DOWNTOWN PARKING LOT IMPROVEMENTS

TOWN OF DAMARISCOTTA

DAMARISCOTTA, ME

US EDA AWARD: # 01-79-17942

BIDDING/CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

JANUARY 2024

W-P PROJECT NO. 20459A

WRIGHT-PIERCE
Engineering a Better Environment

TOWN OF DAMARISCOTTA

DAMARISCOTTA, MAINE

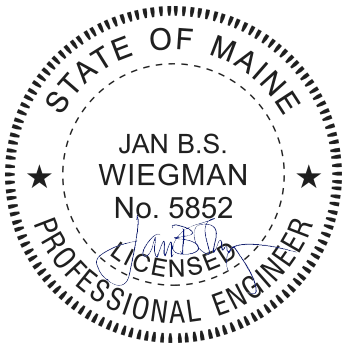
BIDDING/CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

FOR

DOWNTOWN PARKING LOT IMPROVEMENTS

EDA AWARD NO: 01-79-14842

JANUARY 2024



1/10/2024

Prepared By:

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ADVERTISEMENT FOR BIDS

Town of Damariscotta
Damariscotta, Maine
Downtown Parking Lot Improvements

General Notice

The Town of Damariscotta (Owner) is requesting Bids for the construction of the following Project:

Downtown Parking Lot Improvements

Bids for the construction of the Project will be received at the Damariscotta Town Office located at 21 School Street, Damariscotta, Maine, until Thursday, February **15**, 2024 at 2:00 PM local time. At that time the Bids received will be publicly opened and read.

The Project includes the following Work:

Construction of improvements at the down town parking lot including an underground stormwater storage tank, drain manholes, catch basins, storm drains, culverts, and monodirectional valves, pavement reclamation and repaving.

Obtaining the Bidding Documents

The Issuing Office is Wright-Pierce. Information and Bidding Documents for the Project can be found at the following designated website:

https://www.wright-pierce.com/projects

Bidding Documents may be downloaded from the designated website at a cost of $60 per download.

To be considered a responsive Bidder, the Bidder shall have obtained at least one set of Bidding Documents from the Issuing Office using the name that is to appear on the Bid Form. The designated website will be updated periodically with addenda, lists of plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated website. It is the Bidder's responsibility to check the designated website for addenda.

Pre-bid Conference

A pre-bid conference for the Project will be held on Tuesday, January **23**, 2024 at 10:00 AM at Damariscotta Town Hall, 21 School Street, Damariscotta, ME 04543. Attendance at the pre-bid conference is encouraged but not required.

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Instructions to Bidders

For all further requirements regarding funding agency notifications, funding agency requirements, bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

This Advertisement is issued by:

Owner: Town of Damariscotta
By: Andrew Dorr
Title: Town Manager
Date: January 4, 2024

END OF SECTION

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SECTION 00200

INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACT

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ARTICLE 1—DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions.

1.02 Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.

2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.

2.03 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner recommends that Bidder register as a plan holder with the Issuing Office at such website, and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.

2.04 Deleted.

2.05 Deleted.

2.06 *Electronic Documents*

A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf). It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

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B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

3.01 Deleted.

3.02 Deleted.

3.03 *Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:*

A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.

B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.

C. Bidder's state or other contractor license number, if applicable.

D. Subcontractor and Supplier qualification information.

E. Other information regarding qualifications required by the Economic Development Administration (EDA), such as Equal Employment Opportunity information, described in the Article 28 of the Supplementary Conditions.

3.04 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.05 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.06 To be considered a responsive Bidder, the Contractor shall have obtained at least one set of Bidding Documents from the Issuing Office. The Bid will not be awarded to a Bidder unless a record for obtaining at least one set of Bidding Documents exists in the Issuing Office. To meet this requirement and to establish the record of receipt, a prospective Bidder must obtain Bidding Documents using the name that is to appear on the Bid Form.

ARTICLE 4—PRE-BID CONFERENCE

4.01 Deleted.

4.02 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.

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4.03 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:

a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data as included in Appendices A and B attached to these specifications.

2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-related Documents*

A. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. The site visit must be conducted during standard working hours and the Bidder must not disturb any ongoing operations at the Site.

B. Bidders visiting the Site are required to arrange their own transportation to the Site.

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C. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

D. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

E. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

F. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Supplementary Conditions.

5.06 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.

B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.

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7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:

A. Engineer: Jan Wiegman, PE, Email: jan.wiegman@wright-pierce.com, Tel: 207-319-1520

7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than ten working days prior to the date for opening of Bids may not be answered. Addenda will be issued not later than three working days before the bid opening. Bidders are responsible for determining that they have received all Addenda issued.

7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents. Bid security must be at least 5% of the Bidder's maximum Bid price.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Owner's damages in the case of a damages-form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9—CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment are set forth in the Agreement.

9.02 Deleted.

9.03 Provisions for liquidated damages, if any, for failure to timely attain Substantial Completion or completion of the Work in readiness for final payment, are set forth in the Agreement.

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ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

10.01 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

11.02 The apparent Successful Bidder, and any other Bidder so requested, must submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work within five days after Bid opening for the following categories of work:

A. Dewatering

B. Paving

11.03 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

11.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12—PREPARATION OF BID

12.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

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12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.

12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.

12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.

12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.

12.06 A Bid by an individual must show the Bidder's name and official address.

12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.

12.08 All names must be printed in ink below the signatures.

12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.

12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.

12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Lump Sum with Unit Prices and Alternates*

A. Bidders must submit a Bid on a lump sum basis for each lump sum item, and on a unit price basis for each unit price item of Work listed in the Bid Form for the base Bid and include a separate price for each alternate described in the Bidding Documents and as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate.

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B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

D. The total of all unit price "Bid Prices" and all lump sum items will be used by Owner for Bid comparison purposes.

13.02 *Allowances*

A. For cash allowances the Bid price must include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 14—SUBMITTAL OF BID

14.01 Deleted.

14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.

14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.

15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

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ARTICLE 16—OPENING OF BIDS

16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.

18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.

18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.

18.05 *Evaluation of Bids*

A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner will announce to all bidders a "Base Bid plus alternates" budget after receiving all Bids, but prior to opening them. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.

C. Deleted.

D. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

E. Deleted.

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F. Deleted.

18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

18.08 All protests arising from the Owner's procurement practices must be submitted to the Owner as soon as practical. Owner will investigate the basis for the protest, seek advice of legal counsel, document all meeting and actions, and attempt to resolve the protest promptly and equitably. In the event the protest cannot be settled, an appeal may be filed with the Maine Attorney General.

ARTICLE 19—BONDS AND INSURANCE

19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.

19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

19.03 The successful bidder must submit Performance and Payment Bonds to the Owner prior to contract award. Detailed information can be found in the General Conditions. The successful bidder must submit Liability and Property Insurance certificates to the Owner prior to contract award. Detailed information can be found in the General Conditions and the Supplementary Conditions.

19.04

ARTICLE 20—SIGNING OF AGREEMENT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21—SALES AND USE TAXES

21.01 Owner is exempt from Maine state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes must not be included in the Bid. Refer to Paragraph SC-7.10 of the Supplementary Conditions for additional information.

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ARTICLE 22—CONTRACTS TO BE ASSIGNED

No changes to this article.

ARTICLE 23—DELETION OF ITEMS

23.01 Owner reserves the right to reduce project scope by the elimination of Bid items, reduction of quantities on unit price Bid items, or deleting elements of lump sum Bid items. No adjustment to other Bid items prices will be permitted. In the case of reduction of quantities on unit price items, the unit price will not be adjusted. Such adjustments to project scope will be determined prior to award of the Contract and will be negotiated with the apparent Successful Bidder only. If such negotiations are not satisfactory to Owner, Owner will reject all Bids

ARTICLE 24—FEDERAL REQUIREMENTS

24.01 If the contract price is in excess of $100,000, provisions of the Contract Work Hours and Safety Standards Act at 29 CFR 5.5(b) apply.

24.02 Federal requirements at Article 19 of the Supplementary Conditions apply to this Contract.

24.03 American Iron and Steel requirements apply to this project.

ARTICLE 25—SPECIAL LEGAL REQUIREMENTS

24.01 This project will be partially funded with Federal funds from the United States Department of Commerce, Economic Development Administration and therefore is subject to the Federal laws and regulations associated with that program.

25.02 Nondiscrimination in Employment: Each Bidder will be required to comply with the President's Executive Order No. 11246 and any amendments or supplements to this Executive Order.

25.03 The contractor must comply with Davis-Bacon (D-B) and Davis-Bacon Related Acts (DBRA). All laborers and mechanics employed by the contractor and subcontractors on this project shall not be paid less than the prevailing wage rates contained in the wage determination published in these bidding documents. All laborers and mechanics not listed in the wage determination but employed by the contractor and subcontractors on this project shall be paid at least as much as the lowest wage rate for other similar trade classifications already contained in the wage determination published in these bidding documents. A form 1444 submission will be required to obtain additional employee rate classifications, after contract award. No allowances or extra considerations on behalf of any contractor or subcontractor will be permitted subsequently by reason of error or oversight on account of Department of Labor wage determinations. The contractor and subcontractors shall pay all employees weekly. The contractor and subcontractors shall submit weekly certified payrolls to the owner or designated representative, including a payroll summary with signed certification form WH-347. Detailed information and forms can be found in the CWSRF Supplementary Conditions.

END OF SECTION

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FORM **CD-512**
(REV 12-04)

U.S. DEPARTMENT OF COMMERCE

CERTIFICATION REGARDING LOBBYING
LOWER TIER COVERED TRANSACTIONS

Applicants should review the instructions for certification included in the regulations before completing this form. Signature on this form provides for compliance with certification requirements under 15 CFR Part 28, "New Restrictions on Lobbying."

LOBBYING

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 15 CFR Part 28, for persons entering into a grant, cooperative agreement or contract over $100,000 or a loan or loan guarantee over $150,000 as defined at 15 CFR Part 28, Sections 28.105 and 28.110, the applicant certifies that to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure occurring on or before October 23, 1996, and of not less than $11,000 and not more than $110,000 for each such failure occurring after October 23, 1996.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

In any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure occurring on or before October 23, 1996, and of not less than $11,000 and not more than $110,000 for each such failure occurring after October 23, 1996.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above applicable certification.

NAME OF APPLICANT	AWARD NUMBER AND/OR PROJECT NAME
PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE	
SIGNATURE	DATE

SECTION 00410

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

Town of Damariscotta

21 School Street

Damariscotta, Maine 04543

Downtown Parking Lot Improvements

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;

E. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting data;

G. Signed Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions and Lobbying; CD-512 (Section 00408).

H. A tabulation of Subcontractors, Suppliers and other persons and organizations required to be identified in this Bid.

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

Base Bid Items

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum, unit price and allowance items.

B. Bidder acknowledges that:

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1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and

2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents (estimated "*").

Item No.	Description	Unit	Quantity	Bid Unit Price	Bid Amount
1	Mobilization/Demobilization (Max 5% of Total Base Bid)	Lump Sum	1	-	$
2	Traffic Control	Lump Sum	1	-	$
3	Sediment and Erosion Controls	Lump Sum	1	-	$
4	Temporary Construction Fence	Lump Sum	1	-	$
5	Dewatering	Lump Sum	1	-	$
6	Underground Stormwater Storage Tank	Lump Sum	1	-	$
7	4' Diameter Catch Basin	VF	70		$
8	4' Diameter Drain Manhole	VF	12		$
9	6' Diameter Drain Manhole	VF	10		$
10	Catch Basin Filter Inserts	EA	8		$
11	18" Catch Basin Debris Trap (Hood)	EA	8		$
12	8" HDPE Storm Drain Pipe	LF	20		$
13	15" HDPE Storm Drain Pipe	LF	290		$
14	18" HDPE Storm Drain Pipe	LF	730		$
15	24" HDPE Storm Drain Pipe	LF	20		$
16	18" Inline Check Valve	EA	3		$
14	Storm Drain Outfall Armament	CY	30		$
18	Excavation and Replacement of Unsuitable Material	CY	500*		$
19	Reclaim Existing Pavement	SY	8250		$
20	MDOT 703.06 Type B Aggregate Base	CY	1200		$
21	Machine Placed 12.5mm Pavement	TONS	700		$
22	Machine Placed 19mm Pavement	TONS	1160		$
23	Hand Placed 9.5mm Pavement	TONS	20		$
24	Hand Placed 12.5mm Pavement	TONS	15		$
25	Hand Placed 19mm Pavement	TONS	25		$
26	Hand-placed Patterned Pavement at Damariscotta Center	SY	18		$
27	Loam and Seed	SY	900		$
28	Remove and Reset Granite Curb	LF	10		$
29	Slip Form Concrete Curb	LF	500		$
30	Detectable Warning Devices	EA	1		$
31	Pavement Striping and Markings	Lump Sum	1		$
32	Temporary 4" Striping	LF	4650		$
33	3" Capped Sleeve	LF	120		$
34	Wooden Guardrail	LF	422		$
35	Allowance: Asphalt Adjustment	Allowance	1		$
36	MDOT 703.06 Type D Aggregate Subbase	CY	200*		$
37	1-1/2" Crushed Stone	CY	200*		$

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Item No.	Description	Unit	Quantity	Bid Unit Price	Bid Amount
38	Large Truck (Operator Incl)	HR	24*		$
39	All Purpose Excavator (Operator Incl)	HR	24*		$
40	Hand Labor Straight Time	HR	40*		$
41	Foreperson	HR	40*		$
42	Test Pit Excavation and Backfill	EA	5		$
Total Base Bid					$

* indicates indeterminate quantity

ARTICLE 4—DELETED

ARTICLE 5—DELETED

ARTICLE 6—TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Deleted.

6.03 Deleted.

6.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

7.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

7.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

7.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 8—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

8.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

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1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work, including all American Iron and Steel requirements.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

8.02 *Bidder's Certifications*

A. The Bidder certifies the following:

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1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
    a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
    b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
    c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
    d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

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BIDDER hereby submits this Bid as set forth above:

Bidder:

_____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

Address for giving notices:

_____

_____

Bidder's Contact:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

Bidder's Contractor License No.: (if applicable) _____

END OF SECTION

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SECTION 00430

BID BOND (PENAL SUM FORM)

Bidder Name: [Full formal name of Bidder] Address *(principal place of business)*: [Address of Bidder's principal place of business]	Surety Name: [Full formal name of Surety] Address *(principal place of business)*: [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Address *(principal place of business)*: [Address of Owner's principal place of business]	Bid Project *(name and location)*: [Owner project/contract name, and location of the project] Bid Due Date: [Enter date bid is due]
Bond Penal Sum: [Amount] Date of Bond: [Date]	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder _____ *(Full formal name of Bidder)* By: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title:	Surety _____ *(Full formal name of Surety) (corporate seal)* By: _____ *(Signature) (Attach Power of Attorney)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title:
Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.	

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.

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2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
   3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
   3.2. All Bids are rejected by Owner, or
   3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

END OF SECTION

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SECTION 00450

QUALIFICATIONS STATEMENT

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business's organizational structure:

Form of Business:	☐ Sole Proprietorship ☐ Partnership ☐ Corporation		
☐ Limited Liability Company ☐ Joint Venture comprised of the following companies:			
	1.		
	2.		
	3.		
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?	☐ Yes ☐ No ☐ Pending		
Identify all		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

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1.03 Provide information regarding the Business's officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

3.01 Provide information regarding Business's Diverse Business Certification, if any. Provide evidence of current certification.

Certification		Certifying Agency	Certification Date
☐ Disadvantaged Business Enterprise			
☐ Minority Business Enterprise			
☐ Woman-Owned Business Enterprise			
☐ Small Business Enterprise			
☐ Disabled Business Enterprise			
☐ Veteran-Owned Business Enterprise			
☐ Service-Disabled Veteran-Owned Business			
☐ HUBZone Business (Historically Underutilized) Business			
☐ Other			
☐ None			

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ARTICLE 4—SAFETY

4.01 Provide information regarding Business's safety organization and safety performance.

Name of Business's Safety Officer:		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

4.02 Provide Worker's Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

5.01 Provide information regarding the Business's financial stability. If required in the "Submit" check box below, provide a copy of the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:		
Business address:		
Date of Business's most recent financial statement:		☐ Submit
Date of Business's most recent audited financial statement:		☐ Submit
Financial indicators from the most recent financial statement		
Contractor's Current Ratio (Current Assets ÷ Current Liabilities)		
Contractor's Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)		

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ARTICLE 6—SURETY INFORMATION

6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?	☐ Yes ☐ No		
Is surety listed in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? ☐ Yes ☐ No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

7.01 Provide information regarding Business's insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?		☐ Yes ☐ No	
Does provider have an A.M. Best Rating of A-VII or better?		☐ Yes ☐ No	
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

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ARTICLE 8—CONSTRUCTION EXPERIENCE

8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

8.02 Provide information regarding the Business's previous contracting experience.

Years of experience with projects like the proposed project:				
As a general contractor:		As a joint venturer:		
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:				
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been barred from contracting by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been released from a bid in the past 5 years? ☐ Yes ☐ No				
Defaulted on a project or failed to complete any contract awarded to it? ☐ Yes ☐ No				
Refused to construct or refused to provide materials defined in the contract documents or in a change order? ☐ Yes ☐ No				
Been a party to any currently pending litigation or arbitration? ☐ Yes ☐ No				
Provide full details in a separate attachment if the response to any of these questions is Yes.				

8.03 List all projects currently under contract in Schedule A and provide indicated information.

8.04 List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business's experience with projects similar in type and cost of construction.

8.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business's key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

9.01 Provide the following information with the Statement of Qualifications:

A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.

B. Diverse Business Certifications if required by Paragraph 3.01.

C. Certification of Business's safety performance if required by Paragraph 4.02.

D. Financial statements as required by Paragraph 5.01.

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E. Attachments providing additional information as required by Paragraph 8.02.

F. Schedule A (Current Projects) as required by Paragraph 8.03.

G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.

H. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.05.

I. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

(If Business is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

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Schedule A—Current Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

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Schedule B—Previous Experience with Similar Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

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Schedule B—Previous Experience with Similar Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

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Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

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Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

END OF SECTION

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SECTION 00460

COMPLIANCE STATEMENT

EXECUTIVE ORDER 11246

Date: _____

This statement relates to a proposed contract with the Town of Damariscotta, who expects to finance the contract with assistance from an agency of agencies of the United States Government. I am the undersigned bidder or prospective contractor. I represent that -----

1. I ☐ have, ☐ have not, participated in a previous contract or subcontract subject to Executive Order 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.

2. If I have participated in such a contract or subcontract, I ☐ have, ☐ have not, filed all compliance reports that I have been required to file in connection with the contract or subcontract.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to the office where the reports are required to be filed.

_____
Signature of Bidder or Prospective Contractor

Address: _____
Street, P.O. Box, etc.

_____
City, State and Zip Code

(This page to be completed by the Bidder and submitted with the Bid Form)

END OF SECTION

SECTION 00510

NOTICE OF AWARD

Date of Issuance:
Owner: Owner's Project No.:
Engineer: Engineer's Project No.:
Project:
Contract Name:
Bidder:
Bidder's Address:

You are notified that Owner has accepted your Bid dated [date] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is $[Contract Price]. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

[Number of copies sent] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner [number of copies sent] counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): [Describe other conditions that require Successful Bidder's compliance]

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: [Full formal name of Owner]
By *(signature)*: _____
Name *(printed)*: _____
Title: _____

Copy: Engineer

END OF SECTION

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SECTION 00520

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between [name of contracting entity] ("Owner") and [name of contracting entity] ("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Construction of stormwater improvements including an underground stormwater storage tank, drain manholes, catch basins, storm drain culverts, and monodirectional valves, and repaving.

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Construction of stormwater improvements including an underground stormwater storage tank, drain manholes, catch basins, storm drain culverts, and monodirectional valves, road reclamation, and repaving.

ARTICLE 3—ENGINEER

3.01 The Owner has retained Wright-Pierce ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Not Used

4.03 *Contract Times: Days*

A. The Work will be substantially complete within 240 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 270 days after the date when the Contract Times commence to run. Work under the contract must be started by September 1, 2024.

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4.04 Not Used

4.05 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $500 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5—4.06 NOT USED CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the last day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments

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will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.
    a. 95 percent of the value of the Work completed (with the balance being retainage).
        1) Deleted
    b. 95percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion of the entire construction to be provided under the Contract Documents, Owner shall pay an amount sufficient to increase total payments to Contractor to 98percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.
    1. The final percent of the value of the Work shall be retained for a period of one year from the date of Substantial Completion.

6.04 *Interest*

A. All amounts not paid when due will bear interest at the rate of prime plus 2 percent per annum.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:
    1. This Agreement.
    2. Bonds:
        a. Performance bond (together with power of attorney).
        b. Payment bond (together with power of attorney).
    3. General Conditions.
    4. Supplementary Conditions.
    5. Specifications as listed in the table of contents of the project manual (copy of list attached).

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6. Drawings (not attached but incorporated by reference) consisting of [number] sheets with each sheet bearing the following general title: Downtown Parking Lot Improvements.
7. Addenda (numbers [number] to [number], inclusive).
8. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid
9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.
    e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in

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the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

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4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.-

8.04 *Other Provisions* – Not used.

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____(which is the Effective Date of the Contract).

Owner:	Contractor:
_____ *(typed or printed name of organization)*	_____ *(typed or printed name of organization)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Date: _____ *(date signed)*	Date: _____ *(date signed)*
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
	(If [Type of Entity] is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
Designated Representative:	Designated Representative:
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address:	Address:
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____
Email: _____	Email: _____
(If [Type of Entity] is a corporation, attach evidence of authority to sign. If [Type of Entity] is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)	License No.: _____ *(where applicable)*
	State: _____

END OF SECTION

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SECTION 00550

NOTICE TO PROCEED

Owner:	_____	Owner's Project No.:	_____
Engineer:	_____	Engineer's Project No.:	_____
Contractor:	_____	Contractor's Project No.:	_____
Project:	_____		
Contract Name:	_____		
Effective Date of Contract:	_____		

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [date Contract Times are to start] pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

> The number of days to achieve Substantial Completion is 240 from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of [date, calculated from commencement date above]; and the number of days to achieve readiness for final payment is 270 from the commencement date of the Contract Times, resulting in a date for readiness for final payment of [date, calculated from commencement date above].

Before starting any Work at the Site, Contractor must comply with the following:

Owner: _____

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

Date Issued: _____

Copy: Engineer

END OF SECTION

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SECTION 00610

PERFORMANCE BOND

Contractor Name: [Full formal name of Contractor] Address *(principal place of business)*: [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address *(principal place of business)*: [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Mailing address *(principal place of business)*: [Address of Owner's principal place of business]	Contract Description *(name and location)*: [Owner's project/contract name, and location of the project] Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]

Bond

Bond Amount: [Amount]

Date of Bond: [Date]

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

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5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

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14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: [Describe modification or enter "None"]

END OF SECTION

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SECTION 00615

PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address *(principal place of business)*: [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address *(principal place of business)*: [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Mailing address *(principal place of business)*: [Address of Owner's principal place of business]	Contract Description *(name and location)*: [Owner's project/contract name, and location of the project] Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]

Bond

Bond Amount: [Amount]

Date of Bond: [Date]

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

EJCDC® C-615, Payment Bond.
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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1. Claimants who do not have a direct contract with the Contractor

        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2. Pay or arrange for payment of any undisputed amounts.

    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

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8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

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16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: [Describe modification or enter "None"]

END OF SECTION

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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

APPLICATION FOR PAYMENT

Prepared By

EJCDC®
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

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Contractor's Application for Payment

Owner:		Owner's Project No.:	
Engineer:		Engineer's Project No.:	
Contractor:		Contractor's Project No.:	
Project:			
Contract:			
Application No.:		Application Date:	
Application Period:	From	to	

1. Original Contract Price					$ -
2. Net change by Change Orders					$ -
3. Current Contract Price (Line 1 + Line 2)					$ -
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)					$ -
5. Retainage					
a.		X	$ -	Work Completed	$ -
b.		X	$ -	Stored Materials	$ -
c. Total Retainage (Line 5.a + Line 5.b)					$ -
6. Amount eligible to date (Line 4 - Line 5.c)					$ -
7. Less previous payments (Line 6 from prior application)					
8. Amount due this application					$ -
9. Balance to finish, including retainage (Line 3 - Line 4)					$ -

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:
(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;
(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and
(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor:			
Signature:		Date:	

Recommended by Engineer		Approved by Owner	
By:		By:	
Title:		Title:	
Date:		Date:	
Approved by Funding Agency			
By:		By:	
Title:		Title:	
Date:		Date:	

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Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner: _____ Owner's Project No.: _____

Engineer: _____ Engineer's Project No.: _____

Contractor: _____ Contractor's Project No.: _____

Project: _____

Contract: _____

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I
			Work Completed					
Item No.	Description	Scheduled Value ($)	(D + E) From Previous Application ($)	This Period ($)	Materials Currently Stored (not in D or E) ($)	Work Completed and Materials Stored to Date (D + E + F) ($)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) ($)
Original Contract								
			-			-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
	Original Contract Totals	$ -	$ -	$ -	$ -	$ -		$ -

EJCDC C-620 Contractor's Application for Payment
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Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner: _____ Owner's Project No.: _____

Engineer: _____ Engineer's Project No.: _____

Contractor: _____ Contractor's Project No.: _____

Project: _____

Contract: _____

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I
			Work Completed					
Item No.	Description	Scheduled Value ($)	(D + E) From Previous Application ($)	This Period ($)	Materials Currently Stored (not in D or E) ($)	Work Completed and Materials Stored to Date (D + E + F) ($)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) ($)
Change Orders								
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
	Change Order Totals	$ -	$ -	$ -	$ -	$ -		$ -
Original Contract and Change Orders								
	Project Totals	$ -	$ -	$ -	$ -	$ -		$ -

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Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: _____ Owner's Project No.: _____

Engineer: _____ Engineer's Project No.: _____

Contractor: _____ Contractor's Project No.: _____

Project: _____

Contract: _____

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
Original Contract											
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
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					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
Original Contract Totals					$ -		$ -	$ -	$ -		$ -

EJCDC C-620 Contractor's Application for Payment
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Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: _____ Owner's Project No.: _____

Engineer: _____ Engineer's Project No.: _____

Contractor: _____ Contractor's Project No.: _____

Project: _____

Contract: _____

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
Change Orders											
					-		-		-		-
					-		-		-		-
					-		-		-		-
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Original Contract and Change Orders											
				Project Totals	$ -		$ -	$ -	$ -		$ -

EJCDC C-620 Contractor's Application for Payment
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Owner:
Engineer:
Contractor:
Project:
Contract:

Owner's Project No.:
Engineer's Project No.:
Contractor's Project No.:

Application No.: Application Period: From to Application Date:

A	B	C	D	E	F	G	H	I	J	K	L	M
						Materials Stored			Incorporated in Work			
Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Description of Materials or Equipment Stored	Storage Location	Application No. When Materials Placed in Storage	Previous Amount Stored ($)	Amount Stored this Period ($)	Amount Stored to Date (G+H) ($)	Amount Previously Incorporated in the Work ($)	Amount Incorporated in the Work this Period ($)	Total Amount Incorporated in the Work (J+K) ($)	Materials Remaining in Storage (I-L) ($)
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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. Addenda—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. Agreement—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. Application for Payment—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. Bid—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. Bidder—An individual or entity that submits a Bid to Owner.

6. Bidding Documents—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. Bidding Requirements—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. Change Order—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. Change Proposal—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. Claim

    a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

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requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. Constituent of Concern—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. Contract—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. Contract Documents—Those items so designated in the Agreement, and which together comprise the Contract.

14. Contract Price—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. Contract Times—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. Contractor—The individual or entity with which Owner has contracted for performance of the Work.

17. Cost of the Work—See Paragraph 13.01 for definition.

18. Drawings—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. Effective Date of the Contract—The date, indicated in the Agreement, on which the Contract becomes effective.

20. Electronic Document—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. Electronic Means—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

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recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. Engineer—The individual or entity named as such in the Agreement.

23. Field Order—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. Hazardous Environmental Condition—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. Laws and Regulations; Laws or Regulations—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. Liens—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. Milestone—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. Notice of Award—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. Notice to Proceed—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. Owner—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. Progress Schedule—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. Project—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

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33. Resident Project Representative—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. Samples—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. Schedule of Submittals—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. Schedule of Values—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. Shop Drawings—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. Site—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. Specifications—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. Subcontractor—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. Submittal—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. Substantial Completion—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

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43. Successful Bidder—The Bidder to which the Owner makes an award of contract.

44. Supplementary Conditions—The part of the Contract that amends or supplements these General Conditions.

45. Supplier—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

46. Technical Data

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. Underground Facilities—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. Unit Price Work—Work to be paid for on the basis of unit prices.

49. Work—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. Work Change Directive—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

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1.02 Terminology

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. Intent of Certain Terms or Adjectives: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. Day: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

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F. Contract Price or Contract Times: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance

A. Performance and Payment Bonds: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. Evidence of Contractor's Insurance: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. Evidence of Owner's Insurance: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 Copies of Documents

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 Before Starting Construction

A. Preliminary Schedules: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

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into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 Preconstruction Conference; Designation of Authorized Representatives

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

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ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 Reference Standards

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

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inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. Contractor's Verification of Figures and Field Measurements: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. Contractor's Review of Contract Documents: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Requirements of the Contract Documents

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

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B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 Reuse of Documents

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 Reference Points

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

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established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 Progress Schedule

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 Delays in Contractor's Progress

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

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D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

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B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. Removal of Debris During Performance of the Work: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

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and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading of Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 Subsurface and Physical Conditions

A. Reports and Drawings: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. Underground Facilities: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. Reliance by Contractor on Technical Data: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. Limitations of Other Data and Documents: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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5.04 Differing Subsurface or Physical Conditions

A. Notice by Contractor: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. Engineer's Review: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. Owner's Statement to Contractor Regarding Site Condition: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. Early Resumption of Work: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

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Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. Underground Facilities; Hazardous Environmental Conditions: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 Underground Facilities

A. Contractor's Responsibilities: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

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3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. Notice by Contractor: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. Engineer's Review: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. Owner's Statement to Contractor Regarding Underground Facility: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. Early Resumption of Work: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 Hazardous Environmental Conditions at Site

A. Reports and Drawings: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

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of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

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conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

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Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 Insurance—General Provisions

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

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Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

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L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 Contractor's Insurance

A. Required Insurance: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. General Provisions: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. Additional Insureds: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

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4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 Builder's Risk and Other Property Insurance

A. Builder's Risk: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. Property Insurance for Facilities of Owner Where Work Will Occur: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. Property Insurance for Substantially Complete Facilities: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. Partial Occupancy or Use by Owner: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. Insurance of Other Property; Additional Insurance: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 Property Losses; Subrogation

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

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Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

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6.06 Receipt and Application of Property Insurance Proceeds

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 Contractor's Means and Methods of Construction

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 Labor; Working Hours

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

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B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 "Or Equals"

A. Contractor's Request; Governing Criteria: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

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2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) has a proven record of performance and availability of responsive service; and

4) is not objectionable to Owner.

b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. Contractor's Expense: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. Engineer's Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. Effect of Engineer's Determination: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. Treatment as a Substitution Request: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

A. Contractor's Request; Governing Criteria: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

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3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

    a. will certify that the proposed substitute item will:

        1) perform adequately the functions and achieve the results called for by the general design;

        2) be similar in substance to the item specified; and

        3) be suited to the same use as the item specified.

    b. will state:

        1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

        2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

        3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

    c. will identify:

        1) all variations of the proposed substitute item from the item specified; and

        2) available engineering, sales, maintenance, repair, and replacement services.

    d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. Engineer's Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. Reimbursement of Engineer's Cost: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

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E. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. Effect of Engineer's Determination: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 Concerning Subcontractors and Suppliers

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

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H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the

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Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 Permits

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 Record Documents

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available

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to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

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H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 Hazard Communication Programs

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 Submittals

A. Shop Drawing and Sample Requirements

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

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2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. Submittal Procedures for Shop Drawings and Samples: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. Shop Drawings

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. Samples

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Engineer's Review of Shop Drawings and Samples

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

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4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

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c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

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6. The issuance of a notice of acceptability by Engineer;
7. The end of the correction period established in Paragraph 15.08;
8. Any inspection, test, or approval by others; or
9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

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C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 Other Work

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate

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with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 Coordination

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price

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will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 Communications to Contractor

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 Replacement of Engineer

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 Furnish Data

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

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9.04 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 Lands and Easements; Reports, Tests, and Drawings

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 Insurance

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 Change Orders

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 Inspections, Tests, and Approvals

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 Limitations on Owner's Responsibilities

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 Evidence of Financial Arrangements

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 Safety Programs

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

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ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 Owner's Representative

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 Visits to Site

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 Resident Project Representative

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 Engineer's Authority

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

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E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 Limitations on Engineer's Authority and Responsibilities

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 Compliance with Safety Program

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

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ARTICLE 11—CHANGES TO THE CONTRACT

11.01 Amending and Supplementing the Contract

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 Change Orders

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 Work Change Directives

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

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B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 Field Orders

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 Owner-Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 Unauthorized Changes in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

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1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. Contractor's Fee: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

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11.08 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 Change Proposals

A. Purpose and Content: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. Change Proposal Procedures

1. Submittal: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. Supporting Data: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

   a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

   b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

   The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. Engineer's Initial Review: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. Engineer's Full Review and Action on the Change Proposal: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

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Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. Binding Decision: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. Resolution of Certain Change Proposals: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. Post-Completion: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 Notification to Surety

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 Claims

A. Claims Process: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. Submittal of Claim: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

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and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. Review and Resolution: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. Mediation

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. Partial Approval: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. Denial of Claim: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. Final and Binding Results: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

A. Purposes for Determination of Cost of the Work: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

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2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. Costs Included: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

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consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. Construction Equipment Rental

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

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g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. Costs Excluded: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor's Fee

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

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Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. Documentation and Audit: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. Owner's Contingency Allowance: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

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thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. Adjustments in Unit Price

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 Tests, Inspections, and Approvals

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

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D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

A. Contractor's Obligation: It is Contractor's obligation to assure that the Work is not defective.

B. Engineer's Authority: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. Notice of Defects: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. Correction, or Removal and Replacement: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. Preservation of Warranties: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. Costs and Damages: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

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losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 Uncovering Work

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

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or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

A. Basis for Progress Payments: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

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establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

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4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the Contract Price has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. Reductions in Payment by Owner

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

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b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

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submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupancy

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

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significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 Final Payment

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
    a. all documentation called for in the Contract Documents;
    b. consent of the surety, if any, to final payment;
    c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

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d. a list of all duly pending Change Proposals and Claims; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. Engineer's Review of Final Application and Recommendation of Payment: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Notice of Acceptability: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. Completion of Work: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. Final Payment Becomes Due: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 Waiver of Claims

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

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appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate for Convenience

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

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provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

A. Disputes Subject to Final Resolution: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. Final Resolution of Disputes: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
2. agree with the other party to submit the dispute to another dispute resolution process; or
3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 Giving Notice

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 Computation of Times

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

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18.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 Limitation of Damages

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 No Waiver

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 Assignment of Contract

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 Successors and Assigns

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 Headings

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, “Paragraph SC-4.05.”

CONTENTS OF SUPPLEMENTARY CONDITIONS

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SC-41	Notice to Labor Unions	SC-41

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ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

SC-1.01.A.3 APPLICATION FOR PAYMENT

Add the following language to the end of Paragraph 1.01.A.3:

The Application for Payment form to be used on this Project is EJCDC No. C-620 or similar approved format. The Agency must approve all Applications for Payment before payment is made.

SC-1.01.A.8 CHANGE ORDER

Add the following language to the end of Paragraph 1.01.A.8:

The Change Order form to be used on this Project is EJCDC No. C-941. Agency approval is required before Change Orders are effective.

Add the following language to the end of Paragraph 1.01.A.8:The Change Order form to be used on this Project is the modified version of EJCDC No. C-941 provided in these specifications.

SC-1.01.A.22 ENGINEER

Add the following language to the end of Paragraph 1.01.A.22:

The Engineer's Consultants on this Project are as follows: Wright-Pierce

SC-1.01 A.30 OWNER

Add the following to the end of Paragraph 1.01.A.30 of the General Conditions:

Owner is referred to as Grantee in certain sections of these Contract Documents. Owner and Grantee are one and the same.

SC-1.01 A.50 WORK CHANGE DIRECTIVE

Add the following language at the end of the last sentence of Paragraph 1.01.A.50

The Work Change Directive form to be used on this Project is EJCDC C-940 (2018). A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC-1.01 A.53 NON-RESIDENT CONTRACTOR

Add the following paragraph immediately after Paragraph 1.01.A.52 of the General Conditions, which is to read as follows:

53. Non-Resident Contractor -

a. A person who is not a resident in the State where the proposed construction is to be located, or

b. Any partnership that has no member thereof resident in the State where the proposed construction is to be located.

c. Any corporation established under laws other than those of the State in which the proposed construction is located.

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ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

Add a new paragraph immediately after Paragraph 2.01.C of the General Conditions, which is to read as follows:

D. *Non-Resident Contractor*: The Contractor, if a corporation established under laws other than the State in which the proposed construction is located, shall file with the Owner, notice of the name of its resident attorney, appointed as required by the laws of the State in which the proposed construction is located. The Contractor, if a resident of a State other than that in which the proposed construction is located and not a corporation, shall file, at the time of execution of the Agreement, with the Owner a written appointment of a resident of the State in which the construction is located, having an office or place of business therein, to be his/her true and lawful attorney upon whom all lawful processes in any actions or proceedings against him/her may be served; and in such writing, which shall set forth said attorney's place of residence, shall agree that any lawful process against him/her which is served on said attorney shall be of the same legal force and validity as if served on him/her and that the authority shall continue in force so long as any liability remains outstanding against him/her in said State. The power of attorney shall be filed in the office of the Secretary of State if required, and copies certified by the Secretary shall be sufficient evidence thereof. Such appointment shall continue in force until revoked by an instrument in writing, designating in a like manner some other person upon whom such processes may be served, which instrument shall be filed in the manner provided herein for the original appointment.

2.02 *Copies of Documents*

SC-2.02 Delete Paragraph 2.02.A. in its entirety and replace with the following paragraph:

Owner shall furnish to Contractor 4 printed copies of the Contract Documents (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional copies will be furnished upon request at the cost of reproduction.2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

B. *Electronic Documents Protocol:* The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.

1. *Basic Requirements*

a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.

b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.

c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using

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non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.

e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.

f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.

1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 10 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.

2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.

b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.

c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like

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worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.

d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.

e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.

f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.

g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.

h. The Contractor will operate a Project information management system (also referred to in this EDP as “Project Website”) for use of Owner, Engineer and Contractor during the Project for exchange and storage of Project-related communications and information. Except as otherwise provided in this EDP or the General Conditions, use of the Project Website by the parties as described in this Paragraph will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information. The following conditions and standards will govern use of the Project Website:

    1) Describe the period of time during which the Project Website will be operated and be available for reliance by the parties;

    2) Provide any minimum system infrastructure, software licensing and security standards for access to and use of the Project Website;

    3) Describe the types and extent of services to be provided at the Project Website (such as large file transfer, email, communication and document archives, etc.); and

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4) Include any other Project Website attributes that may be pertinent to Contractor's use of the facility and pricing of such use.

C. *Software Requirements for Electronic Document Exchange; Limitations*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.

a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.

2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.

3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Exhibit A to this EDP, including software versions, if listed.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

No changes in this Article.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

SC-4.01 Delete Paragraph 4.01.A in its entirety and insert the following in its place:

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be issued at any time within 30 calendar days after the Effective Date of the Agreement.

SC-4.01 Delete the last sentence of Paragraph 4.01.A

4.03 Reference Points

SC-4.03 Add a new paragraph immediately after Paragraph 4.03A of the General Conditions which is to read as follows: B. Engineer may check the lines, elevations, reference marks, batter boards, etc., set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

4.05 *Delays in Contractor's Progress*

Not used.

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ARTICLE 5—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 *Subsurface and Physical Conditions*

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
Updated Damariscotta Downtown Flood Protection Geotechnical Considerations	8/3/2021	Geotechnical borings
Geotechnical Evaluation, Proposed Waterfront Restroom	7/16/2018	Geotechnical borings
Addendum 1 to Report of Geotechnical Evaluation, Proposed Waterfront Restroom	8/15/2018	Revision to pile hammer energy
Geotechnical Report, Shore and Harbor Improvements, Main Street	7/25/2011	Geotechnical borings

F. The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
None		

5.06 *Hazardous Environmental Conditions*

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	Date of Report	Technical Data
Phase II Environmental Site Assessment, Former AA Hall Grist Mill, Municipal Parking Lot, Main Street	5/24/2016	Environmental site assessment

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any)

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contained in such Drawings upon which Contractor may rely: [If there are no such drawings, so indicate in the table]

Drawings Title	Date of Drawings	Technical Data
None		

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C-610, Performance Bond (2010, 2013, or 2018 edition).
2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C-615, Payment Bond (2010, 2013, or 2018 edition).

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.B:

1. The correction period specified as one year after the date of Substantial Completion in Paragraph 15.08.A of the General Conditions is hereby revised to be1 year after Substantial Completion.

6.02 *Insurance—General Provisions*

Not used.

6.03 *Contractor's Insurance*

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: Engineer's Consultants, as specifically identified in Article 1

E. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory

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Workers' Compensation and Related Policies	Policy limits of not less than:
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	N/A
Bodily injury by disease—aggregate	N/A
Employer's Liability	
Each accident	$500,000
Each employee	$500,000
Policy limit	$500,000
Stop-gap Liability Coverage	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	N/A

F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
    a. Such insurance must be maintained for three years after final payment.
    b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO

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endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.

7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Contractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	$2,000,000
Products—Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$2,000,000
Bodily Injury and Property Damage—Each Occurrence	$1,000,000

J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	$1,000,000
Each Accident	$1,000,000
Property Damage	
Each Accident	$1,000,000
[or]	
Combined Single Limit	

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Automobile Liability	Policy limits of not less than:
Combined Single Limit (Bodily Injury and Property Damage)	$1,000,000

K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	$3,000,000
General Aggregate	$3,000,000

L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of $3,000,000 after accounting for partial attribution of its limits to underlying policies, as allowed above.

M. *Contractor's Pollution Liability Insurance: N/A*

N. *Contractor's Professional Liability Insurance: N/A*

O. *Railroad Protective Liability Insurance: N/A*

P. *Unmanned Aerial Vehicle Liability Insurance: N/A*

Q. *Other Required Insurance:* N/A

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

F. *Builder's Risk Requirements:* The builder's risk insurance must:

1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).

a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.

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b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.

2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).

4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

5. extend to cover damage or loss to insured property while in transit.

6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.

7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.

8. include performance/hot testing and start-up, if applicable.

9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.

10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:

    a. Engineer and Engineer's consultants as listed in SC-1.01.

11. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties: N/A

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6.6 Receipt and Application of Property Insurance Proceeds

Delete Article 6.06 in its entirety.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.03 *Labor; Working Hours*

SC-7.03 Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Regular working hours will be 7:00 AM to 7:00 PM, Monday through Friday.
2. Owner's legal holidays are State mandated holidays.

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

D. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as any hours exceeding 50 hours per week.

SC-7.04 Add the following new paragraph immediately after Paragraph 7.04.D:

E. All Iron and Steel products must meet American Iron and Steel requirements.

F. For projects utilizing a De Minimis waiver, Contractor shall maintain an itemized list of non-domestically produced iron or steel incidental components and ensure that the cost is less than 5% of total materials cost for project.

SC-7.05 *"Or Equals"*

Add the following at the end of Paragraph 7.05.B

Contractor shall include a Manufacturer's Certification letter for compliance with American Iron and Steel requirements in support data, if applicable. Refer to Manufacturer's Certification Letter provided in these Contract Documents.

Add a new subparagraph SC-7.05.B.1 immediately after subparagraph 7.05.B:

1. It shall be Contractor's responsibility to coordinate all submittals to Engineer for approval to eliminate any conflicts which might arise due to the use of "or equal" items. Any additional costs incidental to the use of "or equal" items shall be paid by Contractor.

SC-7.06 *Substitutes*

Modify Paragraph 7.06A as follows:

Remove "and" from end of Paragraph 7.06.A.3.a.2

Add "; and" to the end of Paragraph 7.06.A.3.a.3

Add the following new paragraph immediately after Paragraph 7.06.A.3.a.3:

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4. Comply with American Iron and Steel by providing Manufacturer's Certification letter of American Iron and Steel compliance, if applicable. Refer to Manufacturer's Certification Letter provided in these Contract Documents.

Add a new subparagraph SC-7.06.E.1 immediately after subparagraph 7.06.E:

1. It shall be Contractor's responsibility to coordinate all submittals to Engineer for approval to eliminate any conflicts which might arise due to the use of substitutes. Any additional costs incidental to the use of substitutes shall be paid by Contractor.

SC-7.09 *Permits*

Add the following subparagraph immediately after Paragraph 7.09.A:1. Local permit fees for permits required from the Owner will be waived.

Add the following paragraph immediately after Paragraph 7.09.A:

B. The following permits/approvals have been or will be obtained by the Owner. Copies of the permit approvals are in the Appendices of the Bidding Documents. Full copies of the permit applications and approvals will be on file at the Owner's Offices. It is the responsibility of the Contractor to be familiar with and comply with the applicable provisions of each permit as they apply to the work:

1. Maine DEP NRPA PBR

7.10 *Taxes*

SC-7.10 Add a new paragraph immediately after Paragraph 7.10.A:

B. Owner is exempt from payment of sales and compensating use taxes of the State of Maine and of cities and counties thereof on all materials to be incorporated into the Work.

1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.

2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

SC-7.13 Safety and Protection

SC 7.16 Submittals

Amend Paragraph 7.16.A.1.c by deleting the last period and adding:

, including Manufacturer's Certification letter for any item in the submittal subject to American Iron and Steel requirements and include the Certificate in the submittal. Refer to Manufacturer's Certification Letter provided in these Contract Documents.

Add new paragraph immediately after Paragraph 7.16.C.8

9. Engineer's review and approval of a Shop Drawing or Sample shall include review of Manufacturers' Certifications in order to document compliance with American Iron and Steel requirements, as applicable.

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SC-7.17 Contractor's General Warranty and Guarantee

Add a new paragraph immediately after Paragraph 7.17.E:

F. Contractor shall certify upon Substantial Completion that all Work and Materials have complied with American Iron and Steel requirements as mandated by Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference. Contractor shall provide said Certification to Owner. Refer to General Contractor's Certification Letter provided in these Contract Documents.

Add a new paragraph immediately after Paragraph 7.17.E:

F. The Performance Bond shall remain in full force and effect through the guarantee period.

SC 7.20 Contractor's Records

Add a new paragraph immediately after paragraph 7.19 of the General Conditions which is to read as follows:

7.20 Definitions; Contract Provisions; Management and Financial Statement; Enforcement

A. CONTRACTOR shall comply with all applicable provisions of Chapter 30, Section 39R of the Massachusetts General Laws regarding CONTRACTOR's records.

ARTICLE 8—OTHER WORK AT THE SITE

SC-8.02 COORDINATION

No changes to this Article.

ARTICLE 9—OWNER'S RESPONSIBILITIES

SC-9.13 OWNER'S SITE REPRESENTATIVE

No changes to this Article.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new paragraph immediately after Paragraph 10.03.B:

C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:

1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.

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2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.

3. *Liaison*

   a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

   b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

   c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.

4. *Review of Work; Defective Work*

   a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.

   b. Observe whether any Work in place appears to be defective.

   c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.

5. *Inspections and Tests*

   a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.

   b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.

6. *Payment Requests:* Review Applications for Payment with Contractor.

7. *Completion*

   a. Participate in Engineer's visits regarding Substantial Completion.

   b. Assist in the preparation of a punch list of items to be completed or corrected.

   c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.

   d. Observe whether items on the final punch list have been completed or corrected.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

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4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.

5 Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11—CHANGES TO THE CONTRACT

11.02 Change Orders

SC-11.02 Add the following new paragraph after Paragraph 11.02.B:

C. The Engineer or Owner shall contact the Agency for concurrence on each Change Order prior to issuance. All Contract Change Orders must be concurred in by Agency before they are effective.

11.03 Work Change Directives

SC-11.03 Add new Paragraph 11.03.A.2 immediately after Paragraph 11.03.A:

1. The Engineer or Owner shall contact the Agency for concurrence on each Work Change Directive prior to issuance. Once authorized by Owner, a copy of each Work Change Directive shall be provided by Engineer to the Agency.

11.05 Owner-Authorized Changes in the Work

SC-11.05 Add the following at the end of Paragraph 11.05.B

For Owner-authorized changes in the Work, the Contractor will provide the Manufacturer's Certification(s) for materials subject to American Iron and Steel requirements except when sole-source is specified, in which case the Engineer will provide the Manufacturer's Certification(s).

11.09 Change Proposals

SC-11.09 Add new paragraph immediately after Paragraph 11.09.B.2.b:

c. Change orders involving materials subject to American Iron and Steel requirements shall include supporting data (name of Manufacturer, city and state where the product was manufactured, description of product, signature of authorized Manufacturer's representative) in the Manufacturer's Certification Letter, as applicable.

ARTICLE 12—CLAIMS

No changes to this Article.

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ARTICLE 13—COST OF WORK; ALLOWANCES, UNIT PRICE WORK

13.01 *Cost of the Work*

SC-13.01 Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:

a. For purposes of this paragraph, “small tools and hand tools” means any tool or equipment whose current price if it were purchased new at retail would be less than $500.

SC-13.03 UNIT PRICE WORK

SC-13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the extended price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 5 percent from the estimated quantity of such item indicated in the Agreement.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor’s costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.03 Defective Work

SC 14.03 Add new paragraph immediately after Paragraph 14.03.F

G. Installation of materials that are non-compliant with American Iron and Steel requirements shall be considered defective work.

SC 14.07 Owner May Correct Defective Work

In the first sentence of Paragraph 14.07.A, delete the words "7 days" and replace with the words "21 days".

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

SC-15.01 PROGRESS PAYMENTS

SC-15.01 Add the following language at the end of Paragraph 15.01.B.4:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage or invest the retainage for the benefit of the Contractor.

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SC-15.01 Add new paragraph immediately after Paragraph 15.01.B.4:

5. The Application for Payment form to be used on this Project is EJCDC C-620. The Agency must approve all Applications for Payment before Payment is made.

SC-15.01 Add new paragraph immediately after Paragraph 15.01.B.5:

6. By submitting an Application for Payment based in whole or in part on furnishing equipment or materials, Contractor certifies that such equipment and materials are compliant with American Iron and Steel requirements. Manufacturer's Certification letter for materials satisfy this requirement. Refer to Manufacturer's Certification Letter provided in these Contract Documents.

SC-15.01 Add the following paragraph immediately after Paragraph 15.01.C.2.c:

a. The materials presented for payment in an Application for Payment comply with American Iron and Steel requirements.

SC-15.01 Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

The Application for Payment with Engineer's recommendations will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due twenty (20) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

SC-15.01 Add the following new paragraph after Paragraph 15.01.B.2: For All Stored Materials:

i. The Contractor shall submit the Manufacturer's short-term and long-term storage and shall have established a written program to implement the Manufacturer's required storage procedures, including written schedule for all required maintenance activities.
ii. For each payment requisition that includes payment for stored materials, Contractor shall include the following documentation:
    1) Identification of the item(s), including model number, serial number and photographs.
    2) Copy of the updated maintenance schedule including certification that all required maintenance has been performed.
    3) Lien waivers for the preceding monthly payments.
iii. Contractor shall furnish evidence that payment for stored materials has in fact been paid to the respective supplier(s) within sixty days of payment by Owner. Failure to provide such evidence of payment may result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment.

b. For Off-Site Stored Materials:

i. Payment for off-site stored materials will be determined on a case-by-case basis at the discretion of the Owner and, if considered acceptable by Owner, the off-site facility shall be no more than 2 hours from the job site by car.
ii. Contractor shall provide the Owner and/or Engineer guaranteed right-of-entry to the storage facility to inspect the stored materials. Contractor shall be responsible for paying travel costs and Engineer's time associated with inspections.
iii. Contractor's Builder's Risk certificate of insurance shall explicitly identify the off-site storage location as well as transportation of stored materials from the storage facility to the job site.

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Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place: 1. Fifteen days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

After Subparagraph 15.01.E.1.l add new subparagraphs:m. Contractor has failed to make payment to Subcontractors or Suppliers or for labor.

n. Contractor has not delivered, or Engineer has not been given sufficient time to review such submittals and other documentation as final shop drawings; warranties; installation, operation and maintenance manuals; test reports, certifications; start-up reports and other documentation required by the Contract Documents.

SC-15.02 CONTRACTOR'S WARRANTY OF TITLE

Amend Paragraph 15.02.A by striking out the following text: "7 days after".

SC-15.03 SUBSTANTIAL COMPLETION

SC-15.03 Modify Paragraph 15.03.A by adding the following after the last sentence:

Contractor shall also submit the General (Prime) Contractor's Certification of Compliance certifying that to the best of the Contractor's knowledge and belief all substitutes, equals, and all Iron and Steel products proposed in the Shop Drawings, Change Orders, and Partial Payment Estimates, and those installed for the Project, are either Produced in the United States or are the subject of an approved waiver under Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference.

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

SC-15.08 CORRECTION PERIOD

SC-15.08 Add the following new Paragraph 15.08.G:

G. The correction period specified as one year after the date of Substantial Completion in Paragraph 15.08.A of the General Conditions is hereby revised to be the number of years set forth in SC-6.01.B.1; or if no such revision has been made in SC-6.01.B, then the correction period is hereby specified to be 1 year after Substantial Completion.

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ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No changes in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

ARTICLE 18—MISCELLANEOUS

18.08 *Assignment of Contract*

Add new paragraphs immediately after paragraph 18.10.A of the General Conditions which read as follows:18.11. Addresses

A. Both the address given in the Bid Form upon which this Agreement is founded, and CONTRACTOR's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to CONTRACTOR shall be certified, mailed, or delivered. The delivering at the above named place, or depositing in a postpaid wrapper directed to the first named place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon CONTRACTOR; and the date of said service shall be the date of such delivery or mailing. The first named address may be changed at any time by an instrument in writing, executed and acknowledged by CONTRACTOR, and delivered to OWNER and ENGINEER. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon CONTRACTOR personally.

18.12 Wage Rates:

A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to the employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of these Contract Documents. Copies of the wage schedules are included in SC-32 of these Supplementary Conditions. If, after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administrating the laws mentioned above. Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. CONTRACTOR shall notify OWNER of CONTRACTOR's intention to employ persons in trades or occupations not classified in sufficient time for OWNER to obtain approved rates for such trades or occupations.

B. The schedules of wages referred to above are minimum rates only, and OWNER will not consider any claims for additional compensation made by CONTRACTOR because of payment by CONTRACTOR of any wage rate in excess of the applicable rate contained in these Contract Documents. All disputes in regard to the payment of wages in excess of these specified in the schedules shall be resolved by CONTRACTOR.

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C. The said schedules of wages shall continue to be the minimum rates to be paid during the life of this Agreement and a legible copy of said schedules shall be kept posted in a conspicuous place at the site of the work.

D. The State schedule of minimum wage rates are included in SC-32 of these Supplementary Conditions. Where rates differ, the higher rates shall apply as a minimum for that trade.

ARTICLE 19—FEDERAL REQUIREMENTS

19.01 *Agency Not a Party*

A. This Contract is expected to be funded in part with funds provided by Agency. Neither Agency, nor any of its departments, entities, or employees, is a party to this Contract.

19.02 *Contract Approval*

A. Owner and Contractor will furnish Owner's attorney such evidence as required so that Owner's attorney can complete and execute the "Certificate of Owner's Attorney" (Exhibit G of this Bulletin) before Owner submits the executed Contract Documents to Agency for approval.

B. Agency concurrence is required on both the Bid and the Contract before the Contract is effective.

19.03 *Conflict of Interest*

A. Contractor may not knowingly contract with a Supplier or Manufacturer if the individual or entity who prepared the Drawings and Specifications has a corporate or financial affiliation with the Supplier or Manufacturer. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest or other interest in or a tangible personal benefit from the Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

19.04 *Gratuities*

A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.

B. In the event this Contract is terminated as provided in paragraph 19.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be

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entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

19.05 *Small, Minority, and Women's Businesses*

A. If Contractor intends to let any subcontracts for a portion of the work, Contractor will take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Affirmative steps will include:

1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;

5. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

19.06 *Anti-Kickback*

A. Contractor shall comply with the Copeland Anti-Kickback Act (40 USC 3145) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

19.07 *Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended*

A. Contractor to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

19.08 *Equal Employment Opportunity*

A. The Contract is considered a federally assisted construction contract. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of

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Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

19.09 *Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)*

A. Contractors that apply or bid for an award exceeding $100,000 must file the required certification (RD Instruction 1940-Q Exhibit A-1). The Contractor certifies to the Owner and every subcontractor certifies to the Contractor that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining the Contract if it is covered by 31 U.S.C. 1352. The Contractor and every subcontractor must also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

19.10 *Environmental Requirements*

A. When constructing a Project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental conditions:

1. Wetlands – When disposing of excess, spoil, or other Construction Materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.

2. Floodplains – When disposing of excess, spoil, or other Construction Materials on public or private property, Contractor shall not fill in or otherwise convert 100-year floodplain areas (Standard Flood Hazard Area) delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, e.g., alluvial soils on NRCS Soil Survey Maps.

3. Historic Preservation - Applicants shall ensure that Contractors maintain a copy of the following inadvertent discovery plan onsite for review:

a. If during the course of any ground disturbance related to any Project, any post review discovery, including but not limited to, any artifacts, foundations, or other indications of past human occupation of the area are uncovered, shall be protected by complying with 36 CFR § 800.13(b)(3) and (c) and shall include the following:

i) All Work, including vehicular traffic, shall immediately stop within a 50 ft. radius around the area of discovery. The Contractor shall ensure barriers are established to protect the area of discovery and notify the Engineer to contact the appropriate RD personnel. The Engineer shall engage a Secretary of the Interior (SOI) qualified professional archeologist to quickly assess the nature and scope of the discovery; implement interim measures to protect the discovery from looting and vandalism; and establish broader barriers if further historic and/or precontact properties, can reasonably be expected to occur.

ii) The RD personnel shall notify the appropriate RD environmental staff member, the Federal Preservation Officer (FPO), and State Historic Preservation Office(SHPO) immediately. Indian tribe(s) or Native Hawaiian Organization (NHOs) that have an interest in the area of discovery shall be contacted immediately. The SHPO may require

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additional tribes or NHOs who may have an interest in the area of discovery also be contacted. The notification shall include an assessment of the discovery provided by the SOI qualified professional archeologist.

iii) When the discovery contains burial sites or human remains, the Contractor shall immediately notify the appropriate RD personnel who will contact the RD environmental staff member, FPO, and the SHPO. The relevant law enforcement authorities shall be immediately contacted by onsite personnel to reduce delay times, in accordance with tribal, state, or local laws including 36 CFR Part 800.13; 43 CFR Part 10, Subpart B; and the Advisory Council on Historic Preservation's Policy Statement Regarding treatment of Burial Sites, Human Remains, or Funerary Objects (February 23, 2007).

iv) When the discovery contains burial sites or human remains, all construction activities, including vehicular traffic shall stop within a 100 ft. radius of the discovery and barriers shall be established. The evaluation of human remains shall be conducted at the site of discovery by a SOI qualified professional. Remains that have been removed from their primary context and where that context may be in question may be retained in a secure location, pending further decisions on treatment and disposition. RD may expand this radius based on the SOI professional's assessment of the discovery and establish broader barriers if further subsurface burial sites, or human remains can reasonably be expected to occur. RD, in consultation with the SHPO and interested tribes or NHOs, shall develop a plan for the treatment of native human remains.

v) Work may continue in other areas of the undertaking where no historic properties, burial sites, or human remains are present. If the inadvertent discovery appears to be a consequence of illegal activity such as looting, the onsite personnel shall contact the appropriate legal authorities immediately if the landowner has not already done so.

vi) Work may not resume in the area of the discovery until a notice to proceed has been issued by RD. RD shall not issue the notice to proceed until it has determined that the appropriate local protocols and consulting parties have been consulted.

vii) Inadvertent discoveries on federal and tribal land shall follow the processes required by the federal or tribal entity.

4. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

5. Mitigation Measures – The following environmental mitigation measures are required on this Project: .

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19.11 *Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)*

A. Where applicable, for contracts awarded by the Owner in excess of $100,000 that involve the employment of mechanics or laborers, the Contractor will comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, the Contractor will compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic will be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

19.12 *Debarment and Suspension (Executive Orders 12549 and 12689)*

A. A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

19.13 *Procurement of recovered materials*

A. The Contractor will comply with 2 CFR Part 200.322, "Procurement of recovered materials."

19.14 *American Iron and Steel*

A. Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference applies an American Iron and Steel requirement to this project. All iron and steel products used in this project must be produced in the United States. The term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and Construction Materials.

B. The following waivers apply to this Contract:

1. *De Minimis,*
2. Minor Components,
3. Pig Iron and direct reduced iron, and

END OF SECTION

EJCDC® C-800, Supplementary Conditions of the Construction Contract.
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EXHIBIT A—SOFTWARE REQUIREMENTS FOR ELECTRONIC DOCUMENT EXCHANGE

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contactors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for future use and modification.	Email w/ Attachment or LFE	DWG	
a.6	Correspondence, reports and Specifications to be submitted to Owner for future word processing use and modification.	Email w/ Attachment or LFE	DOC	
a.7	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	
a.8	Database files and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	DB	

Notes	
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.

Key	
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)
PDF	Portable Document Format readable by Adobe® Acrobat Reader
DWG	Autodesk® AutoCAD .dwg format
DOC	Microsoft® Word .docx format
EXC	Microsoft® Excel .xls or .xml format
DB	Microsoft® Access .mdb

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Expiration Date: 01/31/2025

U. S. DEPARTMENT OF COMMERCE
ECONOMIC DEVELOPMENT ADMINISTRATION

EDA CONTRACTING PROVISIONS
FOR CONSTRUCTION PROJECTS

These EDA Contracting Provisions for Construction Projects (EDA Contracting Provisions) are intended for use by recipients receiving federal assistance from the U. S. Department of Commerce - Economic Development Administration (EDA). They contain provisions specific to EDA and other federal provisions not normally found in non-federal contract documents. The requirements contained herein must be incorporated into all construction contracts and subcontracts funded wholly or in part with federal assistance from EDA.

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1. DEFINITIONS

Agreement – The written instrument that is evidence of the agreement between the Owner and the Contractor overseeing the Work.

Architect/Engineer - The person or other entity engaged by the Recipient to perform architectural, engineering, design, and other services related to the work as provided for in the contract.

Contract – The entire and integrated written agreement between the Owner and the Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

Contract Documents – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents.

Contractor – The individual or entity with whom the Owner has entered into the Agreement.

Drawings or Plans – That part of the Contract Documents prepared or approved by the Architect/Engineer that graphically shows the scope, extent, and character of the Work to be performed by the Contractor.

EDA - The United States of America acting through the Economic Development Administration of the U.S. Department of Commerce or any other person designated to act on its behalf. EDA has agreed to provide financial assistance to the Owner, which includes assistance in financing the Work to be performed under this Contract. Notwithstanding EDA's role, nothing in this Contract shall be construed to create any contractual relationship between the Contractor and EDA.

Owner – The individual or entity with whom the Contractor has entered into the Agreement and for whom the Work is to be performed.

Project – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

Recipient – A non-Federal entity receiving a Federal financial assistance award directly from EDA to carry out an activity under an EDA program, including any EDA-approved successor to the entity.

Specifications – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

Subcontractor – An individual or entity having direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

Work – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

2. APPLICABILITY

The Project to which the construction work covered by this Contract pertains is being assisted by the United States of America through federal assistance provided by the U.S. Department of Commerce - Economic Development Administration (EDA). Neither EDA, nor any of its departments, entities, or employees is a party to this Contract. The following EDA Contracting Provisions are included in this Contract and all subcontracts or related instruments pursuant to the provisions applicable to such federal assistance from EDA.

3. FEDERALLY REQUIRED CONTRACT PROVISIONS

(a) All contracts in excess of the simplified acquisition threshold - currently fixed at $150,000 (*see* 41 U.S.C. §§ 134 and 1908) must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate.

(b) All contracts in excess of $10,000 must address termination for cause and for convenience by the Recipient including the manner by which it will be effected and the basis for settlement.

(c) All construction contracts awarded in excess of $10,000 by recipients of federal assistance and their contractors or subcontractors shall contain a provision requiring compliance with Executive Order 11246 of September 24, 1965, *Equal Employment Opportunity*, as amended by Executive Order 11375 of October 13, 1967, and Department of Labor implementing regulations at 41 C.F.R. part 60.

(d) All prime construction contracts in excess of $2,000 awarded by Recipients must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141-3148) as supplemented by Department of Labor regulations at 29 C.F.R. part 5. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. § 874 and 40 U.S.C. § 3145) as supplemented by Department of Labor regulations at 29 C.F.R. part 3.

(e) All contracts awarded by the Recipient in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704 (the Contract Work Hours and Safety Standards Act) as supplemented by Department of Labor regulations at 29 C.F.R. part 5.

(f) All contracts must include EDA requirements and regulations that involve a requirement on the contractor or sub-contractor to report information to EDA, the Recipient or any other federal agency.

(g) All contracts must include EDA requirements and regulations pertaining to patent rights with respect to any discovery or invention which arises or is developed in the course of or under such contract.

(h) All contracts must include EDA requirements and regulations pertaining to copyrights and rights in data.

(i) All contracts and subgrants in excess of $150,000 must contain a provision that requires compliance with all applicable standards, orders, or requirements issued under the Clean Air Act (42 U.S.C. § 7401 *et seq.*) and the Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. § 1251 *et seq.*), and Executive Order 11738, *Providing for Administration of the Clean Air Act and the Federal Water Pollution Control Act With Respect to Federal Contracts, Grants, or Loans*.

(j) Contracts must contain mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C.§ 6201).

(k) Contracts must contain a provision ensuring that contracts are not to be made to parties on the government wide Excluded Parties List System in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. part 180.

(l) Contracts must contain a provision ensure compliance with the Byrd Anti-Lobbying Amendment (31 U.S.C. § 1352) under which contractors that apply or bid for an award of $100,000 or more must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. § 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(m) If the Recipient is a state agency or agency of a political subdivision of a state, any contract awarded must contain a provision ensuring compliance with section 6002 of the Solid Waste Disposal Act (42 U.S.C. § 6962), as amended by the Resource Conservation and Recovery Act related to the procurement of recovered materials.

4. REQUIRED PROVISIONS DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion of correction.

5. INSPECTION BY EDA REPRESENTATIVES

The authorized representatives and agents of EDA shall be permitted to inspect all work, materials, payrolls, personnel records, invoices of materials, and other relevant data and records.

6. EXAMINATION AND RETENTION OF CONTRACTOR'S RECORDS

(a) The Owner, EDA, or the Comptroller General of the United States, or any of their duly authorized representatives shall, generally until three years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

(b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders that do not exceed $10,000.

(c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the Owner, EDA, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

7. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

Immediately after execution and delivery of the contract, and before the first partial payment is made, the Contractor shall deliver to the Owner an estimated construction progress schedule in a form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents and the anticipated amount of each monthly payment that will become due to the Contractor in accordance with the progress schedule. The Contractor also shall furnish the Owner (a) a detailed estimate giving a complete breakdown of the contract price and (b) periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only to determine the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

8. CONTRACTOR'S TITLE TO MATERIAL

No materials, supplies, or equipment for the work shall be purchased by the Contractor or by any subcontractor that is subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants and guarantees that he/she has good title to all work, materials, and equipment used by him/her in the Work, free and clear of all liens, claims, or encumbrances.

9. INSPECTION AND TESTING OF MATERIALS

All materials and equipment used in the completion of the Work shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Owner. Materials of construction, particularly those upon which the strength and durability of any structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for intended uses.

10. "OR EQUAL" CLAUSE

Whenever a material, article, or piece of equipment is identified in the Contract Documents by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard. Any material, article, or equipment of other manufacturers and vendors that will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Architect/Engineer, of equal substance and function. However, such substitution material, article, or equipment shall not be purchased or installed by the Contractor without the Architect/Engineer's written approval.

11. PATENT FEES AND ROYALTIES

(a) Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device that is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Architect/Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the Owner in the Contract Documents.

(b) To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the Owner and the Architect/Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

12. CLAIMS FOR EXTRA COSTS

No claims for extra work or cost shall be allowed unless the same was done in pursuance of a written order from the Architect/Engineer approved by the Owner.

13. CONTRACTORS AND SUBCONTRACTORS INSURANCE

(a) The Contractor shall not commence work under this Contract until the Contractor has obtained all insurance reasonably required by the Owner, nor shall the Contractor allow any subcontractor to commence work on his/her subcontract until the insurance required of the subcontractor has been so obtained and approved.

(b) Types of insurance normally required are:

(1) Workers' Compensation
(2) Contractor's Public Liability and Property Damage
(3) Contractor's Vehicle Liability
(4) Subcontractors' Public Liability, Property Damage and Vehicle Liability
(5) Builder's Risk (Fire and Extended Coverage)

(c) **Scope of Insurance and Special Hazards:** The insurance obtained, which is described above, shall provide adequate protection for the Contractor and his/her subcontractors, respectively, against damage claims that may arise from operations under this contract, whether such operations be by the insured or by anyone directly or indirectly employed by him/her and also against any of the special hazards that may be encountered in the performance of this Contract.

(d) **Proof of Carriage of Insurance:** The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates, and dates of expiration of applicable insurance policies.

14. CONTRACT SECURITY BONDS

(a) If the amount of this Contract exceeds $150,000, the Contractor shall furnish a performance bond in an amount at least equal to one hundred percent (100%) of the Contract price as security for the faithful performance of this Contract and also a payment bond in an amount equal to one hundred percent (100%) of the Contract price or in a penal sum not less than that prescribed by State, Territorial, or local law, as security for the payment of all persons performing labor on the Work under this Contract and furnishing materials in connection with this Contract. The performance bond and the payment bond may be in one or in separate instruments in accordance with local law. Before final acceptance, each bond must be approved by EDA. If the amount of this Contract does not exceed $150,000, the Owner shall specify the amount of the payment and performance bonds.

(b) All bonds shall be in the form prescribed by the Contract Documents except as otherwise provided in applicable laws or regulations, and shall be executed by such sureties as are named in the current list of *Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies* as published in Treasury Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's

authority to act. Surety companies executing the bonds must also be authorized to transact business in the state where the Work is located.

15. **LABOR STANDARDS - DAVIS-BACON AND RELATED ACTS**
(as required by section 602 of PWEDA)

(a) **Minimum Wages**

(1) All laborers and mechanics employed or working upon the site of the Work in the construction or development of the Project will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act at 29 C.F.R. part 3, the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at the time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor, which is attached hereto and made a part hereof, regardless of any contractual relationship that may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 C.F.R. § 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 C.F.R. § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates determined under 29 C.F.R. § 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(2) (i) Any class of laborers or mechanics to be employed under the Contract, but not listed in the wage determination, shall be classified in conformance with the wage determination. EDA shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(A) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(B) The classification is utilized in the area by the construction industry; and

(C) The proposed wage rate, including any bona fide fringe benefits, bears a

reasonable relationship to the wage rates contained in the wage determination.

(ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and EDA or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by EDA or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210.

(iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and EDA or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), EDA or its designee shall refer the questions, including the views of all interested parties and the recommendation of EDA or its designee, to the Administrator for determination.

(iv) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(2)(ii) or (iii) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(b) **Withholding**

EDA or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other federal contract with the same prime Contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper employed or working on the site of the Work in the construction or development of the Project, all or part of the wages required by the Contract, EDA or its designee may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations

have ceased. EDA or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

(c) **Payrolls and basic records**

(1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the Work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the Work in the construction or development of the Project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 C.F.R. § 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, the plan or program is financially responsible, and the plan or program has been communicated in writing to the laborers or mechanics affected, and provide records that show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(2) (i) For each week in which Contract work is performed, the Contractor shall submit a copy of all payrolls to the Owner for transmission to EDA or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 C.F.R. part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose. It may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402; or downloaded from the U.S. Department of Labor's website at https://www.dol.gov/whd/forms/wh347.pdf. The prime Contractor is responsible for the submission of copies of payrolls by all subcontractors

(ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(A) That the payroll for the payroll period contains the information required to be maintained under 29 C.F.R. § 5.5(a)(3)(i) and that such information is correct and complete;

(B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 C.F.R. part 3; and

(C) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

(iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 15(c)(2)(ii) of this section.

(iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under section 1001 of Title 18 and section 3729 of Title 31 of the U.S. Code.

(3) The Contractor or subcontractor shall make the records required under paragraph 15(c)(1) of this section available for inspection, copying, or transcription by authorized representatives of EDA or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, EDA or its designee may, after written notice to the Contractor or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 C.F.R. § 5.12.

(d) **Apprentices and Trainees**.

(1) **Apprentices**. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training (Bureau), or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any

apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a Project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) **Trainees**. Except as provided in 29 C.F.R. § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program that has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(3) **Equal employment opportunity**. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity

requirements of Executive Order 11246, *Equal Employment Opportunity*, as amended, and 29 C.F.R. part 30.

(e) **Compliance with Copeland Anti-Kickback Act Requirements**. The Contractor shall comply with the Copeland Anti-Kickback Act (18 U.S.C. § 874 and 40 U.S.C. § 3145) as supplemented by Department of Labor regulations (29 C.F.R. part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that the Contractor and any subcontractors shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which they are otherwise entitled. The Owner shall report all suspected or reported violations to EDA.

(f) **Subcontracts**. The Contractor and any subcontractors will insert in any subcontracts the clauses contained in 29 C.F.R. §§ 5.5(a)(1) through (10) and such other clauses as EDA or its designee may require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 C.F.R. § 5.5.

(g) **Contract termination; debarment**. The breach of the contract clauses in 29 C.F.R. § 5.5 may be grounds for termination of the contract, and for debarment as a Contractor and a subcontractor as provided in 29 C.F.R. § 5.12.

(h) **Compliance with Davis-Bacon and Related Act Requirements**. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 C.F.R. parts 1, 3, and 5 are herein incorporated by reference in this contract.

(i) **Disputes concerning labor standards**. Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 C.F.R. parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and EDA or its designee, the U.S. Department of Labor, or the employees or their representatives.

(j) **Certification of Eligibility**.

(1)By entering into this Contract, the Contractor certifies that neither it nor any person or firm that has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

(2) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. § 1001.

16. LABOR STANDARDS - CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(a) **Overtime requirements**. No Contractor or subcontractor contracting for any part of the Contract work, which may require or involve the employment of laborers or mechanics, shall require or permit any such laborer or mechanic in any workweek in which that person is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(b) **Violation; liability for unpaid wages, liquidated damages**. In the event of any violation of the clause set forth in paragraph (a) of this section, the Contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a) of this section.

(c) **Withholding for unpaid wages and liquidated damages**. EDA or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor under any such Contract or any other federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b) of this section.

(d) **Subcontracts**. The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (a) through (c) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a) through (c) of this section.

17. EQUAL EMPLOYMENT OPPORTUNITY

(a) The Recipient hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 C.F.R. chapter 60, which is paid for in whole or in part with funds obtained from EDA, the following equal opportunity clause:

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers representatives of the Contractor's commitments hereunder, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by EDA and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of

this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally-assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph 17(a)(1) and the provisions of paragraphs 17(a)(1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as EDA or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event the Contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by EDA or the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

(9) The Recipient further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally-assisted construction work. Provided, however, that if the Recipient so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality, or subdivision of such government that does not participate in work on or under the Contract.

(10)The Recipient agrees that it will assist and cooperate actively with EDA and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish EDA and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist EDA in the discharge of the EDA's primary responsibility for securing compliance.

(11) The Recipient further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a Contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by EDA or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the Recipient agrees that if it fails or refuses to comply with these undertakings, EDA may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this EDA financial assistance; refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case

to the Department of Justice for appropriate legal proceedings.

(b) Exemptions to Above Equal Opportunity Clause (41 C.F.R. chapter 60):

(1) Contracts and subcontracts not exceeding $10,000 (other than Government bills of lading, and other than contracts and subcontracts with depositories of Federal funds in any amount and with financial institutions which are issuing and paying agents for U.S. savings bonds and savings notes) are exempt. The amount of the Contract, rather than the amount of the federal financial assistance, shall govern in determining the applicability of this exemption.

(2) Except in the case of subcontractors for the performance of construction work at the site of construction, the clause shall not be required to be inserted in subcontracts below the second tier.

(3) Contracts and subcontracts not exceeding $10,000 for standard commercial supplies or raw materials are exempt.

18. **CONTRACTING WITH SMALL, MINORITY AND WOMEN'S BUSINESSES**

(a) If the Contractor intends to let any subcontracts for a portion of the work, the Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services.

(b) Affirmative steps shall consist of:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;

(4) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises;

(5) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies;

(6) Requiring each party to a subcontract to take the affirmative steps of this section; and

(7) The Contractor is encouraged to procure goods and services from labor surplus area firms.

19. **HEALTH, SAFETY, AND ACCIDENT PREVENTION**

(a) In performing this contract, the Contractor shall:

(1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to their health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;

(2) Protect the lives, health, and safety of other persons;

(3) Prevent damage to property, materials, supplies, and equipment; and

(4) Avoid work interruptions.

(b) For these purposes, the Contractor shall:

(1) Comply with regulations and standards issued by the Secretary of Labor at 29 C.F.R. part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701 – 3708); and

(2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.

(c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this Contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 C.F.R. part 1904.

(d) The Owner shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the Work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Owner may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.

(e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as EDA, or the Secretary of Labor shall direct as a means of enforcing such provisions.

20. CONFLICT OF INTEREST AND OTHER PROHIBITED INTERESTS

(a) No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part hereof.

(b) No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the Project.

(c) The Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the Contract Documents has a corporate or financial affiliation with the supplier or manufacturer.

(d) The Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, may be involved. Such a conflict may arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in the Contractor. The Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors, or anything of monetary value from the Contractor or subcontractors.

(e) If the Owner finds after a notice and hearing that the Contractor, or any of the Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of the Owner or EDA in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, the Owner may, by written notice to the Contractor, terminate this Contract. The Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which the Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.

(f) In the event this Contract is terminated as provided in paragraph (e) of this section, the Owner may pursue the same remedies against the Contractor as it could pursue in the event of a breach of this Contract by the Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, the Owner may pursue exemplary damages in an amount (as determined by the Owner) which shall not be less than three nor more than ten times the costs the Contractor incurs in providing any such gratuities to any such officer or employee.

21. RESTRICTIONS ON LOBBYING

(a) This Contract, or subcontract is subject to 31 U.S.C. § 1352, regarding lobbying restrictions. The section is explained in the common rule, 15 C.F.R. part 28 (55 FR 6736-6748, February 26, 1990). Each bidder under this Contract or subcontract is generally prohibited from using federal funds for lobbying the Executive or Legislative Branches of the Federal Government in connection with this EDA Award.

(b) **Contract Clause Threshold**: This Contract Clause regarding lobbying must be included in each bid for a contract or subcontract exceeding $100,000 of federal funds at any tier under the EDA Award.

(c) **Certification and Disclosure**: Each bidder of a contract or subcontract exceeding $100,000 of federal funds at any tier under the federal Award must file Form CD-512, *Certification Regarding Lobbying – Lower Tier Covered Transactions*, and, if applicable, Standard Form-LLL, *Disclosure of Lobbying Activities*, regarding the use of any nonfederal funds for lobbying. Certifications shall be retained by the Contractor or subcontractor at the next higher tier. All disclosure forms, however, shall be forwarded from tier to tier until received by the Recipient of the EDA Award, who shall forward all disclosure forms to EDA.

(d) **Continuing Disclosure Requirement**: Each Contractor or subcontractor that is subject to the Certification and Disclosure provision of this Contract Clause is required to file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by such person. Disclosure forms shall be forwarded from tier to tier until received by the Recipient of the EDA Award, who shall forward all disclosure forms to EDA.

(e) **Indian Tribes, Tribal Organizations, or Other Indian Organizations**: Indian tribes, tribal organizations, or any other Indian organizations, including Alaskan Native organizations, are excluded from the above lobbying restrictions and reporting requirements, but only with respect to expenditures that are by such tribes or organizations for lobbying activities permitted by other federal law. An Indian tribe or organization that is seeking an exclusion from Certification and Disclosure requirements must provide EDA with the citation of the provision or provisions of federal law upon which it relies to conduct lobbying activities that would otherwise be subject to the prohibitions in and to the Certification and Disclosure requirements of 31 U.S.C. § 1352, preferably through an attorney's opinion. Note, also, that a non-Indian subrecipient, contractor, or subcontractor under an award to an Indian tribe, for example, is subject to the restrictions and reporting requirements.

22. HISTORICAL AND ARCHAEOLOGICAL DATA PRESERVATION

The Contractor agrees to facilitate the preservation and enhancement of structures and objects of historical, architectural or archaeological significance and when such items are found and/or unearthed during the course of project construction. Any excavation by the Contractor that uncovers an historical or archaeological artifact shall be immediately reported to the Owner and a representative of EDA. Construction shall be temporarily halted pending the notification process and further directions issued by EDA after consultation with the State Historic

Preservation Officer (SHPO) for recovery of the items. *See* the National Historic Preservation Act of 1966 (54 U.S.C. § 300101 *et seq.*, formerly at 16 U.S.C. § 470 *et seq.*) and Executive Order No. 11593 of May 31, 1971.

23. **CLEAN AIR AND WATER**

Applicable to Contracts in Excess of $150,000

(a) **Definition**. "Facility" means any building, plant, installation, structure, mine, vessel, or other floating craft, location, or site of operations, owned, leased, or supervised by the Contractor or any subcontractor, used in the performance of the Contract or any subcontract. When a location or site of operations includes more than one building, plant, installation, or structure, the entire location or site shall be deemed a facility except when the Administrator, or a designee, of the United States Environmental Protection Agency (EPA) determines that independent facilities are collocated in one geographical area.

(b) In compliance with regulations issued by the EPA, 2 C.F.R. part 1532, pursuant to the Clean Air Act, as amended (42 U.S.C. § 7401 *et seq.*); the Federal Water Pollution Control Act, as amended (33 U.S.C. § 1251 *et seq.*); and Executive Order 11738, the Contractor agrees to:

(1) Not utilize any facility in the performance of this contract or any subcontract which is listed on the Excluded Parties List System, part of the System for Award Management (SAM), pursuant to 2 C.F.R. part 1532 for the duration of time that the facility remains on the list;

(2) Promptly notify the Owner if a facility the Contractor intends to use in the performance of this contract is on the Excluded Parties List System or the Contractor knows that it has been recommended to be placed on the List;

(3) Comply with all requirements of the Clean Air Act and the Federal Water Pollution Control Act, including the requirements of section 114 of the Clean Air Act and section 308 of the Federal Water Pollution Control Act, and all applicable clean air and clean water standards; and

(4) Include or cause to be included the provisions of this clause in every subcontract and take such action as EDA may direct as a means of enforcing such provisions.

24. **USE OF LEAD-BASED PAINTS ON RESIDENTIAL STRUCTURES**

(a) If the work under this Contract involves construction or rehabilitation of residential structures over $5,000, the Contractor shall comply with the Lead-based Paint Poisoning Prevention Act (42 U.S.C. § 4831). The Contractor shall assure that paint or other surface coatings used in a residential property does not contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight or 5,000 parts per million (ppm) by weight. For purposes of this section, "residential property" means a dwelling unit, common areas, building exterior surfaces, and any surrounding land, including outbuildings, fences and play equipment affixed to the land, belonging to an owner and available for use by residents, but not

including land used for agricultural, commercial, industrial or other non-residential purposes, and not including paint on the pavement of parking lots, garages, or roadways.

(b) As a condition to receiving assistance under PWEDA, recipients shall assure that the restriction against the use of lead-based paint is included in all contracts and subcontracts involving the use of federal funds.

25. ENERGY EFFICIENCY

The Contractor shall comply with all standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6201) for the State in which the Work under the Contract is performed.

26. ENVIRONMENTAL REQUIREMENTS

When constructing a Project involving trenching and/or other related earth excavations, the Contractor shall comply with the following environmental constraints:

(1) **Wetlands**. When disposing of excess, spoil, or other construction materials on public or private property, the Contractor shall not fill in or otherwise convert wetlands.

(2) **Floodplains**. When disposing of excess, spoil, or other construction materials on public or private property, the Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency (FEMA) Floodplain Maps, or other appropriate maps, i.e., alluvial soils on Natural Resource Conservation Service (NRCS) Soil Survey Maps.

(3) **Endangered Species**. The Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of the Contractor, the Contractor will immediately report this evidence to the Owner and a representative of EDA. Construction shall be temporarily halted pending the notification process and further directions issued by EDA after consultation with the U.S. Fish and Wildlife Service.

27. DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSIONS

As required by Executive Orders 12549 and 12689, *Debarment and Suspension*, 2 C.F.R. Part 180 and implemented by the Department of Commerce at 2 C.F.R. part 1326, for prospective participants in lower tier covered transactions (except subcontracts for goods or services under the $25,000 small purchase threshold unless the subrecipient will have a critical influence on or substantive control over the award), the Contractor agrees that:

(1) By entering into this Contract, the Contractor and subcontractors certify, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared

ineligible, or voluntarily excluded from participation in this Contract by any federal department or agency.

(2) Where the Contractor or subcontractors are unable to certify to any of the statements in this certification, the Contractor or subcontractors shall attach an explanation to this bid.

See also 2 C.F.R. part 180 and 2 C.F.R. § 200.342.

28. **EDA PROJECT SIGN**

The Contractor shall supply, erect, and maintain in good condition a Project sign according to the specifications provided by EDA. To the extent practical, the sign should be a free standing sign. Project signs shall not be located on public highway rights-of-way. Location and height of signs will be coordinated with the local agency responsible for highway or street safety in the Project area, if any possibility exists for obstructing vehicular traffic line of sight. Whenever the EDA site sign specifications conflict with State law or local ordinances, the EDA Regional Director will permit such conflicting specifications to be modified so as to comply with State law or local ordinance.

29. **BUY AMERICA**

To the greatest extent practicable, contractors are encouraged to purchase American-made equipment and products with funding provided under EDA financial assistance awards.

NOTE: To find the Goals fo minority participation (%), click "What to use?" and search for the project's County.

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NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246 AND 41 CFR PART 60-4)

The following Notice shall be included in, and shall be a part of all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of $10,000.

The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation for each trade
What % to use?	0.5 %	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non federally involved construction.
The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is:

State of Maine

County of Lincoln

City of Damariscotta

EDA PROJECT SIGN

The Contractor shall supply, erect, and maintain in good condition a project sign according to the specifications set forth below:

EDA SITE SIGN SPECIFICATIONS

Size: 4' x 8' x ¾"

Materials: Exterior grade/MDO plywood (APA rating A-B)

Supports: 4" x 4" x 12' posts with 2" x 4" cross branching

Erection: Posts shall be set a minimum of three feet deep in concrete footings that are at least 12" in diameter.

Paint: Outdoor enamel

Colors: Jet Black, Blue (PMS300), and Gold (PMS7406). Specifically, on white background the following will be placed:

The U. S. Department of Commerce seal in blue, black, and gold;

"EDA" in blue;

"U. S. DEPARTMENT OF COMMERCE ECONOMIC DEVELOPMENT

ADMINISTRATION" in black;

"In partnership with" in blue;

(Actual name of the) "EDA Grant Recipient" in black;

Lettering: Specific fonts are named below; positioning will be as shown on the attached illustration.

"U. S. DEPARTMENT OF COMMERCE ECONOMIC DEVELOPMENT ADMINISTRATION" use Bank Gothic Medium - BANK GOTHIC MED

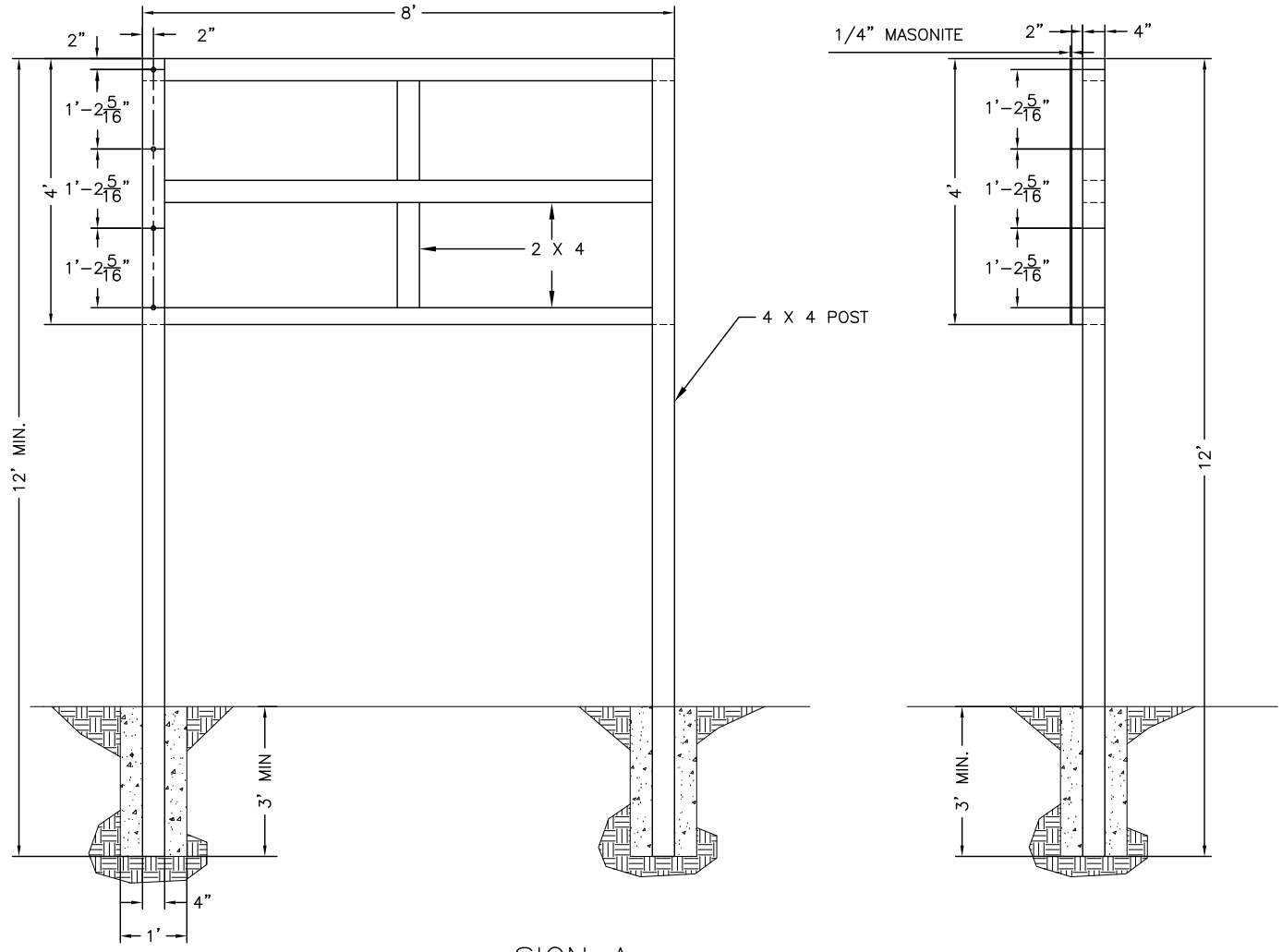
"In partnership with" use Univers™ 55 Oblique - *Univers 55*

(Name of) "EDA Grant Recipient" use Univers™ Extra Black 85 **Univers 85**

Project signs will not be erected on public highway rights-of-way. If any possibility exists for obstruction to traffic line of sight, the location and height of the sign will be coordinated with the agency responsible for highway or street safety in the area.

The EDA Regional Director may permit modifications to these specifications if they conflict with state law or local ordinances.

OMB Number: 0610-0096
Expiration Date: 11/30/2021

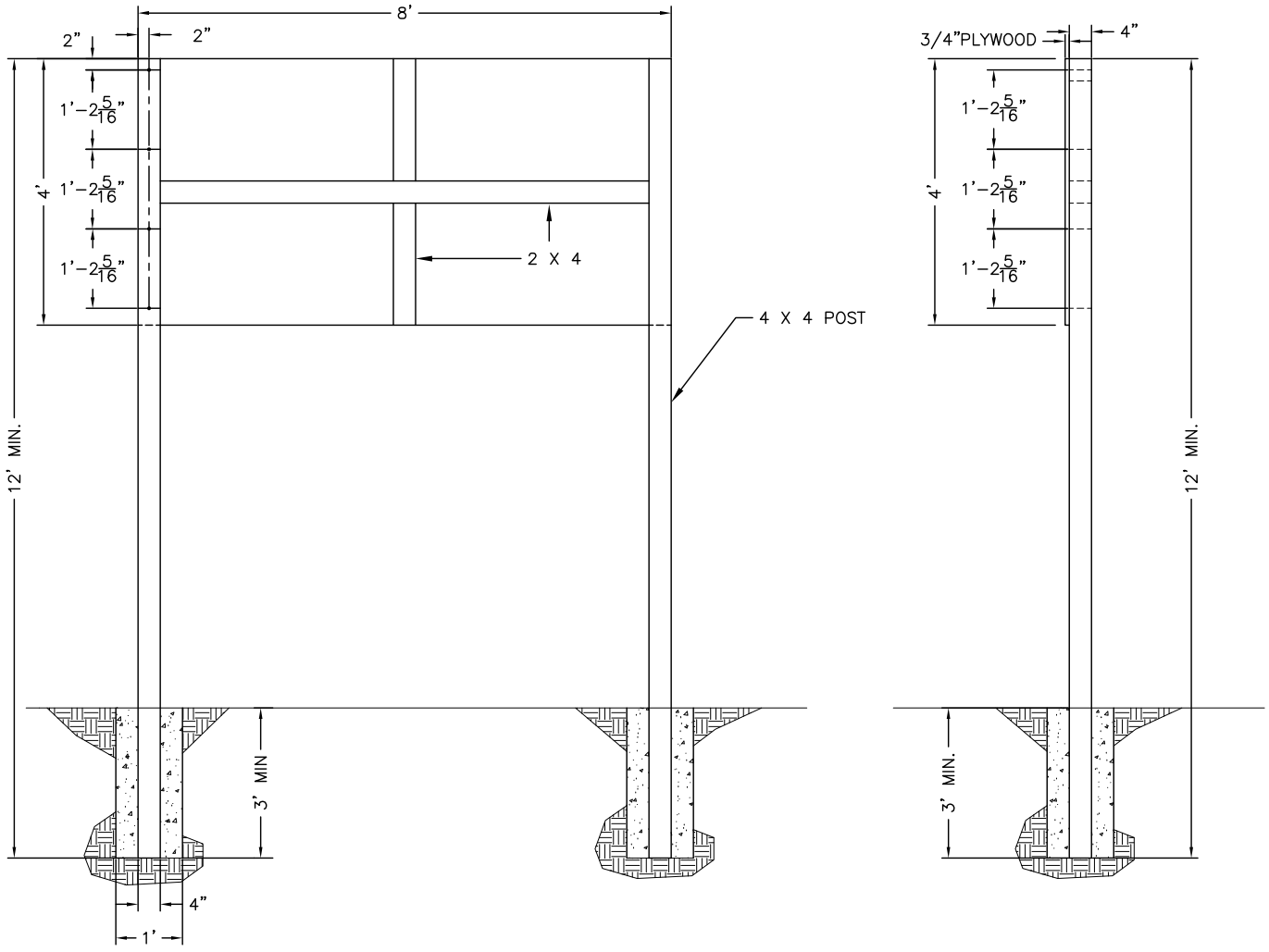


SIGN A
MASONITE SIGN

SCALE: 3/8" = 1'

PROJECT - SIGN A
ECONOMIC DEVELOPMENT ADMINISTRATION

OMB Number: 0610-0096
Expiration Date: 11/30/2021



SIGN B
PLYWOOD SIGN
SCALE: 3/8" = 1'

PROJECT - SIGN B
ECONOMIC DEVELOPMENT ADMINISTRATION



EDA

U.S. Department of Commerce Economic Development Administration

In partnership with

<EDA Grant Recipient Name>


2.25”
13.5”
1.75”
1.75”
EDA
10”
Black
Blue= PMS300
Gold= PMS7406
2.0”
1.5”
U.S. Department of Commerce Economic Development Administration
4.0”
48”
3.0”
In partnership with
3.0”
3.75”
<EDA Grant Recipient Name>
15.0”
96"

SECTION SC-32

WAGE RATES

Davis-Bacon Act

This project is funded in whole or in part by a the US Department of Commerce Economic Development Administration and therefore is subject to the federal Davis-Bacon Act wage provisions.

A copy of the applicable DOL wage determination(s) is included in the Supplementary Conditions.

- ME20230039 Highway wage decision, Lincoln county, publication date 1/6/2023

All laborers and mechanics employed by contractors or subcontractors on this project shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the U.S. Department of Labor (DOL) in accordance with Subchapter IV of Chapter 31 of Title 40, United States Code.

If the applicable wage determination does not provide a rate for a classification of work to be performed, the Contractor must request additional classifications and wage rates to be added in conformance to the contract wage determination after contract award.

Guidance for USDOL conformance procedures is available using the following link: https://www.dol.gov/whd/govcontracts/pwrb/Tab7.pdf

No allowances or extra considerations on behalf of any contractor or subcontractor will be permitted subsequently by reason of error or oversight on account of Department of Labor wage determinations.

Bidders shall refer to the above-referenced CWSRF Supplementary Conditions for additional information and guidance on Davis Bacon requirements. The Contractor must comply with all Federal requirements found in the CWSRF Supplementary Conditions.

State Prevailing Wages

State prevailing wage rates apply to this project.

A copy of the applicable state Prevailing Wage determination(s) is included in the Supplementary Conditions.

- Highway Construction wage decision, Lincoln County, publication date 1/6/2023

If the applicable state Prevailing Wage determination does not provide a rate for a classification of work to be performed, the Contractor must request additional classifications and wage rates to be added in conformance to the contract wage determination after contract award.

If there is a difference between the federal Davis-Bacon wage rates and the state Prevailing Wage rates, Contractor shall pay the higher of the two rates.

"General Decision Number: ME20230039 12/22/2023

Superseded General Decision Number: ME20220039

State: Maine

Construction Type: Highway

County: Lincoln County in Maine.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2023
1	12/22/2023

* ENGI0004-022 12/01/2023

	Rates	Fringes
POWER EQUIPMENT OPERATOR: Grader/Blade, Milling Machine	$ 34.87	32.21

---

* SUME2014-034 06/23/2017

	Rates	Fringes
CARPENTER, Includes Form Work	$ 18.34	2.84
HIGHWAY/PARKING LOT STRIPING: Laborer	$ 14.80 **	1.27
IRONWORKER, REINFORCING	$ 16.27	0.00
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor	$ 15.40 **	2.69
LABORER: Common or General	$ 15.47 **	2.13
LABORER: Landscape	$ 18.69	2.70
LABORER: Wheelman	$ 15.64 **	4.29
OPERATOR: Backhoe/Excavator/Trackhoe	$ 18.80	4.16
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 21.66	4.91
OPERATOR: Broom/Sweeper	$ 19.09	5.20
OPERATOR: Bulldozer	$ 17.30	3.50
OPERATOR: Loader	$ 18.59	5.53
OPERATOR: Mechanic	$ 22.07	8.73
OPERATOR: Paver (Asphalt, Aggregate, and Concrete)	$ 21.46	8.78
OPERATOR: Screed	$ 19.02	4.82
OPERATOR: Roller (Earth)	$ 16.43	3.40
OPERATOR: Roller Asphalt	$ 21.97	7.81
TRAFFIC CONTROL: Flagger	$ 9.38 **	0.00
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper	$ 17.47	4.80
TRUCK DRIVER: Dump Truck	$ 15.07 **	5.15
TRUCK DRIVER: TackTruck	$ 20.18	7.75

WELDERS - Receive rate prescribed for craft performing

operation to which welding is incidental.

==

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($16.20) or 13658 ($12.15). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========

END OF GENERAL DECISION
"

SECTION SC 34

CONTRACTORS GUIDE TO DAVIS-BACON

A Contractor's Guide to Prevailing Wage Requirements for Federally-Assisted Construction Projects - (01/2012)
The guidance document can be found by navigating to the US Department of Housing and Urban Development website or by following the link below:
https://www.hud.gov/sites/documents/4812-LRGUIDE.PDF

END OF SECTION SC 34

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U.S. Department of Housing
and Urban Development

Labor Relations Desk Guide
LR01.DG

DAVIS-BACON
LABOR STANDARDS

A Contractor's Guide to Prevailing Wage Requirements for Federally-Assisted Construction Projects



January 2012
Previous versions obsolete

INTRODUCTION

This Guide has been prepared for you as a contractor performing work on construction projects that are assisted by the Department of Housing and Urban Development and subject to Davis-Bacon prevailing wage requirements. This Guide does not address contractor requirements involved in direct Federal contracting where HUD or another Federal agency enters into a procurement contract. In this latter case, the Federal Acquisition Regulations (FAR) are applicable. While the guidance contained in this Guide is generally applicable to any Davis-Bacon covered project, specific questions pertaining to direct Federal contracts should be addressed to the Contracting Officer who signed the contract for the Federal agency.

Our objective here is to provide you with a guide which is simple and non-bureaucratic yet comprehensive and which will help you better understand and comply with Davis-Bacon labor standards. HUD's Office of Labor Relations worked closely with the Department of Labor's Wage and Hour Division to make sure that the labor standards provisions in your contract and the specifics of complying with them represent the latest information. It is the Department of Labor which has general administrative oversight of all Federal contracting agencies, such as HUD, which administer the day-to-day responsibilities of enforcing Davis-Bacon provisions in construction contracts they either fund or assist in funding.

There are three chapters in this Guide. The first chapter offers a brief description of the laws and regulations associated with Federal labor standards administration and enforcement and discusses both what's in your contract that requires Davis-Bacon compliance and your responsibilities. The second chapter deals with labor standards and payroll reporting requirements. The third chapter discusses what can happen in the event there is a dispute about the wage rates that should be (or have been) paid and any back wages that may be due.

Finally, not all HUD construction projects are covered by Davis-Bacon wage rates. For the purpose of this Guide, we are assuming that a determination has already been made that Davis-Bacon wage rates are applicable. Should you wish assistance in determining whether Davis-Bacon wage rates apply to a particular project or if you need other related technical assistance, please consult with the HUD Labor Relations Field staff for your area. If you don't know which staff to contact, a list of Labor Relations field offices and their geographic areas and telephone numbers can be found on HUD's Home Page at the address below.

Visit the Office of Labor Relations on-line:

http://www.hud.gov/offices/olr

Obtain additional copies of this Guide and other publications at our website or by telephone from HUD's Customer Service Center at (800)767-7468.

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CHAPTER 1 LAWS, REGULATIONS, CONTRACTS AND RESPONSIBILITIES

The following paragraphs describe what the labor standards laws and regulations actually say and what they mean to you on HUD projects:

1-1 DAVIS-BACON AND OTHER LABOR LAWS.

a. **The Davis-Bacon Act (DBA).** The Davis-Bacon Act requires the payment of prevailing wage rates (which are determined by the U.S. Department of Labor) to all laborers and mechanics on Federal government and District of Columbia construction projects in excess of $2,000. Construction includes alteration and/or repair, including painting and decorating, of public buildings or public works.

Most HUD construction work is not covered by the DBA itself since HUD seldom contracts directly for construction services. Most often, if Davis-Bacon wage rates apply to a HUD project it is because of a labor provision contained in one of HUD's "Related Acts" such as the U. S. Housing Act of 1937, the National Housing Act, the Housing and Community Development Act of 1974, the National Affordable Housing Act of 1990, and the Native American Housing Assistance and Self-Determination Act of 1996. The Related Acts are often referred to as the Davis-Bacon and Related Acts or DBRA.

b. **The Contract Work Hours and Safety Standards Act (CWHSSA).** CWHSSA requires time and one-half pay for overtime (O/T) hours (over 40 in any workweek) worked on the covered project. The CWHSSA applies to both direct Federal contracts and to indirect Federally-assisted contracts ***except*** where the assistance is solely in the nature of a loan guarantee or insurance. CWHSSA violations carry a liquidated damages penalty ($10/day per violation). Intentional violations of CWHSSA standards can be considered for Federal criminal prosecution.

CWHSSA does not apply to prime contracts of $100,000 or less. In addition, some HUD projects are not covered by CWHSSA because some HUD programs only provide loan guarantees or insurance. CWHSSA also does not apply to construction or rehabilitation contracts that are not subject to Federal prevailing wage rates (e.g., Davis-Bacon wage rates, or HUD-determined rates for operation of public housing and Indian block grant-assisted housing). However, even though CWHSSA overtime pay is not required, Fair Labor Standards Act (FLSA) overtime pay is probably still applicable. (See also Labor Relations Letter SL-95-01, CWHSSA Coverage threshold for overtime and health and safety provision, available on-line at the HUD Labor Relations Library at: www.hud.gov/offices/olr/library.cfm)

c. **The Copeland Act (Anti-Kickback Act).** The Copeland Act makes it a Federal crime for anyone to require any laborer or mechanic (employed on a Federal or Federally-assisted project) to kickback (i.e., give up or pay back) any part of their wages. The Copeland Act requires every employer (contractors and subcontractors) to submit weekly certified payroll reports (CPRs) and regulates permissible payroll deductions.

d. **The Fair Labor Standards Act (FLSA).** The FLSA contains Federal minimum wage rates, overtime (O/T), and child labor requirements. These requirements generally apply to any labor performed. The DOL has the authority to administer and enforce FLSA. HUD will refer to the DOL any possible FLSA violations that are found on HUD projects.

1-2 DAVIS-BACON REGULATIONS.

The Department of Labor (DOL) has published rules and instructions concerning Davis-Bacon and other labor laws in the Code of Federal Regulations (CFR). These regulations can be found in ***Title 29 CFR Parts 1, 3, 5, 6 and 7***. Part 1 explains how the DOL establishes and publishes DBA wage determinations (aka wage decisions) and provides instructions on how to use the determinations. Part 3 describes Copeland Act requirements for payroll deductions and the submission of weekly certified payroll reports. Part 5 covers the labor standards provisions that are in your contract relating to Davis-Bacon Act wage rates and the responsibilities of contractors and contracting agencies to administer and enforce the provisions. Part 6 provides for administrative proceedings enforcing Federal labor standards on construction and service contracts. Last, Part 7 sets parameters for practice before the Administrative Review Board. These regulations are used as the basis for administering and enforcing the laws.

DOL Regulations are available on-line on the World Wide Web:
http://www.dol.gov/dol/allcfr/Title_29.htm

1-3 CONSTRUCTION CONTRACT PROVISIONS

Each contract subject to Davis-Bacon labor standards requirements must contain labor standards clauses and a Davis-Bacon wage decision. These documents are normally bound into the contract specifications.

a. The labor standards clauses. The labor standards clauses describe the responsibilities of the contractor concerning Davis-Bacon wages and obligate the contractor to comply with the labor requirements. The labor standards clauses also provide for remedies in the event of violations, including withholding from payments due to the contractor to ensure the payment of wages or liquidated damages which may be found due. These contract clauses enable the contract administrator to enforce the Federal labor standards applicable to the project. HUD has standard forms that contain contract clauses. For example, the HUD-2554, Supplementary Conditions to the Contract for Construction, which is issued primarily for FHA multifamily housing and other construction projects

administered by HUD; the HUD-4010, Federal Labor Standards Provisions, which is used for CDBG and HOME projects, and the HUD-5370, General Conditions of the Contract for Construction or the HUD-5370-EZ (construction contracts ≤$100,000) which are used for Public and Indian Housing projects.

HUD program labor standards forms are available on-line at:
www.hud.gov/offices/adm/hudclips/index.cfm

b. Davis-Bacon Wage Decisions. The Davis-Bacon wage decision (or wage determination) is a listing of various construction work classifications, such as Carpenter, Electrician, Plumber and Laborer, and the minimum wage rates (and fringe benefits, where prevailing) that people performing work in those classifications must be paid.

Davis-Bacon wage decisions are established by the DOL for various types of construction (e.g., residential, heavy, highway) and apply to specific geographic areas, usually a county or group of counties. Wage decisions are modified from time to time to keep them current. In most cases, when the contract is awarded or when construction begins, the wage decision is "locked-in" and no future modifications are applicable to the contract or project involved.

All current Davis-Bacon wage decisions can be accessed on-line at no cost at:
http://www.wdol.gov

1-4 RESPONSIBILITY OF THE PRINCIPAL CONTRACTOR

The principal contractor (also referred to as the ***prime*** or ***general contractor***) is responsible for the full compliance of all employers (the contractor, subcontractors and any lower-tier subcontractors) with the labor standards provisions applicable to the project. Because of the contractual relationship between a prime contractor and his/her subcontractors, subcontractors generally should communicate with the contract administrator only through the prime contractor. (See Contract Administrator, below.)

To make this Guide easier to understand, the term "prime contractor" will mean the principal contractor; "subcontractor" will mean all subcontractors including lower-tier subcontractors; and the term "employer" will mean all contractors as a group, including the prime contractor and any subcontractors and lower-tier subcontractors.

1-5 RESPONSIBILITY OF THE CONTRACT ADMINISTRATOR.

The ***contract administrator*** is responsible for the proper administration and enforcement of the Federal labor standards provisions on contracts covered by Davis-Bacon requirements. We use this term to represent the person (or persons) who will provide labor standards advice and support to you and other project principals (e.g., the owner, sponsor, architect), including providing the proper Davis-Bacon wage decision (see 2-1, ***The Wage Decision***) and ensuring that the wage decision and contract clauses are incorporated into the contract for construction. The contract administrator also monitors labor standards compliance (see 2-6, ***Compliance Reviews***) by conducting interviews with construction workers at the job site and reviewing payroll reports, and oversees any enforcement actions that may be required.

The contract administrator could be an employee or agent of HUD, or of a city or county or public housing agency. For HUD projects administered directly by HUD staff, usually FHA-insured multifamily projects, the contract administrator will be the HUD Labor Relations field staff. But many HUD-assisted projects are administered by local contracting agencies such as Public Housing Agencies (PHAs), Indian tribes and tribally-designated housing entities (TDHEs), and States, cities and counties under HUD's Community Development Block Grant (CDBG) and HOME programs. In these cases, the contract administrator will likely be local agency staff. In either case, the guidance for you remains essentially the same.

The DOL also has a role in monitoring Davis-Bacon administration and enforcement. In addition, DOL has independent authority to conduct investigations. A DOL investigator or other DOL representative may visit Davis-Bacon construction sites to interview construction workers or review payroll information.

CHAPTER 2 HOW TO COMPLY WITH LABOR STANDARDS AND PAYROLL REPORTING REQUIREMENTS

WHERE TO START? Now that you know you're on a Davis-Bacon project and you know some of the legal and practical implications, what's next?

SECTION I - THE BASICS

2-1 THE WAGE DECISION.

Davis-Bacon labor standards stipulate the wage payment requirements for Carpenters, Electricians, Plumbers, Roofers, Laborers, and other construction work classifications that may be needed for the project. The Davis-Bacon wage decision that applies to the project contains a schedule of work classifications and wage rates that must be followed. If you don't have it already (and by now you should), you'll want to get a copy of the applicable Davis-Bacon wage decision.

Remember, the wage decision is contained in the contract specifications along with the labor standards clauses. See 1-3, Construction Contract Provisions.

a. **The work classifications and wage rates.** A Davis-Bacon wage decision is simply a listing of different work classifications and the minimum wage rates that must be paid to anyone performing work in those classifications. You'll want to make sure that the work classification(s) you need are contained in the wage decision and make certain you know exactly what wage rate(s) you will need to pay. Some wage decisions cover several counties and/or types of construction work (for example, residential and commercial work) and can be lengthy and difficult to read. Contact the contract administrator (HUD Labor Relations field staff or local agency staff) if you have any trouble reading the wage decision or finding the work classification(s) you need.

To make reading lengthy wage decisions easier for you, the contract administrator may prepare a Project Wage Rate Sheet (HUD-4720). This Sheet is a one-page transcript that will show only the classifications and wage rates for a particular project. A blank copy of a Project Wage Rate Sheet is provided for you in the appendix. Also, a fillable version of this form is available on-line at HUDClips (see web address in the Appendix). Contact the contract administrator monitoring your project for assistance with a Project Wage Rate Sheet.

b. **Posting the wage decision.** If you are the prime contractor, you will be responsible for posting a copy of the wage decision (or the Project Wage Rate Sheet) and a copy of the DOL Davis-Bacon poster titled Employee Rights under the Davis-Bacon Act (Form WH-1321) at the job site in a place that is easily accessible to all of the construction workers employed at the project and where the wage decision and poster won't be destroyed by wind or rain, etc. The Employee Rights under the Davis-Bacon Act poster is available in English and Spanish on-line at HUDClips (see address in the Appendix).

The Employee Rights under the Davis-Bacon Act poster (WH-1321) replaces the Notice to all Employees. The new poster is available in English and Spanish on-line at HUDClips (see address in the Appendix).

2-2 ADDITIONAL "TRADE" CLASSIFICATIONS AND WAGE RATES.

What if the work classification you need isn't on the wage decision? If the work classification(s) that you need doesn't appear on the wage decision, you will need to request an additional classification and wage rate. This process is usually very simple and you'll want to start the request right away. Basically, you identify the classification you need and recommend a wage rate for DOL to approve for the project. There are a few rules about additional classifications; you'll find these rules in the DOL regulations, Part 5, and in the labor clauses in your contract. The rules are summarized for you here:

a. **Additional classification rules.** Additional classifications and wage rates can be approved if:

1. The requested classification is used by construction contractors in the area of the project. (The area is usually defined as the county where the project is located).

2. The work that will be performed by the requested classification is not already performed by another classification that is already on the wage decision. (In other words, if there already is an Electrician classification and wage rate on the wage decision you can't request another Electrician classification and rate.)

3. The proposed wage rate for the requested classification "fits" with the other wage rates already on the wage decision. (For example, the wage rate proposed for a trade classification such as Electrician must be at least as much as the lowest wage rate for other trade classifications already contained in the wage decision.) And,

4. The workers that will be employed in the added classification (if it is known who the workers are/will be), or the workers' representatives, must agree with the proposed wage rate.

b. **Making the request.** A request for additional classification and wage rate must be made in writing through the contract administrator. (If the contract administrator is a local agency, the agency will send the request to the HUD Labor Relations staff.) If you are a subcontractor, your request should also go through the prime contractor. All you need to do is identify the work classification that is missing and recommend a wage rate (usually the rate that employer is already paying to the employees performing the work) for that classification. You may also need to describe the work that the new classification will perform.

c. **HUD review.** The HUD Labor Relations field staff will review the requested classification and wage rate to determine whether the request meets the DOL rules outlined in paragraph 2-2(a), above. If additional information or clarification is needed, the staff will contact the prime contractor (or contract administrator for local agency projects) for more information, etc. If the Labor Relations review finds that the request meets the rules, the staff will give preliminary approval on the request and refer it to the DOL for final approval. The staff will send to you a copy of the preliminary approval/referral letter to the DOL.

   If the HUD Labor Relations staff doesn't think the request meets the rules and if agreement can't be reached on the proper classification or wage rate for the work described, the HUD Labor Relations staff will not approve the request. In this case, the staff will send your request to the DOL with an explanation why HUD believes that the request shouldn't be approved. The DOL still has final decision authority. You will receive a copy of the disapproval/referral letter to the DOL.

d. **DOL decision.** The DOL will respond to HUD Labor Relations in writing about the additional classification and wage rate request. HUD Labor Relations will notify you of the DOL decision in writing. If the DOL approves the request, the prime contractor must post the approval notice on the job site with the wage decision.

   If the DOL does not approve the request, you will be notified about what classification and wage rate should be used for the work in question. You will also receive instructions about how to ask for DOL reconsideration if you still want to try to get your recommendation approved.

It's always a good idea to talk to the contract administrator before submitting an additional classification and wage rate request. The contract administrator can offer suggestions and advice that may save you time and increase the likelihood that DOL will approve your request. Usually, the contract administrator can give you an idea about what the DOL will finally decide.

2-3 CERTIFIED PAYROLL REPORTS.

You'll need to submit a weekly certified payroll report (CPR) beginning with the first week that your company works on the project and for every week afterward until your firm has completed its work. It's always a good idea to number the payroll reports beginning with #1 and to clearly mark your last payroll for the project "Final."

a. **Payroll formats.** The easiest form to use is DOL's WH-347, Payroll. A sample copy of the WH-347 is included in the back of this Guide. You may access a fillable version of the WH-347 on-line at HUDClips (see web address in the Appendix). Also, the contract administrator can provide a few copies of the WH-347 that you can reproduce.

You are not required to use Payroll form WH-347. You are welcome to use any other type of payroll, such as computerized formats, as long as it contains all of the information that is required on the WH-347.

b. **Payroll certifications.** The weekly payrolls are called certified because each payroll is signed and contains language certifying that the information is true and correct. The payroll certification language is on the reverse side of the WH-347. If you are using another type of payroll format you may attach the certification from the back of the WH-347, or any other format which contains the same certification language on the WH-347 (reverse).

DOL's website has Payroll Instructions and the Payroll form WH-347 in a "fillable" PDF format at this address:
www.dol.gov/whd/forms/wh347.pdf

c. **"No work" payrolls.** "No work" payrolls may be submitted whenever there is a temporary break in your work on the project, for example, if your firm is not needed on the project right now but you will be returning to the job in a couple of weeks. (See tip box, for "no work" payroll exemption!) However, if you know that your firm will not be working on the project for an extended period of time, you may wish to send a short note to the contract administrator to let them know about the break in work and to give an approximate date when your firm will return to the project. If you number payrolls consecutively or if you send a note, you do not need to send "no work" payrolls.

If you number your payroll reports consecutively, you do not need to submit "no work" payrolls!

d. **Payroll review and submission.** The prime contractor should review each subcontractor's payroll reports for compliance prior to submitting the reports to the contract administrator. Remember, the prime contractor is responsible for the full compliance of all subcontractors on the contract and will be held accountable for any wage restitution that may be found due to any laborer or mechanic that is underpaid and for any liquidated damages that may be assessed for overtime violations. All of the payroll reports for any project must be submitted to the contract administrator through the prime contractor.

An alert prime contractor that reviews subcontractor payroll submissions can detect any misunderstandings early, prevent costly underpayments and protect itself from financial loss should underpayments occur.

e. **Payroll retention.** Every contractor (including every subcontractor) must keep a complete set of their own payrolls and other basic records such as employee addresses and full SSNs, time cards, tax records, evidence of fringe benefit payments, for a Davis-Bacon project for at least 3 years after the project is completed. The prime contractor must keep a complete set of all of the payrolls for every contractor (including subcontractors) for at least 3 years after completion of the project.

f. **Payroll inspection.** In addition to submitting payrolls to the contract administrator, every contractor (including subcontractors) must make their own copy of the payrolls and other basic records available for review or copying to any authorized representative from HUD or from DOL.

2-4 DAVIS-BACON DEFINITIONS.

Before we discuss how to complete the weekly payroll forms, we need to review a couple of definitions. These definitions can help you understand what will be required of you:

a. **Laborer or mechanic.** "Laborers" and "mechanics" mean anyone who is performing construction work on the project, including trade journeymen (carpenters, plumbers, sheet metal workers, etc.), apprentices, and trainees and, for CWHSSA purposes, watchmen and guards. "Laborers" and "mechanics" are the two groups of workers that must be paid not less than Davis-Bacon wage rates.

1. **Working foremen**. Foremen or supervisors that regularly spend more than 20% of their time performing construction work and do not meet the exclusions in paragraph 2 below are covered "laborers" and "mechanics" for labor standards purposes for the time spent performing construction work.

2. **Exclusions.** People whose duties are primarily administrative, executive or clerical are not laborers or mechanics. Examples include superintendents, office staff, timekeepers, messengers, etc. (Contact the contract administrator if you have any questions about whether a particular employee is excluded.)

b. **Employee.** Every person who performs the work of a laborer or mechanic is "employed" regardless of any contractual relationship which may be alleged to exist between a contractor or subcontractor and such person. This means that even if there is a contract between a contractor and a worker, the contractor must make sure that the worker is paid at least as much as the wage rate on the wage decision for the classification of work they perform. Note that there are no exceptions to the prevailing wage requirements for relatives or for self-employed laborers and mechanics.

For more information about working subcontractors, ask the contract administrator or your HUD Labor Relations Field Staff for a copy of Labor Relations Letter LR-96-01, Labor standards compliance requirements for self-employed laborers and mechanics. Labor Relations Letters and other helpful Labor Relations publications are available at HUD's Labor Relations web site (see the list of web site addresses in the Appendix).

c. **Apprentices and trainees.** The only workers who can be paid less than the wage rate on the wage decision for their work classification are "apprentices" and "trainees" registered in approved apprenticeship or training programs. Approved programs are those which have been registered with the DOL or a DOL-recognized State Apprenticeship Council (SAC). Apprentices and trainees are paid wage rates in accordance with the wage schedule in the approved program.

Most often, the apprentice/trainee wage rate is expressed as a series of percentages tied to the amount of time spent in the program. For example, 0-6 months: 65%; 6 months - 1 year: 70%; etc. The percentage is applied to the journeyman's wage rate. On Davis-Bacon projects, the percentage must be applied to the journeyman's wage rate on the applicable wage decision for that craft.

1. **Probationary apprentice.** A "probationary apprentice" can be paid as an apprentice (less than the rate on the wage decision) if the DOL or SAC has certified that the person is eligible for probationary employment as an apprentice.

2. **Pre-apprentice.** A "pre-apprentice", that is, someone who is not registered in a program and who hasn't been DOL- or SAC-certified for probationary apprenticeship is not considered to be an "apprentice" and must be paid the full journeyman's rate on the wage decision for the classification of work they perform.

3. **Ratio of apprentices and trainees to journeymen.** The maximum number of apprentices or trainees that you can use on the job site cannot exceed the ratio of apprentices or trainees to journeymen allowed in the approved program.

d. **Prevailing wages or wage rates.** Prevailing wage rates are the wage rates listed on the wage decision for the project. The wage decision will list a minimum basic hourly rate of pay for each work classification. Some wage decisions include fringe benefits which are usually listed as an hourly fringe rate. If the wage decision includes a fringe benefit rate for a classification, you will need to add the fringe benefit rate to the basic hourly rate unless you provide bona fide fringe benefits for your employees.

    1. **Piece-work.** Some employees are hired on a piece-work basis, that is, the employee's earnings are determined by a factor of work produced. For example, a Drywall Hanger's earnings may be calculated based upon the square feet of sheetrock actually hung, a Painter's earnings may be based upon the number of units painted. Employers may calculate weekly earnings based upon piece rates provided the weekly earnings are sufficient to satisfy the wage rate requirement based upon actual hours, including any overtime, worked. Accurate time records must be maintained for any piece-work employees. If the weekly piece rate earnings are not sufficient, the employer must recompute weekly earnings based upon the actual hours worked and the rate on the wage decision for the work classification(s) involved.

e. **Fringe benefits** Fringe benefits can include health insurance premiums, retirement contributions, life insurance, vacation and other paid leave as well as some contributions to training funds. Fringe benefits do not include employer payments or contributions required by other Federal, State or local laws, such as the employer's contribution to Social Security or some disability insurance payments.

Note that the total hourly wage rate paid to any laborer or mechanic (basic wage or basic wage plus fringe benefits) may be no less than the total wage rate (basic wage or basic wage plus fringe benefits) on the wage decision for their craft. If the value of the fringe benefit(s) you provide is less than the fringe benefit rate on the wage decision, you will need to add the balance of the wage decision fringe benefit rate to the basic rate paid to the employee. For example, if the wage decision requires $10/hour basic rate plus $5/hour fringe benefits, you must pay no less than that total ($15/hour) in the basic rate or basic rate plus whatever fringe benefit you may provide. You can meet this obligation in several ways: you could pay the base wage and fringe benefits as stated in the wage decision, or you could pay $15 in base wage with no fringe benefits, or you could pay $12 basic plus $3 fringe benefits. You can also off-set the amount of the base wage if you pay more in fringe benefits such as by paying or $9 basic plus $6 fringe benefits; as long as you meet the total amount. The amount of the base wage that you may off-set with fringe benefits is limited by certain IRS and FLSA requirements.

f. **Overtime.** Overtime hours are defined as all hours worked on the contract in excess of 40 hours in any work week. Overtime hours must be paid at no less than one and one-half times the regular rate of basic pay plus the straight-time rate of any required fringe benefits.

g. **Deductions.** You may make payroll deductions as permitted by DOL Regulations 29 CFR Part 3. These regulations prohibit the employer from requiring employees to "kick-back" (i.e., give up) any of their earnings. Allowable deductions which do not require prior DOL permission include employee obligations for income taxes, Social Security payments, insurance premiums, retirement, savings accounts, and any other legally-permissible deduction authorized by the employee. Deductions may also be made for payments on judgments and other financial obligations legally imposed against the employee.

Referring, again, to our example above where the wage decision requiring a $15 total wage obligation ($10 basic wage plus $5 fringe benefits) was met by paying $9 base wage plus $6 fringe benefits: Note that overtime rates must be based on one and one-half times the basic rate as stated on the wage decision. In the above example, the employer must pay for overtime: $15/hr ($9 basic + $6 fringe) plus $5 (one-half of $10, the wage decision basic rate) for a total of $20 per hour.

h. **Proper designation of trade.** You must select a work classification on the wage decision for each worker based on the actual type of work he/she performed and you must pay each worker no less than the wage rate on the wage decision for that classification regardless of their level of skill. In other words, if someone is performing carpentry work on the project, they must be paid no less than the wage rate on the wage decision for Carpenters even if they aren't considered by you to be fully trained as a Carpenter. Remember, the only people who can be paid less than the rate for their craft are apprentices and trainees registered in approved programs.

    1. **Split-classification.** If you have employees that perform work in more than one trade during a work week, you can pay the wage rates specified for each classification in which work was performed only if you maintain accurate time records showing the amount of time spent in each classification of work. If you do not maintain accurate time records, you must pay these employees the highest wage rate of all of the classifications of work performed.

i. **Site of work.** The "site of work" is where the Davis-Bacon wage rates apply. Usually, this means the boundaries of the project. "Site of work" can also include other adjacent or virtually adjacent property used by a contractor or subcontractor in the construction of the project, like a fabrication site that is dedicated exclusively, or nearly so, to the project.

SECTION II - REPORTING REQUIREMENTS

2-5 COMPLETING A PAYROLL REPORT.

What information has to be reported on the payroll form? The weekly payroll form doesn't ask for any information that you don't already need to keep for wage payment and tax purposes. For example, you need to know each employee's name; his or her work classification (who is working for you and what do they do?), the hours worked during the week, his or her rate of pay, the gross amount earned (how much did they earn?), the amounts of any deductions for taxes, etc., and the net amount paid (how much should the paycheck be made out for?). No more information than you need to know in order to manage your work crew and make certain they are paid properly. And, certainly, no more information than you need to keep for IRS, Social Security and other tax and employment purposes.

For many contractors, the Weekly Certified Payroll is the only Davis-Bacon paperwork you need to submit!

You are required to submit certified payrolls to illustrate and document that you have complied with the prevailing wage requirements. The purpose of the contract administrator's review of your payrolls is to verify your compliance. Clearer and complete payroll reports will permit the contract administrator to complete reviews of your payroll reports quickly.

a. **Project and contractor/subcontractor information.** Each payroll must identify the contractor or subcontractor's name and address, the project name and number, and the week ending date. Indicate the week dates in the spaces provided. Numbering payrolls is optional but strongly recommended.

b. **Employee information.** Effective January 18, 2009, payrolls shall not report employee addresses or full Social Security Numbers (SSNs). Instead, the first payroll on which each employee appears shall include the employee's name and an individually identifying number, usually the last 4 digits of the employee's SSN. Afterward, the identifying number does not need to be reported unless it is necessary to distinguish between employees, e.g., if two employees have the same name.

   Employers (prime contractors and subcontractors) must maintain the current address and full SSN for each employee and must provide this information upon request to the contracting agency or other authorized representative responsible for federal labor standards compliance monitoring. Prime contractors may require a subcontractor(s) to provide this information for the prime contractor's records. DOL has modified form WH-347, Payroll, to accommodate these reporting requirements.

c. **Work classification.** Each employee must be classified in accordance with the wage decision based on the type of work they actually perform.

1. **Apprentices or trainees.** The first payroll on which any apprentice or trainee appears must be accompanied by a copy of that apprentice's or trainee's registration in a registered or approved program. A copy of the portions of the registered or approved program pertaining to the wage rates and ratios shall also accompany the first payroll on which the first apprentice or trainee appears.

2. **Split classifications.** For an employee that worked in a split classification, make a separate entry for each classification of work performed distributing the hours of work to each classification, accordingly, and reflecting the rate of pay and gross earnings for each classification. Deductions and net pay may be based upon the total gross amount earned for all classifications.

d. **Hours worked.** The payroll should show ONLY the regular and overtime hours worked on this project. Show both the daily and total weekly hours for each employee. If an employee performs work at job sites other than the project for which the payroll is prepared, those "other job" hours should not be reported on the payroll. In these cases, you should list the employee's name, classification, hours for this project only, the rate of pay and gross earnings for this project, and the gross earned for all projects. Deductions and net pay may be based upon the employee's total earnings (for all projects) for the week.

e. **Rate of pay.** Show the basic hourly rate of pay for each employee for this project. If the wage decision includes a fringe benefit and you do not participate in approved fringe benefit programs, add the fringe benefit rate to the basic hourly rate of pay. Also list the overtime rate if overtime hours were worked.

1. **Piece-work.** For any piece-work employees, the employer must compute an effective hourly rate for each employee each week based upon the employee's piece-work earnings for that week. To compute the effective hourly rate, divide the piece-work earnings by the total number of hours worked, including consideration for any overtime hours.

   The effective hourly rate must be reflected on the certified payroll and this hourly rate may be no less than the wage rate (including fringe benefits, if any) on the wage decision for the classification of work performed. It does not matter that the effective hourly rate changes from week-to-week, only that the rate is no less than the rate on the wage decision for the classification of work performed.

Remember, the overtime rate is computed at one and one-half times the basic rate of pay plus any fringe benefits. For example, if the wage decision requires $10/hour basic plus $5/hour fringe benefits, the overtime rate would be: ($10 x 1 ½) + $5 = $20/hour.

f. **Gross wages earned.** Show the gross amount of wages earned for work performed on this project. Note: For employees with work hours and earnings on other projects, you may show gross wages for this project over gross earnings all projects (for example, $425.40/$764.85) and base deductions and net pay on the "all projects" earnings.

g. **Deductions.** Show the amounts of any deductions from the gross earnings. "Other" deductions should be identified (for example, Savings Account or Loan Repayment). Any voluntary deduction (that is, not required by law or by an order of a proper authority) must be authorized in writing by the employee or provided for in a collective bargaining (union) agreement. A short note signed by the employee is all that is needed and should accompany the first payroll on which the other deduction appears.

Only one employee authorization is needed for recurring (e.g., weekly) other deductions. Written employee authorization is not required for income tax and Social Security deductions.

h. **Net pay.** Show the net amount of wages paid.

i. **Statement of compliance.** The Statement of Compliance is the certification. It is located on the reverse side of a standard payroll form (WH-347). Be sure to complete the identifying information at the top, particularly if you are attaching the Statement of Compliance to an alternate payroll form such as a computer payroll. Also, you must check either 4(a) or 4(b) if the wage decision contains a fringe benefit. Checking 4(a) indicates that you are paying required fringe benefits to approved plans or programs; and 4(b) indicates that you are paying any required fringe benefit amounts directly to the employee by adding the fringe benefit rate to the basic hourly rate of pay. If you are paying a portion of the required fringe benefit to programs and the balance directly to the employee, explain those differences in box 4(c).

Only one Statement of Compliance is required for each employer's weekly payroll no matter how many pages are needed to report the employee data.

j. **Signature.** Make sure the payroll is signed with an original signature in ink. The payroll must be signed by a principal of the firm (owner or officer such as the president, treasurer or payroll administrator) or by an authorized agent (a person authorized by a principal in writing to sign the payroll reports). Signature authorization (for persons other than a principal) should be submitted with the first payroll signed by such an agent. Signatures in pencil; signature stamps; xerox, pdf and other facsimiles are not acceptable.

SECTION III - PAYROLL REVIEWS AND CORRECTIONS

2-6 COMPLIANCE REVIEWS.

The contract administrator or other inspector may visit the project site and interview some of the workers concerning their employment on the project. The DOL may also independently conduct its own reviews (see 1-5). In addition, the contract administrator will periodically review payrolls and related submissions, comparing the interview information to the payrolls, to ensure that the labor standards requirements have been met. You will be notified by the contract administrator if these reviews find any discrepancies or errors. You will be given instructions about what steps must be taken to correct any problems.

a. **On-site interviews.** Every employer (contractor, subcontractor, etc.) must make their employees available for interview at the job site with the contract administrator or other agency representative, or HUD or DOL representative. The interviews are confidential and the employee will be asked about the kind of work they perform and their rate of pay. Every effort will be made to ensure that these interviews cause as little disruption as possible to the on-going work. The interviewer will record the interview information, usually on a form HUD-11, Record of Employee Interview, and forward the interviews to the contract administrator.

b. **Project payroll reviews.** The contract administrator will compare the information on the interview forms to the corresponding payrolls to ensure that the workers are properly listed on the payrolls for the days and hours worked on the job site, work classification and rate of pay. The contract administrator will also review the payroll submissions to make certain that the payrolls are complete and signed; that employees are paid no less than the wage rate for the work classification shown; apprentice and trainee certifications are submitted (where needed); employee or other authorizations for other deductions are submitted (where needed); etc.

2-7 TYPICAL PAYROLL ERRORS AND REQUIRED CORRECTIONS.

The following paragraphs describe common payroll errors and the corrective steps you must take.

a. **Inadequate payroll information.** If an alternate payroll format used by an employer (such as some computer payrolls) is inadequate, e.g., does not contain all of the necessary information that would be on the optional form WH-347, the employer will be asked to resubmit the payrolls on an acceptable form.

b. **Missing identification numbers.** If the first payroll on which an employee appears does not contain the employee's individually identifying number, the employer will be asked to supply the missing information. This information can be reported on the next payroll submitted by the employer if the employer is still working on the project. Otherwise, the employer will be asked to submit a correction certified payroll.

c. **Incomplete payrolls.** If the information on the payroll is not complete, for example, if work classifications or rates of pay are missing, the employer will be asked to send a correction certified payroll.

d. **Classifications.** If the payrolls show work classifications that do not appear on the wage decision, the employer will be asked to reclassify the employees in accordance with the wage decision or the employer may request an additional classification and wage rate (see 2-2). If reclassification results in underpayment (i.e., the wage rate reported on the payroll is less than the rate required for the new classification), the employer will be asked to pay wage restitution to all affected reclassified employees. (see 2-8 for instructions about wage restitution.)

e. **Wage rates.** If the wage rates on the payroll are less than the wage rates on the wage decision for the work classifications reported, the employer will be asked to pay wage restitution to all affected employees.

f. **Apprentices and trainees.** If a copy of the employee's registration or the approved program ratio and wage schedule are not submitted with the first payroll on which an apprentice or trainee appears, the employer will be asked to submit a copy of each apprentice's or trainee's registration and/or the approved program ratio and wage schedule. If the ratio of apprentices or trainees to journeymen on the payroll is greater than the ratio in the approved program, the employer will be asked to pay wage restitution to any excess apprentices or trainees. Also, any apprentice or trainee that is not registered in an approved program must receive the journeyman's wage rate for the classification of work they performed.

g. **Overtime.** If the employees did not receive at least time and one-half for any overtime hours worked on the project, the following will occur:

    1. If the project is subject to CWHSSA overtime requirements, the employer will be asked to pay wage restitution for all overtime hours worked on the project. The employer may also be liable to the United States for liquidated damages computed at $10 per day per violation. Or,

    2. If the project is not subject to CWHSSA, the employer will be notified of the possible FLSA overtime violations. Also, the contract administrator may refer the matter to the DOL for further review.

h. **Computations.** If the payroll computations (hours worked times rate of pay) or extensions (deductions, net pay) show frequent errors, the employer will be asked to take greater care. Wage restitution may be required if underpayments resulted from the errors.

i. **Deductions.** If there are any "Other" deductions that are not identified, or if employee authorization isn't provided, or if there is any unusual (very high, or large number) deduction activity, the employer will be asked to identify the deductions, provide employee authorization or explain unusual deductions, as necessary.

HUD does not enforce or attempt to provide advice on employer obligations to make deductions from employee earnings for taxes or Social Security. However, HUD may refer to the IRS or other responsible agency copies of certified payroll reports that show wages paid in gross amounts (i.e., without tax deduction) for its review and appropriate action.

j. **Fringe benefits.** If the wage decision contains fringe benefits but the payroll does not indicate how fringe benefits were paid [neither 4(a) nor 4(b) is marked on the Statement of Compliance], the employer may be asked to submit correction certified payrolls and will be required to pay wage restitution if underpayments occurred. However, if the basic hourly rates for the employees are at least as much as the total wage rate on the wage decision (basic hourly rate plus the fringe benefit rate), no correction is necessary.

k. **Signature.** If the payroll Statement of Compliance is not signed or is missing, the employer will be asked to submit a signed Statement of Compliance for each payroll affected. If the Statement of Compliance is signed by a person who is not a principle of the firm and that person has not been authorized by principle to sign, the employer will be asked to provide an authorization or to resubmit the Statement(s) of Compliance bearing the signature of a principle or other authorized signatory.

l. **On-site interview comparisons.** If the comparison of on-site interviews to the payrolls indicates any discrepancies (for example, the employee does not appear on the payroll for the date of the interview), the employer will be asked to submit a correction certified payroll report.

m. **Correction certified payroll.** Any and all changes to data on a submitted payroll report must be reported on a certified correction payroll. In no case will a payroll report be returned to the prime contractor or employer for revision.

2-8 RESTITUTION FOR UNDERPAYMENT OF WAGES.

Where underpayments of wages have occurred, the employer will be required to pay wage restitution to the affected employees. Wage restitution must be paid promptly in the full amounts due, less permissible and authorized deductions. All wages paid to laborers and mechanics for work performed on the project, including wage restitution, must be reported on a certified payroll report.

a. **Notification** to the Employer/Prime contractor. The contract administrator will notify the employer and/or prime contractor in writing of any underpayments that are found during payroll or other reviews. The contract administrator will describe the underpayments and provide instructions for computing and documenting the restitution to be paid. The employer/prime contractor is allowed 30 days to correct the underpayments. Note that the prime contractor is responsible to the contract administrator for ensuring that restitution is paid. If the employer is a subcontractor, the subcontractor will usually make the computations and restitution payments and furnish the required documentation through the prime contractor.

The contract administrator may communicate directly with a subcontractor when the underpayments are plainly evident and the subcontractor is cooperative. It is best to work through the prime contractor when the issues are complex, when there are significant underpayments and/or the subcontractor is not cooperative. In all cases, the subcontractor must ensure that the prime contractor receives a copy of the required corrective documentation.

b. **Computing wage restitution.** Wage restitution is simply the difference between the wage rate paid to each affected employee and the wage rate required on the wage decision for all hours worked where underpayments occurred. The difference in the wage rates is called the adjustment rate. The adjustment rate times the number of hours involved equals the gross amount of restitution due. You may also compute wage restitution by calculating the total amount of Davis-Bacon wages earned and subtracting the total amount of wages paid. The difference is the amount of back wages due.

c. **Correction certified payrolls.** The employer will be required to report the restitution paid on a correction certified payroll. The correction payroll will reflect the period of time for which restitution is due (for example, Payrolls #1 through #6; or a beginning date and ending date). The correction payroll will list each employee to whom restitution is due and their work classification; the total number of work hours involved (daily hours are usually not applicable for wage restitution); the adjustment wage rate (the difference between the required wage rate and the wage rate paid); the gross amount of restitution due; deductions and the net amount actually paid. A properly signed Statement of Compliance must accompany the correction payroll.

HUD no longer requires the signature of the employee on the correction payroll to evidence employee receipt of restitution payment. In addition, except in the most extraordinary cases, HUD no longer requires employers to submit copies of restitution checks (certified, cashiers, canceled or other), or employee-signed receipts or waivers.

d. **Review of correction CPR.** The contract administrator will review the correction certified payroll to ensure that full restitution was paid. The prime contractor shall be notified in writing of any discrepancies and will be required to make additional payments, if needed, documented on a correction certified payroll within 30 days.

e. **Unfound workers.** Sometimes, wage restitution cannot be paid to an affected employee because, for example, the employee has moved and can't be located. After wage restitution has been paid to all of the workers who could be located, the employer must submit a list of any workers who could not be found and paid (i.e., unfound workers) providing their names, Social Security Numbers, last known addresses and the gross amount due. In such cases, at the end of the project the prime contractor will be required

to place in a deposit or escrow account an amount equal to the total gross amount of restitution that could not be paid because the employee(s) could not be located. The contract administrator will continue attempts to locate the unfound workers for 3 years after the completion of the project. After 3 years, any amount remaining in the account for unfound workers will be credited and/or forwarded by the contract administrator to HUD.

CHAPTER 3 LABOR STANDARDS DISPUTES, ADMINISTRATIVE REVIEWS, WITHHOLDING, DEPOSITS AND ESCROW ACCOUNTS, AND SANCTIONS

WHAT HAPPENS WHEN THINGS GO WRONG?

3-1 INTRODUCTION.

Even in the best of circumstances, things can go wrong. In a Davis-Bacon context, "things going wrong" usually means there's a difference of opinion or a dispute about whether and to what extent underpayments have occurred. These disputes are usually between the contract administrator and one or more employers (the prime contractor and/or a subcontractor). The dispute may involve something simple such as an additional classification request that is pending before the DOL; or something as significant as investigative findings following a complaint of underpayment. This chapter discusses some of what you may expect and what you can do to make your views known and to lessen any delays in resolving the problem or issue.

3-2 ADMINISTRATIVE REVIEW ON LABOR STANDARDS DISPUTES.

As mentioned in the Introduction above, a dispute about labor standards and compliance can arise for a number of reasons. The labor standards clauses in your contract and DOL regulations provide for administrative review of issues where there is a difference of views between the contract administrator and any employer. The most common circumstances include:

a. **Additional classifications and wage rates.** Additional classification and wage rate requests are sometimes denied by the DOL. An employer that is dissatisfied with the denial can request reconsideration by the DOL Wage and Hour Administrator. The employer may continue to pay the wage rate, as requested, until a final decision is rendered on the matter. When the final decision is known, the employer will be required to pay any additional wages that may be necessary to satisfy the wage rate that is established.

1. **Reconsideration.** The DOL normally identifies the reasons for denial in its response to the request. Any interested person (for example, the contract administrator, employer, representatives of the employees) may request reconsideration of the decision on the additional classification request. The request for reconsideration must be made in writing and must thoroughly address the denial reasons identified by the DOL. Employer requests for reconsideration should be made through the contract administrator but may be made directly to the DOL. (See 2-2(d), and also DOL Regulations 29 CFR 1.8.) All requests initiated by or made through the contract administrator or HUD must be submitted through the HUD Headquarters Office of Labor Relations.

2. **Administrative Review Board.** Any interested party may request a review of the Administrator's decision on reconsideration by the DOL's Administrative Review Board. DOL regulations 29 CFR Part 7 explain the procedures for such reviews. (See also 29 CFR 1.9.)

b. **Findings of underpayment.** Compliance reviews and other follow-up enforcement actions may result in findings of underpayment. The primary goal in every case and at every step in this process is to reach agreements about who may have been underpaid and how much wage restitution may be due and, of course, to promptly deliver restitution to any underpaid workers. The contract administrator will usually work informally with you to reach such agreements. You will have an opportunity to provide additional information to the contract administrator that may explain apparent inconsistencies and/or resolve the discrepancies.

If informal exchanges do not result in agreement, the final determination and schedule of back wages due will be presented to you in writing and you will be permitted 30 days in which to correct the underpayment(s) or to request a hearing on the matter before the DOL. The request for hearing must be made in writing through the contract administrator and must explain what findings are in dispute and the reasons. In such cases, HUD is required to submit a report to DOL for review and further consideration. All requests for DOL hearing must be submitted through the HUD Headquarters Office of Labor Relations.

1. **DOL review.** The DOL will review the contract administrator's report and the arguments against the findings presented in the hearing request. The DOL may affirm or modify the findings based upon the materials presented. You will be notified in writing by the DOL of the results of its review. If DOL concludes that violations have occurred, you will be given an opportunity to correct any underpayments or to request a hearing before a DOL Administrative Law Judge (ALJ). (See DOL Regulations 29 CFR 5.11 (b) and 29 CFR Part 6, Rules of Practice for Administrative Proceedings.)

2. **Administrative Review Board.** Contractors and/or subcontractors may request a review by the Administrative Review Board of the decision(s) rendered by the DOL ALJ in the administrative hearing process. See DOL regulations 29 CFR Part 7 for more information about this proceeding.

3-3 WITHHOLDING.

The contract administrator shall cause withholding from payments due to the prime contractor to ensure the payment of wages which are believed to be due and unpaid, for example, if wage underpayments or other violations are not corrected within 30 days after written notification to the prime contractor. DOL may also direct the withholding of contract payments for alleged wage underpayments. Withholding is considered to be serious and is not taken unless warranted. If withholding is deemed necessary, you will be notified in writing. Only the amounts needed to meet the contractor's (and/or subcontractors') liability shall be withheld.

3-4 DEPOSITS AND ESCROWS.

In every case, we attempt to complete compliance actions and resolve any disputes before the project is completed and final payments are made. Sometimes, corrective actions or disputes continue after completion and provisions must be made to ensure that funds are available to pay any wage restitution that is ultimately found due. In these cases, we allow projects to proceed to final closing and final payments provided the prime contractor deposits an amount equal to the potential liability for wage restitution and liquidated damages, if necessary, in a special account. The deposit or escrow account is controlled by the contract administrator. When a final decision is rendered, the contract administrator makes disbursements from the account in accordance with the decision. Deposit/escrow accounts are established for one or more of the following reasons:

Remember, the prime contractor is responsible and will be held liable for any wage restitution that is due to any worker employed in the construction of the project, including workers employed by subcontractors and any lower-tier subcontractors. See 1-4, Responsibility of the Principal Contractor, and 2-8, Restitution for Underpayment of Wages.

a. **Where the parties have agreed to amounts of wage restitution that are due** but the employer hasn't furnished evidence yet that all of the underpaid workers have received their back wages, e.g., some of the workers have moved and could not be located. The amount of the deposit is equal to the total gross amount of restitution due to workers lacking payment evidence. As these workers are paid and proper documentation is provided to the contract administrator, amounts corresponding to the documented payments are returned to the depositor. Amounts for any workers who cannot be located are held in the deposit/escrow account for three years and disposed as described in 2-8(f) of this Guide.

b. **Where underpayments are suspected or alleged and an investigation has not yet been completed.** The deposit is equal to the amount of wage restitution and any liquidated damages, if applicable, that are estimated to be due. If the final determination of wages due is less than the amount estimated and placed in the escrow account, the escrow will be reduced to the final amount and the difference will be returned to the depositor.

   If the parties agree to the investigative findings, the amounts due to the workers will be paid by the employer. As these workers are paid and proper documentation is provided to the contract administrator, the gross amounts corresponding to the documented payments are returned to the depositor.

   1. If the employer is unable to make the payments to the workers, e.g., lacks the funds necessary, the contract administrator may make disbursements directly to the workers in the net amounts calculated by the employer. The amounts withheld from the workers for tax deduction will be returned to the employer as payments to workers are made. The employer shall be responsible for reporting and transmitting withholdings to the appropriate agencies.

2. If the employer is not cooperating in the resolution, the contract administrator shall make disbursements to the workers in accordance with the schedule of wages due. Amounts for unfound workers will be retained as described above (See 2-8(f) and 3-4(a)).

If the parties do not agree and an administrative hearing is requested, the escrow will be maintained as explained in 3-4(c), below.

Remember, if you have any questions or need assistance concerning labor standards requirements help is always available. Contact the contract administrator for the project you're working on or the HUD Field Labor Relations staff in your area.

c. **Where the parties are waiting for the outcome of an administrative hearing** that has been or will be requested contesting a final determination of wages due. The deposit shall be equal to the amount of wage restitution and liquidated damages, if applicable, that have been determined due. Once a final decision is rendered, disbursements from the escrow account are made in accordance with the decision.

3-5 ADMINISTRATIVE SANCTIONS.

Contractors and/or subcontractors that violate the labor standards provisions may face administrative sanctions imposed by HUD and/or DOL.

a. **DOL debarment.** Contractors and/or subcontractors that are found by the Secretary of Labor to be in aggravated or willful violation of the labor standards provisions of the Davis-Bacon and Related Acts (DBRA) will be ineligible (debarred) to participate in any DBRA or Davis-Bacon Act contracts for up to 3 years. Debarment includes the contractor or subcontractor and any firm, corporation, partnership or association in which the contractor or subcontractor has a substantial interest. Debarment proceedings can be recommended by the contract administrator or can be initiated by the DOL. Debarment proceedings are described in DOL regulations 29 CFR 5.12.

b. **HUD sanctions.** HUD sanctions may include Limited Denials of Participation (LDPs), debarments and suspensions.

1. **Limited Denial of Participation.** HUD may issue to the employer a limited denial of participation (LDP) which prohibits the employer from further participation in HUD programs for a period up to one year. The LDP is usually effective for the HUD program in which the violation occurred and for the geographic jurisdiction of the issuing HUD Office. HUD regulations concerning LDP's are found at 24 CFR 24.700-24.714.

2. **Debarment and suspensions.** In certain circumstances, HUD may initiate its own debarment or suspension proceedings against a contractor and/or subcontractor in connection with improper actions regarding Davis-Bacon obligations. For example, HUD may initiate debarment where a contractor has been convicted for making false statements (such as false statements on certified payrolls or other prevailing wage certifications) or may initiate suspension where a contractor has been indicted for making false statements. HUD regulations concerning debarment and suspension are found at 24 CFR Part 24.

3-6 FALSIFICATION OF CERTIFIED PAYROLL REPORTS.

Contractors and/or subcontractors that are found to have willfully falsified payroll reports (Statements of Compliance), including correction certified payroll reports, may be subject to civil or criminal prosecution. Penalties may be imposed of $1,000 and/or one year in prison for each false statement (see Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code).

Remember, if you have any questions or need assistance concerning labor standards requirements help is always available. Contact the contract administrator for the project you're working on or the HUD Field Labor Relations staff in your area.

ACRONYMS AND SYMBOLS

CDBG -	Community Development Block Grant
CFR -	Code of Federal Regulations
CPR -	Certified Payroll Report
CWHSSA -	Contract Work Hours and Safety Standards Act
DBA -	Davis-Bacon Act
DBRA -	Davis-Bacon and Related Acts
DOL -	Department of Labor
FHA -	Federal Housing Administration
FLSA -	Fair Labor Standards Act
HUD -	Housing and Urban Development (Department of)
IHA -	Indian Housing Authority
LCA -	Local Contracting Agency
LDP -	Limited Denial of Participation
O/T -	Overtime
PHA -	Public Housing Agency
S/T -	Straight-time
SAC -	State Apprenticeship Council/Agency
TDHE -	Tribally-Designated Housing Entity
§ -	Section
¶ -	Paragraph

DAVIS-BACON - RELATED WEB SITES*

HUD Office of Labor Relations:
www.hud.gov/offices/olr

HUD Regulations:
http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR

HUDClips (HUD Forms and Publications):
www.hud.gov/offices/adm/hudclips/index.cfm

DOL Davis-Bacon and Related Acts Homepage:
http://www.dol.gov/whd/contracts/dbra.htm

DOL Regulations:
http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR

Davis-Bacon Wage Decisions:
www.wdol.gov

DOL Forms:
www.dol.gov/whd/programs/dbra/forms.htm

***Web addresses active as of January 2012**

Project Wage Rate Sheet	U.S. Department of Housing and Urban Development Office of Labor Relations	

Project Name:	Wage Decision Number/Modification Number:
Project Number:	Project County:

Work Classification	Basic Hourly Rate (BHR)	Fringe Benefits	Total Hourly Wage Rate	Laborers Fringe Benefits		$
Bricklayers			$	Group #	BHR	Total Wage
Carpenters			$			$
Cement Masons			$			$
Drywall Hangers			$			$
Electricians			$			$
Iron Workers			$			$
Painters			$	Operators Fringe Benefits:		$
Plumbers			$	Group #	BHR	Total Wage
Roofers			$			$
Sheet Metal Workers			$			$
Soft Floor Workers			$			$
Tapers			$			$
Tile Setters			$	Truck Drivers Fringe Benefits:		$
Other Classifications				Group #	BHR	Total Wage
			$			
			$			
			$			

Additional Classifications (HUD Form 4230-A)					
Work Classification	Basic Hourly Rate (BHR)	Fringe Benefits	Total Hourly Wage Rate	Date of HUD Submission to DOL	Date of DOL Approval
			$		
			$		
			$		

U.S. Department of Labor
Wage and Hour Division

PAYROLL

(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

U.S. Wage and Hour Division
Rev. Dec. 2008

OMB No.: 1215-0149
Expires: 12/31/2011

NAME OF CONTRACTOR ☐ OR SUBCONTRACTOR ☐	ADDRESS	
PAYROLL NO.	FOR WEEK ENDING	PROJECT AND LOCATION / PROJECT OR CONTRACT NO.

(1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER	(2) NO. OF WITHHOLDING EXEMPTIONS	(3) WORK CLASSIFICATION	OT. OR ST.	(4) DAY AND DATE / HOURS WORKED EACH DAY	(5) TOTAL HOURS	(6) RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS: FICA	WITH-HOLDING TAX			OTHER	TOTAL DEDUCTIONS	(9) NET WAGES PAID FOR WEEK
			O											
			S											
			O											
			S											
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While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that is will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

Date _____

I, _____ _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
(Contractor or Subcontractor)

_____; that during the payroll period commencing on the
(Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____,

all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full
(Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Start. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

_____

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.

U.S. Department of Housing and Urban Development
Office of Departmental Operations and Coordination
Washington, DC 20410

Email: www.OfficeofLaborRelations@hud.gov

Labor Relations Desk Guide
LR01.DG





SECTION SC 36

EQUAL OPPORTUNITY CLAUSE

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or workers' representatives of the contractor's commitment under this section, and shall post copies of the notice in conspicuous places available employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Department and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's non compliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24,1965, so that such provisions

will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Department may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Department, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

END OF SECTION

SECTION SC-38

EXECUTIVE ORDER 11246

PART 1 - GENERAL

1.1 DESCRIPTION

A. Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

1. As used in these specifications:
   a. "Covered area" means the geographical area described in the solicitation from which this Contract resulted;
   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941.
   d. "Minority" includes:
      i. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      ii. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      iii. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      iv. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North American and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the CONTRACTOR, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this Contract resulted.
3. If the CONTRACTOR is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and

to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The CONTRACTOR shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this Contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the CONTRACTOR should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The CONTRACTOR is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the CONTRACTOR has a collective bargaining agreement, to refer either minorities or women shall excuse the CONTRACTOR's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the CONTRACTOR during the training period, and the CONTRACTOR must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The CONTRACTOR shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the CONTRACTOR's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The CONTRACTOR shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the CONTRACTOR's employees are assigned to work. The CONTRACTOR, where possible, will assign two or more women to each construction project. The CONTRACTOR shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the CONTRACTOR's obligation to maintain

such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the CONTRACTOR or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the CONTRACTOR by the union or, if referred, not employed by the CONTRACTOR, this shall be documented in the file with the reason therefore, along with whatever additional actions the CONTRACTOR may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the CONTRACTOR has a collective bargaining agreement has not referred to the CONTRACTOR a minority person or woman sent by the CONTRACTOR, or when the CONTRACTOR has other information that the union referral process has impeded the CONTRACTOR's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the CONTRACTOR's employment needs, especially those programs funded or approved by the Department of Labor. The CONTRACTOR shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the CONTRACTOR's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the CONTRACTOR in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year, and, by posting the company's EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of

these meetings, persons attending, subject matter discussed and disposition of the subject matter.

h. Disseminate the CONTRACTOR's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media and providing written notification to and discussing the CONTRACTOR's EEO policy with other Contractors and Subcontractors with whom the CONTRACTOR does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the CONTRACTOR’s recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source the CONTRACTOR shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a CONTRACTOR's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60.3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the CONTRACTOR's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the CONTRACTOR's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the CONTRACTOR is

a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these Specifications provided that the CONTRACTOR actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the CONTRACTOR's minority and female workforce participation, makes a good faith effort to meet its individual goals and time-tables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the CONTRACTOR. The obligation to comply, however, is the CONTRACTOR's and failure of such a group to fulfill an obligation shall not be a defense for the CONTRACTOR's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The CONTRACTOR, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the CONTRACTOR may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the CONTRACTOR has achieved its goals for women generally, the CONTRACTOR may be in violation of the Executive Order if a specific minority group of women is underutilized).
10. The CONTRACTOR shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
11. The CONTRACTOR shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The CONTRACTOR shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing Subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any CONTRACTOR who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The CONTRACTOR, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the CONTRACTOR fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 80-4.8.
14. The CONTRACTOR shall designate a responsible official to monitor all employment related activity to ensure that the company's EEO policy is being carried out, to submit reports relating to the provision hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction

trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

END OF SECTION

SECTION SC-40

CERTIFICATION OF NONSEGREGATED FACILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Certification of Nonsegregated Facilities - (Applicable to federally assisted construction Contracts and related Subcontracts exceeding $10,000 which are not exempt from the Equal Opportunity Clause).

The federally assisted construction CONTRACTOR certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction CONTRACTOR certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction CONTRACTOR agrees that a breach of this certification is a violation of the Equal Opportunity clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally assisted construction CONTRACTOR agrees that (except where he has obtained identical certifications from proposed Subcontractors for specific time periods) he will obtain identical certifications from proposed Subcontractors prior to the award of Subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

_____

Signature Date

_____

Name and Title of Signer (Please Type)

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

END OF SECTION

SECTION SC-41

NOTICE TO LABOR UNIONS OR OTHER ORGANIZATIONS OF WORKERS NONDISCRIMINATION IN EMPLOYMENT

To: _____
(Name of union or organization of workers)

The undersigned currently holds Contract(s) with _____
(Name of Applicant)

involving funds or credit of the U. S. Government of (a) subcontract(s) with a prime contractor holding such contract(s).

You are advised that under the provisions of the above contract(s) or subcontract(s) and in accordance with Executive Order 11246, dated September 24, 1965, the undersigned is obliged not to discriminate against any employee or applicant for employment because of race, color, creed, or national origin. This obligation not to discriminate in employment includes, but is not limited to, the following:

HIRING, PLACEMENT, UPGRADING, TRANSFER, OR DEMOTION;

RECRUITMENT, ADVERTISING, OR SOLICITATION FOR EMPLOYMENT;

TRAINING DURING EMPLOYMENT; RATES OF PAY OR OTHER FORMS

OF COMPENSATION; SELECTION FOR TRAINING, INCLUDING

APPRENTICESHIP; LAYOFF, OR TERMINATION.

This notice is furnished you pursuant to the provisions of the above contract (s) or subcontract(s) and Executive Order 11246.

COPIES OF THIS NOTICE WILL BE POSTED BY THE UNDERSIGNED IN CONSPICUOUS PLACES AVAILABLE TO EMPLOYEES OR APPLICANTS FOR EMPLOYMENT.

_____

/s/ _____
(Contractor or Subcontractor)

_____
(Date)

END OF SECTION

SECTION 00920

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:
Engineer:
Contractor:
Project:
Contract Name:

Owner's Project No.:
Engineer's Project No.:
Contractor's Project No.:

This ☐ Preliminary ☐ Final Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: [Enter date, as determined by Engineer]

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities: ☐ None ☐ As follows:

[List amendments to Owner's Responsibilities]

Amendments to Contractor's Responsibilities: ☐ None ☐ As follows:

[List amendments to Contractor's Responsibilities]

The following documents are attached to and made a part of this Certificate:

[List attachments such as punch list; other documents]

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Engineer

By *(signature)*: _____
Name *(printed)*: _____
Title: _____

END OF SECTION

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SECTION 00935

NOTICE OF ACCEPTABILITY OF WORK

Owner: Owner's Project No.:
Engineer: Engineer's Project No.:
Contractor: Contractor's Project No.:
Project:
Contract Name:
Notice Date: Effective Date of the Construction Contract:

The Engineer hereby gives notice to the Owner and Contractor that Engineer recommends final payment to Contractor, and that the Work furnished and performed by Contractor under the Construction Contract is acceptable, expressly subject to the provisions of the Construction Contract's Contract Documents ("Contract Documents") and of the Agreement between Owner and Engineer for Professional Services dated [date of professional services agreement] ("Owner-Engineer Agreement"). This Notice of Acceptability of Work (Notice) is made expressly subject to the following terms and conditions to which all who receive and rely on said Notice agree:

1. This Notice has been prepared with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.
2. This Notice reflects and is an expression of the Engineer's professional opinion.
3. This Notice has been prepared to the best of Engineer's knowledge, information, and belief as of the Notice Date.
4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's Work) under the Owner-Engineer Agreement, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Owner-Engineer Agreement.
5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Contract Documents, or to otherwise comply with the Contract Documents or the terms of any special guarantees specified therein.
6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

Engineer

By *(signature)*: _____
Name *(printed)*: _____
Title: _____

END OF SECTION

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SECTION 00936

CONSENT OF SURETY TO FINAL PAYMENT

To: _____ (Owner)
_____
_____

From: _____ (Contractor)
_____
_____

CONTRACT TITLE: _____
BOND NUMBER: _____

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the _____ (Surety Company) on the bond of the Contractor hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to the Owner as set forth in the said Surety Company's Bond.

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand this _____ day of _____, 20___.

_____
Surety Company Name

_____
Signature of Authorized Representative

_____
Printed Name and Title

Attest: (Seal)

Note: Power of Attorney should be attached in instances where same applies.

END OF SECTION

SECTION 00937

CONTRACTOR'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

Before me, the undersigned, a _____
(Notary Public, Justice of Peace, Alderman)

in and for said County and State personally appeared, _____
(Individual, Partner or duly

_____ who being duly sworn according to law
(Authorized Representative of Corporate Contractor)

deposes and says that the cost of all the Work, and outstanding claims and indebtedness of whatever nature arising out of the performance of the contract between

_____
(Owner)

and _____ of _____
(Contractor)

dated _____ for the construction of the _____
(Agreement Date) (Project)

_____ and necessary appurtenant installations have been paid in full.

_____
(Individual, Partner, or duly authorized representative of corporate contractor)

Sworn to and subscribed before me
This _____ day of _____, 20___

END OF SECTION

SECTION 00938

CONTRACTOR'S RELEASE

KNOW ALL PERSONS BY THESE PRESENTS that _____ (Contractor)
of _____, County of _____ and State of _____

do hereby acknowledge that _____ (Contractor) has this day had, and received of and from _____ (Owner) the sum of One Dollar and other valuable considerations in full and complete satisfaction and payment of all sums of money owed, payable and belonging to _____ (Contractor) by any means whatsoever, for on account of a Contract Agreement between _____ (Owner) and _____ (Contractor) dated _____ (Agreement Date) for _____ (Project)

NOW, THEREFORE, the said _____ (Contractor)

(for myself, my heirs, executors and administrators) (for itself, its successors and assigns) do/does, by these presents remise, release, quit-claim and forever discharge _____ (Owner), of and from all claims and demands, arising from or in connection with the said contract dated _____ (Agreement Date), and of and from all, and all manner of action and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums of money, accounts, reckonings, bonds, bills, specialties, covenants, contracts, agreements, promises, variances, damages, judgments, extents, executions, claims and demand, whatsoever in law or equity, or otherwise, against _____ (Owner) its successors and assigns, which (I, my heirs, executors, or administrators) (it, its successors and assigns) ever had, now have or which (I, my heirs, executors, or administrators) (it, its successors and assigns) hereafter can, shall or may have, for, upon or by reason of any matter, cause, or thing whatsoever; from the beginning of recorded time to the date of these presents.

IN WITNESS WHEREOF, _____
(Contractor)

has caused these presents to be duly executed this _____ day of _____ 20_____

Signed, Sealed and Delivered in the presence of:

_____ _____(seal)
(Individual -Contractor)

_____(seal)
(Partnership - Contractor)

_____ By _____(seal)
(Partner)

Attested:

_____
(Corporation)

_____ By _____
(Secretary) (President or Vice President)

(Corp. Seal)

END OF SECTION

SECTION 00939

WAIVER OF LIEN - MATERIALS AND LABOR

STATE OF _____
COUNTY OF _____

To: _____ (Owner)
_____
_____

WHEREAS, _____ (the undersigned) have been employed by _____ (Contractor) on the _____ (Project Name) to furnish the following:
_____
_____
_____ (description of material and services).

NOW THEREFORE, the undersigned, for good and valuable considerations do hereby waive and release any and all lien, or right of lien, or claim to lien on said above project and premises under the Law, in relation to Mechanics' Liens Law, on account of labor and materials, or both, furnished by the undersigned to or on account of the said contract for the said project and premises only so far as that portion of work which has been included in our requisition dated _____ and all prior requisitions.

THIS WAIVER AND RELEASE is being made to the undersigned in the amount of $ _____ which sum the undersigned certifies to be the balance due the undersigned for all labor, materials or both, furnished by the undersigned to or on account of the said contract as included on Contractor's requisition dated _____.

GIVEN UNDER our hand and seal, this _____ day of _____, 20 __.

By: _____
Manufacturer, Supplier or Subcontractor Name

_____
Signature of Authorized Representative

_____
Printed Name and Title

END OF SECTION

SECTION 00940

WORK CHANGE DIRECTIVE NO.: [Number of Work Change Directive]

Owner:	Owner's Project No.:
Engineer:	Engineer's Project No.:
Contractor:	Contractor's Project No.:
Project:	
Contract Name:	
Date Issued:	Effective Date of Work Change Directive:

Contractor is directed to proceed promptly with the following change(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents related to the change to the Work]

Purpose for the Work Change Directive:

[Describe the purpose for the change to the Work]

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to: [Check one or both of the following]

☐ Non-agreement on pricing of proposed change. ☐ Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: $ _____ [increase] [decrease] [not yet estimated].

Contract Time: _____ days [increase] [decrease] [not yet estimated].

Basis of estimated change in Contract Price:

☐ Lump Sum ☐ Unit Price ☐ Cost of the Work ☐ Other

	Recommended by Engineer	Authorized by Owner
By:		
Title:		
Date:		

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SECTION 00941

CHANGE ORDER NO.: [Number of Change Order]

Owner: Owner's Project No.:
Engineer: Engineer's Project No.:
Contractor: Contractor's Project No.:
Project:
Contract Name:
Date Issued: Effective Date of Change Order:

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price	Change in Contract Times [as days or dates]
Original Contract Price: $ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. [Number of previous CO]: $ _____	[Increase] [Decrease] from previously approved Change Orders No.1 to No. [Number of previous CO]: Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: $ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: $ _____	[Increase] [Decrease] this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: $ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)	Accepted by Contractor
By: _____	_____
Title: _____	_____
Date: _____	_____
Authorized by Owner	**Approved by Funding Agency (if applicable)**
By: _____	_____
Title: _____	_____
Date: _____	_____

END OF SECTION

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SECTION 00942

FIELD ORDER NO.: [Number of Field Order]

Owner: Owner's Project No.:
Engineer: Engineer's Project No.:
Contractor: Contractor's Project No.:
Project:
Contract Name:
Date Issued: Effective Date of Field Order:

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s):

Drawing(s) / Details (s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____

Title: _____

Date: _____

END OF SECTION

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SECTION 01010B

SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Location: The Work locations include, but are not limited to, locations within the property, right-of-ways and easements on the following property and streets in the Town of Damariscotta.
   1. Municipal Parking Lot
   2. Water Street
   3. Cross Street
   4. Main Street

B. Work Included: The Work includes, but is not limited to, the following:
   1. New Storm Drain System:
      a. Storm drains, outfalls and culverts
      b. Drain manholes and catch basins
      c. Storm drain and catch basin laterals
      d. Removal and disposal or abandonment of existing drain manholes, catch basins and catch basin laterals
      e. Existing flow management/ bypass pumping for installation of new storm drain pipes, catch basins, and manholes
      f. Underground stormwater storage tank
      g. Inline backflow prevention valves
      h. In-basin stormwater treatment
      i. Storm drain and sewer abandonment
   2. Parking lot reconstruction
      a. Reclaiming of parking lot pavement
      b. Additional parking lot gravel
      c. Grading
      d. Parking lot paving
      e. Curbing
      f. Crosswalk striping
   3. All related site work including trench excavation, ledge excavation, groundwater dewatering, disposal of excess excavated materials, filter fabric, bedding, backfill, compaction, road/drive/parking lot subbase, paving, loam/seed and landscaping.
   4. Other miscellaneous work shown in the Specifications for a complete and operational system.

C. Related Work Specified Elsewhere
   1. Coordination: Section 01050
   2. Construction Schedules: Section 01310
   3. Traffic Regulation: Section 01570
   4. Site work, piping, structures, testing requirements are specified in Division 2.

D. Removals, Relocations and Rearrangements
   1. Examine the existing site for the work of all trades which will influence the cost of the work under the bid. This work shall include removals, relocations and rearrangements which may interfere with, disturb or complicate the performance of the work under the general bid involving systems, equipment and related service lines, which shall continue to be utilized as part of the finished project. The Contractor is responsible for all coordination in this regard.
   2. Provide in the bid a sufficient amount to include all removals, relocations, rearrangements and reconnections herein specified, necessary or required to provide approved operation and coordination of the combined new and existing systems and equipment.
   3. Provide in the bid a sufficient amount to include all temporary facilities required to maintain flows during the construction period, including bypass pumping, temporary piping, etc. The cost shall include the cost for all labor, tools, equipment and materials necessary.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

A. Continuous Operations Criteria:
   1. The Contractor shall conduct their operations in such a manner and sequence which shall neither result in a disruption of, nor interfere with, the functional workings of any existing utilities.
   2. The Contractor shall furnish, install and operate any piping, equipment and appurtenances necessary to provide the temporary services/facilities required during construction including, but not limited to, bypass pumping, flow barriers and diversions. Temporary facilities, if required, shall have pumping capacity equal to or greater than the existing maximum capacity of the piping as determined by their size and slope.
   3. The Contractor shall notify and coordinate with the Owner whenever Contractor's temporary facilities or construction will interface with existing utilities.
   4. The Contractor shall be responsible for the operation and maintenance of all new and temporary facilities until such time as the new facilities are accepted by the Owner.

B. Minimize Interference
   1. The Contractor shall at all times conduct their operations so as to interfere as little as possible with existing parking. The Contractor shall develop a program, in cooperation with the Engineer and interested officials, which shall provide for the construction in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted

2. Work of connecting with, cutting into and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time and when the demands on the facilities best permit such interference. It may be necessary to work outside of normal working hours to minimize interference. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand.

3.2 CONSTRUCTION SEQUENCE

A. Construction of the proposed facilities will disrupt the existing structures and operations. To maintain continuous operations, the construction must be divided into phases or sequenced appropriately.

B. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of the proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for doing the work.

C. The Contractor shall submit to the Engineer a written request to deviate from the above sequence with adequate supporting information to demonstrate to the Engineer that the continuity and degree of treatment will not be adversely affected.

3.3 SCHEDULE LIMITATIONS AND WORK RESTRICTIONS/ REQUIREMENTS

A. Work Hours:
   1. Work hours are defined in the Section 00700 (General Conditions) and Section 00800 (Supplemental Conditions).
   2. All Work shall be prohibited on Saturdays, Sundays, and legal holidays
   3. All Work on weekdays shall be performed between the hours of 7 AM and after 7 PM, except during emergencies.
   4. The Contractor shall request permission to work outside the work hours specified above at least 72-hours in advance of the proposed work. The Contractor shall not commence work outside of the work hours specified above unless or until granted such permission from the Owner and Engineer.

B. Maintain Services:
   1. Maintain all existing sewer, water, and storm drain services.

C. Traffic Control Plan:
   1. A project-specific Traffic Control Plan shall be submitted prior to the Pre-Construction Meeting (refer to Section 01570). The Traffic Control Plan shall identify traffic management requirements for each distinct component of the project.
   2. Contractor shall provide one lane for the passage of traffic within any work zone unless approved by the Owner.
   3. Contractor shall maintain access to all residences and businesses at all times.
   4. Contractor shall maintain access for garbage collection and mail services to all residences and businesses at all times. Contractor shall coordinate with these service providers.

D. Special Coordination Requirements:
   1. All work throughout the project shall be coordinated at weekly construction meetings with the Owner, Engineer, and Contractor This coordination

specifically includes scheduling of material deliveries/removals, concrete placements and cranes.

END OF SECTION

SECTION 01050

COORDINATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Contractor is required to work in close proximity to Owner's existing facilities. The Contractor, under this Contract, will be responsible for coordinating construction activities with Owner to ensure that services, facilities, and safe working conditions are maintained.

B. Other Construction Contractors will be interfacing with this Contract and working within the work area and in the vicinity of this Contract. The Contractor, under this contract, shall act as Construction Coordinator and shall coordinate construction activities with other Contractors working for Owner.

C. Any damage to existing structures, equipment and property, accepted equipment or structures, and property or work in progress by others; as a result of the Contractor's or their subcontractor's operations shall be made good by the Contractor at no additional cost to the Owner.

1.2 COORDINATION WITH OTHERS

A. Town of Damariscotta

1. Contractor shall coordinate access, egress, detours and traffic control, if required, at each site with the Damariscotta Police Department. The Contractor shall notify Damariscotta Police, Fire Department and Rescue Squad at least 24 hours in advance of any street closings or detours.
2. The Contractor shall be responsible for coordinating and maintaining public services to all public and private properties.

B. Great Salt Bay Sanitary District (GSBSD)

1. Contractor shall be responsible for coordinating all work in the vicinity of water and sewer lines with the parking lot. Contractor shall bear all costs for the GSBSD's inspection requirements, temporary facilities, water main adjustments and other requirements.

C. Central Maine Power Company (CMP):

1. The Contractor shall be responsible for coordinating all work around CMP facilities with CMP and shall bear all costs of inspection requirements, temporary facilities relocation and other requirements.

D. Tidewater Communications

1. The Contractor shall be responsible for coordinating and providing telephone/internet service to all construction sites, both temporary and permanent. The Contractor shall also be responsible for coordinating all work around Tidewater facilities with Tidewater and shall bear all costs of inspection requirements, temporary facilities relocation and all other requirements..

E. Charter:

1. The Contractor shall be responsible for coordinating and providing telephone/internet service to all construction sites, both temporary and

permanent. The Contractor shall also be responsible for coordinating all work around Charter facilities with Charter and shall bear all costs of inspection requirements, temporary facilities relocation and all other requirements.

F. The Contractor shall provide the Resident Project Representative a construction schedule indicating the times to perform the work required. The Contractor shall update the schedule when required and give the Town one week notice before the start of any work. The Contractor shall daily communicate with the Resident Project Representative concerning updating the schedule, job progress, delay or early starts that affect Town facilities.

G. Weekly coordination meetings shall be held between the Contractor and the Resident Project Representative. This meeting shall cover the following:
   1. Work to be completed the following week
   2. Project Schedule
   3. Shop Drawing issues
   4. Outstanding RFIs and Clarifications
   5. Change Orders and Field Orders
   6. Review of Record Drawing Information
   7. Discussion/Resolution of any old issues
   8. New issues discussion
   9. Contractor’s Safety and Health Plan Updates

H. Snow Removal Coordination: The Contractor shall be responsible for all snow removal activities in construction and laydown areas onsite. Owner’s operations staff will be responsible for snow removal on the remaining parking area. Contractor is to coordinate closely with Owner’s operations staff to maintain access to all areas of the parking lot to allow normal parking operations.

1.3 CONTRACTOR'S USE OF PREMISES

A. Contractor shall have use of the premises within the limits shown on the Drawings and as defined in the General Conditions for the performance of the Work.

B. Contractor work hours will be limited to 7:00AM to 7:00PM, Monday through Friday . Any work outside these hours will require permission of the Owner and adequate notice.

C. Contractor shall maximize access to parking facilities within the municipal parking lot.

D. Contractor shall assume full responsibility for security of all of their, and their subcontractors, materials and equipment stored on the site.

E. If directed by the Owner, Contractor shall move any stored items which interfere with operations of Owner.

F. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

END OF SECTION

SECTION 01070

ABBREVIATIONS & SYMBOLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Where any of the following abbreviations are used in these Specifications, they shall have the meaning set forth opposite each.

AASHTO	American Association of State Highway & Transportation Officials
AC	Alternating Current
ACI	American Concrete Institute
ACP	Asbestos Cement Pipe
AGA	American Gas Association
AIC	Ampere Interrupting Capacity
AGMA	American Gear Manufacturers Association
AIEE(IEEE)	American Institute of Electrical Engineers (Institute of Electrical and Electronics Engineers, Inc.)
AISC	American Institute of Steel Construction
AMP	Ampere 125-16
Amer. Std.	American Standard for Cast Iron Pipe Flanges and Flanged Fittings, Class l25 (ASA Bl6 ll960)
ANSI	American National Standards Institute
API	American Petroleum Institute
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American or Brown and Sharpe Wire Gage
AWWA	American Water Works Association
CCTV	Closed Circuit Television
CF	Cubic Foot
CFM	Cubic Foot Per Minute
CFS	Cubic Foot Per Second
CI	Cast Iron
CIPP	Cured-in-Place Pipe
CIPRA	Cast Iron Pipe Research Association
CSI	Construction Specifications Institute
CY	Cubic Yard
DC	Direct Current
DEP	Department of Environmental Protection
DI (DIP)	Ductile Iron (Pipe)
DOT	Department of Transportation
EDR	Equivalent Directional Radiation

EPA	U.S. Environmental Protection Agency
FPS	Feet Per Second
FT	Feet
GAL	Gallons
GPD	Gallons Per Day
GPM	Gallons Per Minute
HP	Horsepower
IBR	Institute of Boiler and Radiator Manufacturers
IN	Inches
ISA	Instrument Society of America
KVA	Kilovolt-ampere
KW	Kilowatt
LB	Pound
MACP	Manhole Assessment and Certification Program
MAX	Maximum
MGD	Million Gallons Per Day
MIN	Minimum
NACE	National Association of Corrosion Engineers
NASSCO	National Association of Sewer Service Companies
NBS	National Bureau of Standards
NEC	National Electrical Code, Latest Edition
NEMA	National Electrical Manufacturers Association
NEWWA	New England Water Works Association
NPT	National Pipe Thread
OS&Y	Outside Screw and Yoke
PCA	Portland Cement Association
PPM	Parts Per Million
PSI	Pounds Per Square Inch
PSIG	Pounds Per Square Inch Gage
PVC	Polyvinyl Chloride
RPM	Revolutions Per Minute
RUS	Rural Utility Service
SF	Square Foot
STL. W.G.	U.S. Steel Wire, Washburn and Moen, American Steel and Wire Cos., or Roebling Gage
SY	Square yard
TDH	Total Dynamic Head
USAS	Standards of the United States of America Standards Institute (formerly American Standards Association)
USS GAGE	United States Standard Gage
VC	Vitrified Clay
WSP	Working Steam Pressure
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Service Administration, Washington, D.C.

END OF SECTION

SECTION 01150B

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. For lump sum items, payment shall be made to the contractor in accordance with an accepted progress schedule and schedule of values on the basis of actual work completed.

B. For unit-price items, payment shall be based on the actual amount of work accepted and for the actual amount of materials in place, as shown by final measurements.

1. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the Engineer.
2. At the end of each day's work, the Contractor's Superintendent or other authorized representative of the Contractor shall meet with the Resident Project Representative and determine the quantities of unit price work accomplished and/or completed during the workday.
3. The Resident Project Representative will then prepare two "Daily Progress Reports" which shall be signed by both the Resident Project Representative and Contractor's Representative.
4. Once each month the Resident Project Representative will prepare two "Monthly Progress Summation" forms from the month's accumulation of "Daily Progress Reports" which shall also be signed by both the Resident Project Representative and Contractor's Representative.
5. These completed forms will provide the basis of the Engineer's monthly quantity estimate upon which payment will be made. Items not appearing on both the Daily Progress Reports and Monthly Progress Summation will not be included for payment. Items appearing on forms not properly signed by the Contractor will not be included for payment.
6. After the work is completed and before final payment is made, the Engineer will make final measurements to determine the quantities of various items of work accepted as the basis for final settlement.

1.2 SCOPE OF PAYMENT

A. Payments to the Contractor will be made for the actual quantities of the Contract items performed and accepted in accordance with the Contract Documents. Upon completion of construction, if these actual quantities show either an increase or decrease from the quantities given in the Proposal Form, the Contract Unit Prices will still prevail.

B. The Contractor shall accept in compensation, as herein provided, in full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced by the Contract; also for all loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be

encountered during the prosecution of the Work and until its final acceptance by the Engineer, and for all risks of every description connected with the prosecution of the work, except as provided herein, also for all expenses incurred in consequence of the suspension of the Work as herein authorized.

C. The payment of any partial estimate or of any retained percentage except by and under the approved final invoice, in no way shall affect the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.

1.3 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

A. When alterations in the quantities of work not requiring supplemental agreements, as hereinbefore provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract price for the actual quantities of work done. No allowance will be made for anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

1.4 OMITTED ITEMS

A. Should any items contained in the bid form be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract, and such action shall in no way invalidate the Contract, and no allowance will be made for items so eliminated in making final payment to the Contractor.

1.5 PAYMENT FOR MATERIAL DELIVERED

A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable, non-perishable materials and equipment which are to be incorporated into bid items, have not been used and have been delivered to the construction site, or placed in storage places acceptable to the Owner. Payment shall be subject to the provisions of the General and Supplemental Conditions.

B. No payment shall be made upon fuels, supplies, lumber, false work, or other materials, or on temporary structures of any kind which are not a permanent part of the Contract.

1.6 FINAL PAYMENT

A. After final measurements are made by the Engineer, the Contractor will prepare a final quantity invoice of the amount of the Work performed and the value of such Work. Owner shall make final payments of the sum found due less retainages subject to provisions of the General and Supplemental Conditions.

1.7 INCIDENTAL WORK

A. Incidental work items for which separate payment will not be made includes, but is not limited to, the following items:
   1. Pre-Construction photographs or videos.
   2. Project Record Documents
   3. Clean-up and restoration of property.

4. Restoration of fences and other structures.
5. Cooperation and coordination with other Contractors and utility companies including related inspection costs and other costs (Refer to Section 01050).
6. Utility crossings and relocations, unless otherwise paid for.
7. Temporary utility services to buildings, as required to maintain service during construction.
8. Minor Items – such as relocation of signposts, guard rails, rock wall, mailboxes, curbs, traffic loop detectors, pavement markings, etc., damaged as a result of construction activities.
9. Trench boxes, steel and/or wood sheeting as required, including that left in place.
10. Maintenance of all existing sewer flows and repair of existing sewer pipes.
11. Temporary Construction Dewatering as necessary.
12. Dust control.
13. Quality assurance testing.
14. Final cleaning of sewers, force mains and storm drains.
15. Routine flagman services.
16. Construction schedules, bonds, insurance, shop drawings, warranties, guarantees, certifications and other submittals required by the Contract Documents.
17. Repair and replacement of water lines under 2-inches in size, culverts, underdrains, rock lined drainage trenches in streets and other utilities damaged by construction activities and corresponding proper disposal of removed materials unless otherwise paid for.
18. Temporary construction necessary for construction sequencing and other facilities not permanently incorporated into the work.
19. Weather protection.
20. Permits not otherwise paid for or provided by the Owner.
21. Visits to the project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required.
22. All excavation except the test pits specifically shown or ordered by the Engineer to establish sewer line and water line locations, earth excavation below grade and rock excavation.
23. Contract administration and insurance.
24. Test pits to establish in place field soils density, groundwater conditions, or requirements for dewatering.
25. Pipe markings.
26. Temporary Field Office.
27. Earthwork (Except Ledge)
28. Test Pits for the Contractor’s Benefit
29. Disinfection cleaning and testing of installed water mains and blow offs where show on plans
30. Sewer service risers.
31. Temporary resetting or replacement of existing street and traffic signs and temporary traffic signals where necessary.

32. Raising and lowering of existing frames and covers of buried utilities to grade unless payment is otherwise provided for.
33. Horizontal adjustment of existing frames, covers and grates to match final grades and curb faces.
34. Removing and replacing existing SMH inverts to accommodate new and replacement pipes.
35. Removing and resetting of existing steps, guard rails, fences, walls and non-paved brick or paver walkways disturbed during construction, other than those identified on the Drawings to be replaced.
36. Protection of existing block and stone retaining walls unless otherwise identified to be removed, relocated or modified in the Drawings.
37. Cross-over channels and underdrains for sewer, storm drain and water excavation pits, and check dams for all excavated channels.
38. Installing raised pavement markers and temporary symbols on the binder course within 48 hours of installing any section of the binder course and maintaining these throughout the project duration.
39. Locating and verifying the locations of water and sewer services within the limits of work. Capping or plugging existing underground utilities as shown on the plans and Dye testing as required to determine bulkheading and reconnection requirements.
40. Modifying, to include coring, patching and parging of existing sewer and drainage structures to accommodate new pipes as shown on plans.
41. Removal and subsequent delivery of replaced or obsolete frames, covers, grates, hydrants curbstones and signs to a location within the City limits designated by the Owner.
42. Leak testing of all existing sewer manholes whose frames and covers have been replaced.
43. Removal of temporary or permanent pavement markings, prior to paving. This includes removing markings that are applied on the winter binder layer, prior to installation of the wearing course.
44. Clay (impervious material) trench dams. Concrete Trench Dams are a unit price item.
45. Relocation, replacement and extension of all underground telephone, power, cable, data, gas and all other private utility services from within the Rights of Way to the dwellings, structures or meters.
46. Flushing and final cleaning of storm drain system.
47. Completion of the Storm Water Pollution Prevention Plan as well as required inspections, monitoring and reporting.
48. Post Completion CCTV and report of Entire Sanitary Sewer System installed under this Contract.
49. Provide temporary pavement marking paint on the streets as shown in the layout plans on the binder course within two weeks of pavement installation if the wearing course will not be installed until after a winter season.

1.8 DESCRIPTION OF PAY ITEMS

A. The following sections describe the measurement of and payment for the work to be done under the respective items listed in the Bid Form.

B. Each unit or lump-sum price stated in the Bid Form shall constitute full compensation, as herein specified, for each item of the work completed.

(1) – Mobilization/Demobilization

A. Method of Measurement: Lump sum. Total of bid item shall not exceed 5% of Total Amount of the Bid.

B. Basis of Payment: Mobilization/demobilization costs are those costs of initiating and ending the contract. Payment for mobilization/demobilization shall be a lump sum at the price as stated in the Bid Form. Seventy-Five percent (75%) of the lump sum will be payable when the Contractor is operational on the site and the remaining 25% of the lump sum will be payable when the Contractor leaves the site following the completion of all contract work. For purposes of payment on this item, "Operational" shall mean the Contractor has provided all required and properly executed bonds and insurance certificates and the owner has approved the following: Construction Schedule, Erosion Control Plan, Traffic Control Plan, Project Sign (and installed), Temporary Facilities, and Pre-Construction photographs/videos. Only one lump sum payment divided into the two partial payments described herein shall be made to cover all mobilization/demobilization costs throughout the entire contract.

(2) – Traffic Control

A. Method of Measurement: Traffic regulation and control will be paid for at the Lump Sum unit price as stated in the Bid Schedule.

B. Basis of Payment: Payment for traffic regulation and control shall constitute full compensation for all traffic regulation and control efforts and including all labor, materials, equipment, signage and supervision required to provide comprehensive and professional traffic regulation and control at all project locations. The traffic control plan, temporary pavement markings for traffic re-routing and pedestrian safety are included in this item. The lump sum shall be paid in partial payments over the course of the project, where the percentage paid is equal to the percentage of completion of the entire Contract.

(3) – Sediment and Erosion Controls

A. Method of Measurement: Sediment and erosion controls will be paid for at the Lump Sum Unit price as stated in the Bid Schedule.

B. Basis of Payment: The lump sum contract unit price for erosion & sedimentation control shall be full compensation for all labor, materials, and equipment necessary to install and maintain erosion and sedimentation controls to ensure sediment and pollutants are controlled and are not discharged from the construction site onto adjacent streets or waterways and all else incidental thereto for which payment is not provided. Street sweeping, dust control, and maintenance of stormwater throughout the project are included in this item. The lump sum shall be paid in partial payments over the course of the project, where the percentage paid is equal to the percentage of completion of the entire Contract.

(4) – Temporary Construction Fence

A. Method of Measurement: Temporary construction fence will be paid for at the Lump Sum Unit price as stated in the Bid Schedule.

B. Basis of Payment: Temporary construction fence shall be paid for at the lump sum unit price as stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, tools, and equipment required to procure and set up and move the temporary construction fence during the various phases of construction and all else incidental thereto for which payment is not provided under other items.

(5) – Dewatering

A. Method of Measurement: Dewatering will be paid for at the Lump Sum Unit price as stated in the Bid Schedule.

B. Basis of Payment: Payment for dewatering shall be a lump sum at the bid price as stated in the Bid Schedule. Said lump sum price shall constitute full compensation for all dewatering efforts including well point systems, pumping with sumps, treatment of water, and any other method of dewatering or pre-draining of soils necessary to complete the work. The lump sum shall be paid in partial payments over the course of the project, where the percentage paid is equal to the percentage of completion of the entire Contract.

(6) – Underground Stormwater Storage Tank

A. Method of Measurement: Underground stormwater storage tank will be paid for at the Lump Sum Unit price as stated in the Bid Schedule.

B. Basis of Payment: Payment for installation of the underground stormwater storage tank shall be paid for as a lump sum at the bid price as stated in the Bid Schedule. Said lump sum shall constitute full compensation for all labor, materials, and equipment necessary to complete the installation of the underground stormwater storage tank including excavation to subgrade, installation of washed stone base and washed stone along the sides of the tanks per the plans, geotextile and geogrid and underground stormwater storage tank units, washed stone to 1’ above the tank, and all else incidental thereto for which payment is not provided under other items.

(7) – Catch Basins

A. Method of Measurement: Quantity of catch basins to be paid for under these items shall be the actual vertical feet of structures installed and accepted complete in place, measured vertically from the bottom of the sump to finish grade.

B. Basis of Payment: Catch basins shall be paid for at the unit price per vertical foot as stated in the Bid Schedule. Said unit price shall be full compensation for all labor, materials and equipment necessary to complete the installation including sawcut, management, removal and disposal of pavement; excavation (excluding ledge), bedding, furnishing and installing precast sections, furnishing and installing frames and grates at proper grade, backfilling, compaction, cleaning sumps and all else incidental thereto for which payment is not provided under other items.

(8) and (9) – Drain Manholes (4’ and 6’ Diameter)

A. Method of Measurement: Quantity of drain manholes to be paid for under these items shall be the actual vertical feet of structures installed and accepted complete in place, measured vertically from the bottom of the sump to finish grade.

B. Basis of Payment: Drain manholes shall be paid for at the unit price per vertical foot as stated in the Bid Schedule. Said unit price shall be full compensation for all labor, materials and equipment necessary to complete the installation including sawcut, management, removal and disposal of pavement; excavation (excluding ledge), bedding, furnishing and installing precast sections, furnishing and installing frames and grates at proper grade, weir walls and orifices, backfilling, compaction, cleaning sumps and all else incidental thereto for which payment is not provided under other items.

(10) – Catch Basin Filter Inserts

A. Method of Measurement: Quantity of catch basin filter inserts to be paid for under these items shall be the actual number if inserts installed and accepted complete in place.

B. Basis of Payment: Catch basin filter inserts shall be paid for at the unit price per each as stated in the Bid Schedule. Said unit price shall be full compensation for all labor, materials, and equipment necessary to complete installation, furnishing and installing the inserts, filter cartridges, hardware, and patching and repairing interior walls where necessary, cleaning and all else incidental thereto for which payment is not provided under other items.

(11) – 18” Catch Basin Debris Traps (Hoods)

A. Method of Measurement: Quantity of hoods for Drainage Structures to be paid for under these items shall be the actual number of hoods installed and accepted complete in place.

B. Basis of Payment: Drainage structure hoods shall be paid for at the unit price per each as stated in the Bid Schedule. Said unit price shall be full compensation for all labor, materials and equipment necessary to complete the installation including, furnishing and installing hoods and, patching and repairing interior walls where the mounting hardware is, , cleaning and all else incidental thereto for which payment is not provided under other items.

(12), (13), (14), and (15) – 8”, 15”, 18”, and 24” Storm Drain Pipe

A. Method of Measurement: Storm drain pipe measured for payment under these items shall be the number of linear feet installed measured along the center line of the pipe as laid, regardless of materials of construction. Pipes shall be measured between centers of manholes or structures minus half the inside diameter of each structure. Pipe installed into the structure will not be measured for payment.

B. Basis of Payment: The contract unit price per linear foot for storm drain pipe installed shall be full compensation for all labor, materials, and equipment necessary to complete this work including sawcut, management, removal and disposal of pavement; excavation (excluding ledge), bedding, furnishing and installing pipe and fittings, initial backfill, final backfill, compaction, cleaning pipes

and sumps, connection to existing piping and structures as required, and all else incidental thereto for which payment is not provided under other items. Aggregate base above the pipe trench final backfill shall be paid for under the Type B Aggregate Base Bid Item.

(16) – 18" Inline Check Valve

A. Method of Measurement: Quantity of inline check valves to be paid for under these items shall be the actual number if inserts installed and accepted complete in place.
B. Basis of Payment:
    1. The contract unit price per each inline check valve installed shall be full compensation for all labor, materials, and equipment necessary to complete this work including cleaning, furnishing and installation of inline check valve, anchoring, testing, and all else incidental thereto for which payment is not provided under other items.
    2. Payment for this work on interim requisitions shall be according to the following percentages:
        a. Inline check valve acceptably set in place - 90 percent.
        b. Inline check valve successfully cleaned and tested - 10 percent.

(17) – Storm Drain Outfall Armament

A. Method of Measurement: Storm Drain Outfall Armament shall be measured for payment shall be the cubic yards of Class I riprap installed. This amount shall be field measured by the Engineer and the quantity shall be determined by multiplying the average width, depth, and length. The depth used shall be that indicated on the Drawings for the stone itself. The depth of the course aggregate filter layer shall be considered incidental and not measured for payment.
B. Basis for Payment: The contract unit price per cubic yard for Class I riprap material shall be full compensation for all labor, materials, tools, and equipment necessary to complete this work, including purchasing and hauling material, excavation, dewatering, grading, compacting, providing and installing geotextile filter fabric and aggregate layer between fabric and riprap, and all else incidental thereto for which payment is not provided under other items.

(18) – Excavation and Replacement of Unsuitable Materials

A. Method of Measurement: Quantity to be paid for under this item shall be the number of cubic yards of unsuitable material removed, disposed of offsite and replaced with crushed stone as authorized by the Engineer. The payment limit for this item shall be below the subgrade elevation shown on the plans to a depth and area as determined by the engineer in the field.
B. Basis of Payment: Excavated unsuitable and replacement materials shall be paid for at the unit price per cubic yard stated in the Bid Schedule, where one cubic yard of excavated material and one cubic yard of replacement material shall be counted as one cubic yard under the quantity for this item. Said unit price shall be full compensation for furnishing all labor, equipment, and tools necessary for the excavation of unsuitable material including the disposal of materials; placement, compacting and grading of the crushed stone replacement material; and for all other

work and expenses incidental thereto for which payment is not provided under other items.

(19) – Reclaim Existing Pavement

A. Method of Measurement: Reclaim existing pavement will be measured by the square yard.

B. Basis of Payment: The accepted quantity of reclaimed existing pavement will be paid for at the contract unit price per square yard, complete in-place which price will be full compensation for furnishing all equipment, materials, and labor for pulverizing, blending, placing, grading, compacting, and for all incidentals necessary to complete the work. The addition of materials to restore profile grade and/or cross-slope in areas shown on the plans or described in construction notes will be paid for separately under designated pay items within the contract. No additional payment will be made for materials salvaged from the project.

(20) – MDOT 703.06 Type B Aggregate Base

A. Method of Measurement: Placement of Type B aggregate base measured for payment shall be the number of cubic yards of Type B aggregate base placed for roadways, and parking lots measured and calculated within the limits indicated on the plans, complete and in place.

B. Basis for Payment:

1. The contract unit price per cubic yard for placement of aggregate and base shall constitute full compensation for all materials, labor and equipment necessary to complete this work including furnishing and transporting aggregate base gravel to the project site, preparing subgrade, placing, grading, compaction, dust control and all else incidental thereto for which payment is not provided under other items.
2. It includes gravel shoulders and driveways as called for in the plans.

(21-26) – Asphalt Paving and Hand-placed Patterned Asphalt at Damariscotta Center

A. Method of Measurement:

1. The quantity of bituminous concrete pavement to be paid for under this item includes:
   a. Asphalt Pavement - The number of tons of initial pavement placed and removed at the direction of the Engineer, calculated as described below, within the payment limits shown on the Drawings.
   b. Hand-placed Patterned Asphalt at Damariscotta Center - The number of square yards of final pavement placed at the direction of the Engineer, calculated as described below, within the payment limits shown on the Drawings.
   c. Hand Placed Paving for Park Edge Pavement - The number of tons of final pavement placed at the direction of the Engineer, calculated as described below, within the payment limits of trench paving shown on the Drawings.
2. Actual widths will be used in computing area wherever the width of pavement removed and replaced is less than the limits indicated on the Drawings.

3. The conversion factor to change volume of bituminous concrete pavement measured in place to tons will be 0.055 tons per square yard per inch of thickness.

B. Basis of Payment:
   1. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools necessary for the placement and removal of pavement, preparation of base material, application of tack coat, placement and grading of gravel shoulder material to back up overlay pavement. No additional payment will be made to the Contractor for repair work done by them in maintaining bituminous concrete pavement.

(27) – Loam and Seed

A. Method of Measurement: The quantity of loaming and seeding shall consist of the number of square yards of loaming and seeding installed at the direction of the Engineer within the limits of work shown on the drawings.

B. Basis of Payment:
   1. The square yard unit price shall be full compensation for furnishing all labor, materials, and equipment required to place and grade loam, furnish and place seed, mulch, lime, fertilize and water, assure and maintain grass growth until final acceptance by the Engineer; and for all other work including grading of paved and unpaved areas disturbed during construction and expenses indicated thereto for which payment is not provided under other items. This price shall include clean-up and restoration of property including property boundary monuments and markers, replacement of shrubs, fences, trees and mulch that are not identified to be removed and which are displaced at the convenience of the Contractor. This price shall include removal of existing pavement, sidewalk, concrete, structures and other manmade features in areas that will be replaced with loam and seed and plantings. This price includes the clearing, grubbing and stripping and stockpiling of topsoil. Areas disturbed for the Contractor's convenience shall be restored at no additional cost to the Owner.
   2. 80% at the completion of the installation of the loaming and seeding, upon acceptance by the Engineer. 20% upon final contract completion and consistent coverage and growth of the new turf.

(28) – Remove and Reset Granite Curb

A. Method of Measurement: Removing and resetting granite curb measured for payment shall be the actual linear footage of curb removed, reset, and accepted complete and in place and measured along its face.

B. Basis of Payment: The Contract unit price per linear foot for this item shall constitute full compensation for all labor, equipment and materials necessary to complete this work including careful removal and storage of existing granite curb, sandblasting of exposed portion of reset curb, installing curb, subgrade preparation, placement of concrete fill, backfill and all labor and appurtenances incidental thereto for which payment is not provided under other items.

(29) – Slip Form Concrete Curb

A. Method of Measurement: Slip form concrete curb measured for payment shall be the actual linear footage of slip form concrete curb installed and accepted complete and in place.

B. Basis of Payment: The Contract unit price per linear foot for slipform concrete curb shall constitute full compensation for all labor, equipment and materials necessary to complete this work including furnishing and installing curb, subgrade preparation, placement of concrete fill and removal and resetting of existing brick pavers, fences, flagstones and handrails backfill and all labor and appurtenances incidental thereto for which payment is not provided under other items.

(30) – Detectable Warning Devices

A. Method of Measurement: Detectable warning devices will be paid for under this item shall consist of the number of square feet of detectible warning device plates installed at the direction of the Engineer.

B. Basis of Payment: The Contract unit price per square foot of detectable warning device shall constitute full compensation for all labor, equipment and materials necessary to complete this work including furnishing and installing rectangular and radial plates, layout, subgrade preparation, anchors, backfill and all labor and appurtenances incidental thereto for which payment is not provided under other items. The concrete component of this installation, as shown in the plan detail, is included in this pay item.

(31-32) – Pavement Striping and Markings and Temporary 4" Striping

A. Method of Measurement: Payment for crosswalk stripes and parking stalls and hatch marks, as shown on the drawings, shall be paid for as a lump sum as stated in the Bid Schedule.

B. Basis of Payment:

1. Said lump sum price for Pavement Striping and Markings shall be full compensation for final pavement markings including furnishing all materials, labor, equipment and tools necessary for milling of pavement, furnishing and placement of striping and for furnishing all materials, labor, equipment and tools necessary for cutting of all milled recesses as directed by the Engineer.

2. Said unit price for Temporary 4" Striping shall be full compensation for temporary pavement striping including furnishing all materials, labor, equipment and tools necessary placement of striping as directed by the Engineer.

(33) – 3" Capped Sleeve

A. Method of Measurement: 3" Capped sleeve measured for payment under these items shall be the number of linear feet installed measured along the center line of the pipe as laid, regardless of materials of construction. Pipes shall be measured between capped ends of the sleeve.

B. Basis of Payment: The contract unit price per linear foot for sleeve installed shall be full compensation for all labor, materials, and equipment necessary to complete

this work including sawcut, management, removal and disposal of pavement; excavation (excluding ledge), bedding, furnishing and installing pipe and fittings, initial backfill, final backfill, compaction, and all else incidental thereto for which payment is not provided under other items. Aggregate base above the pipe trench final backfill shall be paid for under the Type B Aggregate Base Bid Item.

(34) – Wood Guard Rail

A. Method of Measurement: Wood Guard Rail accepted for payment shall be the actual linear feet of guard rail installed and accepted complete in place as directed by the Engineer.
B. Basis of Payment: The contract unit price per linear foot for wood guard rail shall be full compensation for all labor, materials, tools and equipment necessary to complete this work including excavation, foundations, anchors, backfill, compaction and all else incidental thereto for which payment is not provided under other items.

(35) – Allowance: Asphalt Adjustment

A. Method of Measurement: Allowance to be included and carried in the bid schedule.
B. Basis of payment: The payment for this bid item shall be based on MDOT published data, as outlined in Specification Section 01151 Special Provisions – Price Adjustments.

(36) – MDOT 703.06 Type D Aggregate Subbase*

A. Method of Measurement: Placement of Type D aggregate subbase measured for payment shall be the number of cubic yards of Type D aggregate subbase placed as directed by the engineer and measured per the truck volume, complete and in place.
B. Basis for Payment:
    1. The contract unit price per cubic yard for placement of aggregate subbase shall constitute full compensation for all materials, labor and equipment necessary to complete this work including furnishing and transporting aggregate subbase gravel to the project site, preparing subgrade, placing, grading, compaction, dust control and all else incidental thereto for which payment is not provided under other items.

(37) – 1-1/2” Crushed Stone*

A. Method of Measurement: Placement of 1-1/2” crushed stone measured for payment shall be the number of cubic yards of 1-1/2” crushed stone placed as directed by the engineer and measured per the truck volume, complete and in place.
B. Basis for Payment:
    1. The contract unit price per cubic yard for placement of crushed stone shall constitute full compensation for all materials, labor and equipment necessary to complete this work including furnishing and transporting crushed stone to the project site, preparing subgrade, placing, grading, compaction, dust control and all else incidental thereto for which payment is not provided under other items.

(38) – Truck Large (Operator Included)*

A. Method of Measurement: Truck large (operator included) will be measured by the hour to the nearest ¼-hour. Time spent moving to and from the site within the project limits and from beyond the project limits, servicing, maintaining, and changing attachments will not be measured for payment.

B. Basis of Payment:

1. The accepted quantities of truck large will be paid for at the contract unit price per hour. Payment shall include operators, fuel, grease, oil, and other incidentals necessary to operate the excavator.
2. No separate payment will be made to direct work done under these items, except when called for on the Plans. Payment will then be made under Pay Item 36. Payment made will be limited to the grade of foreman and limited to hours spent in actually supervising equipment operators. Such related costs as use of pickup truck, meal and room expenses, benefits, insurance, retirement, travel time, and overtime will not be paid for separately but will be considered incidental to the unit price bid for this pay item.
3. Payment for all purpose excavator will be based on experienced operators, familiar with the work being performed. Operators, determined to be below normal acceptable standards of production or workmanship, will be paid for at reduced hours as determined by the Resident.

(39) – All Purpose Excavator (Operator Included)*

A. Method of Measurement: All-purpose excavator will be measured by the hour to the nearest ¼-hour. Time spent moving to and from the site within the project limits and from beyond the project limits, servicing, maintaining, and changing attachments will not be measured for payment.

B. Basis of Payment:

1. The accepted quantities of all-purpose excavator will be paid for at the contract unit price per hour. Payment shall include operators, fuel, grease, oil, and other incidentals necessary to operate the excavator.
2. No separate payment will be made to direct work done under these items, except when called for on the Plans. Payment will then be made under Pay Item 36. Payment made will be limited to the grade of foreman and limited to hours spent in actually supervising equipment operators. Such related costs as use of pickup truck, meal and room expenses, benefits, insurance, retirement, travel time, and overtime will not be paid for separately but will be considered incidental to the unit price bid for this pay item.
3. Payment for all purpose excavator will be based on experienced operators, familiar with the work being performed. Operators, determined to be below normal acceptable standards of production or workmanship, will be paid for at reduced hours as determined by the Resident.

(40) – Hand Labor Straight Time*

A. Method of Measurement: Hand labor straight time will be measured by the hours of work actually performed, measured to the nearest ¼ hour.

B. Basis of Payment: The accepted quantity of hand labor straight time will be paid for at the contract unit price per hour. The contract unit price shall be full compensation for hiring, transporting, supervising, payment of workmen's compensation, social security taxes, unemployment insurance, overtime, benefits and for all hand tools, protective clothing, and all incidentals necessary to complete the work.

(41) – Foreperson*

A. Method of Measurement: Foreperson will be measured by the hour to the nearest 1/4-hour.

B. Basis of Payment: The accepted quantities of labor will be paid for at the contract unit price per hour. The contract unit price shall be full compensation for hiring, transporting, supervising, payment of workmen's compensation, social security taxes, unemployment insurance, overtime, benefits, and for all protective clothing and all incidentals necessary to complete the work.

(42) – Test Pit Excavation and Backfill

A. Method of Measurement: The quantity to be paid for under this item shall be the actual number of test pits performed as authorized by the Engineer. Test pits for the contractor's benefit, to establish in place field soils density, groundwater conditions, or requirements for dewatering, or for reasons listed in Section 1.7 are incidental and will not be paid for using this Bid Item.

B. Basis of Payment: Test pit excavations shall be paid for at the unit price per each test pit as stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, tools, and equipment; for sawcut and removal of pavement, excavation (except ledge excavation), dewatering, backfill including aggregate base and subbase [NTS - ADJUST IF PAYING FOR AGGREGATE BASE AND SUBBASE SEPARATELY], compaction, temporary pavement; providing the test pit result information to the Engineer and for all other work and expenses incidental thereto for which payment is not provided under other items.

END OF SECTION

SECTION 01151

SPECIAL PROVISIONS – PRICE ADJUSTMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work under this Contract includes price adjustments for hot mix asphalt (also known as liquid asphalt).

B. Base Prices for hot mix asphalt under this Project are defined as the Price presented on the Maine Department of Transportation (MDOT) website. MDOT posts liquid asphalt prices on their website at:

http://www.maine.gov/mdot/contractors/bidderinfo/asphalt.shtml

Prices may not be available for the month in which the project is Bid at the time the project is advertised for Bid. The Base Price will be confirmed after Contract Award and before the first monthly payment requisition. For this project, the recent Base Price History for the specified items is presented within Table 1.

Table 1 –Base Price History

Description	Unit	4/24/2023	5/30/2023	6/19/2023
Liquid Asphalt	per ton	$660.00	$657.50	$662.50

N/A = Not Available

1.2 MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT MIXTURES

A. Method of Measurement: The quantity of the hot mix asphalt (HMA) mixtures will be measured under the respective Bid Item(s) in the Contract. The Price Adjustment will be made based on the quantity installed during the monthly payment period.

B. Basis of Payment: The Contract Price of the hot mix asphalt (HMA) mixtures will be paid under the respective Bid Item(s) in the Contract. The Contract includes an allowance to be used for all price adjustments including price adjustments for Hot Mix Asphalt Mixtures. The Price Adjustment will be based on the variance in price for the liquid asphalt component only from the Base Price to the Period Price only. The adjustment shall not include transportation or other charges. Since the posted Prices may not be available before the end of the active work month for inclusion in the Payment Application, the Price Adjustment will be assessed in the following month's Payment Application once pricing information for the period is available.

1. Base Price: The Base Price of Hot Mix Asphalt Mixtures will be the price as indicated on the MDOT website (http://www.maine.gov/mdot/contractors/bidderinfo/asphalt.shtml) for the month in which the contract was bid , which includes State Tax.
2. Period Price: The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month as posted on the MDOT website.

3. The Contract Price of the hot mix asphalt mixture will be paid under the respective item in the Contract. The Price Adjustment, as herein provided, upwards or downwards, will be made after the work has been completed and accepted, using the monthly period price for the month during which the work was performed and will be paid under the Price Adjustment Allowance in the Payment Application.
4. The Price Adjustment applies only to the actual virgin liquid asphalt content in the mixture placed on the job in accordance with the Contract Documents and as measured for the Hot Mix Asphalt Work Item.
5. The Price Adjustment will be determined using the following formula; the quantity of tons of hot mix asphalt mixture placed during each monthly period multiplied by the liquid asphalt content percentage multiplied by the variance in price between Base Price and Period Price of liquid asphalt. The liquid asphalt content, for the purpose of this adjustment, will be 5.5% (0.055) for each ton of bituminous concrete mixture.
6. The Price Adjustment will be paid only if the variance from the Base Price is 10% or more for a monthly period. The complete adjustment will be paid in all cases for either a 10% upward or 10% downward adjustment.
7. No Price Adjustment will be allowed beyond the Substantial Completion Date of this Contract, unless an extension of time beyond the contractual Substantial Completion Date has been issued and approved by the Owner.
8. The Contractor warrants that its bid prices for this Contract include no allowances for any contingency to cover increased costs for items which adjustment is provided herein.
9. The City will not be responsible for computing or otherwise indicating price adjustments except to the prime contractor, which must make its own arrangements with subcontractors.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1 PREPARATION OF MONTHLY PAYMENT APPLICATION

A. Payment Applications shall be submitted monthly. Table 2 presents an example calculation for determining Price Adjustments for the specified items.

Note: In this example, the Payment Application for June will be submitted at the end of June or early in July and shall include all of the work performed during the month of June and Price Adjustments for the work performed in May.

For this example, 400 tons of full-width final bituminous pavement over 1,000 feet of roadway were completed in May.

Table 2 – Example Project Related Prices				
Description	Unit	Base Price	May 2013	June 2013
Hot Mix Asphalt	per ton	$600.00	$675.00	N/A

Based on the example Prices in Table 2, an assessment of whether or not Price Adjustments will be paid for this example is presented in Table 3.

Table 3 – Example Price Adjustment Assessment					
Item	Base Price	Period Price	Price Difference	% Change	Price Adjustment Required
Hot Mix Asphalt	$600.00	$675.00	$75.00	12.5%	Yes, >10%

As indicated in Table 3, Price Adjustments for this example would be required for Hot Mix Asphalt if work items were performed during the Month of May.

The following asphalt escalator formula by MDOT shall be used for calculating the price adjustment:

Price adjustment = (# of tons) x (price difference of period vs base price) x (% asphalt factor for that item).

Where "% asphalt factor" is equal to the average factor used for a particular HMA mix as found in Maine DOT Special Provision 108.4.1. Reference shall be to MaineDOT Standard Specifications, March 2020, incorporating revisions made up to December 12, 2020.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.

B. Related work described elsewhere: The Contractor's relations with their subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and are not part of project meetings content.

1.2 QUALITY ASSURANCE

A. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS

A. Agenda items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.

B. Minutes: The Engineer will compile minutes of each project meeting and will furnish a copy to the Contractor. The Contractor may make and distribute such other copies as they wish.

PART 2 - PRODUCTS

(No products are required in this Section.)

PART 3 - EXECUTION

3.1 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held monthly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

A. Meetings will be held at the job site in or at a Town designated facility, unless the Owner and/or Engineer determine that virtual meetings are applicable and appropriate for any reason (e.g., COVID, Safety and Health Plan, etc.).

1. If meetings are required by Owner/Engineer to be held virtually, Engineer will host the meetings via Microsoft Teams. All required meeting attendees are responsible for providing hardware necessary to view, share, be heard and hear content of the meeting.

3.3 PRECONSTRUCTION MEETING

A. Preconstruction meeting will be scheduled within twenty days after the Effective Date of the Agreement, but before the Contractor starts work at the site. Provide attendance by authorized representatives of the Contractor and all major subcontractors. The Engineer will advise other interested parties and request their attendance.

B. Minimum agenda: Distribute data on, and discuss:
   1. Identification of key project personnel for Owner, Engineer, Contractor, funding/regulatory Agencies.
   2. Responsibilities of Owner, Engineer, Resident Project Representative, Contractor.
   3. Channels and procedures for communications.
   4. Construction schedule, including sequence of critical work.
   5. Easements, permits.
   6. Contract Documents, including distribution of required copies of original documents and revisions.
   7. Processing of Shop Drawings and other data submitted to the Engineer for review.
   8. Processing of field decisions and Change Orders.
   9. Rules and regulations governing performance of the Work, including funding/regulatory Agency requirements.
   10. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters.

3.4 PROJECT MEETINGS

A. Attendance: To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The Superintendent shall attend. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved.

B. Minimum agenda:
   1. Review, revise as necessary, and approved minutes of previous meeting.
   2. Review progress of the Work since last meeting, including status of submittals for approval.
   3. Review schedule of work to be accomplished prior to next meeting.
   4. Discuss monthly partial payment request.
   5. Review status of change order requests and Work Directive Changes.
   6. Identify problems which impede planned progress.
   7. Develop corrective measures and procedures to regain planned schedule.
   8. Complete other current business.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES – SHORT FORM

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Within ten (10) days after the effective date of the Agreement between Owner and Contractor submit to the Engineer an estimated progress schedule as specified herein.

B. Specific Schedule Considerations: The parking lot shall be made usable with a minimal cover of the base pavement and temporary striping and construction activity restricted during the months of July and August. Further work stoppages should be noted during the annual Pumkin Fest activities slated for October 3 -7, 2024.

C. Form of Schedules:
   1. Narrative: Completely describe the construction methods to be employed.
   2. Network Analysis System:
      a. Provide a separate horizontal schedule line for each trade or operation and show concurrent and preceding activities.
      b. Present in chronological order the beginning of each trade or operation showing duration and float time.
      c. Scale: Identify key dates and allow space for updating and revision.
   3. Mathematical Analysis:
      a. A mathematical analysis shall accompany the network diagram. A computer printout will be acceptable.
      b. Information shall be included on activity numbers, duration, early start, late start, etc. and float times.

D. Content of Schedules:
   1. Provide complete sequence of construction by activity:
      a. Shop Drawings, Project Data and Samples:
         i. Submittal dates.
         ii. Dates reviewed copies will be required.
      b. Decision dates for:
         i. Products specified by allowances.
         ii. Selection of finishes.
      c. Estimated product procurement and delivery dates.
      d. Dates for beginning and completion of each element of construction.
   2. Identify work of separate phases and logically grouped activities.
   3. Show the projected percentage of completion for each item of work as of the first day of each month.
   4. Provide separate sub-schedules, if requested by the Engineer, showing submittals, review times, procurement schedules, and delivery dates.
   5. Schedule sheets shall be printed in color on 24”x36” paper, unless a smaller size paper is allowed by the Engineer.

E. Updating:
   1. Show all work activities including those already complete.

2. Show all changes occurring since previous submission.
3. Indicate progress of each activity, show completion dates.
4. Include:
    a. Major changes in scope.
    b. Activities modified since previous updating.
    c. Revised projections due to changes.
    d. Other identifiable changes.
5. Provide narrative report, including:
    a. Discussion of problem areas, including current and anticipated delay factors.
    b. Corrective action taken or proposed.
    c. Description of revisions that may affect schedules.
    d. Description of activities to be performed in the next 6-week period.
    e. Updated list of key shop drawings, project data and samples to be submitted in the next 6-week period.

1.2 SUBMITTALS

A. Submit updated schedules with each progress payment request.
B. Submit 4 copies of initial and updated schedules to the Engineer.

END OF SECTION

SECTION 01320

SAFETY AND HEALTH PLAN

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work, as outlined herein and in the General and Special Conditions of the Contract Documents. Within 10 days after the effective date of the Agreement between Owner and Contractor, submit to the Engineer a Safety and Health Plan as specified herein. Refer to submittals section below.
2. Contractor shall comply with all applicable Laws and Regulations related to the safety of persons or property, or for the protection of persons or property from damage, injury, illness, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
3. Contractor shall designate a qualified and experienced safety representative (OSHA defined "Competent Person") at the site whose duties and responsibilities shall be the prevention of accidents and maintaining and supervising of safety precautions and programs, including a "Job Hazards Analysis".
4. The Contractor shall be solely responsible to provide all labor, equipment, and utilities sufficient to ensure no construction noise, particulates, or odors, are allowed to accumulate to levels which adversely affect health or work in, or near the construction area.

B. Content of Safety and Health Plan:

1. Prepare complete safety and health plan in accordance with the requirements of CFR Title 29 Part 1926 - Safety and Health Regulations for Construction.
    a. Provide documentation that Contractor's hazardous communication program is up to date.
    b. Provide documentation that Contractor's safety training is up to date.
    c. Prepare a project specific Safety and Health Plan addressing construction safety and protection, including but not limited to excavations, fall protection, egress, as well as provisions for construction in hazardous environmental conditions, confined space entry, electrically-classified spaces, chemical storage/handling, biological hazards, etc., at the project site.

C. Updating:

1. Contractor shall be responsible for updating the Safety and Health Plan as appropriate throughout the course of the construction period.

1.2 SUBMITTALS

A. Submit the Contractor's site-specific Safety and Health Plan to the Engineer, in accordance with Section 01340. Submit hardcopy submittals, if required.

B. Submit updated Safety and Health Plans as necessary during the course of the project.
C. The Safety and Health Plan is provided "for information only" to inform the Owner, Engineer and Resident Project Representative of the project specific safety program requirements; however, if the Safety and Health Plan incomplete (e.g., missing elements relevant to the project work), inadequate (e.g., outdated qualifications) or not project-specific, it will be returned "revise and resubmit". Delays related to an incomplete Safety and Health Plan are the responsibility of the Contractor.
D. The Contractor will overview the plan with the Owner (and staff), Engineer (and Resident Project Representative) prior to work beginning at the project site, and subsequently when/if the safety plan is updated.
E. Contractor's most current Safety and Health Plan shall be available at the construction site throughout the construction project.

1.3 ON-SITE COORDINATION MEETINGS

A. Contractor shall review key aspects of Safety and Health Plan at the Pre-Construction Meeting, and subsequent on-site safety informational meeting.
B. Contractor shall report to Engineer and Owner at each progress meeting concerning compliance with the Safety and Health Plan for the most recent construction period and new considerations and requirements for the upcoming period.
C. Contractor shall hold weekly on-site coordination meetings with Resident Project Representative and Owner to ensure that Owner's staff is aware of key Safety and Health Plan requirements of the current phase of construction.

END OF SECTION

SECTION 01340

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Submit all shop drawings, operations and maintenance manuals, Manufacturers' certificates, project data, and samples required by the Specifications.

B. Related Work Specified Elsewhere:
   1. Construction Schedules: Section 01310
   2. Project Record Documents: Section 01720
   3. General Conditions: Section 00700.

C. Submittals: This project shall utilize:
   1. Submittals – Electronic via Web-Based Software
      a. The Contractor shall submit to the Engineer an electronic submittal of shop drawings and O&M Manuals in portable document format (PDF) transmitted via email. The Engineer shall return an electronic PDF of the submittal review comments to the Contractor through email. The electronic submittals shall serve as the electronic record of the project.

1.2 SHOP DRAWINGS

A. Shop Drawings are required for each and every element of the work.

B. Shop Drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the Contractor, their subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.

C. The Contractor shall provide a completed Contractor Submittal Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of every shop drawing and signed by the Contractor and Manufacturer (where applicable). Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the work.
   1. Each shop drawing submittal shall include a complete copy of the relevant specification section markup up to reflect “compliance” or “deviation” on an item-by-item basis.

D. Shop Drawings shall be submitted as a complete package by specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials and samples associated with each specification section be included as a single submittal for the Engineer's review. Any deviation from this requirement, shall be requested in writing with an anticipated shop drawing breakdown/schedule prior to any associated submittal. An exception to this requirement are shop drawings for reinforcing steel, miscellaneous metals and structural steel, which shall be submitted separately for each structure unless otherwise permitted by the Engineer.

E. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.

F. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.

G. Until the necessary review has been made, the Contractor shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.

H. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from their subcontractors and returning reviewed drawings to them. Shop drawings shall be formatted to standard paper sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 24 inches by 36 inches; (b) 11 inches by 17 inches, and (c) 11 inches by 8-1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein may be returned for resubmittal without being reviewed.

I. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by their subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to confirm that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer.

J. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in the transmittal. Shop Drawings that contain significant deviations that are not brought to the attention of the Engineer may be subject to rejection.

K. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, Contractor shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications.

L. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such review and checking, as determined

by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be required by the Engineer in an accurate, complete, and timely fashion. Resubmittals for the sole purpose of providing written responses to review comments will not be considered a resubmittal counting towards the two submission limit.

M. Shop Drawings that include drawings or other material that is illegible or too small may be returned without review.

N. American Iron & Steel certifications must be submitted with the initial shop drawing.

1.3 SAMPLES

A. The Contractor shall submit samples when requested by the Engineer to establish conformance with the specifications, and as necessary to define color selections available. Submittals of “samples” shall be documented through the electronic submittal process by including a photograph of the item(s) and indicating the date the sample was mailed and/or delivered.

1.4 OPERATION AND MAINTENANCE MANUALS

A. Operation and Maintenance (O&M) Manuals are required for certain elements of the project, as specified herein.

B. The Contractor shall provide a completed Operation and Maintenance Manual Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of every Manual and signed by the Contractor and Manufacturer.

C. Each hard copy of an O&M Manual shall be provided in a stand-alone binder or shall be suitable for insertion into a 3-ring binder. Include the General Contractor's and Manufacturer's representative's contact information on the front cover. O&M manuals must be appropriate for the project and customized for the project. If a Manufacturer's standard O&M manual is included in the submittal, all non-applicable content must be removed or crossed out.

D. O&M Manuals shall contain the following operational information:

1. Safety Precautions: List personnel hazards, equipment or product safety precautions for all operating conditions.
2. Operator Prestart: Include all procedures required to set up and prepare each system, equipment or component for use.
3. Startup Procedures: Provide a narrative description for all startup operating procedures, include all control sequences.
4. Shutdown Procedures: Provide a narrative description for all shutdown operating procedures, include all control sequences.
5. Post-Shutdown Procedures: Provide a narrative description for all post-shutdown operating procedures, include all control sequences.
6. Normal Operating Procedures: Provide a narrative description of normal operating procedures. Include control diagrams with data to explain operation and control of systems and specific equipment.
7. Emergency Operations: Include emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable

contingencies. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.

8. Operator Service Requirements: Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, alignment, spare parts installation and gage reading or recording.
9. Environmental Conditions: Include a list of environmental conditions (temperature, humidity, and other relevant data) which are best suited for each product or piece of equipment and describe conditions under which the equipment should not be allowed to run.

E. O&M Manuals shall contain the following maintenance information:

1. Lubrication Data: Include a table showing recommended lubricants for specific temperature ranges and applications. Also, include charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, capacities and a lubrication schedule showing service interval frequency
2. Preventative Maintenance Plan: Include the manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation as well as to ensure minimization of corrective maintenance and repair. Provide the manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide the manufacturer's specified frequency and procedures for each separate operation.
3. Troubleshooting Guides: Include recommendations on procedures and instructions for correcting problems and making repairs. Provide step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.
4. Wiring and Control Diagrams: Provide Wiring diagrams and control diagrams. All diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to the actual installation numbering.
5. Maintenance and Repair Procedures: Include instructions and list the tools required to restore products and/or equipment to proper conditions or operating standards.
6. Removal and Replacement Instructions: Include step-by-step procedures, list required tools/supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.
7. Spare Parts and Supply Lists: Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration shall be required for facilities at

remote locations. List spare parts and supplies that have a long lead times to obtain.

8. Corrective Maintenance Work Hours: Include the manufacturer's projection of corrective maintenance work-hours including craft requirements by type of craft. Corrective maintenance that requires participation of the equipment manufacturer shall be identified and tabulated separately.

F. O&M Manuals shall contain the following additional information:

1. Parts Identification: Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirements to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items.
   a. When illustrations omit a part number and description, both the illustration and a separate listing shall show the index, reference, or key number which shall cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as a master parts catalog, in accordance with the manufacturer's standard commercial practice.
2. Warranty Information: List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force. Include warranty information for all primary components included in product systems.
3. Personnel Training Requirements: Provide information available from the manufacturers to use in training designated personnel to operate and maintain the equipment and systems properly.
4. Testing and Special Tools: Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.
5. Contractor Information: Provide a list that includes the name, address, and telephone number of the General Contractor and each subcontractor installing the respective product or equipment. Include local representatives and service organizations most convenient to the project site. Provide the name, address, and telephone number of the product or equipment manufacturers.
6. Written confirmation from the manufacturer that the Contractor has coordinated the equipment One Year Service Call in accordance with specification Section 01800, par. 1.1, A, 2.

1.5 MANUFACTURER'S CERTIFICATES

A. Prior to accepting the installation, the Contractor shall submit manufacturer's certificates for each item specified.

B. Such manufacturer's certificates shall state that the equipment has been installed under either the continuous or periodic supervision of the manufacturer's authorized representative, that it has been adjusted and initially operated in the presence of the

manufacturer's authorized representative, and that it is operating in accordance with the specified requirements, to the manufacturer's satisfaction. All costs for meeting this requirement shall be included in the Contractor's bid price.

1.6 SUBMISSION REQUIREMENTS

A. Accompany submittals with a transmittal cover sheet, containing:
   1. Date.
   2. Project title and number.
   3. Contractor's name and address.
   4. The sequential shop drawing number for each shop drawing, project data and sample submitted shall be:
      a. Specification Section number followed by a dash and then a sequential number beginning with 01 (e.g., 16000-01).
      b. Under limited situations when additional different pieces of equipment are submitted under the same specification section, those submittals shall be numbered sequentially (e.g. 05500-01, 05500-02, 05500-03, etc.).
      c. Resubmittals shall include an alphabetic suffix after the corresponding sequential number (e.g., 16000-01A).
      d. O&M submittals shall be numbered with the Specification Section number followed by a dash, the letters “OM”, another dash, and then a sequential number beginning with 01 (e.g. 16000-OM-01). Resubmittals of O&Ms shall include an alphabetic suffix after the corresponding sequential number (e.g. 16000-OM-01A).
   5. Notification of deviations from Contract Documents.
   6. Other pertinent data.

B. A completed Contractor Submittal Certification Form shall be attached to each hardcopy and electronic PDF of each shop drawing and must include:
   1. Project name
   2. Specification Section and sequential number with alphabet suffix for resubmittal
   3. Description
   4. Identification of deviations from Contract Documents.
   5. Contractor's stamp, initialed or signed, certifying review of the submittal, verification of field measurements and compliance with Contract Documents.
   6. Where specified or when requested by the Engineer, manufacturer's certification that equipment, accessories and shop painting meet or exceed the Specification requirements.
   7. Where specified, manufacturer's guarantee.

C. Additional Requirements for Electronic Submittals:
   1. Each individual shop drawing or O&M submittal shall be contained in one PDF.
   2. The first page of the PDF shall be the Contractor Submittal Certification Form as described above.
   3. The electronic PDF shall be **exactly** as submitted in the hardcopy.
   4. The electronic PDF shall include an electronic table of contents that is bookmarked for each section of the submittal.
   5. The electronic PDF shall be configured such that is fully searchable.

6. PDF versions of 24x36 drawings shall be converted to 24 x 36 PDFs so as not to lose the clarity of the original drawing.
7. Electronic PDF submittals that are not submitted in accordance with the requirements stated above will not be reviewed by the Engineer.
8. Electronic submittals shall be transmitted via the protocol established in Part 1 above.

1.7 RESUBMISSION REQUIREMENTS

A. Revise initial submittals as required and resubmit as specified for initial submittal.
B. Indicate on submittals any changes which have been made other than those required by Engineer. All renumbering of shop drawings, relabeling of individual pieces or assemblies or relocating of pieces or assemblies to other Drawings within the submittal shall be clearly brought to the attention of the Engineer. If relabeling of individual pieces or assemblies has taken place, the labels from the previous submittal shall be indicated to assist in comparing the original and resubmitted shop drawing.
C. All resubmittals shall include a summary of the previous submittal review comments with the vendors' written response as to how the previous comments were addressed.

1.8 ENGINEER'S REVIEW

A. The review of shop and working drawings hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.
B. The Engineer's review comments will be summarized on a Submittal Review Form, which includes an action code. A description of each action code is provided below.
    1. No Exceptions Taken (Status 0 on shop drawing log). The shop drawing complies with the Contract Document requirements. No changes or further information are required. Where appropriate, the submittal review form will be used to alert the Contractor, Owner and Field personnel of remaining items within that specification section that still needs to be submitted.
    2. Make Corrections Indicated (Status 1 on shop drawing log). The shop drawing complies with the Contract Document requirements except for minor changes, as indicated. Engineer requires that all comments will be addressed by the Contractor, unless otherwise notified in writing prior to execution of the relevant work.
    3. Conditional to Remarks (Status 2 on shop drawing log). The shop drawing potentially complies with the Contract Document requirements, contingent upon satisfactory resolution of review comments. Remarks will explicitly list what information needs to be resubmitted. Resubmittal from the Contractor should include a cover letter or summary which indicates how each review comment has been addressed. **This action code will not be used, or will be sparingly used, for electronic submittals.**
    4. Revise and Resubmit (Status 3 on shop drawing log). The shop drawing does not comply with the Contract Document requirement as submitted, but may with changes indicated and/or submission of additional information. The entire package must be resubmitted with the necessary information and a cover letter

which indicates how each review comment has been addressed and where to find the information in the resubmittal.

5. Rejected (Status 4 on shop drawing log). The shop drawing does not comply with the Contract Document requirements, for the reasons indicated in the remarks, and is unacceptable.
6. For Information Only (Status 5 on shop drawing log). The shop drawing review was for information only.
7. In Review (Status 6 on shop drawing log). The shop drawing is currently under review.

CONTRACTOR SUBMITTAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

SHOP DRAWING NUMBER: _____ (SPECIFICATION SECTION OR DRAWING NO:) - _____ (SEQUENTIAL NUMBER (& ALPHA SUFFIX FOR RESUBMITTAL))

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the material and/or equipment meets or exceeds the project specification requirements with

☐ NO DEVIATIONS

or

☐ A COMPLETE LIST OF DEVIATIONS AS FOLLOWS[a]:

_____
_____
_____
_____

By: _____ Contractor[b] By: _____ Manufacturer[c]

Date: _____ Date: _____

a Any deviations not brought to the attention of the Engineer for review and concurrence shall be the responsibility of the Contractor to correct, if so directed.
b Required on all submittals
c When required by specifications Page ___ of ___

General Contractor's Stamp

OPERATIONS AND MAINTENANCE MANUAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

O&M NUMBER: _____ SPECIFICATION SECTION OR DRAWING NO: - OM- _____ SEQUENTIAL NUMBER (& ALPHA SUFFIX FOR RESUBMITTAL)

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced operations and maintenance manual has been reviewed by the undersigned and I/we certify that the manual is customized as needed for this project, is suitable for mounting in a 3-ring binder, and contains the following items:

- ☐ Table of Contents
- ☐ Contractor and Manufacturer Contact Information
- ☐ Preventative Maintenance Schedule and Summary
- ☐ Removal and Replacement Instructions
- ☐ Lubrication Schedule
- ☐ Troubleshooting Information
- ☐ Warranty Information
- ☐ Rebuild Information for All Components
- ☐ Startup, Operation and Shutdown Procedures
- ☐ Normal and Emergency Operations
- ☐ Safety Procedures and Precautions
- ☐ Shop Drawings corrected to As-Built Conditions
- ☐ Personnel Training Requirements
- ☐ Project-Related Design Data
- ☐ Serial Numbers
- ☐ Maintenance and Repair Procedures
- ☐ Wiring and Control Diagrams
- ☐ Equipment Drawings & Schematics
- ☐ Equipment Performance Curves
- ☐ Parts and Service Contact Information
- ☐ Manufacturer's Contact Information
- ☐ Emergency Operations Plan
- ☐ List of All Component Part Numbers
- ☐ List of Spare Parts Supplied
- ☐ Testing Equipment & Special Tools
- ☐ Other System Specific Information

By: _____ By: _____
Contractor[a] Manufacturer[b]
Date: _____ Date: _____

[a] Contact information shall include name, address and telephone number.
[b] Required on all Operation and Maintenance Manuals.
[c] When required by Specifications. Page ___ of ___

General Contractor's Stamp

PROCESS EQUIPMENT MANUFACTURER SUBMITTAL CERTIFICATION
(Divisions 11 and 14)

Owner:_____ Date: _____

_____

Project:

_____

_____

Contractor: _____

_____

Equipment Manufacturer: _____

_____

_____

Equipment: _____

As an authorized representative of the equipment manufacturer, the undersigned certifies that the equipment listed above conforms to the requirements of Section 11000, Part 1.3.K. The undersigned authorized representative of the manufacturer further certifies that the equipment manufacturer or supplier has: reviewed the Construction Documents, the intended installation by the Contractor, and the intended functional and operational conditions; determined all conditions to be acceptable; and found no conditions which would cause the warranty to be void; or the equipment to function improperly, or not meet the performance requirements.

_____ _____

(Authorized Representative of the Manufacturer) (Date)

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Pre-Construction Record: Contractor shall take digital photographs and video to obtain a visual record of the project area prior to beginning any work at the project site.
   2. Construction Progress: Contractor shall take a minimum of 30 ground-based digital photographs at monthly intervals in order to obtain a visual record of the project area.
   3. Post-Construction Record: Contractor shall take a minimum of 30 ground-based digital photographs of the project site after the work has been completed.
   4. Notify Engineer at least three (3) working days prior to photographing or videoing the project area so Engineer may, at their option, observe.

1.2 QUALITY

A. Pre-Construction Record: Quality shall be such that the condition of existing pavement, curbing, driveway entrances, sidewalks, walls, doors, equipment, piping, etc. can be readily determined. Pre-construction record photographs and videos shall be taken by the Contractor with the Engineer or RPR present.
B. Construction Progress: Quality shall be such that the progress of the work is satisfactorily documented. Construction progress photographs may be taken by a professional photographer or may be taken by the Contractor.
C. Post-Construction Record: Post-construction photographs may be taken by a professional photographer or may be taken by the Contractor.
D. Electronic files shall be high resolution digital images in *.jpeg format and shall not be compressed or downsized. Electronic files shall not be less 2MB in size.

1.3 SUBMITTALS

A. Pre-Construction Record:
   1. Submit electronic pre-construction photographs/videos in accordance with Section 01340 prior to initiating any work on-site.
B. Construction Record:
   1. Submit electronic construction record photographs/videos in accordance with Section 01340 concurrent with the monthly payment requisition.
C. Post-Construction Record:
   1. Submit electronic post-construction record photographs in accordance with Section 01340 prior to final payment requisition.
D. The quality of the photos and video are subject to approval by the Engineer.
E. Photographs and videos taken for the project and submitted are released to the Owner and Engineer for reproduction and use for records retention, governmental, commercial, and marketing purposes.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. General Quality Control.
B. Workmanship.
C. Manufacturer's Instructions.
D. Manufacturer's Certificates.
E. Manufacturer's Field Services.
F. Testing Laboratory Services.

1.2 RELATED REQUIREMENTS

A. Section 00700 - General Conditions: Inspection and testing required by governing authorities.
B. Section 01340 - Submittals: Submittal of Manufacturer's Instructions
Section 02200 - Earthwork
C. Section 02513 – Bituminous Concrete Paving

1.3 QUALITY CONTROL

A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

1.4 WORKMANSHIP

A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
B. Perform work by persons qualified to produce workmanship of specified quality.
C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.5 MANUFACTURERS' INSTRUCTIONS

A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

1.6 MANUFACTURERS' CERTIFICATES

A. When required by individual Specifications Section, submit manufacturer's certificate that products meet or exceed specified requirements.

1.7 MANUFACTURERS' FIELD SERVICES

A. When specified in respective Specification Sections, require supplier and/or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
B. Representative shall submit written report to Engineer listing observations and

recommendations.

1.8 TESTING LABORATORY SERVICES

A. Owner will employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services wherever an Independent Testing Laboratory is required by individual specification sections listed in paragraph 1.2 above, unless otherwise indicated.

B. Services will be performed in accordance with requirements of governing authorities and with specified standards.

C. Reports will present observations and test results and indicate compliance or non-compliance with specified standards and with Contract Documents. Independent Testing Laboratory will submit one copy of each report directly to each of the following: Engineer, Resident Project Representative, Contractor. Reports will be submitted within 5 days of obtaining test results. If test results indicate deficiencies, Independent Testing Laboratory shall telephone or email results to Engineer, Resident Project Representative and Contractor within 24 hours.

D. Contractor shall cooperate with Independent Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.

E. Contractor shall notify Engineer at least one full working day prior to needing testing laboratory services. Engineer will notify Independent Testing Laboratory. If scheduled tests or sampling cannot be performed because the work is not ready as scheduled, testing costs associated with the delay will be determined by Engineer and invoiced by Owner to Contractor. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price. If adequate notice is not provided, Contractor shall suspend work on that portion of the Project until testing can be performed. Such suspension will not be grounds for a claim against the Owner for delay, nor will it be an acceptable basis for an extension of time.

F. Payment for Independent Testing Laboratory services shall be as follows:

1. General: Where testing is the Owner's responsibility, payment will be made as stated below unless other requirements are given in Specification Sections. Testing which is the responsibility of the Contractor will be considered an incidental item unless otherwise indicated in Section 01150, Measurement and Payment.
2. Initial Testing: Owner will pay for initial tests.
3. Retesting: Costs of retesting due to non-compliance will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.
4. Contractor's Convenience Testing: Inspections and tests performed for Contractor's convenience will be paid for by Contractor.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01562

DUST CONTROL

PART 1 - GENERAL

1.1 DESCRIPTIONS

A. Work Included:

1. Furnish and apply water or calcium chloride on the road surfaces within the construction site, when required to control dust and when directed by the Engineer.
2. When dust control is not included as a separate item in the Contract, the work shall be considered incidental to the appropriate items of the Contract.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Water for Sprinkling:

B. Clean, free of salt, oil, and other injurious matter.

C. Calcium Chloride:

1. Meet the requirements of AASHTO M144.

PART 3 - EXECUTION

3.1 APPLICATION

A. Water:

1. Apply water by methods approved by the Engineer.
2. Use approved equipment including a tank with gauge equipped pump and spray bar.

B. Calcium Chloride:

1. Apply at a rate sufficient to maintain a damp surface but low enough to assure non-contamination of water courses.
2. Apply water prior to calcium chloride addition.

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Provide all materials and perform all work necessary to completely regulate traffic in the area of Work.
   2. Perform all work in such a manner as to provide safe passage at all times for the public and with a minimum of obstruction to traffic and parking.
   3. Do not close roads or streets to passage of the public without the permission of the proper authorities.

B. The local police department and/or the Maine Department of Transportation will decide if safe passage is being maintained and shall have the authority to require the Contractor to take any additional steps necessary to maintain safe passage. If the Authority furnishes an inspector on the job as a result of poor traffic control by the Contractor, the Contractor shall be responsible for all costs assessed by the Authority (State Highways).

C. Minimize the length of delays or traffic stoppage to the extent practicable. Maximum traffic stoppage time shall be 10 minutes.

D. Develop a project specific traffic control plan that meets the requirements of Manual of Uniform Traffic Control Devices (MUTCD) and any local and state requirements. Proposed Traffic Control Plan shall indicate signs/locations to be used. Traffic Control Plan submittal to the Engineer will be for general information only.

E. The Contractor's designated traffic control representative shall respond to all traffic safety complaints and be available to direct traffic control subcontractors the entire time work is occurring on site. If the designated representative is not on site for a period of time, another on site representative shall be designated by the Contractor for that period.

1.2 SCHEDULING WORK

A. During the Project Pre-Construction Meeting one Contractor representative will be designated as the coordinator between the Police Department and subcontracted traffic control.

B. Variable Message Signs notifying the public of pending road closure and/or construction must be in place seven days prior to road closure or as required by [insert appropriate state transportation authority].

C. Schedule all work so that two adjacent parallel streets are not closed to passage by the public at any one time, if at all possible.

D. Revise the plan of work if it will create a traffic hazard or an unreasonably long detour.

E. Do not start work in any new location without the permission of the Engineer.

F. Notify all police and fire departments of all scheduled detours and when streets are reopened.

PART 2 - PRODUCTS

2.1 WARNING SIGNS AND BARRICADES

A. Traffic control (plans, methods and devices) shall be as outlined in Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) as published by U. S. Department of Transportation, and any local and state requirements.

B. Provide adequate warning signs, barricades, signal lights, flaggers/uniformed police officers, and take other necessary precautions for the safety of the public.

C. Provide and illuminate suitable warning signs to show where construction, barricades or detours exist.

D. Provide digital message boards at appropriate locations as determined by the local police department and/or the [insert appropriate state transportation authority] to maintain safe passage of traffic and work zone.

E. Provide barricades of substantial construction and painted with a finish that increases visibility at night, as outlined in the MUTCD.

F. Keep signal lights illuminated at all barricades and obstructions from sunset to sunrise.

G. Maintain all necessary signs, barricades, lights, flaggers, crew and other safety precautions during authorized suspension of the Work, weekends, holidays or other times when the Work is not in progress.

H. Contractor shall make periodic inspection throughout the day of the traffic control patterns, methods, signs and other devices to ensure that they are properly placed.

2.2 UNIFORMED POLICE OFFICER

A. A uniformed police officer is a police officer (local, county or state) on regular or special duty dressed in uniform with the necessary high visibility vest and apparel needed for traffic control.

B. Arrange the police detail with the local Chief of Police, County Sheriff, or State Police Captain depending on jurisdiction.

2.3 FLAG PERSON

A. A flag person is a trained and certified individual assigned specifically to the task of directing traffic and is outfitted in the necessary high visibility vest and apparel needed for traffic control.

B. Flag persons shall be provided by the Contractor.

PART 3 - EXECUTION

3.1 DETOURS

A. Provide, identify and maintain suitable detours when the project, or any part thereof, is closed to public travel.

B. When the closed part of the project is reopened, restore the detour area and any other disturbed areas to the original condition.

3.2 INCONVENIENCE TO RESIDENTS OF VICINITY

A. Whenever a traveled way is closed, perform the Work in such a manner that local

travel, residents and businesses in the vicinity of the Work will be inconvenienced as little as possible.

B. Allow access to residents and abutting land owners along the project to driveways and other normal outlets from their property.

3.3 TRAFFIC CONTROL OFFICERS

A. Where required by the local, county or state police departments and/or when specified, traffic control officer shall be Uniformed Police Officers.

B. Where the local, county or state police departments do not wish to or are unable to furnish traffic control officers and/or when specified, the traffic control officers shall be flag person.

END OF SECTION

SECTION 01572

MAINE CONSTRUCTION GENERAL PERMIT (MCGP)

Construction activities to be performed under of this Project have been determined to require coverage under the Maine Construction General Permit (MCGP). The MCGP is based on the Federal National Pollutant Discharge Elimination System (NPDES) Stormwater program that applies nationwide. The Environmental Protection Agency (EPA) has delegated its authority to administer this program to the Maine Department of Environmental Protection (MEDEP). The program provides that certain discharges are not allowed unless they are licensed, and the MCGP authorizes the direct discharge of stormwater associated with construction activities to waters of the State.

Activity Under the MCGP, construction activities are defined as:
Construction involving one acre or more of disturbed area;

- Construction activity less than one acre that is part of a common plan of development (i.e. subdivision) of which is larger than one acre; or
- Any construction activity designated by the MEDEP based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the State.

Maine Regulations requires the Owner (or their authorized Applicant) to submit a Notice of Intent (NOI) and a Notice of Termination (NOT) to the appropriate MEDEP regional office listed on Section page 00830-2. For all Projects (other than Owner constructed projects) the Owner will authorize the Contractor, as Applicant, to submit the NOI, pay the NOI submittal fee and submit the NOT. The Authorized Representative for the Owner must be someone appointed by the Selectmen, Council or Trustees to sign and authorize the Applicant to submit the NOI.

1.1 NOTIFICATION PHASE:

A. Submit a Notice of Intent (NOI)

1. The Notice of Intent (NOI) for the MCGP is a one page form that is filed with the MEDEP. All construction activities, as defined in the General Permit, are required to submit an NOI (except for common plan of development projects that do not require a Site Law, Stormwater, or Land Use Regulation Commission (LURC) permit which instead are required to meet the Maine Erosion and Sedimentation Control Law).
2. The NOI must be filed and approved by MEDEP prior to any soil disturbance or construction. The NOI form provides information including, but not limited to:
    a. Name, address, telephone number of the Owner and Applicant
    b. Project location and detailed directions
    c. Size of the proposed disturbed area
    d. Brief description of the project and its purpose.
    e. Name of the waterbodies to which the disturbed area drains or the name of the municipality, if it drains to an MS4.

By signing the NOI, the Applicant certifies that the information is true and agrees to meeting the requirements of the MCGP, including the Basic Standards for erosion and sedimentation control; inspection and maintenance of any stormwater control practices; and housekeeping (ex. preventing fuel spills and controlling dust on the construction site). The Basic Standards are found in the Appendices of the MCGP.

Note that Maine's water quality laws 38 M.R.S.A. § 349 and Section 309 of the Clean Water Act provides for significant penalties where information is false or the permittee violates, either knowingly or negligently, permit requirements. Refer to the Maine Construction General Permit requirements for further definition on submittal requirements.

3. All NOI forms must be accompanied by a fee and the following documentation:
   a. A location map
      i. The location must be a copy of a portion of a 7.5 minute USGS topographic map or a Delorme Atlas map showing the site location and approximate boundaries.
   b. A site plan of the Project
      i. The site plan must show the locations of structures and roads, the extent of the disturbed area(s), pre-construction site topography, post-construction site topography, on-site adjacent surface waterbodies, and all erosion and sedimentation control measures to be used on site. The site plan must identify the location of downgradient vegetated buffers. Vegetated buffers are to be preserved wherever possible; however, if buffers cannot be retained, a written narrative explaining why must be included. In addition, all protected natural resources, such as wetlands, streams, or high water line ponds or coastal wetlands must be identified on the site plan. The site plan does not need to be prepared by a professional; however it must be legible and drawn to scale.
   c. An erosion and sedimentation (ESC) plan
      i. The ESC plan must contain permanent stabilization measures, installation details of proposed erosion control measures, seeding and mulching rates, and a construction schedule. The ESC plan must be designed by a professional. This plan and its details may be included on the site plan instead of as a separate submission.
   d. Photographs of the area to be developed
      i. Photographs must show the existing character and topography of the area proposed for development.
   e. Written approval from the Department of Inland Fisheries & Wildlife (IF&W), if the Project is located in an essential habitat area.
4. MEDEP has developed the attached form to be used by Applicant (Owner or Contractor) of construction activities when submitting an NOI. The form indicates all the information required and must be used in order for the NOI to be processed correctly. The Applicant (Owner and/or Contractor) of

construction activities must submit the completed NOI by certified mail or hand delivery to the MEDEP regional office serving the area where the project is located. The MEDEP regional office addresses are listed below:

Maine Department of Environmental Protection
Southern Maine Regional Office
312 Canco Road
Portland, ME 04103

Maine Department of Environmental Protection
Central Maine Regional Office
17 State House Station
Augusta, ME 04333-1107

Maine Department of Environmental Protection
Eastern Maine Regional Office
106 Hogan Road
Bangor, ME 04401

Maine Department of Environmental Protection
Northern Maine Regional Office
1235 Central Drive
Skyway Park
Presque Isle, ME 04769

5. The Application Fee required by the NOI shall be paid by the Applicant.
6. The NOI is deemed approved 14 calendar days after MEDEP receives the NOI and the Applicant can proceed unless notified by MEDEP to the contrary.

1.2 PERFORMANCE PHASE:

A. The Applicant (Owner or Contractor) must continue to comply with the Basic Performance Standards stated in Appendix A through C of the MCGP conditions and the ESC Plan until: (1) they no longer meet the definition of the Applicant (Owner or Contractor) of a construction activity or (2) the construction activity is complete, all disturbed soils have been finally stabilized, and temporary erosion and sediment controls have been removed. The Applicant (Owner or Contractor) then needs to submit a Notice of Termination (NOT) to inform MEDEP that permanent erosion control measures have been installed and are functioning properly.

1.3 PERMANENT STABILIZATION AND TERMINATION PHASE:

A. Submit Notice of Termination (NOT) - MEDEP has developed the attached form to be used by Applicant (Owner or Contractor) of construction activities when they submit a NOT. The NOT must be completed and submitted to MEDEP within 20 days of the completion of permanent stabilization. The NOT form provides information including, but not limited to:
   1. Name, address, telephone number of the Owner and Applicant
   2. Name, location, and description of project
   3. Permit number

4. Photographs of the completed site
5. Signed certification statement

B. The Applicant (Owner and/or Contractor) of construction activities must submit the completed NOI by certified mail or hand delivery to the MEDEP regional office serving the area where the project is located. The MEDEP regional office addresses are listed below:

Maine Department of Environmental Protection
Southern Maine Regional Office
312 Canco Road
Portland, ME 04103

Maine Department of Environmental Protection
Central Maine Regional Office
17 State House Station
Augusta, ME 04333-1107

Maine Department of Environmental Protection
Eastern Maine Regional Office
106 Hogan Road
Bangor, ME 04401

Maine Department of Environmental Protection
Northern Maine Regional Office
1235 Central Drive
Skyway Park
Presque Isle, ME 04769

C. The Applicant's authorization to discharge under the MCGP terminates at midnight on the day the NOT is signed.

D. Retention of Records - Following the termination of construction activities the Applicant (Owner or Contractor) must keep a copy of the Erosion and Sedimentation Control (ESC) Plan and any forms, submissions, reports or other materials required by the MCGP for a period of at least three years following permanent stabilization. The record retention period may be extended by request of the MEDEP.

E. Accessibility - Employees and agents of the MEDEP may enter any property at reasonable hours to determine compliance. The permittee must retain a copy of the ESC and the General Permit at the construction site and make it accessible to the MEDEP other government officials for the duration of the project. In addition, the ESC and General Permit must be made available for use by any contractors on site undertaking work regulated in the General Permit.

END OF SECTION

NOTICE OF INTENT TO COMPLY WITH MAINE CONSTRUCTION GENERAL PERMIT

PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

Name of Applicant (Owner):		**Applicant Mailing Address:**			
Town/City:		**State:**		**Zip Code:**	
Daytime phone: (with area code)		**Email if available:**		**Name of Agent:**	
Project Location: (Town/City):		**UTM Northing: (if known)**		**UTM Easting: (if known)**	
Map #:		**Lot #:**		**Size of disturbed area proposed:**	
Creating a common plan of development or sale?	**Yes**	**No**	**Part of a larger project?**	**Yes**	**No**
Name of waterbody(ies) to which the disturbed area drains, or name municipality if drains to an MS4:					
Does site drain to an Impaired Waterbody (C)? If so, give name:					
Detailed directions to site, including address if available:					
Description of project and its purpose:					

I am filing notice of my intent to carry out work which meets the requirements of the Construction General Permit (effective 3/10/03). I have a copy of the Construction General Permit. I have read and will comply with all of the standards. I have attached all the required submittals. *Notification forms cannot be accepted without the necessary attachments.*

- ❑ ALL: A check (non-refundable) made payable to: "Treasurer, State of Maine." **See DEP fee schedule for correct fee**. You must know # of acres being permitted to determine the fee**.**
- ❑ ALL: A U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.
- ❑ ALL: Drawing of the proposed activity (site plan).
- ❑ ALL: An ESC plan.
- ❑ IF this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.
- ❑ IF any construction activity will occur in essential habitat, attach written approval from the Dept. of Inland Fisheries & Wildlife.

I authorize staff of the Departments of Environmental Protection to access the project site for the purpose of determining compliance with the general permit. I also understand that ***this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.***

Signature of Applicant:		**Date:**	

<u>*Keep the bottom copy as a record of permit*</u>. Send the form with attachments via certified mail to the Maine Dept. of Environmental Protection **at the appropriate regional office.** The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Check with DEP Staff to determine the expiration date on this permit . **Work carried out in violation of any standard is subject to enforcement action.**

OFFICE USE ONLY	Ck.#		Staff	Staff	
NOI #	FP	Date	Acc. Date	Def. Date	After Photos

NOTICE OF TERMINATION for use with CONSTRUCTION GENERAL PERMIT

PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

Name of applicant:				**Name of owner or lessee:**			
Mailing Address:				**Town/City:**			
State:		**Zip Code:**		**Daytime phone: (with area code)**		**Email if available:**	
Name/description of project:							
				Permit number (if known)			
Name of waterbody(ies) to which the disturbed area drains, or name of municipality if area drains to an MS4:							
Project Location: (Town/City):		**UTM Northing: (if known)**		**UTM Easting: (if known)**			
Map #:		**Lot #:**		**County:**			

I am filing notice of my Notice of Termination indicating that permanent stabilization has been completed or, if the project was a common plan of development or sale, that the requirements of the Construction General Permit at Part IV(B)(2) have been completed. I have attached all the required submittals*. Notification forms cannot be accepted without the necessary attachments.*

- ❑ ALL: Photographs showing the completed project and affected area, except as provided in Part IV(B)(3)(c) of the MCGP.
- ❑ IF this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign; OR
- ❑ Check here to reference documentation showing authorization to sign that was submitted with the Notice of Intent if the documentation showing authorization to sign applies and is still current.

I authorize staff of the Departments of Environmental Protection to access the project site for the purpose of determining compliance with the general permit.

Signature of Applicant:		**Date:**	

Retain your records. The permittee is required to retain copies of any forms, submissions, reports, or other materials required by this general permit for a period of at least three years from the completion of permanent stabilization**.**

OFFICE USE ONLY			Staff	Staff	
NOI #	FP	Date	Acc. Date	Def. Date	After Photos

SECTION 01580

PROJECT IDENTIFICATION AND SIGNS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Provide and erect sign(s) at the project site to identify the project and to indicate the applicable Federal and State Government Agencies that are participating in the development of the project.

B. Do not place, or allow the placement of, other advertising sign boards at the project site or along rights-of-way furnished for the project work.

C. See Section 28 of the Supplementary Conditions for specific Economic Development Administration (EDA) signage requirements.

PART 2 - PRODUCTS

2.1 MATERIAL AND DESIGN

A. Construct a sign of 3/4-inch exterior grade, high density overlaid plywood or other material, approved by the Engineer, suitable for signs.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Erect the sign in a prominent location as approved by the Engineer.

B. Construct the sign in accordance with the sample Drawing provided elsewhere in these specifications.

C. Remove the sign when the Work has been completed at no additional cost to the Owner.

END OF SECTION

SECTION 01710

PROJECT CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Maintain premises and public properties free from accumulations of waste, debris, and rubbish, caused by operations.
2. At completion of work, remove waste materials, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces. Leave project clean and ready for use.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Conduct cleaning and disposal operations in accordance with all applicable local and state laws, ordinances, and code requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.

B. Use cleaning materials only on surfaces recommended by cleaning material manufacturers.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Cleaning During Construction:

1. Execute cleaning operations to ensure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.
2. Entirely remove and dispose of material or debris during the progress of the work that has washed into or has been placed in watercourses, ditches, gutters, drains, catch basins, or elsewhere as a result of the Contractor's operations.
3. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
4. At reasonable intervals during the progress of work, clean the site and dispose of waste materials, debris, and rubbish.
5. Clean interiors of buildings, when applicable, prior to finish painting, and continue to clean on an as-needed basis until buildings are ready for occupancy.
6. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw material from heights.
7. When applicable, schedule cleaning operations so that dust and other contaminants resulting from the cleaning process will not fall on wet, newly painted surfaces.

B. Control of Hazards:
   1. Store volatile wastes in covered metal containers, and remove from premises daily.
   2. Prevent accumulation of wastes which may create hazardous conditions.
   3. Provide adequate ventilation during use of volatile or noxious substances.

C. Disposal:
   1. Do not burn or bury rubbish and waste materials on project site.
   2. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.
   3. Do not dispose of wastes into streams or waterways.

D. Final Cleaning:
   1. Employ experienced workers, or professional cleaners, for final cleaning.
   2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from all sight-exposed interior and exterior finished surfaces.
   3. Repair, patch and touch up marred surfaces to specified finishes.
   4. Broom clean paved surfaces.
   5. Rake clean non-paved surfaces of the project site.
   6. Restore to their original condition those portions of the site not designated for alterations by the Contract Documents.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Keep accurate record documents for all additions, demolition, changes of material or equipment (from that shown on the Drawings), variations in work, and any other additions or revisions to the Contract (via Change Order, Work Change Directive, Field Order or Clarification).

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 MAINTENANCE OF DOCUMENTS

A. Maintain at job site, one copy of:

1. Contract Drawings
2. Specifications
3. Addenda
4. Reviewed Shop Drawings
5. Change Orders
6. Any other modifications to the Contract
7. Field Test Reports

B. Store documents in files and racks specifically identified for Record Drawing use, that are apart from documents used for construction.

C. File documents in a logical manner indexed for easy reference.

D. Maintain documents in clean, dry, legible condition.

E. Do not use record documents for construction purposes.

F. Make documents available at all times for inspection by the Engineer and Owner, and by the end of the project, transmit these documents to the Engineer.

G. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests.

1.4 RECORDING

A. Label each document "PROJECT RECORD" in large high printed letters.

B. Keep record documents current and do not permanently conceal any work until required information has been recorded.

C. General Field Recording Issues:

1. All swing ties shall be taken from existing, permanent features such as utility poles, corners of buildings and hydrants. Porches, sheds or other house additions shall be avoided as they could be torn down. A minimum of two swing ties shall be taken. Survey grade GPS coordinates are also acceptable.
2. Stations shall be recorded to the nearest foot.

3. Inverts shall be recorded to the nearest hundredth of a foot.
4. Elevations shall be recorded to the nearest hundredth of a foot.
5. Building dimensions shall be recorded to the nearest 1/4".
6. Equipment and Piping shall be recorded to the nearest tenth of a foot, and the overall dimensions and layout of the equipment shall be adjusted to reflect the equipment provided.

D. Project Record Drawings - Legibly mark Contract Drawings to record existing utilities and actual construction of all work, including but not limited to the following (where applicable):
   1. Existing Utilities
      a. Water mains and services, water main gate valves, sewer mains and services, storm drains, culverts, steam lines, gas lines, tanks and other existing utilities encountered during construction must be accurately located and shown on the Drawings. In congested areas supplemental drawings or enlargements may be required.
      b. Show any existing utilities encountered in plan and profile and properly labeled showing size, material and type of utility. Ties shall be shown on plan. Utility shall be drawn to scale in section (horizontally and vertically) and an elevation shall be called out to the nearest hundredth of a foot.
      c. When existing utility lines are broken and repaired, ties shall be taken to these locations.
      d. If existing water lines are replaced or relocated, document the area involved and pipe materials, size, etc. in a note, and with ties.
   2. Manholes, Catch Basins, Valve Pits and other structures.
      a. Renumber structure stationing to reflect changes.
      b. Show ties to center of structure covers or hatches.
      c. In general, show inverts at center of structures. However, for manholes with drop structures, or steep channels (greater than 0.2' change on slope), show inverts at face of manhole.
      d. Show inverts for other structures at the face of the structure.
      e. Draw any new structures that are added on plan and profile.
      f. Show any field or office redesigns.
      g. Redraw plan if the structure's location is moved more than 5 feet in any direction. Note: It is important to show existing utilities, as outlined in Paragraph 1 above, especially if they were one reason for relocating the sewer, manholes and other structures.
      h. Redraw profile if inverts changed by more than 6 inches.
   3. Gravity Sewer Line
      a. Change sewer line slopes indicated on Drawings if inverts are changed.
      b. Draw any new gravity lines that are added on plan and profile.
      c. Show any field or office redesigns.
      d. Redraw the sewer line profile if manhole inverts are redrawn.
      e. Redraw the sewer line on plan corresponding to relocated manholes.
   4. Water Mains and Force Mains
      a. Show ties to the location of all valves, bends (horizontal and vertical), tees and other fittings. The use of thrust blocks shall be recorded.

b. Revise elevations indicated on the Drawings to reflect actual construction.

5. House Services
   a. Draw all house services (even to empty lots) on plan, and show ties.
   b. Show ties or distances to wyes from manhole.
   c. Show chimneys heights in the profile.
   d. The Wright-Pierce "Sanitary Sewer Service Location" forms and “Water Service Location” forms shall be used to record sewer and water service information. A copy of these forms shall be provided to the Owner, along with the Record Drawing Set.
6. Ledge
   a. Ledge profiles shall be shown. Note whether the plotted ledge profile reflects undisturbed or expanded conditions.
7. Yard Piping and Buried Electrical Conduit
   a. Site piping and utilities shall be drawn to reflect the installed locations, with ties and elevation of all bends (horizontal and vertical).
   b. Show routing for electrical conduits and pull boxes, especially in close proximity to buildings and when the conduits change direction or cross process piping.
8. Roads
   a. Show centerline road profile and level spot elevations.
   b. Show pavement widths.
   c. On road cross sections, show the pavement cross slope.
   d. Show any deviations from the design plans.
9. Utilities
   a. When encountered, additional utilities (e.g., gas, cable, telephone, fiber optic, etc.) shall be indicated on the Record Drawings.

E. Specifications and Addenda - Legibly mark up each section to record:
   1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
   2. Changes made by Change Order, Field Order, or other method.

1.5 SUBMITTALS

A. At the completion of the project, and prior to the release of retainage, deliver record documents to the Engineer.
   1. Record drawings shall be provided as a bound, red-line paper set and an electronic file (pdf format) consisting of a full scan of the bound paper set.

B. Accompany submittal with transmittal letter, in duplicate, containing:
   1. Date, project title and number.
   2. Contractor's name and address.
   3. Title and number of each record document with certification that each document is completed and accurate.
   4. Signature of Contractor, or their authorized representative.

C. Failure to supply all information on the Project Record Drawings as specified in Part 1.3 may result in withholding final completion and in non-approval of final payments of the Contract. If Contract Time has elapsed, this shall be grounds for imposing liquidated damages.

1.6 QUALITY ASSURANCE

A. All horizontal and vertical dimensions, swing-ties, and elevations shall be accurate to within one-tenth of a foot, unless greater accuracy is specified elsewhere in the Specifications (e.g., concrete elevations, weir elevations, etc.).

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION

3.1 MAINTAINING AND PROVIDING RECORDS

A. Records shall be kept current as the work progresses.

B. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.

C. Records shall be kept current as the work progresses. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests. Failure to provide records shall also be grounds for withholding of final payment and, if beyond contract time, shall be grounds for imposing liquidated damages.

3.2 AS-BUILT SURVEY PERFORMANCE

A. From established survey control, and construction baseline as shown on the drawings, conduct surveys of the project area during construction as needed to obtain information of buried and above ground items. Surveys shall include information outlined in Section 1.3.

B. Actual road alignments; walls; fence and guardrail; existing, new and relocated utility poles; traffic and warning sign locations; crosswalks, parking space and stop bar locations; retaining walls and foundations drains; all underground and overhead utility poles and lines within the project limits, including those installed on private property; all other new features and appurtenances and those existing features and appurtenances changed as a result of this project shall be included in the survey.

3.3 FORMAT FOR ELECTRONIC DELIVERABLES

A. As-builts shall be electronic file (pdf format).

END OF SECTION

SECTION 02050A

DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The Contractor shall furnish all labor, materials, tools, equipment and apparatus necessary and shall do all work required to complete the demolition, removal, and alterations of existing facilities as indicated on the Drawings, as herein specified, and/or as directed by the Engineer.
2. Demolition and alteration work within occupied areas shall be accomplished with minimum interference to the occupants and to the plant which shall be in continuous operation during construction.
3. All equipment, piping, and other materials that are not to be relocated or to be returned to the Owner shall become the property of the Contractor and shall be disposed of by him, away from the site of the work and at his own expense.
4. All demolition or removal of existing structures, utilities, equipment, and appurtenances shall be accomplished without damaging the integrity of existing structures, equipment, and appurtenances to remain, to be salvaged for relocation or stored for future use.
5. Such items that are damaged shall be either repaired or replaced at the Contractor's expense to a condition at least equal to that which existed prior to the start of his work.
6. Unless otherwise indicated, all items labeled to be "removed", "demolished" or "remove/demolish" shall be removed and disposed of off site in accordance with all Local, State and Federal Regulations.
7. The Contractor shall not collect any samples of either Building Materials, Wastes, Soils, or any other site/project related materials, nor have the samples analyzed for any reason without prior written approval from the Owner or Engineer. Furthermore, the Contractor shall not hire or contract with another party or Consultant to conduct sampling of either Building Materials, Wastes, Soils, or any other site/project related materials or to conduct analytical analysis.
    a. All sampling requests are to be directed in written format to the Owner and Engineer.
    b. By collecting unauthorized samples, the Contractor shall assume any and all financial burden of the required corrective action.
    c. If a sample is collected and analyzed without prior written approval from the Owner or Engineer, the Contractor shall be responsible for any and all remediation required by any applicable regulatory authority arising from or related to the samples collected and analyzed, as the validity of the materials sampled, sample locations and sampling protocols utilized cannot be confirmed by the Owner's or Engineer's independent Consultant.

B. Related Work Specified Elsewhere: (When Applicable)
   1. Earthwork is specified in Section 02200.
   2. Use of Explosives is specified in Section 01546.
   3. See Summary of Work, Section 01010.

1.2 JOB CONDITIONS
A. Condition of Structures:
   1. The Owner assumes no responsibility for the actual condition of structures to be demolished.
   2. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner as far as practicable. However, variations within the structures may occur due to Owner's removal and salvage operations prior to the start of demolition work (where applicable).

1.3 UTILITIES
A. Utility Locations:
   1. Utility locations shown on the plans are approximate only, based on information supplied by the utility companies.
B. Coordination with Utilities:
   1. The Contractor shall make all necessary arrangements and perform any necessary work to the satisfaction of affected utility companies and governmental divisions involved with the discontinuance or interruption of affected public utilities and services.

1.4 SUBMITTALS
A. Schedule - Demolition:
   1. Submit two (2) copies of proposed methods and operations of demolition to the Engineer for review prior to the start of work. Include in the schedule the coordination for shut-off, capping and continuation of utility services as required.
   2. Provide a detailed sequence of demolition and removal work to ensure the uninterrupted progress of the Owner's operations.

1.5 PROTECTIONS
A. Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities and persons. Erect temporary, covered passageways as required by authorities having jurisdiction.
B. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.

1.6 DAMAGES
A. The Contractor shall promptly repair damages caused by demolition operations to adjacent facilities at no cost to the Owner.

PART 2 - PRODUCTS – Not Applicable

PART 3 - PERFORMANCE

3.1 DESCRIPTION

A. Remove and dispose of non-salvageable material in accordance with all applicable local and state laws, ordinances and code requirements.
B. Dispose of material daily as it accumulates.
C. Carefully remove, store and protect from damage all materials to be salvaged.
D. Buildings and Adjacent Property:
   1. Protect all buildings and property adjacent to equipment to be removed from damage by erecting suitable barriers or by other suitable means.
   2. Leave such buildings in a permanently safe and satisfactory condition.
E. Maintaining Traffic:
   1. Ensure minimum interference with roads, streets, driveways, sidewalks and adjacent facilities.
   2. Do not close or obstruct streets, sidewalks, alleys or passageways without permission from authorities having jurisdiction.
F. Architectural, structural, mechanical, process and electrical demolition, removal and alteration are indicated in the corresponding sections.
G. Mechanical/Process Demolition:
   1. Mechanical/Process demolition in general shall consist of the dismantling and removal of existing piping, tanks, pumps, motors, equipment and other appurtenances as specified, and indicated on the Drawings.
   2. It shall also include, where necessary, the cutting of existing piping for the purpose of making connections thereto.
   3. Piping not indicated to be removed but which may interfere with construction shall be removed to the nearest solid support, capped and left in place. Where piping that is to be removed passes through the wall of existing structures, it shall be cut off and properly capped on each side of the wall.
   4. When piping is to be altered or removed underground, the remaining piping shall be properly capped or plugged.
   5. Abandoned underground piping shall be left in place unless it interferes with new structures or unless otherwise noted on the Drawings.
H. Salvage:
   1. Salvaged items shall be stored on site for the Owner in an acceptable location and manner.
I. Demolition Sequence:
   1. The demolition sequence is to conform the reviewed and approved project schedule, and restrictions outlined in Section 01310, Construction Schedules.
J. Pest Control:
   1. Provide pest control when needed or when directed by the Engineer.
   2. Exterminate and prevent migration of rodents to adjoining buildings in accordance with the requirements of the state or local health department.

END OF SECTION

SECTION 02140

TEMPORARY CONSTRUCTION DEWATERING SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Design, furnish, operate, maintain, and remove temporary dewatering system to lower and control ground water table levels and hydrostatic pressures to permit excavation, backfill, and construction to be performed in the dry; collect and dispose of ground and surface water where necessary to complete the work.
   2. Design, furnish, operate, maintain, and remove temporary treatment system for temporary dewatering system effluent prior to discharge.
   3. Conduct structure monitoring, as specified herein.
   4. Conduct compliance testing, as specified herein and in accordance with the requirements of the permitting authority.

B. Related Work Specified Elsewhere: (When Applicable)
   1. Section 02156 Temporary Excavation Support System
   2. Section 02200 Earthwork
   3. Geotechnical Data Report is provided in Appendix A.
   4. Phase II Environmental Assessment is provided in Appendix B.

1.2 DESIGN REQUIREMENTS

A. The Temporary Construction Dewatering System shall be designed by a Professional Engineer registered in the State of Maine (the "Design Engineer") who is experienced in the design of Temporary Construction Dewatering Systems for subsurface construction operations.

B. The Temporary Construction Dewatering System shall be of sufficient size and capacity necessary to lower and maintain the ground water table to an elevation at least two feet below the lowest foundation subgrade, or bottom of pipe trench, to allow material to be excavated in a dry condition, including depressurizing the soil stratum beneath the excavation subgrade. Materials to be removed shall be sufficiently dry to permit excavation to grades shown on the Contract Drawings and to stabilize the excavation slopes where temporary excavation support systems are not required. Operate the dewatering system continuously until backfill work has been completed.

C. Control of surface and subsurface water is part of the Temporary Construction Dewatering System requirements. Maintain adequate control so that:
   1. The stability of excavated and constructed slopes are not adversely affected by saturated soil, including water entering the prepared subbase and subgrades where underlying materials are not free draining or are subject to swelling or freeze-thaw action.
   2. Erosion is controlled.
   3. Flooding of excavations or damage to structures does not occur.
   4. Surface water drains away from excavations.

5. Excavations are protected from becoming wet from surface water and ensure excavations are dry before additional work is undertaken.
6. Prevent loss of fines, seepage, boils, quick conditions or softening of foundation strata.
7. The stability of the sides and bottom of excavations are sustained during excavations. Construction operations shall be performed to dry and stable soils.
8. Any existing dewatering wells that can affect dewatering and excavation shall be sealed below the excavation subgrade.

D. The design shall include an assessment of how the dewatering operations will affect the stability of all adjacent structures.

E. Contractor is responsible to perform additional geotechnical investigations as deemed necessary to facilitate the design of the Temporary Construction Dewatering System and prevent damage to adjacent buildings, roads, structures, utilities and other facilities.

1.3 QUALITY ASSURANCE

A. The Temporary Construction Dewatering System shall be installed, operated and monitored by the Contractor or a specialty subcontractor specializing in and having experience installing and operating dewatering systems in similar subsurface conditions for at least 5 years.

B. Well drillers, if required, shall be licensed in the State of Maine.

1.4 SUBMITTALS

A. Provide submittals in accordance with Specification Section 01340.

B. Provide a Temporary Construction Dewatering System Plan prepared by a Professional Engineer (as specified above) at least 30 days prior to beginning operations. This submittal shall include:

1. Qualifications of the Temporary Construction Dewatering System Design Engineer and qualifications of the Contractor or specialty subcontractor installing and operating the system.
2. Signed and sealed design calculations confirming the adequacy of the proposed system to manage groundwater, to eliminate pumping of fines and to prevent damage to adjacent buildings, roads, structures, utilities and other facilities.
3. Signed and sealed, dimensioned layout drawings showing the arrangement, location, depth and size of wells, wellpoints, headers, sumps, ditches; size and location of discharge lines; pumps; standby pumps; standby power equipment; effluent treatment components, effluent disposal location, and observation wells/ piezometers.
4. Detailed written description of dewatering methods to be employed to convey the water from site to adequate disposal, including operations, maintenance, and control requirements.
5. Estimated average, minimum and maximum pumping rates (total).
6. Capacity and number of standby pumping equipment.
7. Capacity and number of standby power equipment.
8. Treatment tankage and discharge locations.
9. Technical data on the well screens, filter materials and gradations to demonstrate adequacy of the proposed systems to prevent migration of fines.

10. Structure Monitoring Plan, if required.
11. Pre-Construction and Post-Construction Survey, if required.
12. Effluent monitoring provisions and laboratory testing methods, including sample monitoring log (flow, TSS, etc.).
13. System removal requirements.
14. Written approval from the ***Department of Environmental Protection*** for disposal of the treated water.

C. The Temporary Construction Dewatering System submittal shall be provided concurrently with and coordinated with the submittals required by Section 02156 (Temporary Excavation Support Systems).
D. Submit water monitoring results at the frequency required by the permitting authority.
E. Submit structure monitoring results, if required, at the frequency specified herein.
F. Submittal review with no exceptions taken of the Temporary Construction Dewatering System Plan shall not in any way relieve the Contractor from full responsibility for the complete and adequate design, installation and performance of the dewatering system and shall not relieve the Contractor of sole responsibility for the dewatering system as necessary to prevent damage and settlement to adjacent buildings, roads, structures, utilities and other facilities adjacent to the excavations and for the safety of people working within the excavated areas.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment used in the Temporary Construction Dewatering System shall adhere to accepted industry standards.
B. Backup equipment for the Temporary Construction Dewatering System shall be identical to the primary equipment, shall be immediately available and in operating condition at all times.
C. Pipes and Well Screens: Schedule 40 PVC or stronger.
D. Sand: Clean, single-size filter sand having an effective size (D10) of 0.3 to 0.5 mm with a fineness modulus of less than 4 and with no more than 4% passing a 100 sieve.
E. Grout: Cement-bentonite grout of adequate mix proportion and consistency. Seals shall consist of bentonite pellets.
F. Pumps, meters, hoses and controls shall be suitable for the intended purpose and application.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. General:
   1. Prior to any excavation below the ground water table, place the Temporary Construction Dewatering System into continuous operation (24 hours per day, 7 days per week) to lower the water table as required until utilities and structures have been satisfactorily constructed, which includes the placement of backfill materials and dewatering is no longer required.
   2. The Contractor shall coordinate the dewatering system operation with existing and proposed conditions.

3. The Temporary Construction Dewatering System Design Engineer and the Contractor shall modify the dewatering system and methods as required by actual field conditions encountered during construction, at no additional cost to the Owner. Any component of the dewatering system that malfunctions or is damaged during its operation shall be promptly repaired or replaced by the Contractor at no additional cost to the Owner.
4. Surface areas adjacent to the excavation shall be graded and/or curbed to prevent flow of surface water into the excavation.
5. The Contractor shall install observation wells / piezometers prior to beginning excavation work.
6. The Contractor shall notify the Engineer 7 days prior to the dewatering system start-up.
7. Keep work areas dewatered until all construction of new structures, pipes, and appurtenances have been substantially completed to the extent that they will not be damaged by water.
8. Thoroughly brace, or otherwise protect against flotation, all pipelines and structures which are not stable until final grades and ground cover is established.
9. Maintain standby, or backup, equipment and power supply throughout the duration of the dewatering operations.
10. Prevent soil particles from entering the discharge points.

B. Disposal of Water:
1. Dispose of water pumped or drained from the construction site in a suitable manner to avoid siltation of adjacent drainage structures and piping, wetlands or water bodies, injury to public health, damage to public and private property, and damage to the work completed or in progress.
2. Provide suitable temporary channels for water that may flow along or across the construction site.
3. Provide treatment as necessary to prevent discharge of contaminated ground water caused by Contractor's operations or any contaminated ground water that may pass through the Temporary Construction Dewatering System.
4. Contractor must obtain all necessary regulatory approvals for the disposal of dewatering flows. These may include, among others, approval by the USEPA under the National Pollutant Discharge Elimination System (NPDES) program for construction activities.

C. Temporary Underdrains:
1. When necessary, temporary underdrains may be placed in excavations.
2. Underdrain pipe shall be perforated corrugated metal, polyethylene or P.V.C. pipe.
3. Surround the underdrain completely and fill the space between the underdrain and the pipe or structure with free draining material.

D. Excavation Sump Pumping:
1. When necessary, and where appropriate to the geotechnical conditions encountered, excavations may be over excavated 12 to 24-inches and filled with screened stone to allow sump pumping of groundwater. Immediately cease

operations if boils, loss of fines, quick conditions, softening of the ground or instability of slopes occur.

2. The system shall be installed with suitable screens and filters so that pumping of fines does not occur.

E. Well and Wellpoint System:

1. If necessary, dewater the excavations and trenches with an efficient well or wellpoint system to drain the soil and prevent saturated soil from flowing into the excavated wells and area.
2. Wellpoint and well systems shall be of the type designed for dewatering work and shall be installed with suitable screens and filters so that pumping of fines does not occur.
3. Pumping units shall be capable of maintaining sufficient suction to handle large volumes of air and water at the same time.

F. Removal

1. Remove all equipment after the permanent installations are complete.
2. All wells and piezometers shall be properly abandoned at the completion of the work, unless otherwise directed by the Temporary Construction Dewatering System Design Engineer, in accordance with requirements or guidelines in project location.

3.2 PRE-TREATMENT

A. The Contractor shall provide a settling tank (or tanks) to provide pre-treatment of groundwater prior to discharge. Tanks shall be sized to provide 60-minute hydraulic retention time at the anticipated maximum sustained pumping rate. Tanks shall have an underflow baffle to collect any floatables and shall have a final overflow weir to allow for flow measurement and sample collection. The effluent weir shall be sized to allow for accurate flow measurement based on the anticipated pumping rates.

B. Routine inspection of the settling tanks shall be carried out daily, with records maintained.

C. Settling tanks shall be cleaned frequently to prevent excess deposition of solids which could overflow from the tank.

D. Conduct effluent sampling requirements per the requirements of the permitting authority which is receiving the pre-treated dewatering system effluent.

3.3 MONITORING

A. General:

1. Contractor shall monitor the performance of the dewatering system and the groundwater level achieved throughout construction.
2. Contractor shall monitor the effluent quality from the treatment system as required by the permitting authority.
3. The Temporary Construction Dewatering System Design Engineer shall visit the site during the monitoring program at periodic intervals.
4. General Contractor shall maintain dewatering activities to avoid damage to and settlement of adjacent buildings, roads, structures, utilities and other facilities.
5. Contractor shall monitor the adjacent grade, buildings, roads, structures, utilities and other facilities throughout construction. Monitoring shall include the following at a minimum:

a. Pre-Installation Structure Elevation Survey. Survey of each structure prior to installation of dewatering system. Survey shall include digital photos of each structure and written description of existing deficiencies:
   i. Structure Monitoring. Conduct structure monitoring as outlined below for the duration of the Temporary Construction Dewatering System operations, as outlined below:
   iii. All monitoring points will be set at the tops of concrete (or structural steel) and will be selected by the Engineer during construction.
   iv. A minimum of 3 monitoring points for each structure will be established. All elevations shall be to the nearest 0.001 foot.
   v. Baseline elevations shall be established for each structure before dewatering activities commence. These elevations will be used for comparison to future elevations to determine if and what magnitude of movement has occurred.
   vi. Elevations shall be taken at the same monitoring points for each structure at the same time on a weekly basis.
   vii. Upon either detecting an incremental settlement of 0.005 feet, a total cumulative settlement of 0.01 feet or visible damage to any of the structures, Contractor shall proceed to the Corrective Actions specified below.

b. Post-Installation Structure Survey. Survey after operation of dewatering system is discontinued.

3.4 CORRECTIVE ACTION

A. No movement of or damage to adjacent buildings, roads, structures, utilities and other facilities shall be allowed.

B. If dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system (loosening of the foundation strata, or instability of slopes, or damage to foundations or structures), the Contractor shall stop work and consult with the Design Engineer and resubmit a revised Temporary Construction Dewatering System design submittal. The revised plan shall indicate why the system revisions are needed and indicated what change will be made to address the issues. Contractor shall perform work necessary for reinstatement of foundation soil and damaged structure resulting from such inadequacy or failure by Contractor, at no additional cost to the Owner.

C. Damage to existing structures shall be repaired at no additional cost to the Owner.

CERTIFICATE OF DESIGN

RE: Contract between
OWNER: _____
(Name)
and
CONTRACTOR: _____
(Name)
on
CONTRACT: _____
(Title)
_____
(Number) (Date)

The undersigned hereby certify that the engineer listed below (the "Design Engineer"):

1. Is licensed or registered to perform professional engineering work in the State of _____ (location of Project);
2. Is qualified by education and training to design the Temporary Construction Dewatering System specified in Section 02140 of the subject Contract;
3. Has previously successfully designed comparable groundwater dewatering systems;
4. Has prepared the design in full compliance with the requirements of subject contract, including all applicable laws, regulations, rules, and codes.
5. Has reviewed and coordinated the design of the Temporary Construction Dewatering System with the Temporary Excavation Support System design (specified in Section 02156); and
6. Will inspect and supervise installation of the Temporary Construction Dewatering System and will monitor the in-place system to confirm that the system is installed and functions in accordance with the design.

CONTRACTOR	DESIGN ENGINEER
By: _____	By: _____
(Signature)	(Signature)
_____	_____
(Name)	(Name)
_____	_____
(Title)	(Engineering Discipline)
_____	_____
(Date)	(Date)

END OF SECTION

SECTION 02156

TEMPORARY EXCAVATION SUPPORT SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Design, furnish, install, maintain, and remove temporary excavation support system as required to comply with all applicable State and Federal regulations including the Occupational Safety and Health Act. Excavation support system shall consist of steel sheeting, pile and lagging bracing or other systems designed by the Contractor. Related Work Specified Elsewhere (When Applicable):
   1. Section 02140 Temporary Construction Dewatering System
   2. Section 02200 Earthwork
   3. Geotechnical Data Report is provided in Appendix A.
   4. Phase II Environmental Assessment is provided in Appendix B.

1.2 DESIGN REQUIREMENTS

A. The Contractor shall be responsible for the design and construction of the excavation support structures. The excavation support structures (sheeting systems or other special excavation techniques) shall be properly designed by a Professional Engineer registered in the State in which the project is located, who practices in a discipline applicable to excavation work and has more than 5 years of experience in the design of excavation support systems. The excavation support system shall be designed to accommodate an additional 2 feet of excavation below the bottom of excavation shown on the Contract Drawings.

B. The excavation support system shall be designed and installed to limit the upward hydraulic gradient into the bottom of the excavation and to sustain all existing and expected loads and utilities, to prevent migration of fine-grained materials into the excavation, to prevent all movement to earth which could in any way cause injury to workmen, delay the work or endanger adjacent structures. If detrimental effects result from construction activities, the Contractor shall modify the design, revise construction procedures and/or take measures to mitigate and abate further movement at no cost to the Owner.

C. The Contractor shall prepare an excavation support system monitoring plan intended to monitor the performance of the excavation support system, as well as the adjacent grade and adjacent structures, throughout construction. The excavation support system monitoring plan shall include vibration and deformation monitoring. Contractor shall retain the services of a qualified vibration monitoring consultant to perform vibration monitoring during installation and removal of the excavation support system. Refer to Paragraphs 1.3 and 3.4 for additional requirements.

D. The internal lateral bracing shall be located so that the braces shall not pass through walls and/or slabs of existing or proposed structures.

E. The support system shall provide adequate room to properly perform the installation and to allow for inspection of the installation.

F. Prior to the installation of any portion of the temporary lateral support system, the

Contractor shall furnish to the Owner precondition surveys documenting the existing conditions of the adjacent structures.

G. The use of existing structures to support the sheeting bracing or structural framing shall be prohibited.

1.3 SUBMITTALS

A. Provide submittals in accordance with Specification Section 01340.

B. Submit qualifications of temporary excavation support system design engineer.

C. Submit attached certificate of design and complete scaled and dimensioned layout drawings of the proposed excavation system, stamped and sealed by a Professional Engineer registered in the State in which the project is located. Drawings shall show plan, sections and elevations of the support system as well as the proposed structures. Submittal shall identify:

1. Physical location on the site and identify any existing utilities, site piping, site electrical conduit that must be relocated prior to excavation support system installation.
2. Type and location of any surcharge loads adjacent to the excavation support system required by the Contractor to execute the work (e.g., excavators, trucks, cranes, soil piles, etc.).
3. Design calculations, supporting documentation and materials cut sheets.
4. Sample monitoring log.
5. System removal requirements.

D. Submit excavation support system monitoring plan, including qualifications of Contractor's vibration monitoring consultant and Contractor's surveyor. The excavation support system monitoring plan shall identify: the specific method, location and frequency of measurements (pre-, during and post-construction); individual(s) responsible for inspection/measurements; submittal and maintenance of on-site records; and threshold vibration values and excavation support system deformation values that, if exceeded, will require immediate stoppage of work and the performance of repairs necessary for reinstatement of a functional system. Provide justification for recommended vibration and deformation tolerances, on a structure-by-structure basis.

E. The Contractor shall have sole responsibility for design, construction, monitoring and removal of the excavation support system as necessary to prevent damage to adjacent structures, utilities, streets adjacent to excavations and for safety of persons working within the excavated areas. The submittals will be reviewed for consistency with the design intent.

F. Submittals under this Section shall be provided concurrently with and coordinated with the submittals under Section 02401 (Temporary Dewatering System).

PART 2 - PRODUCTS

2.1 MATERIAL

A. All materials shall conform to all applicable State and Federal regulations including the Occupational Safety and Health Act.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Perform preparatory work to discover, protect, maintain, and restore utilities, foundations or other facilities located in close proximity of the proposed excavation lateral support system.

B. Conduct pre-excavation to remove obstructions along the alignment of the excavation lateral support system which will interfere with installation of the excavation lateral support system.

C. Install the excavation support system, including the installed wall and bracing system, outside the limits of the permanent structure. Construction tolerances (e.g., wall verticality) and lateral wall deflections as a result of excavation and other activities shall be considered in determining the plan location.

D. Excavation shall not proceed more than 2 ft. below the bracing level, anywhere within the excavation support limits, until the entire level of bracing is completely installed.

E. The first level of bracing shall be installed within 5 ft. of the ground surface prior to any excavation below this level.

3.2 INSTALLATION

A. Install excavation support system in accordance with all applicable State and Federal regulations including the Occupational Safety and Health Act. The excavation support system design engineer shall visit the site during excavation support system installation.

3.3 INTERNAL LATERAL WALL BRACING (RAKERS, WALES AND STRUTS)

A. Rakers are only allowed for the temporary lateral brace that is installed within 5 ft. of the ground surface.

B. Use wales, struts, corner braces to provide support of the excavation lateral support walls as required. Include web stiffeners, plates, brackets, or angles as required to prevent rotation, crippling or buckling of connections and points of bearing between structural steel members. Allow for eccentricities due to fabrication and assembly. Consider effects of temperature changes.

C. Install and maintain all support members in continuous tight contact with each other and with the wall being supported.

D. Preload all bracing members (including rakers, corner braces, and struts) in accordance with methods, procedures and sequence as described on the reviewed shop drawings. Coordinate excavation work with installation of bracing and preloading. Use steel shims and steel wedges, welded or bolted in place, to maintain the preloading force in the bracing after release of the jacking equipment pressure. Wood shims or wedges shall not be used. Braces shall be preloaded to 50 percent of the maximum design load. Provide means to control the fluctuation of loading due to temperature variations.

E. Accomplish preloading by jacking struts, rakers, etc. in place against the excavation lateral support system walls, or by other methods acceptable to the Owner or Owner's Representative.

3.4 MONITORING

A. Contractor shall implement the excavation support system monitoring plan intended to monitor the performance of the excavation support system, as well as adjacent grade and adjacent structures, throughout construction. Monitoring shall include the following at a minimum:
   1. Pre-Installation Structure Elevation Survey. Survey prior to excavation support system installation.
   2. Vibration Monitoring. Full-time vibration monitoring during excavation support system installation.
   3. Installation Structure and Support System Surveys.
      a. After excavation support system installation but prior to first brace installation;
      b. When at mid-point of excavation;
      c. When at bottom of excavation;
      d. At weekly intervals during structure construction.
      e. Prior to excavation support system removal.
      f. Each survey shall assess the support system deformation and key structures.
   4. Vibration monitoring. Full-time during excavation support system removal.
   5. Post-Installation Structure Survey. Survey after removal of excavation support system.

B. The excavation support system design engineer shall visit the site during the monitoring program at periodic intervals.

C. Additionally, if the excavation support system monitoring criteria/requirements are not satisfied due to inadequacy or failure of the excavation support system (settlement of adjacent grade, settlement of structures, cracking of structures, etc.), immediately stop work and perform repairs necessary for reinstatement of a functional system, as well as restoration of foundation soil and damaged structure resulting from such inadequacy or failure by Contractor, at no additional cost to Owner.

3.5 REMOVAL OF SHEETING

A. Remove all sheeting and bracing unless the removal may cause injury to adjacent structures and/or property.

B. The General Contractor shall be responsible for repairing all damage to existing structures caused by the removal of sheeting. The excavation support system design engineer shall visit the site during excavation support system removal.

C. All backfill disturbed by the removal of the sheeting shall be re-compacted to its in-situ density.

D. Proceed with backfilling as specified in these Specifications. When the level of compacted backfill reaches the location of bracing and wales, remove these items from the trench or other excavation. When the level of the backfill reaches a point three feet below the existing ground grade, remove the sheeting by approved methods and equipment.

E. After removing the sheeting, complete backfilling in the usual manner.

F. If the Contractor elects to leave the sheeting or any component of the temporary support system in place, the Contractor shall cut the sheeting or such component at least 4 feet below the ground surface, or as directed by the Engineer.

CERTIFICATE OF DESIGN

RE: Contract between
OWNER: _____
(Name)
and
CONTRACTOR: _____
(Name)
on
CONTRACT: _____
(Title)
_____
(Number) (Date)

The undersigned hereby certify that the engineer listed below:

1. Is licensed or registered to perform professional engineering work in the state of _____(location of Project);

2. Is qualified by education and training to design the _____ _____ specified in Section _____ of subject contract;

3. Has previously designed comparable excavation support systems;

4. Has prepared the design in full compliance with the requirements of subject contract, including all applicable laws, regulations, rules, and codes – including review and coordination with the Dewatering System design; and

5. Will inspect and supervise installation of the excavation support system, will monitor the in-place system to confirm that the system is installed and functions in accordance with the design and will inspect and supervise the removal of the excavation support system.

CONTRACTOR	ENGINEER
By: _____ (Signature)	By: _____ (Signature)
_____ (Name)	_____ (Name)
_____ (Title)	_____ (Engineering Discipline)
_____ (Date)	_____ (Date)

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Work described by this Section consists of all earthwork encountered and necessary for construction of the project as indicated in the Contract Documents, and includes but is not limited to the following:
   1. Excavation
   2. Backfilling and Filling
   3. Compaction
   4. Grading
   5. Providing soil material as necessary
   6. Disposal of unsuitable materials
   7. Disposal of excess suitable material

B. Related Work Specified Elsewhere: (When Applicable)
   1. Traffic Regulation and Quality Control is specified in Division 1.
   2. Clearing and Grubbing, Temporary Construction Dewatering System, Temporary Excavation Support System, Filter Fabric, Temporary Erosion Control, Stripping and Stockpiling of Topsoil, Sheeting, Landscaping, and Paving are specified in the appropriate sections of this Division.
   3. Pipe, fittings, and valves are specified in Division 2.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:
   1. All work shall be performed and completed in accordance with all local, state, and federal regulations.
   2. The General Contractor shall secure all other necessary permits unless otherwise indicated from, and furnish proof of acceptance by, the municipal and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.

B. Line and Grade:
   1. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the work.

C. Testing Methods:
   1. Gradation Analysis: Where a gradation is specified, the testing shall be in accordance with ASTM C117 and ASTM C136 (or latest revision).
   2. Compaction Control:
      a. Unless otherwise indicated, wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place density divided by the maximum density and multiplied by 100. The maximum density shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture-Density Relations of Soil Using

10-lb. Hammer and 18-in. Drop, Designation D1557 (Modified Proctor), or latest revision, unless otherwise indicated.

b. The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone method, Designation D1556, (or latest revision) or Nuclear method Designation D6938.

c. Wherever specifically indicated, maximum density at optimum moisture may be determined by ASTM Standard Methods of Test for Moisture Density Relations of Soils, ASTM D6938 (Standard Proctor).

d. An Independent Testing Laboratory will be retained by the Owner to conduct all laboratory and field soil sampling and testing, and to observe earth work and foundation construction activities. Laboratory testing will consist of sieve analyses, natural water content determinations, and compaction tests. Field testing will consist of in-place field density tests and determination of water contents.

1.3 SUBMITTALS

A. Collection of samples and testing of all materials for submittals shall be performed by the Independent Testing Laboratory and paid for by the Contractor until the materials are approved by the Owner or Engineer.

B. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.

C. Submit test results (including gradation analysis) and source location for all borrow material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.

D. Submit moisture density curve for each type of soil (on site or borrow material) to be used for embankment construction or fill beneath structures or pavement.

1.4 TESTS

A. The Independent Testing Laboratory shall conform to the following procedures and standards:

B. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.

C. All testing shall be performed by a qualified Independent Testing Laboratory acceptable to the Engineer and Contractor at the Owner's expense unless otherwise indicated (see Section 01400 - Quality Control).

D. Field density tests on embankment materials shall be as follows:

E. Tests shall be taken on every 200 cubic yards of embankment material.

F. Paved Areas and Building Slab Subgrade: Make at least one field density test of subgrade for every 2,000 sq. ft. of paved area or building slab, but in no case less than 3 tests. In each compacted fill layer, make one field density test for every 2,000 sq. ft. of overlaying building slab or paved area, but in no case less than 3 tests.

G. Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.

H. Foundation Wall Backfill: Take at least one (1) field density tests per lift per wall at locations and elevations as designated by the Engineer.

I. In addition to the above tests the Independent Testing Laboratory will perform

additional density tests at locations and times requested by the Engineer.

J. Additional density testing will be required by the Engineer if the Engineer is not satisfied with the apparent results of the Contractor's compaction operation.
   1. If the test results fail to meet the requirements of these specifications, the Contractor shall undertake whatever action is necessary, at no additional cost to the Owner, to obtain the required compaction. The cost of retesting will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount for retesting will be deducted from the Contract Price. No allowance will be considered for delays in the performance of the work.
   2. If the test results pass and meet the requirements of these Specifications, the cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

1.5 JOB CONDITIONS

A. Site Information:
   1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner and Engineer will not be responsible for interpretations or conclusions drawn there from by the Contractor. Data are made available for the convenience of Contractor.
   2. Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.

B. Existing Utilities and Structures:
   1. The locations of utilities and structures shown on the Drawings are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities or structures within the project area.

PART 2 - PRODUCTS

2.1 SOIL MATERIAL

A. MDOT Type D Aggregate Subbase: Shall be screened or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. Type D Aggregate for base shall not contain particles of rock that will not pass the 3-inch square mesh sieve. The gradation of the part that passes a 3-inch sieve shall meet the following grading requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieves Type D Aggregate
1/2 inch	35-80
1/4 inch	25-65
No. 40	0-30
No. 200	0-7

MDOT Type B Aggregate Base: Shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
1/2 inch	35-75
1/4 inch	25-60
No. 40	0-25
No. 200	0-6

B. Common Borrow: Shall consist of approved material required for the construction of the work where designated. Common borrow shall be free from frozen material, perishable rubbish, peat, organic, and other unsuitable material.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
6-inch	100
No. 200	0-5

Common borrow may be used for embankments unless otherwise indicated and provided that the material is at a moisture content suitable for compaction to the specified density. No rocks shall exceed 3/4 of the depth of the specified lift thickness.

C. Crushed Stone: Shall be a uniform material consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, containing angular pieces, as are those which come from a mechanical crusher. Gradation requirements shall be as follows:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
1-1/2 inch	100
1 inch	95-100
1/2 inch	25-60
No. 4	0-10

D. Screened Stone: Shall be a well graded stone consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, meeting the following gradation requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
1 inch	100
3/4 inch	90-100
3/8 inch	20-55
No. 4	0-10
No. 8	0-5

E. Select Fill (Structural Fill): Shall consist of well graded granular material free of organic material, loam, wood, trash, snow, ice, frozen soil and other objectionable material and having no rocks with a maximum dimension of over 4 inches and meeting the following gradation requirements, except where it is used for pipe bedding in which case the maximum size shall be 2 inches.

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
4 inch	100
3 inch	90-100
¼ inch	25-90
No. 40	0-30
No. 200	0-5

F. Sand: Shall be well graded durable material free of organic matter and conform to the following gradation requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
3/8 inch	100
No. 4	95-100
No. 16	50-85
No. 50	10-30
No.100	2-10
No.200	0-5

Sand conforming to the requirement for fine aggregate in ASTM Standard Specifications for Concrete Aggregate, Designation C-33, will meet the above requirement.

G. 1-1/2" Washed Stone: Shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. Stone shall be washed free of fines. The gradation of the part that passes a 1-1/2 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
1-1/2 inch	100
1/2 inch	35-75
1/4 inch	25-60
No. 8	0

2.2 CONCRETE

A. If concrete is required for excess excavation, provide 3,000 psi concrete complying with requirements of Section 03300.

2.3 FILTER FABRIC

A. If filter fabric is required, refer to Section 02260.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions under which excavating, backfilling, filling, compaction and grading are to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 EXCAVATION

A. General:

1. Excavation consists of removal and disposal of all material encountered when establishing line and grade elevations required for execution of the work.
2. The Contractor shall make excavations in such manner and to such widths as will give suitable room for building the structures or laying and jointing the piping; shall furnish and place all sheeting, bracing, and supports; shall do all cofferdamming, pumping, and draining; and shall render the bottom of the excavations firm, dry and acceptable in all respects.
3. All excavation shall be classified as either earth or ledge.
    a. Earth Excavation shall consist of the removal, hauling and disposal of all earth materials encountered during excavation including but not limited to native soil or fill, pavement (bituminous or concrete), existing sewers and manholes, ashes, loam, clay, swamp muck, debris, soft or disintegrated rock or hard pan which can be removed with a backhoe, or a combination of such materials, and boulders that do not meet the definition of "Ledge" below.
    b. Ledge Excavation: Shall consist of the removal, hauling, and disposal of all ledge or rock encountered during excavation. "Ledge" and "rock" shall be defined as any natural compound, natural mixture that in the opinion of the Engineer can be removed from its existing position and state only by drilling and blasting, wedging, sledging, boring or breaking up with power operated tools. No boulder, ledge, slab, or other single piece of excavated material less than two cubic yards in total volume shall be considered to be rock unless, in the opinion of the Engineer it must be removed from its existing position by one of the methods mentioned above.
4. The Contractor shall not have any right of property in any materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the Engineer. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Engineer to be unsuitable for backfilling. The Contractor shall dispose of unsuitable and excess material in accordance with the applicable sections of the Contract Documents.

B. Additional Excavation: When excavation has reached required subgrade elevations, notify the Engineer and Resident Project Representative who will observe the conditions.

1. If material unsuitable for the structure or paved area or pipeline (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the Drawings and/or Specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted select fill, screened stone, crushed stone, or concrete as directed by the Engineer.
2. All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor and disposed of at locations in accordance with all State and local laws and the provisions of the Contract Documents.

C. Unauthorized Excavation: Shall consist of removal of materials beyond indicated subgrade elevations or dimensions without specific authorization of Engineer. Unauthorized excavation, as well as remedial work required by the Engineer shall be at the Contractor's expense. Remedial work required is as follows:
   1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation with select fill or screened stone compacted to 95%. Provide 12" minimum select fill or screened stone directly under footings. Concrete fill may be used to bring elevations to proper position, when acceptable to Engineer.
   2. If the bottom of a trench is excavated beyond the limits indicated, backfill the resulting void with thoroughly compacted screened stone, unless otherwise indicated.
   3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Engineer.

D. Structural Excavation:
   1. Shall consist of the removal, hauling, disposal, of all material encountered in the excavation to permit proper installation of structures.
   2. Excavations for structures shall be carried to the lines and subgrades shown on the Drawings.
   3. Excavate areas large enough to provide suitable room for building the structures.
   4. The extent of open excavation shall be controlled by prevailing conditions subject to any limits designated by the Engineer.
   5. Provide, install, and maintain sheeting and bracing as necessary to support the sides of the excavation and to prevent any movement of earth which could diminish the width of the excavation or otherwise injure the work, adjacent structures, or persons and property in accordance with all state and OSHA safety standards.
   6. Erect suitable fences around structure excavation and other dangerous locations created by the work, at no additional cost to the Owner.
   7. Exposed subgrade surfaces shall remain undisturbed, protected, and maintained as uniform, plane areas and shape to receive the foundation components of the structure.
      a. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
      b. In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade and trim bottoms to required lines and grades to leave solid base to receive the structure.
      c. If a structure is to be constructed within the embankment, the fill shall first be brought to a minimum of 3 feet above the base of the footing. A suitable excavation shall then be made as though the fill were undisturbed earth.

E. Trench Excavation: Shall consist of removal, hauling and disposal of all material encountered in the excavation to the widths and depths shown on the Drawings to

permit proper installation of underground utilities.

1. Excavate trenches to the uniform width shown on the Drawings sufficiently wide to provide sufficient space for installation, backfilling, and compaction. Every effort should be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.
2. Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one foot above the top of the pipe.
3. Grade bottoms of trenches as indicated for pipe and bedding to establish the indicated slopes and invert elevations, notching under pipe joints to provide solid bearing for the entire body of the pipe, where applicable.
4. If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least two feet above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.
5. Unless otherwise specifically directed or permitted by the Engineer, begin excavation at the low end of sewer and storm lines and proceed upgrade.
6. Perform excavation for force mains and water mains in a logical sequence.
7. The extent of open excavation shall be controlled by prevailing conditions subject to any limits prescribed by the Engineer.
8. As the excavation progresses, install such shoring and bracing necessary to prevent caving and sliding and to meet the requirements of the state and OSHA safety standards, as outlined in the appropriate section of this Specification.

F. Protection of Persons, Property and Utilities:

1. Barricade open excavations occurring as part of this work and post with warning lights in compliance with local and State regulations.
2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures that may be required.
3. Rules and regulations governing the respective utilities shall be observed in execution of all work. Active utilities and structures shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization of the utility owner. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable.
4. Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Engineer, the utility, the property owner, and the Owner.

G. Stability of Excavations:
   1. Slope sides of excavations to comply with all codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
   2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

H. Shoring and Bracing:
   1. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.
   2. Provide trench shoring and bracing to comply with local codes and authorities having jurisdiction. Refer to Specification Section 02156.
   3. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Install shoring and bracing as excavation progresses.

I. Material Storage:
   1. Stockpile excavated materials which are satisfactory for use on the work until required for backfill or fill. Place, grade and shape stockpiles for proper drainage and protect with temporary seeding or other acceptable methods to control erosion.
   2. Locate and retain soil materials away from edge of excavations.
   3. Dispose of excess soil material and waste materials as herein specified.

J. Dewatering:
   1. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) with which to intercept and/or remove promptly and dispose properly of all water entering trenches and other excavations (including surface and subsurface waters).
   2. Excavations shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged. Refer to Specification Section 02401.

K. Cold Weather Protection:
   1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35*F.
   2. No frozen material shall be used as backfill or fill and no backfill shall be placed on frozen material.

L. Separation of Surface Material:
   1. The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the work.
   2. Prior to excavation, existing pavement shall be cut where in the opinion of the Engineer it is necessary to prevent damage to the remaining road surface.
   3. Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.
   4. From areas within which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

M. Dust Control:
1. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, so as to minimize the creation and dispersion of dust. Refer to Specification Section 01562.
2. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, the contractor shall furnish and spread the material, as directed.

3.3 BACKFILL AND FILL

A. General:
1. Backfilling shall consist of replacing material removed to permit installation of structures or utilities, as indicated in the Contract Documents.
2. Filling shall consist of placing material in areas to bring them up to grades indicated on the Drawings.
3. The Contractor shall provide and place all necessary backfill and fill material, in layers to the required grade elevations.
4. Backfill excavations as promptly as work permits, but not until completion of the following:
   a. Acceptance by Engineer of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
   b. Inspection, approval, and recording locations of underground utilities.
   c. Removal of concrete formwork.
   d. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Temporary sheet piling driven below bottom of structures shall be removed in manner to prevent settlement of the structure or utilities, or cut off and left in place if required.
   e. Removal of trash and debris.
   f. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
   g. Density testing having results meeting requirements specified herein.
5. In general, and unless otherwise indicated, material used for backfill of trenches and excavations around structures shall be suitable excavated material which was removed in the course of making the construction excavation. Unless otherwise specified or allowed by the Engineer the backfill and fill shall be placed in layers not to exceed 8 inches in thickness.
6. All fill and backfill under structures and pavement, and adjacent to structures, shall be compacted crushed stone or select fill as specified or as indicated on the Drawings. The fill and backfill materials shall be placed in layers not exceeding 8 inches in thickness.
7. All structures (including manholes) shall be placed on a 6-inch mat of screened stone unless otherwise indicated.
8. Suitable excavated material shall meet the following requirements:
   a. Free from large clods, silt lumps or balls of clay.
   b. Free from stones and rock fragments with larger than 12 inch max. dimension.
   c. Free from organics, peat, etc.

d. Free from frozen material.

9. If sufficient suitable excavated material is not available from the excavations, and where indicated on the Drawings, the backfill material shall be select fill or common borrow, unless otherwise indicated, as required and as directed by the Engineer.
10. Do not backfill with, or on, frozen materials.
11. Remove, or otherwise treat as necessary, previously placed material that has frozen prior to placing backfill.
12. Do not mechanically or hand compact material that is, in the opinion of the Engineer, too wet.
13. Do not continue backfilling until the previously placed and new materials have dried sufficiently to permit proper compaction.
14. The nature of the backfill materials will govern the methods best suited for their placement and compaction. Compaction methods and required percent compaction is covered in Compaction section.
15. Before compaction, moisten or aerate each layer as necessary to provide a water content necessary to meet the required percentage of maximum dry density for each area classification specified.
16. Do not allow large masses of backfill material to be dropped into the excavation in such a manner that may damage pipes and structures.
17. Place material in a manner that will prevent stones and lumps from becoming nested.
18. Completely fill all voids between stones with fine material.
19. Do not place backfill on or against new concrete until it has attained sufficient strength to support loads without distortion, cracking, and other damage.
20. Deposit backfill and fill material evenly on all sides of structures to avoid unequal soil pressures.
21. Keep stones or rock fragments with a dimension greater than two inches at least one foot away from the pipe or structure during backfilling.
22. Leave sheeting in place when damage is likely to result from its withdrawal.
23. Completely fill voids left by the removal of sheeting with screened stone which is compacted thoroughly.

B. Pipe Bedding, Initial Backfill and Trench Backfill:

1. Place bedding and backfill in layers of uniform thickness specified herein, and as shown on the Drawings.
2. Thoroughly compact each layer by means of a suitable vibrator or mechanical tamper.
3. Install pipe bedding and initial backfill in layers of uniform thickness not greater than eight (8) inches.
4. Deposit the remainder of the backfill in uniform layers not greater than eight inches.
5. Provide underground utility marking tape for new utility trenches as shown on the Drawings. Refer to Section 02650 – Buried Utility Markings.
6. Where soft silt and clay soils are encountered the trench shall be excavated six inches below the normal bedding and backfilled with 6-inches of compacted sand.

7. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below the bottom of such footings, or which pass under wall footings. Place concrete to the level of the bottom of adjacent footings.
8. The following schedule lists the bedding materials for various types of pipe. Refer to the pipe trench detail for dimensional requirements.

BEDDING REQUIREMENTS

DI or Concrete Pipe	screened stone or select fill.
PVC or PE Pipe	screened stone.

9. The following schedule lists the initial backfill requirements for various types of pipes. Refer to the pipe trench detail for dimensional requirements.

INITIAL BACKFILL REQUIREMENTS

DI or Concrete, Pipe	Screened stone or select fill
PVC or PE Pipe	Screened stone

10. Special bedding and backfill requirements shown on the Drawings supersede requirements of this section.
11. Where pipes or structures pass through or under the impervious core of the lagoon embankments, bedding and backfill material shall consist of the impervious embankment material. Extra care should be given to properly and thoroughly compact the bedding material around the pipe.

C. Improper Backfill:
1. When excavation and trenches have been improperly backfilled, and when settlement occurs, reopen the excavation to the depth required, as directed by the Engineer.
2. Refill and compact the excavation or trench with suitable material and restore the surface to the required grade and condition.
3. Excavation, backfilling, and compacting work performed to correct improper backfilling shall be performed at no additional cost to the Owner.

D. Ground Surface Preparation:
1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, scarify or break-up sloped surface steeper than 1 vertical to 4 horizontal.
2. When existing ground surface has a density less than that specified under "compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

3.4 COMPACTION

A. General:
   1. Control soil compaction during construction to provide not less than the minimum percentage of density specified for each area classification.

B. Percentage of Maximum Density Requirements:
   1. Compact soil to not less than the following percentages of maximum dry density determined in accordance with ASTM D1557 as indicated.
      a. Structures: Compact each layer of backfill or fill material below or adjacent to structures to at least 95% of maximum dry density (ASTM D1557).
      b. Off Traveled Way Areas: Compact each layer of backfill or fill material to at least 90% of maximum dry density (ASTM D1557).
      c. Walkways: Compact each layer of backfill or fill material to at least 93% of maximum dry density (ASTM D1557).
      d. Roadways, Drives and Paved Areas: Compact each layer of fill, subbase material, and base material to at least 95% of maximum dry density (ASTM D1557).
      e. Pipes: Compact bedding material and each layer of backfill to at least 90% maximum dry density (ASTM D1557). Where backfilling with excavated material, compact to native field density.
      f. Embankments: Compact each layer of embankment material to at least 95% of maximum dry density (ASTM D1557).

C. Moisture Control:
   1. Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, in quantities controlled to prevent free water appearing on surface during or subsequent to compaction operations.
   2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
   3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory level.

D. Compaction Methods: The Contractor may select any method of compaction that is suitable to compact the material to the required density.
   1. General: Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material. All voids left by the removal of sheeting shall be completely backfilled with suitable materials and thoroughly compacted.
   2. Tamping or Rolling: If the material is to be compacted by tamping or rolling, the material shall be deposited and spread in uniform, parallel layers not exceeding the uncompacted thicknesses specified. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. Care shall be taken that the material close to the excavation side slopes, as well as in all other portions of the fill area, is thoroughly

compacted. When the excavation width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe or structure, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping or rolling, the rate at which backfilling material is deposited shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.

E. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.5 GRADING

A. General:
   1. Grading shall consist of that work necessary to bring all areas to the final grades.
   2. Uniformly grade areas within limits of work requiring grading, including adjacent transition areas.
   3. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

B. Grading Outside Building Lines:
   1. Grade areas adjacent to building to drain away from structures and to prevent ponding.
   2. Grade surfaces to be free from irregular surface changes, and as follows:
      a. Lawn or Unpaved Areas: Finish grade areas to receive topsoil to within not more than 1" above or below the required subgrade elevations.
      b. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/2" above or below the required subgrade elevation.
      c. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 3/8" above or below the required subgrade elevation.

C. Grading Surface of Fill Under Building Slabs:
   1. Grade surface to be smooth and even, free of voids, and compacted as specified, to the required elevation.
   2. Provide final grades within a tolerance of 1/2" when tested with a 10' straight edge.

D. Compaction:
   1. After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

E. Protection of Graded Areas:
   1. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
   2. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

3.6 BASE COURSE AND LEVELING COURSE

A. General:
   1. Base course consists of placing the specified materials in layers to support a leveling course or paved surface, as indicated in the Drawings.

B. Grade Control:
   1. During construction, maintain lines and grades including crown and cross-slope of base course and leveling course.

C. Placing:
   1. Place base course on prepared subbase conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting base materials.
   2. Place leveling course on prepared base course, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compaction.

D. Shaping and Compacting:
   1. All layers of aggregate base course and leveling course shall be compacted to the required density immediately after placing. As soon as the compaction of any layer has been completed, the next layer shall be placed.
   2. The Contractor shall bear full responsibility for and make all necessary repairs to the base leveling courses and the subgrade until the full depth of the base leveling courses is placed and compacted. Repairs shall be made at no additional cost to the Owner.
   3. If the top of any layer of the aggregate base or leveling course becomes contaminated by degradation of the aggregate or addition of foreign materials, the contaminated material shall be removed and replaced with the specified material at the Contractor's expense.

END OF SECTION

SECTION 02260

FILTER FABRIC AND GEOGRID

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Furnish all materials and install filter fabric of the types, dimensions and in the location(s) shown on the Drawings and specified herein.

B. Related Work Specified Elsewhere:

1. Temporary Erosion Control, Riprap and Stone Ditch Protection, and Stormwater Storage Tanks are specified in the appropriate sections of this Division.

1.2 QUALITY ASSURANCE

A. A competent laboratory must be maintained by the manufacturer of the fabric at the point of manufacture to ensure quality control.

B. During all periods of shipment and storage, the fabric shall be wrapped in a heavy duty protective covering to protect the fabric from direct sunlight, ultraviolet rays, temperatures greater than 140oF, mud, dirt, dust and debris.

1.3 SUBMITTALS

A. Manufacturer shall furnish certified test reports with each shipment of material attesting that the fabric meets the requirements of this Specification

PART 2 - PRODUCTS

2.1 MATERIALS

A. Filter fabric for use beneath and around the subsurface storage tank modules, stone bedding, and backfill of the subsurface stormwater storage tank shall be ACF M200, or equivalent and meet the requirements of Table 1.

TABLE 1

PROPERTY	TEST METHOD	ENGLISH	METRIC
Grab Tensile Strength	ASTM D-4632	365 x 200 lbs	1,624 x 890 N
Elongation @ Break	ASTM D-4632	24 x 10 %	24 x 10 %
Wide Width Tensile Strength	ASTM D-4595	2,400 x 1,680 lbs/ft	35.03 x 24.52 kN/m
CBR Puncture	ASTM D-6241	675 lbs	3,004 N
Trapezoidal Tear	ASTM D-4533	115 x 75 lbs	512 x 334 N
Apparent Opening Size[1,2]	ASTM D-4751	40 US Sieve	0.425 mm
Permittivity[1]	ASTM D-4491	2.1 Sec^{-1}	2.1 Sec^{-1}
Permeability[1]	ASTM D-4491	0.14 cm/sec	0.14 cm/sec
Water Flow Rate[1]	ASTM D-4491	145 g/min/f^2	5,908 L/min/m^2
Percent Open Area	CW-02215	10 %	10 %
UV Resistance @ 500 Hours	ASTM D-4355	90 %	90 %

[1] At the time of manufacturing. Handling, storage, and shipping may change these properties.
[2] Maximum average roll value (MaxARV).

The geotextile shall have property values expressed in "typical" values that meet or exceed the values stated above as determined by the most recent test methods specified above.

B. Geogrid shall be ACF BX-12 or equivalent and meet the requirements of Table 2.

TABLE 2

Geogrid Property	Test Method	Typical Roll Value	
		MD	CD
Ultimate Tensile Strength[1]	ASTM D6637	1310 lbs/ft	1970 lbs/ft
Tensile Strength @ 2%[1]	ASTM D6637	410 lbs/ft	620 lbs/ft
Tensile Strength @ 5%[1]	ASTM D6637	810 lbs/ft	1340 lbs/ft
UV Resistance	ASTM D4355	100%	
Junction Efficiency[2]	ASTM D7737	93%	
Flexural Stiffness[3]		750,000 mg-cm	
Aperture Stability[4]		0.65 m-N/deg	
Resistance to UV Degradation[5]	ASTM D4355	100%	
Rib Thickness		0.05 in	
Aperture Size		1.0 in	1.3 in
Roll Size (width x length)		12.5 ft x 246 ft	
Roll Area		341 yds^2	

The geotextile shall meet or exceed the "typical" values stated above as determined by the most recent test methods specified above.

C. Filter Fabric for use under riprap shall meet the requirements as specified in Section 02271 - Riprap and Stone Ditch Protection.

D. For Silt Fence, refer to Section 02270 - Temporary Erosion Control Execution

PART 3 - EXECUTION

3.1 Install filter fabric as shown on the drawings or as directed in appropriate specifications in this division or in accordance with manufacturer's instructions or as directed by the engineer.

END OF SECTION

SECTION 02270

TEMPORARY EROSION CONTROL (MAINE)

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. The work under this section shall include provision of all labor, equipment, materials and maintenance of temporary erosion control devices, as specified herein, as shown on the Drawings and as directed by the Engineer.
   2. Erosion control measures shall be provided as necessary to correct conditions that develop prior to the completion of permanent erosion control devices, or as required to control erosion that occurs during normal construction operations.
   3. Construction operations shall comply with all federal, state and local regulations pertaining to erosion control.
   4. After awarding of or after being awarded the Contract, prior to commencement of construction activities, the Contractor will meet with the Engineer to discuss erosion control requirements and develop a mutual understanding relative to details of erosion control.

B. Related Work Specified Elsewhere:
   1. Site work is specified in appropriate sections of this Division.

C. Design Criteria:
   1. Conduct all construction in a manner and sequence that causes the least practical disturbance of the physical environment.
   2. Stabilize disturbed earth surfaces in the shortest time and employ such temporary erosion control devices, as may be necessary, until such time as adequate soil stabilization has been achieved.

1.2 SUBMITTALS

A. The Contractor shall furnish the Engineer, in writing, his work plan giving proposed locations for storage of topsoil and excavated material, before beginning construction. A schedule of work shall accompany the work plan. Acceptance of this plan will not relieve the Contractor of his responsibility for completion of the work as specified.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Baled Hay:
   1. At least 14" by 18" by 30" securely tied to form a firm bale, staked as necessary to hold the bale in place.

B. Sand Bags:
   1. Heavy cloth bags of approximately one cubic foot capacity filled with sand or gravel.

C. Mulches:
   1. Loose hay, straw, peat moss, wood chips, bark mulch, crushed stone, wood excelsior, or wood fiber cellulose.
   2. Type and use shall be as specified by the "Maine Erosion and Sedimentation Control Best Management Practices" prepared by the Maine DEP, herein after referred to as the BMP.

D. Mats and Nettings:
   1. Twisted Craft paper, yarn, jute, excelsior wood fiber mats, glass fiber and plastic film.
   2. Type and use shall be as specified in the BMP.

E. Permanent Seed:
   1. Conservation mix appropriate to the predominant soil conditions as specified in the BMP and subject to approval by the Engineer.

F. Temporary Seeding:
   1. Use species appropriate for soil conditions and season as specified in the BMP and subject to approval by the Engineer.

G. Water:
   1. The Contractor shall provide water and equipment to control dust, as directed by the Engineer.

H. Silt Fence:
   1. Silt Fence shall be one of the commercially available brands, meeting the following requirements:

Geotextile Mechanical Property	Test Method	Minimum Permissible Value
Grab Tensile Strength (both directions)	ASTM D-4632	124 pounds
Puncture Strength	ASTM D-4833	60 pounds
Apparent Opening Size	ASTM D-4751	#30
Flow Rate	ASTM D-4491	8 gal/min/ft^2

2.2 CONSTRUCTION REQUIREMENTS

A. Temporary Erosion Checks:
   1. Temporary erosion checks shall be constructed in ditches and other locations as necessary.
   2. Baled hay, sand bags or siltation fence may be used in an arrangement to fit local conditions.

B. Temporary Berms:
   1. Temporary barriers shall be constructed along the toe of embankments when necessary to prevent erosion and sedimentation.

C. Temporary Seeding:

1. Areas to remain exposed for a time exceeding 3 weeks shall receive temporary seeding as indicated below:

Season	Seed	Rate
Summer (5/15 - 8/15)	Sudangrass	40 lbs/acre
Late Summer/Early Fall	Oats	80 lbs/acre
(8/15 - 9/15)	Annual Ryegrass	40 lbs/acre
Fall (9/15 - 10/1)	Winter Rye	112 lbs/acre
Winter (10/1 - 4/1	Mulch w/Dormant Seed	80 lbs/acre*
Spring (4/1 - 7/1)	Oats	80 lbs/acre
	Annual Ryegrass	40 lbs/acre

* seed rate only

D. Silt Fence shall be supported by posts and installed per the manufacturer's recommendations.

E. Mulch All Areas Receiving Seeding:
   1. Use either wood cellulose fiber mulch (750 lbs/acre); or straw mulch with chemical tack (as per manufacturer's specifications). Wetting for small areas may be permitted. Biodegradable netting is recommended in areas to be exposed to drainage flow.

F. Erosion control matting for slopes and ditches shall be anchored with pegs and/or staples per manufacturer's recommendations. Contractor shall provide matting along the flowline of all ditches and swales having a longitudinal slope in excess of 0.01 ft/ft, and on all slopes in excess of 3(H) to 1(V).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Temporary Erosion Checks:
   1. Temporary erosion checks shall be constructed in ditches and at other locations designated by the Engineer. The Engineer may modify the Contractor's arrangement of silt fences, bales and bags to fit local conditions.
   2. Baled hay, silt fences, or sandbags, or some combination, may be used in other areas, as necessary, to inhibit soil erosion.
   3. Siltation fence shall be located and installed as shown on plans or as required to comply with all Federal, State and Local Regulations.
   4. Sedimentation ponds shall be sited and constructed to the grades and dimensions as shown on the Drawings and will include drainage pipe and an emergency spillway.

B. Erosion control matting for slopes and ditches shall be installed where indicated on the Drawings and as required to stabilize the soil until permanent vegetative stabilization is established.

C. Maintenance:
   1. Erosion control features shall be installed prior to excavation wherever appropriate. Temporary erosion control features shall remain in place and shall be maintained until a satisfactory growth of grass is established. The Contractor shall be responsible for maintaining erosion control features throughout the life

of the construction contract. Maintenance will include periodic inspections by the Owner or Engineer for effectiveness of location, installation and condition with corrective action taken by the Contractor, as appropriate.

D. Removing and Disposing of Materials:
   1. When no longer needed, material and devices for temporary erosion control shall be removed and disposed of upon approval by Engineer.
   2. When removed, such devices may be reused in other locations, provided they are in good condition and suitable to perform the erosion control for which they are intended.
   3. When dispersed over adjacent areas, the material shall be scattered to the extent that it causes no unsightly conditions nor creates future maintenance problems.
   4. Sedimentation basins, if no longer required, will be filled in, the pipe removed, the surface loamed and grass cover shall be established.

END OF SECTION

SECTION 02271

RIPRAP AND STONE DITCH PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing all plant, labor, equipment, and materials and performing all work necessary to place a protective covering of erosion-resistant material on the slopes of embankments, spillways, streambanks, slopes of channels, or as directed by the Engineer. The work shall be done in accordance with these Specifications and in conformity with the lines and grades shown on the Drawings or established by the Engineer.

B. Types of riprap included in this specification:

1. Riprap - Riprap consists of stone dumped in place on a prepared slope of either a filter blanket or a filter fabric backing to form a well-graded mass with a minimum of voids.
2. Filter Blanket - A filter blanket consists of one or more layers of graded material placed on the bank before placing the riprap in order to prevent the bank material from passing through the riprap protection. The thickness and gradation of filter blanket will be shown on the plans.
3. Filter Fabric Backing - A filter fabric backing consists of a filter fabric overlain by a layer of coarse aggregate placed on the bank before placing the riprap to prevent the bank material from passing through the riprap protection. Filter fabric backing shall be used in lieu of a filter blanket where specifically called for on the plans or where approved by the Engineer.

1.2 SUBMITTALS

A. Submittals shall be in accordance with 01340 – Submittals, and the General Conditions of the Construction Contract.

B. Submit test results (including gradation analysis) and source location for all riprap material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Definition of the materials:

1. Riprap:
   a. Stone used for riprap shall be hard, durable, angular in shape; resistant to weathering and to water action; free from overburden, spoil, shale and organic material; and shall meet the gradation requirements for the class specified. Neither breadth nor thickness of a single stone should be less than one-third its length. Rounded stone or boulders shall not be accepted without written permission of the Engineer. Broken concrete may be substituted for stone with written authorization of the Engineer. Shale and

stone with shale seams are not acceptable. The minimum weight of the stone shall be l55 pounds per cubic foot as computed by multiplying the specific gravity (bulksaturated-surface-dry basis, AASHTO Test T 85) times 62.3 pounds per cubic foot.

b. Each load of riprap shall be reasonably well graded from the smallest to the maximum size specified. Stones smaller than the specified l0 percent size and spalls shall not be permitted in an amount exceeding l0 percent by weight of each load.

2. Filter Blanket - The filter blanket shall consist of one or more layers of screened gravel of the thickness as shown on the plans. The gradation of materials in the filter blanket shall be as shown on the Drawings. All material comprising the filter blanket shall be composed of tough, durable particles, reasonably free from thin, flat and elongated pieces, and shall contain no organic matter nor soft, friable particles in quantities in excess of those approved by the Engineer.

3. Filter Fabric Backing:
   a. Coarse Aggregate:
      i. The coarse aggregate shall be composed of tough, durable particles, reasonably free from thin, flat, and elongated pieces, and shall contain no organic matter nor soft, friable particles in quantities in excess of those approved by the Engineer.
   b. Filter Fabric:
      i. Filter fabric shall be US 1540 woven, or equivalent.
      ii. The filter fabric shall be formed in widths of not less than six (6) feet.
      iii. A competent laboratory must be maintained by the producer of the fabric at the point of manufacture to ensure quality control. During all periods of shipment and storage, the fabric shall be maintained, wrapped in a heavy duty protective covering to protect the fabric from direct sunlight, ultraviolet rays, temperatures greater than 140*F, mud, dirt, dust and debris.
      iv. The vendor shall furnish certified test reports with each shipment of material attesting that the fabric meets the requirements of this Specification.

TABLE 1
REQUIREMENTS FOR FILTER FABRIC

PROPERTY	TEST METHOD	ENGLISH	METRIC
Grab Tensile Strength	ASTM D-4632	365 x 200 lbs	1,624 x 890 N
Elongation @ Break	ASTM D-4632	24 x 10 %	24 x 10 %
Wide Width Tensile Strength	ASTM D-4595	2,400 x 1,680 lbs/ft	35.03 x 24.52 kN/m
CBR Puncture	ASTM D-6241	675 lbs	3,004 N
Trapezoidal Tear	ASTM D-4533	115 x 75 lbs	512 x 334 N
Apparent Opening Size(1,2)	ASTM D-4751	40 US Sieve	0.425 mm
Permittivity(1)	ASTM D-4491	2.1 Sec^{-1}	2.1 Sec^{-1}
Permeability(1)	ASTM D-4491	0.14 cm/sec	0.14 cm/sec
Water Flow Rate(1)	ASTM D-4491	145 $g/min/f^2$	5,908 $L/min/m^2$
Percent Open Area	CW-02215	10 %	10 %
UV Resistance @ 500 Hours	ASTM D-4355	90 %	90 %

(1) At the time of manufacturing. Handling, storage, and shipping may change these properties.
(2) Maximum average roll value (MaxARV).

B. Gradation of Coarse Aggregate for Filter Fabric Backing:

Sieve Size	% Passing By Weight
2-1/2"	100
2"	85 - 100
1"	35 - 70
1/2"	10 - 30
No. 4	0 - 5

C. Gradation of Riprap Stone:

Size of Stone	% of Total Weight Smaller Than The Given Size
Class I	
100 lb.	100
60 lb.	80
25 lb.	50
2 lb.	10
Class II	
700 lb.	100
500 lb.	80
200 lb.	50
20 lb.	10
Class III	

2,000 lb.	100
1,400 lb.	80
700 lb.	50
40 lb.	10

PART 3 - EXECUTION

3.1 CONSTRUCTION DETAILS

A. Slopes to be protected by riprap shall be free of brush, trees, stumps, and other objectionable material and be dressed to a smooth surface. All soft or spongy material shall be removed to the depth shown on the Drawings or as directed by the Engineer and replaced with approved material. Filled areas will be compacted thoroughly. A toe trench as shown on the Drawings shall be dug and maintained until the riprap is placed.

1. Riprap
   a. Stone for riprap shall be placed on the prepared slope or area in a manner which will produce a reasonably well- graded mass of stone with the minimum practicable percentage of voids. The entire mass of stone shall be placed in conformance with the lines, grades, and thicknesses shown on the Drawings. Riprap shall be placed to its full course thickness in one operation and in such a manner as to avoid displacing the underlying material. Placing of riprap in layers, or by dumping into chutes, or by similar methods likely to cause segregation will not be permitted.
   b. The larger stones shall be well distributed and the entire mass of stone shall conform to the gradation specified on the Drawings. All material going into riprap protection shall be so placed and distributed so that there will be no large accumulations of either the larger or smaller sizes of stone.
   c. It is the intent of these Specifications to produce a compact riprap protection in which all sizes of material are placed in their proper proportions. Hand placing or rearranging of individual stones by mechanical equipment may be required to the extent necessary to secure the results specified.
   d. Unless otherwise authorized by the Engineer, the riprap protection shall be placed in conjunction with the construction of the embankment with only sufficient lag in construction of the riprap protection as may be necessary to allow for proper construction of the portion of the embankment protected and to prevent mixture of embankment and riprap. The riprap protection shall be maintained until accepted, and any material displaced by any cause shall be replaced.
   e. Riprap stone shall not be dropped from a height greater than one foot onto the filter blanket.
2. Filter Blanket:
   a. A filter blanket shall be placed on the prepared slope or area to the full specified thickness using methods which will not cause segregation of

particle sizes within the bedding. The surface of the finished layer should be reasonably even and free from mounds or windrows.

3. Filter Fabric Backing:

a. A filter fabric shall be placed in the manner and at the locations shown in the Drawings or as directed by the Engineer. At the time of installation, fabric shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. The fabric shall be placed with the long dimension parallel to the centerline of the channel or shoreline unless otherwise directed by the Engineer, and shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. The strips shall be placed to provide a minimum width of 36 inches of overlap for each joint. Overlap joints and seams shall be measured as a single layer of cloth. Securing pins with washers shall be inserted through both strips of overlapped cloth at not greater than the following intervals along a line through the midpoint of the overlap.

Pin Spacing	Slope
2 feet	Steeper than 3:1
3 feet	3:1 to 4:1
5 feet	Flatter than 4:1

The fabric shall be turned down and buried two (2) feet at all exterior limits.

b. Additional pins regardless of location shall be installed as necessary to prevent any slippage of the filter fabric. The fabric shall be placed so that the upstream strip of fabric will overlap the downstream strip. Should the Engineer direct that the fabric be placed with the long dimension perpendicular to the centerline of the channel or shoreline, the lower strip of fabric shall overlap the next higher strip. Each securing pin shall be pushed through the fabric until the washer bears against the fabric and secures it firmly to the foundation. The fabric shall be protected at all times during construction from contamination by surface runoff and any fabric so contaminated shall be removed and replaced with uncontaminated fabric. Any damage to the fabric during its installation or during placement of riprap shall be replaced by the Contractor. The work shall be scheduled so that the filter blanket shall be covered with riprap as soon as possible following filter blanket placement. Any damage to the filter material during placement of riprap shall be corrected prior to proceeding with the work.

c. Securing pins for anchoring filter fabric shall be 3/16 inch steel bars, pointed at one end and fabricated with a head to retain a steel washer having an outside diameter of not less than 1.5 inches. The length of the pin shall not be less than 18 inches.

d. A layer of coarse aggregate shall be placed on the filter fabric to the full specified thickness using methods which will not cause segregation of

particle sizes. The surface of the finished layer shall be reasonably even and free from mounds or windrows.

END OF SECTION

SECTION 02431

CATCH BASINS, GRATES AND FRAMES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Construct catch basins, grates, frames, and brick masonry in conformance with the dimensions and locations shown on the Drawings.

B. Related Work Specified Elsewhere: (Where applicable)

1. Pipe, trench excavation and backfill, paving and dewatering are specified in the appropriate Sections in this Division.

1.2 QUALITY ASSURANCE

A. Precast Catch Basin Base, Barrel and Top Sections:

1. Conform to ASTM C478-97 except as modified herein, on the Drawings, or as directed by the Engineer.
2. Minimum strength of 4,000 psi at 28 days
3. Testing:
   a. Determine concrete strength by tests on 6 inch by 12 inch vibrated test cylinders cured in the same manner as the bases, barrels and tops.
   b. Have tests conducted at manufacturer's plant or at an approved testing laboratory.
   c. Have not less than 2 tests made for each 100 vertical feet of precast catch basin sections.

B. Frames and Covers:

1. Acceptable Manufacturers:
   a. EJ Group, Inc.
   b. Neenah Foundry Company
   c. Or equivalent.

C. Masonry:

1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick.
2. Cement: ASTM C-150.
3. Hydrated Lime: ASTM C-207.
4. Sand: ASTM C144.

1.3 SUBMITTALS TO THE ENGINEER

A. Submit shop Drawings and manufacturer's literature in conformance with the Standard General Conditions of the Construction Contract.

B. Bases, Barrel Sections and Tops: Submit test results and receive approval from the Engineer prior to delivery to the site.

PART 2 - PRODUCTS

2.1 PRECAST CATCH BASIN SECTIONS

A. Dimensions, as shown on the Drawings.

B. Use flat tops or eccentric cones as appropriate. Exterior face of cone sections shall not flare out beyond the vertical.
C. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to ensure accurate joint surfaces.
D. Constructed to support an HS-20 wheel loading.
E. Openings:
   1. Provide openings in the risers to receive pipes entering the catch basin of the types and materials approved by the Engineer.
   2. Make openings at the manufacturing plant or cut openings in the field.
   3. Size: To provide a uniform annular space between the outside wall of pipe and the riser.
   4. Location: To permit setting of the entering pipes at the correct elevations.
F. Joints:
   1. Joint gaskets to be flexible self seating butyl rubber joint sealant installed according to manufacturer's recommendations. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer.
   2. Acceptable Materials:
      a. Kent-Seal No. 2
      b. Ram-Nek
      c. Or equivalent.
   3. Joints between precast sections shall conform to related standards and manufacturer's instructions.

2.2 FRAMES AND GRATES

A. All essential details of design shall conform to the Drawings. Standard castings differing in non-essential details may be approved by the Engineer.
B. All frames and grates shall be made of cast iron and shall have machined bearing surfaces to prevent rocking under traffic.
C. Grate castings will be smooth with no sharp edges.
D. Constructed to support an HS-20 wheel loading.

2.3 MASONRY

A. Brick:
   1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.
   2. Immediately remove rejected brick from the work.
B. Mortar:
   1. Composition (by volume):
      a. 1 part portland cement.
      b. 1/2 part hydrated lime.
      c. 4-1/2 parts sand.
   2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed 3 times the sum of the volume of cement and lime.
C. Cement:
   1. Shall be Type II portland cement.
D. Hydrated Lime:

1. Shall be Type S.

E. Sand:
   1. Shall consist of inert natural sand.

F. Grading:

Sieve	Percent Passing
No. 4	100
No. 8	95-100
No. 16	70-100
No. 30	40-75
No. 50	10-35
No. 100	2-15
No. 200	0-5

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Precast Catch Basin Sections:
   1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.
   2. Install barrels and tops level and plumb.
   3. Make all joints water tight.
   4. Solidly fill annular spaces around pipes entering the catch basin with non-shrink grout or other material approved by the Engineer.
   5. Cut openings (as required) carefully to prevent damage to barrel sections and tops. Damaged barrel sections and tops shall be replaced by the Contractor at no additional expense to the Owner.

B. Pipe Connections to Catch Basins: Connect pipes to catch basins with joint design and materials approved by the Engineer.

C. Masonry:
   1. Laying Brick:
      a. Use only clean bricks in brickwork for catch basins.
      b. Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar or so wet as to be slippery when laid.
      c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.
      d. Construct all joints in a neat workmanlike manner, construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.
   2. Curing:
      a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.
      b. Protect brick masonry from the weather and frost as required.

D. Frames and Grates:

1. Set all frames in a full bed of mortar, true to grade and concentric with the catch basin opening.
2. Completely fill all voids beneath the bottom flange to make a watertight fit.
3. Place a ring of mortar at least one inch thick around the outside of the bottom flange, extending to the outer edge of the catch basin all around its circumference.
4. Clean the frame seats before setting the covers in place.

E. Bedding and Backfilling:

1. Bedding material of catch basin shall be 6 inches of screened stone (see Section 02200).
2. Backfill 18 inches all around catch basin with gravel borrow.

END OF SECTION

SECTION 02432

CATCH BASIN FILTER INSERTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install catch basin filtration devices in conformance with the dimensions and locations shown on the Drawings.

B. Related Work Specified Elsewhere: (Where applicable)

1. Catch basins, frames and grates are specified in the appropriate Sections in this Division.

1.2 QUALITY ASSURANCE

1.3 SUBMITTALS TO THE ENGINEER

A. Submit shop Drawings and manufacturer's literature in conformance with the Standard General Conditions of the Construction Contract.

PART 2 - PRODUCTS

2.1 FILTER INSERT SYSTEM

A. Inserts shall fit within the catch basin frames and allow the grate to fit above. Systems will be engineered for most hydraulic and cold climate conditions. The devices shall provide for isolation of trapped pollutant, including debris, sediments and floatable trash and hydrocarbons from bypass flow in order to minimize suspension during peak flows.

B. Water suspended pollutants such as oils and grease, pathogens, heavy metals and nutrients shall be treated by a radial downflow cartridge system that uses a filter medium designed to be non-leaching, non-biodegradable and safe for outdoor use. The cartridge specified shall effectively filter the water quality flow rates from a frequently occurring rainfall event and shall provide at least one mode of bypass. Under normal functioning conditions, a single cartridge shall be able to handle flow rates up to 0.25 cfs at 0.5 ft of driving head as documented through hydraulic testing of a clean cartridge.

C. High flows that exceed the treatment capacity of the filter cartridge, either clean or during the normal course of service, must be able to escape through overflow ports that are provided at the top of the insert.

Performance Parameter	Flows (gpm)
Cartridge flow rate	115
Bypass flow rate	1,080

D. Performance Characteristics and Testing: The water quality insert device shall have been tested by the manufacturer in the field and the in laboratory in order to demonstrate pollutant removal efficiency at flow rates at or near the cartridges

filtration capacity. Manufacturer may be required to submit test data to the Municipality or agency indicating the proposed device has been shown to achieve removal rates within the ranges specified in the table below.

Performance Parameter	**Percent Removal Range**
Sediment removal Based on U.S. Silica OK 110	at least 80 %
Hydrocarbons, Oils and Grease	at least 80 %
Total Phosphorus	40 to 60%
Nitrogen Compounds	30 to 50%
Bacteria	50 to 70%
Heavy Metals	40 to 60%

E. Materials: The support frame for the catch basin filter insert shall be composed of Aluminum Alloy 5000. Consideration may be given to alternate materials provided they have shown longevity of at least 5-years in cold climate environments exposed to freeze thaw cycles and winter deicing materials (road sand and salts). A complete list of material of construction and pertinent material properties are included in the table below.

Item	**Materials or Mechanical Properties**
Basin	Aluminum Alloy 5000
Adjustable flange and deflector	Aluminum Alloy 5000
Splash guard	Neoprene Rubber
Corner Filler	Aluminum Alloy 5000
Support Hardware	CRES 300
Aluminum Allow 6063-T6	Yield Strength 40,000 PSI (275 MPa)
	Tensile Strength 45,000 PSI (310 MPa)
	Shear Strength 30,000 PSI (206 MPa)
Neoprene Splash Guard	Thickness 0.25 inches (6.4 mm)
	Temperature Rating -45 °F to 250 °F (-42.7 C to 121 °C)
	Durometer 80

F. Clearance: The minimum clearance from bottom of cartridge to inside bottom of vault or resting water surface is 2 inches.

1. Joint gaskets to be flexible self seating butyl rubber joint sealant installed according to manufacturer's recommendations. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer.
2. Acceptable Materials:
   a. Kent-Seal No. 2
   b. Ram-Nek
   c. Or equivalent.

3. Joints between precast sections shall conform to related standards and manufacturer's instructions.

2.2 FRAMES AND GRATES

A. All essential details of design shall conform to the Drawings. Standard castings differing in non-essential details may be approved by the Engineer.
B. All frames and grates shall be made of cast iron and shall have machined bearing surfaces to prevent rocking under traffic.
C. Grate castings will be smooth with no sharp edges.
D. Constructed to support an HS-20 wheel loading.

2.3 MASONRY

A. Brick:
   1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.
   2. Immediately remove rejected brick from the work.
B. Mortar:
   1. Composition (by volume):
      a. 1 part portland cement.
      b. 1/2 part hydrated lime.
      c. 4-1/2 parts sand.
   2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed 3 times the sum of the volume of cement and lime.
C. Cement:
   1. Shall be Type II portland cement.
D. Hydrated Lime:
   1. Shall be Type S.
E. Sand:
   1. Shall consist of inert natural sand.
F. Grading:

Sieve	Percent Passing
No. 4	100
No. 8	95-100
No. 16	70-100
No. 30	40-75
No. 50	10-35
No. 100	2-15
No. 200	0-5

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Precast Catch Basin Sections:
   1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.
   2. Install barrels and tops level and plumb.
   3. Make all joints water tight.
   4. Solidly fill annular spaces around pipes entering the catch basin with non-shrink grout or other material approved by the Engineer.
   5. Cut openings (as required) carefully to prevent damage to barrel sections and tops. Damaged barrel sections and tops shall be replaced by the Contractor at no additional expense to the Owner.

B. Pipe Connections to Catch Basins: Connect pipes to catch basins with joint design and materials approved by the Engineer.

C. Masonry:
   1. Laying Brick:
      a. Use only clean bricks in brickwork for catch basins.
      b. Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar or so wet as to be slippery when laid.
      c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.
      d. Construct all joints in a neat workmanlike manner, construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.
   2. Curing:
      a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.
      b. Protect brick masonry from the weather and frost as required.

D. Frames and Grates:
   1. Set all frames in a full bed of mortar, true to grade and concentric with the catch basin opening.
   2. Completely fill all voids beneath the bottom flange to make a watertight fit.
   3. Place a ring of mortar at least one inch thick around the outside of the bottom flange, extending to the outer edge of the catch basin all around its circumference.
   4. Clean the frame seats before setting the covers in place.

E. Bedding and Backfilling:
   1. Bedding material of catch basin shall be 6 inches of screened stone (see Section 02200).
   2. Backfill 18 inches all around catch basin with gravel borrow.

END OF SECTION

SECTION 02435

CULVERTS AND STORM DRAINS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Provide and install culvert or storm drain pipe and sections of the type(s), size(s) and in the location(s) shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere:
   1. Excavation and backfill, dewatering, catch basins, pavement, borrow and bedding material are specified in the appropriate sections in this division.

1.2 SUBMITTALS

A. Submit, in duplicate, sworn certificates of inspections and tests performed at the location of manufacturers.

B. Submit shop drawings in accordance with the General Conditions of the Construction Contract.

1.3 DELIVERY, STORAGE AND HANDLING

A. Exercise care when handling pipe to prevent damage of any nature to pipe and finish.

B. Immediately remove damaged materials and replace at no additional cost to the Owner.

C. Store materials above ground on platforms, skids or other adequate supports.

1.4 FIELD QUALITY CONTROL

A. Acceptance will be on the basis of tests of materials and inspection of the complete product.

B. Inspection may be made at the place of manufacture or on the construction site after delivery, or both, and the pipe shall be subject to rejection at any time due to failure to meet all of the specification requirements, even though sample pipe units may have been accepted as satisfactory at the place of manufacture.

C. Immediately remove from the project site all rejected pipe.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe shall be one of the following as specified on the Drawings or at the option of the Contractor and with the approval of the Engineer.
   1. Polyvinyl Chloride (PVC) Pipe
   2. High Density Corrugated Polyethylene (HDPE) Pipe

B. Materials for pipes shall conform to Standards listed as follows:
   1. PVC (Polyvinylchloride) SDR 35 Pipe. This pipe and fittings shall conform to the requirements of AASHTO M278. All pipe shall be supplied with gasket type joints meeting the requirements of ASTM D3212.

2. High Density Corrugated polyethylene pipe (smooth interior), ADS N12 or equivalent. This pipe and fittings shall have a smooth interior and corrugated exterior and conform to the requirements of AASHTO M252 and AASHTO M294 or ASTM F2648. The pipe joint system shall be watertight (WT) and shall meet or exceed the current ASTM D3212 Lab Test Requirements and the current ASTM F1417 Watertight Field Test Requirements. Coiled pipe will not be accepted.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas to receive piping for the following:
   1. Obstructions that adversely affect the installation and quality of the work.
   2. Deviations beyond allowable tolerances for clearances.

B. Examine pipe and fittings before installation to assure no defective materials are incorporated.

C. Start the work only when conditions are satisfactory.

D. Remove and replace all defective materials at no additional cost to the Owner.

3.2 INSTALLATION

A. Do not install pipe, nor backfill, between December 15 and April 1 without the written permission of the Engineer.

B. Begin laying the pipe at the downstream end.

C. Place metal pipe with the longitudinal laps of seams at the sides and the outside laps of circumferential joints pointing up grade.

D. Lay paved or partially lined pipe with the lining on the bottom.

E. Join flexible pipe sections and metal end sections by coupling bands.

F. Assemble the plates for structural plate arches according to the manufacturer's assembly instructions and as shown on the Drawings.

END OF SECTION

SECTION 02485

LOAMING & SEEDING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish, place, and test topsoil, seed, lime, and fertilizer where shown on the drawings and protect and maintain seeded areas disturbed by construction work, as directed by the Engineer.

B. Related Work Specified Elsewhere (When Applicable): Earthwork, excavation, backfill, compaction, site grading and temporary erosion control are specified in the appropriate Sections of this Division.

1.2 SUBMITTALS AND TESTING

A. Seed:

1. Furnish the Engineer with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered to the project site is fully labeled in accordance with the Federal Seed Act and is at least equal to the specification requirements.
2. This certification shall appear in, or with, all copies of invoices for the seed.
3. The certification shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates and certificates have been approved.
4. Each lot of seed shall be subject to sampling and testing, at the discretion of the Engineer, in accordance with the latest rules and regulations under the Federal Seed Act.

B. Topsoil:

1. Inform the Engineer, within 30 days after the award of the Contract, of the sources from which the topsoil is to be furnished.
2. Obtain representative soil samples, taken from several locations in the area under consideration for topsoil removal, to the full stripping depth.
3. Have soil samples tested by an independent soils testing laboratory, approved by the Engineer, at the Contractor's expense.
4. Have soil samples tested for physical properties and pH (or lime requirement), for organic matter, available phosphoric acid, and available potash, in accordance with standard practices of soil testing.
5. Approval, by the Engineer, to use topsoil for the work will be dependent upon the results of the soils tests.

C. Lime & Fertilizer:

1. Furnish the Engineer with duplicate copies of invoices for all lime and fertilizer used on the project showing the total minimum carbonates and minimum percentages of the material furnished that pass the 90 and 20 mesh sieves and the grade furnished.

2. Each lot of lime and fertilizer shall be subject to sampling and testing at the discretion of the Engineer.
3. Sampling and testing shall be in accordance with the official methods of the Association of Official Agricultural Chemists.
4. Upon completion of the project, a final check may be made comparing the total quantities of fertilizer and lime used to the total area seeded. If the minimum rates of application have not been met, the Engineer may require the Contractor to distribute additional quantities of these materials to meet the minimum rates.

1.3 DELIVERY, STORAGE & HANDLING

A. Seed:
   1. Furnish all seed in sealed standard containers, unless exception is granted in writing by the Engineer.
   2. Containers shall be labeled in accordance with the United States Department of Agriculture's rules and regulations under the Federal Seed Act in effect at the time of purchase.

B. Fertilizer:
   1. Furnish all fertilizer in unopened original containers.
   2. Containers shall be labeled with the manufacturer's statement of analysis.

1.4 JOB CONDITIONS

A. Topsoil: Do not place or spread topsoil when the subgrade is frozen, excessively wet or dry, or in any condition otherwise detrimental, in the opinion of the Engineer, to the proposed planting or to proper grading.

B. Seeding:
   1. Planting Seasons: The recommended seeding time is from April 1 to September 15. The Contractor may seed at other times. Regardless of the time of seeding, the Contractor shall be responsible for each seeded area until it is accepted.
   2. Weather Conditions:
      a. Do not perform seeding work when weather conditions are such that beneficial results are not likely to be obtained, such as drought, excessive moisture, or high winds.
      b. Stop the seeding work when, in the opinion of the Engineer, weather conditions are not favorable.
      c. Resume the work only when, in the opinion of the Engineer, conditions become favorable, or when approved alternate or corrective measures and procedures are placed into effect.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Seed:
   1. Provide the grass seed mixture approved by the Engineer, having the following composition:
      a. Park Mixture:
         i. 50 percent Creeping Red Fescue
         ii. 30 percent Kentucky Bluegrass

iii. 20 percent Annual Ryegrass
iv. Add 1 pound White or Dutch Clover per acre
v. No weed seeds allowed

b. Roadside Mixture:
i. 50 percent Creeping Red Fescue
ii. 15 percent Kentucky Bluegrass
iii. 5 percent White Clover
iv. 2 percent Red Top
v. 3 percent Birdsfoot Trefoil
vi. 25 percent Annual Ryegrass
vii. Add 1 pound of White or Dutch Clover per acre
viii. No weed seeds allowed

c. Lawn Areas:

i.	Kentucky 31 Fescue	25 percent
ii.	Chewing Fescue	15 percent
iii.	Creeping Red Fescue	15 percent
iv.	Pennfine Perennial Rye	25 percent
v.	Lynn Perennial Rye	10 percent
vi.	Common Annual Rye	10 percent
vii.	No weed seeds allowed	

2. Do not use seed which has become wet, moldy, or otherwise damaged in transit or during storage.

B. Topsoil:
1. Fertile, friable, natural topsoil typical of the locality, without admixture of subsoil, refuse or other foreign materials and obtained from a well-drained site. Mixture of sand, silt, and clay particles in equal proportions.
2. Free of stumps, roots, heavy of stiff clay, stones larger than 1-inch in diameter, lumps, coarse sand, weeds, sticks, brush or other deleterious matter.
3. Not less than 4 percent nor more than 20 percent organic matter.
4. Topsoil depth shall be 4-inches, unless otherwise indicated.

C. Lime:
1. Provide lime which is ground limestone containing not less than 85% of total carbonate and of such fineness that 90% will pass a No. 20 sieve and 50% will pass a No. l00 sieve.
2. Coarser materials will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing a No. l00 sieve. No additional payment will be made to the Contractor for the increased quantity.

D. Fertilizer:
1. Provide a commercial fertilizer approved by the Engineer.
2. Provide fertilizer containing the following minimum percentage of nutrients by weight:
l0% Available phosphoric acid
l0% Available potash
l0% Available nitrogen (75% of the nitrogen shall be organic)

PART 3 - EXECUTION

3.1 PREPARATION

A. Equipment:
   1. Provide all equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials.
   2. Demonstrate to the Engineer that the equipment will apply materials at the specified rates.

B. Soil: Perform the following work prior to the application of lime, fertilizer or seed.
   1. Scarify the subgrade to a depth of 2 inches to allow the bonding of the topsoil with the subsoil.
   2. Apply topsoil to a depth of 4 inches or as directed on areas to be seeded.
   3. Trim and rake the topsoil to true grades free from unsightly variations, humps, ridges or depressions.
   4. Remove all objectionable material and form a finely pulverized seed bed.

3.2 PERFORMANCE

A. Grading:
   1. Grade the areas to be seeded as shown on the Drawings or as directed by the Engineer.
   2. Leave all surfaces in even and properly compacted condition.
   3. Maintain grades on the areas to be seeded in true and even conditions, including any necessary repairs to previously graded areas.

B. Placing Topsoil:
   1. Uniformly distribute and evenly spread topsoil on the designated areas.
   2. Spread the topsoil in such a manner that planting work can be performed with little additional soil preparation or tillage.
   3. Correct any irregularities in the surface resulting from topsoiling or other operations to prevent the formation of depressions where water may stand.
   4. Thoroughly till the topsoil to a depth of at least 3 inches by plowing, harrowing, or other approved method until the condition of the soil is acceptable to the Engineer. The surface shall be cleared of all debris and or stones one inch or more in diameter.

C. Placing Fertilizer:
   1. Distribute fertilizer uniformly at a rate determined by the soils test over the areas to be seeded.
   2. Incorporate fertilizer into the soil to a depth of at least 3 inches by discing, harrowing, or other methods acceptable to the Engineer.
   3. The incorporation of fertilizer may be a part of the tillage operation specified above.
   4. Distribution by means of an approved seed drill equipped to sow seed and distribute fertilizer at the same time will be acceptable.

D. Placing Lime:
   1. Uniformly distribute lime immediately following or simultaneously with the incorporation of fertilizer.
   2. Distribute lime at a rate determined from the pH test, to a depth of at least 3 inches by discing, harrowing, or other methods acceptable to the Engineer.

E. Seeding:
   1. Fine rake and level out any undulations or irregularities in the surface resulting from tillage, fertilizing, liming or other operations before starting seeding operations.
   2. Hydroseeding:
      a. Hydroseeding may be performed where approved and with equipment approved by the Engineer.
      b. Sow the seed over designated areas at a minimum rate of 5 pounds per 1000 square feet.
      c. Seed and fertilizing materials shall be kept thoroughly agitated in order to maintain a uniform suspension within the tank of the hydroseeder.
      d. The spraying equipment must be designed and operated to distribute seed and fertilizing materials evenly and uniformly on the designated areas at the required rates.
   3. Drill Seeding:
      a. Drill seeding may be performed with approved equipment having drills not more than 2 inches apart.
      b. Sow the seed uniformly over the designated areas to a depth of l/2 inch and at a rate of 5 pounds per l,000 square feet.
   4. Broadcast Seeding:
      a. Broadcast seeding may be performed by equipment approved by the Engineer.
      b. Sow the seed uniformly over the designated areas at a rate of 5 pounds per l,000 square feet.
      c. Sow half the seed with the equipment moving in one direction and the remainder of the seed with the equipment moving at right angles to the first sowing.
      d. Cover the seed to an average depth of l/2 inch by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved devices.
      e. Do not perform broadcast seeding work during windy weather.

F. Compacting:
   1. Seeded areas must be raked lightly after sowing unless seeding is to be directly followed by application of an approved mulch.
   2. Compact the entire area immediately after the seeding operations have been completed.
   3. Compact by means of a cultipacker, roller, or other equipment approved by the Engineer weighing 60 to 90 pounds per linear foot of roller.
   4. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, use a pneumatic roller (not wobbly wheel) that has tires of sufficient size to obtain complete coverage of the soil.
   5. When using a cultipacker or similar equipment, perform the final rolling at right angles to the prevailing slopes to prevent water erosion, or at right angles to the prevailing wind to prevent dust.

G. Mulching for Permanent Seeding:

1. Apply mulch at the specified rate for the given type and as specified by the "Maine Erosion and Sedimentation Control Best Management Practices" prepared by the Maine DEP.
2. Erosion Control Mix must contain some soil.
3. Hydraulic mulches, such as paper mulch and cellulose fiber, can include seeds, fertilizer, or soil binders.

Maine	
Mulch Type	**Rate**
Straw	2 bales (70-90lbs)/1,000 SF
Erosion Control Mix	<3:1 Slope: 2 inches min. >3:1 Slope: 4 inches min.
Paper Mulch	5 lbs/1,000 SF
Cellulose Fiber	40 lbs/1,000 SF
Erosion Control Blankets	Per manufacturer's instructions
Wood Chips and Bark Mulch	3 inches min.

4. Apply mulch at the specified rate for the given type and as specified by the "New Hampshire Stormwater Manual, Volume 3: Erosion and Sediment Controls During Construction" prepared by the NHDES and Comprehensive Environmental Inc.

New Hampshire	
Mulch Type	**Rate**
Straw	2 bales, (70-90lbs)/1,000 SF
Wood Chips or Bark Erosion Control Mix	2-6 inches, (460-920) lbs/1,000 SF <15% Slope: 2 inches thick min. >15% Slope: 4 inches thick min.
Erosion Control Blankets	Per manufacturer's instructions
Wood Fiber Mulch	500 lbs/acre

3.3 PROTECTION & MAINTENANCE

A. Protection:
   1. Protect the seeded area against traffic or other use.
   2. Erect barricades and place warning signs as needed.

B. Maintenance:
   1. At the time of the first cutting, set mower blades two inches high. All lawns shall receive at least two mowings before acceptance. Coordinate schedule for mowing with Engineer.
   2. Maintenance shall also include all temporary protection fences, barriers and signs and all other work incidental to proper maintenance.
   3. Maintain grass areas until a full stand of grass is indicated, which will be a minimum of 45 days after all seeding work is completed, and shall not necessarily related to Substantial Completion of the General Contract.

4. Protection and maintenance of grass areas shall consist of watering, weeding, cutting, repair of any erosion and reseeding as necessary to establish a uniform stand for the specified grasses, and shall continue until Acceptance by the Engineer of the work of this section. It shall also include the furnishing and applying of such pesticides as are necessary to keep grass areas free of insects and disease. All pesticides shall be approved by Engineer prior to use.

3.4 ACCEPTANCE

A. At final acceptance of the project all areas shall have a close stand of grass with no weeds present and no bare spots greater than three inches (3") in diameter over greater than five percent (5%) of the overall seeded area.

END OF SECTION

SECTION 02501

REMOVAL & REPLACEMENT OF PAVING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Remove bituminous and/or portland cement pavement, and replace aggregate base and subbase, pavement binder course and surface course, including temporary pavement, within the area(s) shown on the Drawings and as directed by the Engineer.
   2. Keep pavement removal to a minimum width suitable for the required construction.
   3. Replace pavement markings to the permanent paving to be the same as prior to pavement removal.

B. Work Not Included: Removal and replacement of paving for the convenience of the Contractor will not be considered for payment.

1.2 QUALITY ASSURANCE

A. Materials: Use only bituminous pavement furnished by a bulk bituminous concrete producer regularly engaged in the production of hot mixed, hot laid bituminous concrete.

B. Equipment: Provide, maintain and operate pavers, dump trucks, tandem, 3-wheel and pneumatic tired rollers well suited to the mixtures being placed. Provide, maintain and operate hand equipment as required. When applicable, provide, maintain and operate trimming equipment and materials.

C. Mix Requirements, Method of Placement and Compaction: State of Maine, Department of Transportation Standard Specifications - Highways and Bridges, 1984 or latest edition, hereinafter called Maine D.O.T. Standards, for mixing, placing and compacting bituminous concrete are applicable to this work

1.3 SUBMITTALS

A. Refer to 02513 – Bituminous Concrete Paving for required material submittals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide all materials in accordance with the applicable sections of the Maine D.O.T. Standards or the applicable section of these contract documents.
   1. Aggregate Subbase and Base (When Applicable): Division 700 - Materials, Section 703 - Aggregates, Subsection 703.06.
   2. Bituminous Tack Coat (When Applicable): Provide RS-1, CRS-1, HFMS-1, CSS-1 or 1h Asphalt Emulsion Material, Division 700 - Materials, Section 702 Bituminous Material, Subsection 702.04 - Emulsified Asphalts.

3. Bituminous Concrete Binder and Surface Courses: Section 702 - Bituminous Material, Subsection 702.01 - Asphalt Cement and Section 703 - Aggregates Subsection 703.09, Grading B and Grading C.
4. Curbs (When Applicable): Division 700 - Materials Subsection 712.36.
5. Sidewalks (When Applicable): Section 608 Sidewalks, Division 700 - Materials Subsection 702.01 Asphalt Cement, Subsection 703.09 Grading "D" and Division 400 - Pavements, Section 403 - Hot Bituminous Pavement.

B. Pavement markings shall conform to AASHTO designation M248-74 for Ready-Mixed White and Yellow Traffic Paints, Type N regular dry or Type F, fast dry. Glass beads shall conform to the Requirements of AASHTO M247, Type I.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Use construction methods as specified in the appropriate sections of these contract documents or in the sections of M.D.O.T. standard specification noted below.

B. Pavement Removal:
   1. General:
      a. Exercise extreme care in the removal of pavement so that pavement will not be unnecessarily disturbed or destroyed.
      b. Mechanically cut pavement to be removed to a straight, vertical line, unless otherwise directed in writing by the Engineer.
      c. All pavement removed shall remain the property of the Owner and shall be stockpiled at locations acceptable to or designated by the Owner at no additional cost to the Owner.

C. Pavement Replacement:
   1. Aggregate Subbase and Base Courses:
      a. Construct the aggregate subbase and base courses in accordance with "Division 300, Bases; Section 304, Aggregate Base and Subbase Course".
   2. Bituminous Tack Coat (When Applicable): Apply an emulsified asphalt tack coat to curb faces and pavements whenever the surface of the preceding pavement will not promote adequate bond. Generally, a tack coat is not required for pavement laid immediately after the final rolling of the underlying course. Tack coat will be required to bond at joints. Apply at a rate of .05 to .15 gallons per square yard uniformly distributed over the surface to be paved or jointed. Excess tack or fat spots will not be permitted.
   3. Bituminous Concrete, Binder and Surface Courses: Division 400 - Pavements, Section 403 Hot Bituminous Pavement.
   4. Curbs (When Applicable): Division 600 - Incidental Construction, Section 609 - Curbing.
   5. Sidewalks (When Applicable): Division 600 - Incidental Construction, Section 608 - Sidewalks.

D. Reset all existing manholes to finished grade as required at no additional cost to the Owner.

E. Pavement Markings:
   1. Material, conforming to these specifications, is to be furnished and applied after the installation of permanent paving.

2. Apply pavement markings in accordance with Division 600 Incidental Construction, Section 627, Pavement Markings. Pavement markings shall be identical in location to those removed or as shown on the plans, the latter taking precedent.

END OF SECTION

SECTION 02513A

BITUMINOUS CONCRETE PAVING (MAINE)

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Furnish all plant, labor, equipment and materials required to install bituminous concrete pavement courses, including sidewalks, driveways, temporary and permanent trench paving and restoration of pavement markings as shown on the Drawings and as specified herein.
   2. Remove bituminous asphaltic and/or Portland cement pavement, and replace bituminous asphaltic pavement, base, binder courses and surface courses, including temporary pavement, within the area(s) shown on the Drawings and as directed by the Engineer.
   3. Keep pavement removal to a minimum width suitable for the required construction.
   4. Apply pavement markings to the permanent paving as specified.

B. Work Not Included: Removal and replacement of paving for the convenience of the Contractor will not be considered for payment.

C. Related Work Specified Elsewhere (When Applicable):
   1. Excavation, backfill, aggregate base and subbase.

1.2 QUALITY ASSURANCE

A. Materials: Use only materials furnished by a bulk bituminous concrete producer regularly engaged in the production of hot mixed, hot laid bituminous concrete.

B. Equipment: Provide, maintain and operate pavers, dump trucks, tandem, 3-wheel and pneumatic tired rollers well suited to the mixtures being placed. Provide, maintain and operate hand equipment as required. When applicable, provide, maintain and operate trimming equipment and materials.

C. Mix Requirements, Method of Placement and Compaction: All mixes shall conform to the State of Maine Department of Transportation's SUPERPAVE mix standards.

1.3 SUBMITTALS

A. A Job Mix Formula approved by the State of Maine Department of Transportation's Central Laboratory in Bangor shall be submitted for each mixture to be supplied at least 15 calendar days prior to production.

B. Delivery slips shall be furnished with each load of mix delivered to the project. Information shall include:
   1. Vehicle identification.
   2. Date.
   3. Project.
   4. Identification of material.
   5. Gross, tare and net weights.
   6. Signed by the bituminous concrete producer.

7. Stamped by a licensed public weighmaster.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hot Bituminous Paving Mix:
   1. Binder Course - Maine D.O.T. Type 19.0 mm Superpave Mix
   2. Surface Course - Maine D.O.T. Type 12.5 mm Superpave Mix
   3. Sidewalks and Drives - Maine D.O.T. Type 9.5 mm Superpave Mix
   4. Deep Lifts in Full Construction - Maine D.O.T. Type 25.0 Superpave Mix.

B. Composition of Mixtures - Control Points

SIEVE SIZE	GRADING			
	TYPE 25 mm	TYPE 19 mm	TYPE 12.5 mm	TYPE 9.5 mm
	PERCENT BY WEIGHT PASSING - COMBINED AGGREGATE			
37.5 mm	100			
25 mm	90-100	100		
19 mm	-90	90-100	100	
12.5 mm	-	-90	90-100	100
9.5 mm	-	-	-90	90-100
4.75 mm	-	-	-	-90
2.36 mm	15-41	23-49	28-58	32-67
1.18 mm	-	-	-	-
0.60 mm	-	-	-	-
0.30 mm	-	-	-	-
0.075 mm	1-7	2-8	2-10	2-10

C. Tack Coat:
   1. Emulsified type, Grade RS-1, CRS-1, HFMS-1, CSS-1, 1h

D. Pavement markings shall be in accordance with Section 02577.

PART 3 - EXECUTION

3.1 GENERAL

A. Grade Control:
   1. The Contractor shall establish and maintain the required lines and grades, including crown and cross-slope, for each course during construction operations.

B. Trench areas shall receive initial paving as the work progresses where trenches are in paved streets. Not more than 300 linear feet of backfill trench shall be left unpaved.

C. Reset all existing manholes to finished grade as required at no additional cost to the Owner.

3.2 PAVEMENT REMOVAL

A. General:

1. Exercise extreme care in the removal of pavement so that pavement will not be unnecessarily disturbed or destroyed.
2. Mechanically cut pavement to be removed to a straight line, unless otherwise directed by the Engineer.
3. All pavement removed shall become the property of the Contractor and disposed of at locations acceptable to or designated by the Owner at no additional cost to the Owner.

B. Maine DOT Areas:
1. When removing pavement under the jurisdiction of the Maine DOT, strictly adhere to all DOT regulations controlling pavement openings.

3.3 SURFACE PREPARATION

A. Tack coats shall conform to Section 410 of the Maine D.O.T. Standard Specifications.

B. Tack Coat:
1. Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.05 to 0.15 gallons per square yard of surface.

3.4 WEATHER AND SEASONAL LIMITATIONS

A. The State is divided into 2 paving zones as follows:
1. Zone 1 - Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais.
2. Zone 2 - Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.

B. The Contractor may place Hot Mix Asphalt Pavement for use other than a traveled way wearing course in either Zone between the dates of April 15th and November 15th, provided that the air temperature as determined by an approved thermometer (placed in the shade at the paving location) is 2°C or higher and the area to be paved is not frozen. The Contractor may place Hot Mix Asphalt Pavement as traveled way wearing course in Zone 1 between the dates of May 1st and the Saturday following October 1st and in Zone 2 between the dates of April 15th and the Saturday following October 15th, provided the air temperature determined as above is 10°C or higher. For the purpose of this Subsection, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes.

C. Hot Mix Asphalt Pavement used for curb, driveways, sidewalks, islands, or other incidentals is not subject to seasonal limitations, except that conditions shall be satisfactory for proper handling and finishing of the mixture. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface, and the air temperature shall be 2°C or higher.

3.5 PLACING THE MIX

A. General:
1. Place asphalt concrete mixture on prepared surface. Minimum allowable temperature for placing is 250°F. Maximum shall be 325°F. Place in areas inaccessible to paving machine and small areas by hand. Place each course to required grade, cross-slope and compacted thickness.

B. Protection:
   1. After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened to the extent that the pavement will not be damaged.

3.6 PAVEMENT MARKINGS

A. Material, approved by the Engineer, is to be furnished and applied after the installation of permanent paving.

B. Apply pavement markings in accordance with existing markings. Match paint color, marking dimensions, layout and other details with existing markings in the vicinity of the project.

END OF SECTION

SECTION 02516

FULL DEPTH RECLAMATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Full Depth Reclamation work shall consist of pulverizing a portion of the existing parking lot structure into a homogenous mass and placing and compacting the material to the lines and grades and dimensions shown on the plans or established by the Engineer.

B. Related Work Specified Elsewhere:

1. Excavation and Hot Bituminous Paving are specified in appropriate sections in this division.

1.2 QUALITY ASSURANCE

A. Equipment: Provide, maintain equipment including reclaimers, dump trucks, tandem, 3-wheel and pneumatic tired rollers well suited to the work being performed and mixtures being placed. Provide, maintain and operate hand equipment as required. When applicable, provide, maintain and operate trimming equipment and materials.

1.3 SUBMITTALS

A. The Contractor shall submit a Quality Control Plan (QCP) to address material sources, testing plan, recycling operations

1.4 TESTING

A. Control Testing: The Contractor shall be responsible for control testing and documentation to evaluate the full depth reclamation process. The following minimum frequencies shall be used:

MINIMUM QUALITY CONTROL FREQUENCIES

Test or Action	Frequency	Test Method
Density	1 per 1000 ft *I* lane	AASHTO T 310
Air Temperature	4 per day at even intervals	
Surface Temperature	At the beginning and end of each days operation	
Yield of all materials (The daily yield, yield since last test, and total	I per 1000 ft *I* lane	

B. Acceptance Testing: The Owner shall perform in place Acceptance Testing in accordance with AASHTO T 310. Testing will be completed at a frequency of 1 per 1,000 linear feet per lane.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pulverized Material:
   1. Material shall consist of the existing bituminous surface, macadam base and 4 inch depth of the underlying crushed base aggregate, mixed as directed, using specified pulverizing and mixing equipment. Pulverized material shall be processed to 100% passing the 2-inch sieve.

B. New Aggregate and Additional Recycled Material
   1. New aggregate shall meet the requirements of subsection 703.10 – Aggregate for untreated surface course and Leveling Course. New aggregate, if required as directed by the engineer, shall be paid for as aggregate base material.
   2. Recycled material, if required, shall consist of material from the project or from off-site stockpiles that has been processed to 100% passing the 2-inch sieve. Recycled materials shall be free of winter sand, granular fill, construction debris and other materials not generally considered bituminous pavement.

C. Unsuitable Material:
   1. If, in the opinion of the Engineer, the material encountered during base reclamation is unsuitable for roadway construction, remove the material.

D. Disposal of Material:
   1. All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor.
   2. Dispose of this material at locations acceptable to or designated by the Owner at no additional cost to the Owner.
   3. All other material shall remain property of the owner and shall be delivered to the Bath Public Works Facility by the Contractor

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Shoulders
   1. The existing shoulders shall be excavated to the designated lines and grade and the aggregate subbase shall be placed up to at least the adjacent pavement elevation before the reclamation operation is started.

B. Pulverization:
   1. Pulverization of the pavement shall be accomplished by a self-propelled pulverizer machine, specifically manufactured for full depth pavement recycling work capable of reducing the required existing materials to a size that will pass a 2 inch square mesh sieve. The machine shall be equipped with standard automatic depth controls and must maintain a consistent cutting depth and width. The machine shall also be equipped with a gauge to show depth of material being processed.

C. Placement Equipment

1. Placement of full depth recycled material to the required slope and grade shall be done with an approved highway grader or by another method approved by the Engineer.

D. Rolling:
   1. The full depth recycled material shall be rolled with a vibratory pad/tamping foot roller, a vibratory steel drum soil compactor and a Type II pneumatic tire roller. The pad/tamping foot roller drum shall have a minimum of 112 tamping feet 3 inches in height, a minimum contact area per foot of 17 $in^2$and a minimum width of 84 inches. The vibratory steel drum roller shall have a minimum 84 in width single drum.

E. Full Depth Reclamation:
   1. New aggregate or recycled pavement meeting the requirements of Section 307.021 - New Aggregate, and Recycled Material shall be added as necessary to restore cross-slope and/or grade. Locations will be shown on the plans or described in the construction notes. The Contractor will use recycled pavement to the extent it is available, in lieu of new aggregate. The material shall then be pulverized, processed, and blended into a homogeneous mass passing a 2 inch square mesh sieve. Material found not pulverized down to a 2 inch size will be required to be reprocessed by the recycler with successive passes until approved by the Owner/Engineer. The material shall then be shaped to the cross- slope and grade shown on the plans, typical, or as directed by the Resident. This pulverized material shall be fine-graded ½- in. tolerance.
   2. The resultant material shall be graded and compacted to the cross-slope and profile shown on the plans or as directed by the Engineer. The Contractor will be responsible for re-establishing the existing profile grade. The completed surface of the full depth recycled course shall be shaped and maintained to a tolerance, above or below the required cross sectional shape, of 3/8 inch.
   3. After compaction, the roadway surface shall be treated with a light application of water, and rolled with pneumatic-tired rollers to create a close-knit texture. The finished layer shall be free from surface laminations, segregation of fine and coarse aggregate, corrugations, centerline differential, potholes, or any other defects that may adversely affect the performance of the layer.
   4. The Contractor shall protect and maintain the recycled layer until a lift of pavement is applied. Frequent light watering shall be performed to keep the finished cement stabilized material moist for at least 48 hours. Watering will continue from 48 hours to 1 week if the equipment is available on-site. Any damage or defects in the layer shall be repaired immediately. An even and uniform surface shall be maintained. The recycled material shall be swept prior to hot mix asphalt placement.
   5. Between 24 and 48 hours after compaction, the finished course shall be vibrated between 2 and 4 passes to induce minute cracks in the treated base course. Additional passes may be required to achieve the desired crack pattern as directed by the Engineer.

F. Material Use:
   1. Prior to placing the pulverized and mixed material in its final position, the underlying base material of the traveled way shall be shaped and compacted to

a tolerance of 1 inch above or 1 inch below the required grade and cross section. The compaction in the top 6 inches shall not be less than 95 percent of the maximum dry density as determined by AASHTOT99.

2. The pulverized and mixed material shall then be bladed onto the prepared underlying base material and shaped and graded within reasonably close conformity with the lines, grades and typical cross sections as shown on the Drawings or established by the Engineer.
3. The completed surface of the stabilized base course shall be shaped and maintained to a tolerance, above or below the required cross sectional shape, of 3/8 of an inch.

G. Application of Wearing Surfaces:
1. Hot bituminous shall be applied in the thickness shown on the Drawings and in accordance with the appropriate specification in this division.

3.2 WEATHER LIMITATIONS

A. Work shall not be completed when wind conditions would allow for transport of dust for the road surface.

3.3 REPAIRS

A. Repairs and maintenance of the recycled layers, during and after the curing period, resulting from damage caused by traffic, weather or environmental conditions, or resulting from damage caused by the Contractor's operations or equipment, shall be completed at no additional cost to the Owner.

B. Low areas will be repaired using a hot mix asphalt shim. Areas up to 1 in high can be repaired by milling or shimming with hot mix asphalt. Areas greater than 1 inch high will be repaired using a hot mix asphalt shim. All repair work will be done with the Owners approval at the Contractor's expense.

3.4 PAVEMENT

A. No new pavement shall be placed on the FDR until a curing period of 48-hours. If incremental weather occurs during this period, additional curing time may be required as directed by the Engineer.

END OF SECTION

SECTION 02525

GRANITE CURBS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: This work shall consist of furnishing and installing curb or edging, or removing and relaying existing curbing or edging in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the Drawings or established by the Engineer. The types of curbs are designated as follows:
   Type 1 - Vertical granite curb
   Type 5 - Sloped granite edging

B. Related Work Specified Elsewhere: Excavation and Embankment, Aggregate Base and Subbase, Bituminous Concrete Paving and Landscaping are specified in the appropriate Sections of this Division.

1.2 SUBMITTALS

A. Submit shop drawings in accordance with the applicable sections of Division 1, and the General Conditions of the Specifications.
B. Provide dimensional information, layout diagrams, and source of materials.
C. Submit mortar mix design.
D. Submit masonry contractor’s qualifications.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:
   1. The stone for curbing and edging shall be hard, durable, quarried granite.
   2. It shall be gray in color, free from seams, cracks or other structural defects and shall be of smooth splitting character.
   3. The curb may contain natural color variations that are characteristic of the granite source.
   4. The dimensions, shape and other details shall be as shown on the Drawings.

B. Source:
   1. The Contractor shall submit for approval the name of the quarry which is the proposed source of the granite for curb materials.
   2. Samples shall be submitted for acceptance by the Engineer when requested.

C. Finish and Surface Dimensions:
   1. Vertical Curb, Type 1:
      a. The individual curb stones shall conform to the dimensions indicated on the Drawings.
      b. Individual stones shall be furnished in minimum lengths of 6 feet, unless otherwise specified.

c. The exposed face of the stone curb shall be free from indications of drill holes. Half drill holes not larger than 3/4 inches diameter will be permitted in the arris line in the plane of the back.
d. The top surface shall be sawed or dressed to an approximately true plane with no depression or projection on that surface of over 1/8 inch.
e. The top front arris line shall be pitched straight and true with no variations from a straight line greater than 1/4 inch.
f. The top back arris line shall meet the same requirement as the top front arris except that indentations of a maximum of 3/8 inch will be allowed.
g. There shall be no projection or depression on the back face which would exceed a batter of 1 horizontal on 3 vertical for a distance from the top of 3 inches.
h. The front face shall be at right angles to the top and shall be smooth split and have no projections greater than one inch or depressions greater than 1/2 inches, measured from the vertical plane of the face through the top arris line, for a distance down from the top of 8 inches. The remainder of the face shall have no projections or depressions greater than one inch measured in the same manner.
i. The ends of the curb shall be approximately square with the planes of the top, back and face and so finished that when the sections are placed end to end with the required minimum spacing of 1/4 inch no more than 5/8 inch space shall show in the joint for the full width of the top surface and for the entire exposed front face. The remainder of the end may extend back no more than 8 inches from the plane of the joint.
j. The bottom surface may be sawn or split.
k. Drill holes through the curb will be allowed providing they are at least 9 inches below the top and are mortared full with portland cement mortar before placing the stone.

2. When curbing is specified on the Drawings with a radius of 60 feet or less, it shall be cut on the specified radius.
3. Curb Inlets: Inlets used at catch basins shall conform to the applicable requirements of Vertical Curb, Type 1, and to the shape, dimensions and details as shown on the Drawings.
4. Sloped Edging, Type 5:
   a. The individual edging stones shall conform to the dimensions indicated on the Drawings.
   b. Individual stones shall be furnished in minimum lengths of two (2) feet, unless otherwise specified.
   c. The exposed face shall be smooth split to an approximate true plane having no projections or depressions which will allow over one (1) inch to show between a two (2) foot straightedge and the face when the straightedge is placed as closely as possible on any part of the face.
   d. Half drill holes not more than three (3) inches in length and 3/4 inch in diameter will be permitted along the bottom.
   e. The arris line, top front shall be straight and true with no variation from a straight line greater than 1/8 inch.

f. The arris lines at the bottom of the face shall be straight and true so that not over one (1) inch shall show between the stone and a straightedge for the full length of the stone.

g. The ends shall be square to the length at the face and so finished that when the stones are placed end to end, no space more than 1 1/2 inches will show in the joint for the width of the face.

h. When sloped edging is specified on the Drawings with a radius of thirty (30) feet or less, it shall be cut on the specified radius.

5. Terminal curb, Type 1: Shall meet the requirements of Vertical Curb, Type 1 as contained herein.

D. Joint Mortar:

1. Shall consist of one (1) part portland cement and two (2) parts sand and mixed with sufficient water to form a plastic composition.
2. The portland cement shall conform to AASHTO M85, Type II-A.
3. The sand shall consist of the following gradation:

100%	Passing the No. 8 sieve
15-40%	Passing the No. 50 sieve
0-10%	Passing the No. 100 sieve
0-5%	Passing the No. 200 sieve

PART 3 - EXECUTION

3.1 REMOVAL OF CURBING

A. The Contractor shall carefully remove, store and clean curb specified on the Drawings or designated for resetting.

B. Curbing damaged or destroyed, as a result of the Contractor's operations or because of his failure to store and protect it in a manner that would prevent loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

3.2 EXCAVATION

A. Excavation shall be made to the required depth and base material upon which the curb is to be set shall be compacted to a firm, even surface.

B. All soft and unsuitable material shall be removed and replaced with suitable material which shall be thoroughly compacted.

3.3 INSTALLATION

A. The curb and sloped edging shall be set so that the front top arris line is in close conformity to the line and grade required.

B. All space beneath the curbing shall be filled and thoroughly tamped with material meeting the requirements of the bed course material.

3.4 JOINTS

A. The required spacing between stones shall be a minimum of 1/4 inch and a maximum of 5/8 inch for Type 1 curb.

B. The required spacing between stones shall be a maximum of 1/2 inch for Type 5 curb.

C. Joints between stones shall be carefully filled with mortar along the back portion of the joint to prevent loss of backfill material.

3.5 BACKFILLING

A. After the joints have set, any remaining excavated areas shall be filled and tamped with approved material placed in eight (8) inch layers.

3.6 CURB INLETS

A. Curb placed adjacent to curb inlets shall be installed with steel dowels cemented into each stone with epoxy grout.

END OF SECTION

SECTION 02526B

SLIPFORMED CONCRETE CURBS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: This work shall consist of furnishing and installing curb in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the Drawings or established by the Engineer. The types of curbs are designated as follows:
   1. Straight Curb
   2. Radius Curb
   3. Terminal Curb

B. Related Work Specified Elsewhere: Excavation and Embankment, Aggregate Base and Subbase, Bituminous Concrete Paving and Landscaping are specified in the appropriate Sections of this Division.

1.2 SUBMITTALS

A. Submit Concrete Mix designs including past field performance test results.

B. Submit product data for bonding agent.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The portland cement concrete shall conform to the requirements of AASHTO M85 Type II with a moderate heat of hydration and with the following exceptions:
   1. The autoclave expansion shall be limited to a maximum of 0.20 percent.
   2. There will be no requirements for tensile strength.
      Only one brand of cement shall be used on any one contract unless otherwise permitted, in writing, be the Engineer.
   3. Coarse aggregate for concrete shall meet the requirements of MaineDOT Section 703.02 for Class “A” or “AA”.
   4. Minimum strength of concrete: 4,000 psi.

B. Fiber reinforcement shall meet the requirements of ASTM C-1116, Section 4.1.3 and AC-32 at 0.75 lb per CY..

C. The premolded expansion joint material shall be non-extruding and resilient bituminous type and shall conform to the requirements of AASHTO M213.

D. Curing Compound shall be a clear emulsion meeting the requirements of ASTM C-309 Type 1 or 1D, Class A&B and AASHTO M-148.

E. Bonding agent for the concrete and the pavement base shall be a chemical concrete bonding agent meeting the tensile bond strength testing requirements of ASTM C-932

PART 3 - EXECUTION

3.1 LAYOUT CURB

A. The Contractor shall layout the edge of curb line on the base pavement as a guide for the slipform operation.

3.2 BONDING

A. Sweep surface of pavement where curbing shall be placed.
B. Apply bonding agent to pavement in curbing locations.

3.3 INSTALLATION

A. The slip form paving operation of depositing, spreading, consolidating and finishing shall be such that, insofar as possible, continuous operation of the paver will be maintained. Starting and stopping of the paver should be kept to a minimum. The concrete shall be vibrated, either externally or internally, with sufficient intensity to consolidate it throughout its entire width and depth. Whenever, for any reason, it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately, and not restarted until the forward motion of the paver resumes.
B. Curing compound shall be applied shortly after the installation of the curbing.
C. For cold weather slipforming the outside temperature must be at least 36º F and rising.

3.4 JOINTS

A. Expansion joints shall be placed at the end of all radii and against buildings or other fixed objects, and in no case shall the distance between expansion joints exceed 160 feet.
B. Contraction joints shall be saw cut 1” -3” into the curbing at 10 foot intervals along the length of the curb. If the curb is adjacent to a sidewalk the contraction joints in the sidewalk shall be in the same locations as the curbing and made to match.

3.5 PROTECTION

A. Slipform curbing must be adequately protected after placement. The concrete shall be allowed to cure for at least 72 hours. During cold weather conditions, when temperatures drop below the required 36º F after placement, curbing shall be protected by concrete blankets of a combination of plastic sheeting and straw. After any placement of slipform curbing, regardless of weather conditions, the placed curbing shall be protected by traffic control devices and flagging as necessary for a period of 7 days.
B. Curbing damaged or destroyed, as a result of the Contractor's operations or because of his failure to protect it in a manner that would prevent loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

3.5 BACKFILLING

A. After the concrete has been in place for 7 days, any remaining excavated areas shall be filled and tamped with approved material.

END OF SECTION

SECTION 02577

PAVEMENT MARKINGS - MAINE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. This work shall consist of providing final reflective pavement lines and markings during paving operations as shown on the plans. It shall consist of providing temporary pavement markings during construction.

1.2 SUBMITTALS

A. All submittals shall be in accordance with 01340 – Submittals, and the General Conditions of the Construction Contract.

B. Submit product data for all pavement marking materials.

PART 2 - PRODUCTS

2.1 MATERIALS - TAPE

A. Performed Plastic:

1. General - Reflectorized pavement marking tape and marking sheeting, performed into rolls or ribbons of various lengths, pliability, and widths suitable for use as reflective markings on Portland cement concrete or bituminous pavement shall consist of a mixture of high-quality polymeric materials, pigments, or glass beads that are uniformly distributed throughout, with a reflective layer of beads bonded to the top. The edges of the performed material shall be clean cut and true. It may be supplied with a precoated, factory applied adhesive for immediate pavement application without the use of heat, solvent or other types of adhesive operations, or it may be furnished with separate adhesives as recommended by the manufacturer. The affixed material shall be capable of molding itself to the pavement contoured by the action of traffic and maintain its original dimensions and placement under normal traffic conditions at the pavement temperatures, which could occur within Maine.
2. Physical Requirements - Color Pigments shall be selected and blended to conform to standard highway colors throughout the expected life of the material. When tested by Federal Test Method Standard 141 Method 4232, the white shall be no darker than Color Number 37778 of Federal Standard number 595 and the yellow shall conform to Color Number 33538 of Federal Standard Number 595 (Highway yellow Color PR#1).
3. Retro-Reflectivity - The retro-reflective performed film shall have a layer of reflective spheres bonded to the top surface. The white and yellow film shall have the following initial minimum retroreflectance values at 0.2° and 0.5° observation angles and 86° entrance angle as measured in accordance with the photometric testing procedures of ASTM D4061. Retroreflectance values shall

be expressed as specific luminance in millicandelas per square meter per lux (medm 2lx 1) [millicandelas per square foot/foot candle (med ft 2fc 1)]

	White		Yellow	
Observation Angle	0.2°	0.5°	0.2°	0.5°
SL[medm ^{2}lx ^{1}] [med ft ^{2}fc ^{1}]	550	380	410	250

The test distance shall be 15 m [50 feet] and the sample size a 600 mm by 750 mm [3 feet by 2.5 feet] rectangle. The angular aperture of both the photoreceptor and light projector shall be 10 minutes of arc. The reference center of the sample and the reference axis shall be taken perpendicular to the test sample.

4. Bead Retention - When tested with a 50 mm by 150 mm [2 in by 6 in] sample bent over a 13 mm [½ in] diameter mandrel with the 50 mm [2 in] dimension perpendicular to the mandrel axis, microscopic examination of the arc on the mandrel shall show no more than 10% of the beads are entrapped in the binder and less than 40% of the surface of the bead.
5. Application - The preformed plastic material shall be capable of application to non-defective pavement surfaces that are dry and free from dirt or other foreign matter. For normal application, the pavement temperature should be at least 15°C [60°F] and rising.
6. Special Instructions - Special instructions should be supplied by the vendor for application to be made at pavement temperatures below 15°C [60°F]. Application shall be according to manufacturer's recommended procedures. Plastic pavement marking materials shall only be applied to surfaces with temperatures within the range specified by the manufacturer for optimum adhesion.
7. Adhesive, Activators or Special Coatings - Adhesive, activators or special coatings for various types of pavement surfaces shall be provided with the preformed plastic material. Detailed information must be supplied with the material outlining required application procedures for such adhesives, activators, or special coating.
8. Preformed Plastics - Performed plastics shall be capable of being applied to new asphalt pavement immediately prior to the final rolling of the new surface and of being rolled into place with conventional pavement and highway rollers. The plastic material and adhesives used in such applications shall be of the type that water used on the roller to prevent asphalt pickup shall not be harmful to the successful application of the plastic.
9. Special Equipment - Special equipment necessary for the successful installation of any preformed plastic material shall be available from the manufacturer of the plastic material on a lease, loan, or purchase basis. These materials following application shall be immediately ready for traffic without any damage to the material surface or injuries to passing vehicles. The retro reflective pavement marking tapes are intended for use as longitudinal lines such as lane lines, edge lines, channelization lines, gore markings or stop bars and crosswalk

lines, and shall be inlaid into new asphaltic concrete by using a steel pavement roller while the pavement is at temperatures between 130°F. and 150°F.

2.2 MATERIALS -PAINT

A. Pavement Marking Paint for final and temporary pavement marking shall meet the requirements of Federal Specification TT-P-1952E. Either Type N, regular dry traffic paint or Type F, fast dry traffic paint may be used.

PART 3 - EXECUTION

3.1 GENERAL

A. All pavement lines and markings shall be applied in accordance with the Manual on Uniform Traffic Control Devices. Longitudinal lines placed on tangent roadway segments shall be straight and true. Longitudinal lines placed on curves shall be continuous smoothly curved lines consistent with the roadway alignment. All pavement markings placed shall meet the tolerance limits shown on the plans.

B. Broken lines shall consist of alternate 3 m [10 ft] painted line segments and 9m [30 ft] gaps. Temporary pavement marking lines, will be applied as many times as necessary to properly delineate traffic lanes for the safe passage of traffic. Bi-directional delineators may be used in place of temporary lines. Delineators will be applied at 12 m [40 ft] intervals.

C. In overnight lane closure areas that are not to be overlaid, temporary plastic lines or raised pavement markers shall be used through the length of the taper.

D. The plastic final pavement lines and markings shall be applied in accordance with the manufacturer's recommendations by the inlay method of application.

3.2 ESTABLISHMENT PERIOD

A. Inlaid plastic pavement lines and marking material furnished and installed under this contract for final pavement markings shall still be subject to a six-month period of establishment.

B. The period of establishment shall commence as soon as the plastic pavement lines and markings are complete and in place and shall continue for six months. At the end of the establishment period, a minimum of 95% of the plastic pavement lines and markings shall still be in place to be acceptable.

C. If less than 95% of the plastic pavement lines and markings are in place after six months, the Contractor shall replace all unsatisfactory plastic pavement lines and markings on the project without additional payment. Plastic pavement lines and markings designated for replacement shall be installed according to these specifications, unless otherwise directed. Plastic pavement lines and markings replaced at the end of the six month establishment period will not be subject to a further establishment period.

3.3 PAVEMENT MARKING TAPE MATERIAL REPLACEMENT PROVISION GUARANTEE

A. The Contractor shall supply the Owner with a written guarantee for a minimum of two years for all materials contained in these specifications.

B. The period of guarantee shall begin from the date of application to the road.

3.4 PREPARATION OF SURFACE FOR PAINT

A. Immediately before applying the pavement marking paint to the pavement or curb, the surface shall be dry and entirely free from dirt, grease, oil, or other foreign matter. Surface preparation for application of plastic markings shall conform to the manufacturer's recommendations.

3.5 APPLICATION OF PAINT

A. Prior to applying paint for final pavement lines, the Contractor shall perform a test for paint thickness by furnishing and placing a piece of smooth, clean metal with an area of at least 0.1 m^2 [144 in^2] in the path of the striping truck. The striping truck shall be passed over the piece of metal, painting the surface as it passes, without applying beads. The result of this test will be used to determine the pressure setting and speed of the truck when applying paint to obtain the specified thickness. Additional paint thickness testing may be required on the final paint markings. The wet thickness of paint without beads on final pavement lines shall be a minimum of 0.400 mm [16 mils].

B. On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be in two uniform covering coats, each at least 0.25 mm [10 mils] thick. Before the second coat of paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.

C. Glass beads shall be applied to the final and temporary pavement lines, marking and curb at the rate of 0.72 kg/L [4.5 lb/gal] of paint and in sufficient quantity to assure complete and uniform coverage of hand painted surfaces.

D. Temporary painted lines and markings shall be applied as specified for permanent painted lines, except that the thickness shall be a minimum of 0.400 mm [16 mils].

E. Temporary pliant polymer marking material shall be used for temporary markings on the final pavement and on pavements not to be resurfaced when such pavement markings do not conform to the final pavement markings pattern.

F. Newly painted lines, markings and curb shall be protected from traffic by the use of cones, stationary vehicles or other approved methods until the paint is dry.

3.6 REMOVING LINES AND MARKINGS

A. When it is necessary to remove pavement lines and markings, it shall be done by grinding, high temperature flame, sand blasting, solvent or other acceptable means. The method chosen must be capable of completely eradicating the existing line or marking without damage to the pavement. Burning and grinding to remove temporary markings from final pavement or from existing pavement not to be resurfaced will not be permitted.

END OF SECTION

SECTION 02601

MANHOLES, COVERS AND FRAMES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Construct manholes, covers, frames, brick masonry, inverts and apply waterproofing in conformance with the dimensions, elevations, and locations shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere (when applicable):
   1. Final sewer testing is specified in this Division.
   2. Pipe, excavation, backfill, paving and dewatering are specified in the appropriate Sections in this Division.
   3. Concrete and grout are specified in Division 3.

1.2 QUALITY ASSURANCE

A. Precast Manhole Base, Barrel and Top Sections:
   1. Conform to ASTM C478 except as modified herein, and on the Drawings.
   2. Average strength of 4,000 psi at 28 days.
   3. Testing:
      a. Determine concrete strength by tests on 6-inch by 12-inch vibrated test cylinders cured in the same manner as the bases, barrels and tops.
      b. Have tests conducted at the manufacturer's plant or at a testing laboratory approved by the Engineer.
      c. Have not less than 2 tests made for each 100 vertical feet of precast manhole sections.

B. Manhole Steps –
   1. Conform to ASTM C478-06 for load carrying capacity and pull out resistance.
   2. Acceptable Manufacturers:
      a. Parson Environmental Products, Inc.
      b. M. A. Industries, Inc.
      c. Or equal

C. Frames and Covers:
   1. Acceptable Manufacturers:
      a. EJ Castings
      b. Neenah Foundry Company.
      c. Or equal

D. Exterior Chimney Wrap/Seal
   1. Acceptable Manufacturers:
      a. Sealing Systems, Inc. Infi-Shield Uni-Band
      b. Or equal

E. Masonry:
   1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick.
   2. Cement: ASTM C150.

3. Hydrated Lime: ASTM C207
4. Sand: ASTM C33

F. Waterproofing:
1. Acceptable Manufacturers:
a. Karnak #220 AF Fibered Emulsion Dampproofing, Karnak Corp., Clark, NJ.
b. PPS 922 Superseal, International Precast Supply.
c. Or equal.

G. Microbially induced corrosion control (MICC) admixture:
1. Concrete admixture for microbiologically induced corrosion control shall be included with structures noted.
2. Acceptable Manufacturers:
a. Conshield, by ConShield Technologies, Inc.
b. Bio-San C500, by Xypex Chemical Corporation.
c. Or equal

H. Pipe connections shall conform to ASTM C 923, "Standard Specifications for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals

1.3 SUBMITTALS

A. Submit shop drawings and manufacturer's literature in conformance with Section 01340 and the Standard General Conditions of the Construction Contract.
B. Precast Manhole Sections: Submit test results and receive approval from the Engineer prior to delivery to the site.
C. Microbiologically induced corrosion control (MICC) admixture.
1. Product data, dosage, and instructions for use including storage, preparation prior to dosing, batching sequence, dosing process, and concrete mixing procedures.
2. Letter from MICC admixture manufacturer attached to concrete mixture design stating that the concrete mixture design is compatible for use with the admixture. (MICC admixtures may not be compatible with some commercially available concrete admixtures.)
3. Letter of certification from pre-caster stating that all requirements of the admixture manufacturer were followed.
4. Concrete batch tickets for each batch of concrete, indicating inclusion of MICC admixture.

PART 2 - PRODUCTS

2.1 PRECAST MANHOLE SECTIONS

A. Dimensions, shall be as shown on the Drawings:
1. Base & Riser Sections:
a. Diameter: As shown on the Drawings.
b. Length: As required.
c. Wall Thickness: Not less than 5 inches.
d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to ensure accurate joint surfaces.

2. Tops:
    a. Diameter: Eccentric cone type, 24 inches I.D. at top, 48 inches I.D. at bottom unless otherwise shown on the Drawings.
    b. Height: 4 feet.
    c. Wall thickness: Not less than 5 inches at the base, tapering to not less than 8 inches at the top.
    d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to ensure accurate joint surfaces.
    e. Exterior face of cone sections shall not flare out beyond the vertical.
3. Flat Slab Tops:
    a. Location: Where shallow installations do not permit the use of a cone-type top and where indicated on the Drawings.
    b. Slab thickness: Not less than 6 inches.
    c. Constructed to support an HS-20 wheel loading.

B. Openings:
1. Provide openings in the risers to receive pipes entering the manhole.
2. Make openings at the manufacturing plant.
3. Size: To provide a uniform annular space between the outside wall of pipe and riser.
4. Location: To permit setting of the entering pipes at the correct elevations.
5. Openings shall have a flexible watertight union between pipe and the manhole base.
    a. Cast into the manhole base and sized to the type of pipe being used.
    b. Type of flexible joint being used shall be approved by the Engineer. Install materials according to the Manufacturer's instructions.
        i. Lock Joint Flexible Manhole Sleeve made by Interpace Corporation.
        ii. Kor N Seal made by National Pollution Control System, Inc.
        iii. Press Wedge II made by Press-Seal Gasket Corporation.
        iv. A-Lok Manhole Pipe Seal made by A-Loc Corporation.
        v. Or equivalent.

C. Joints:
1. Joint gaskets to be flexible self-seating butyl rubber joint sealant installed according to manufacturer's recommendations. Install a double row of joint sealants for every manhole joint. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer.
    Acceptable Materials:
    a. Kent-Seal No. 2
    b. Ram-Nek
    c. Or equivalent.
2. Joints between precast sections shall conform to related standards and manufacturer's instructions.
3. All manholes greater than 6 ft. diameter and all manholes used as wet wells, valve pits and other dry-pit type structures shall be installed with exterior joint collars. The joint collar shall be installed according to the manufacturer's instructions.
    Acceptable Materials:

a. MacWrap exterior joint sealer as manufactured by Mar-Mac Manufacturing Company
b. Cretex External Joint Wrap
c. Or equivalent.

D. Waterproofing:
1. The exterior surface of all manholes shall be given two coats of waterproofing material at a application rate as recommended by the manufacturer.
2. The coating shall be applied after the manholes have cured adequately and can be applied by brush or spray in accordance with the manufacturer's written instruction.
3. Sufficient time shall be allowed between coats to permit sufficient drying so that the application of the second coat has no effect on the first coat.

E. Frost Protective Wrapping:
1. The frost protective wrap shall be constructed of an ultraviolet resistant polyethylene material and shall be a minimum thickness of 6 mils.

2.2 FRAMES AND COVERS

A. Standard Units:
1. Made of cast iron conforming to ASTM A48-76, Class 30 minimum.
2. Have machined bearing surfaces to prevent rocking.
3. Castings shall be smooth with no sharp edges.
4. Constructed to support an HS-20 wheel loading.
5. Dimensions and Style shall conform to the Drawings, Standard castings differing in non-essential details are subject to approval by the Engineer:
a. Covers -solid with sewer in 3-inch letters diamond pattern.
b. Frame - 24-inch diameter clear opening, with flange bracing ribs.
6. Minimum weight of frame and cover shall be 370 lbs.

B. Water Tight Units:
1. Same features as above for Standard Units, with 22-inch diameter minimum clear opening.
2. Sealing features:
a. Inner lid held by a bronze tightening bolt in a locking bar.
b. Neoprene gasket
c. Water tight pick hole.
3. Minimum weight of frame and cover shall be 510 lbs.

2.3 EXTERIOR CHIMNEY WRAP/SEAL

A. One-piece flexible, molded wrap/seal manufactured from rubber and non-hardening butyl mastic.

B. Shall meet the following minimum standards:

1.	Elongation	ASTM D412	350%
2.	Tensile	ASTM D412	1,200 PSI/min
3.	Hardness	ASTM D2240	60 Duro

C. The wrap/seal shall not need any heat for be molded to the frame and chimney.

2.4 MANHOLE STEPS

A. Polyethylene coated steel safety type designed with a minimum concentrated live

load of 300 pounds.

B. Thoroughly clean all surfaces to be embedded with a suitable cleaning agent to ensure that the surfaces are free from all foreign matter such as dirt, oil and grease.

C. The steps shall become thoroughly dry before being placed into the concrete.

D. All steps shall be cast into walls of the precast section so as to form a continuous ladder with a distance of 12-inches between steps.

2.5 MASONRY

A. Brick:

1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.
2. Immediately remove rejected brick from the work.

B. Mortar:

1. Composition (by volume):
   a. 1 part Portland cement.
   b. 1/2 part hydrated lime.
   c. 4-1/2 parts sand.
2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed 3 times the sum of the volume of cement and lime.

C. Cement shall be Type II Portland cement.

D. Hydrated lime shall be Type S.

E. Sand:

1. Shall consist of inert natural sand.
2. Grading:

Sieve	Percent Passing
No. 4	100
No. 8	95-100
No. 16	70-100
No. 30	40-75
No. 50	10-35
No. 100	2-15
No. 200	0-5

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Precast Manhole Sections:

1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.
2. Install riser sections and tops level and plumb.
3. Make all joints watertight.
4. When necessary, cut openings carefully to prevent damage to barrel sections and tops. Replace damaged manhole sections and tops at no additional cost to the Owner.

5. When manhole steps are included in the Work, install barrel sections and tops so that steps are in alignment.

B. Drop Manholes:
   1. The difference in elevation between the invert of the inlet pipe and outlet pipe is to be either less than 6-inches (which does not require a drop manhole) or more than 24-inches (which does require a drop manhole).
   2. Where difference in elevation between the invert of the inlet pipe to the invert of the outlet pipe exceeds 24 inches, construct a drop manhole as shown on the Drawings or as directed by the Engineer.

C. Adjust to Grade:
   1. Adjust tops of manholes to grade with brick masonry.
   2. Concrete rings are not acceptable for adjusting to grade.
   3. In paved areas, set frame and cover to final grade after binder pavement is placed and the grade of surface pavement has been determined.

D. Pipe Connections to Manholes: Connect pipes to manholes with joint design and materials approved by the Engineer. Special care shall be taken to ensure that the openings through which pipes enter the structure are watertight.

E. Invert Channels:
   1. After manhole and all pipes entering or exiting the manhole have been installed, construct the invert channels and shelf.
   2. Channels to be smooth and semicircular in shape conforming to the inside of the adjacent sewer section.
   3. Make changes in direction of flow with smooth curves having a radius as large as permitted by the size of the manhole.
   4. Stop the pipes at the inside face of the manhole where changes of direction occur.
   5. Form invert channels and shelf with brick. Form invert channels and shelf with smooth and carefully shaped 2500 psi concrete with no voids. Coat concrete with non-slip, hi-build epoxy coating.
   6. The maximum change in elevation from the invert of the inlet pipe to the invert of the outlet pipe is 6-inches. Shape invert to make smooth transition in vertical grade.
   7. Slope the floor of the manhole (shelf) to the flow channel, as shown on the Drawings.

F. Masonry:
   1. Laying Brick:
      a. Use only clean bricks in brickwork for manholes.
      b. Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.
      c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.
      d. Construct all joints in a neat workmanlike manner. Construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.

e. Outside faces of brick masonry shall be plastered with mortar from ¼-inch to 3/8-inch thick.
f. Completed brickwork shall be watertight.

2. Curing:
a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.
b. Protect brick masonry from the weather and frost as required.

G. Frames and Covers:
1. Set all frames in a full bed of mortar, true to grade and concentric with the manhole opening.
2. Completely fill all voids beneath the bottom flange to make a watertight fit.
3. Place a ring of mortar at least one inch thick around the outside of the bottom flange, extending to the outer edge of the manhole all around its circumference.
4. Clean the frame seats before setting the covers in place.

H. Exterior Chimney Wrap/Seal
1. Clean frame's flange and chimney with a wire brush and a whisk broom.
2. Frame and chimney must be dry.
3. Apply an aerosol primer on frame flange and chimney per manufacturer's recommendations.
4. Install wrap/seal around chimney.
5. Remove tape from the butyl mastic on top section of wrap and seal it to the frame's flange.

I. Plugging and Patching:
1. Fill all exterior cavities with non-shrink grout and with bituminous waterproofing once the concrete and mortar has set.
2. Touch up damaged water proofing.

J. Cleaning:
1. Thoroughly clean manholes, steps, frames and covers of all debris and foreign matter.

K. Bedding and Backfilling:
1. Bedding of manholes shall be 6 inches of 3/4" screened stone.
2. Backfill a minimum of 18 inches all around manhole with gravel borrow.

L. Frost Protective Wrap:
1. The Contractor shall comply with the manufacturer's instructions for the particular conditions of installations in each case.
2. Clean each manhole exterior of all dirt and remove any sharp protrusions.
3. Apply two 6-inch wide vertical strips of bituminous waterproofing material and/or duct tape from the top to bottom of the manhole per layer.
4. Prior to installing pipe through each manhole or valve pit, wrap each manhole to the maximum depth of frost penetration, but not less than 5 feet below grade, with four layers of the polyethylene material by beginning the wrap at the adhesive strip and proceeding around the manhole, valve pit, etc., continuously by overlapping the adhesive strip by 24 inches on the final layer. Cut the polyethylene wrap in areas where piping exits the manhole. The size of the cut is to be equivalent to the pipes outside diameter.

5. Tuck and pleat the polyethylene wrap at the top of each manhole in a continuous manner, minimizing the size of each fold. Extend the polyethylene wrap past the top of the manhole frame and temporarily tuck the remainder inside the frame, until final backfill and paving.
6. In paved areas, cut the polyethylene wrap flush with the manhole rim after the pavement is in place.
7. In unpaved areas, pull the polyethylene wrap together, and tie around frame with galvanized wire.
8. Protect the installed frost barrier from harmful weather exposures and from possible physical abuses, where possible by prompt installation of concealing work or, where that is not possible, by temporary covering or enclosure.
9. Backfill around the manhole/frost barrier with material as outlined in Section 02200 - Earthwork.

3.2 MANHOLE TESTING

A. General:
   1. Perform a vacuum test on all manholes
   2. Perform all testing in the presence of the Engineer.
   3. Suitably plug all pipes entering each manhole and brace plugs to prevent blow out.

B. Vacuum Test:
   1. The manhole shall be tested by a vacuum test after assembly of the manhole, connection piping and backfilling. Vacuum testing to be conducted prior to construction of invert channels.
   2. Plug all lifting holes completely with non-shrink grout.
   3. Properly tighten all boot clamps and brace all plugs to prevent them from being sucked into the manhole.
   4. Install the testing equipment according to the manufacturer's instructions.
   5. A vacuum of 10 inches of Hg shall be drawn on the manhole and the loss of 1 inch of Hg vacuum timed. The manhole shall be considered to have passed the test if the time for the loss of 1 inch of Hg vacuum is:
      a. Greater than 2 minutes for manholes less than 10-feet deep.
      b. Greater than 2.5 minutes for manholes 10 to 15-feet deep.
      c. Greater than 3 minutes for manholes more than 15-feet deep.
   6. If the manhole fails the initial test, the Contractor shall locate the leak(s) and make repairs. The manhole shall be retested until a satisfactory test result is obtained.

C. Manhole Repairs:
   1. Correct leakage by reconstruction, replacement of gaskets and/or other methods as approved by the Engineer.
   2. The use of lead-wool or expanding mortar will not be permitted.

D. After the manholes have been backfilled and prior to final acceptance, any signs of leaks or weeping visible inside the manholes shall be repaired and the manhole made watertight.

END OF SECTION

SECTION 02610

RIGID BOARD INSULATION FOR PIPE IN TRENCHES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide and install rigid board insulation in trenches over or between piping, as shown on the Drawings and as specified herein.

1.2 REFERENCES

A. ASTM C272 - Test Method for Water Absorption of Core Materials for Structural Sandwich Construction.
B. ASTM C518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter.
C. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.

1.3 SUBMITTALS

A. Submit shop drawings, product data and manufacturer's written installation instruction in accordance with the applicable section of Division 1 and the General Conditions of the Construction Contract.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to project site in manufacturer's original unopened packaging.
B. Identify contents, manufacture, brand name, thermal values, and applicable standards.
C. Store materials in area protected from weather, and moisture.
D. Remove damaged materials from site.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Rigid Pipe Insulation
   1. Dow Chemical Company – Styrofoam Highload 40
   2. Certifoam 40
   3. Or equivalent

2.2 RIGID PIPE INSULATION

A. Insulation: Closed cell polystyrene foam board
   1. Standard Two Foot Width.
   2. Aged "R" Value - "R" = 5.0 per inch, ASTM C518.
   3. Water Absorption - 0.1 percent, ASTM C272.
   4. Water Vapor Permeance - 1.0 perm (max) ASTM E96
   5. Compressive Strength - 40 pounds per square inch, ASTM D1621.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lay rigid board insulation in trenches over or between piping where depth of pipe cover is than that required on the Drawings. Install rigid board insulation as shown on the Drawings.

END OF SECTION

SECTION 02650

BURIED UTILITY MARKINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. This work shall consist of providing and installing utility line markings above all buried lines installed as part of this contract and replacing existing markings disturbed as part of this contract. Buried utilities are indicated on the Civil and Electrical Drawings.

B. Related Work Specified Elsewhere:
   1. Pipe, excavation, backfill, insulation are specified in the appropriate Sections in this Division.

1.2 SUBMITTALS

A. Submit shop drawings in accordance with the applicable section of Division 1 and the General Conditions of the Construction Contract.

B. Submit manufacturer's "Certification of Conformance" that utility markings meet or exceed the requirements of these Specifications.

C. Submit manufacturers specifications for utility markings.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials and color shall be in accordance with latest AASHTO specifications for pipe and utility marking.

B. Marking tape color shall be in accordance with latest American Public Works Association (APWA) Uniform Color Code and American National Standards Institute ANSI Standard Z535.1, Safety Color Code specifications for buried utility marking as noted in the Schedule below.
   1. Schedule

Marker Color	Buried Utility
Blue	Potable Water &Associated lines
Green	Sanitary Sewers, Storm Drain and other Drain lines
Orange	Telecommunication, signal, alarm
Purple	Reclaimed, Recycled, Irrigation Water and Slurry Lines
Red	Electric Power lines cables conduits and lighting cables
Yellow	Gas, Oil, Steam, Petroleum or Gaseous Material Lines

   2. Warning Information shall be in Black Letters with typical wording of:
      a. "CAUTION: BURIED (NAME OF UTILITY LINE) BELOW"

C. For ferrous pipe material use 0.004" minimum polyethylene film; 6" wide clearly marking type of buried utility.

D. For non-ferrous pipe material (e.g. Concrete, PVC, PE, etc.) use detection tape composite of polyethylene and metallic core 6" wide clearly marking type of buried utility.
E. Seton Identification Products, New Haven, CT, Utility Safeguard LLC or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Marking tape shall be installed over utility lines centerline and buried 24" below grade.
B. Markings damaged during opening of trench shall be reinstalled with 2' overlap at broken sections.

END OF SECTION

SECTION 02721

UNDERGROUND STORMWATER STORAGE TANK

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included:
   1. Provide excavation and base preparation as shown on Drawings to provide adequate support for project design loads and safety from excavation sidewall collapse. Excavations shall be in accordance with the owner's and OSHA's requirements.
   2. Provide and install underground stormwater storage system and all related products including fill materials, geotextiles, geogrids, inlet and outlet pipe with connections per the manufacturer's installation guidelines provided in this section.
   3. Provide and construct the cover of the underground stormwater storage system including:
      a. Stone backfill,
      b. Structural fill cover, and
      c. Pavement section as shown on design Drawings
   4. Protect underground storage system from construction traffic after installation until completion of all construction activity in the installation area.

B. Related work described elsewhere:
   1. Excavation, bedding, and backfill are specified in the appropriate sections of this Division.
   2. Pipe materials, gates, coupling, and connectors are specified in the appropriate sections of this Division.
   3. Culverts and storm drains, manholes covers and frames, and catch basins grates and frames are specified in the appropriate sections of this Division.

1.2 QUALITY CONTROL INSPECTION

A. All materials shall be manufactured in ISO certified facilities.
B. Installation contractor shall demonstrate the following experience:
   1. A minimum of three underground stormwater storage tank or equivalent projects completed within two years; and,
   2. A minimum of 25,000 cubic feet of storage volume completed within the past 2 years.
   3. Contractor experience requirement may be waived if the manufacturer's representative provides on-site training and review during construction.
C. Installation Personnel: Performed only by skilled workers with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
D. Contractor must have manufacturer's representative available for site review if requested by Owner.

1.3 SUBMITTALS

A. Shop Drawings: In accordance with Section 01340, the Contractor shall provide shop drawings for the Engineer's review and acceptance.
B. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.
C. Submit manufacturer's product data, including compressive strength and unit weight.
D. Submit manufacturer's installation instructions.
E. Submit underground stormwater storage tank sample for review. Reviewed and accepted samples will be returned to the contractor.
F. Submit required experience and personnel requirements as specified in Quality Control Section 1.2.B.
G. All proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 1:Tank Characteristics.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect underground stormwater storage tank and other materials from damage during delivery. Store UV sensitive materials under tarp to protect from sunlight when time from delivery to installation exceeds two weeks. Storage of materials should be on smooth surfaces free from dirt, mud, and debris.
B. Protect the modular stormwater storage system from construction traffic after installation until completion of all construction activity in the installation area.
C. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
D. Cold weather:
    1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.
    2. Do not use frozen materials or materials mixed or coated with ice or frost.
    3. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.5 PREINSTALLATION CONFERENCE

A. Prior to the start of installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

1.6 PROJECT CONDITIONS

A. Coordinate installation for the underground stormwater storage tank system with other on-site activities to eliminate all non-installation related construction traffic over the completed underground stormwater storage tank system. No loads heavier than the design loads shall be allowed over the system, and in no case shall loads higher than a standard AASHTO HS20 (or HS25, depending on design criteria) load be allowed on the system at any time.
B. Protect adjacent work from damage during underground stormwater storage system

installation.

C. All pre-treatment systems to remove debris and heavy sediments must be in place and function prior to operation of the underground stormwater storage tank system. Additional pretreatment measures may be needed if unit is operational during construction due to increased sediment loads.

D. Contractor is responsible for any damage to the system during construction.

PART 2 - PRODUCTS

2.1 MATERIALS AND DESIGN

A. Underground Stormwater Storage Tank Units

1. Injection molded plastic tank plates assembled to form a minimum 95% void modular structure of predesigned height (custom for each project).
2. Underground stormwater storage tank units shall meet the following Physical & Chemical Characteristics:

Table 1: Tank Characteristics

Property	Description	Value
Void Area	Volume available for water storage	95% min
Surface Void Area	Percentage of exterior available for infiltration	90%
Vertical Compressive Strength	ASTM D 2412/ASTM F 2418	33.4 psi
Lateral Compressive Strength	ASTM D 2412/ASTM F 2418	22.4 psi
HS-20 Minimum Cover	Cover required to support HS-20 loads	20-inches
HS-25 Minimum Cover	Cover required to support HS-20 loads	24-inches
Maximum cover	Maximum allowable cover depth	<7 feet
Unit Weight	Weight of plastic per cubic foot of tank	3.62 lbs/cf
Rib Thickness	Thickness of load-bearing members	0.18 inches
Service Temperature	Safe temperature range for use	-14-167°F

B. Geosynthetics

1. Geotextile. A geotextile envelope is required to prevent backfill material from entering the underground stormwater storage tank modules.
   a. Water must infiltrate/exfiltrate through the geotextile as a function of the system design, therefore a woven monofilament (ACF M200 or equivalent) shall be used.
2. Geogrid. For installations subject to traffic loads and/or when required by project plans, install geogrid (ACF BX12 or equivalent) to reinforce backfill above the underground stormwater storage tank system.

C. Backfill & Cover materials

1. Bedding Materials: Stone (angular and smaller than 1.5” in diameter) or soil (GW, GP, SW, or SP as classified by the United Soil Classification System) shall be used below the underground stormwater storage tank system (3” minimum). Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

2. Side and Top Backfill: Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
    a. Traffic Applications: Free draining material shall be used adjacent to (24" minimum) and above (for the first 12") the underground stormwater storage system.
        i. For HD modules, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW or SP as classified by the Unified Soil Classification System).
3. Additional Cover Materials: Structural Fill shall consist of granular materials meeting the gradational requirements of SM, SP, SW, GM, GP, or GW as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 25% passing the No. 200 sieve, shall have a maximum clay content of 10 percent and a maximum Plasticity Index of 4. Materials shall be within 3percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

D. Other Materials: Utility Marker: Install metallic tape at corners of R-Tank System to mark the area for future utility detection.

2.2 PERFORMANCE

A. The stormwater treatment system(s) shall adhere to the following performance specifications at the specified design flows, and storage capacities.
B. The stormwater treatment system shall include a pre-treatment at the system catch basin with filters (specified elsewhere) and hooded outlets.
C. The stormwater treatment system shall be of a hydraulic design that includes flow controls designed and certified by a Professional Engineer using accepted principles of fluid mechanics that raise the water surface inside the tank to a pre-determined level in order to prevent the re entrainment of trapped floating contaminants.
D. The stormwater treatment system shall be capable of removing 80% of the Total Suspended Solids (TSS). The stormwater treatment systems shall have the design treatment capacities specified by the Engineer, and shall not resuspend trapped sediments or re entrain floating contaminants at flow rates up to and including the specified "Design Treatment Capacity" of 15 cubic feet per second at the 2-year storm, and shall treat as designed and/or bypass flow rates up to and including the "Peak Flow Rate" of 25 cubic feet per second.
E. The stormwater treatment system manufacturer shall furnish documentation which supports all product performance claims and features, storage capacities and maintenance requirements.
F. Stormwater treatment systems shall be completely housed within one structure, with the exception of devices used to direct and handle bypass flows.

PART 3 - EXECUTION

3.1 ASSEMBLY

A. Assembly of underground stormwater storage tank modules shall be performed in accordance with the manufacturer's installation manual.

3.2 LAYOUT AND EXCAVATION

A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than the underground stormwater storage tank dimensions in each direction allowing for installation of geotextile filter fabric, R-Tank modules, and free draining backfill materials.

B. All excavations must be prepared with OSHA approved excavated sides and sufficient working space.

C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.

D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or yielding subgrade areas. A minimum of 2,000 pounds per square foot bearing capacity is required.
   1. Standard applications: Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.

E. Unsuitable Soils or Conditions: All questions about the base of the excavation shall be directed to the Owner's engineer, who will approve the subgrade conditions prior to placement of stone. The owner's engineer shall determine the required bearing capacity of the underground stormwater storage tank subgrade; however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.
   1. In unsuitable soils are encountered at the subgrade, or if the subgrade is pumping or appears excessively soft, repair the area in accordance with contract documents and/or as directed by the owner's engineer.
   2. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.
   3. Do not start installation of the underground stormwater storage system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.

3.3 PREPARATION OF BASE

A. Place a layer (12" unless otherwise specified) of bedding material over the subgrade to establish a level working platform for the underground stormwater storage tank modules. Level to within ½" (±1/4") as shown on the plans.
   1. Bedding materials shall be prepared in accordance with the contract documents.

B. Outline the footprint of the underground stormwater storage system on the excavation floor using spray paint or chalk line to ensure a 2' perimeter is available around the underground stormwater storage tank system for proper installation and compaction of backfill.

3.4 INSTALLATION OF THE UNDERGROUND STORMWATER STORAGE TANKS

A. Where a geotextile wrap is specified on the stone base, cut strips to length and install in excavation, removing wrinkles so material lays flat. Overlap geotextile a minimum of 12" or as recommended by manufacturer. Use tape, special adhesives, sandbags, or other ballast to secure overlaps. As geotextiles can be damaged by

extreme heat, smoking is not permissible on/near the geotextile, and tools using a flame to tack the overlaps, such as propane torches, are prohibited.

B. Install underground stormwater storage tank modules by placing side by side, in accordance with the design drawings. No lateral connections are required. It is advisable to use a string line to form square corners and straight edges along the perimeter of the underground stormwater storage system. The modules are to be oriented as per the design drawing with required depth as shown on plans.
   1. For HD installations, the large side plate of the tank should be placed on the perimeter of the system. This will typically require that the two ends of the tank system will have a row of tanks placed perpendicular to all other tanks. If this is not shown in the construction drawings, it is a simple field adjustment that will have minimal effect on the overall system footprint. Refer to the manufacturer's installation guide for more details.

C. Wrap the underground stormwater storage tank top and sides in specified geotextile. Cut strips of geotextile so that it will cover the sides and top, encapsulating the entire system to prevent backfill entry into the system. Overlap geotextile 12" or as recommended by manufacturer. Take great care to avoid damage to geotextile during placement.

D. Identify locations of inlet, outlet and any other penetrations of the geotextile. These connections should be installed flush (butted up to the tank) and the geotextile fabric shall be cut to enable the hydraulic continuity between the connections and the tank units. These connections shall be secured using pipe boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent pipe from settling and damaging the geotextile or pipe. Connecting pipes at 90-degree angles facilitates construction unless otherwise specified. Ensure end of pipe is installed snug against the underground stormwater storage tank system.

E. Install Inspection and Maintenance Ports in locations noted on plans. At a minimum one maintenance port shall be installed within 10' of each inlet & outlet connection, and with a maximum spacing of one maintenance port for every 2,500 square feet. Install all ports as noted in the manufacturer's installation guide.

3.5 BACKFILLING OF UNDERGROUND STORMWATER STORAGE TANK UNITS

A. Backfill and fill with recommended materials as follows:
   1. Place freely draining backfill materials around the perimeter in lifts with a maximum thickness of 12". Each lift shall be placed around the entire perimeter such that each lift is no more than 24" higher than the side backfill along any other location on the perimeter of the underground stormwater storage tank system. No fill shall be placed over top of tanks until the side backfill has been completed.
   2. Each lift shall be compacted at the specified moisture content to a minimum of 95% of the Standard Proctor Density until no further densification is observed (for self-compacting stone materials). The side lifts shall be compacted with walk behind compaction equipment. Even when "self-compacting" backfill materials are selected, a walk behind vibratory compactor must be used.

3. Take care to ensure that the compaction process does not allow the machinery to come into contact with the modules due to the potential for damage to the geotextile and underground stormwater storage tank units.
4. No compaction equipment is permissible to operate directly on the underground stormwater storage tank modules.
5. Top Backfill
    a. Typical applications: Install a 12” (or as shown on plans) lift of freely draining material over the underground stormwater storage tank units, maintaining 12” between equipment tracks and underground stormwater storage system. Lightly compacted using a walk behind roller. Alternatively, a roller (maximum gross vehicle weight of 6 tons) may be used. Roller must remain in static mode until a minimum of 24” of cover has been placed over the modules. Sheep foot rollers should not be used.
    b. Shallow Applications (<18” total cover): Install top backfill in accordance with plans.
6. If required, install a geogrid as shown on plans. Geogrid shall extend a minimum of 3 feet beyond the limits of the excavation wall.
7. Following placement and compaction of the initial cover, subsequent lifts of structural fill shall be placed at the specified moisture content and compacted to a minimum of 95% of the SPD and shall cover the entire footprint of the underground stormwater storage tank system. During placement of fill above the system, unless otherwise specified, a uniform elevation of fill shall be maintained to within 12” across the footprint of the system. Do not exceed maximum cover depths as listed in the table.
8. Place additional layers of geotextile and/or geogrid at elevations as specified in the design details. Each layer of geosynthetic reinforcement placed above the system shall extend a minimum of 3-feet beyond the limits of the excavation wall.

B. Only low-pressure tire or track vehicles shall be operated over the underground stormwater storage tank system during construction. No machinery should drive on top of the tank until a minimum of 18” of backfill and compaction is achieved. Dump Trucks and Pans shall not be operated withing the system footprint at any time. Where necessary the heavy equipment should unload in an area adjacent to the system and the material should be moved over the system with tracked equipment.
C. Ensure that all unrelated construction traffic is kept away from the limits of excavation until the project is compete and final surface materials are in place. No non-installation related loading should be allowed over the system until the final design section has been constructed (including pavement).
D. Place paving materials over the structure with care to avoid displacement of cover fill and damage to surrounding areas.
E. Backfill depth over the underground stormwater storage system must be within the limitations shown in the table. If the total backfill depth does not comply with this table, contact engineer or manufacturer’s representative for assistance.

PART 4 - USING THE SYSTEM

4.1 MANTENANCE REQUIREMENTS

A. A routine maintenance effort is required to ensure proper performance of the underground stormwater storage system. The maintenance program should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will reduce the risk of contamination of the underground stormwater storage tank system and stormwater released from the site. Pretreatment systems shall be inspected yearly, or as directed by the regulatory agency and by the manufacturer (for proprietary systems). Maintain as needed using acceptable practices or following manufacturer's guidelines (for proprietary systems).

B. All inlet pipes and inspection and/or maintenance ports in the underground stormwater storage tank system will need to be inspected for accumulation of sediments at least quarterly through the first year of operation and at least yearly thereafter.

C. If sediment has accumulated to the level noted in the maintenance guide or beyond a level acceptable to the Owner's engineer, the underground stormwater storage system should be flushed.

D. All inspection and maintenance activities should be performed in accordance with the manufacturer's operation, inspection & maintenance manual.

END OF SECTION

SECTION 02723

CATCH BASIN TREATMENT INSERTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included:
   1. This specification describes a post development catch basin filtration device that treats for suspended solids, oils and grease, dissolved and particulate phosphorus, pathogens, and heavy metals and is installed in new or existing stormdrain infrastructure that consist of drop, combo, or curb only inlets that are round, square, or rectangular in shape.
   2. Municipal separate storm drains selected for treatment are those located in high traffic areas, municipal parking lots, public right of ways, and environmentally sensitive areas draining to impaired open water bodies and are identified on the plan set.

B. Related work described elsewhere:
   1. Precast concrete structures are specified in sections 02601 and 02431.
   2. Concrete and grout are specified in Division 3.

1.2 QUALITY CONTROL INSPECTION

A. The quality of materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Engineer. Such inspection may be made at the place of manufacture, or on the work site after delivery, or at both places, and the sections shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements, even though sample sections may have been accepted as satisfactory. Sections rejected after delivery to the site shall be marked for identification and shall be removed from the site at once. All sections which have been damaged beyond repair during delivery will be rejected and, if already installed, shall be removed and replaced, entirely at the Contractor's expense.

B. The manufacturer shall have a representative present on site at the time of system installation to monitor the installation procedures for conformance to the manufacturer's recommended procedures.

C. All sections shall be inspected for general appearance, dimensions, soundness, etc. The surface shall be dense, close textured and free of blisters, cracks, roughness and exposure of reinforcement.

D. Imperfections may be repaired, subject to the acceptance of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final acceptance.

1.3 SUBMITTALS

A. Shop Drawings: In accordance with Section 01340, the Contractor shall provide shop drawings for the Engineer's review and acceptance. Shop drawings shall show details for construction, reinforcing, joints and any cast in place appurtenances. Shop drawings shall be annotated to indicate all materials to be used and all applicable

standards for materials, required tests of materials and design assumptions for structural analysis. Design calculations and shop drawings shall be certified by a Professional Engineer retained by the system manufacturer or Contractor and licensed in the state where the system is to be installed. Shop drawings shall be prepared at a scale of not less than 1/4" per foot. Submit calculations demonstrating that the treatment unit has a factor of safety of at least 1.15 against flotation assuming the groundwater level is at finishing grade and the chambers are empty.

B. Affidavit on patent infringement: The Contractor shall submit to the Engineer, prior to installation of the stormwater treatment system, an affidavit regarding patent infringement rights stating that any suit or claim against the Owner due to alleged infringement rights shall be defended by the Contractor who will bear all the costs, expenses and attorney's fees incurred thereof.

C. Upon successful completion of the system installation, the Contractor shall submit to the Engineer written acceptance from the manufacturer that the unit was installed properly per the manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 GENERAL CONFIGURATION

A. This technology is a post developed stormwater treatment system. The catch basin stormwater treatment insert provides effective filtration of pollutants and debris typical of urban runoff, while utilizing the existing or new storm drain infrastructure. The catch basin stormwater treatment insert is designed to rest on the flanges of conventional catch basin frames and is engineered for most hydraulic and cold climate conditions.

B. The devoce shall provide for isolation of trapped pollutants, including debris, sediments, and floatable trash and hydrocarbons from bypass flow in order to minimize suspension during peak flows.

C. Water suspended pollutants such as oils and grease, pathogens, heavy metals, and nutrients shall be treated by a radial downflow cartridge system that uses a filter medium designed to be non-leching, non-biodegradable and safe for outdoor use.

2.2 FLOW CAPACITY

A. The cartridge specified shall effectively filter the water quality flow rates from a frequently occurring rainfall event and shall provide at least one mode of bypass. Under normal functioning conditions, a single cartridge shall be able to handle flow rates up to XX cfs at XX ft of driving head as documented through hydraulic testing of a clean cartridge.

B. High flows that exceed the treatment capacity of the filter cartridge, either clean or during the normal course of service, must be able to escape through overflow ports that are provided at the top of the insert.

1. Cartridge Flow Rate: XX CFS
2. Primary Bypass Flow Rate: XX CFS
3. Secondary Bypass Flow Rate: XX CFS
4. Total Bypass Flow Rate: XX CFS

2.3 PERFORMANCE CHARACTERISTICS AND TESTING

A. The water quality insert device shall have been tested by the manufacturer in the field and the laboratory in order to demonstrate pollutant removal efficiency at flow rates at or near the cartridges filtration capacity. Manufacturer may be required to submit test data to the Municipality or agency indicating the proposed device has been shown to achieve removal rates within the ranges specified below.

1. Sediment removal based on US Silica OK 110: At least 80% removal
2. Hydrocarbons, Oils, and Grease: At least 80% removal
3. Total Phosphorus: 40 to 60% removal
4. Nitrogen Compounds: 30 to 50% removal
5. Bacteria: 50 to 70% removal
6. Heavy Metals: 40 to 60% removal

2.4 MATERIALS

A. The support frame for the StormBasin shall be composed of Aluminum Alloy 6063-T6. Consideration may be given to alternate materials provided they have shown longevity of at least 5-years in cold climate environments exposed to freeze thaw cycles and winter deicing materials (road sand and salts). A complete list of material of construction and pertinent material properties are included in the table below.

Catch Basin Stormwater Treatment Insert	**Materials or Mechanical Properties**
Basin Plastic	Polypropylene/polyethylene copolymer
Adjustable flange and deflector	Aluminum Alloy 6063-T6
Splash guard	Neoprene Rubber
Corner Filler	Aluminum Allow 5052-H32
Support Hardware	CRES 300 Series
Aluminum Alloy 6063-T6	Yield Strength 40,000 PSI (275 MPa)
	Tensile Strength 45,000 PSI (310 MPa)
	Shear Strength 30,000 PSI (206 MPa)
Neoprene Splash Guard	Thickness 0.25 inches (6.4 mm)
	Temperature Rating -45˚F to 250˚F (-24.7˚C to 121˚C)
	Durometer 80
Co-Polymer (Injection Molded)	Tensile Strength 3,200 PSI
	Heat Deflection Temperature @ 66 PSI (455 KPa): 175˚F (79.4˚C)
	Notched ISOD Impact Strength @ 73˚F (22.7˚C): No Break

2.5 CLEARANCE

A. Recommend minimum clearance from bottom of cartridge to inside bottom of vault or resting water surface is 2 inches (50 mm).

2.6 FRAME ADJUSTABILITY

A. Typical frame adjustability range of 5-inches (127 mm) in each direction.

2.7 DELIVERY, STORAGE, HANDLING

A. All materials shall be protected during loading, transportation and unloading, in accordance with the manufacture's recommendations.

2.8 MANUFACTURER

A. The manufacturer of said system shall have been regularly engaged in the engineering design and production of systems for physical treatment of stormwater runoff for a minimum of 8-years.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation procedures shall include removing the storm grate, cleaning the ledge of debris and solids, measuring catch basin clear opening and adjusting flanges to rest on grate support ledge.
B. Catch basin stormwater treatment inserts shall be installed so the adjustable flanges are resting on the grate support ledge.
C. Corner filler pieces shall be installed.
D. Storm drain grate shall be reinstalled directly on support flanges (rise shall be no more than 1/8-inch)

3.2 MAINTENANCE

A. Typically, the catch basin stormwater treatment inserts are serviceable from street level, and therefore maintenance does not require confined space entry into the catch basin structure. The unit is designed to be maintained in place with a vacuum hose attached to a sweeper or a vactor truck.
B. The filter cartridges are designed to be easily replaced from the street level.
C. Use only replaceable parts.

END OF SECTION

APPENDIX A
Geotech Reports

SLR Consulting

Memorandum

To: Mike Zarba, PE

From: C. Eric Teale, PE, Carl W. Thunberg, PE, and Erich A. Adler, EIT

Date: August 3, 2021

Subject: Updated Damariscotta Downtown Flood Protection Geotechnical Considerations

I) INTRODUCTION

This memorandum supersedes our original submittal dated March 29, 2021. This updated memorandum includes the drilling of two additional test borings and further evaluation of flood wall foundation systems.

The objective of our services was to explore subsurface conditions of the parking area south of Main Street to develop geotechnical recommendations for proposed flood protection. The project site is located approximately 14 miles up the Damariscotta River from the Atlantic Ocean. We understand that to protect the parking and the downtown areas, a wall system with a top at a level of EL 13.2 is required with a potential future increase in height to EL 14.6 feet.

II) PUBLISHED SUBSURFACE GEOLOGY

Published Maine Geological Survey surficial geology map information indicates that the site is underlain by Presumpscot Formation, a glaciomarine silt, clay and sand deposited on the late glacial sea floor. Figure 1 is a detail of the published surficial geology map from 2009.

The Maine Geological Survey also provided a reconnaissance Bedrock Geology map. This map indicates that the development site is underlain by the Bucksport Formation, a medium bedded, grey quartz-feldspar-biotite granofels. Figure 2 is a detail of the published bedrock geology map from 2016.

III) SUBSURFACE EXPLORATIONS

Initially six test borings were drilled on December 2 through 4, 2020 and supplemented by two additional test borings on May 4, 2021. The subsurface exploration program collectively consisted of a total of eight test borings at the approximate locations identified on the attached Figure 3. Former test borings by others have been conducted on the site for previous studies. SLR has also compiled the attached Table 1 – Summary of Subsurface Explorations for the current and previous explorations.

A) MMI/SLR Test Borings

Test borings (designated MMI-1 through MMI-5 and MMI-7) were drilled by New England Boring Contractors, Inc. (NEBC) of Hermon, Maine on December 2 through 5, 2020 under the observation of Milone & MacBroom (currently SLR). Note that MMI-6 was eliminated due to a utility conflict. Test borings SLR-8 and SLR-9 were also drilled by NEBC on May 4, 2021, under the observation of SLR. Test borings MMI-1 through MMI-5 and MMI-7 were advanced using standard drive and wash drilling techniques to depths of 25± to 32.2± feet. Test borings SLR-8 and SLR-9 were drilled using hollow stem augers to depths of 7.5 to 13.7 feet. Note that four attempts were made to penetrate cobbles and boulders in SLR-9A through SLR-9C. Standard Penetration Tests (SPTs) were performed in general accordance with ASTM D1586 in each test boring, with split spoon samples recovered generally at five-foot intervals. The SPT consists of driving a 1-3/8 inch I.D. split spoon sampler with a 140-pound hammer falling 30 inches. The blows for each 6 inches of penetration are recorded for a total of 18- or 24-inches. The sum of the blows required to drive the sampler from 6-inches to 18-inches penetration is referred to as the Standard Penetration Resistance or N-value which is an index measure of in-situ soil density or consistency.

The explorations were performed under the observation of a SLR geotechnical engineer. Soil samples from the test borings were classified in the field by SLR in general accordance with the Burmister Soil Classification System. Logs of these explorations, as prepared by MMI/SLR, are attached. A copy of the Burmister Soil Classification system is attached with the boring logs.

B) Explorations by Others

SLR was provided copies of three previous studies on the project site where subsurface explorations were conducted. The scope of these studies is discussed below. Logs of these explorations are attached, and their approximate locations are included on Figure 3.

1) R.W.Gillespie & Associates, Inc.

In 2018, R.W. Gillespie & Associates, Inc. (RWGA) performed two test borings (B-1 and B-2) and two test pits (TP-1 & TP-2) to gather subsurface information for the proposed construction of a restroom facility. Approximate locations of these explorations are included on Figure 3.

2) Ransom Consulting, Inc.

In 2016, Ransom Consulting, Inc. (RCI) conducted a Phase II Environmental Site Assessment of the former AA Hall Grist Mill. Included in this report were boring logs from eight test borings (B-101 through B-108). Approximate locations of these explorations are included on Figure 3.

3) Summit Geoengineering Services

In 2011, Summit Geoengineering Services (SGS) conducted a preliminary geotechnical study for Shore and Harbor Improvements at the site. SGS coordinated and observed a drilling program of five test borings (B-1 through B-5). Approximate locations of these explorations are included on Figure 3.

IV) SUBSURFACE CONDITIONS

The encountered subsurface conditions generally consist of miscellaneous fill overlying glacial marine deposits, which in turn, overly glacial till. Refusal conditions below the glacial till likely represent underlying bedrock.

A) Fill

The existing fill is approximately 5 to 17 feet in thickness and consists of brown fine to coarse sand, some to trace silt/clay, some to trace gravel, with anthropogenic materials (wood) mixed in at some locations. Additional areas displayed remolded glacial marine deposits as fill. These materials were found to be loose to dense, with uncorrected SPT-N values ranging between 6 and 48, indicating that the fill was likely placed will little to no formal compactive effort applied. It is important to note that the blow counts in SLR-9A through SLR-9C are not considered reliable due to the presence of cobbles and boulders. As such, the auger refusal conditions reported in SLR-9 through SLR-9C likely are not indicative of the presence of bedrock. Based on the variable density and constituents of the fill materials, random zones are anticipated to exhibit moderate to high ranges of hydraulic conductivity.

B) Tidal Deposits

These soft to stiff cohesive deposits were encountered only at SLR-8 below the fill materials and consist of soft to stiff grey clay, trace fine sand with variable organic content. Uncorrected SPT-N values ranged from Weight of Hammer to 12. Auger refusal was encountered at a depth of about 13.7 feet.

C) Glacial Marine Deposits

The upper glacial marine deposits consist of grey to olive brown clay, trace to some silt and coarse to fine sand. Based on SLR's exploration data, these deposits were found to be soft to very soft, with uncorrected SPT-N values ranging between Weight of Rods for 19-inches to 24-inches. The lower portion of the glacial marine deposits consist of interbedded fine sand and clay with uncorrected SPT-N values ranging from 2 to 10. Given the cohesive nature of the glacial marine deposits, these materials are considered to have relatively low hydraulic conductivities.

D) Glacial Till

Where encountered, a veneer of glacial till was encountered over probable bedrock. This deposit consists of dense to very dense, grey to olive brown, fine to coarse sand, little clayey silt, with varying amounts of

gravel. Based on SLR's recent test boring program, these deposits were found to be loose to very dense, with uncorrected SPT-N values ranging between 6 and 100+.

E) Bedrock

Probable Bedrock was noted in each of SLR's recent test borings at depths ranging from 16.7± to 31.6± feet. Please note that in the absence of rock coring, definitive top of rock elevations cannot be ascertained with certainty.

F) Groundwater

Due to drilling methods (flush joint casing) and the low hydraulic conductivity of the glacial marine deposits, groundwater depths were not recorded in the test borings. Previous explorations noted that unstabilized groundwater was encountered at depths ranging from 3.5± to 12.1± feet. It should be noted that these levels are likely tidally influenced with SLR personnel observing the inundation and subsequent draining of the foundation excavation for the proposed restroom facility that was under construction during the subsurface exploration program.

G) Laboratory Testing

During advancement of test borings, two 3-inch diameter, undisturbed Shelby tube samples were obtained from MMI-3 (20- to 22-feet) and MMI-4 (16- to 18-feet) for constant stress, one-dimension consolidation tests including gradation analysis and Atterberg limits. The sample retrieved from MMI-3 (20- to 22-feet) contained predominantly silt and sand not conducive to consolidation testing. The sample obtained from MMI-4 (16- to 18-feet) was able to be fully tested. Laboratory results are attached.

V) GEOTECHNICAL EVALUATION

The geotechnical considerations pertinent for the proposed flood protection improvements include:

- The presence of loose miscellaneous fill materials, loose/soft marine deposits and soft to stiff tidal deposits resulting in uncontrolled settlements under wall loads imposed by spread footing foundations.
- The potential for hydrostatic uplift pressures under pavement surfaces located on the land side of the flood protection improvements due to the variable hydraulic conductivity of the fill materials.
- The presence of high ground water in excavations during high tide intervals.

We understand that a wall with a top at design elevation 13.2 feet NAVD88 is planned to protect the parking and nearby downtown buildings from sea level rise predicted by 2050 with the design allowing it to be extended to elevation 14.6 feet NAVD88 to accommodate future larger sea level rise. Three different wall options were considered, including the following:

i) a fully penetrating sheet pile wall with decorative panel coverings or
ii) a soldier pile and partial penetrating sheet pile combination wall that will have removable above grade panels between the soldier piles, or
iii) a secant pile wall, which consists of overlapping shafts with alternating high strength and low strength concrete.

Due to the permeable nature of the fill materials, all three wall systems, as a minimum, will need to fully penetrate the fill materials and be embedded into the underlying low permeable glacial marine deposits to create a seepage path cutoff from the ocean side of the wall to the land side of the wall. This seepage cutoff barrier is necessary to prevent hydrostatic uplift forces from acting upward on the existing pavement resulting in potential damage and flooding of the land side of the wall during flood events.

The protective wall alignment will generally extend along the south edge of the parking area approaching the Narragansett Leathers building. The wall alignment shown on Figure 3 should be considered approximate, and will need to extend a sufficient distance of at least 50± feet further east beyond MMI-1 in order to provide sufficient protection against subsurface seepage around the west end of the sheeting. Subsurface conditions along the route of the wall are defined by MMI-1, MMI-2, MMI-3, MMI-5, MMI-7, SLR-8 and SLR-9.

We also evaluated three potential ground improvement methods. Ground improvement involves various methods to improve the strength and permeability characteristics of the fill to allow construction of a conventional retaining wall atop the improved soils. The following three ground improvement methods were considered:

i) Rapid Impact Compaction
ii) Soil Mixing
iii) Deep Trench Excavation

VI) WALL OPTIONS

A) Sheet Pile Wall Option

This option includes the installation of steel sheeting that will protrude above the ground surface at EL 8± to a top of wall at EL 13.2 and be clad in decorative panels. In order to support the weight of decorative panels with no appreciable settlement, the steel sheeting will need to be driven through the very soft to medium dense glacial marine deposits and be embedded into the underlying dense to very dense glacial till deposits. The exposed portion of the sheet pile wall will initially protrude about 5.2± feet above ground surface but must be designed to accommodate for a future raising to EL 14.6.

Design and selection of the steel sheet piling wall must consider support of the future weight of the decorative panels and have a maximum horizontal deflection at the top of the wall limited to about 1/2± inch under full hydrostatic loading with top of wall at EL 14.6. SLR's analysis included the commercial software program DeepEX 2020 to assess horizontal deflection at the proposed top of wall at EL 14.6.

Based on our analyses, which are attached hereto, steel sheet piling will need to be driven into the glacial till layer (practical refusal) and have a minimum section modulus of 7.9 in^3 in order to result in 1/2± inches of horizontal deflection at the top of the wall (EL 14.6). Based on test boring data, the bottom of the sheeting should be driven to the following elevations:

Test Boring	Bottom of Steel Sheeting
MMI-1	EL -9
MMI-2	EL -21
MMI-3	EL -15
MMI-5	EL -17
MMI-7	EL -7
SLR-8	EL -7

Note that the SLR-9 series explorations, which encountered relatively shallow refusal, did not provide sufficient information to determine the depth of sheeting. Future test pit excavations at this location will be necessary to further evaluate subsurface conditions, particularly the refusal materials, preparatory to final sheeting design.

An intermediate lightweight sheet section, such as SZ-11, would meet this requirement. It is also recommended that the exposed portion of the steel sheet piling extending to about 5± feet below grade be corrosion protected given the marine environment.

B) Soldier Pile Wall Option

This option also includes the installation of steel sheeting approximately flush with the ground surface extending downward to the top of the low permeable glacial marine deposits to effectively cutoff seepage to the parking lot land side of the wall. The sheeting will not be designed for support of the wall itself since it will be driven to the top of the very soft glacial marine deposits. Integral with the sheet piling will be driven steel H-piles at about 10± feet on center with removable panels. The H-piles will therefore support the removable panels vertically due to weight of the panels and horizontally due to hydrostatic forces during the design flood event. Similar to the steel sheet pile wall option, the H-piles will be designed considering a top level of EL 14.6 with an allowable horizontal deflection of about 1/2± inch during the design flood event.

SLR's analysis included the commercial software program AllPile 6 to assess horizontal deflection at the proposed top of wall at EL 14.6. The wall was designed to be end bearing at practical refusal (i.e. top of rock) penetrating through all of the overburden soil materials. Loading analysis included H-piles at 10 feet on center with water-tight panels between, design flood water at elevation 14.6, existing ground surface at elevation 8.0±, and a water-tight sheet pile wall connection between the soldier piles to cut-off subsurface flood water infiltration. Based on our analyses, a HP 14x117 will deflect about a 1/2± half inch under these loading conditions.

Based on test boring data, the bottom of the sheeting should be driven to the following elevations:

Test Boring	Bottom of Steel Sheeting
MMI-1	EL 0
MMI-2	EL -8
MMI-3	EL -6
MMI-5	EL -5
MMI-7	EL +1
SLR-8	EL +1

Additionally, the bottom of the H-piles would be driven to practical refusal to the following elevations:

Test Boring	Bottom of Steel Sheeting
MMI-1	EL -14
MMI-2	EL -24
MMI-3	EL -17
MMI-5	EL -19
MMI-7	EL -10
SLR-8	EL -10

As indicated above, future test pit excavations at the SLR-9 location will be necessary to further evaluate subsurface conditions, particularly the refusal materials, preparatory to final sheeting and H-pile design.

While the soldier pile / sheet pile system is considered technically feasible, this system was eliminated from further consideration due to relatively high costs associated with the need to mobilize two different pile driving systems.

C) Secant Pile Option

The intent of the secant pile option is to provide structural support and seepage cutoff to support a conventional truncated/stub wall on top of the secants. An advantage of secant piles over other wall systems is they may be installed with low ground vibration. Secant pile walls are constructed by drilling overlapping concrete shafts. The primary shafts are generally constructed of low strength concrete with the secondary shafts consisting of high strength concrete. Reinforcing steel is typically placed in the secondary shafts. Secant piles would be embedded approximately 5 feet into the glacial marine clay to serve as a seepage cutoff relative to the overlying fill materials. Secant piles are generally not amenable to installing a decorative façade. For this reason, we recommend terminating the secant piles approximately 2 feet below existing grade over which a truncated/stub wall would then be built on top of the secant pile wall.

Based on test boring data, the bottom of the secants should extend to the following elevations:

Test Boring	Bottom of Secants
MMI-1	EL -3
MMI-2	EL -10.5
MMI-3	EL -9.5
MMI-5	EL -7.8
MMI-7	EL -2
SLR-8	EL -2

VII) GROUND IMPROVEMENT OPTIONS

A) Rapid Impact Compaction

Rapid Impact Compaction (RIC) is a ground improvement technique that densifies shallow, loose soils, using a hydraulic hammer which repeatedly strikes an impact plate. The energy is transferred to the underlying loose soils and rearranges the particles into a denser and less permeable configuration. The impact locations are typically located on a grid pattern, the spacing of which is determined by the subsurface conditions and foundation loading and geometry. Treated soils and fills have increased density, friction angle and stiffness, allowing for construction of a conventional concrete retaining wall over the RIC improved soil matrix. RIC is prone to causing excessive vibrations. While considered to be technically and economically feasible, given the age and historic nature of the near existing buildings and underground utilities, RIC was eliminated from further consideration due to potentially damaging vibrations during construction.

B) Soil Mixing

Soil Mixing is a process of mixing cement grout with soil in-place to improve the strength and permeability characteristics. The cement grout and soil mixing is accomplished through specially designed augers to mechanically mix the soil and grout in-place. Once the soil mixture has cured, a conventional concrete can be built atop the improved soils. For this site, the mechanical mixing would extend about 5 feet below the top of the glacial marine deposits. Although technically feasible, soil mixing was eliminated from further consideration due to cost and space considerations, as the grout plant would take up valuable parking space during construction.

C) Deep Trench Excavation

The deep excavation option involves excavating a 2-foot wide trench through the full depth of the existing fill until encounter with the underlying glacial marine deposits, and replacing it with lean concrete or flowable fill. The deep trench option was eliminated from further consideration due to excavation depths of about 5 feet to 14 feet below grade, and the tidal influence on groundwater levels. Note that groundwater control was required for the recently completed public restroom project, particularly at high tide.

VIII) CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing discussions, SLR has prepared the following conclusions and recommendations:

- The subsurface conditions consist of heterogeneous fill materials underlain by glacial marine clay which transitions to interbedded sand and clay and glacial till.
- The fill is not suitable for direct or indirect support of a traditional reinforced concrete seawall as unacceptable settlements would be anticipated and significant seepage under the wall would occur during design storm conditions.
- Three alternative wall systems were considered including sheet pile walls with decorative panels above the ground surface, soldier pile walls, or secant piles with a reinforced truncated/stub concrete wall constructed atop the secants. Soldier piles were eliminated from consideration due to cost. Sheet pile and secant pile walls appear technically and economically viable options.
- Three ground improvement methods were evaluated, including Rapid Impact Compaction, Soil Mixing, and excavation and removal of existing fill through a deep trench, followed by backfill with lean concrete or flowable fill. All three ground improvement methods were eliminated for cost or constructability concerns.
- We recommend developing the sheet pile wall or secant pile wall options in final design. We also recommend obtaining detailed estimates from specialty contractors for the two options.
- During installation of steel sheet piles, and H-piles if that option is selected, vibration monitoring will be required to assess resultant ground vibrations and to provide real-time data to the Contractor to allow for modification of driving methods as necessary to be protective of nearby existing structures, both above and below ground. Prior to installation, it is recommended that a pre-construction survey be performed on all buildings and underground utilities (to the extent practicable). While steel sheet pile driving generally results in low amplitude, high frequency vibrations, it is the high amplitude, low frequency vibrations from H-pile installations that are generally more prone to ground movements that can damage structures.

ATTACHMENTS

Tables

Table 1 – Summary of Subsurface Explorations

Figures

Figure 1 – Surficial Geology Map
Figure 2 – Bedrock Geology Map
Figure 3 – Subsurface Exploration Location Plan

Subsurface Exploration Logs

MMI/SLR Test Boring Logs
RW Gillespie and Associates Exploration Logs

Ransom Consulting, Inc Test Boring Logs
Summit Geoengineering Services Test Boring Logs

Laboratory Data

MMI-3, UP-1; Gradation Analysis
MMI-4, UP-2; Gradation Analysis, Atterberg Limits, One Dimensional Consolidation

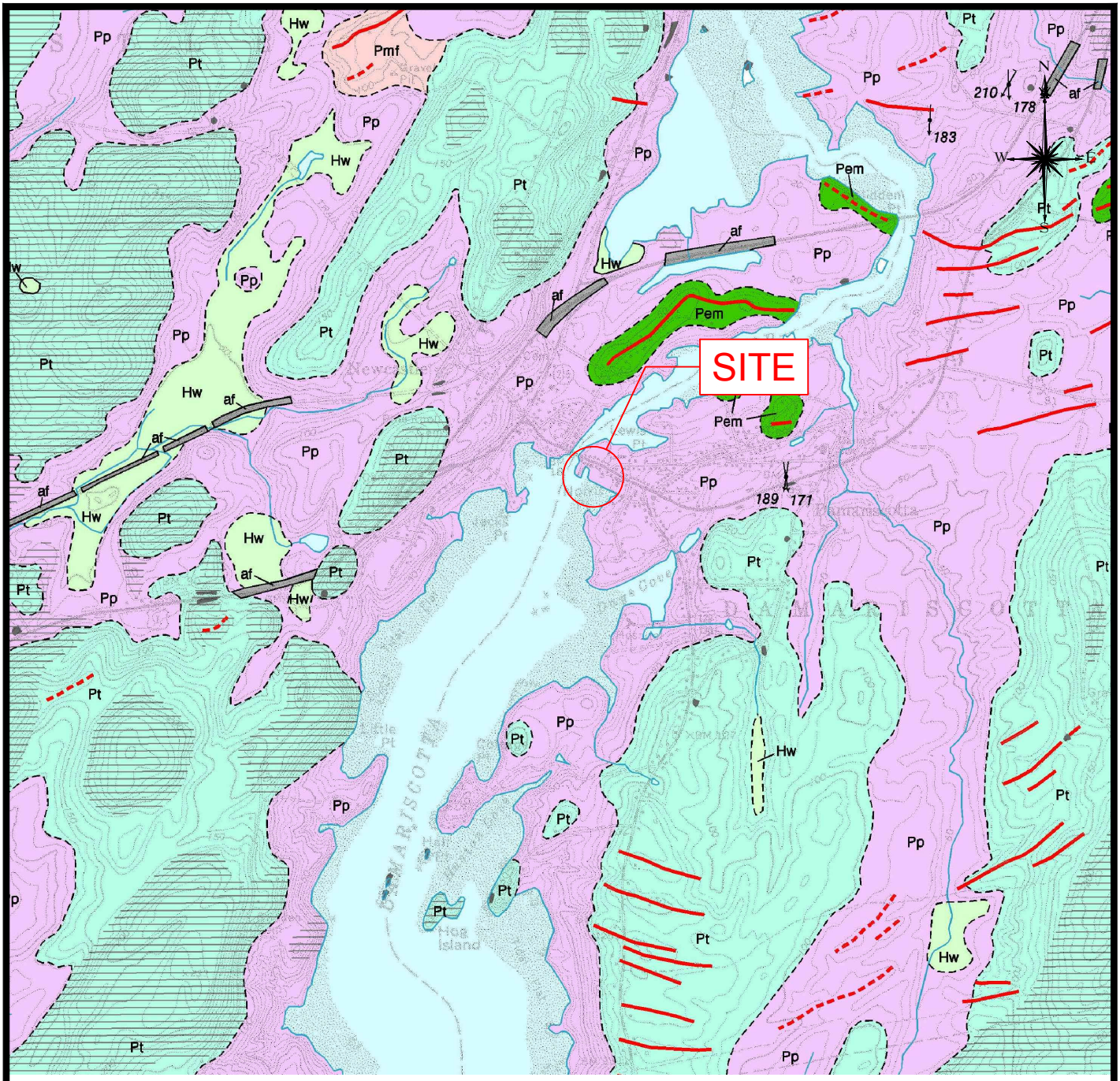
Software Output

Sheet Pile Design from DeepEX
Soldier Pile Design from AllPile

TABLE 1
SUMMARY OF SUBSURFACE EXPLORATIONS
DOWNTOWN FLOOD PROTECTION
MAIN STREET, DAMARISCOTTA, MAINE
PROJECT NO. 143.16541.00017

EXPLORATION DESIGNATION	APPROXIMATE GROUND SURFACE ELEVATION	BOTTOM OF FILL		TOP OF GLACIAL MARINE DEPOSITS		TOP OF GLACIAL TILL		TOP OF PROBABLE BEDROCK		BOTTOM OF EXPLORATION		OBSERVED GROUNDWATER LEVELS DURING DRILLING OPERATIONS	
		DEPTH (FT)	ELEVATION (FT)	DEPTH (FT)	ELEVATION (FT)	DEPTH (FT)	ELEVATION (FT)	DEPTH (FT)	ELEVATION (FT)	DEPTH (FT)	ELEVATION (FT)	DEPTH (FT)	ELEVATION (FT)
MMI-1	12 ±	10.0 ±	2.0 ±	10.0 ±	2.0 ±	21.0	-9.0	25.5 ±	-13.5 ±	26.0 ±R	-14.0 ±R	NR	NR
MMI-2	8.5 ±	14.0 ±	-5.5 ±	14.0 ±	-5.5 ±	29.0 ±	-20.5 ±	31.6 ±	-23.1 ±	32.2 ±R	-23.7 ±R	NR	NR
MMI-3	8 ±	12.5 ±	-4.5 ±	12.5 ±	-4.5 ±	23.0 ±	-15.0 ±	24.5 ±	-16.5 ±	25.0 ±R	-17.0 ±R	NR	NR
MMI-4	8 ±	9.5 ±	-1.5 ±	9.5 ±	-1.5 ±	22.5 ±	-14.5 ±	28.3 ±	-20.3 ±	29.2 ±R	-21.2 ±R	NR	NR
MMI-5	8 ±	10.8 ±	-2.8 ±	10.8 ±	-2.8 ±	24.3 ±	-16.3 ±	25.0 ±	-17.0 ±	28.0 ±R	-20.0 ±R	NR	NR
MMI-7	8 ±	5.0 ±	3.0 ±	5.0 ±	3.0 ±	14.5 ±	-6.5 ±	16.7 ±	-8.7 ±	17.5 ±R	-9.5 ±R	NR	NR
SLR-8	8 ±	4.5 ±	3.5 ±	4.5 ±	3.5 ±	13.5 ±	-5.5 ±	13.7 ±	-5.7 ±	13.7 ±R	-5.7 ±R	4.5 ±	3.5 ±
SLR-9	8 ±	5.0 ±	3.0 ±	5.0 ±	3.0 ±	7.0 ±	1.0 ±	7.5 ±	0.5 ±	7.5 ±R	0.5 ±R	NR	NR
B-1	8 ±	5.0 ±	3.0 ±	5.0 ±	3.0 ±	20.0	NE	20.5	NE	26.8 ±R	-18.8 ±R	4.0 ±	4.0 ±
B-2	8 ±	6.5 ±	1.5 ±	6.5 ±	1.5 ±	NE	NE	19.8	NE	19.8 ±R	1.0 ±R	3.0 ±	5.0 ±
TP-1	10 ±	5.0 ±	5.0 ±	5.0 ±	5.0	NE	NE	NE	NE	8.5 ±	1.0 ±	5.0 ±	5.0 ±
TP-2	10 ±	4.5	5.5	4.5	5.5	NE	NE	NE	NE	6.0 ±R	1.0 ±R	4.0 ±	6.0 ±
B-101	8 ±	17.0 ±	-9.0 ±	NE	NE	NE	NE	NE	NE	17.0 ±	-9.0 ±	5 ±	3.0 ±
B-102	8 ±	12.5 ±	-4.5 ±	NE	NE	NE	NE	NE	NE	12.5 ±R	-4.5 ±R	5 ±	3.0 ±
B-103	12 ±	15.0 ±	-3.5 ±	15.0 ±	-3.5 ±	NE	NE	NE	NE	17.0 ±	-5.5 ±	5 ±	6.5 ±
B-104	8 ±	13.5 ±	-5.5 ±	NE	NE	NE	NE	NE	NE	13.5 ±	-5.5 ±	3 ±	5.0 ±
B-105	7 ±	11.0 ±	-4.0 ±	11.0 ±	-4.0 ±	NE	NE	NE	NE	12.0 ±	-5.0 ±	5 ±	2.0 ±
B-106	8 ±	11.0	-3.0 ±	11.0 ±	-3.0 ±	NE	NE	NE	NE	12.0 ±	-4.0 ±	5 ±	3.0 ±
B-107	11 ±	15.0 ±	-4.0 ±	15.0 ±	-4.0 ±	NE	NE	NE	NE	17.0 ±	-6.0 ±	5 ±	6.0 ±
B-108	8 ±	11.0 ±	-3.0 ±	11.0 ±	-3.0 ±	NE	NE	NE	NE	12.0 ±	-4.0 ±	5 ±	3.0 ±
B-1	8 ±	5.0 ±	3.0 ±	5.0 ±	3.0 ±	NE	NE	22.8 ±	-14.8 ±	22.8 ±R	-14.8 ±R	12.1 ±	-4.1 ±
B-2	8 ±	5.0 ±	3.0 ±	5.0 ±	3.0 ±	21.8 ±	-13.8 ±	24.5 ±	-16.5 ±	24.5 ±R	-16.5 ±R	3.5 ±	4.5 ±
B-3	8 ±	5.0 ±	3.0 ±	5.0 ±	3.0 ±	NE	NE	20.3 ±	-12.3 ±	20.3 ±R	-12.3 ±R	4.5 ±	3.5 ±
B-4	8 ±	9.0 ±	-1.0 ±	9.0 ±	-1.0 ±	24.0 ±	-16.0 ±	31.7 ±	-23.7 ±	31.7 ±R	-23.7 ±R	9.0 ±	-1.0 ±
B-5	8 ±	5.0 ±	3.0 ±	5.0 ±	3.0 ±	NE	NE	NE	NE	12.0 ±R	-4.0 ±R	7.0 ±	1.0 ±

Notes:
1) Test Borings MMI-1 through MMI-7 were performed between december 2 and 5, 2020 by New England Boring Contractors of Hermon, Maine.
2) Test Boriings SLR-8 and SLR-9 were performed on May 4, 2021 by New England Boring Contractors of Hermon, Maine.
3) B-1, B-2, TP-1 and TP-2 explorations were performed for RW Gillespie in June 2016.
4) B-100 series test borings were conducted for Ransom Consulting in February 2016.
5) Borings B-1 thjrough B-5 were conducted for Summit Geoengineering Services in July 2011.
6) Groundwater levels were measured during exploration advancement and therefore are not indicative of stabilized groundwater conditions.
7) "R" indicates auger or spoon refusal (defined as 100 blows for 6 inches or less penetration).
8) "NE" indicates not encountered; "NR" Indicates not recorded.



Pp

Presumpscot Formation - Glaciomarine silt, clay, and sand deposited on the late-glacial sea floor. This map unit overlies the irregular surface of glacial till in a complex manner, so it is likely to include areas of till exposed at the ground surface.

BASE PLAN: SURFICIAL GEOLOGY, DAMARISCOTTA QUADRANGLE, MAINE. BY THE MAINE GEOLOGICAL SURVEY OPEN FILE No. 09-6 DATED 2009.

SLR
2 MARKET STREET, 5TH FLOOR
PORTLAND, ME 04101
207.541.9544
SLRCONSULTING.COM

FIGURE 1 - SURFICIAL GEOLOGY MAP

DOWNTOWN FLOOD PROTECTION

MAIN STREET
DAMARISCOTTA, MAINE

PROJECT PHASE: REV: ---

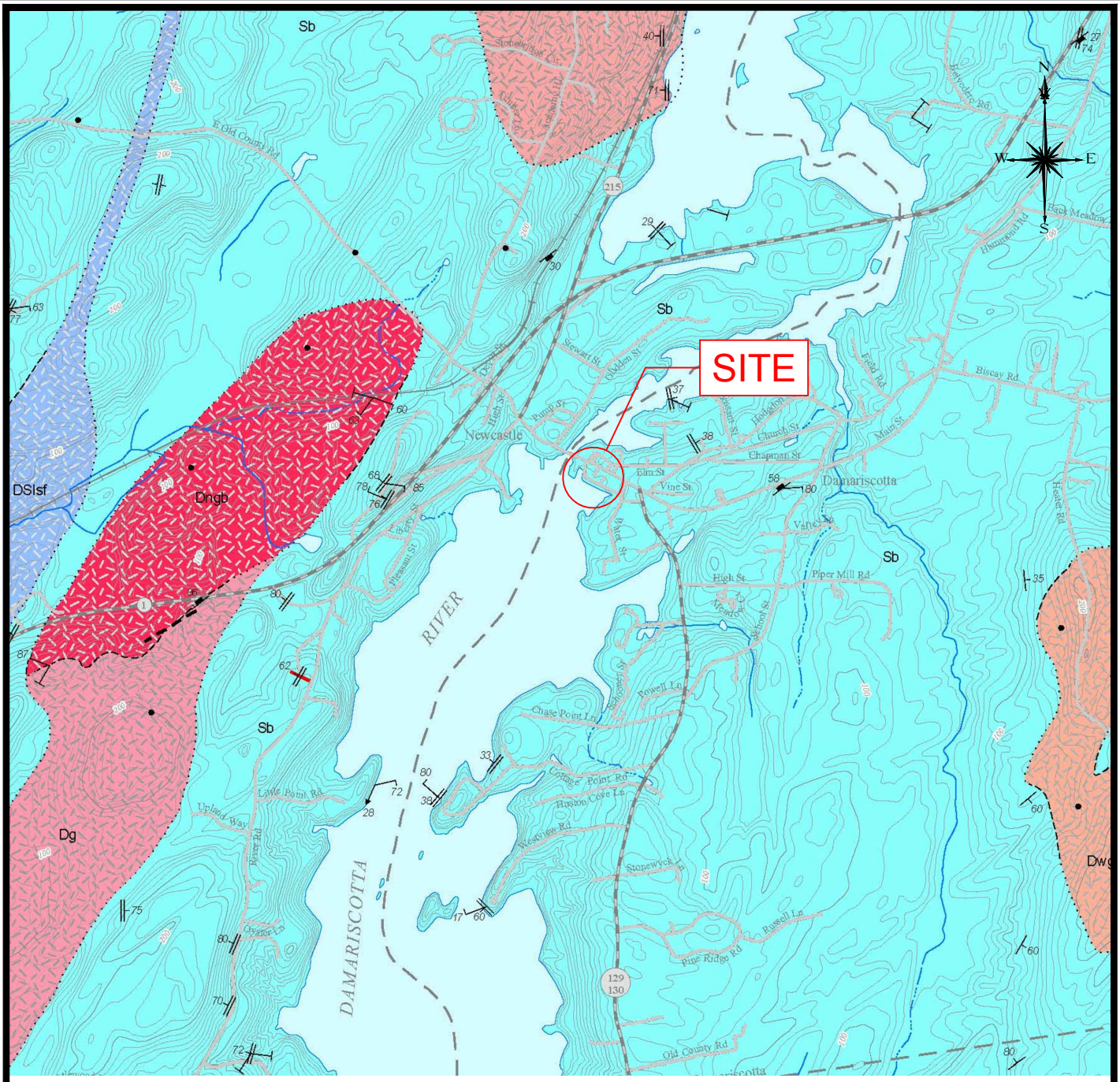
DATE	AUG 3, 2021
SCALE	N.T.S.
PROJ. NO.	143.16541.00017
DESIGNED	EAA
DRAWN	EAA
CHECKED	CET

DRAWING NAME:

FIG. 1

Copyright SLR - 2021

Drawing: B:\6500\6541 WRIGHT PIERCE\6541-17 DAMARISCOTTA\CAD\143.16541.00017 FIG.1.DWG Layout Tab:8.5X11V
Plotted by: EADLER On this date: Mon, 2021 March 1 - 9:39am



Sb **Bucksport Formation.** Medium-bedded, medium gray to light gray, quartz-feldspar-biotite granofels with interbedded medium green to greenish-gray, diopside calc-silicate granofels.

BASE PLAN: RECONNAISSANCE BEDROCK GEOLOGY OF THE DAMARISCOTTA QUADRANGLE, MAINE. BY THE MAINE GEOLOGICAL SURVEY OPEN FILE No. 16-22 DATED 2016.

SLR
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PORTLAND, ME 04101
207.541.9544
SLRCONSULTING.COM

FIGURE 2 - BEDROCK GEOLOGY MAP

DOWNTOWN FLOOD PROTECTION

MAIN STREET
DAMARISCOTTA, MAINE

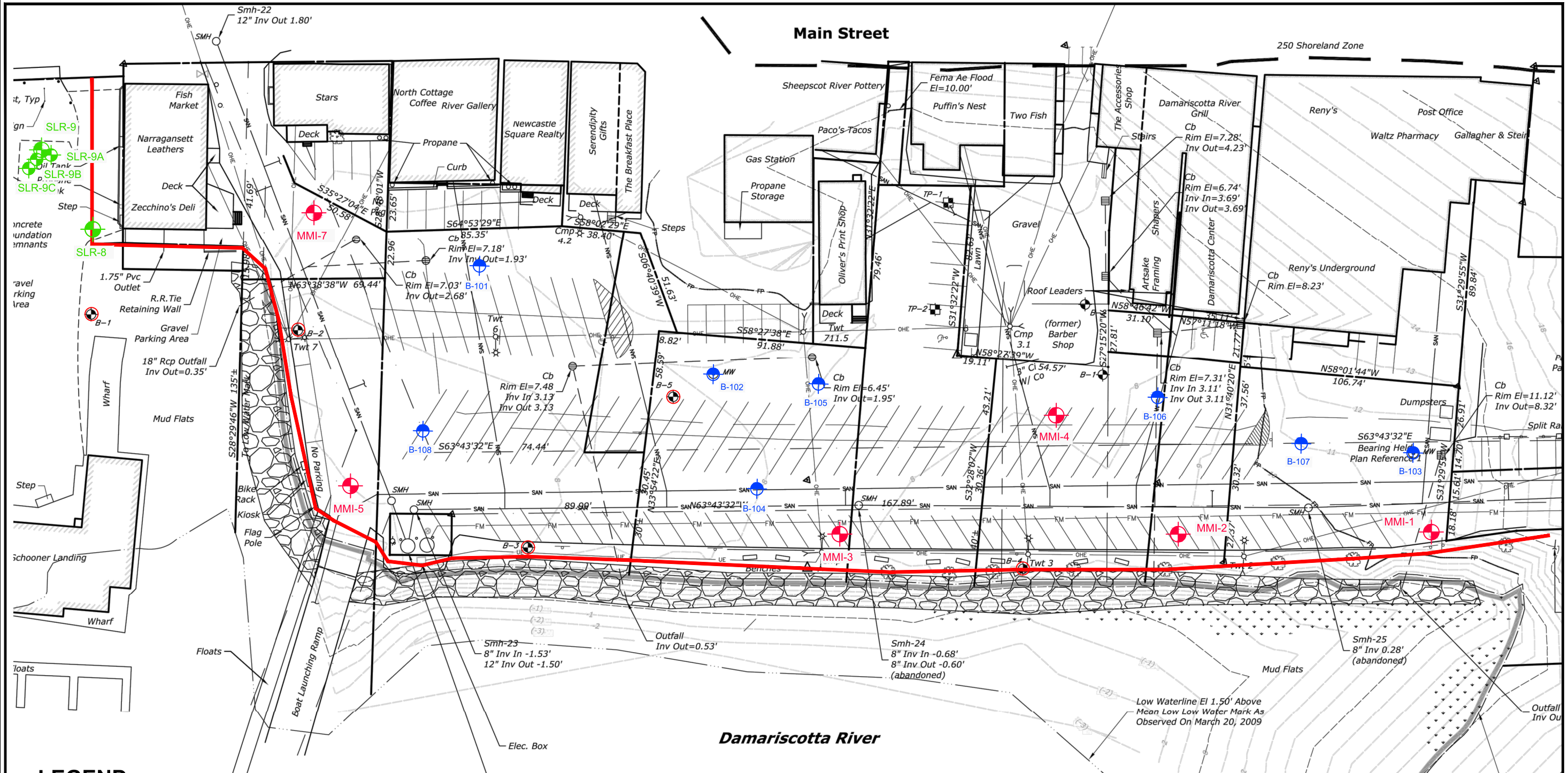
PROJECT PHASE: REV: ---

DATE	AUG 3, 2021
SCALE	N.T.S.
PROJ. NO.	143.16541.00017
DESIGNED / DRAWN / CHECKED	EAA / EAA / CET
DRAWING NAME:	FIG. 2

Copyright SLR - 2021

Drawing: B:\6500\6541 WRIGHT PIERCE\6541-17 DAMARISCOTTA\CAD\143.16541.00017 FIG-2.DWG Layout Tab:8.5X11V
Plotted by: EADLER On this date: Mon, 2021 March 1 - 9:46am

Drawing: B:\65001\6541 WRIGHT PIERCE\16541-17 DAMARISCOTTA\CAD\143.16541.00017 FIG.3R2.DWG Layout: Tab:11X17


Main Street
250 Shoreland Zone
Smh-22
12" Inv Out 1.80'
Fish Market
Narragansett Leathers
Zecchino's Deli
Stars
North Cottage Coffee
River Gallery
Newcastle Square Realty
Serendipity Gifts
The Breakfast Place
Sheepscot River Pottery
Fema Ae Flood El=10.00'
Puffin's Nest
Two Fish
Paco's Tacos
Gas Station
Propane Storage
Oliver's Print Shop
The Accessories Shop
Stairs
Damariscotta River Grill
Reny's
Post Office
Waltz Pharmacy
Gallagher & Stein
Artsake Framing
Shapers
Damariscotta Center
Reny's Underground
Gravel
Roof Leaders
(former) Barber Shop
Dumpsters
Split Ra
Deck
Propane
Curb
Steps
Step
Gravel Parking Area
1.75" Pvc Outlet
R.R.Tie Retaining Wall
18" Rcp Outfall
Inv Out=0.35'
Wharf
Mud Flats
Bike Rack
Kiosk
Flag Pole
No Parking
Schooner Landing
Floats
Boat Launching Ramp
Benches
Smh-23
8" Inv In -1.53'
12" Inv Out -1.50'
Outfall
Inv Out=0.53'
Smh-24
8" Inv In -0.68'
8" Inv Out -0.60'
(abandoned)
Smh-25
8" Inv 0.28'
(abandoned)
Mud Flats
Low Waterline El 1.50' Above Mean Low Low Water Mark As Observed On March 20, 2009
Elec. Box
Damariscotta River
SLR-9
SLR-9A
SLR-9B
SLR-9C
SLR-8
MMI-7
MMI-5
MMI-4
MMI-3
MMI-2
MMI-1
B-101
B-102
B-103
B-104
B-105
B-106
B-107
B-108
B-1
B-2
B-3
B-5
TP-1
TP-2
Cb Rim El=7.03' Inv Out=2.68'
Cb Rim El=7.18' Inv Out=1.93'
Cb Rim El=7.48 Inv In 3.13 Inv Out 3.13
Cb Rim El=6.45' Inv Out=1.95'
Cb Rim El=7.31' Inv In 3.11' Inv Out 3.11
Cb Rim El=7.28' Inv Out=4.23'
Cb Rim El=6.74' Inv In=3.69' Inv Out=3.69'
Cb Rim El=8.23'
Cb Rim El=11.12' Inv Out=8.32'
Cmp 4.2
Cmp 3.1
Ci 54.57' W/ Co
Twt 6
Twt 7
Twt 711.5
Twt 3
S64°53'29"E 85.35'
S58°02'29"E 38.40'
S58°27'38"E 91.88'
S63°38'38"W 69.44'
S63°43'32"E 74.44'
S63°43'32"E Bearing Held For Plan Reference 1
N63°43'32"W 89.99'
N63°43'32"W 167.89'
S35°27'04"E 50.58'
S06°40'39"W 51.63'
S28°29'46"W 135'±
To Low Water Mark
N58°46'42"W 31.10'
N57°11'18"W 19.11'
N58°01'44"W 106.74'
S31°29'55"W 89.84'
S31°29'55"W 45.61'
S31°29'55"W 14.70'
N31°40'20"E 37.56'
S32°28'37"W 30.36'
N33°54'22"E 30.45'
S27°15'20"W 27.81'
N31°32'22"E 79.46'
S31°32'22"W 32.56'
Lawn
22.96'
23.65'
41.69'
43.21'
58.59'
8.82'
30.32'
27.47'
18.18'
26.91'
21.77'
30.45'
30.36'
30.45'
30.32'
30.45'
30.36'
30.45'
30.32'
30.45'
30.36'
30.45'
30.32

TEST BORING LOG

MILONE & MACBROOM
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-1**	**SHEET:** 1 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	December 3, 2020	**GROUND SURFACE ELEVATION:**	±12

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW/NW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4/3	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
				2" Asphalt	0.2	
1				Cuttings indicate olive-grey coarse to fine SAND, some Gravel, trace Silt	**FILL**	
2					1.8	
	S1	4	4	Medium dense olive-brown coarse to fine SAND, trace Gravel, trace Silt.	**FILL**	
3			6			
			7			
4			23			
	S2	12	3	Loose olive-brown medium to fine SAND, trace (+) Silt, no structure, no odor, moist.	**FILL**	
5			4			
			4			
6			3			
				Drill action and wash indicates very loose coarse to fine SAND, some Gravel from 6-10'	**FILL**	
7						
8						
9						
				Change in drill wash indicates grey clay at ±10'	10	
10						
11	S3	0	WOH/12"	Very soft, No Recovery.		
12						
			1			
13			2			
14	S4	24	1	Soft grey CLAY, trace (-) fine Sand, no structure, no odor, wet.	**GLACIAL MARINE**	
15			2			
			2			
16			1			
	S5	24	WOH/24"	Very soft grey CLAY, trace (+) fine Sand, layered, no odor, wet.	**GLACIAL MARINE**	
17						
18						
19						
20	S6	13	WOH/12"	Very soft, similar to above.	**GLACIAL MARINE**	
21					21	
			16	Medium dense olive-grey coarse to fine SAND, little silty Clay, well blended in-situ, no odor, wet.	**TILL**	
22			15			

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

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603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-1**	**SHEET:** 2 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	December 3, 2020	**GROUND SURFACE ELEVATION:**	±12

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW/NW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4/3	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
23				Drill action and wash indicates glacial till to ±25'	**TILL**	
24						
25	S7	0	18	Very dense, no recovery	25.5	
26			100/0"	Roller bit grinding from 25.5 to 26'	26	
				Bottom of Exploration at ± 26'		
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ·ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	**COHESIVE SOILS**	**SAMPLE TYPE**	**PROPORTIONS**
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

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Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-2**	**SHEET:** 1 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	12/3/2020-12/4/2020	**GROUND SURFACE ELEVATION:**	±8.5

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	7		2" Asphalt	0.2	
1			9 12	Medium dense brown coarse to fine SAND, little Gravel, trace Silt, no structure, no odor, moist.	**FILL**	
2			7 6			
3						
4						
	S2	0	9 7	Medium dense, No Recovery. Drill cuttings indicate similar to above.		
5			8 5			
6						
7						
8						
9						
	S3	4	6 4	Loose brown coarse to fine SAND, little Silt, no structure, no odor, moist.	**FILL**	
10			4 3			
11						
12						
13					14	
14	S4	24	WOH/8" 1	Soft grey CLAY, trace Silt, trace fine Sand, layered, no odor, wet.	**GLACIAL MARINE**	
15			2 1			
16						
17						
18						
19	S5	24	WOR/24"	Very soft grey CLAY, no structure, no odor, wet. PP=0.0 tsf	**GLACIAL MARINE**	
20						
21						
22						

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

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2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-2**	**SHEET:** 2 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	12/3/2020-12/4/2020	**GROUND SURFACE ELEVATION:**	±8.5

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
23						
24	S6	24	WOR/24"	Very soft grey CLAY, no structure, no odor, wet. PP=0.0 tsf	**GLACIAL MARINE**	
25						
26						
27						
28						
29					29	
29	S7	0	6	Medium dense, No Recovery. Note coarse Gravel in spoon tip.	**TILL**	
30			7			
			6		31.6	
31			50/2"	Roller bit grinding from 31.6 to 32.2'	**BEDROCK**	
32				Bottom of Exploration at ± 32.2	32.2	
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ·ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

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2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-3**	**SHEET:** 1 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	December 3, 2020	**GROUND SURFACE ELEVATION:**	±8

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☒ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	4		1" Asphalt	0.1	
1			8	Medium dense brown coarse to fine SAND, little Gravel, trace	**FILL**	
			8	Silt, no structure, no odor, moist. Note coarse Gravel in spoon tip.		
2			7			
			4			
3						
4						
	S2	3	4	Medium dense olive-brown coarse to fine SAND, little Gravel,	**FILL**	
5			3	little Clay, no structure, no odor, wet.		
			13			
6			6			
7						
8						
					9	
9	S3	11	26	Very dense WOOD fragments, little coarse to fine Sand.	**FILL**	
			47			
10			25			
			26			
11	S4	4	6	Medium dense WOOD fragments.	**FILL**	
			4			
12			6		12.5	
			5			
13						
14	S5	0	8	Medium stiff, No Recovery. Note wood fragments in spoon tip.	**GLACIAL MARINE**	
			4	Grey clay on spoon exterior		
15			4			
			4			
16						
17						
18	S6	24	WOH/24"	Very soft grey CLAY, trace fine Sand, no structure, no odor, wet.	**GLACIAL MARINE**	
19						
20	UP1	13		Coarse to fine SAND, some Silt, trace Gravel.		
21						
22	S7	0	1	Soft, no recovery.		
			1			

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

MILONE & MACBROOM
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-3**	**SHEET:** 12of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	December 3, 2020	**GROUND SURFACE ELEVATION:**	±8

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☒ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
23	S7	0	1 1	Soft No Recovery.	**MARINE** 23	
24			5 6	Loose, No Recovery, note drill action indicates gravel at ±23'	**TILL** 24.5	
25				Drill action and wash indicates probable weathered bedrock at ±24.5'	**BEDROCK** 25	
26				Bottom of Exploration at ± 25'		
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ·ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

MILONE & MACBROOM
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-4**	**SHEET:** 1 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	December 4, 2020	**GROUND SURFACE ELEVATION:**	±8

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☒ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	13		1.5" Asphalt	0.1	
1			5	Medium dense brown coarse to fine SAND, some Gravel, trace	**FILL**	
			7	Silt, no structure, no odor, moist.		
2			13			
			17			
3						
4	S2	17	16	Medium dense brown coarse to fine SAND, some Gravel, trace	**FILL**	
			10	Silt, no structure, no odor, moist.		
5			16			
			17			
6						
7						
8						
				Drill action indicates no change to ±9'		
9	S3	0	12	Loose, No Recovery.	9.5	
			6			
10			2			
			2			
11				Drill wash indicated grey clay.		
12						
13						
14	UP1	0				
15						
16	UP2	21		Grey lean CLAY		
17						
18	S4	24	WOH/24"	Very soft grey CLAY, trace fine Sand in frequent partings, no	**GLACIAL MARINE**	
				odor, wet.		
19						
20						
21						
22				Drill action indicates cobble at ±22.5'	22.5	

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

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Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-4**	**SHEET:** 2 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	December 4, 2020	**GROUND SURFACE ELEVATION:**	±8

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☒ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
23						
24	S5	9	8 28 60 41	Very dense grey coarse to fine SAND, little clayey Silt, well bonded in-situ, no odor, wet.	**TILL**	
25						
26						
27						
28				Drill action indicates probable weathered bedrock at ±28.3'	28.3	
29	S6	0	100/0"	Very dense, No Recovery.	**BEDROCK** 29.2	
30				Bottom of Exploration at ± 29.2'		
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ·ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

MILONE & MACBROOM
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-5**	**SHEET:** 1 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	December 2, 2020	**GROUND SURFACE ELEVATION:**	±8

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**
TYPE	--	HW/NW	S	--
SIZE ID (IN)	--	4/3	1 3/8	--
HAMMER WT (LB)	--	300	140	--
HAMMER FALL (IN)	--	24	30	--

GROUNDWATER OBSERVATIONS

ELAPSED TIME (HR)			
CASING AT (FT)			
DEPTH (FT)			

☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	14		3" Asphalt	0.3	
1			8	Dense brown coarse to fine SAND and Gravel, trace Silt, gravel is	**FILL**	
			23	angular, no odor, moist.		
2			25		2.5	
	S2	6	25			
			7	Medium dense brown coarse to fine SAND, little Gravel, little	**FILL**	
3			12	silty Clay, no structure, no odor, moist to wet.		
			12			
4						
	S3	6	9			
			6	Loose brown coarse to fine SAND, little Gravel, little silty Clay,	**FILL**	
5			4	no structure, no odor, wet.		
			5			
6			7			
7	S4	0	3	Loose, No Recovery.		
			4			
8			2			
			3			
9						
10	S5	10	WOH/18"	Very loose brown medium to fine SAND, some silty Clay, clay in	**FILL**	
				spoon tip, no odor, wet.	10.8	
11						
			2			
12	S6	14	WOH/12"	Very loose brown to grey fine SAND, some silty Clay, bottom 6"	**GLACIAL MARINE**	
				of spoon is grey Clay, no odor, wet.		
13			1/12"			
14	S7	0	WOH/24"	Very soft, No Recovery		
15						
16	S8	16	WOH/18"	Very soft grey CLAY, trace fine Sand, occasional redoximorphic	**GLACIAL MARINE**	
				mottling, no odor, wet.		
17				PP=2.5-3.5 tsf		
			4			
18					18.9	
				Drill action and wash indicates boulder from ±18.9-19.5'		
19					19.5	
20	S9	24	2	Very loose grey-brown fine SAND and Clay, layered, no odor	**GLACIAL MARINE**	
			1	wet.		
21			1			
			2			
22	S10	6	WOH/18"	Very loose brown fine SAND, little Clay, no structure, no odor,	**GLACIAL MARINE**	
				wet.		

Notes:

1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ·ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

MILONE & MACBROOM
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-5**	**SHEET:** 2 of 2
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	December 2, 2020	**GROUND SURFACE ELEVATION:**	±8

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**			
TYPE	--	HW/NW	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	--	4/3	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
23	S10	6	WOH/18"	Very loose brown fine SAND, little Clay, no structure, no odor, wet.	**GLACIAL MARINE**	
24	S11	3	2 1 14	Very dense grey coarse to fine SAND, and Gravel, little Clay, slightly bonded in-situ, no odor, wet.	24.3 **TILL**	
25			100/0"		25	
26				Drill action and wash indicates probable weathered bedrock from ±25-28'	**WEATHERED BEDROCK**	
27						
28				Bottom of Exploration at ±28' on probable competent bedrock	28	
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ·ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	**COHESIVE SOILS**	**SAMPLE TYPE**	**PROPORTIONS**
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

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603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **MMI-7**	**SHEET:** 1 of 1
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	D. Share
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	12/2/2020 - 12/3/2020	**GROUND SURFACE ELEVATION:**	±8

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**
TYPE	--	HW	S	--	ELAPSED TIME (HR)
SIZE ID (IN)	--	4	1 3/8	--	CASING AT (FT)
HAMMER WT (LB)	--	300	140	--	DEPTH (FT)
HAMMER FALL (IN)	--	24	30	--	☐ **NO GROUNDWATER ENCOUNTERED**

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
				1" Asphalt	0.1	
1	S1	14	3 7	Cuttings indicate olive-grey coarse to fine SAND and Gravel. Medium dense olive grey coarse to fine SAND, some Gravel, trace Silt, no structure, no odor, moist.	**FILL** 2	
2			7 5	Medium dense yellow-brown medium to fine SAND.	**FILL**	
3	S2	13	7 3	Loose olive-brown coarse to fine SAND, trace (+) Gravel, trace Silt, no structure, no odor, moist.	**FILL**	
4			5 3		5	
5	S3	20	1 1	Very loose fine SAND and Clay, layered, no odor, wet.	**GLACIAL MARINE**	
6			1/12"			
7						
8						
9	S4	9	3 9	Medium dense brown and grey coarse to fine SAND, trace (+) silty Clay, trace Gravel, no structure, no odor, wet.	**GLACIAL MARINE**	
10			10 24		11	
11				Drill action indicates boulder from ±11 to 12', offset ±3' south.	12	
12						
13	S5	8	5 5	Medium dense brown coarse to fine SAND, little Silt, trace Gravel, no structure, no odor, wet.	**GLACIAL MARINE**	
14			5 16		14.5	
15						
16	S6	9	14 100/6"	Very dense olive-brown medium to fine SAND, little Clay, trace Gravel, no structure, no odor, wet. Note possible weathered bedrock in spoon tip.	**TILL** 16.7	
17				Drill action and wash indicates probable weathered bedrock from ±16.7 to 17.5'	17.5	
18				Bottom of Exploration at ± 17.5		
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: Mobile Drill B-53; Truck Mounted
2) HAMMER/HOIST TYPE: Automatic
3) Groundwater depth not recorded due to low permeability materials and drilling methods.

FILE: ·ight Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB L

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	Downtown Flood Protection	BORING NO.: SLR-8	SHEET: 1 of 1
LOCATION:	Damariscotta, Maine	CONTRACTOR:	New England Boring Contractors
PROJ. NO:	143.16541.00017	FOREMAN:	T. Schaefer
CLIENT:	Wright-Pierce	INSPECTOR:	E. Adler
DATE:	May 4, 2021	GROUND SURFACE ELEVATION:	8±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	SSA/HSA	--	S	--	ELAPSED TIME (HR)	0		
SIZE ID (IN)	4/2.25	--	1 3/8	--	CASING AT (FT)	10		
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)	4.5		
HAMMER FALL (IN)	--	--	30	--	☐ NO GROUNDWATER ENCOUNTERED			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
1	S1	8	5 6 7 9	Medium dense dark-brown coarse to fine SAND, little Gravel, trace clayey Silt, no structure, no odor, moist.	**FILL**	
2	S2	5	10 9 6 10	Medium dense dark-brown coarse to fine SAND, little Gravel, trace clayey Silt, trace wood fragments, no structure, no odor, moist.	**FILL**	
4	S3	10	1 2 1/12"	Very loose, similar to above.	4.5	
5				Soft grey CLAY, trace fine SAND, strong organic odor, wet.	**TIDAL DEPOSITS**	
6	S4	8	WOH/12"	Soft grey CLAY, trace fine SAND, little wood fragments, strong organic odor, wet.	**TIDAL DEPOSITS**	
7			3 3			
10	S5	4	2 10 2 3	Stiff black organic CLAY, some fine SAND, little shell fragments, trace wood fragments, slight organic odor, wet.	**TIDAL DEPOSITS**	
13				Auger action indicates strata change at ±13.5'	13.5	
14				Auger refusal at ±13.7'	13.7	
				Bottom of Exploration at ± 13.7'		

Notes:
1) TYPE OF RIG: Mobile Drill B-53, Track Mounted
2) HAMMER/HOIST TYPE: Automatic

FILE: Wright Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB Logs

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	Downtown Flood Protection	BORING NO.: SLR-9	SHEET: 1 of 1
LOCATION:	Damariscotta, Maine	CONTRACTOR:	New England Boring Contractors
PROJ. NO:	143.16541.00017	FOREMAN:	T. Schaefer
CLIENT:	Wright-Pierce	INSPECTOR:	E. Adler
DATE:	May 4, 2021	GROUND SURFACE ELEVATION:	8±±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	SSA/HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4/2.25	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
1	S1	9	10 11 7 14	Medium dense grey to brown coarse to fine SAND and Gravel, trace Silt, no structure, no odor, moist.	**FILL**	
2	S2	0	48 100/5"	Very dense, no recovery. Spoon action indicates cobble.		
3				Auger action indicates cobbles ±2.5-4'		
4	S3	0	100/6"	Very dense, no recovery.	**4.5**	
5				Auger refusal at 4.5' Bottom of Exploration at ± 4.5'		
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: Mobile Drill B-53, Track Mounted
2) HAMMER/HOIST TYPE: Automatic

FILE: Wright Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB Logs

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:**	**SLR-9A**
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	T. Schaefer
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	May 4, 2021	**GROUND SURFACE ELEVATION:**	8±

SHEET: 1 of 1

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**			
TYPE	SSA/HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4/2.25	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] **NO GROUNDWATER ENCOUNTERED**			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
5	S1	3	100/5"	Very dense brown coarse to fine SAND, little Silt, trace Gravel, coarse gravel in spoon tip.	**FILL** 5.5	
6				Auger refusal at ±5.5' Bottom of Exploration at ± 5.5'		

Notes:
1) TYPE OF RIG: Mobile Drill B-53, Track Mounted
2) HAMMER/HOIST TYPE: Automatic

FILE: Wright Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB Logs

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **SLR-9B**	**SHEET:** 1 of 1
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	T. Schaefer
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	May 4, 2021	**GROUND SURFACE ELEVATION:**	8±

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**			
TYPE	SSA/HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4/2.25	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] **NO GROUNDWATER ENCOUNTERED**			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
5	S1	6	2 21 15 10	Dense brown to grey coarse to fine SAND, some Silt, trace Gravel, trace shell fragments, no odor, moist to wet.		
7				Auger refusal at ±7.5'	7.5	
8				Bottom of Exploration at ± 7.5'		

Notes:
1) TYPE OF RIG: Mobile Drill B-53, Track Mounted
2) HAMMER/HOIST TYPE: Automatic

FILE: Wright Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB Logs

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire
03110
603-668-1654

PROJECT:	**Downtown Flood Protection**	**BORING NO.:** **SLR-9C**	**SHEET:** 1 of 1
LOCATION:	Damariscotta, Maine	**CONTRACTOR:**	New England Boring Contractors
PROJ. NO:	143.16541.00017	**FOREMAN:**	T. Schaefer
CLIENT:	Wright-Pierce	**INSPECTOR:**	E. Adler
DATE:	May 4, 2021	**GROUND SURFACE ELEVATION:**	8±

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**			
TYPE	SSA/HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4/2.25	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] **NO GROUNDWATER ENCOUNTERED**			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
1						
2						
3						
4						
5				Auger refusal at ±5.5'	5.5	
6				Bottom of Exploration at ± 5.5'		
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: Mobile Drill B-53, Track Mounted
2) HAMMER/HOIST TYPE: Automatic

FILE: Wright Pierce\6541-17 Damariscotta\[Copy of 143.16541.00017 TB Logs

COHESIONLESS SOILS	**COHESIVE SOILS**	**SAMPLE TYPE**	**PROPORTIONS**
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-1

Total Depth (ft): 26.8

Sheet 1 of 2

Project Name: Damariscotta Waterfront Restroom
RWG&A Project No. 0810-006
Location: Damariscotta, Maine
Client: Wright-Pierce
RWG&A Representative: Dan Burgess
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 4'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 06/12/2018
Date Completed: 06/12/2018
Surface Elevation: 8 Feet
Drilling Method: Drive + Wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	ASPHALTIC PAVEMENT (1.5 inches).	11	10 14 12	26	7	GS MC
				FILL; Gravelly, coarse to medium sand, little silt, brown.					
			S-2	FILL; Silty sand with gravel, brown. Trace amounts of pavement, medium dense.	7	12 12 12 15 18	27		
5			S-3		5	3 3 3	6		
				Becomes wet.					
			S-4		5	3 4 4 5	9		
				Sand becoming fine, wet, some silt, gravelly, brown.					
10			S-5		13	5 2 3 3 4	6		
				SILTY SAND WITH ORGANIC (SM); Loose, wet, some organics, wood traces, shells, dark gray.					
				SILTY CLAY (CL); Soft to very soft, wet, clay, with silt, dark gray to olive gray.					
15			S-6		24	2 2 2 2	4	33	MC
20			S-7		NR	WOH 50/5"	100+		
			R-1	Top of bedrock. Advance to 21.8' with roller bit and began rock core. Very hard, fresh to slightly weathered, medium gray, aphanitic/amorphous to fine grained, METAWACKE (Bucksport Formation). Highly to moderately fractured with slightly weathered, low to moderately dipping fractures/ joints, tight to open, generally rough fracture surface with some iron staining. Recovery = 24"/60"=40% RQD = 51% At 24' granite intrusion of pegmatite - very hard, fresh to very slightly weathered, white and medium gray, coarse-grained granite PEGMATITE. Top 1" of pegmatite surface has slight iron staining.					
25									
30				Bottom of Exploration at 26.8'; Boring terminated 5.8' below top of					

Notes:

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-1
Total Depth: 26.8
Sheet 2 of 2

Project Name: Damariscotta Waterfront Restroom
Location: Damariscotta Maine
Client: Wright-Pierce
Observed Water Depth: 4'

RWG&A Project No. 0810-006
Surface Elevation: 8 Feet
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30				bedrock.					
35									
40									
45									
50									
55									
60									

Notes:

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-2

Total Depth (ft): 19.8

Sheet 1 of 1

Project Name: Damariscotta Waterfront Restroom
RWG&A Project No. 0810-006
Location: Damariscotta, Maine
Client: Wright-Pierce
RWG&A Representative: Dan Burgess
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 3'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 06/12/2018
Date Completed: 06/12/2018
Surface Elevation: 8 Feet
Drilling Method: Drive + Wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	ASPHALTIC PAVEMENT (1.5 inches).	14	5 6 6	12	4	GS MC
			S-2	FILL; Silty sand with gravel, trace amounts of pavement, brown.	12	4 4 4	8		
				Becomes wet and loose.		4 4 4			
5			S-3		4	16 6 5	11		
				Wet, wood, some organics, silty sand, gray.					
			S-4	SILTY SAND WITH ORGANIC (SM); Loose, wet, organic, wood fragments/shells, fine seams of olive gray, gray.	20	5 4 3	6		
10			S-5		0	3 2 2	7		
				SILTY CLAY (CL); Medium, wet, clay, with silt, gray.		3 4 4			
15			S-6		24	WOR	WOR	30	MC
			FV	Field Vane: Undrained Shear Strength: Su=0.500 ksf, residual=0.050 ksf.		WOR			
			FV	Field Vane: Undrained Shear Strength: Su=0.520 ksf, residual=0.050 ksf.		WOR			
20				Bottom of Exploration at 19.8'; Auger refusal, possible bedrock.		WOR			
25									
30									

Notes: Field Vane tests conducted then sample obtained using split-barrel sampler.

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

TEST PIT LOG

Test Pit No. TP-1

PROJECT	Damariscotta Waterfront Restroom	PROJECT NO.	0810-006
CLIENT	Wright-Pierce	DATE	11/30/2017
LOCATION	Damariscotta	ELEV.	10'
EXCAVATION METHOD	Machine-excavated test pit	LOGGER	C. Nickerson
EXCAVATION LOCATION	See Exploration Location Plan		
DEPTH TO - Water: 5'	When checked: High Tide - 7:51AM, 10' m.l.w	Caving:	

DEPTH	SYMBOL	SAMPLES SAMPLE NUMBER	DESCRIPTION	MOISTURE %	LAB TESTS
0			ASPHALTIC PAVEMENT (3 inches).		
		S-1	FILL; Dry to moist, poorly graded gravel with silt and sand, light brown.	1	GS
			AGGREGATE BASE		
2			FILL; Moist, silty gravel with sand, brownish gray with clay tile pipe fragments, pieces of wood, cobbles, few boulders, approx. 1.5 CF piece of cut granite. PVC sewer clean out at about 1.5'. (See sketch)		
4			Faint petroleum odor at about 4' to 5'; no sheen.		
			5 inch O.D. clay tile sewer pipe on timbers at about 5'. (See sketch) Manually probed below timbers with pry bar. Bottom of machine-excavated test pit at about 5.5'.		
6					
8					
			Bottom of Exploration at about 8.5'; Not refusal.		
10					
12					

Notes: 1. Probed with pry bar near connection of clean out. Very loose/soft soil.
2. Reportedly parking lot filled up to current elevation in 1960s with excess material from construction of Route 1 interchange.

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

TEST PIT LOG

Test Pit No. TP-2

PROJECT	Damariscotta Waterfront Restroom	PROJECT NO.	0810-006
CLIENT	Wright-Pierce	DATE	11/30/2017
LOCATION	Damariscotta	ELEV.	10'
EXCAVATION METHOD	Machine-excavated test pit	LOGGER	C. Nickerson
EXCAVATION LOCATION	See Exploration Location Plan		
DEPTH TO - Water: 4'	When checked: appears perched in fill	Caving:	

DEPTH	SYMBOL	SAMPLES SAMPLE NUMBER	DESCRIPTION	MOISTURE %	LAB TESTS
0			NEWER ASPHALTIC PAVEMENT (3 inches).		
			OLDER ASPHALTIC PAVEMENT (3 inches).		
			FILL; Dry to moist, poorly graded gravel with silt and sand, light brown.		
			AGGREGATE BASE		
2			FILL; Moist, silty gravel with sand, brownish gray.	1	GS
			FILL; Moist to wet, saw dust and wood fragments, light orange.		
			Mixed with silty sand below 3.5'.		
			ORGANIC SILTY SAND (OL-SM); Wet, sand, some to little silt, strong organic odor, buried mud flat.		
6			Bottom of Exploration at about 6; Refusal on nested boulders or bedrock.		
8					
10					
12					

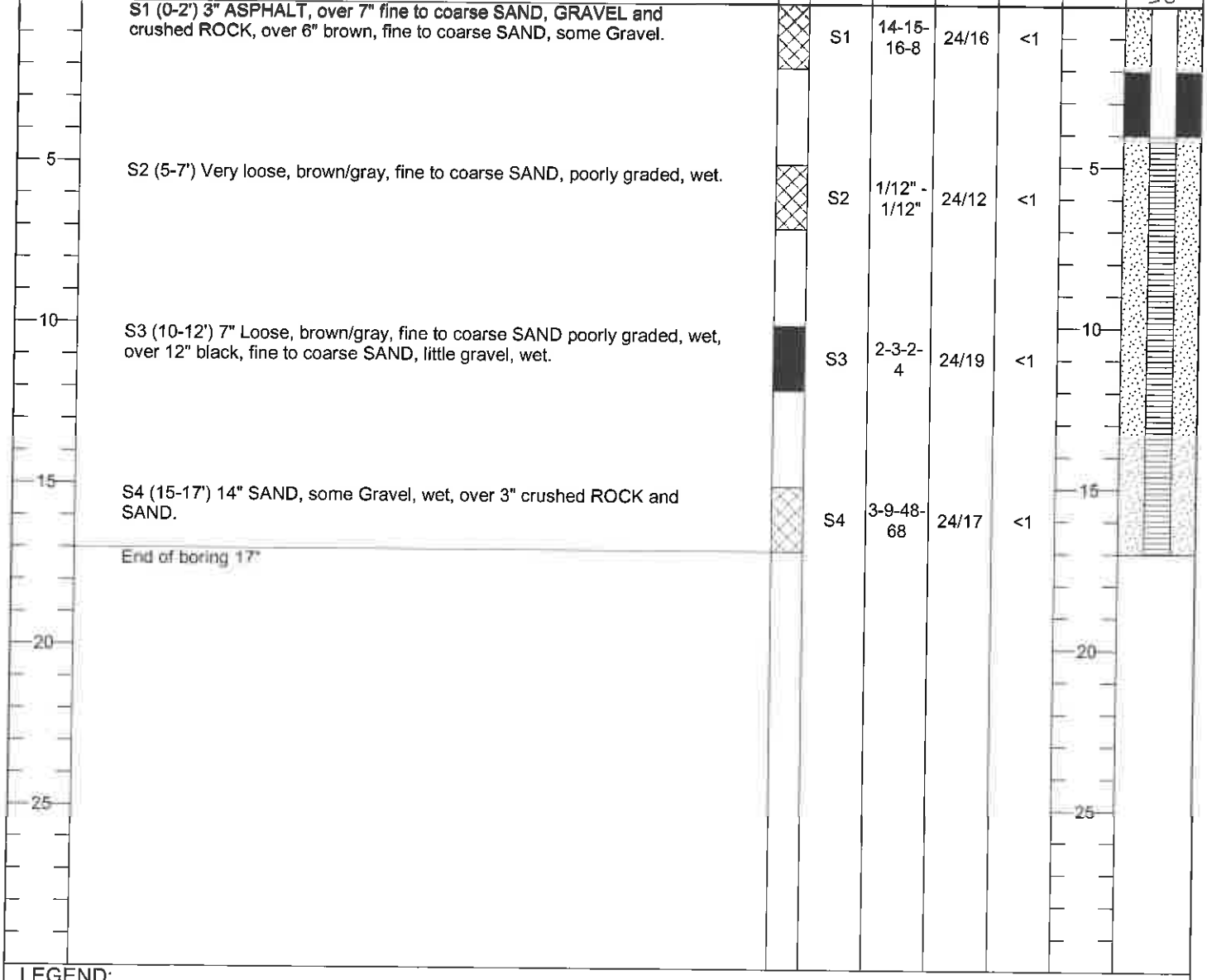
Notes: Test pit dug from 9:15AM to 9:45AM; High tide 7:51AM, 10'm.l.w.

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Engineers
and Scientists

BORING AND MONITORING WELL LOG: B101/MW101

Reviewed by: Eric Rhuse	Total Depth: 17 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/17/16 to 02/17/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmeister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)
	S1 (0-2') 3" ASPHALT, over 7" fine to coarse SAND, GRAVEL and crushed ROCK, over 6" brown, fine to coarse SAND, some Gravel.		S1	14-15-16-8	24/16	<1
5	S2 (5-7') Very loose, brown/gray, fine to coarse SAND, poorly graded, wet.		S2	1/12" - 1/12"	24/12	<1
10	S3 (10-12') 7" Loose, brown/gray, fine to coarse SAND poorly graded, wet, over 12" black, fine to coarse SAND, little gravel, wet.		S3	2-3-2-4	24/19	<1
15	S4 (15-17') 14" SAND, some Gravel, wet, over 3" crushed ROCK and SAND.		S4	3-9-48-68	24/17	<1
	End of boring 17'					
20						
25						



LEGEND:

Filter Sand | Native Fill | Bentonite | Bentonite Grout | Concrete | PVC Screen | Solid PVC Riser

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

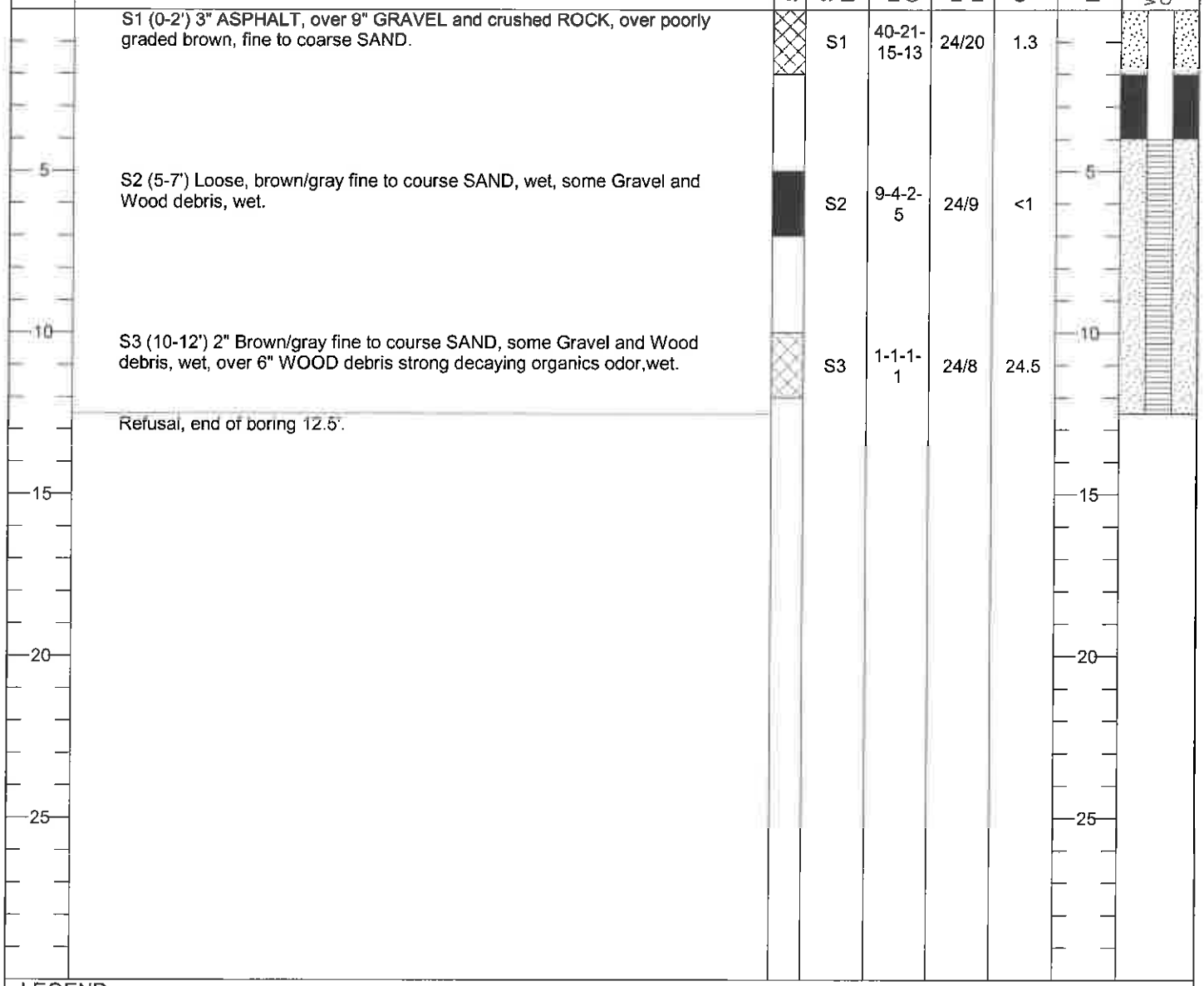
Project No.: 131.06156

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Engineers
and Scientists

BORING AND MONITORING WELL LOG: B102/MW102

Reviewed by: Erik Rhenz	Total Depth: 12.5 Feet	Logged By: KJQ
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/17/16 to 02/17/16
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS

DEPTH	DESCRIPTION (Based on a modified Burmeister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)
	S1 (0-2') 3" ASPHALT, over 9" GRAVEL and crushed ROCK, over poorly graded brown, fine to coarse SAND.		S1	40-21-15-13	24/20	1.3
5	S2 (5-7') Loose, brown/gray fine to course SAND, wet, some Gravel and Wood debris, wet.		S2	9-4-2-5	24/9	<1
10	S3 (10-12') 2" Brown/gray fine to course SAND, some Gravel and Wood debris, wet, over 6" WOOD debris strong decaying organics odor,wet.		S3	1-1-1-1	24/8	24.5
	Refusal, end of boring 12.5'.					
15						
20						
25						



LEGEND:

Filter Sand | Native Fill | Bentonite | Bentonite Grout | Concrete | PVC Screen | Solid PVC Riser

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

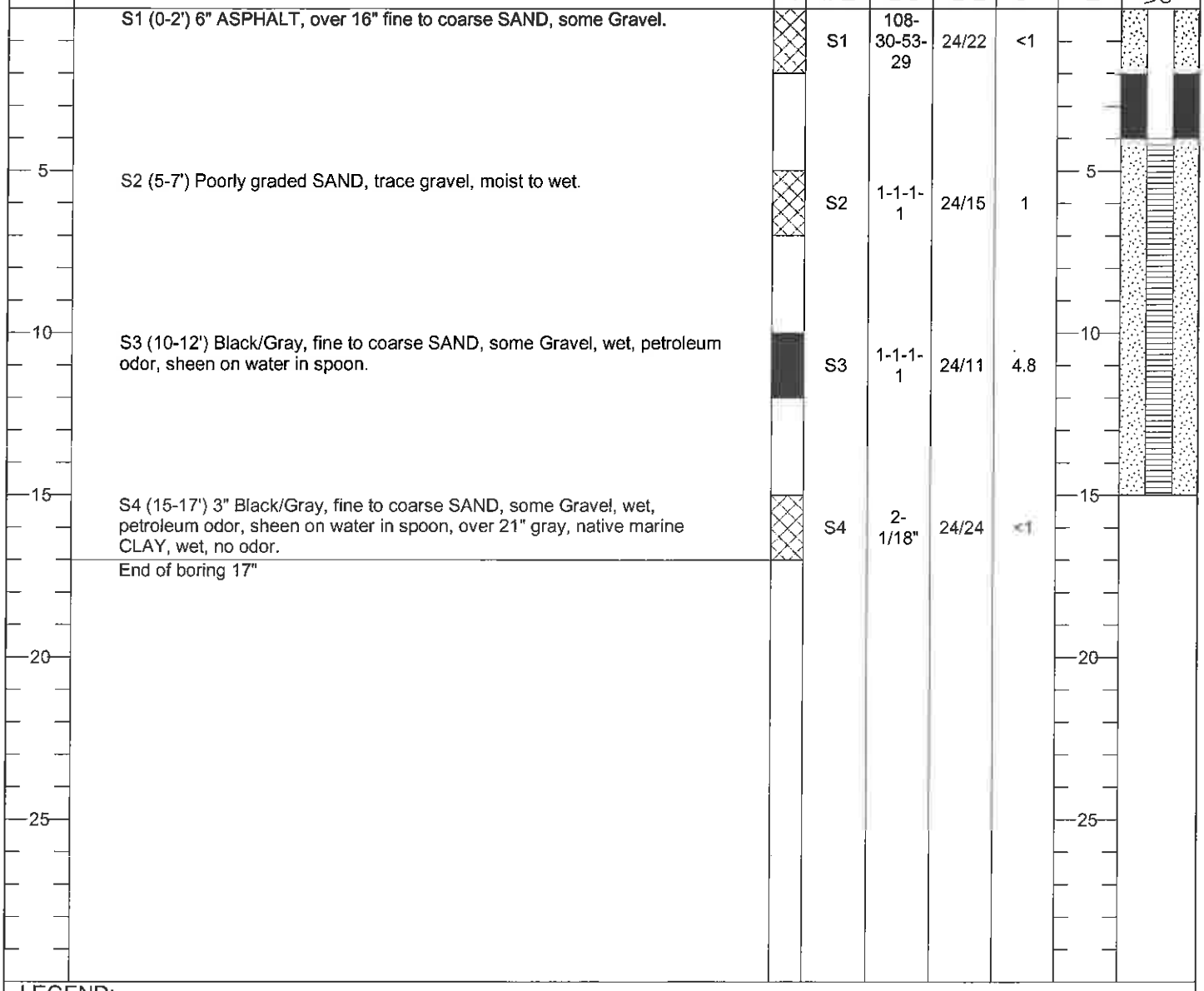
Project No.: 131.06156 | Page: 1

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BORING AND MONITORING WELL LOG: B103/MW103

Reviewed by: Eric Rhein	Total Depth: 17 Feet	Logged By: KJQ
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/17/16 to 02/17/16
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS

DEPTH	DESCRIPTION (Based on a modified Burmeister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)
0	S1 (0-2') 6" ASPHALT, over 16" fine to coarse SAND, some Gravel.		S1	108-30-53-29	24/22	<1
5	S2 (5-7') Poorly graded SAND, trace gravel, moist to wet.		S2	1-1-1-1	24/15	1
10	S3 (10-12') Black/Gray, fine to coarse SAND, some Gravel, wet, petroleum odor, sheen on water in spoon.		S3	1-1-1-1	24/11	4.8
15	S4 (15-17') 3" Black/Gray, fine to coarse SAND, some Gravel, wet, petroleum odor, sheen on water in spoon, over 21" gray, native marine CLAY, wet, no odor.		S4	2-1/18"	24/24	<1
17	End of boring 17"					
20						
25						



LEGEND:

Filter Sand | Native Fill | Bentonite | Bentonite Grout | Concrete | PVC Screen | Solid PVC Riser

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156 | Page: 1

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BORING LOG: B104

Reviewed By: Eric Reed	Total Depth: 13.5 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 2 Inches	Date Drilled: 02/18/16 to 02/18/16	
GW Observed at: 3 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 3" ASPHALT, over 15" fine to coarse SAND, little gravel.		S1	10-12-12-10	24/18	<1		
5	S2 (5-7') Brown, fine to coarse SAND, little gravel and wood debris.		S2	1-1-2-3	24/4	<1		5
10	S3 (10-12') Black/Gray, fine to coarse SAND, trace gravel and wood debris, over 3" WOOD debris, wet.		S3	14-10-8-7	24/9	<1		10
	S4 (12-13.5') 5" Wood debris, over 11" gray, poorly graded, SAND, wet.		S4	4-8-13	17/16	<1		
	Refusal, end of boring 13.5'.							
15								15
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

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Consulting
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and Scientists

BORING LOG: B105

Reviewed By: Eric Rhein	Total Depth: 12 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/18/16 to 02/18/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 4" ASPHALT, over 8" brown, fine to coarse SAND, some Gravel.		S1	19-10-8-9	24/12	<1		
5	S2 (5-7') Brown to black, fine to coarse SAND, little gravel, brick and wood debris, wet.		S2	3-2-1-1	24/5	<1		5
10	S3 (10-12') 3" WOOD debris, decaying organic odor, wet, over 13" gray soft CLAY, wet, no odor.		S3	1-1-1-1	24/16	<1		10
	End of boring 12'							
15								15
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

RANSOM Consulting Engineers and Scientists

BORING LOG: B106

Reviewed By: Erik Phelps	Total Depth: 12 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/18/16 to 02/18/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 3" ASPHALT, over 11" brown, fine to coarse SAND, some Gravel.		S1	12-12-11-12	24/14	<1		
	S2 (2-4') Brown, fine to coarse SAND, some Gravel, wet.		S2	15-15-11-7	24/20	<1		
5	S3 (5-7') Brown, fine to coarse SAND, some Gravel, wet.		S3	4-7-5-9	24/10	<1		5
10	S4 (10-12') 7" Fine to coarse SAND, little gravel, over 13" gray CLAY, wet, decaying organics odor.		S4	1-1-1-1	24/20	<1		10
	End of boring 12'.							
15								15
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

RANSOM Consulting Engineers and Scientists

BORING LOG: B107

Reviewed By: Earl Phelps	Total Depth: 17 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 2 Inches	Date Drilled: 02/17/16 to 02/17/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 3" ASPHALT, over 14" brown, fine to coarse SAND, some Gravel.		S1	21-16-17-13	24/17	<1		
5	S2 (5-7') 13" poorly graded SAND, over 5" fine to coarse SAND, trace gravel, bottom 2" wet.		S2	1-2-1-1	24/18	<1		5
10	S3 (10-12') Gray, poorly graded SAND, trace gravel, wet, slight petroleum odor.		S3	WH 18"-3	24/17	2.5		10
15	S4 (15-17') Soft, gray, silty marine CLAY, wet, decaying organics odor.		S4	1-1-1-1	24/17	<1		15
	End of boring 17' bgs.							
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

RANSOM Consulting Engineers and Scientists

BORING LOG: B108

Reviewed By: Erik Rhemp	Total Depth: 12 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/18/16 to 02/18/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 4" ASPHALT, over 12" brown, fine to coarse SAND, some Gravel.		S1	18-14-10-13	24/16	<1		
5	S2 (5-7') Brown, poorly graded SAND, wet.		S2	1-1-1-1	24/15	<1		5
10	S3 (10-12') 12" Very loose, poorly graded SAND, wet, over 12", very soft, gray, marine CLAY, wet.		S3	WH for 18" - 1	24/24	<1		10
	End of boring 12'.							
15								15
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT: LCRPC

SITE: AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-1**

Project: Wright-Pierce Boardwalk
Location: Main Street, Damariscotta, Maine

Project #: 11155
Sheet: 1 of 1
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley

Boring Location: Schooner Landing parking lot
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	12.1'		Measured with Water Meter

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/6	0 - 2	8	Brown SAND, little Silt and Gravel, compact, humid,		GRANULAR FILL
1				8	SM-SP		
				8			
2				8			
	S-2	24/6	2 - 4	8	Brown SAND, little Silt and Gravel, compact, humid,		
3				7	SM-SP		
				8			
4				8			
5							
	S-3	24/10	5 - 7	3	Brown CLAY, some Sand, little Silt, trace Organics, firm,		5' GLACIAL MARINE DEPOSITS
6				3	damp, CL		
				4			
7				4 / Bounce	Wood Debris		
8							
9							
10							
	S-4	24/18	10 - 12	4	Dark gray to black CLAY, some Silt and Sand, stiff, wet,		
11				7	CL		
				5	Bounced at 10'10" on wood debris		
12				10	Organic Odor		
13							
14							
15							
	S-5	24/4	15 - 17	2	Dark gray CLAY, some Silt, soft to firm, wet, CL		
16				2			
				2			
17				3			
18							18' +/-
19							
20							
	S-6	24/4	20 - 22	5	Light brown SAND, little Silt, compact, wet, SM		
21				6			
				7			
22				6			
					Auger Refusal at 22.8'		BEDROCK

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-2**

Project: Wright-Pierce Boardwalk
Location: Main Street, Damariscotta, Maine

Project #: 11155
Sheet: 1 of 2
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley

Boring Location: West end of Main Street parking lot
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	3.5'		Measured in open bore hole after drilling
7/15/2011	6.9'		Measured during drilling with water meter

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					Bituminous Pavement = 3"		PAVEMENT
1	S-1	24/6	0.3 - 2.3	7	Brown SAND, some Gravel, little Silt, compact, humid, SM		0.3'
				10			GRANULAR FILL
2				13			
				13			
3	S-2	24/6	2.3 - 4.3	6	Brown SAND, little Silt, compact, damp, SM		
				7			
4				8			
				8			
5							
	S-3	24/6	5 - 7	1	Light brown SAND, some Silt, little Gravel, very loose,		5'
6				1	moist, SM		GLACIAL MARINE DEPOSITS
				1			
7				WOH			
	S-4	24/12	7 - 9	1	Light brown SAND, little Silt and Gravel, very loose, wet,	Gravel = 8.4%	
8				WOH	SW-SM	Sand = 80.7%	
				1		Fines = 10.9%	
9				WOH			
10							
	S-5	24/24	10 - 12	2	Light brown SAND, some Silt, loose, wet, SM		
11				3			
				2			
12				3			
13							
14							
							14' +/-
15							
	S-6	24/24	15 - 17	1	Gray to olive brown CLAY, trace Sand and Silt, soft to	PP = 3,000 psf	
16				1	firm, CL	MC = 28.0%	
				3		PP = 4,000 psf	
17				5			
18							
19							
							19' +/-
20							
	S-7	24/24	20 - 22	2	Light brown SAND, loose, wet, SW		
21				2	Mottling at tip of spoon		
				7			
22				9	Olive and mottled Silty SAND, some Gravel, compact,		21.8'
					wet, SM		GLACIAL TILL

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition

Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Project:	Wright-Pierce Boardwalk	Boring #:	B-2
Location:	Main Street	Project #:	11155
	Damariscotta, Maine	Sheet:	2 of 2
		Chkd by:	CWC

Drilling Co:	Northern Test Boring	Boring Location:	West end of Main Street parking lot
Personnel:	Mike Nadeau	Elevation:	
Summit Staff:	Craig Coolidge, Erika Hawksley	Date started: 7/15/2011	Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	3.5'		Measured in open bore hole after drilling
7/15/2011	6.9'		Measured during drilling with water meter

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23					Rod Push 22' - 23' = 17 bpf 23' - 24' = 23 bpf 24' - 24.5' = 50/6" bpf		GLACIAL TILL
24							
25					Refusal at 24.5', Bedrock		24.5' BEDROCK
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES: bpf = blows per foot

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-3**

Project: Wright-Pierce Boardwalk
Location: Main Street, Damariscotta, Maine
Project #: 11155
Sheet: 1 of 1
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley
Boring Location: Main Street parking lot, East of boat launching ramp
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	3" Casing	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	4.5'		Observed moisture change

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/6	0 - 2	4	Brown SAND, some Silt, compact, humid, SM		GRANULAR FILL
1				3			
				8			
2				10			
	S-2	24/1	2 - 4	8	Brown SAND, some Gravel, little Silt, compact, damp,		
3				12	SM-SP		
				11			
4				10			
						Water at 4.5'	
5							
	S-3	24/8	5 - 7	3	Brown SAND, some Gravel, trace Silt, compact, wet, SP		5' GLACIAL MARINE DEPOSITS
6				7			
				5			
7				4			
	S-4	24/6	7 - 9	3	Light brown Gravelly SAND, loose, wet, SP		
8				4			
				3			
9				8			
10							
	S-5	24/12	10 - 12	1	Inter-layered Clay and Sand		10'
11				1	Olive brown CLAY, little Silt, soft, wet, CL		
				1	Light brown SAND, some Silt, very loose, wet, SM		
12				1			
13							
14							
15							
	S-6	24/18	15 - 17	2	Olive brown to gray CLAY, some Sand and Silt seams,	PP=1,500 psf	15'
16				2	soft to firm, wet, CL	MC = 27.5%	
				2			
17				2			
18							
					Torevane unable to advance at 18'		18'
19					Well graded SAND, SW		
20							
	S-7	24/8	20 - 20.3	50/4"	Gray SAND, compact, wet, SW		
21					Weathered rock at spoon tip		
					Auger Refusal at 20.3', Bedrock		20.3' BEDROCK
22							

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-4**

Project: Wright-Pierce Boardwalk
Project #: 11155
Location: Main Street
Damariscotta, Maine
Sheet: 1 of 2
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley
Boring Location: East end of Main Street parking lot
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	9'		Observed moisture change

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/3	0 - 2	2	Dark brown organic SILT, rootlets, loose, humid, OL	Lawn	TOPSOIL
1				2	Brown SAND, some Silt, loose to compact, humid, SM		0.2'
				8			GRANULAR
2				10			FILL
	S-2	24/3	2 - 4	5	Brown SAND, some Gravel, trace Silt, loose, humid,		
3				5	SP		
				3			
4				5			
5							
	S-3	24/6	5 - 7	3	Brown Silty SAND, little Gravel, compact, moist, damp,		
6				3	SM		
				3	Moist at spoon tip		
7				2			
	S-4	24/14	7 - 9	1	Light brown Silty SAND, trace Clay, loose, moist, SM		
8				3			
				6			
9				7			
						Water at 9'	9'
10							GLACIAL MARINE
	S-5	24/12	10 - 12	2	Gray well graded medium-course SAND, trace Silt,		DEPOSITS
11				5	compact, wet, SP		
				1			
12				1			
13							
14							
							14' +/-
15							
	S-6	24/16	15 - 17	1	Gray CLAY, little Silt, soft, wet, CL	PP = 1,500 psf	
16				1		MC = 34.5%	
				2			
17				2			
18							
19							
20							
	S-7	24/24	20 - 22	WOH	Gray CLAY, very soft, wet, CL	PP <= 500 psf	
21				WOH		MC = 38.3%	
				1			
22				1			

Granular Soils		Cohesive Soils		% Composition		NOTES:	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency				Dry: S = 0%
0-4	V. Loose	<2	V. soft			Bedrock Joints	Humid: S = 1 to 25%
4-10	Loose	2-4	Soft	<5%	trace	Shallow = 0 to 35 degrees	Damp: S = 26 to 50%
10-30	Compact	4-8	Firm	5-15	little	Dipping = 35 to 55 degrees	Moist: S = 51 to 75%
30-50	Dense	8-15	Stiff	15-25	some	Steep = 55 to 90 degrees	Wet: S = 76 to 99%
>50	V. Dense	15-30	V. Stiff	>25	and		Saturated: S = 100%
		>30	Hard			Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches	

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Project:	Wright-Pierce Boardwalk	Boring #:	B-4
Location:	Main Street	Project #:	11155
	Damariscotta, Maine	Sheet:	2 of 2
		Chkd by:	CWC

Drilling Co:	Northern Test Boring	Boring Location:	East end of Main Street parking lot
Personnel:	Mike Nadeau	Elevation:	
Summit Staff:	Craig Coolidge, Erika Hawksley	Date started: 7/15/2011	Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	9'		Observed moisture change

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23					Rod push advancement		GLACIAL MARINE DEPOSITS
24							
25							
26					Denser material at 25' Sand and Silt mixture		24' GLACIAL TILL
27							
28							
29							
30					Rod Push 30' - 30.5' = 8 blows per 6"		
31					30.5' - 31' = 6 blows per 6" 31' - 31.5' = 5 blows per 6"		
32					31.5' - 31.7' = 50/2" blows per 6"		
33					Auger Refusal at 31.7', Bedrock		31.7' BEDROCK
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							

Granular Soils		Cohesive Soils	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. Loose	<2	V. soft
4-10	Loose	2-4	Soft
10-30	Compact	4-8	Firm
30-50	Dense	8-15	Stiff
>50	V. Dense	15-30	V. Stiff
		>30	Hard

% Composition	
<5%	trace
5-15	little
15-25	some
>25	and

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-5**

Project: Wright-Pierce Boardwalk
Project #: 11155
Location: Main Street
Damariscotta, Maine
Sheet: 1 of 1
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley
Boring Location: Middle of Main Street parking lot, behind Irving
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	7'		Observed moisture change

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					Bituminous Pavement = 3"		PAVEMENT
1	S-1	24/10	0.3 - 2.3	8	Brown SAND, some Gravel, little Silt, compact, humid, SM	Gravel = 18.3%	0.3'
				12		Sand = 69.1%	GRANULAR
2				14		Fines = 12.6%	FILL
				10			
3	S-2	24/12	2.3 - 4.3	7	Brown SAND, some Gravel, concrete, and brick,		
				8	compact, damp, SP		
4				10			
				12			
5							
	S-3	24/5	5 - 7	2	Gray GRAVEL, some Sand, trace Silt, dense, moist, GW		5'
6				20			GLACIAL MARINE
				11			DEPOSITS
7				9			(Portions Reworked)
	S-3	24/12	7 - 9	4	Gray GRAVEL, little Sand, dense, wet, GW	Water at 7'	
8				17			
				21			
9				14			
10							
	S-4	24/24	10 - 12	2	Gray CLAY, some Sand and Gravel, trace Silt, stiff, wet,		10'
11				4	CL		
				6			
12				33	Wood at 11.5'		
					Auger Refusal at 12', Wood		12'
13							WOOD
14							
15							
16							
17							
18							
19							
20							
21							
22							

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

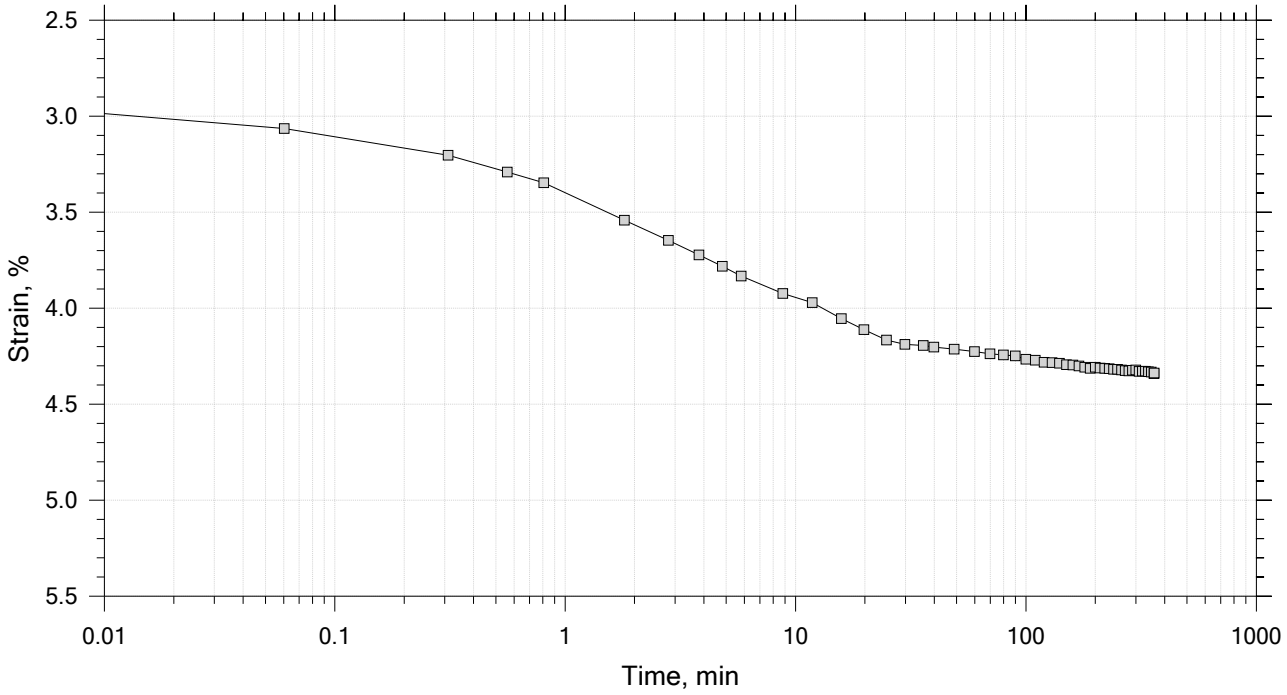
Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

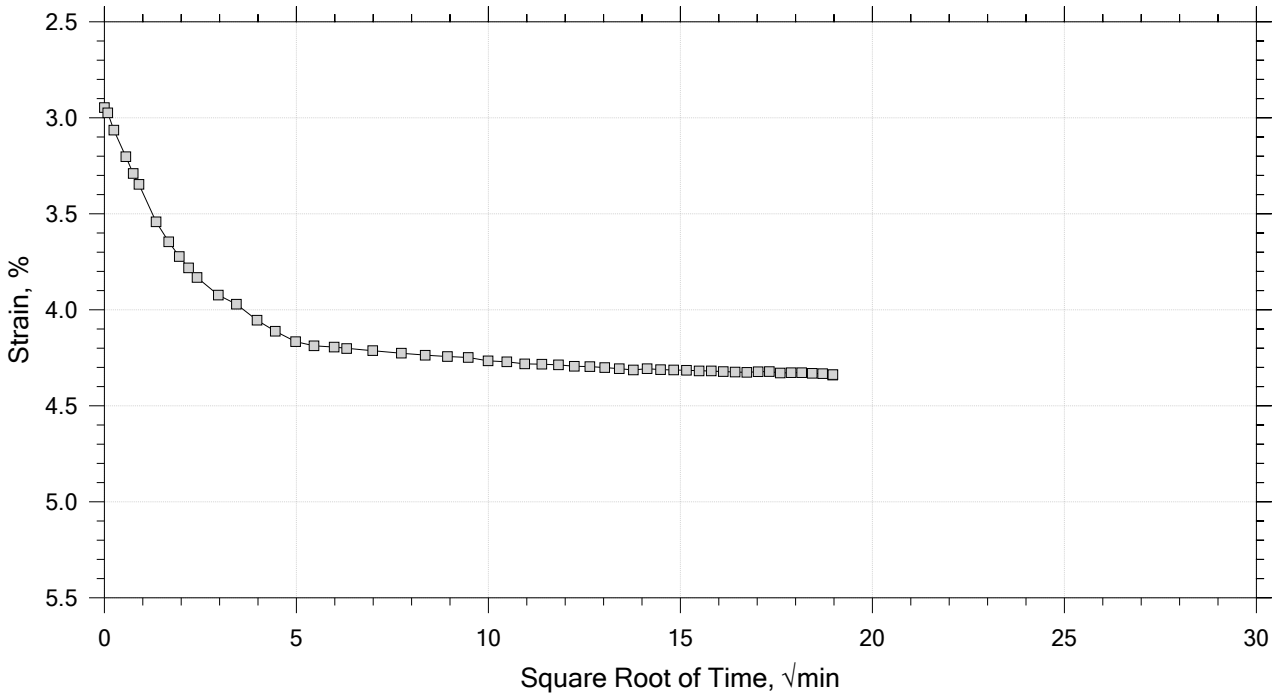
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 4 of 23

Constant Load Step

Stress: 0.5 tsf





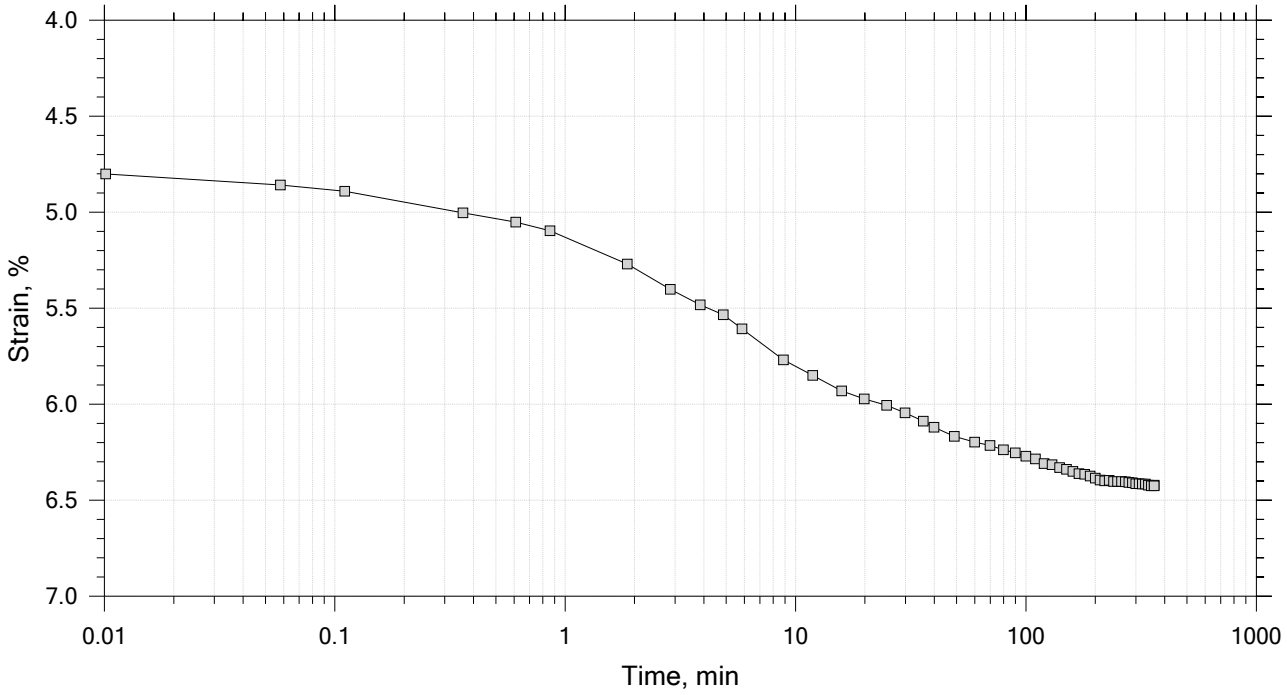
GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

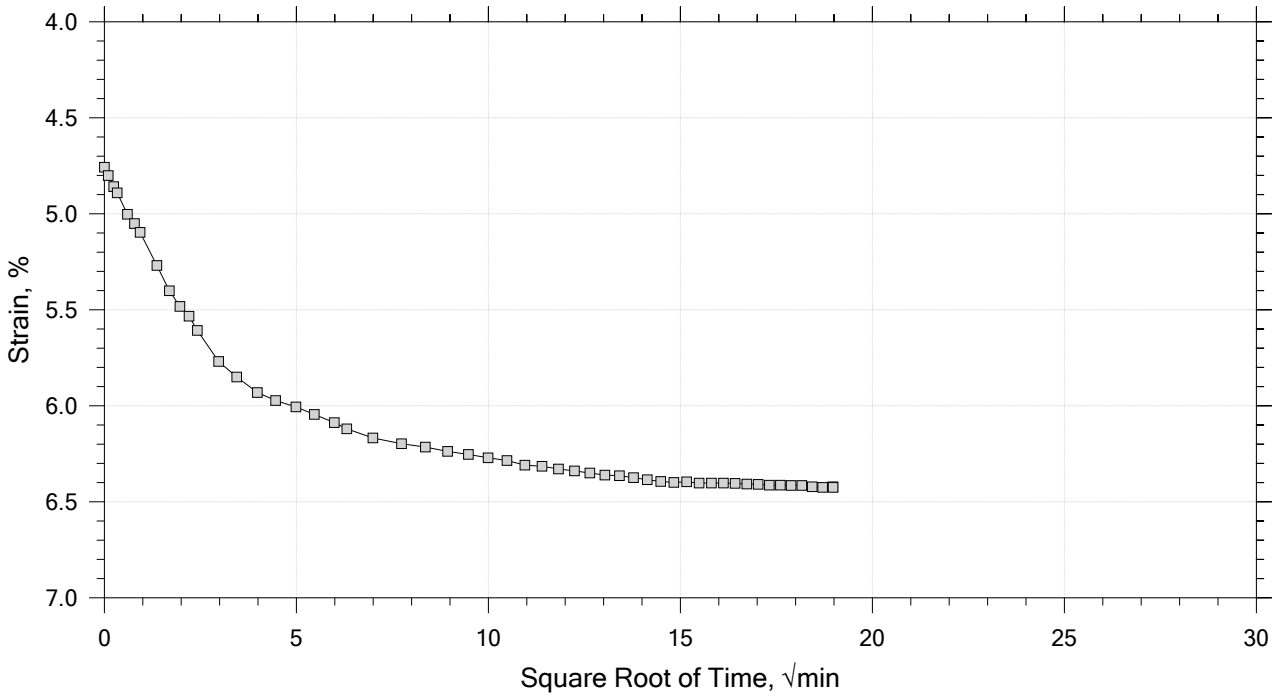
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 5 of 23

Constant Load Step

Stress: 0.9 tsf





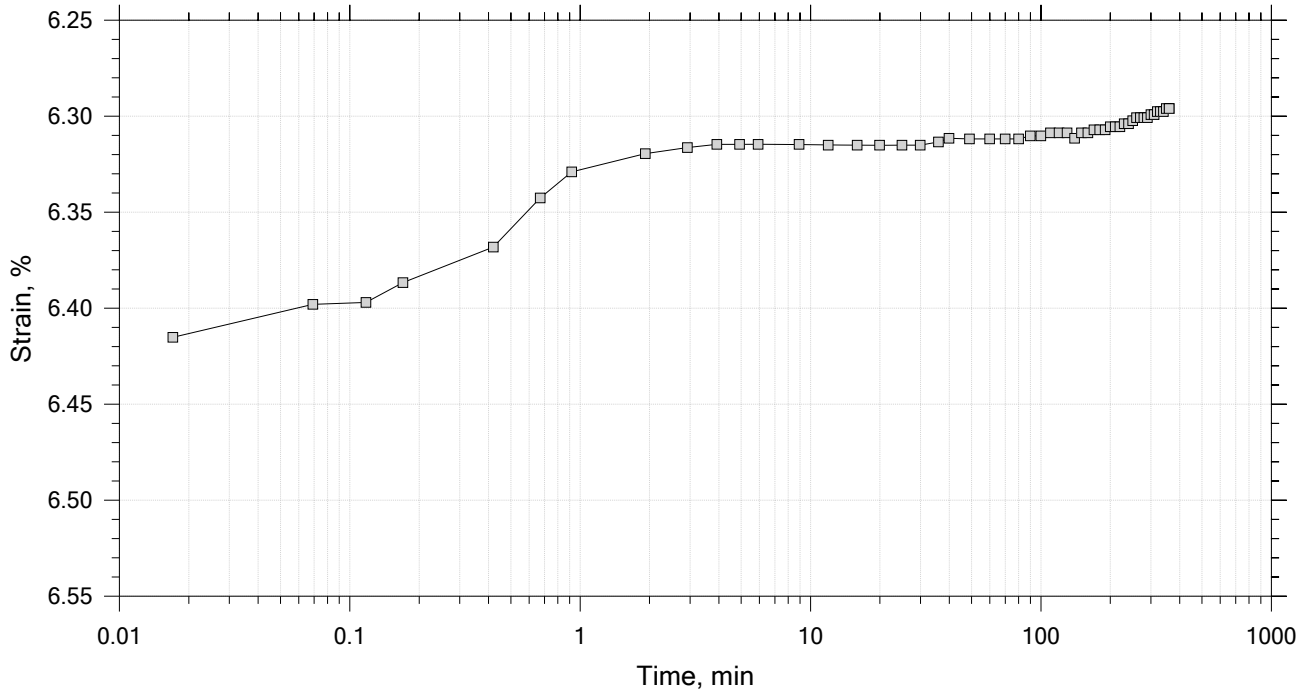
GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

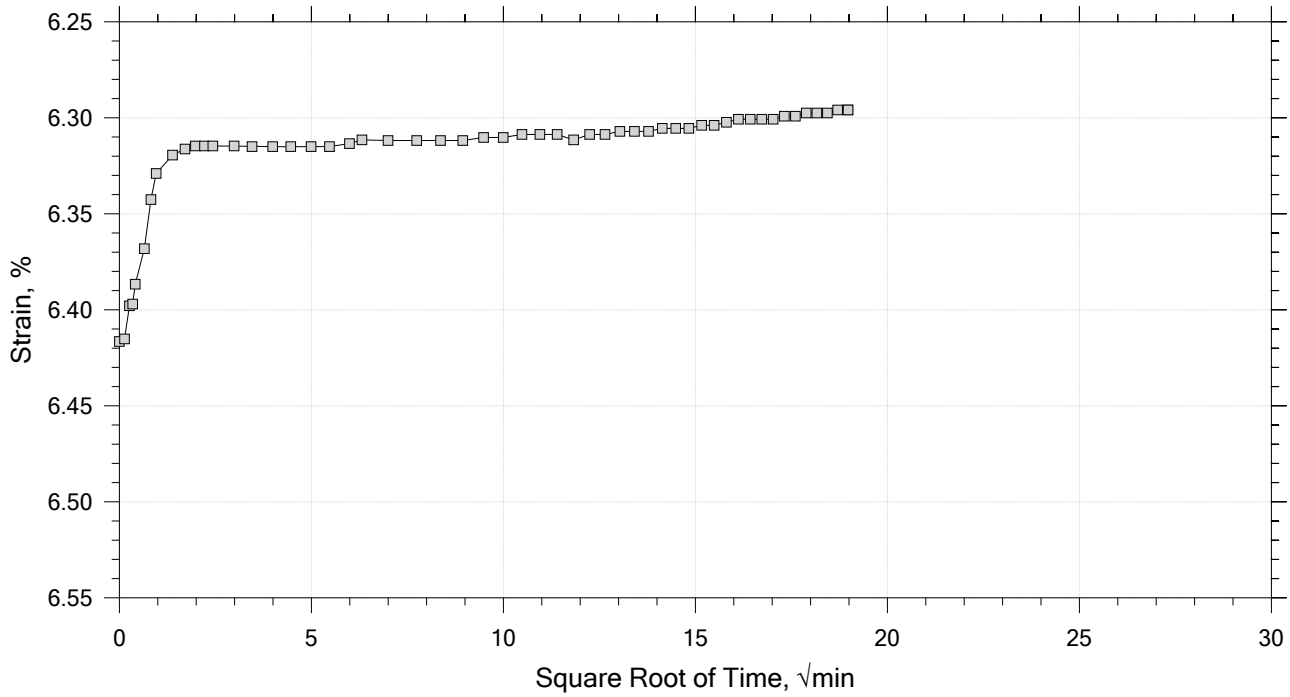
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 6 of 23

Constant Load Step

Stress: 0.5 tsf





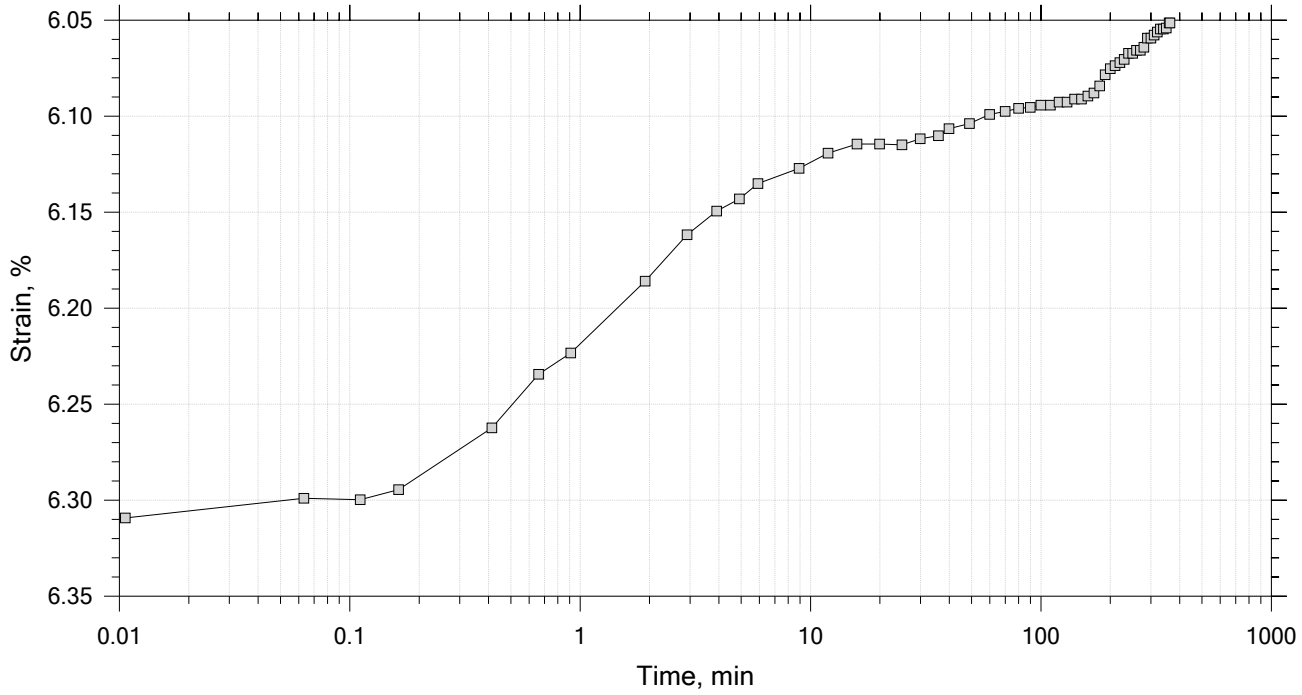
GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

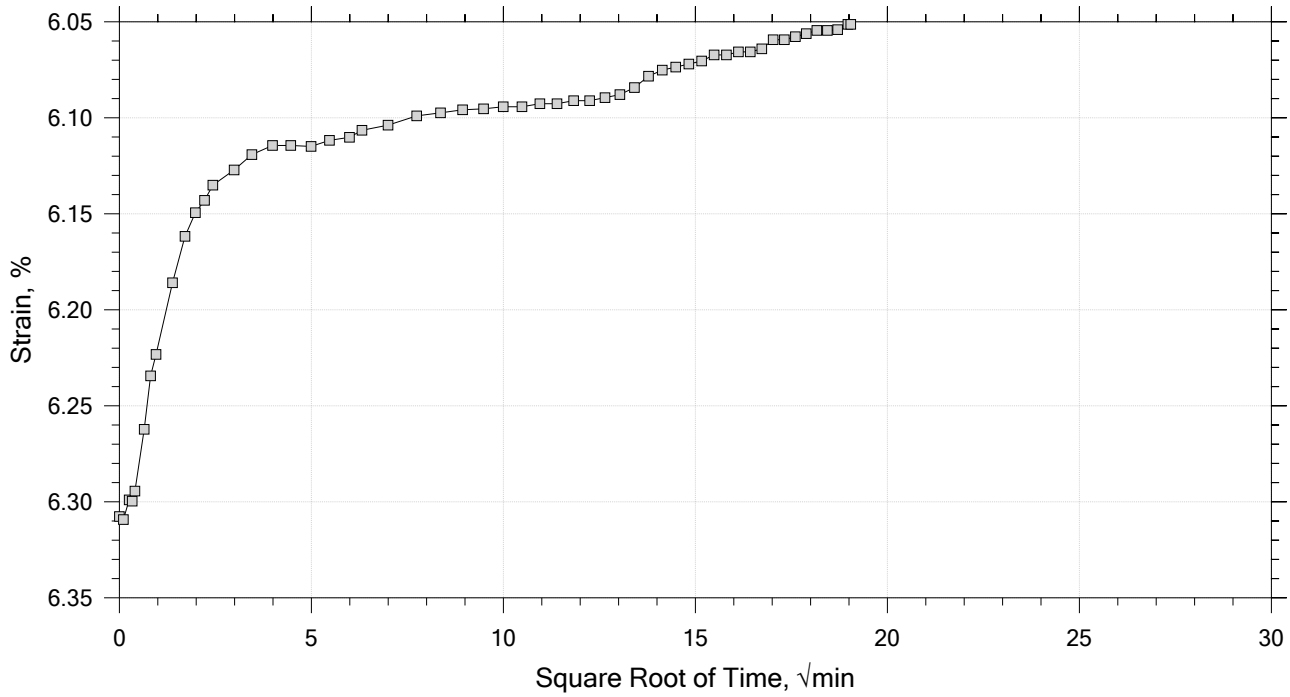
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 7 of 23

Constant Load Step

Stress: 0.25 tsf





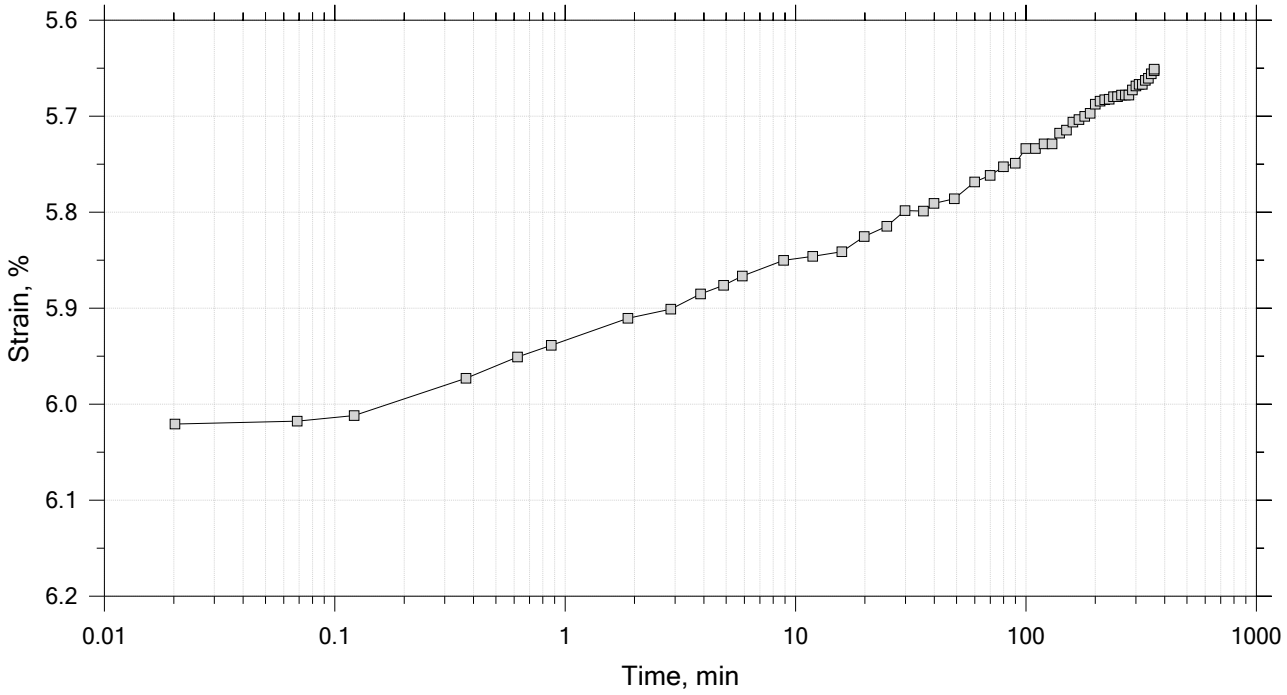
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	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

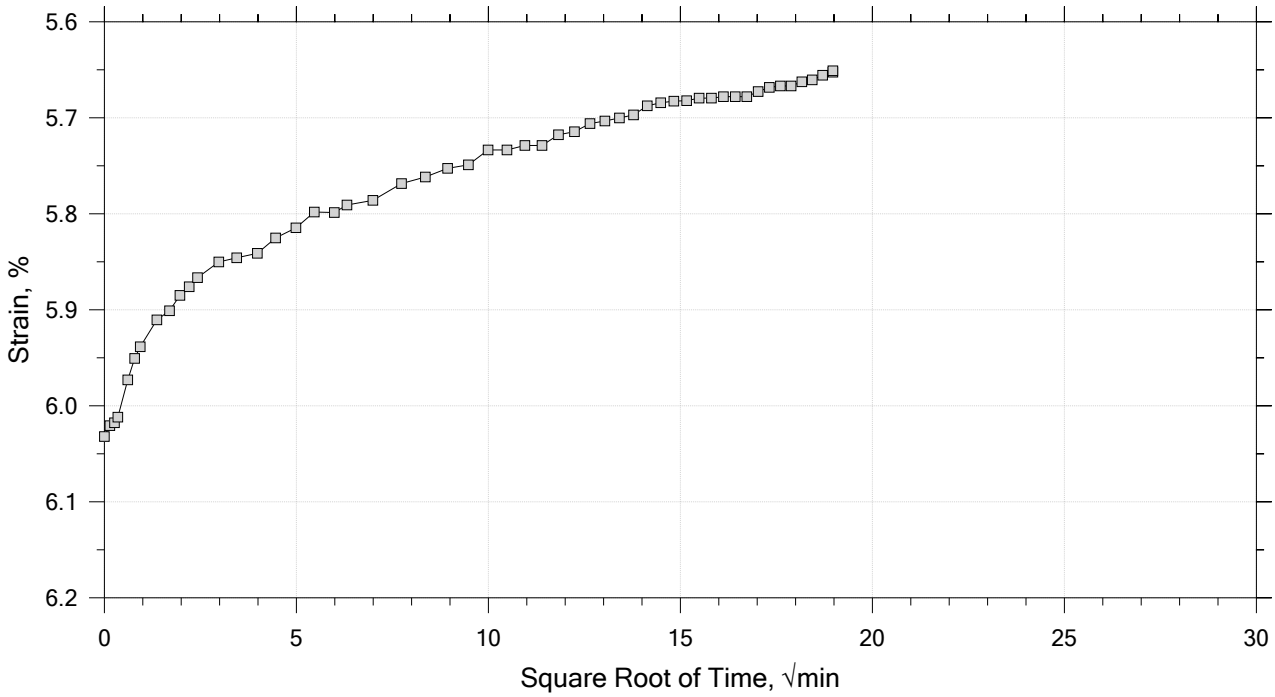
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 8 of 23

Constant Load Step

Stress: 0.125 tsf





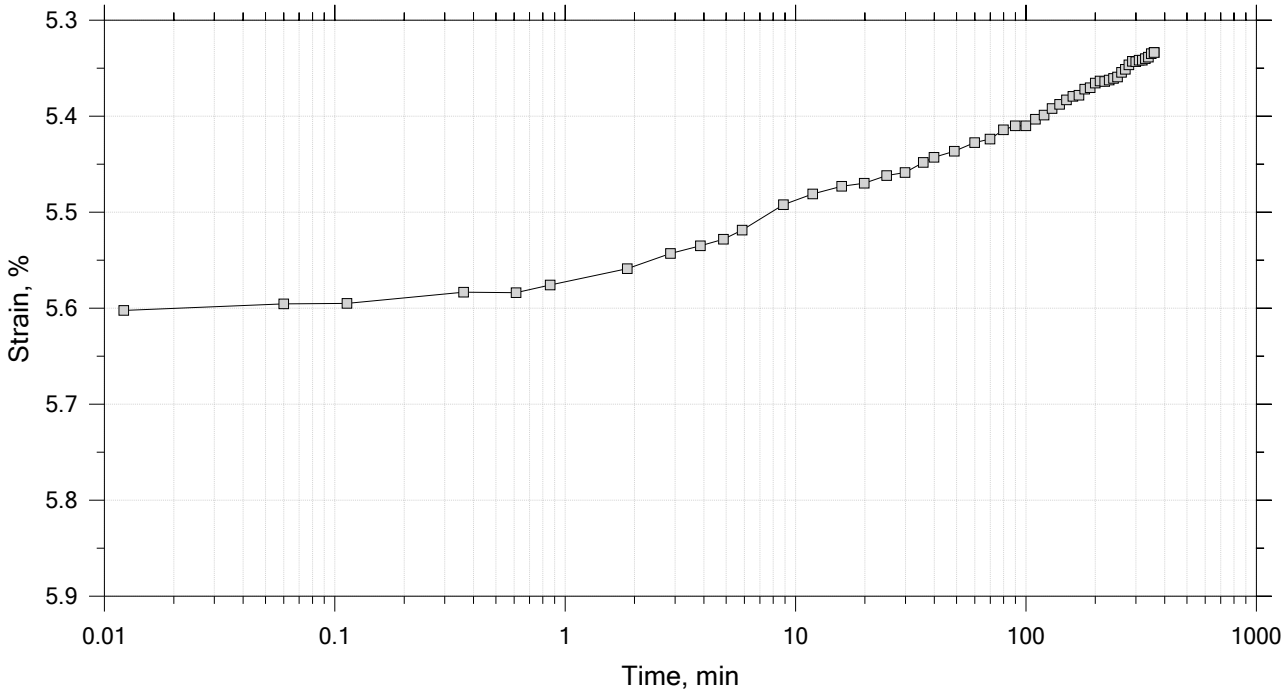
GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

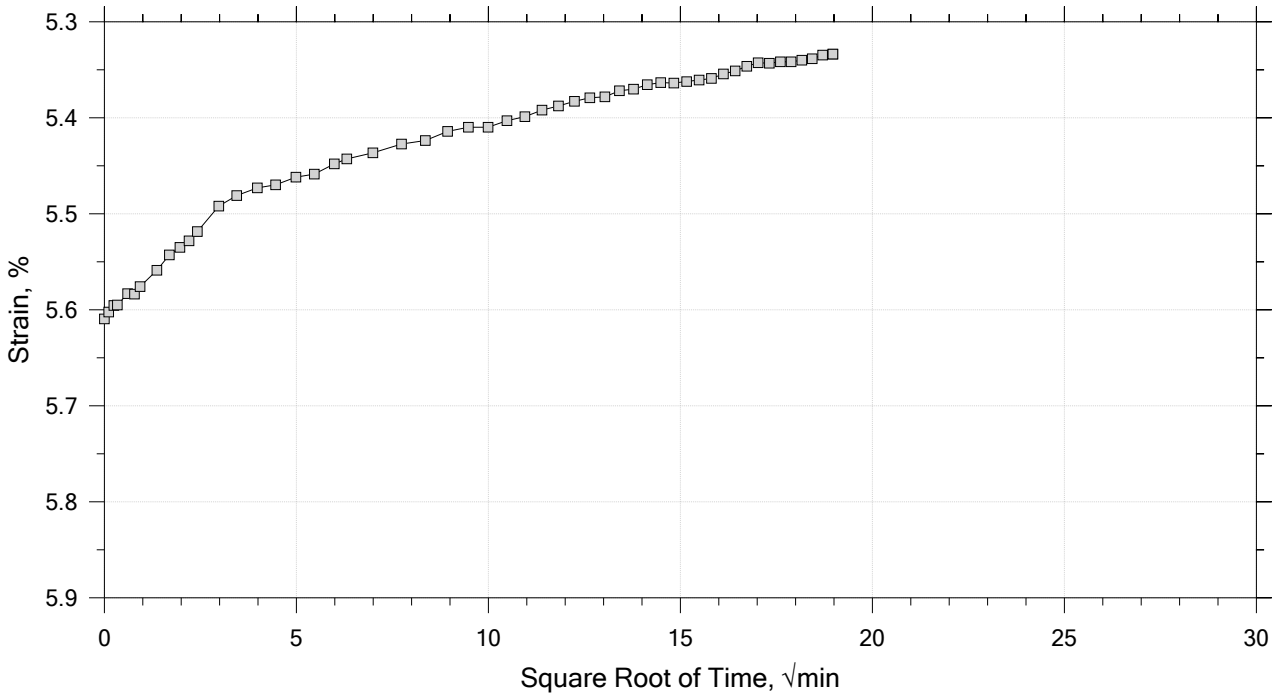
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 9 of 23

Constant Load Step

Stress: 0.0625 tsf

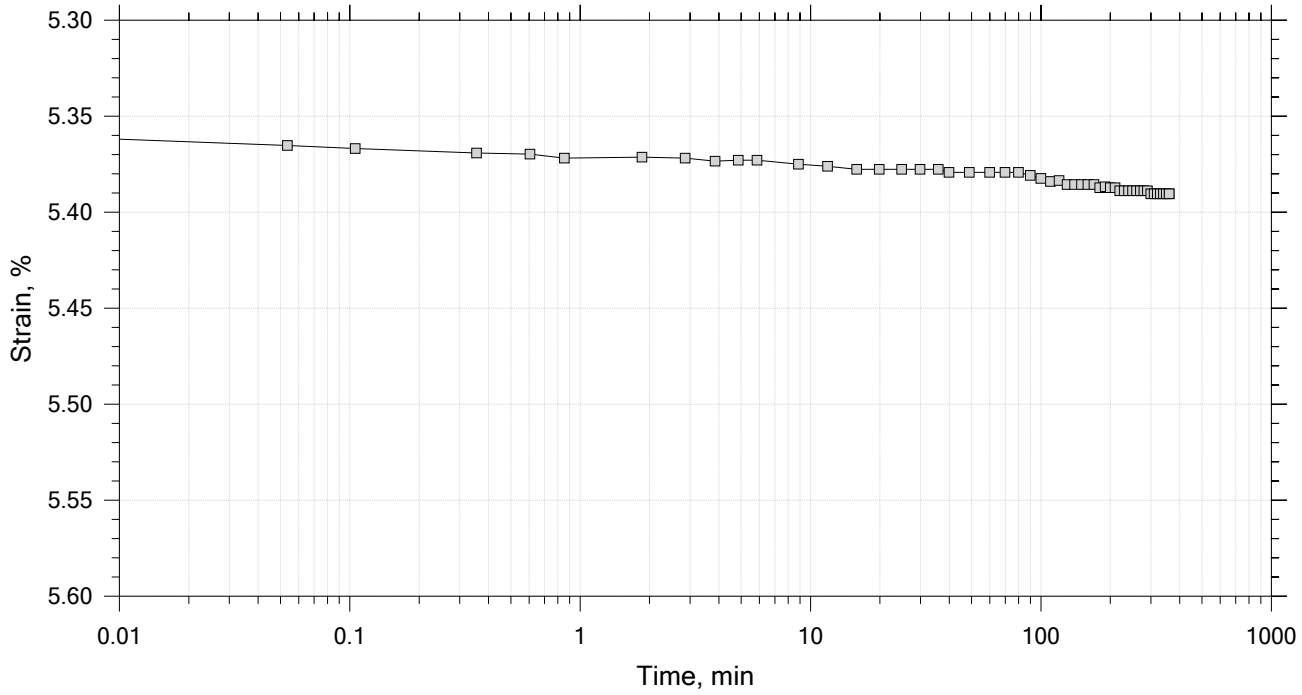


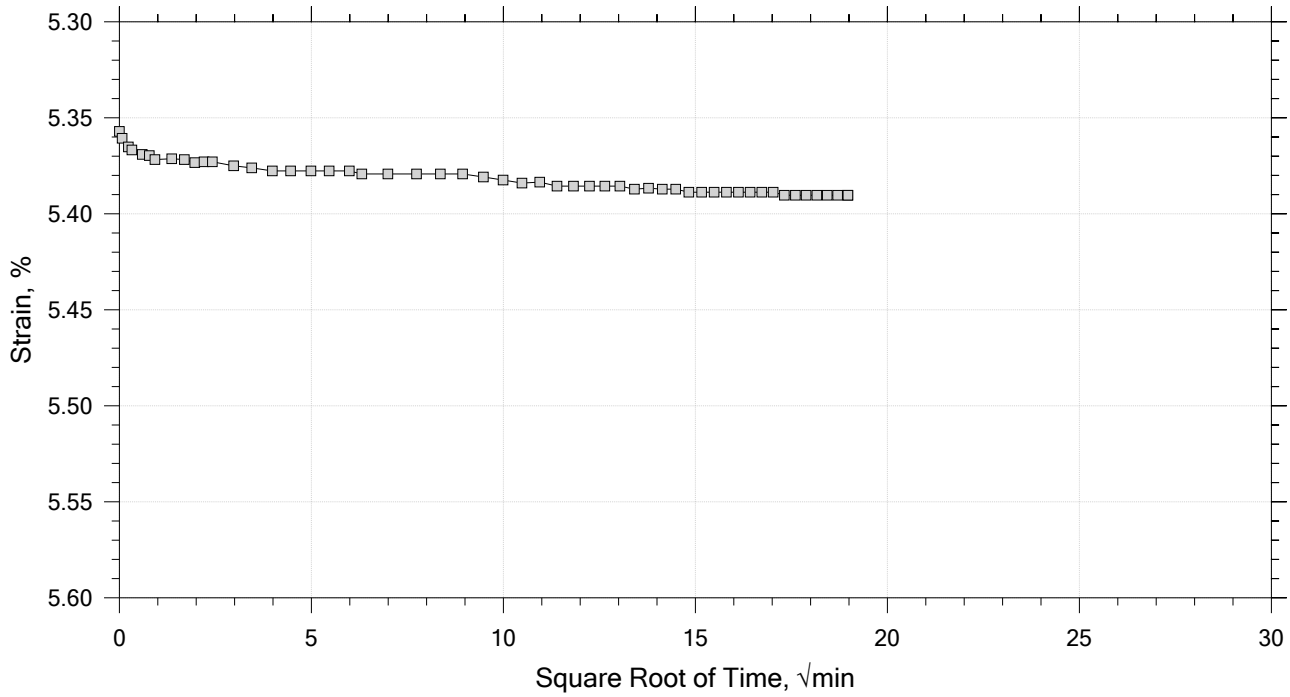


Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
Boring No.: MMI-4	Tested By: md	Checked By: anm
Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---
Description: Moist, gray clay		
Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 10 of 23
Constant Load Step
Stress: 0.125 tsf

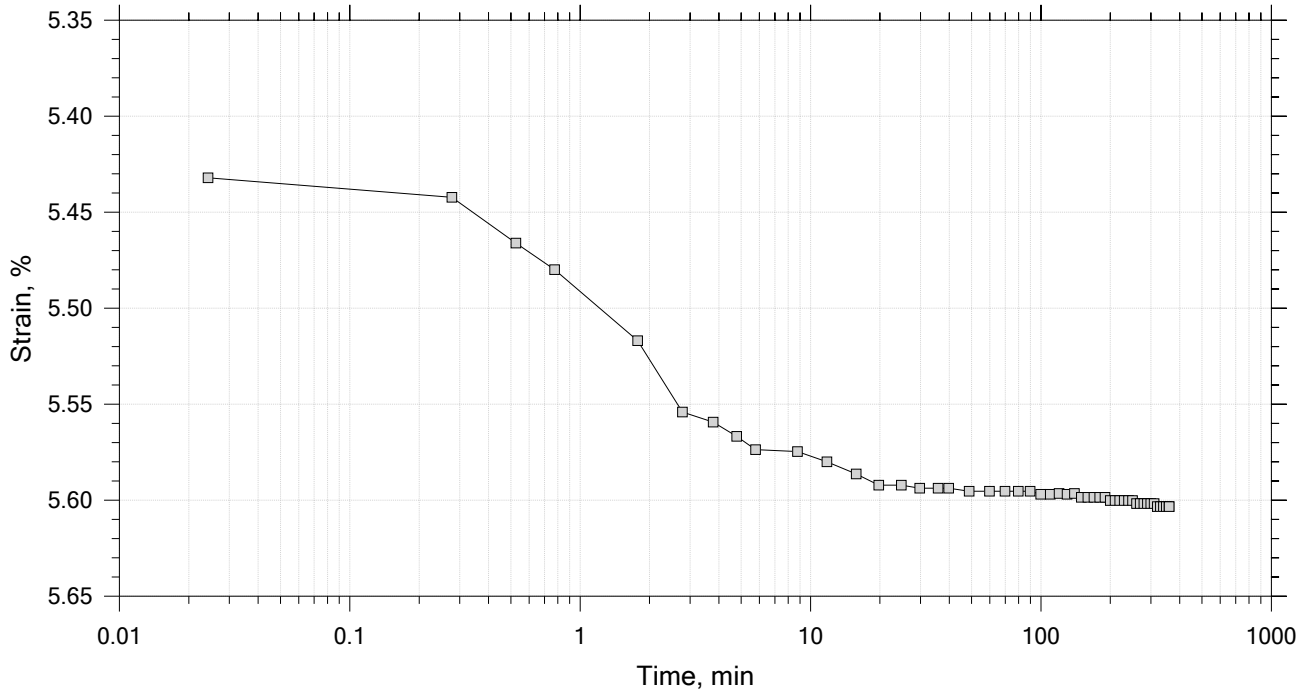


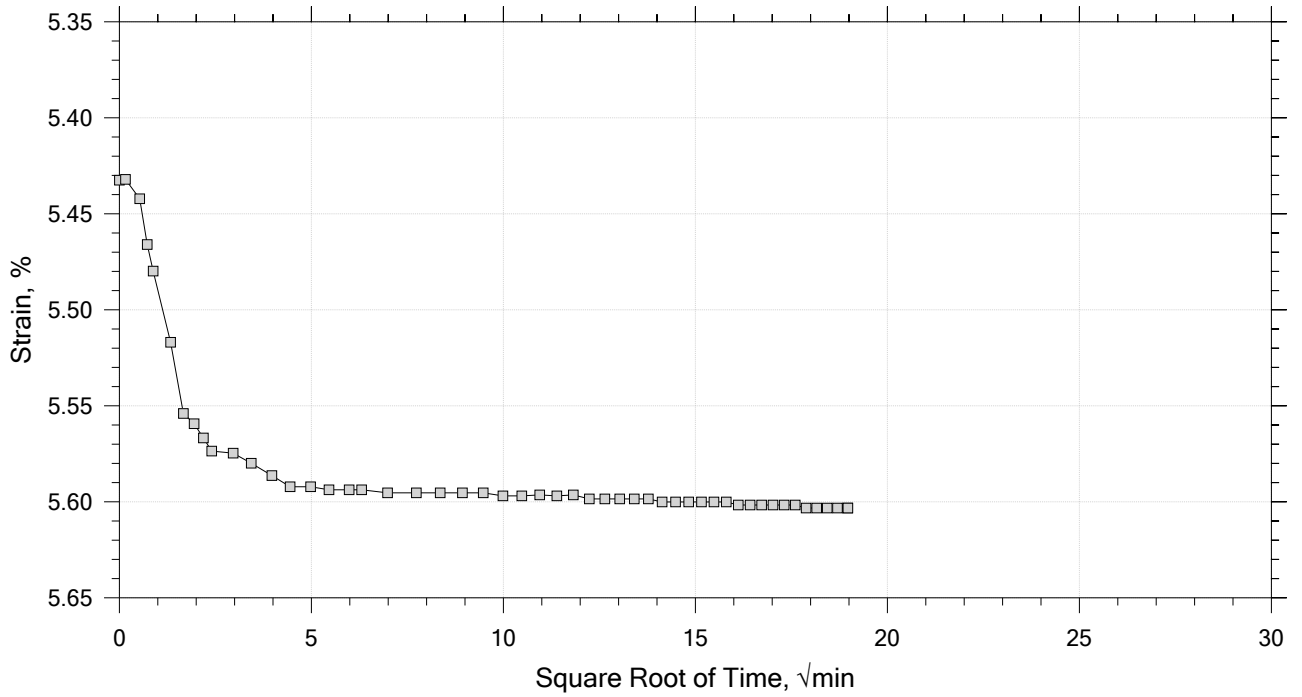


Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
Boring No.: MMI-4	Tested By: md	Checked By: anm
Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---
Description: Moist, gray clay		
Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 11 of 23
Constant Load Step
Stress: 0.25 tsf





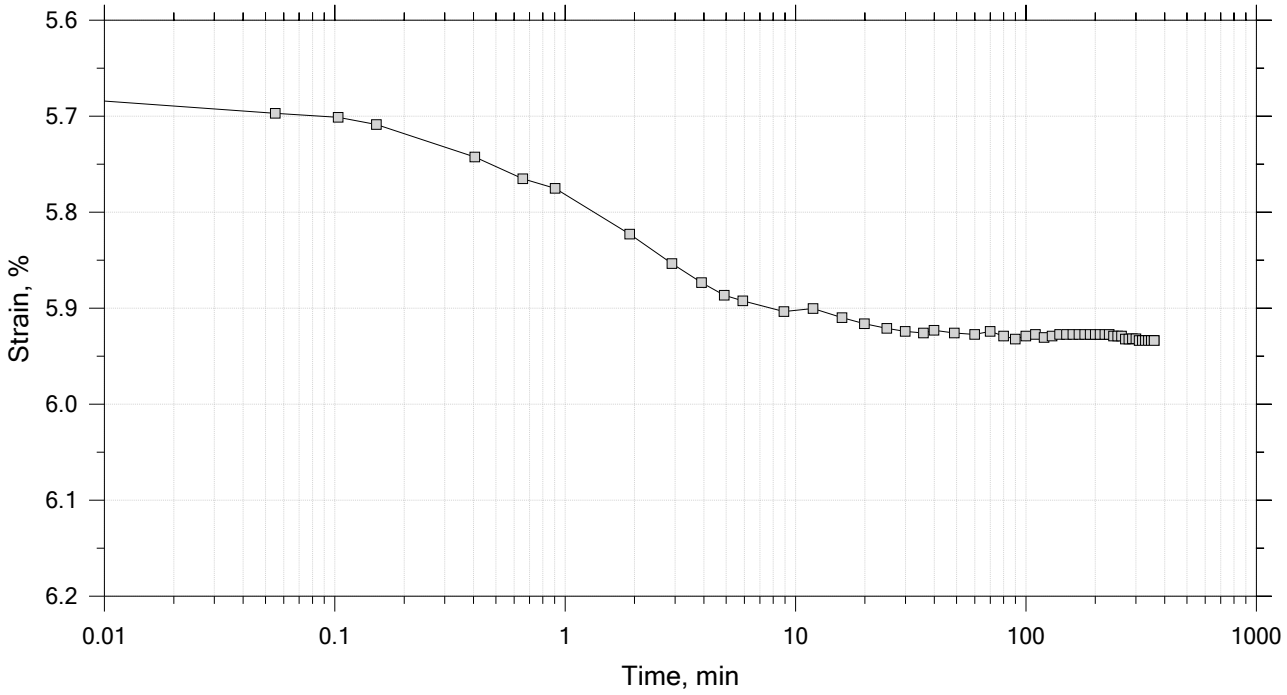
Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
Boring No.: MMI-4	Tested By: md	Checked By: anm
Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---
Description: Moist, gray clay		
Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

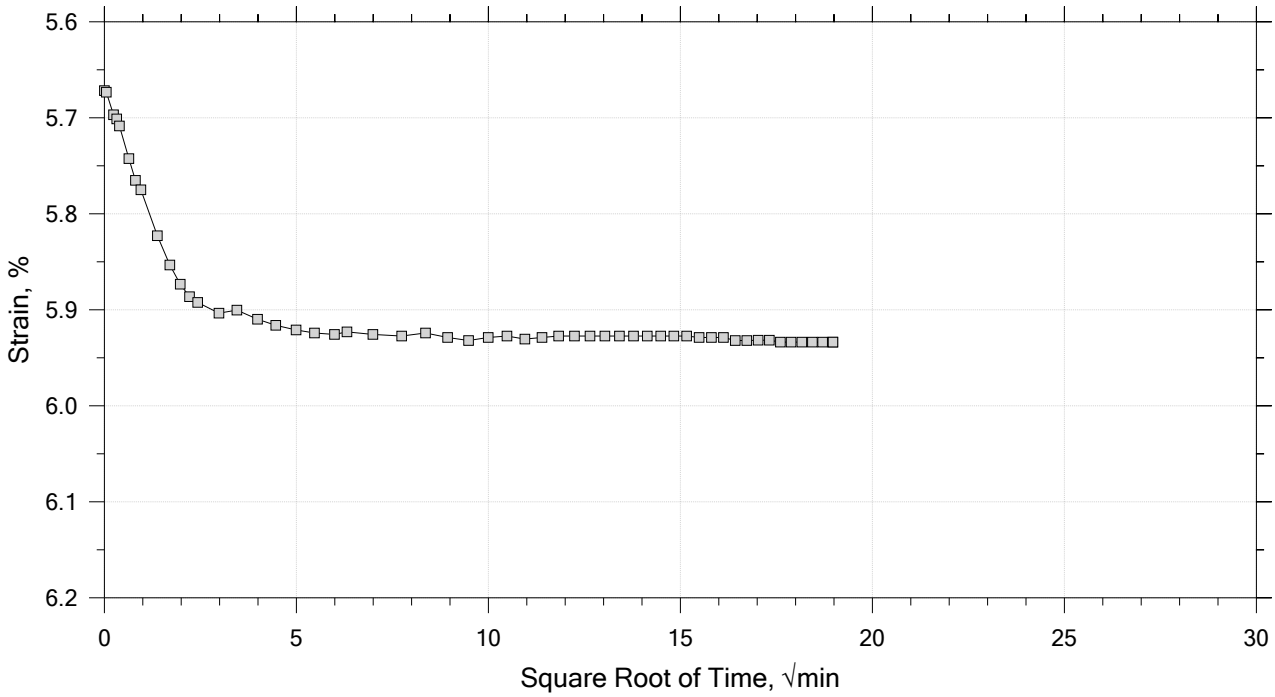
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 12 of 23

Constant Load Step

Stress: 0.5 tsf





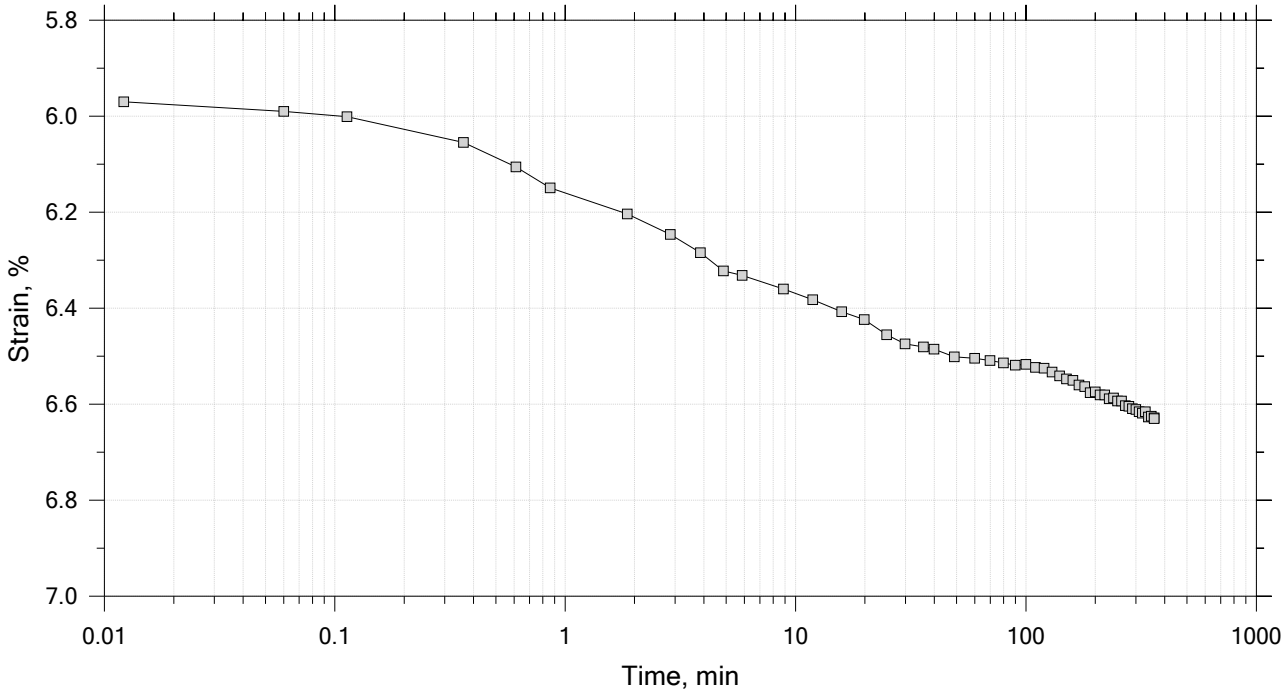
GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

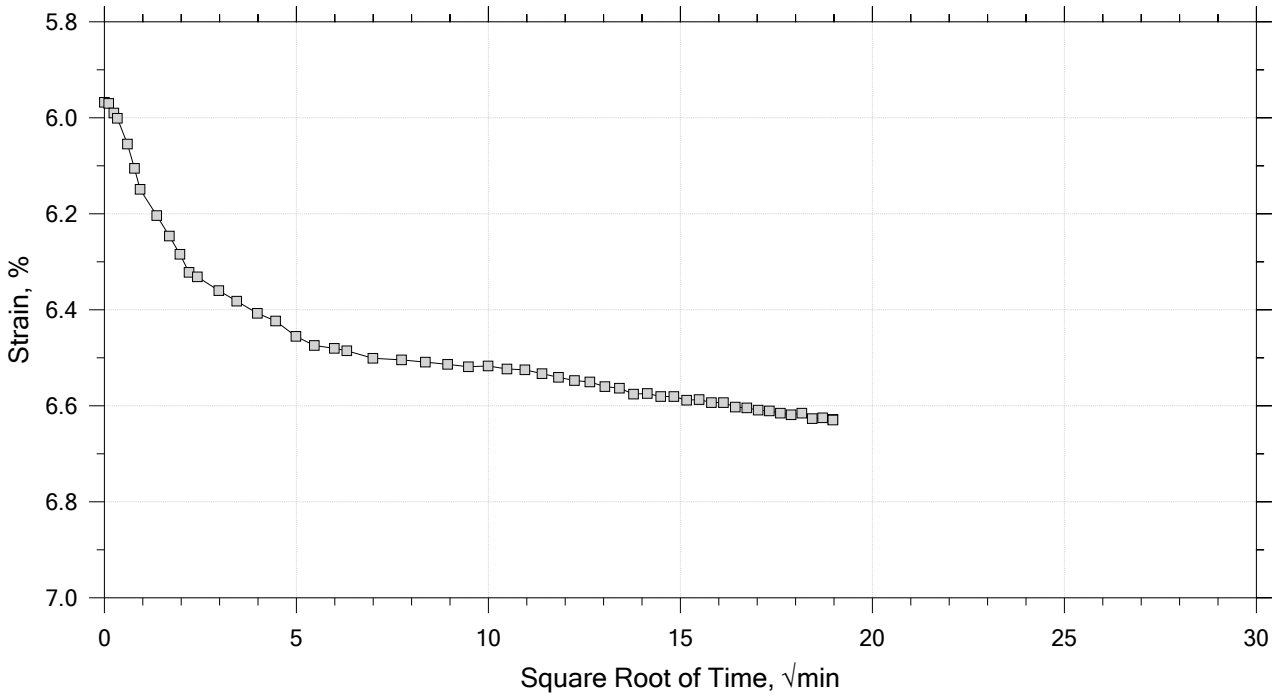
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 13 of 23

Constant Load Step

Stress: 0.9 tsf





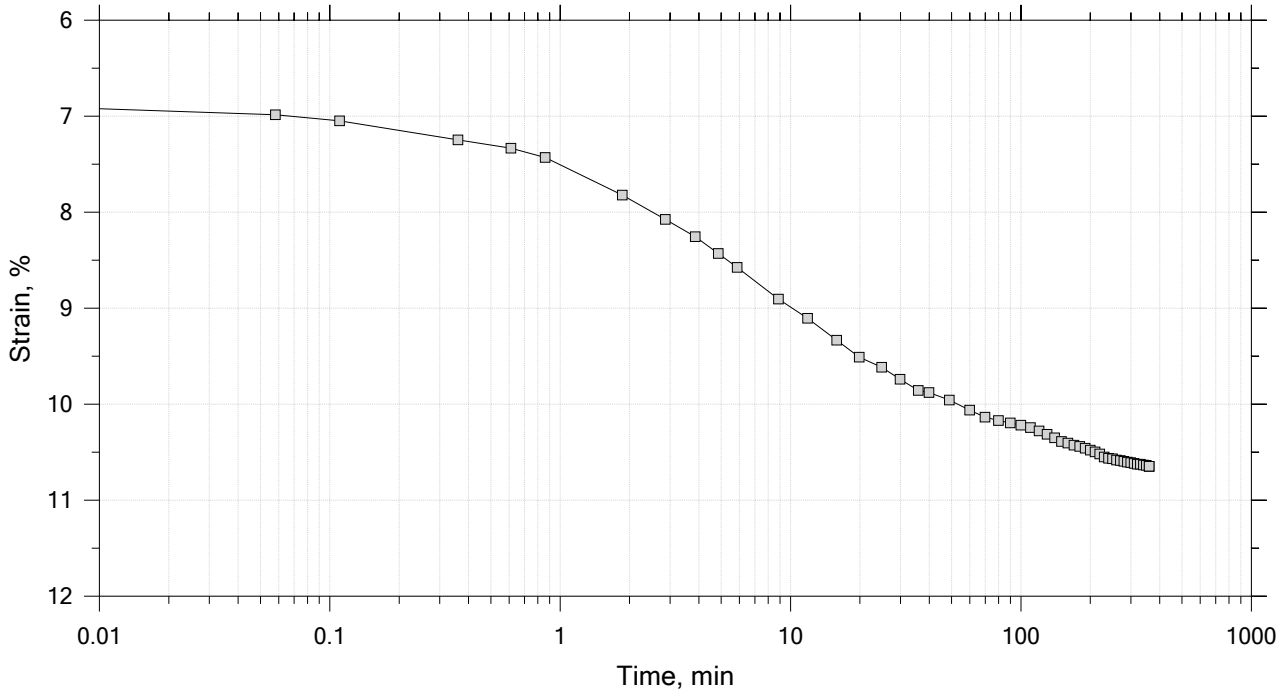
Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
Boring No.: MMI-4	Tested By: md	Checked By: anm
Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---
Description: Moist, gray clay		
Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

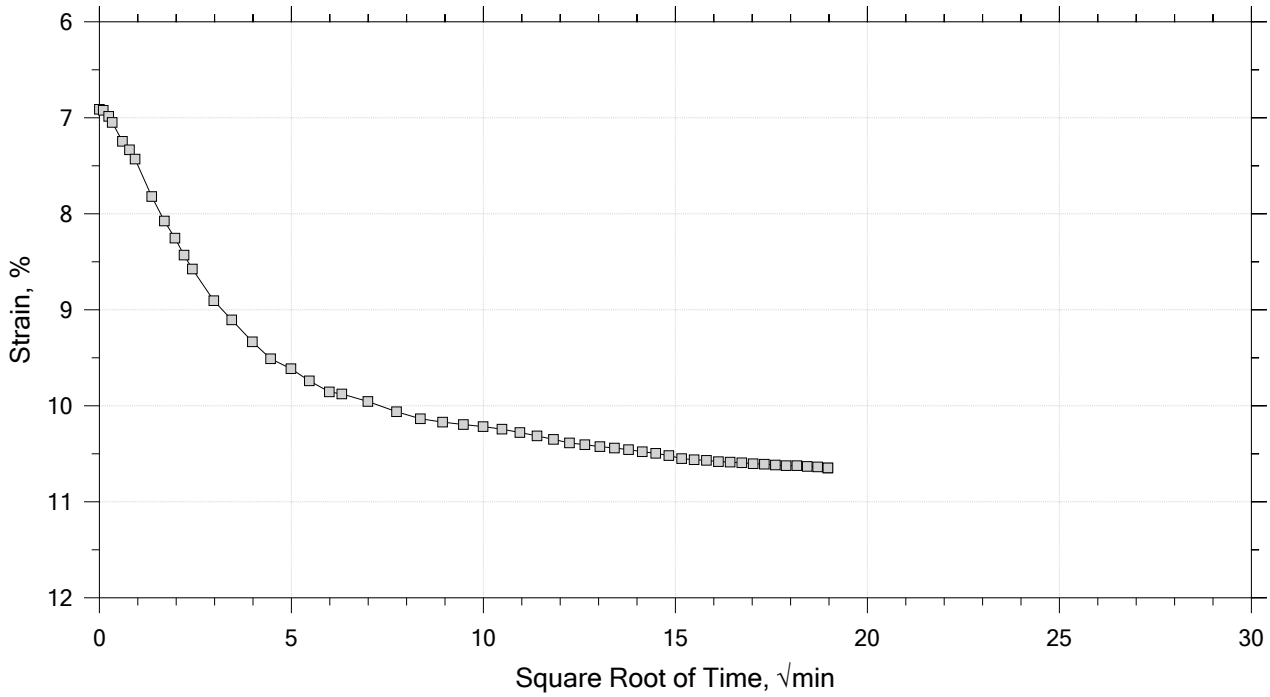
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 14 of 23

Constant Load Step

Stress: 2 tsf





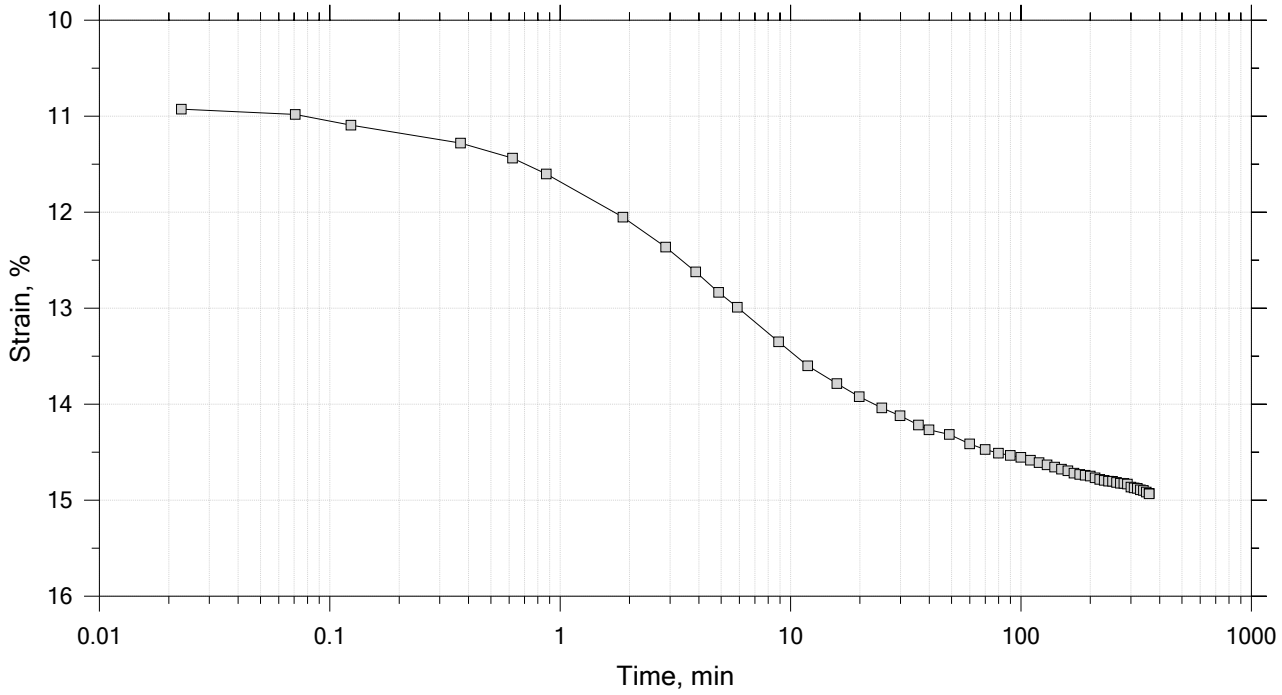
GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

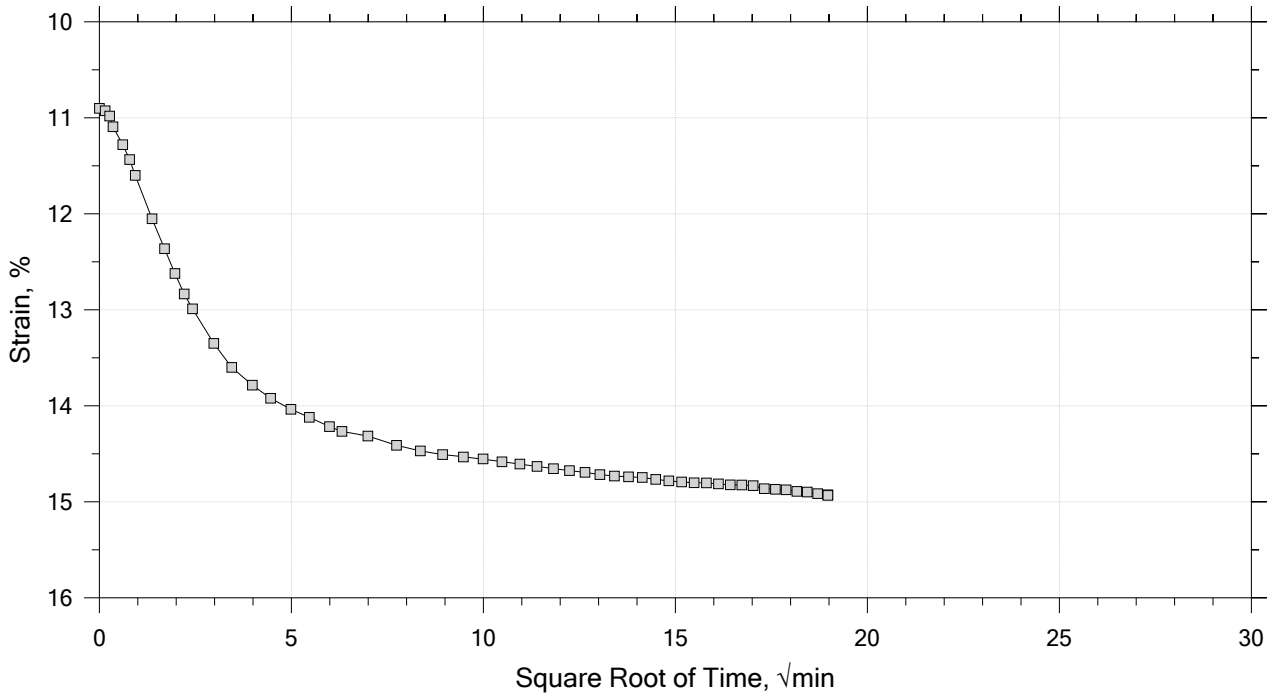
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 15 of 23

Constant Load Step

Stress: 4 tsf





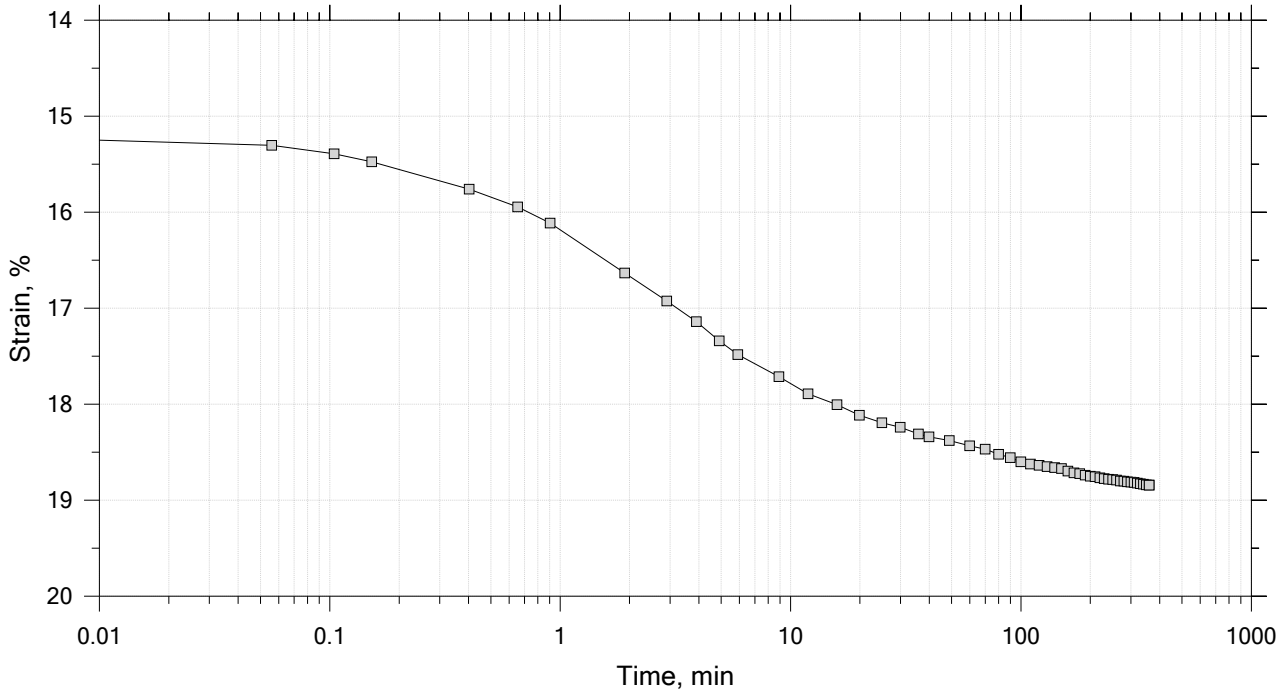
GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

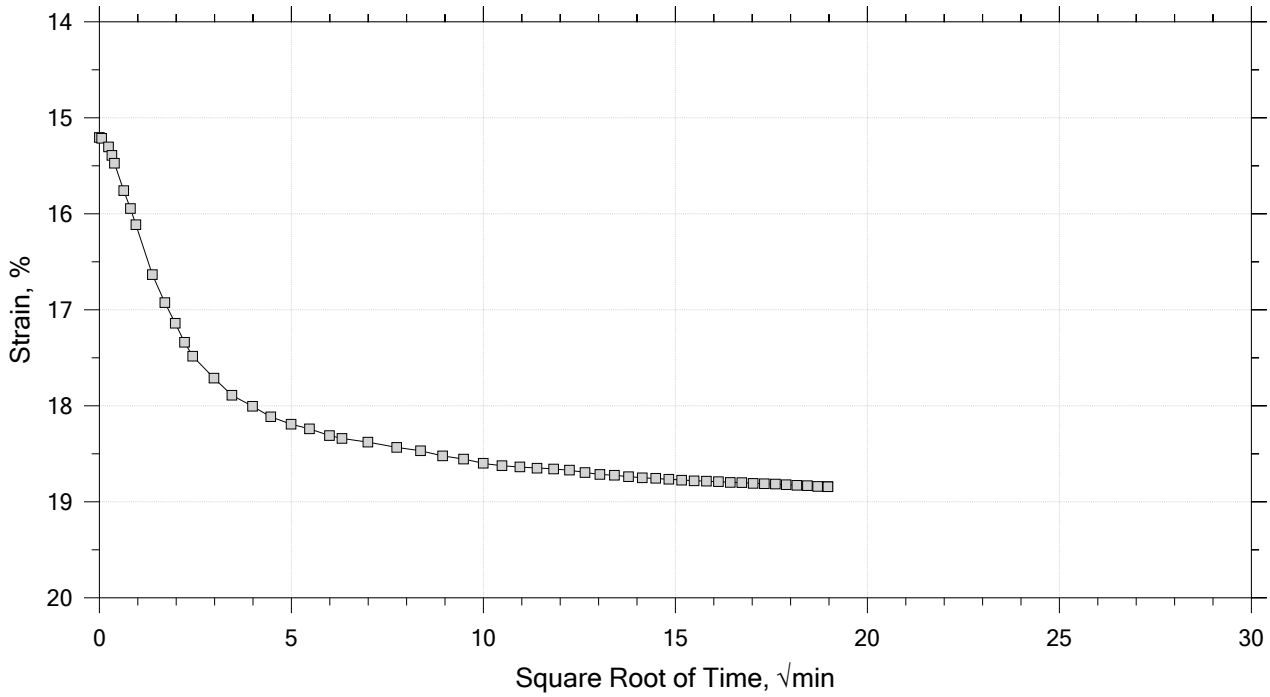
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 16 of 23

Constant Load Step

Stress: 8 tsf

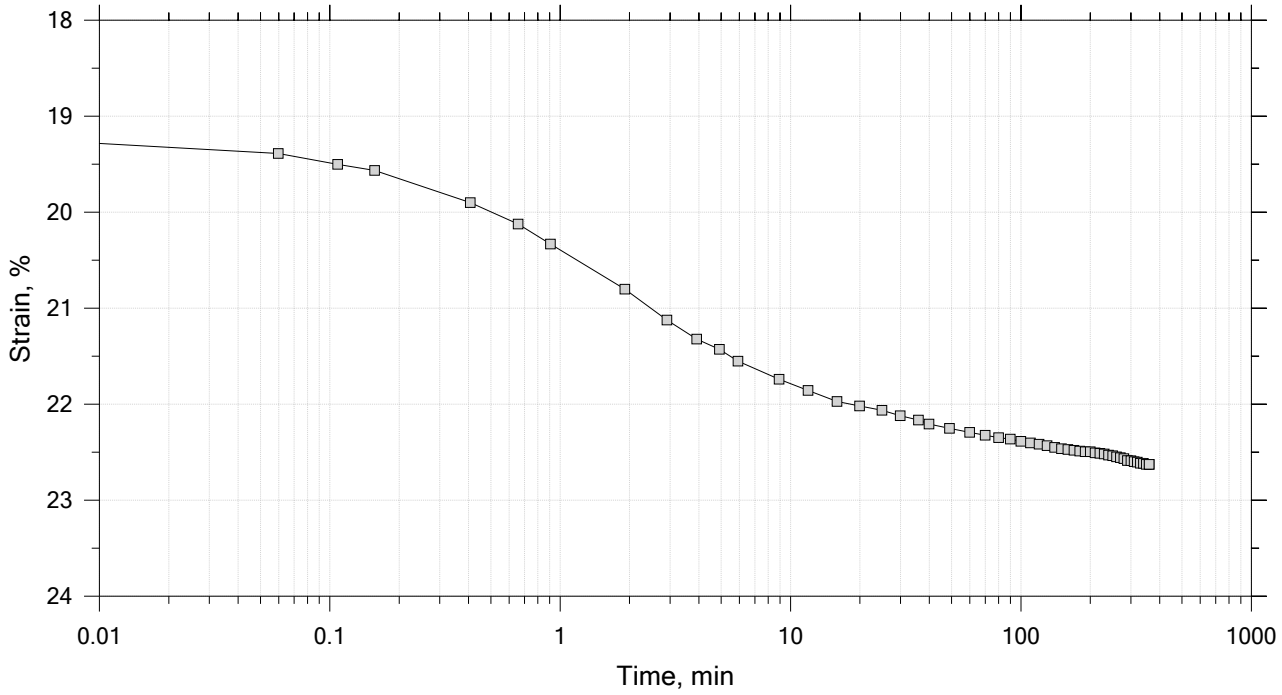


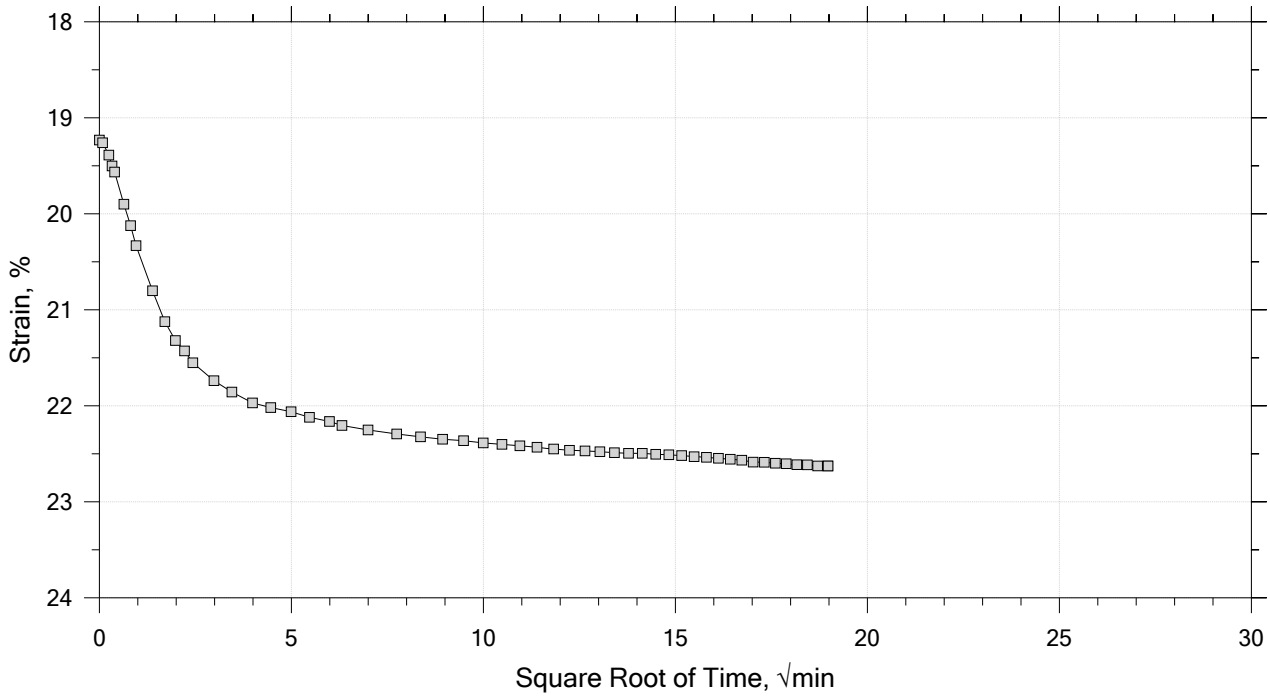


GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 17 of 23
Constant Load Step
Stress: 16 tsf

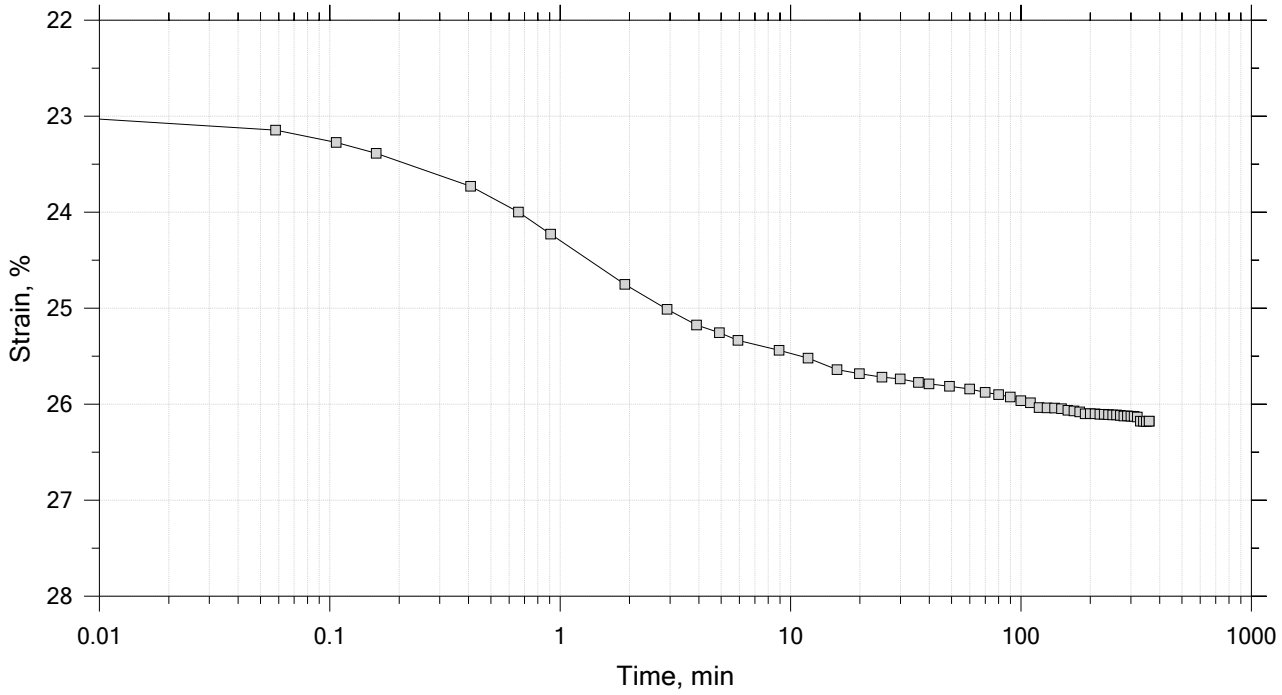


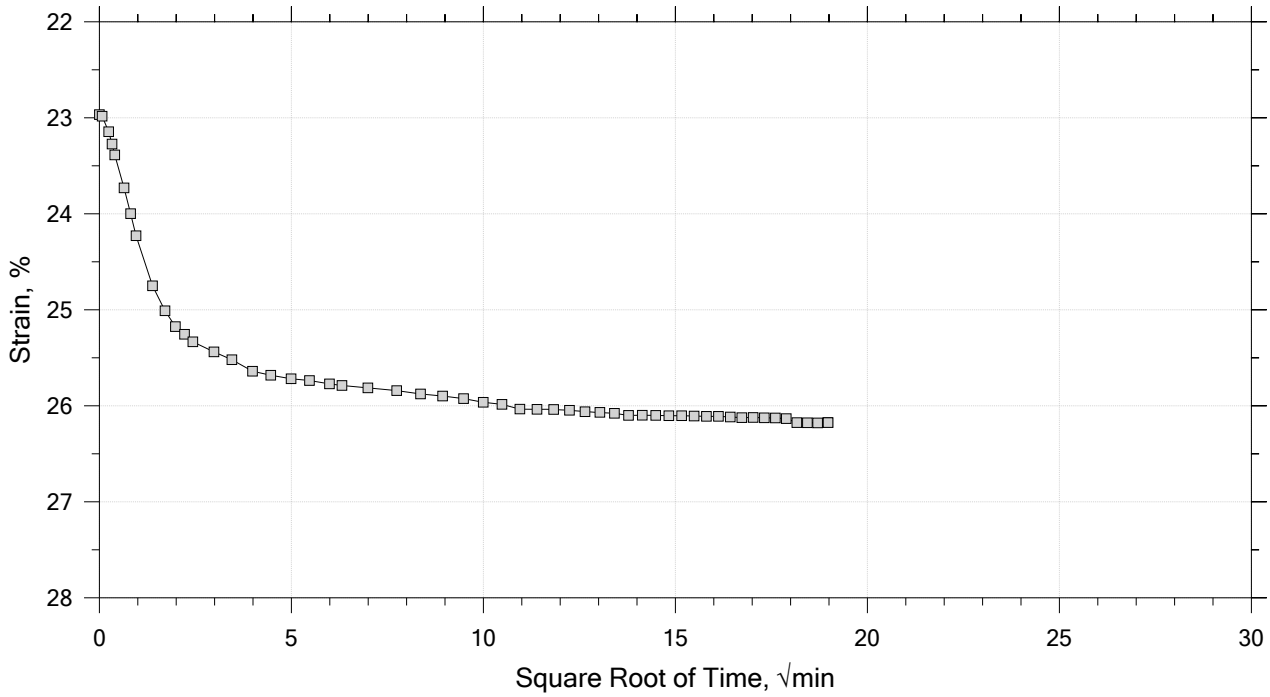


GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 18 of 23
Constant Load Step
Stress: 32 tsf





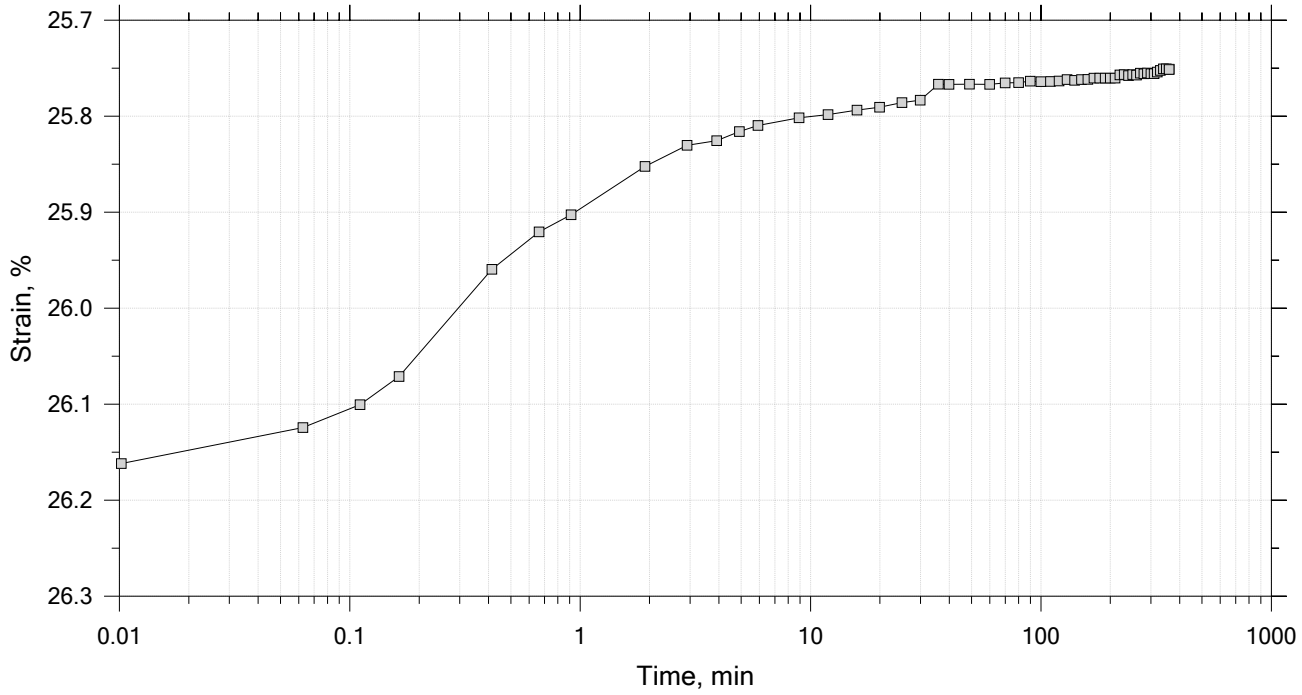
GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

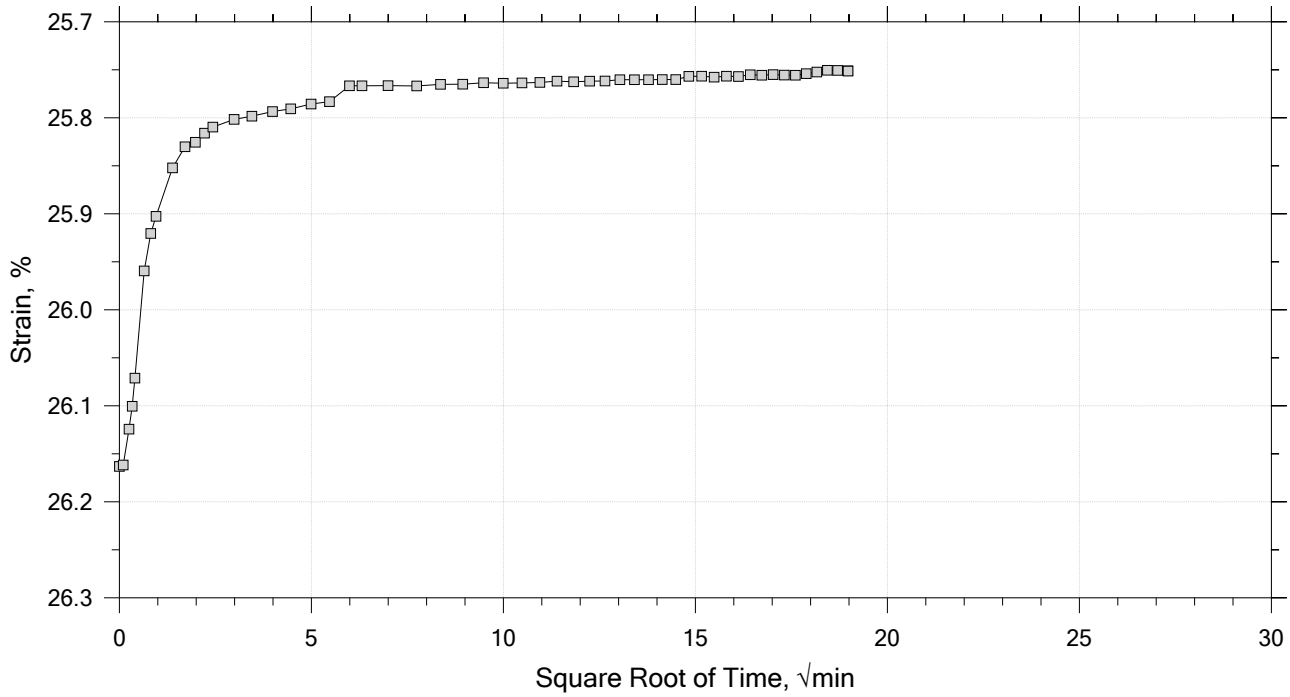
One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 19 of 23

Constant Load Step

Stress: 8 tsf

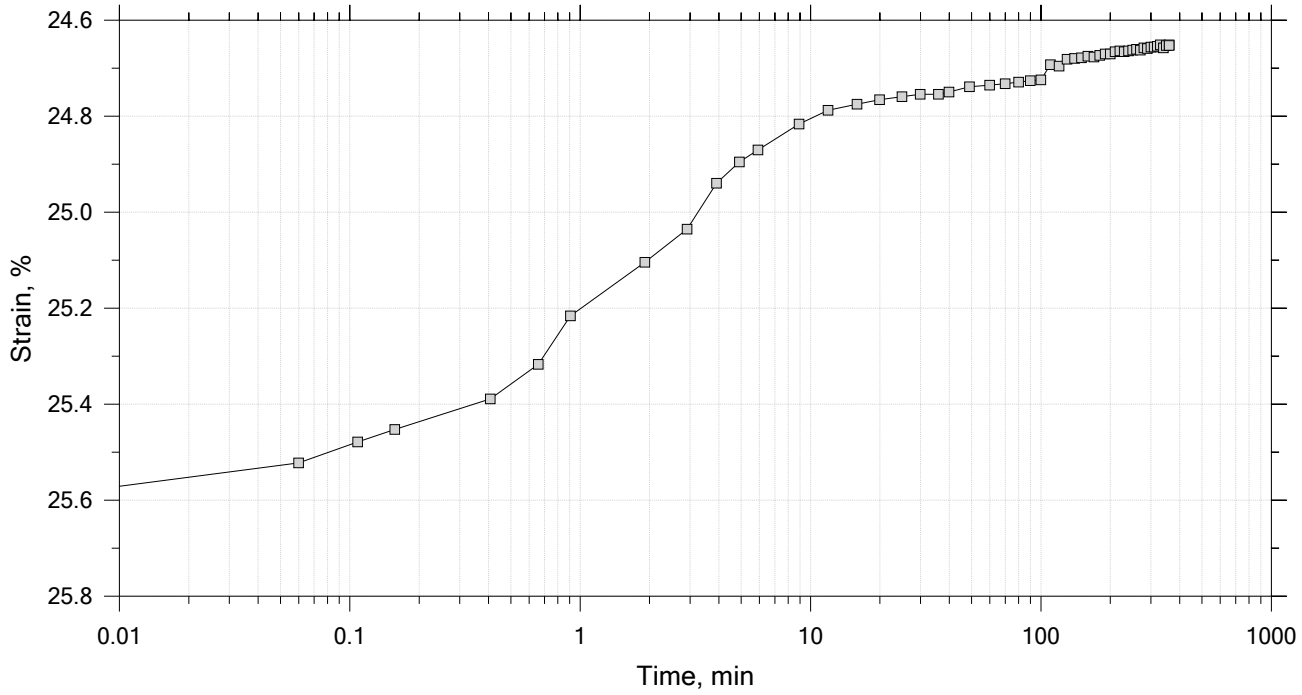


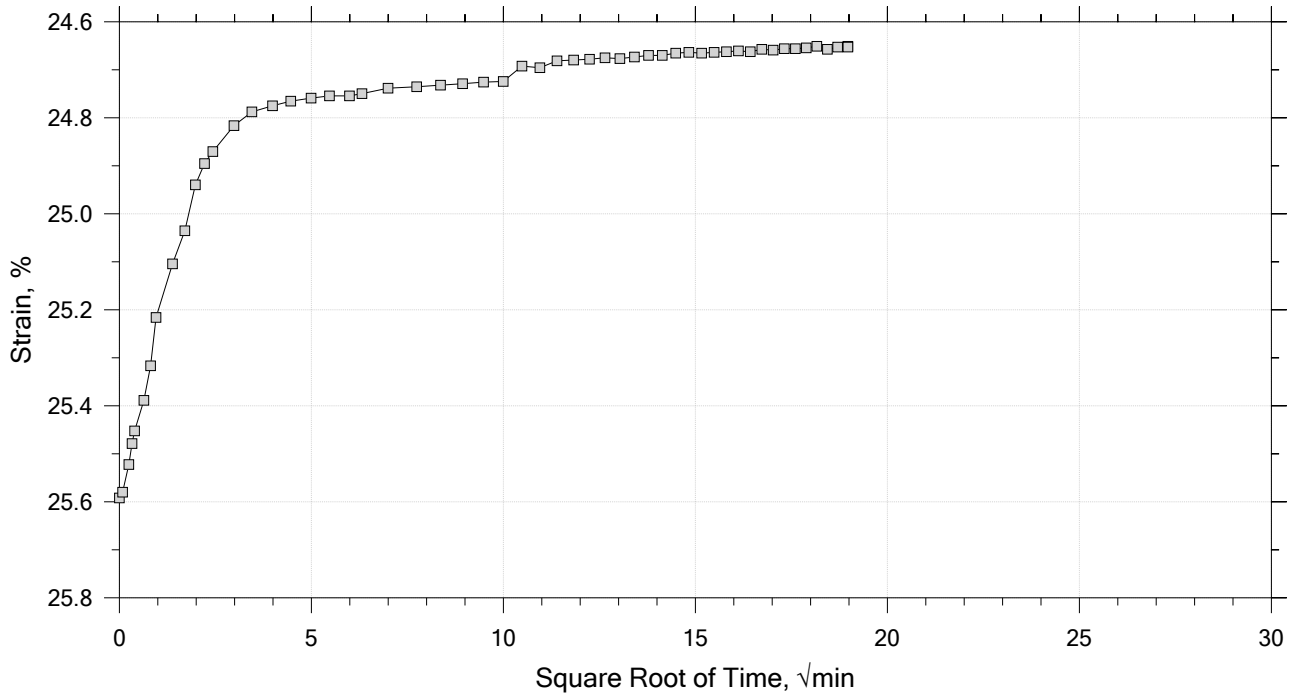


Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
Boring No.: MMI-4	Tested By: md	Checked By: anm
Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---
Description: Moist, gray clay		
Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 20 of 23
Constant Load Step
Stress: 2 tsf

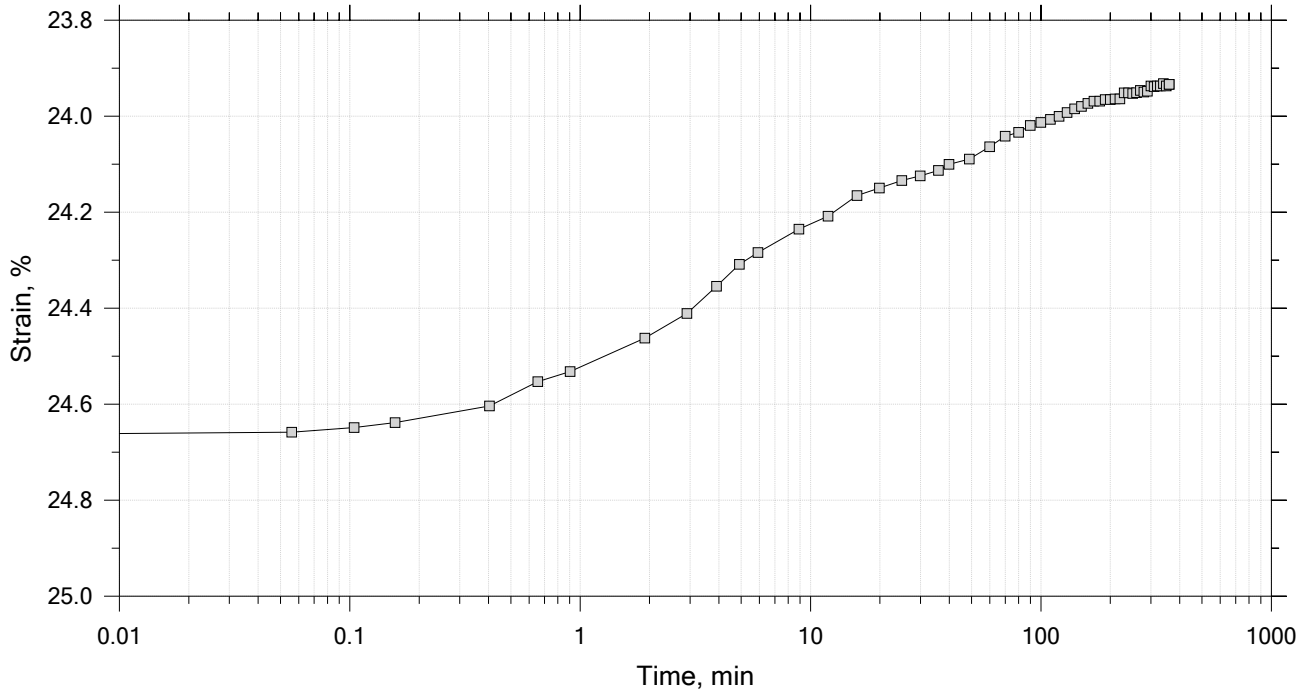


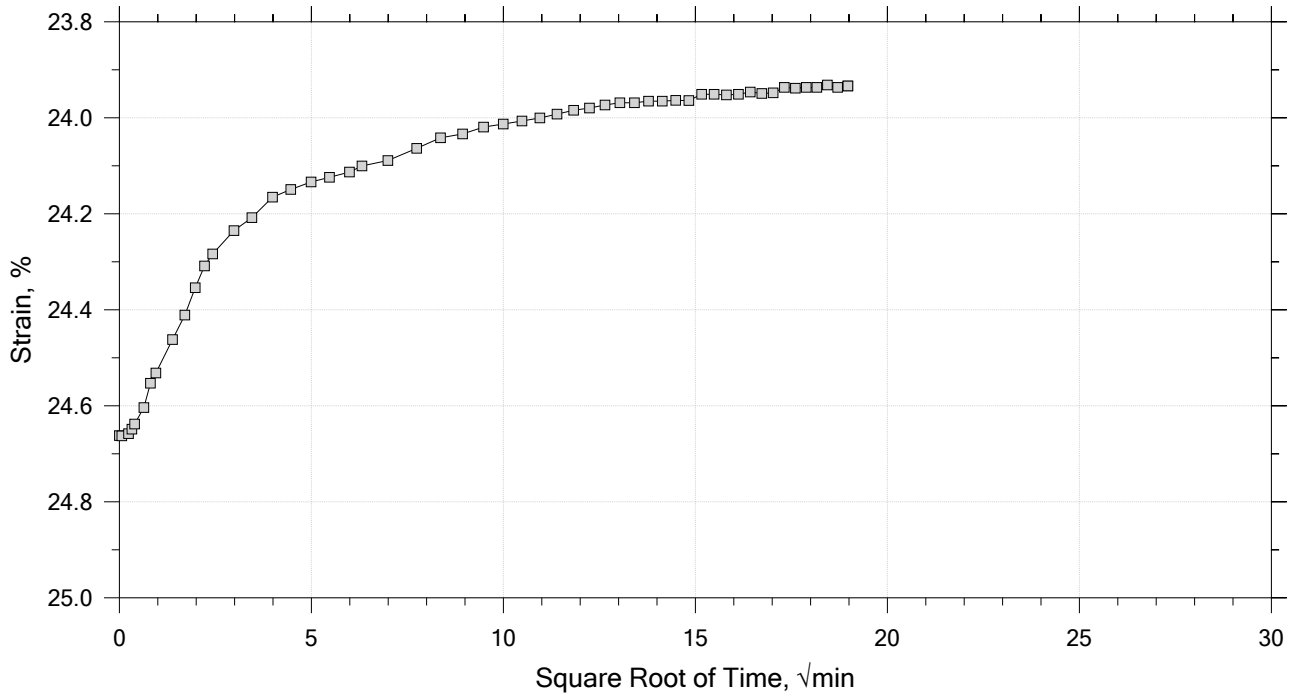


Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
Boring No.: MMI-4	Tested By: md	Checked By: anm
Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---
Description: Moist, gray clay		
Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 21 of 23
Constant Load Step
Stress: 0.9 tsf

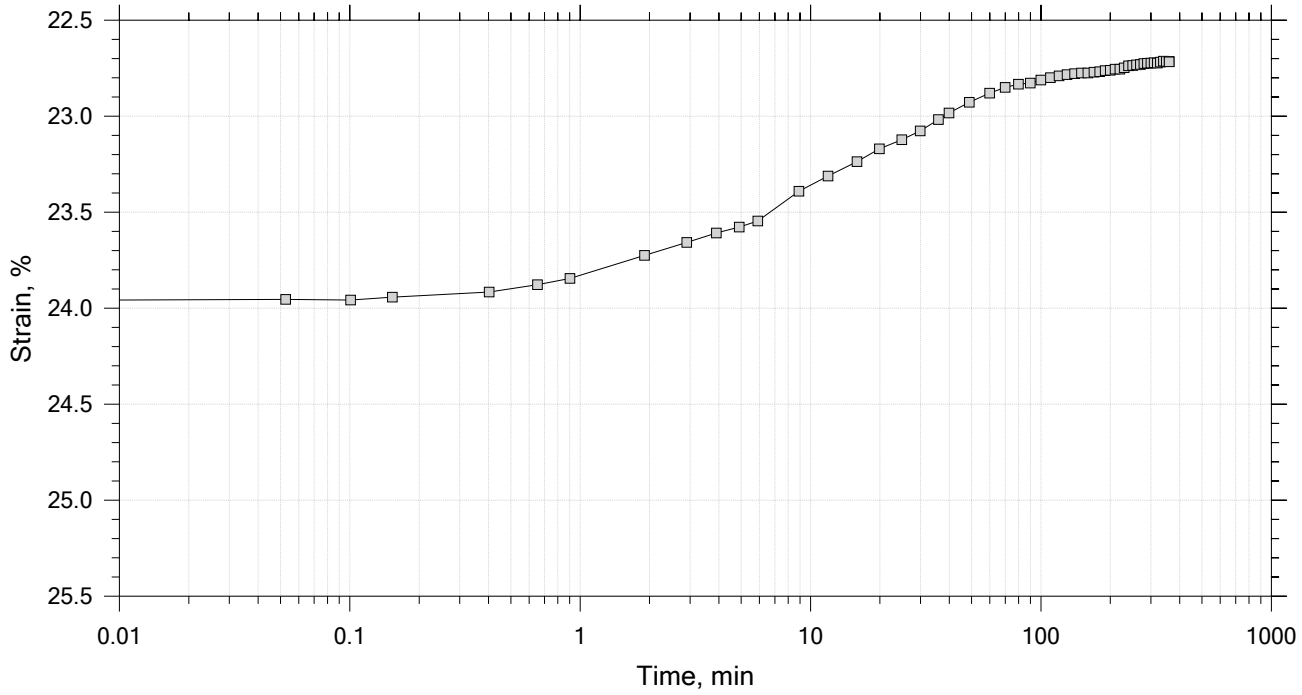


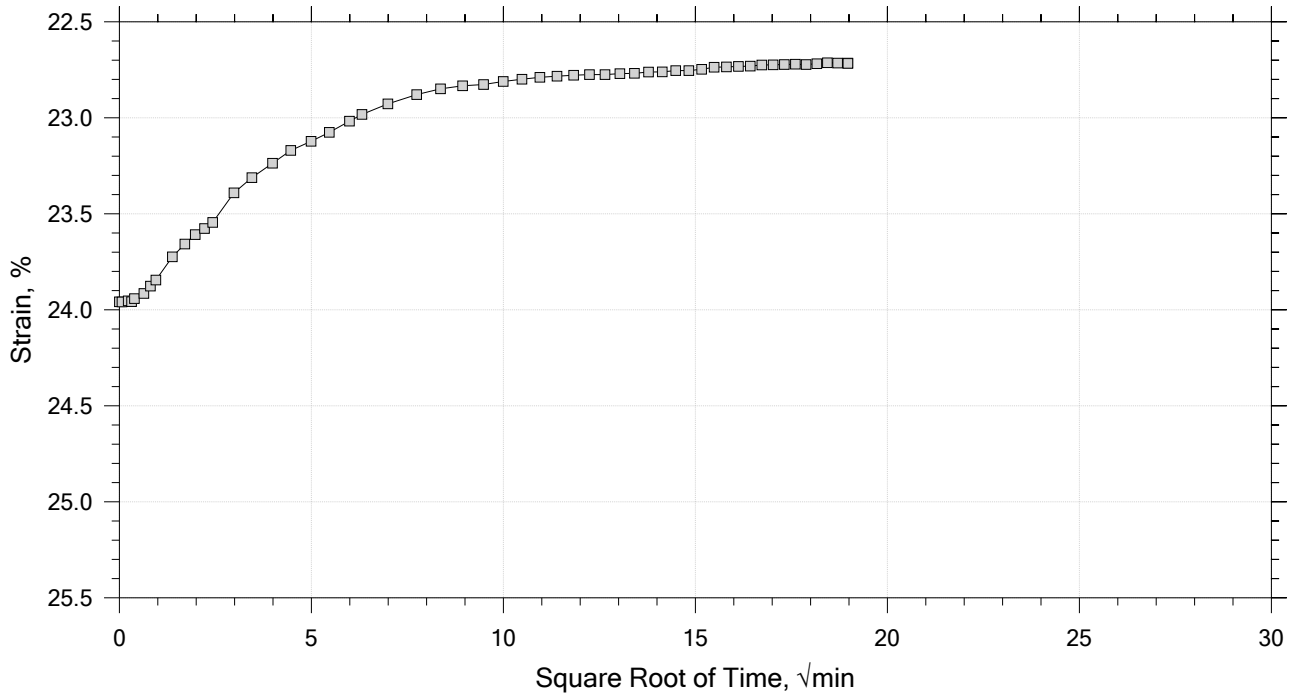


GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 22 of 23
Constant Load Step
Stress: 0.25 tsf

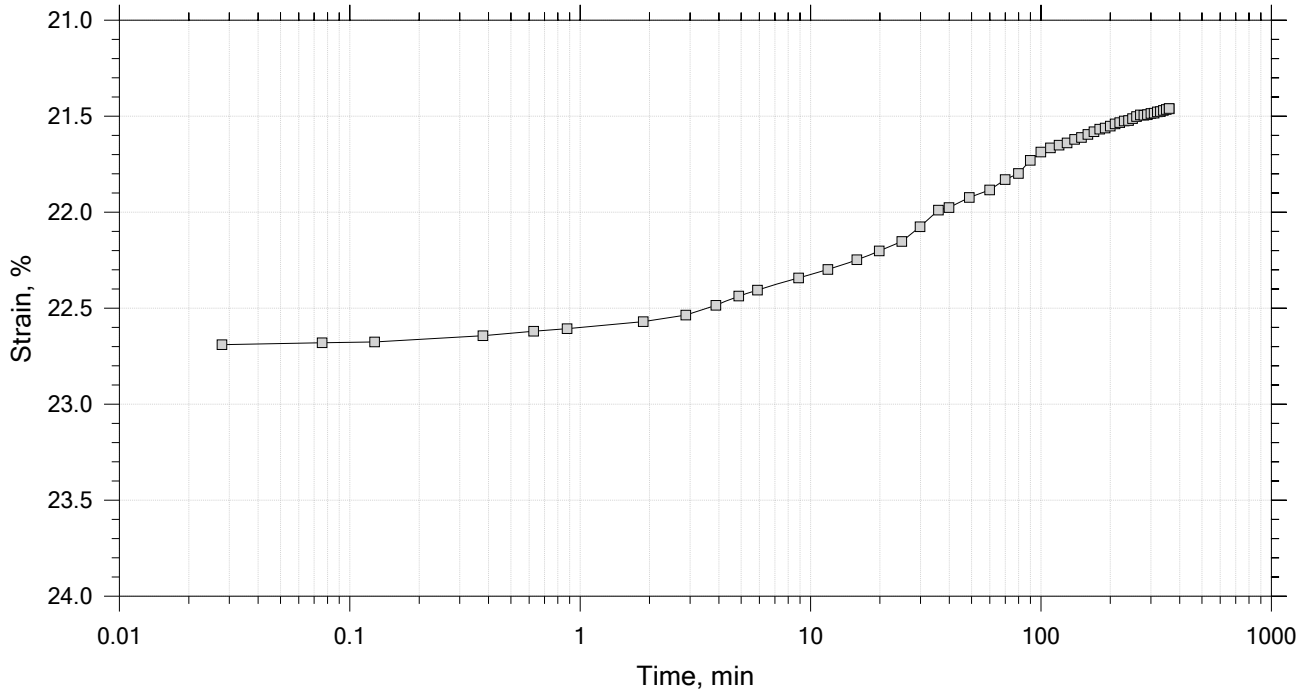


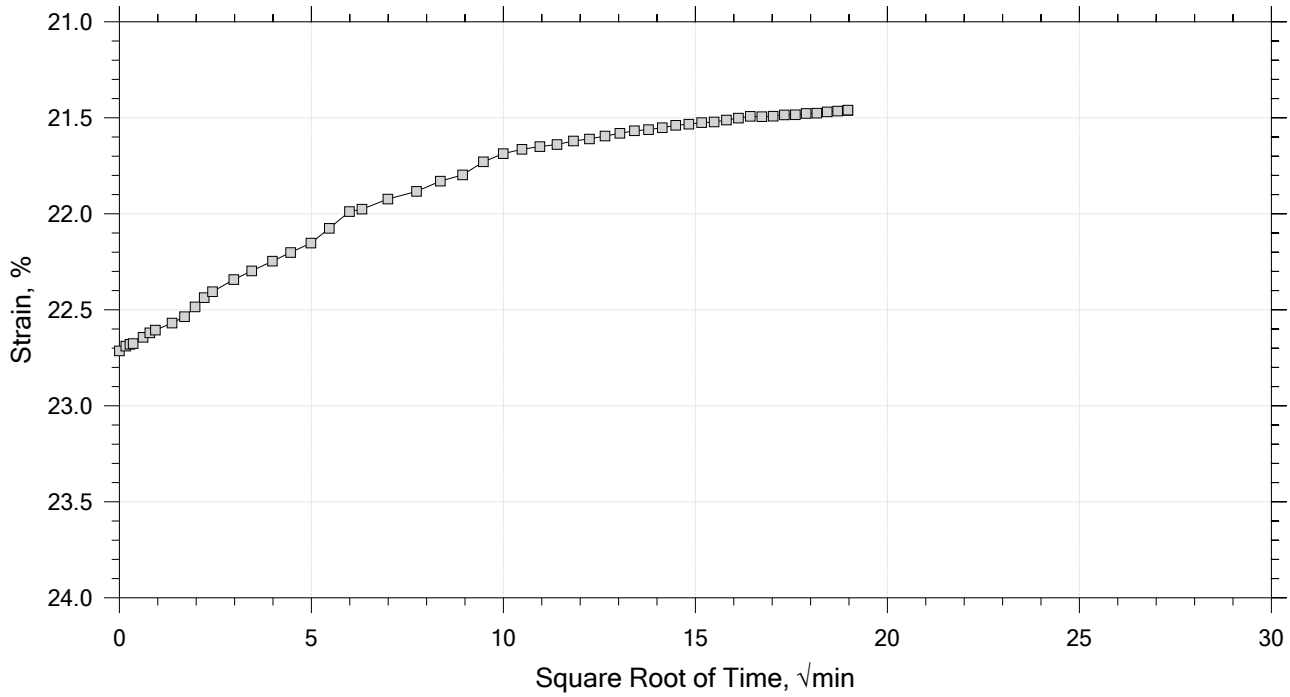


GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Time Curve 23 of 23
Constant Load Step
Stress: 0.0625 tsf





Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
Boring No.: MMI-4	Tested By: md	Checked By: anm
Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---
Description: Moist, gray clay		
Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Specimen Diameter: 2.50 in	Estimated Specific Gravity: 2.75	Liquid Limit: 34
Initial Height: 1.00 in	Initial Void Ratio: 0.935	Plastic Limit: 18
Final Height: 0.77 in	Final Void Ratio: 0.49	Plasticity Index: 16

	Before Test Trimmings	Before Test Specimen	After Test Specimen	After Test Trimmings
Container ID	A-1802	RING		D229
Mass Container, gm	8.29	112.26	112.26	8.39
Mass Container + Wet Soil, gm	156.89	264.31	247	144.58
Mass Container + Dry Soil, gm	117.23	226.64	226.64	124
Mass Dry Soil, gm	108.94	114.38	114.38	115.61
Water Content, %	36.41	32.94	17.80	17.80
Void Ratio	---	0.93	0.49	---
Degree of Saturation, %	---	96.93	100.00	---
Dry Unit Weight, pcf	---	88.768	115.28	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

Square Root of Time Coefficients

Step	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in²/s	Mv 1/tsf	k ft/day
1	0.0976	0.01157	0.912	1.16	---	---	1.19e-01	---
2	0.125	0.01404	0.908	1.40	79.176	4.35e-05	9.02e-02	7.34e-05
3	0.250	0.02514	0.886	2.51	29.658	1.15e-04	8.88e-02	1.90e-04
4	0.500	0.04337	0.851	4.34	10.023	3.29e-04	7.30e-02	4.49e-04
5	0.900	0.06425	0.810	6.42	16.625	1.90e-04	5.22e-02	1.86e-04
6	0.500	0.06296	0.813	6.30	3.522	8.80e-04	3.22e-03	5.31e-05
7	0.250	0.06051	0.818	6.05	8.378	3.71e-04	9.78e-03	6.80e-05
8	0.125	0.05651	0.825	5.65	99.869	3.14e-05	3.20e-02	1.88e-05
9	0.0625	0.05334	0.831	5.33	89.862	3.51e-05	5.08e-02	3.34e-05
10	0.125	0.05390	0.830	5.39	219.854	1.44e-05	9.07e-03	2.45e-06
11	0.250	0.05603	0.826	5.60	9.961	3.17e-04	1.70e-02	1.01e-04
12	0.500	0.05934	0.820	5.93	6.213	5.05e-04	1.32e-02	1.25e-04
13	0.900	0.06630	0.806	6.63	29.067	1.07e-04	1.74e-02	3.48e-05
14	2.00	0.1065	0.729	10.6	22.435	1.31e-04	3.65e-02	8.99e-05
15	4.00	0.1493	0.646	14.9	19.371	1.39e-04	2.14e-02	5.57e-05
16	8.00	0.1884	0.570	18.8	10.566	2.31e-04	9.78e-03	4.23e-05
17	16.0	0.2263	0.497	22.6	7.358	3.02e-04	4.73e-03	2.67e-05
18	32.0	0.2618	0.428	26.2	5.630	3.59e-04	2.22e-03	1.49e-05
19	8.00	0.2575	0.436	25.8	3.590	5.40e-04	1.77e-04	1.79e-06
20	2.00	0.2465	0.458	24.7	6.670	2.96e-04	1.83e-03	1.02e-05
21	0.900	0.2393	0.472	23.9	18.614	1.09e-04	6.54e-03	1.33e-05
22	0.250	0.2272	0.495	22.7	41.441	5.01e-05	1.87e-02	1.76e-05
23	0.0625	0.2146	0.519	21.5	110.301	1.94e-05	6.70e-02	2.44e-05

GeoTesting EXPRESS	Project: Downtown Flood Control	Location: Damariscotta, ME	Project No.: GTX-312886
	Boring No.: MMI-4	Tested By: md	Checked By: anm
	Sample No.: U2	Test Date: 12/22/20	Depth: 16-18 ft
	Test No.: IP-1	Sample Type: intact	Elevation: ---
	Description: Moist, gray clay		
	Remarks: System LTIII-16-0834, Swell Pressure = 0.0976 tsf		
	Displacement at End of Increment		

DeepEX 2020: Report Output

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Project: Damariscotta Floodwall

Company: SLR International
Prepared by engineer: E. Adler
File number: 143.16541.00017
Time: 3/2/2021 8:59:13 AM

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File: B:\6500\6541 Wright Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-3.DEEP

ANALYSIS AND CHECKING SUMMARY

The following tables summarize critical resuls for all design sections. These results may include wall moments, shears, displacements, stress checks, wall embedment safety factors, basal & slope stability safety factors, etc.

Summary vs Design Section

Base model	Wall Moment	Wall Shear	Wall Displace	Max Support	Critical Support	Embedment	Comments
	(k-ft/ft)	(k/ft)	(in)	Reaction (k/ft)	Check	Wall FS	
Base model	8.13	5.43	0	No supports	No supports	2.213	Calculation successful

Extended Summary

Table: Extended summary for all design sections.

Design Section	Calculation Result	Wall Displacement	Settlement
Name		(in)	(in)
Base model	Calculation successful	0.45	N/A

Table: Extended summary for wall moments and shears for all design sections.

Design Section	Wall Moment	Wall Moment	Wall Shear	Wall Shear
Name	(k-ft/ft)	(k-ft)	(k/ft)	(k)
Base model	8.13	8.13	5.43	5.43

Table: Extended summary for wall stress checks for all design sections.

Design Section	STR Combined	STR Moment	STR Shear	Wall Concrete Service
Name	Wall Ratio	Wall Ratio	Wall Ratio	Stress Ratio FIC
Base model	0.491	0.491	0.496	N/A

Table notes:

STR Combined: Combined stress check, along eccentricity line considering axial load and moment (demand/capacity).
STR Moment : Moment stress check, assuming constant axial load on wall (demand/capacity).
STR Shear : Shear stress check (shear force demand/wall shear capacity).

Table: Extended summary for support results for all design sections

Design Section	Max Support	Max Support	Critical	STR Support	Support Geotech
Name	Reaction (k/ft)	Reaction (k)	Support Check	Ratio	Capacity Ratio (pull
Base model	No supports	No supports	No supports	No supports	No supports

Table notes:

STR Support ratio: Critical structural stress check for support (force demand/structural capacity).
Support geotech capacity ratio: Critical geotechnical capacity stress check (demand/geotechnical capacity).
Critical support check: Critical demand/design capacity ratio (structural or geotechnical).

Table: Summary for basal stability and wall embedment safety factors from conventional analyses.

Design Section	FS	Toe FS	Toe FS	Toe FS
Name	Basal	Passive	Rotation	Length
Base model	1000	2.272	2.213	2.763

Table notes:

FSbasal : Critical basal stability safety factor (relevant only when soft clays are present beneath the excavation).
TOE FS Passive : Safety factor for wall embedment based on FS= Available horizontal thrust resistance/Driving hor. thrust.
TOE FS Rotation: Safety factor for wall embedment based on FS= Available resisting moment/Driving moment.
TOE FS Length : Safety factor for wall embedment based on FS= Available wall embedment/Required embedment for FS=1.0

Table: Summary for wall embedment safety factors from elastoplastic analyses.

Design Section	FS Mobilized	FS
Name	Passive	True/Active
Base model	N/A	N/A

Table notes:

FS Mobilized Passive : Safety factor= Available horizontal passive resistance/Mobilized passive thrust.
FS True/Active : Soil thrust on retained wall side/Minimum theoretically horizontal active force thrust.

Table: Summary for hydraulic safety factors, water flow, and slope stability

Design Section	Hydraulic	Qflow	FSslope
Name	Heave FS	(ft3/hr)	
Base model	1.675	N/A	N/A

Max. Moment vs Stage

	Base Model
M stg0 (k-ft/ft)	DS: 0

Max. Shear vs Stage

	Base Model
V stg0 (k/ft)	DS: 0

Max. Support F vs Stage

	Base Model
Rmax Stage 0 (k/ft)	DS: 0

STRUCTURAL MATERIALS DATA

Steel

Name	Strength Fy	Fu	Elastic E	Density g
	(ksi)	(ksi)	(ksi)	(kcf)
A36	36	58	29000	0.49
A50	42	60	29000	0.49
A572 GR42	42	60	29000	0.49

Concrete

Name	Strength Fc'	Elastic E	Density g	Tension Strength Ft
	(ksi)	(ksi)	(kcf)	(% of Fc')
Fc 3ksi	3	3122	0.15	10
Fc 4ksi	4	3605	0.15	10
Fc 5ksi	5	4031	0.15	10
Fc 6ksi	6	4415	0.15	10

Steel rebar

Name	Strength Fy	Elastic E
	(ksi)	(ksi)
Grade 60	60	29000
Grade 75	75	29000
Grade 80	80	29000
Grade 150	150	29000
Strands 270 ksi	270	29000
S410	59.4	30434.8
S500	72.5	30434.8
B450C	65.2	30434.8

Wood

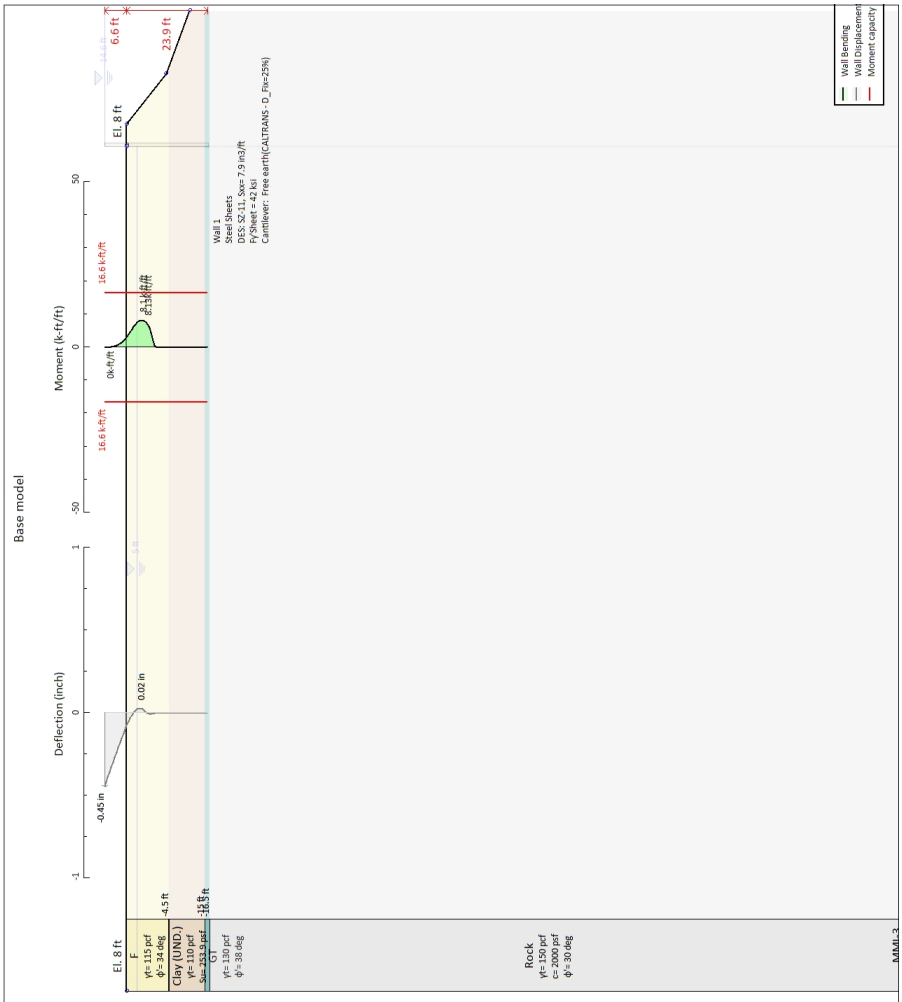
Name	Ultimate Bending Srtength Fbu	Ultimate Tensile Strength Ftu	Ultimate Shear Strength Fvu	Density g	Elastic E
	(ksi)	(ksi)	(ksi)	(kcf)	(ksi)
Construction Timb	3.525	3.09	1.995	0.05	1200
Regular grade	2.94	2.94	2	0.05	800
Pacific Coast Dougl	7.2	5.88	0.38	0.05	1250
Red Pine	7.2	5.88	0.28	0.05	1280
Southern Pine	7.06	5.88	0.37	0.05	1500

STEEL
Name=material name
fy=fyk= characteristc resistance for steel (for all the codes)

Fu=fuk= ultimate resistence for steel (for all the codes)
Elastic E= Elastic modulus
Density g= specific weight
CONCRETE
Name=material name
f'c=fck= cylindrical resistance for concrete (for all the codes)
Elastic E= Elastic modulus
Density g= specific weight
Tension strength=ft=fctk= characteristic tension resistance for concrete
STEEL REBARS
Name=material name
fy=fyk= characteristic resistance for steel (for all the codes)
Fu=fuk= ultimate resistence for steel (for all the codes)
Elastic E= Elastic modulus
Density g= specific weight
WOOD
Name=material name
Fb=fbk= Ultimate bending strength
Ftu=ftuk= Ultimate tensile strength
Fvu=fvuk= Ultimate shear strength
Density g= specific weight
Elastic E= Elastic modulus

Project: Damariscotta Floodwall
Results for Design Section 0: Base model

ANALYSIS AND CHECKING SUMMARY



Company: SLR International Engineer: E. Adler	Quick summary	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-3.DEEP		2021

Summary of Wall Moments and Toe Requirements

Top Wall	Wall	L-Wall	H-Exc.	Max+M/Cap	Max-M/Cap	FS Toe	FS Toe	FS Toe	FS 1 Toe EL.	Slope
(ft)	Section	(ft)	(ft)	(k-ft/ft)	(k-ft/ft)	Passive	Rotation	Embedment	(ft)	Stab. FS
14.6	Wall 1	30.5	0	8.13/16.56	0/16.56	2.272	2.213	2.763	-0.65	N/A

Summary of Basal Stability and Predicted Wall Movements According to Clough 1989 Method Wall: W

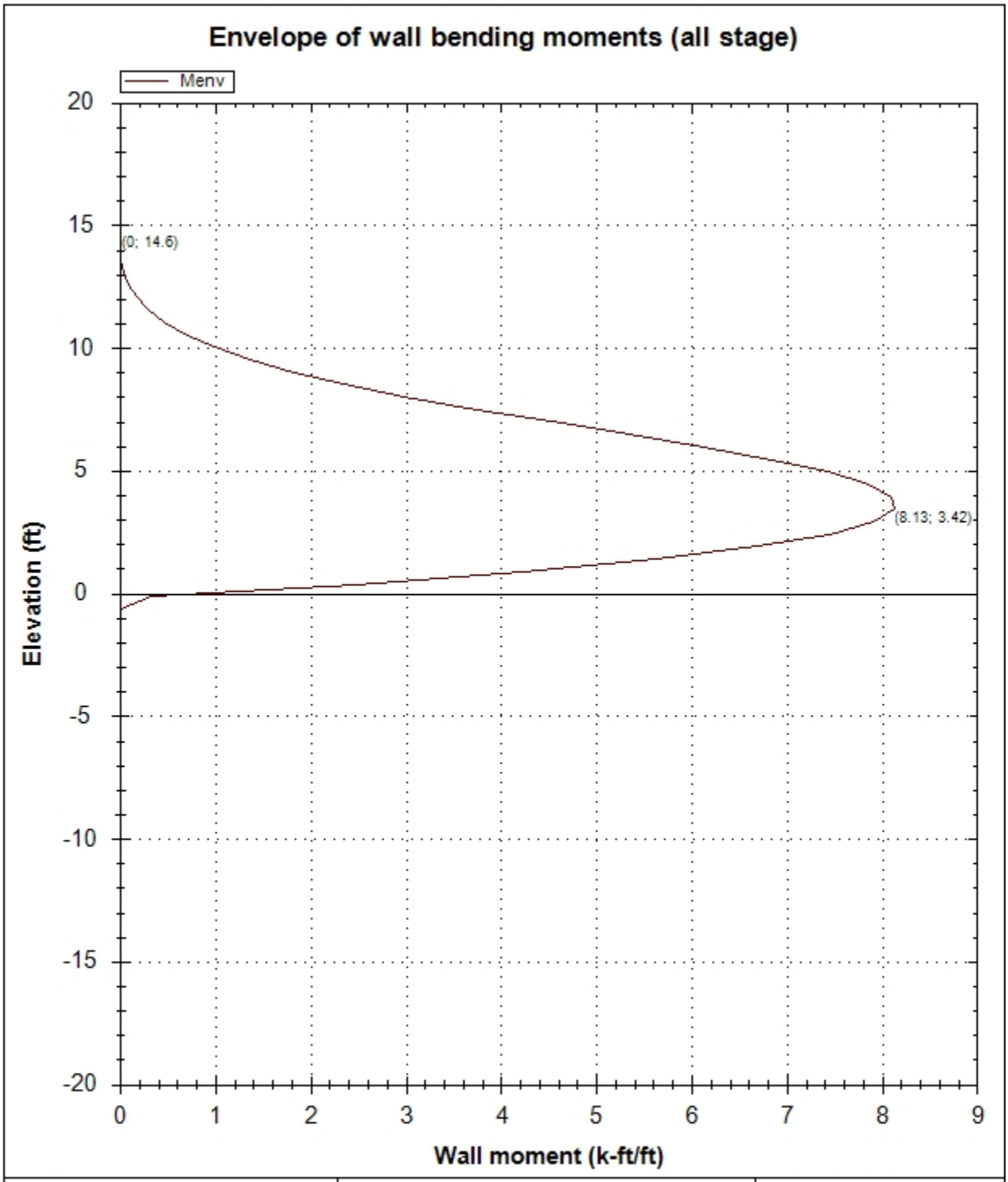
1. FSmin	2. DxMax (in)	2. Stiffness	2. FSbasal	3. Dx/H (%)	3. Stiffness	3. FSbasal
@ stage 0	@ stage	@ DxMax	@ DxMax	@ stage	@ Dx/H max	@ Dx/H max
1000	N/C	N/C	N/C	N/C	N/C	N/C

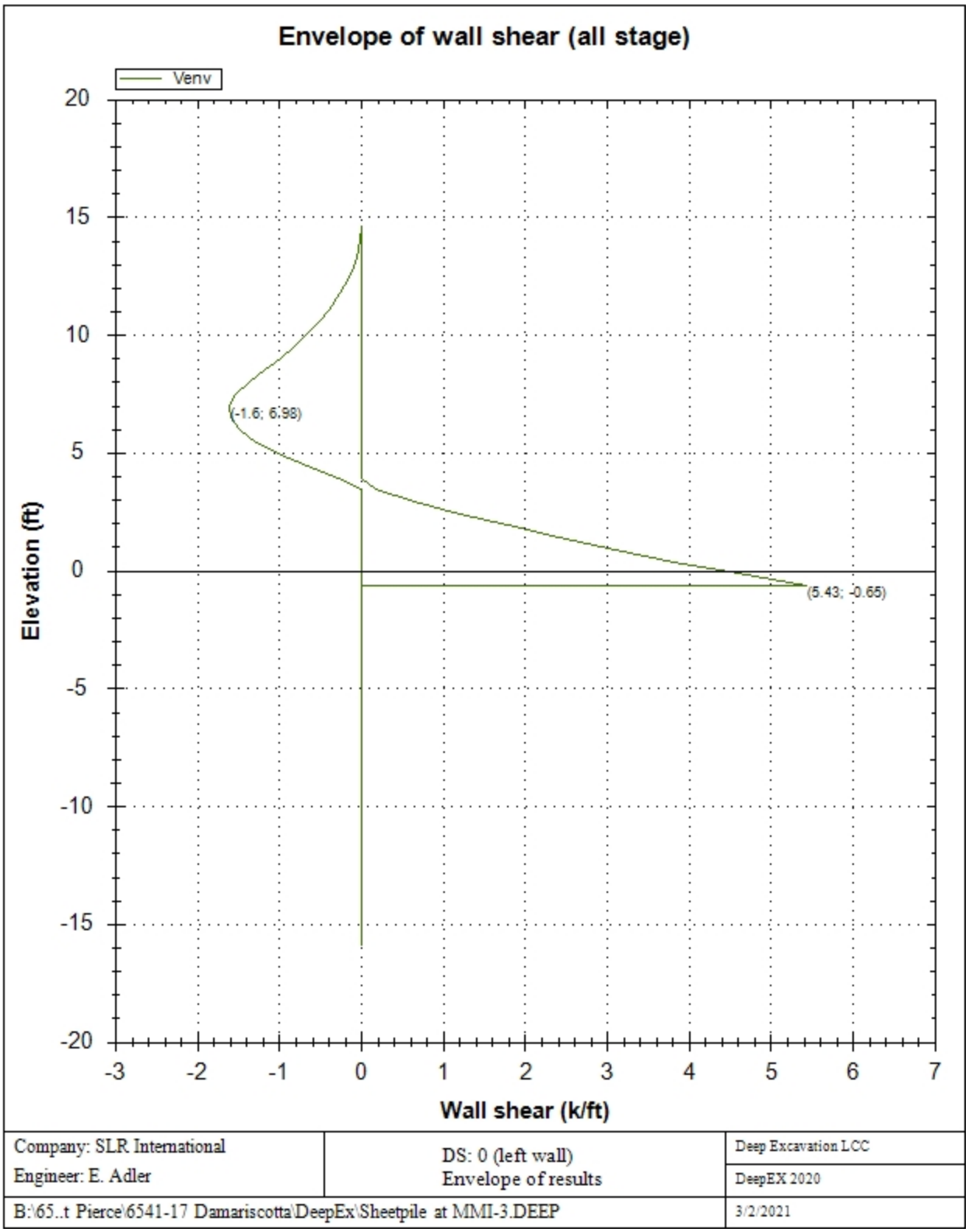
General assumptions for last stage: Stage 1

Concrete Code:	ACI 318-19/1.6
Steel Code:	AISC 360-16 ALL.
1st Wall Limit Equilibrium	California Shoring Manual-11
Drain State Clays	Default
Water γ= 62.4 pcf	Simple flow
Drive	Ka
Resist	Kp

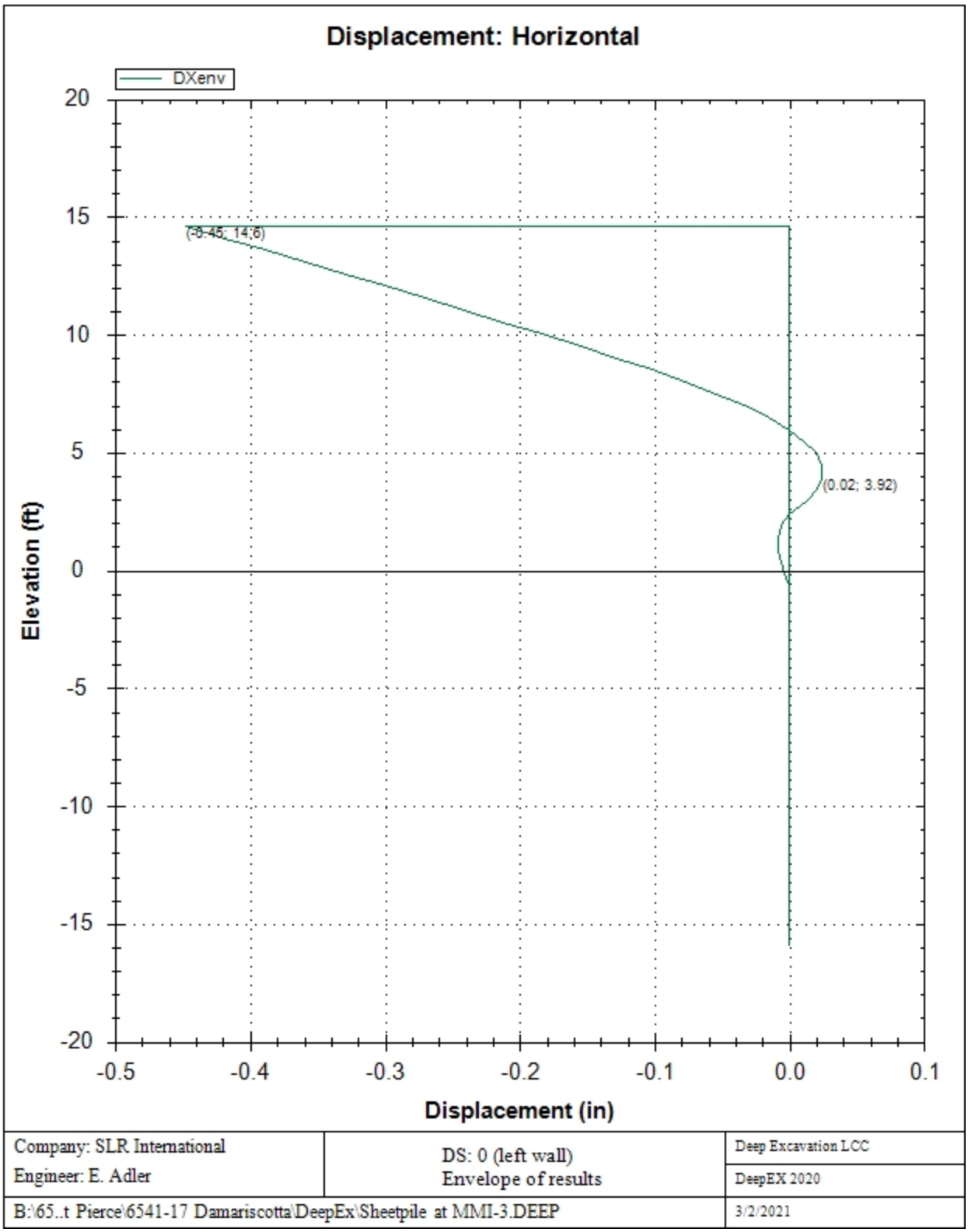
Envelope of results

A sequence of result diagrams for each excavation stage is reported





Company: SLR International Engineer: E. Adler	DS: 0 (left wall) Envelope of results	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-3.DEEP		3/2/2021



Extended vs Stage

	Calculation Result	Wall Displaceme	Settlement	Wall Moment	Wall Moment
		(in)	(in)	(k-ft/ft)	(k-ft)
Stage 1	Calculated	-0.45	N/A	8.13	8.13

	Wall Shear	Wall Shear	STR Combined	STR Moment	STR Shear
	(k/ft)	(k)	Wall Ratio	Wall Ratio	Wall Ratio
Stage 1	5.43	5.43	0.491	0.491	0.496

Table notes:

STR Combined: Combined stress check, along eccentricity line considering axial load and moment (demand/capacity).
STR Moment : Moment stress check, assuming constant axial load on wall (demand/capacity).
STR Shear : Shear stress check (shear force demand/wall shear capacity).

	Max Support	Max Support	Critical	STR Support	Support Geotech
	Reaction (k/ft)	Reaction (k)	Support Check	Ratio	Capacity Ratio (pull out
Stage 1	0	0	N/A	No supports	No supports

Table notes:

STR Support ratio: Critical structural stress check for support (force demand/structural capacity).
Support geotech capacity ratio: Critical geotechnical capacity stress check (demand/geotechnical capacity).
Critical support check: Critical demand/design capacity ratio (structural or geotechnical).

	FS	Toe FS	Toe FS	Toe FS	Zcut	FS Mobilized	FS
	Basal	Passive	Rotation	Length	(nonlinear)	Passive	True/Active
Stage 1	1000	2.272	2.213	2.763	N/A	N/A	N/A

	Hydraulic	Qflow	FSslope
	Heave FS	(ft3/hr)	
Stage 1	1.675	N/A	N/C

Support Force/S vs Stage

	No Supports
0:Stage 1	No support

Support Force vs Stage

Support Force vs Stage

	No Supports
0:Stage 1	No support

Embedment FS vs Stage

	Min Toe FS	FS1 Passive	FS2 Rotation	FS3 Length (from FS1, FS2)	FS4 Mobilized Passive	FS5 Actual Drive Thrust / Theory
Stage 0	2.213	2.272	2.213	2.763	N/A	N/A

Table notes:

FSbasal : Critical basal stability safety factor (relevant only when soft clays are present beneath the excavation).
Wall embedment safety factors from conventional analysis (limit-equilibrium):
FS1 Passive : Safety factor for wall embedment based on FS= Available horizontal thrust resistance/Driving hor. thrust.
FS2 Rotation: Safety factor for wall embedment based on FS= Available resisting moment/Driving moment.
FS3 Length : Safety factor for wall embedment based on FS= Available wall embedment/Required embedment for FS=1.0
Wall embedment safety factors from non-linear analysis:
FS4 Mobilized Passive : Safety factor= Available horizontal passive resistance/Mobilized passive thrust.
FS5 True/Active : Soil thrust on retained wall side/Minimum theoretically horizontal active force thrust.

Tables for stress checks follow: Support force/Design capacity

Support Check vs Stage

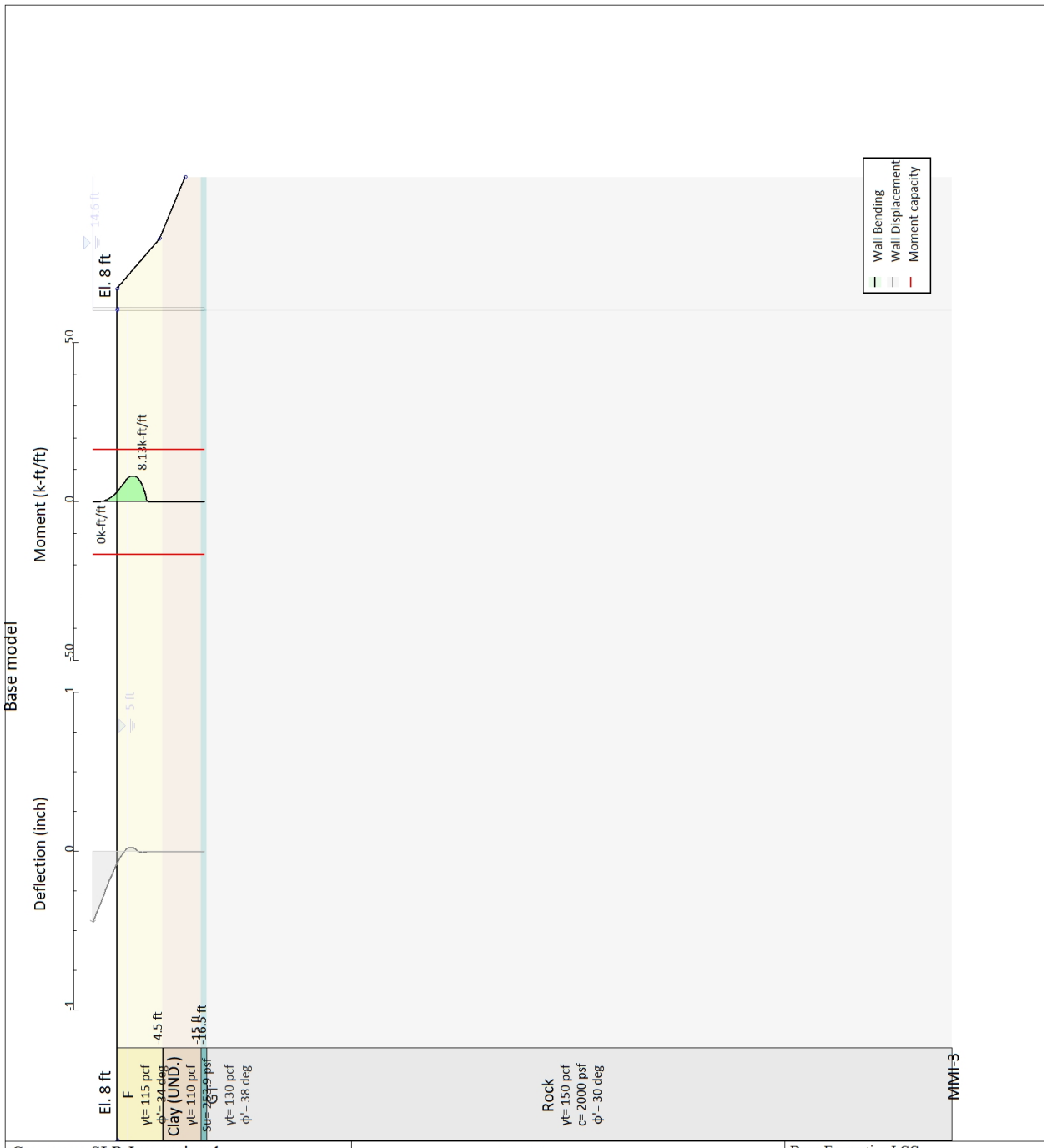
	No Supports
0:Stage 1	No support

Forces (Res. F, M/Drive F, M)

	FS1 Passive	FS2 Rotation	FS3 Length	FS4 Mobilized Passive	FS5 Actual Drive	Fh EQ Soil	Fh EQ Water
	(FxResist/FxDrive)	(Mresist/Mdrive)	(Embedment/ToeFS=1)	(FxPassive/FxPas_Mobili	/ Theory Active		
Stage 0	40.642/17.889	443.33/164.89	23.9/8.65	N/A	N/A	N/A	N/A

Reinforcement Requirements

	Parameter Description
Note:	Wall does not use steel reinforcement. Section does not apply.



Company: SLR International	Quick summary	Deep Excavation LCC
Engineer: E. Adler		DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-3.DEEP		3/2/2021

Summary of Wall Moments and Toe Requirements

Top Wall	Wall	L-Wall	H-Exc.	Max+M/Cap	Max-M/Cap	FS Toe	FS Toe	FS Toe	FS 1 Toe EL.	Slope
(ft)	Section	(ft)	(ft)	(k-ft/ft)	(k-ft/ft)	Passive	Rotation	Embedment	(ft)	Stab. FS
14.6	Wall 1	30.5	0	8.13/16.56	0/16.56	2.272	2.213	2.763	-0.65	N/A

Summary of Basal Stability and Predicted Wall Movements According to Clough 1989 Method Wall: W

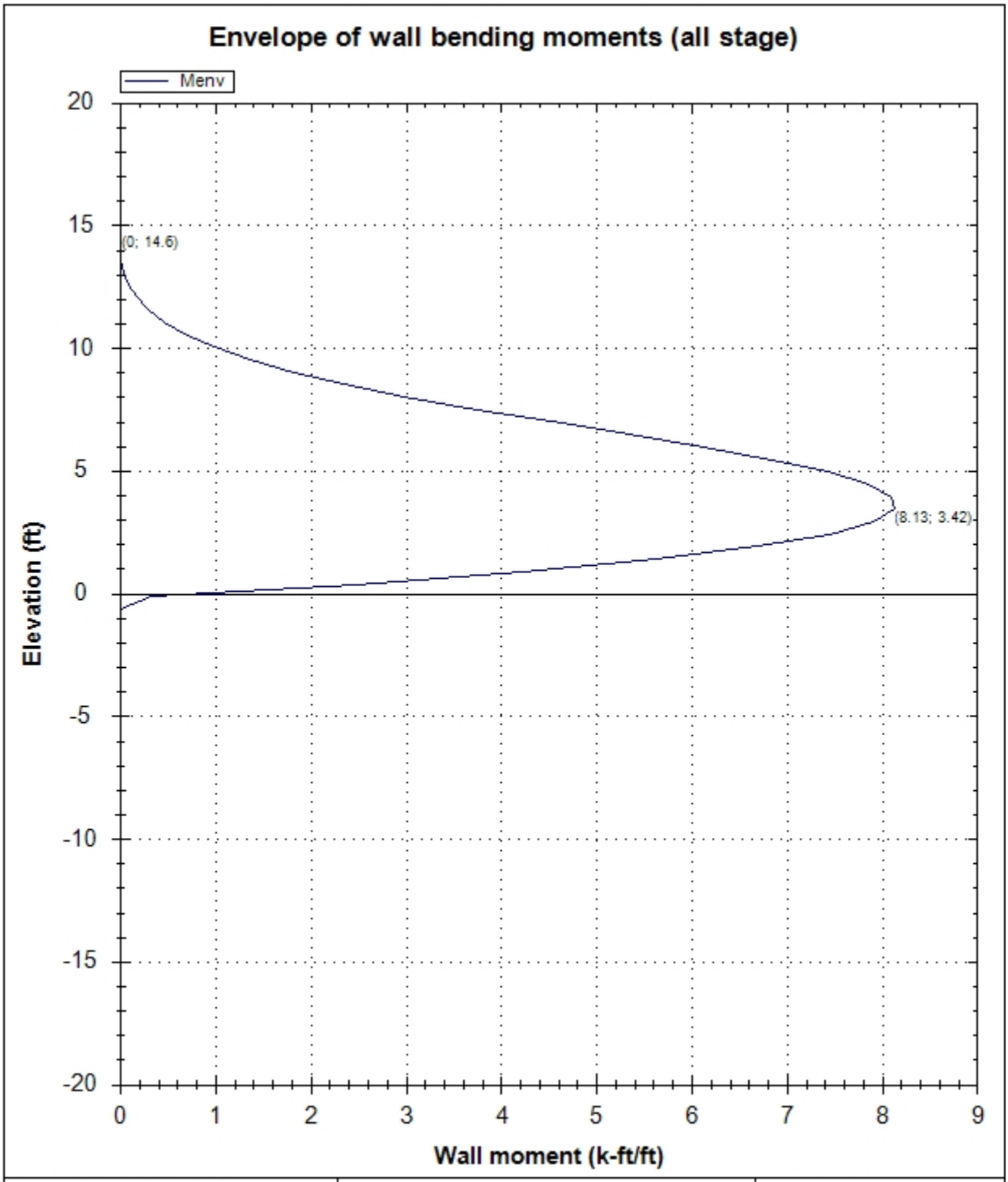
1. FSmin	2. DxMax (in)	2. Stiffness	2. FSbasal	3. Dx/H (%)	3. Stiffness	3. FSbasal
@ stage 0	@ stage	@ DxMax	@ DxMax	@ stage	@ Dx/H max	@ Dx/H max
1000	N/C	N/C	N/C	N/C	N/C	N/C

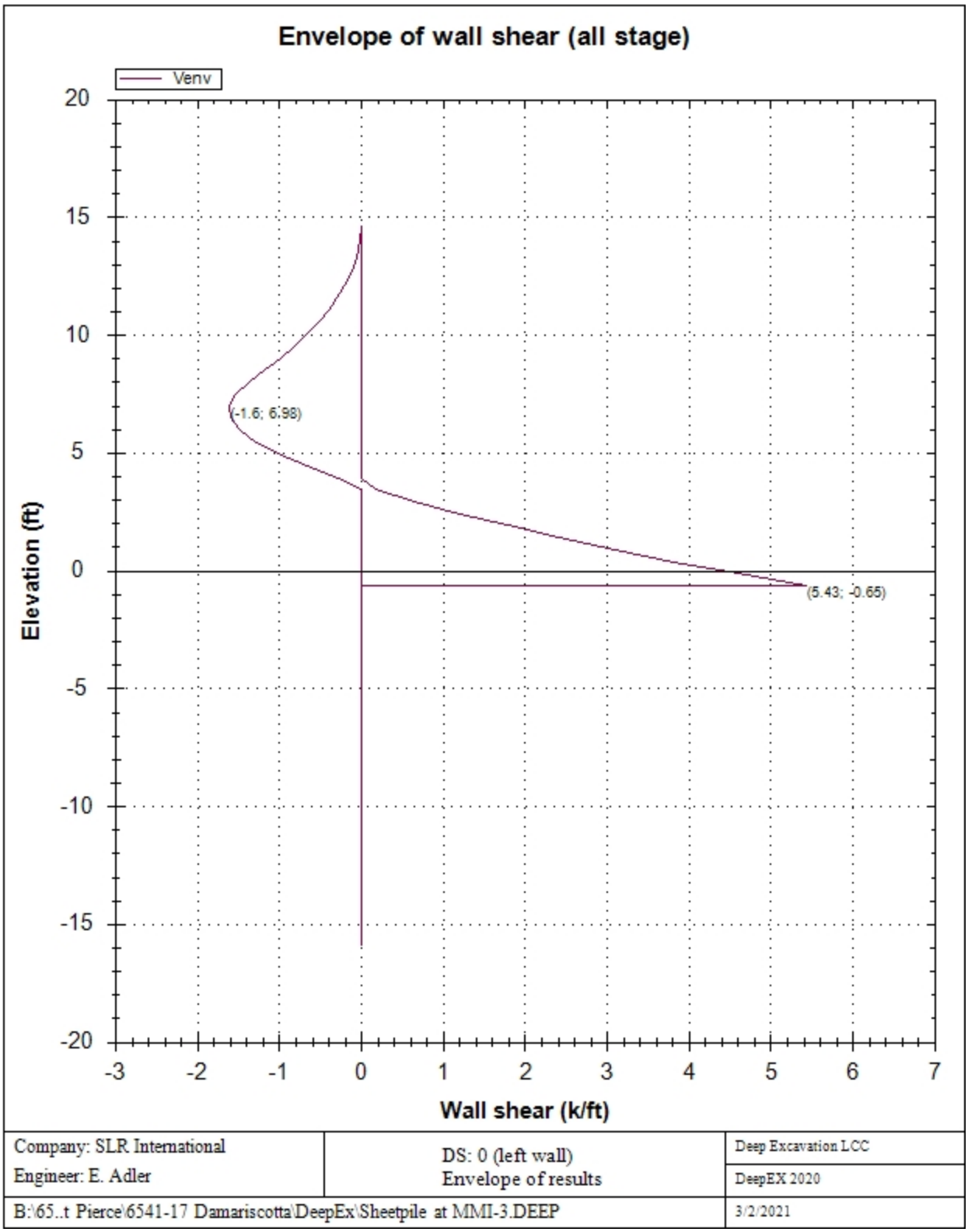
General assumptions for last stage: Stage 1

Concrete Code:	ACI 318-19/1.6
Steel Code:	AISC 360-16 ALL.
1st Wall Limit Equilibrium	California Shoring Manual-11
Drain State Clays	Default
Water γ= 62.4 pcf	Simple flow
Drive	Ka
Resist	Kp

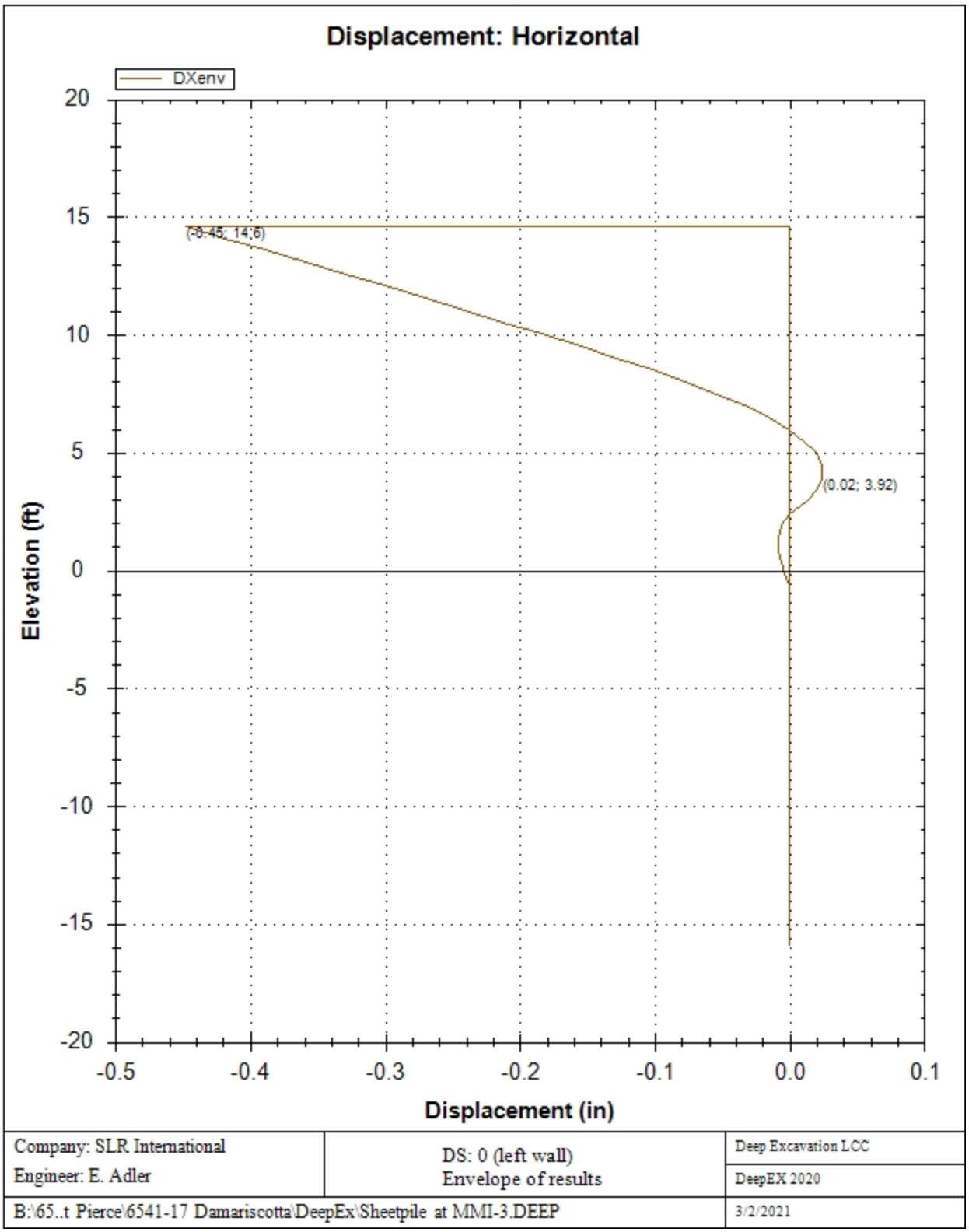
Envelope of results

A sequence of result diagrams for each excavation stage is reported





Company: SLR International Engineer: E. Adler	DS: 0 (left wall) Envelope of results	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-3.DEEP		3/2/2021



DESIGN APPROACHES AND COMBINATION FACTORS

The Design Approaches (from Codes or Customized by the user) and related safety factors are the following:

Ftan fr=mult factor for friction angle
F C'= safety factor on effective cohesion (Eurocode 7 methods)
F Su'= safety factof for undrained shear strength (Eurocode 7 methods)
F EQ= Load factor for seismic loads
F perm load= Load factor for permanent loads (dead load, etc)
F temp load= Load factor on live loads and other temporary loads
F perm supp= Reduction factor for resistance for pull out checking of permanent tiebacks
F temp supp= Reduction factor for resistance for pull out checking of temporary tiebacks
F earth Dstab= Load factor for driving earth pressures, unfavorable (on retained side)
F earth stab= Safety factor for passive pressures, favorable (on excavation side)
F GWT Dstab (ground water)= Load factor for driving water pressures, unfavorable
F GWT stab (ground water)= Load factor for resisting water pressure, favorable
F HYD Dstab= Load factor for hydraulic heave, unfavorable (hydraulic checking)
F HYD stab= Resistance factor for hydraulic heave, favorable (hydraulic checking)
F UPL Dstab= Load factor for uplift check, unfavorable
F UPL stab= Resistance factor for uplift check, favorable

Stage	Design Code	Design Case	F(tan	F	F	F	F(perm	F(temp	F(perm	F(temp	F Earth	F Earth	F GWT	F GWT	F HYD	F HYD	F UPL	F UPL
	Name		fr)	(c')	(Su)	(EQ)	load)	load)	sup)	sup)	(Dstab)	(stab)	(Dstab)	(stab)	(Dstab)	(stab)	(Dstab)	(stab)
0	Default	Service Factors	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

SOIL DATA

Name	g tot	g dry	Frict	C'	Su	FRp	FRcv	Eload	rEur	kAp	kPp	kAcv	kPcv	Vary	Spring	Color
	(pcf)	(pcf)	(deg)	(psf)	(psf)	(deg)	(deg)	(ksf)	(-)	NL	NL	NL	NL		Model	
F	115	115	34	0	N/A	N/A	N/A	300	3	0.28	3.54	N/A	N/A	True	EXP	
Clay	110	110	17	200	253.9	14.43	21.1	600	3	0.6	1.66	0.47	2.12	True	EXP	
GT	130	130	38	0	N/A	N/A	N/A	900	3	0.24	4.2	N/A	N/A	True	EXP	
Rock	150	150	30	2000	N/A	N/A	N/A	10000	3	0.33	3	N/A	N/A	True	Linear	

Name	Poisson	Min Ka	Min sh	ko.NC	nOCR	aH.EXP	aV.EXP	qSkin	qNails	kS.nails	PL
	v	(clays)	(clays)	-	-	(0 to 1)	(0 to 1)	(psi)	(psi)	(k/ft3)	(ksi)
F	0.35	-	-	0.441	0.5	1	0	12	4.8	20	-
Clay	0.45	0.2	0.104	0	0.5	0	1	18	12.1	30	-
GT	0.45	-	-	0.384	0.5	1	0	40	19.3	70	-
Rock	0.45	-	-	0.5	0.5	-	-	100	67.7	200	-

gtot = total soil specific weight
gdry = dry weigth of the soil
Frict = friction angle
C' = effective cohesion
Su = Undrained shear strength (only for CLAY soils in undrained conditions, used as a cutoff strength in NL analysis)
Evc = Virgin compression elastic modulus
Eur = unloading/reloading elastic modulus
Kap = Peak active thrust coefficient (initial value, may be modified on each stage according to analysis settings).
Kpp = Peak passive thrust coefficient (initial value, may be modified on each stage according to analysis settings).
Kacv = Constant volume active thrust coeff (only for clays, initial value)
Kpcv = Constant volume passive thrust coeff (only for clays, initial value).
Spring models= spring model (LIN= constant E over the soil layer height , EXP=exponential , SIMC=simplified winkler)
LIN= Linear-Elastic-Perfectly Plastic,
EXP: Exponential, SUB: Modulus of Subgrade Reaction
SIMC= Simplified Clay mode

SOIL BORINGS

Top Elev= superior SOil level

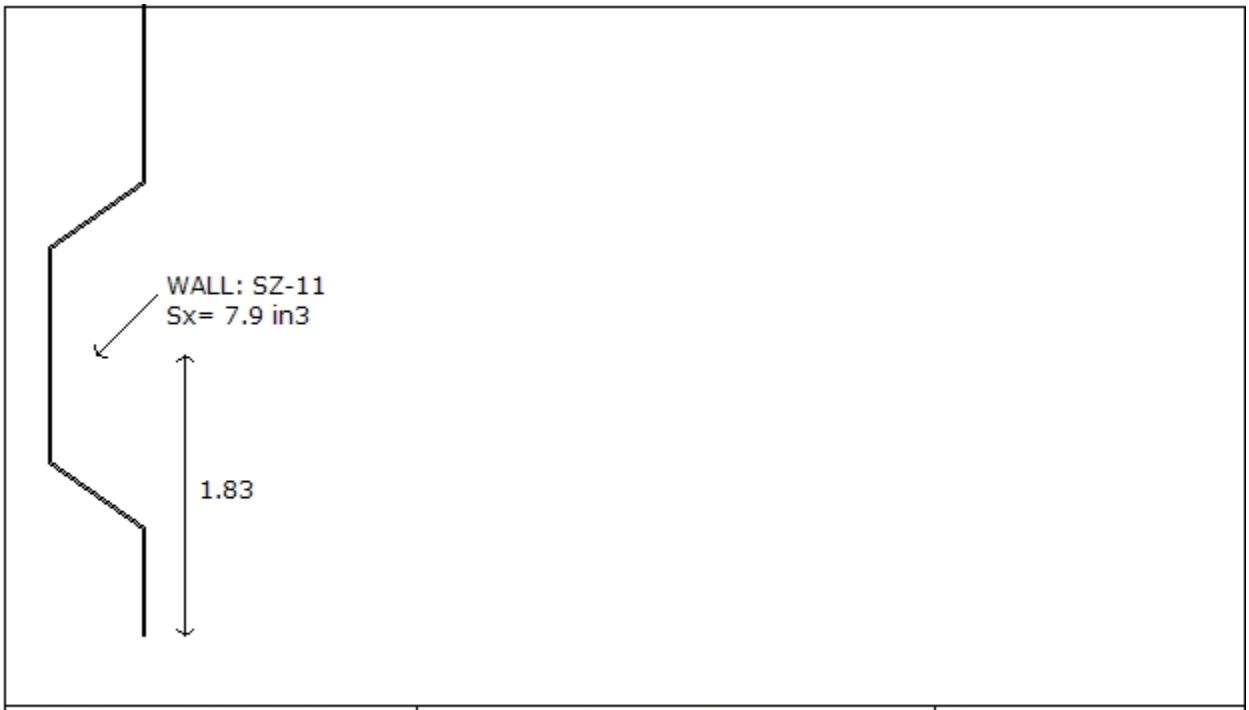
Soil type= type of the soil (sand , clay , etc)
OCR= overconsolidation ratio
K0= at rest coefficient

Name: MMI-3, pos: (-65.617, 8)

Top elev.	Soil type	OCR	Ko
8	F	1	0.44
-4.5	Clay	1	0
-15	GT	1	0.38
-16.5	Rock	1	0.5

WALL DATA

Wall section 0: Wall 1



Company: SLR International Engineer: E. Adler	Wall sketch	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-3.DEEP		3/2/2021

Wall uses wall section 0: Wall 1
Wall type: Steel sheet piling
Top wall El: 14.6 ft Bottom wall El: -15.9 ft
Hor. wall spacing: 1 ft Wall thickness = 0.62 ft
Passive width below exc: 1 ft Active width below exc: 1 ft Swater= 1 ft
Steel members fy = 42 ksi Esteel = 29000 ksi
Wall friction: Ignored
Steel wall capacities are calculated with AISC 360-16 ALL.
Concrete capacities are calculated with ACI 318-19
Note: With ultimate capacities you may have to use a structural safety factor.
Steel sheet pile properties

Table: Steel Sheet Pile Cross Sectional Properties

DES	Shape	W	A	h	t	b	s	Ixx	Sxx
		(plf)	(in^2/ft)	(in)	(in)	(in)	(in)	(in^4/ft)	(in^3/ft)
SZ-11	Z	10	2.98	7.43	0.179	22	0.179	30	7.9

GENERAL WALL DATA
Hor wall spacing= Wall horizontal spacing
Passive width below exc= spacing for passive thrust pressure for classic analysis
f'c=fck= cylindrical concrete resistance
fyk=fy= steel rebar characteristic resistance
Econc= Concrete Elastic modulus
fctk= characteristic Concrete tension
Esteel= steel elastic modulus
TABULAR DATA (principal parameters)
1) Diaphragm wall (rectangular cross section)
N/A= data not available
Fy=fyk
F'c=fck
D=wall thickness
B=wall width
2)Steel sheet pile
DES=shape (Z or U)
W=width per unit of length
A=area
h=height
t=horizontal part thickness
b=width of the single sheet pile part
s=inclined part thickness
Ixx=strong axis inertia (per unit of length)
Sxx=strong axis section modulus (per unit of length)
3)Secant piles wall, Tangent piles wall, soldier piles, soldier piles and timber lagging
W=weight per unit of length
A=area
D=diameter
tw=web thickness
tp= pipe thickness
bf=flange width
tf= flange thickness
k= flange thickness+stem base height
Ixx= strong axis inertia modulus (per unit of length)
Sxx= strong axis section modulus (per unit of length)
rx=radius of gyration about X axis
ry=radius of gyration about Y axis
Iyy=weak axis inertia modulus (per unit of length)
Syy=weak axis section modulus (per unit of length)
rT=radius of gyration for torsion
Cw= warping constant

GENERAL ANALYSIS CRITERIA

Summary of stage assumptions

Name	Analysis	Drive	ka-Mult	Htr T/B	Resist	Res	Contle
	Method	Press		(%)	Press	Mult	Method
Stage 0	Conventional	Ka	N/A	N/A	Kp	N/A	Free Earth

Name	Support	Axial	Used	Min Toe	Toe	Toe
	Model	Incl	FSwall	FDtoe	FSrot	FSpas
Stage 0		N/A	1.6	2.213	2.213	2.272

Name=excavation stage name

Analysis method

springs = Elastoplastic spring analysis used

DR = Drained condition for CLAY model

U = Undrained condition for CLAY model for all the soils

Up = Undrained condition just for selected soil

Limit equilibrium analysis settings

Drive press:

Ka (Active pressure diagram), Ka-Trap = Trapezoid apparent diagram from active pressures x multiplier,

FHWA= Federal Highway Administration apparent pressure diagrams.

Ko = At-rest lateral earth pressures.

Peck = Peck 1969 Apparent earth pressure diagrams.

2 Step rect = Two step rectangular apparent earth pressure diagram.

User def. = User defined apparent earth pressure diagram.

Ka+d (and so on) indicates that wall friction is applied

ka mult = multiplication factor for Ka when Ka-Trap is selected

Htr T/B (%) = trapezoidal pressure scheme, top and bottom triangular percentage of excavation depth H

Resit press = Kp (passive earth pressures)

Res Mult = Safety factor applied directly on resisting pressures (

COntle Method = cantilever analysis method for limit equilibrium analysis.

Support Model: Method for calculating support reactions in limit-equlibrium analysis.

Beam= support reactions beam analysis (uses Blum's method).

Trib= support reactions from tributary height calculations (Can be applied with apparent diagrams).

Axial Incl = Axial loads included for structural design

Used FS wall = Safety factor for axial+bending wall resistance to divide ultimate wall capacities.

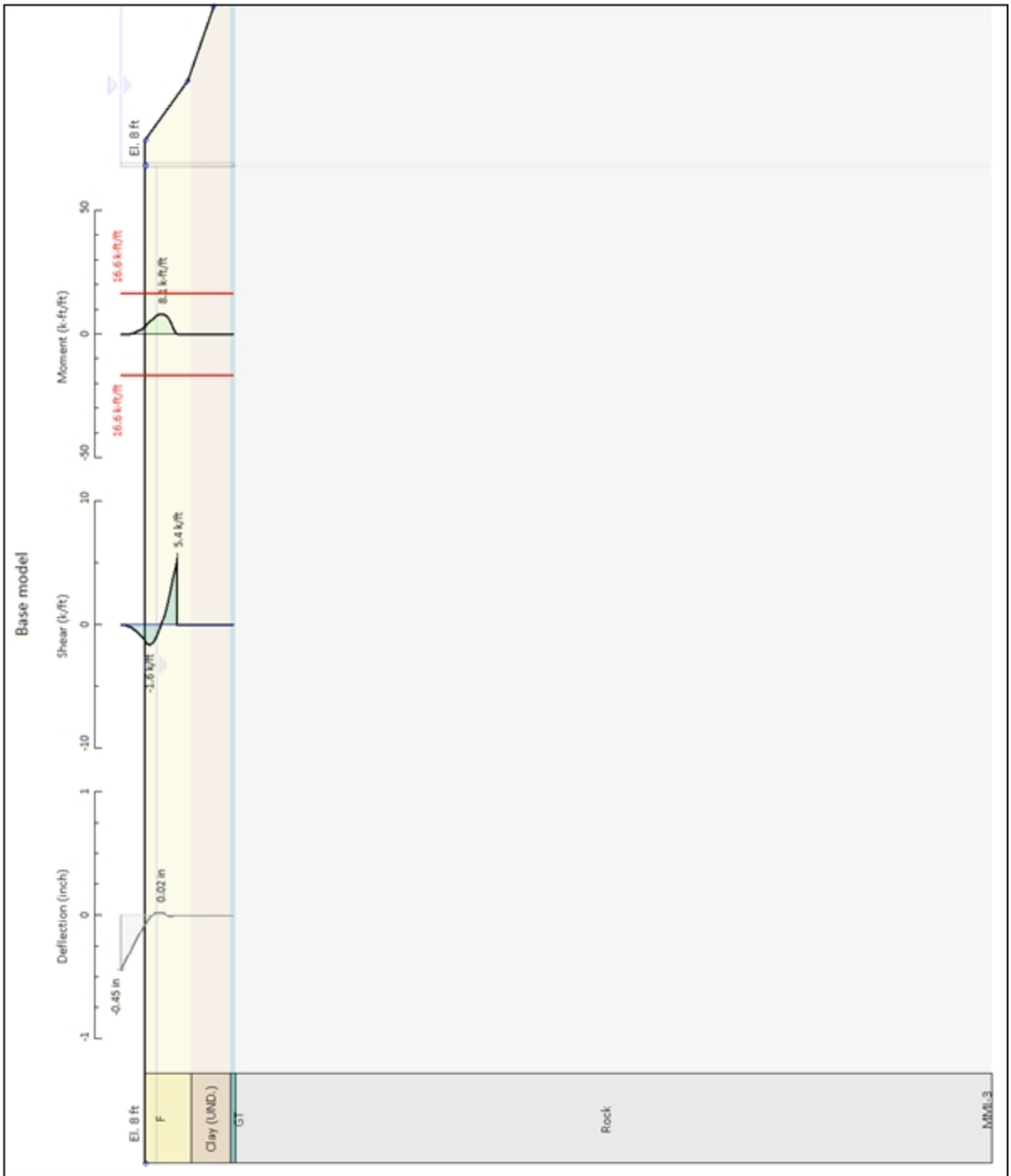
Min FD Toe= embedded minimum safety factor (for limit equilibrium analysis)

Toe FS rot= rotation safety factor (classic for limit equilibrium analysis)

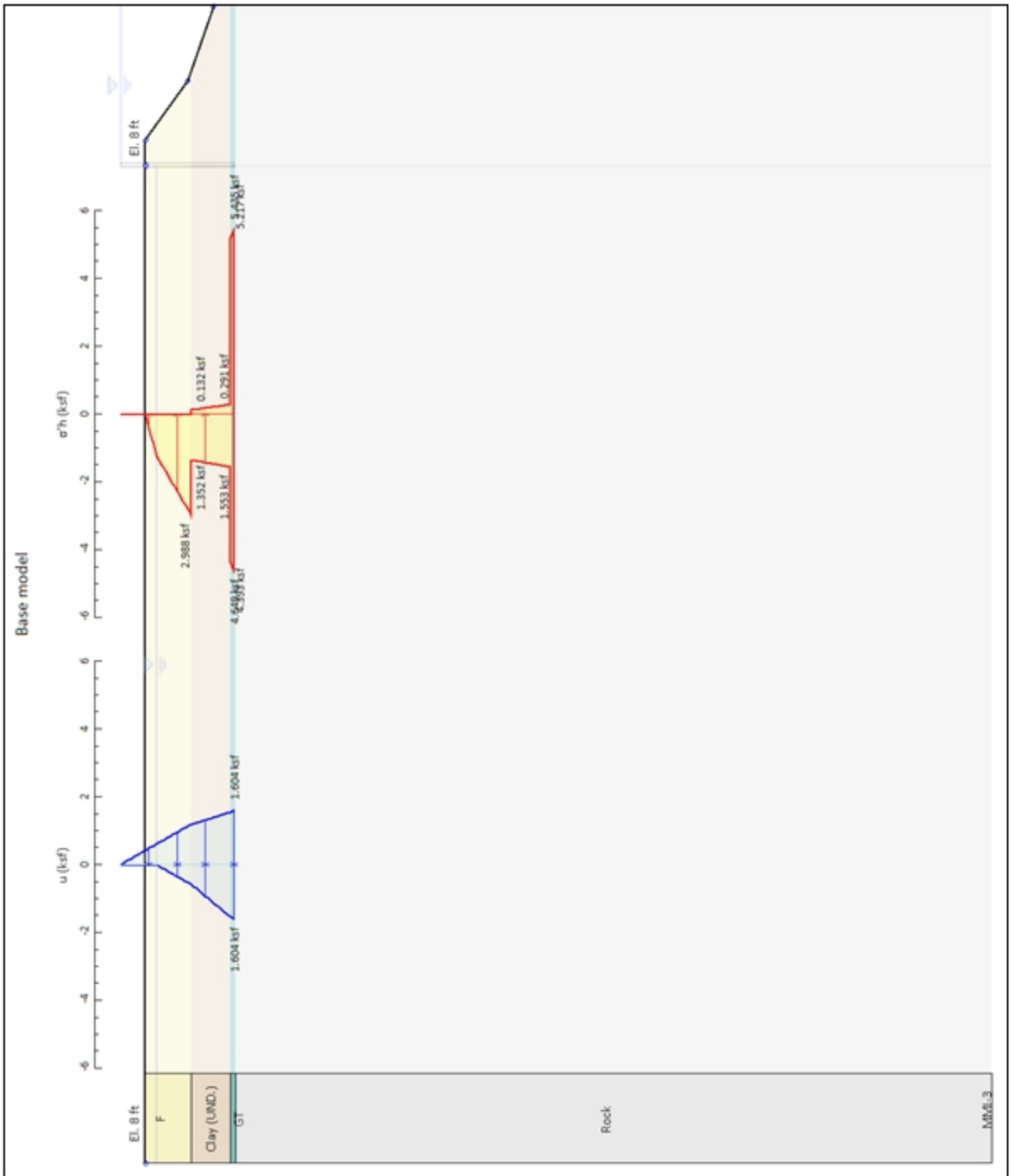
Toe FSpas= driving/resisting pressure safety factor (for limit equilibrium analysis)

EXCAVATION STAGES SKETCHES

A sequence of figures for each excavation stage is reported



Company: SLR International Engineer: E. Adler	DS: 0, Stage 1	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-3.DEEP		3/2/2021



Company: SLR International Engineer: E. Adler	DS: 0, Stage 1	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-3.DEEP		3/2/2021

Toe stability

Embedment FS vs Stage

	Min Toe FS	FS1 Passive	FS2 Rotation	FS3 Length (from FS1, FS2)	FS4 Mobilized Passive	FS5 Actual Drive Thrust / Theory
Stage 0	2.213	2.272	2.213	2.763	N/A	N/A

Legend: Wall embedment safety factors (toe)
Min Toe FS= Minimum wall embedment safety factor (from all analysis methods)
Limit-equilibrium analysis methods: The following safety factors may not be applicable for all stages.
FS1 Passive: Horizontal force safety factor, FS1= Resisting/Driving force
FS2 Rotation: Rotational safety factor about lowest support, FS2= Resisting moment/Driving moment
FS3 Length (from FS1, FS2): Program determines maximum required wall embedment for safety factor of 1 for methods FS1 and FS2 (say length LFS1). Then FS length= Provided wall embedment/LFS1.
Non-linear elastoplastic analysis safety factors:
FS4 Mobilized Passive: Safety factor on mobilized passive resistance, FS4= Available passive soil resistance/Mobilized passive soil force on excavation side.
FS5 Active Drive Thrust/Theory Active: Ratio of soil thrust on retained side/ Active condition theoretical minimum thrust. This factor is not as critical, and indicates how close to active conditions the model is.
General recommendations on wall embedment (excluding FS5):
When then excavation is designed with allowable standards, engineers generally use minimum safety factors from 1.2 to 1.5 depending on the level of confidence. A minimum safety factor of 1.2 is generally applied on FS3.
With ultimate limit state designs (such as Eurocode 7, and LRFD) the required safety factor must generally be greater than 1.0. In non-linear solutions it might be impossible to achieve exactly 1 on FS4 as this would likely trigger overall failure.

DeepEX 2020: Report Output

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Project: Damariscotta Floodwall

Company: My Company
Prepared by engineer: E. Adler
File number: 143.16541.00017
Time: 3/4/2021 4:32:14 PM

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File: B:\6500\6541 Wright Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP

ANALYSIS AND CHECKING SUMMARY

The following tables summarize critical resuls for all design sections. These results may include wall moments, shears, displacements, stress checks, wall embedment safety factors, basal & slope stability safety factors, etc.

Summary vs Design Section

Base model	Wall Moment	Wall Shear	Wall Displace	Max Support	Critical Support	Embedment	Comments
	(k-ft/ft)	(k/ft)	(in)	Reaction (k/ft)	Check	Wall FS	
Base model	8.14	2.93	0	No supports	No supports	1.372	Calculation successful

Extended Summary

Table: Extended summary for all design sections.

Design Section	Calculation Result	Wall Displacement	Settlement
Name		(in)	(in)
Base model	Calculation successful	0.54	N/A

Table: Extended summary for wall moments and shears for all design sections.

Design Section	Wall Moment	Wall Moment	Wall Shear	Wall Shear
Name	(k-ft/ft)	(k-ft)	(k/ft)	(k)
Base model	8.14	8.14	2.93	2.93

Table: Extended summary for wall stress checks for all design sections.

Design Section	STR Combined	STR Moment	STR Shear	Wall Concrete Service
Name	Wall Ratio	Wall Ratio	Wall Ratio	Stress Ratio FIC
Base model	0.492	0.492	0.268	N/A

Table notes:

STR Combined: Combined stress check, along eccentricity line considering axial load and moment (demand/capacity).
STR Moment : Moment stress check, assuming constant axial load on wall (demand/capacity).
STR Shear : Shear stress check (shear force demand/wall shear capacity).

Table: Extended summary for support results for all design sections

Design Section	Max Support	Max Support	Critical	STR Support	Support Geotech
Name	Reaction (k/ft)	Reaction (k)	Support Check	Ratio	Capacity Ratio (pull
Base model	No supports	No supports	No supports	No supports	No supports

Table notes:

STR Support ratio: Critical structural stress check for support (force demand/structural capacity).
Support geotech capacity ratio: Critical geotechnical capacity stress check (demand/geotechnical capacity).
Critical support check: Critical demand/design capacity ratio (structural or geotechnical).

Table: Summary for basal stability and wall embedment safety factors from conventional analyses.

Design Section	FS	Toe FS	Toe FS	Toe FS
Name	Basal	Passive	Rotation	Length
Base model	1000	2.346	1.372	1.591

Table notes:

FSbasal : Critical basal stability safety factor (relevant only when soft clays are present beneath the excavation).
TOE FS Passive : Safety factor for wall embedment based on FS= Available horizontal thrust resistance/Driving hor. thrust.
TOE FS Rotation: Safety factor for wall embedment based on FS= Available resisting moment/Driving moment.
TOE FS Length : Safety factor for wall embedment based on FS= Available wall embedment/Required embedment for FS=1.0

Table: Summary for wall embedment safety factors from elastoplastic analyses.

Design Section	FS Mobilized	FS
Name	Passive	True/Active
Base model	N/A	N/A

Table notes:

FS Mobilized Passive : Safety factor= Available horizontal passive resistance/Mobilized passive thrust.
FS True/Active : Soil thrust on retained wall side/Minimum theoretically horizontal active force thrust.

Table: Summary for hydraulic safety factors, water flow, and slope stability

Design Section	Hydraulic	Qflow	FSslope
Name	Heave FS	(ft3/hr)	
Base model	-15.737	4.175E-05	N/A

Max. Moment vs Stage

	Base Model
M stg0 (k-ft/ft)	DS: 0
M stg1 (k-ft/ft)	8.14

Max. Shear vs Stage

	Base Model
V stg0 (k/ft)	DS: 0
V stg1 (k/ft)	2.93

Max. Support F vs Stage

	Base Model
Rmax Stage 0 (k/ft)	DS: 0
Rmax Stage 1 (k/ft)	

STRUCTURAL MATERIALS DATA

Steel

Name	Strength Fy	Fu	Elastic E	Density g
	(ksi)	(ksi)	(ksi)	(kcf)
A36	36	58	29000	0.49
A50	42	60	29000	0.49
A572 GR42	42	60	29000	0.49

Concrete

Name	Strength Fc'	Elastic E	Density g	Tension Strength Ft
	(ksi)	(ksi)	(kcf)	(% of Fc')
Fc 3ksi	3	3122	0.15	10
Fc 4ksi	4	3605	0.15	10
Fc 5ksi	5	4031	0.15	10
Fc 6ksi	6	4415	0.15	10

Steel rebar

Name	Strength Fy	Elastic E
	(ksi)	(ksi)
Grade 60	60	29000
Grade 75	75	29000
Grade 80	80	29000
Grade 150	150	29000
Strands 270 ksi	270	29000
S410	59.4	30434.8
S500	72.5	30434.8
B450C	65.2	30434.8

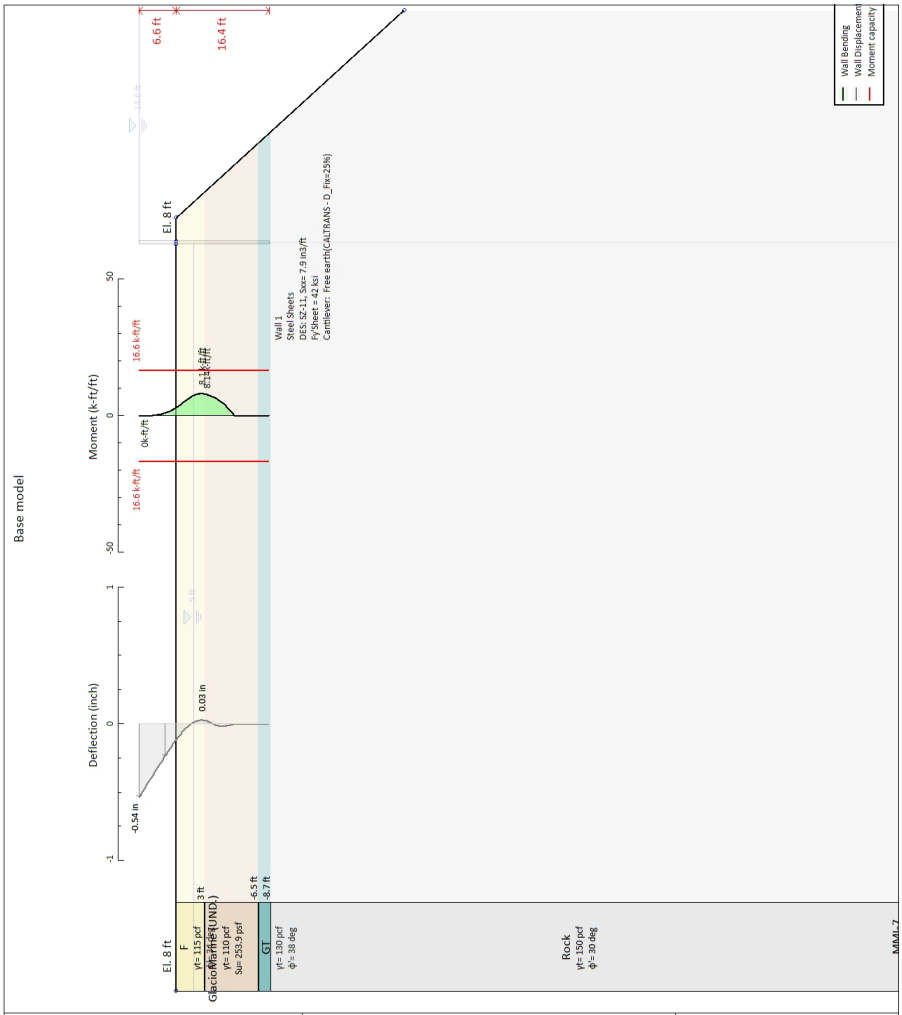
Wood

Name	Ultimate Bending Srtength Fbu	Ultimate Tensile Strength Ftu	Ultimate Shear Strength Fvu	Density g	Elastic E
	(ksi)	(ksi)	(ksi)	(kcf)	(ksi)
Construction Timb	3.525	3.09	1.995	0.05	1200
Regular grade	2.94	2.94	2	0.05	800
Pacific Coast Dougl	7.2	5.88	0.38	0.05	1250
Red Pine	7.2	5.88	0.28	0.05	1280
Southern Pine	7.06	5.88	0.37	0.05	1500

STEEL
Name=material name
fy=fyk= characteristc resistance for steel (for all the codes)
Fu=fuk= ultimate resistence for steel (for all the codes)
Elastic E= Elastic modulus
Density g= specific weight
CONCRETE
Name=material name
f'c=fck= cylindrical resistance for concrete (for all the codes)
Elastic E= Elastic modulus
Density g= specific weight
Tension strength=ft=fctk= characteristic tension resistance for concrete
STEEL REBARS
Name=material name
fy=fyk= characteristic resistance for steel (for all the codes)
Fu=fuk= ultimate resistence for steel (for all the codes)
Elastic E= Elastic modulus
Density g= specific weight
WOOD
Name=material name
Fb=fbk= Ultimate bending strength
Ftu=ftuk= Ultimate tensile strength
Fvu=fvuk= Ultimate shear strength
Density g= specific weight
Elastic E= Elastic modulus

Project: Damariscotta Floodwall
Results for Design Section 0: Base model

ANALYSIS AND CHECKING SUMMARY



Company: My Company Engineer: Engineer	Quick summary	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP		5/7/2021

Summary of Wall Moments and Toe Requirements

Top Wall	Wall	L-Wall	H-Exc.	Max+M/Cap	Max-M/Cap	FS Toe	FS Toe	FS Toe	FS 1 Toe EL.	Slope
(ft)	Section	(ft)	(ft)	(k-ft/ft)	(k-ft/ft)	Passive	Rotation	Embedment	(ft)	Stab. FS
14.6	Wall 1	23	0	8.14/16.56	0/16.56	2.346	1.372	1.591	-2.31	N/A

Summary of Basal Stability and Predicted Wall Movements According to Clough 1989 Method Wall: W

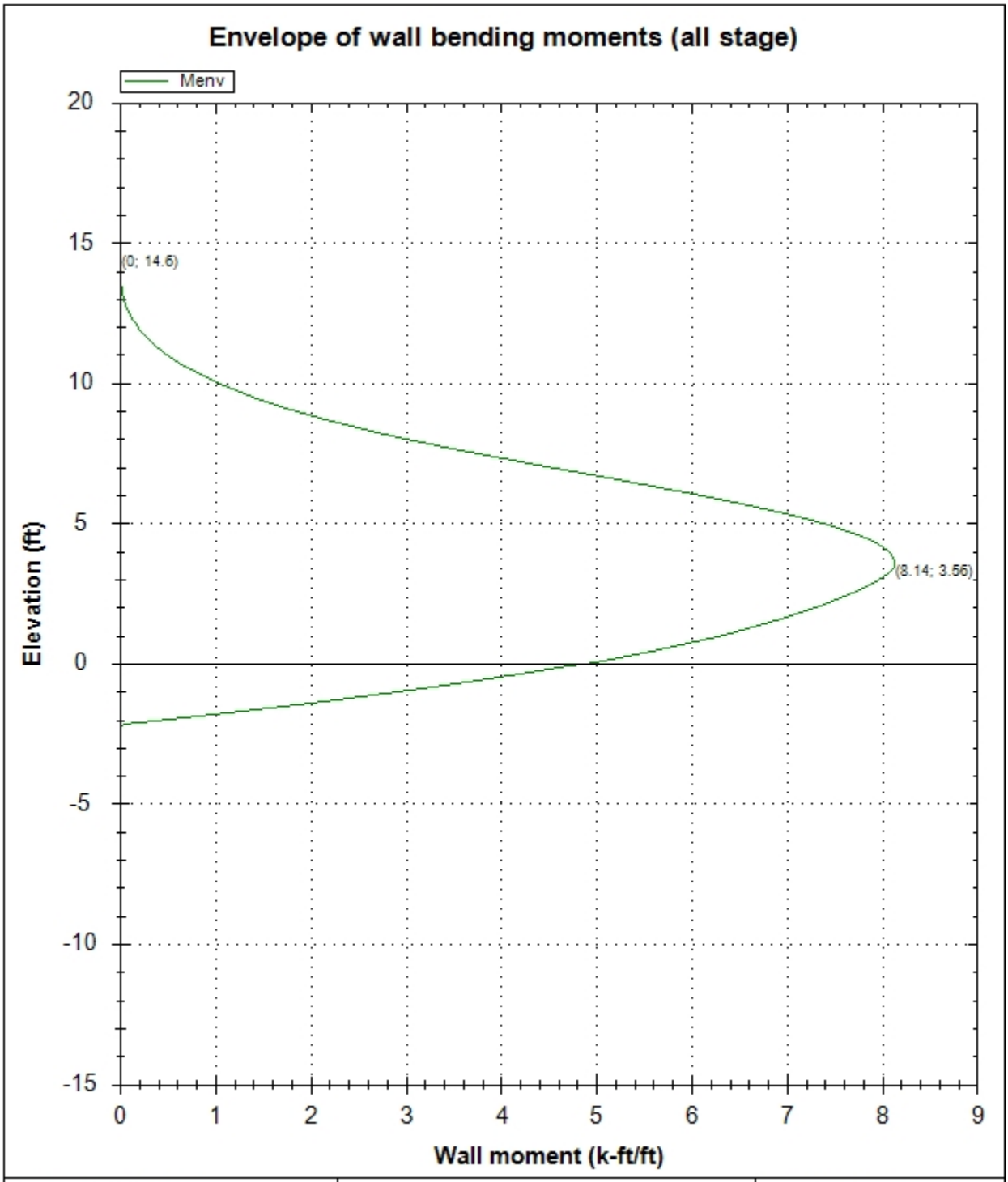
1. FSmin	2. DxMax (in)	2. Stiffness	2. FSbasal	3. Dx/H (%)	3. Stiffness	3. FSbasal
@ stage 0	@ stage	@ DxMax	@ DxMax	@ stage	@ Dx/H max	@ Dx/H max
1000	N/C	N/C	N/C	N/C	N/C	N/C

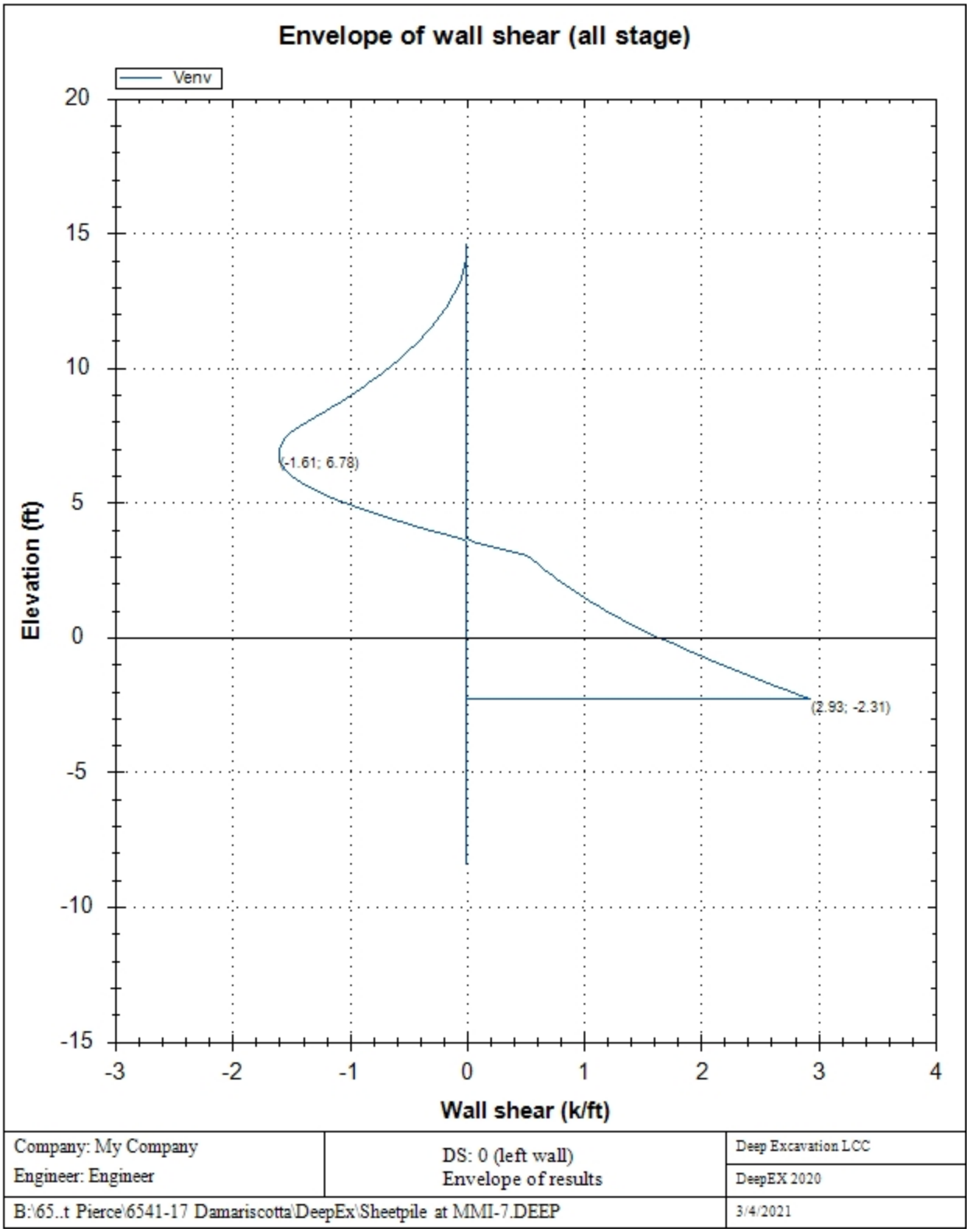
General assumptions for last stage: Stage 1

Concrete Code:	ACI 318-19/1.5
Steel Code:	AISC 360-16 ALL.
1st Wall Limit Equilibrium	California Shoring Manual-11
Drain State Clays	Default
Water γ= 62.4 pcf	Flownet
Drive	Ka
Resist	Kp

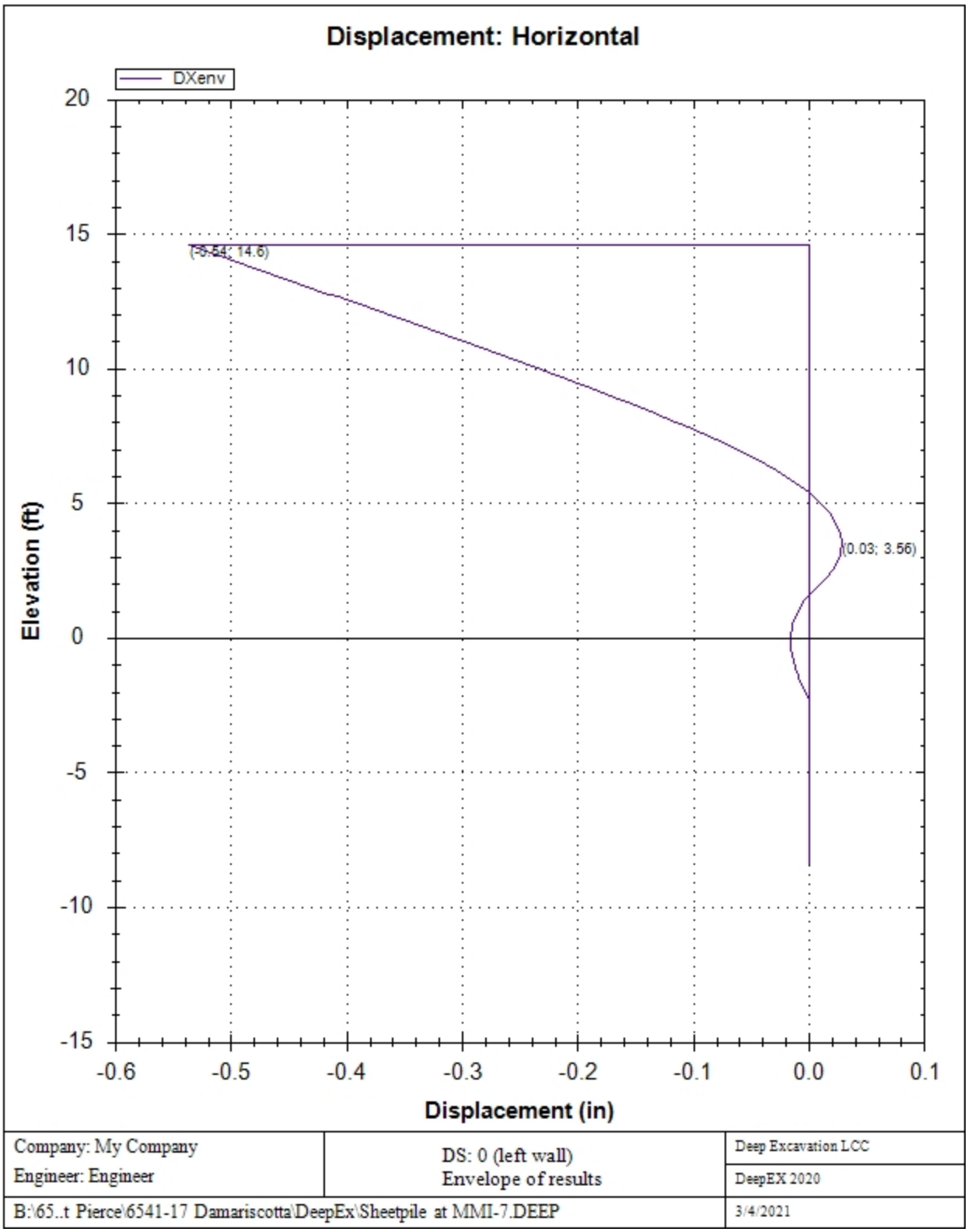
Envelope of results

A sequence of result diagrams for each excavation stage is reported





Company: My Company Engineer: Engineer	DS: 0 (left wall) Envelope of results	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP		3/4/2021



Extended vs Stage

	Calculation Result	Wall Displaceme	Settlement	Wall Moment	Wall Moment
		(in)	(in)	(k-ft/ft)	(k-ft)
Stage 0	Calculated	0	N/A	0	0
Stage 1	Calculated	-0.54	N/A	8.14	8.14

	Wall Shear	Wall Shear	STR Combined	STR Moment	STR Shear
	(k/ft)	(k)	Wall Ratio	Wall Ratio	Wall Ratio
Stage 0	0	0	0	0	0
Stage 1	2.93	2.93	0.492	0.492	0.268

Table notes:

STR Combined: Combined stress check, along eccentricity line considering axial load and moment (demand/capacity).
STR Moment : Moment stress check, assuming constant axial load on wall (demand/capacity).
STR Shear : Shear stress check (shear force demand/wall shear capacity).

	Max Support	Max Support	Critical	STR Support	Support Geotech
	Reaction (k/ft)	Reaction (k)	Support Check	Ratio	Capacity Ratio (pull out
Stage 0	0	0	N/A	No supports	No supports
Stage 1	0	0	N/A	No supports	No supports

Table notes:

STR Support ratio: Critical structural stress check for support (force demand/structural capacity).
Support geotech capacity ratio: Critical geotechnical capacity stress check (demand/geotechnical capacity).
Critical support check: Critical demand/design capacity ratio (structural or geotechnical).

	FS	Toe FS	Toe FS	Toe FS	Zcut	FS Mobilized	FS
	Basal	Passive	Rotation	Length	(nonlinear)	Passive	True/Active
Stage 0	1000	5.038	6.104	191.667	N/A	N/A	N/A
Stage 1	1000	2.346	1.372	1.591	N/A	N/A	N/A

	Hydraulic	Qflow	FSslope
	Heave FS	(ft3/hr)	
Stage 0	2	0	N/C
Stage 1	-15.737	0	N/C

Support Force/S vs Stage

	No Supports
0:Stage 0	No support
1:Stage 1	

Support Force vs Stage

Support Force vs Stage

	No Supports
0:Stage 0	No support
1:Stage 1	

Embedment FS vs Stage

	Min Toe FS	FS1 Passive	FS2 Rotation	FS3 Length (from FS1, FS2)	FS4 Mobilized Passive	FS5 Actual Drive Thrust / Theory
Stage 0	5.038	5.038	6.104	191.667	N/A	N/A
0:Stage 0	1.372	2.346	1.372	1.591	N/A	N/A

Table notes:

FSbasal : Critical basal stability safety factor (relevant only when soft clays are present beneath the excavation).
Wall embedment safety factors from conventional analysis (limit-equilibrium):
FS1 Passive : Safety factor for wall embedment based on FS= Available horizontal thrust resistance/Driving hor. thrust.
FS2 Rotation: Safety factor for wall embedment based on FS= Available resisting moment/Driving moment.
FS3 Length : Safety factor for wall embedment based on FS= Available wall embedment/Required embedment for FS=1.0
Wall embedment safety factors from non-linear analysis:
FS4 Mobilized Passive : Safety factor= Available horizontal passive resistance/Mobilized passive thrust.

FS5 True/Active : Soil thrust on retained wall side/Minimum theoretically horizontal active force thrust.

Tables for stress checks follow: Support force/Design capacity

Support Check vs Stage

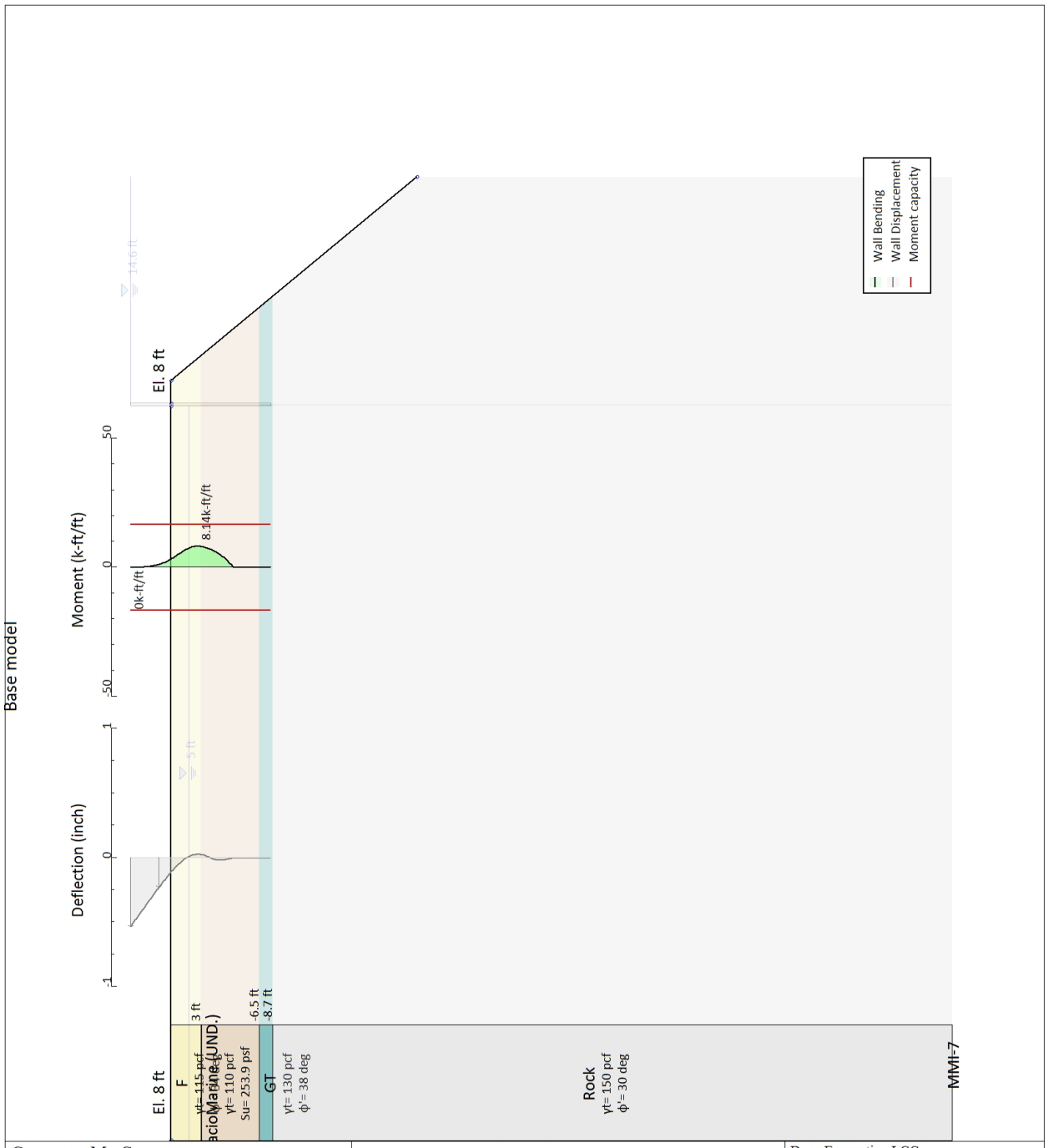
	No Supports
0:Stage 0	No support
1:Stage 1	

Forces (Res. F, M/Drive F, M)

	FS1 Passive	FS2 Rotation	FS3 Length	FS4 Mobilized Passive	FS5 Actual Drive	Fh EQ Soil	Fh EQ Water
	(FxResist/FxDrive)	(Mresist/Mdrive)	(Embedment/ToeFS=1)	(FxPassive/FxPas_Mobili	/ Theory Active		
Stage 0	58.882/11.687	543.48/89.04	23/0.12	N/A	N/A	N/A	N/A
Stage 1	20.184/8.602	131.53/70.62	16.4/10.31	N/A	N/A	N/A	N/A

Reinforcement Requirements

	Parameter Description
Note:	Wall does not use steel reinforcement. Section does not apply.



Company: My Company Engineer: Engineer	Quick summary	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP		3/4/2021

Summary of Wall Moments and Toe Requirements

Top Wall	Wall	L-Wall	H-Exc.	Max+M/Cap	Max-M/Cap	FS Toe	FS Toe	FS Toe	FS 1 Toe EL.	Slope
(ft)	Section	(ft)	(ft)	(k-ft/ft)	(k-ft/ft)	Passive	Rotation	Embedment	(ft)	Stab. FS
14.6	Wall 1	23	0	8.14/16.56	0/16.56	2.346	1.372	1.591	-2.31	N/A

Summary of Basal Stability and Predicted Wall Movements According to Clough 1989 Method Wall: W

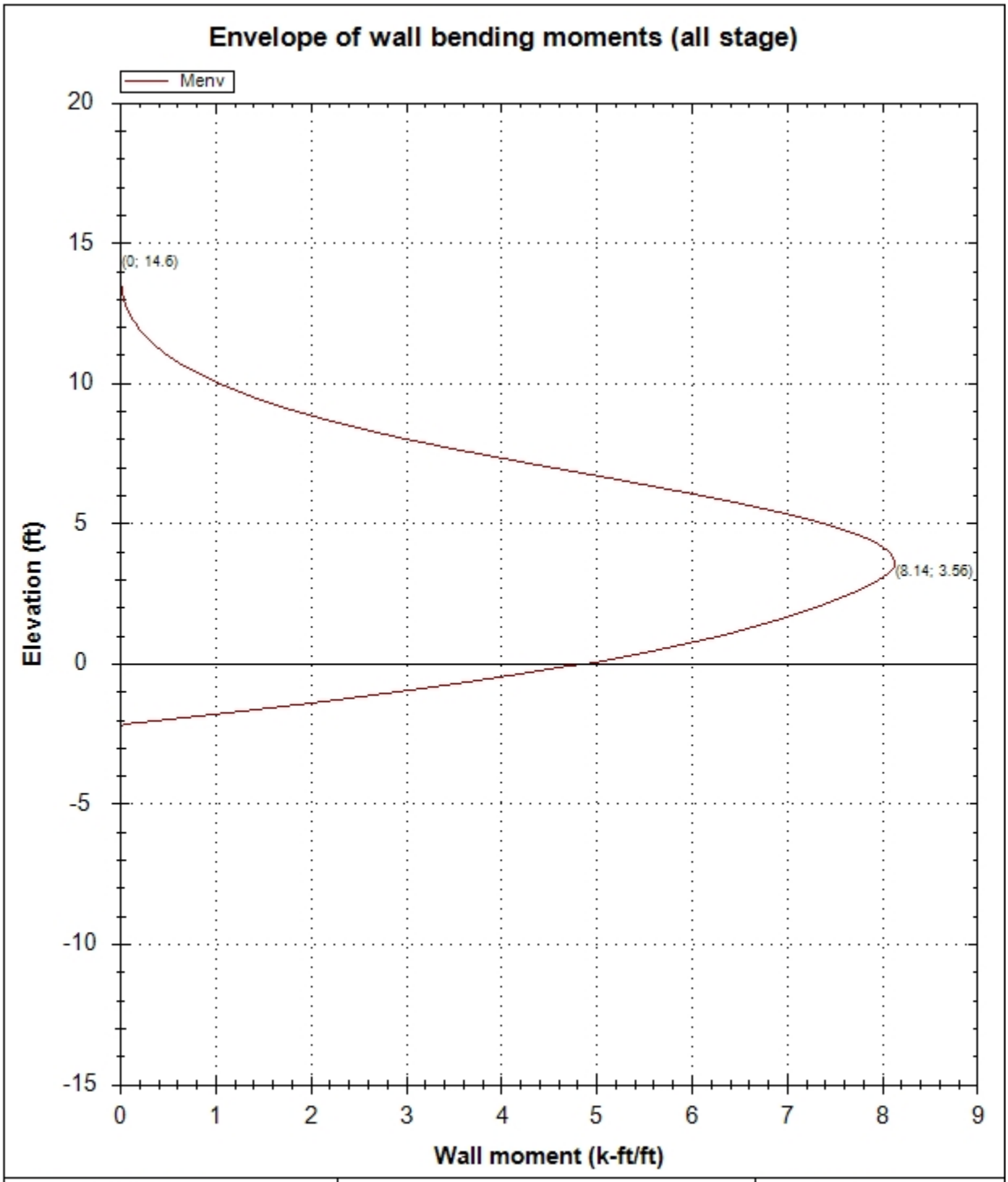
1. FSmin	2. DxMax (in)	2. Stiffness	2. FSbasal	3. Dx/H (%)	3. Stiffness	3. FSbasal
@ stage 0	@ stage	@ DxMax	@ DxMax	@ stage	@ Dx/H max	@ Dx/H max
1000	N/C	N/C	N/C	N/C	N/C	N/C

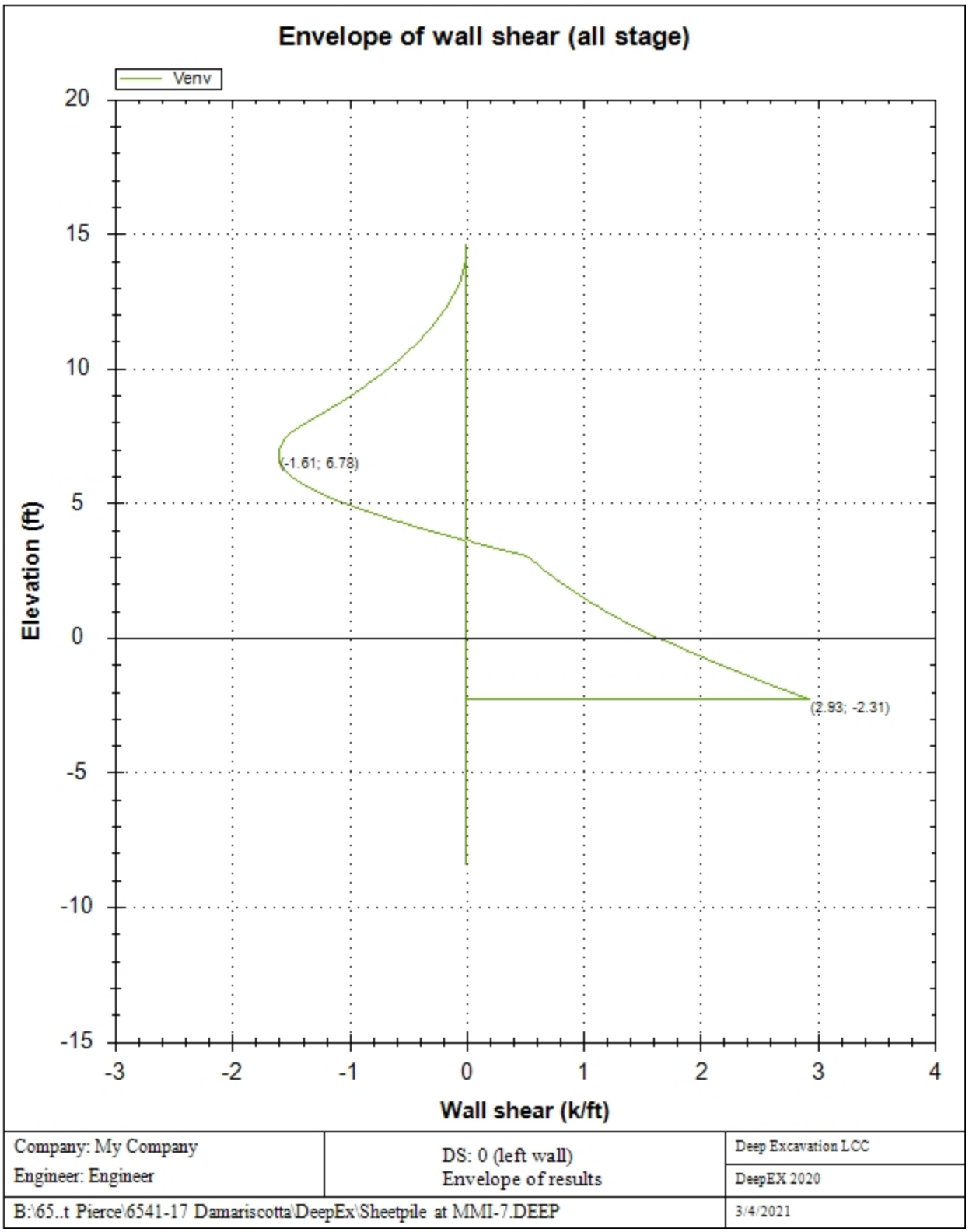
General assumptions for last stage: Stage 1

Concrete Code:	ACI 318-19/1.5
Steel Code:	AISC 360-16 ALL.
1st Wall Limit Equilibrium	California Shoring Manual-11
Drain State Clays	Default
Water γ= 62.4 pcf	Flownet
Drive	Ka
Resist	Kp

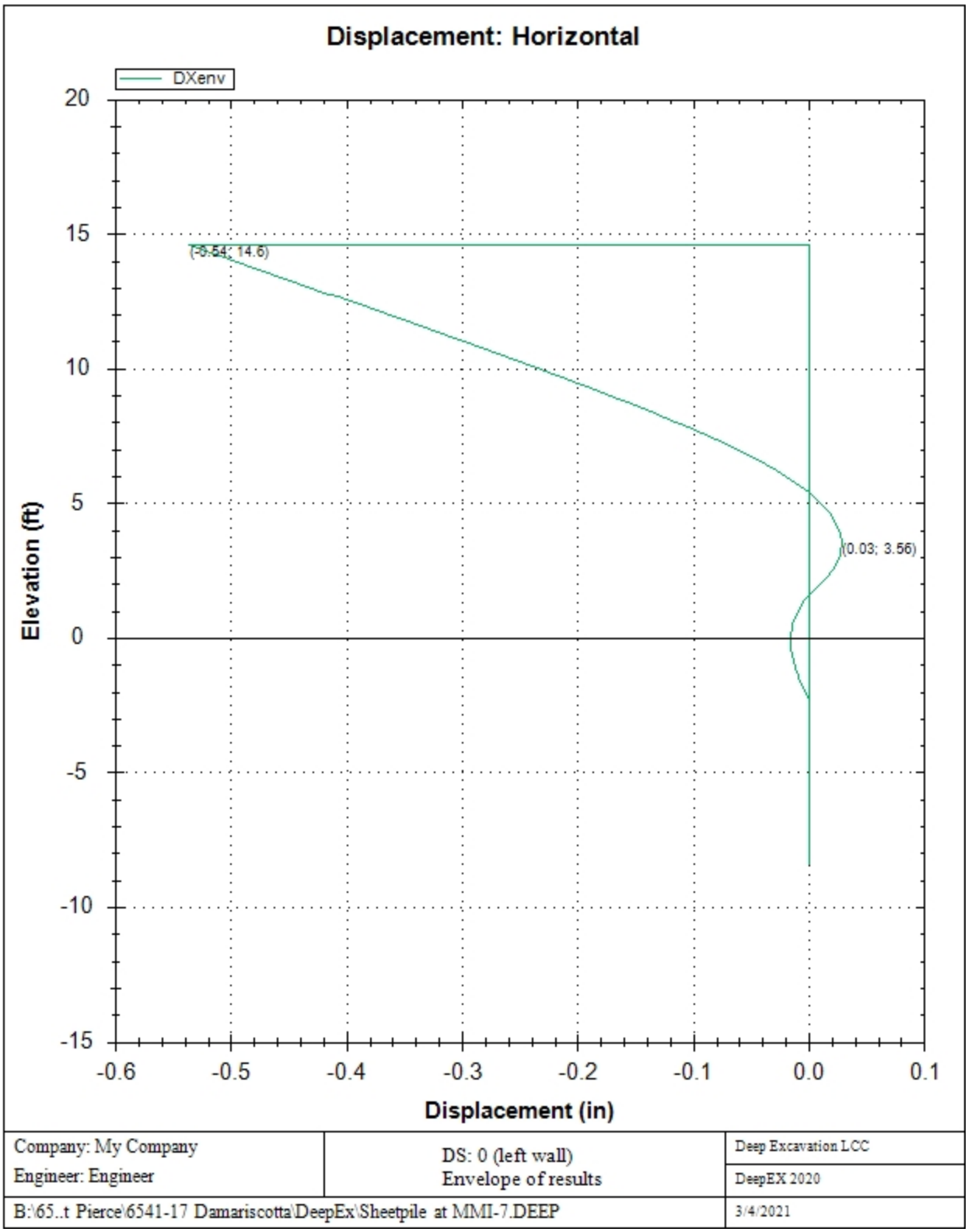
Envelope of results

A sequence of result diagrams for each excavation stage is reported





Company: My Company Engineer: Engineer	DS: 0 (left wall) Envelope of results	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP		3/4/2021



DESIGN APPROACHES AND COMBINATION FACTORS

The Design Approaches (from Codes or Customized by the user) and related safety factors are the following:

Ftan fr=mult factor for friction angle
F C'= safety factor on effective cohesion (Eurocode 7 methods)
F Su'= safety factof for undrained shear strength (Eurocode 7 methods)
F EQ= Load factor for seismic loads
F perm load= Load factor for permanent loads (dead load, etc)
F temp load= Load factor on live loads and other temporary loads
F perm supp= Reduction factor for resistance for pull out checking of permanent tiebacks
F temp supp= Reduction factor for resistance for pull out checking of temporary tiebacks
F earth Dstab= Load factor for driving earth pressures, unfavorable (on retained side)
F earth stab= Safety factor for passive pressures, favorable (on excavation side)
F GWT Dstab (ground water)= Load factor for driving water pressures, unfavorable
F GWT stab (ground water)= Load factor for resisting water pressure, favorable
F HYD Dstab= Load factor for hydraulic heave, unfavorable (hydraulic checking)
F HYD stab= Resistance factor for hydraulic heave, favorable (hydraulic checking)
F UPL Dstab= Load factor for uplift check, unfavorable
F UPL stab= Resistance factor for uplift check, favorable

Stage	Design Code	Design Case	F(tan	F	F	F	F(perm	F(temp	F(perm	F(temp	F Earth	F Earth	F GWT	F GWT	F HYD	F HYD	F UPL	F UPL
	Name		fr)	(c')	(Su)	(EQ)	load)	load)	sup)	sup)	(Dstab)	(stab)	(Dstab)	(stab)	(Dstab)	(stab)	(Dstab)	(stab)
0	Default	Service Factors	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	Default	Service Factors	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

SOIL DATA

Name	g tot	g dry	Frict	C'	Su	FRp	FRcv	Eload	rEur	kAp	kPp	kAcv	kPcv	Vary	Spring	Color
	(pcf)	(pcf)	(deg)	(psf)	(psf)	(deg)	(deg)	(ksf)	(-)	NL	NL	NL	NL		Model	
F	115	115	34	0	N/A	N/A	N/A	300	3	0.28	3.54	N/A	N/A	True	EXP	
GlacioMarine	110	110	17	200	253.9	21.1	30	600	3	0.47	2.12	0.33	3	True	EXP	
GT	130	130	38	0	N/A	N/A	N/A	900	3	0.24	4.2	N/A	N/A	True	EXP	
Rock	150	150	30	0	N/A	N/A	N/A	10000	3	0.33	3	N/A	N/A	True	Linear	

Name	Poisson	Min Ka	Min sh	ko.NC	nOCR	aH.EXP	aV.EXP	qSkin	qNails	kS.nails	PL
	v	(clays)	(clays)	-	-	(0 to 1)	(0 to 1)	(psi)	(psi)	(k/ft3)	(ksi)
F	0.35	-	-	0.441	0.5	1	0	12	4.8	20	-
GlacioMarine	0.45	0.2	0.104	0	0.5	0	1	18	12.1	30	-
GT	0.45	-	-	0.384	0.5	1	0	40	19.3	70	-
Rock	0.45	-	-	0.5	0.5	-	-	100	67.7	200	-

gtot = total soil specific weight
gdry = dry weigth of the soil
Frict = friction angle
C' = effective cohesion
Su = Undrained shear strength (only for CLAY soils in undrained conditions, used as a cutoff strength in NL analysis)
Evc = Virgin compression elastic modulus
Eur = unloading/reloading elastic modulus
Kap = Peak active thrust coefficient (initial value, may be modified on each stage according to analysis settings).
Kpp = Peak passive thrust coefficient (initial value, may be modified on each stage according to analysis settings).
Kacv = Constant volume active thrust coeff (only for clays, initial value)
Kpcv = Constant volume passive thrust coeff (only for clays, initial value).
Spring models= spring model (LIN= constant E over the soil layer height , EXP=exponential , SIMC=simplified winkler)
LIN= Linear-Elastic-Perfectly Plastic,
EXP: Exponential, SUB: Modulus of Subgrade Reaction
SIMC= Simplified Clay mode

SOIL BORINGS

Top Elev= superior SOil level

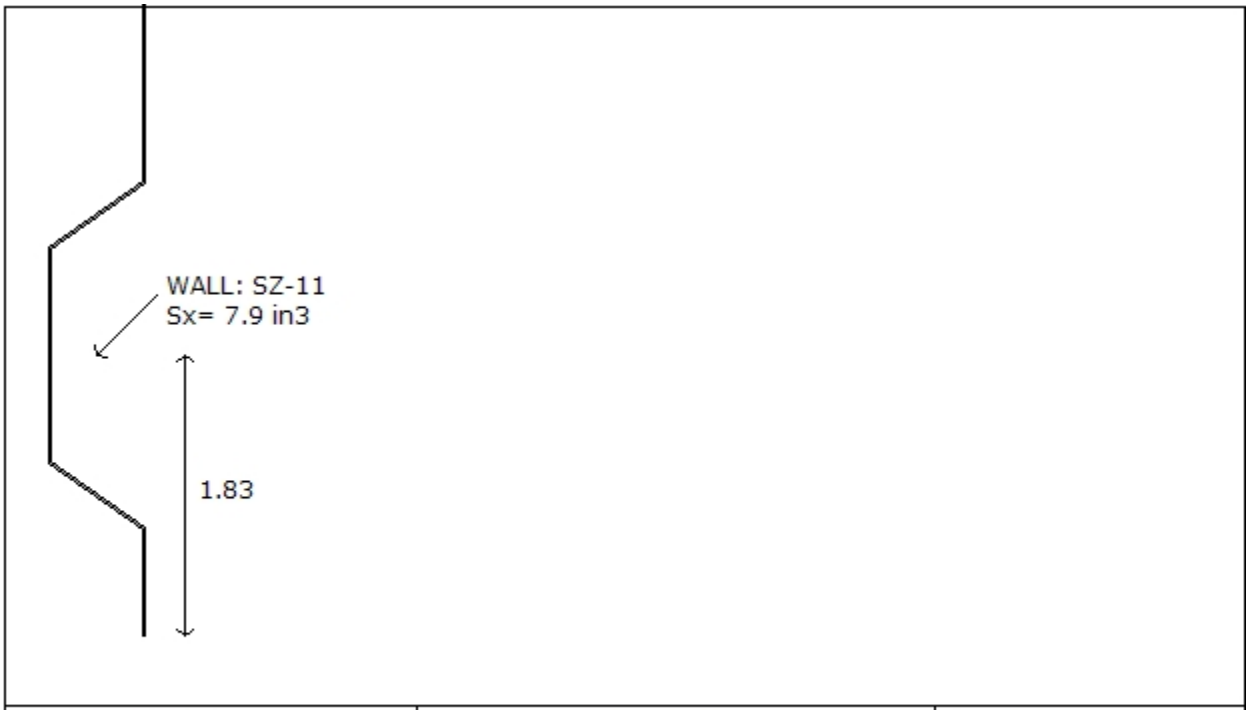
Soil type= type of the soil (sand , clay , etc)
OCR= overconsolidation ratio
K0= at rest coefficient

Name: MMI-7, pos: (-65.617, 8)

Top elev.	Soil type	OCR	Ko
8	F	1	0.44
3	GlacioMarine	1	0
-6.5	GT	1	0.38
-8.7	Rock	1	0.5

WALL DATA

Wall section 0: Wall 1



Wall uses wall section 0: Wall 1
Wall type: Steel sheet piling
Top wall El: 14.6 ft Bottom wall El: -8.4 ft
Hor. wall spacing: 1 ft Wall thickness = 0.62 ft
Passive width below exc: 1 ft Active width below exc: 1 ft Swater= 1 ft
Steel members fy = 42 ksi Esteel = 29000 ksi
Wall friction: Ignored
Steel wall capacities are calculated with AISC 360-16 ALL.
Concrete capacities are calculated with ACI 318-19
Note: With ultimate capacities you may have to use a structural safety factor.
Steel sheet pile properties

Table: Steel Sheet Pile Cross Sectional Properties

DES	Shape	W	A	h	t	b	s	Ixx	Sxx
		(plf)	(in^2/ft)	(in)	(in)	(in)	(in)	(in^4/ft)	(in^3/ft)
SZ-11	Z	10	2.98	7.43	0.179	22	0.179	30	7.9

GENERAL WALL DATA
Hor wall spacing= Wall horizontal spacing
Passive width below exc= spacing for passive thrust pressure for classic analysis
f'c=fck= cylindrical concrete resistance
fyk=fy= steel rebar characteristic resistance
Econc= Concrete Elastic modulus
fctk= characteristic Concrete tension
Esteel= steel elastic modulus
TABULAR DATA (principal parameters)
1) Diaphragm wall (rectangular cross section)
N/A= data not available
Fy=fyk
F'c=fck
D=wall thickness
B=wall width
2)Steel sheet pile
DES=shape (Z or U)
W=width per unit of length
A=area
h=height
t=horizontal part thickness
b=width of the single sheet pile part
s=inclined part thickness
Ixx=strong axis inertia (per unit of length)
Sxx=strong axis section modulus (per unit of length)
3)Secant piles wall, Tangent piles wall, soldier piles, soldier piles and timber lagging
W=weight per unit of length
A=area
D=diameter
tw=web thickness
tp= pipe thickness
bf=flange width
tf= flange thickness
k= flange thickness+stem base height
Ixx= strong axis inertia modulus (per unit of length)
Sxx= strong axis section modulus (per unit of length)
rx=radius of gyration about X axis
ry=radius of gyration about Y axis
Iyy=weak axis inertia modulus (per unit of length)
Syy=weak axis section modulus (per unit of length)
rT=radius of gyration for torsion
Cw= warping constant

GENERAL ANALYSIS CRITERIA

Summary of stage assumptions

Name	Analysis	Drive	ka-Mult	Htr T/B	Resist	Res	Contle
	Method	Press		(%)	Press	Mult	Method
Stage 0	Conventional	Ka	N/A	N/A	Kp	N/A	Free Earth
Stage 1	Conventional	Ka	N/A	N/A	Kp	N/A	Free Earth

Name	Support	Axial	Used	Min Toe	Toe	Toe
	Model	Incl	FSwall	FDtoe	FSrot	FSpas
Stage 0		N/A	1.5	5.038	6.104	5.038
Stage 1		N/A	1.5	1.372	1.372	2.346

Name=excavation stage name

Analysis method

springs = Elastoplastic spring analysis used

DR = Drained condition for CLAY model

U = Undrained condition for CLAY model for all the soils

Up = Undrained condition just for selected soil

Limit equilibrium analysis settings

Drive press:

Ka (Active pressure diagram), Ka-Trap = Trapezoid apparent diagram from active pressures x multiplier,

FHWA= Federal Highway Administration apparent pressure diagrams.

Ko = At-rest lateral earth pressures.

Peck = Peck 1969 Apparent earth pressure diagrams.

2 Step rect = Two step rectangular apparent earth pressure diagram.

User def. = User defined apparent earth pressure diagram.

Ka+d (and so on) indicates that wall friction is applied

ka mult = multiplication factor for Ka when Ka-Trap is selected

Htr T/B (%) = trapezoidal pressure scheme, top and bottom triangular percentage of excavation depth H

Resit press = Kp (passive earth pressures)

Res Mult = Safety factor applied directly on resisting pressures (

COntle Method = cantilever analysis method for limit equilibrium analysis.

Support Model: Method for calculating support reactions in limit-equlibrium analysis.

Beam= support reactions beam analysis (uses Blum's method).

Trib= support reactions from tributary height calculations (Can be applied with apparent diagrams).

Axial Incl = Axial loads included for structural design

Used FS wall = Safety factor for axial+bending wall resistance to divide ultimate wall capacities.

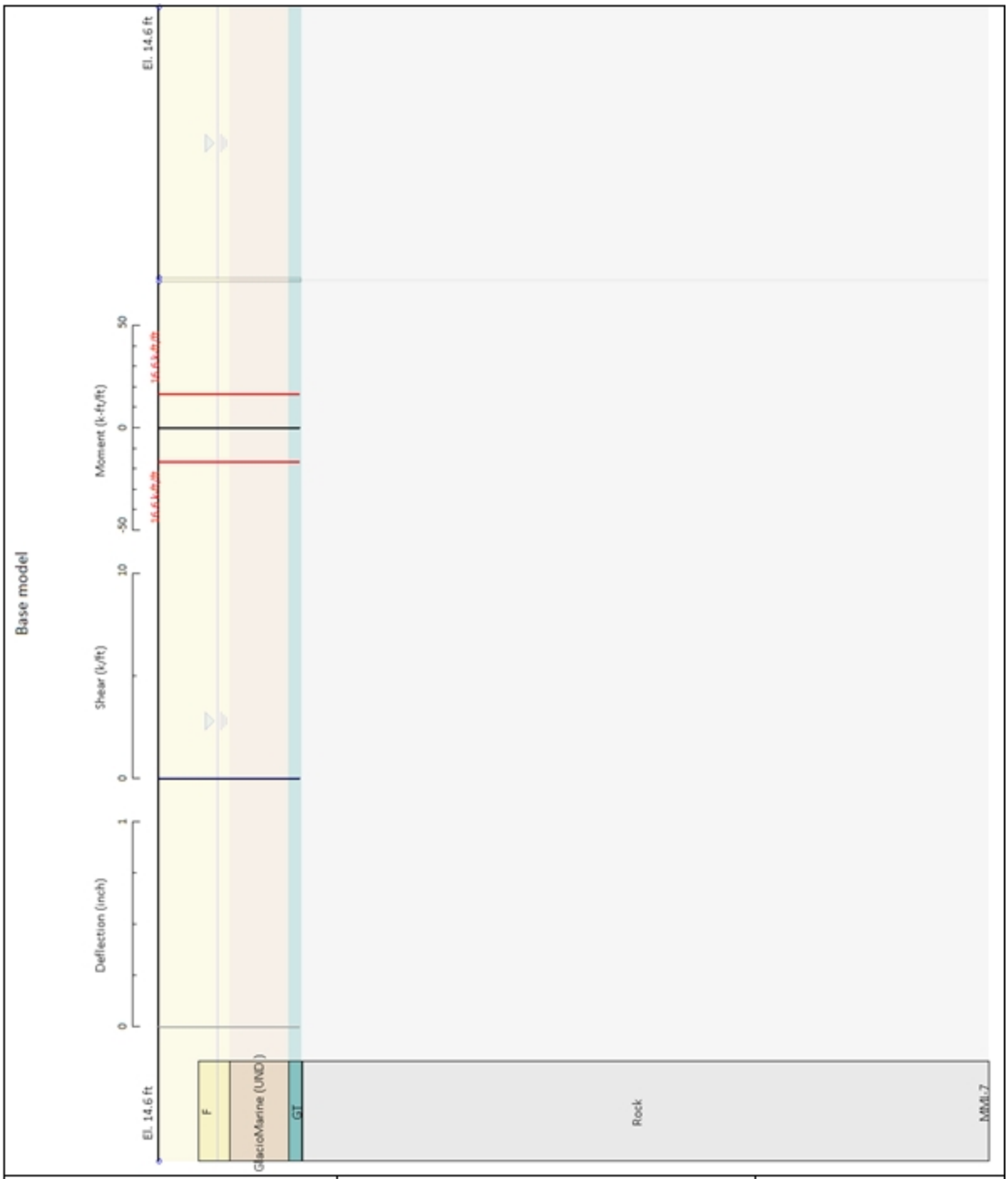
Min FD Toe= embedded minimum safety factor (for limit equilibrium analysis)

Toe FS rot= rotation safety factor (classic for limit equilibrium analysis)

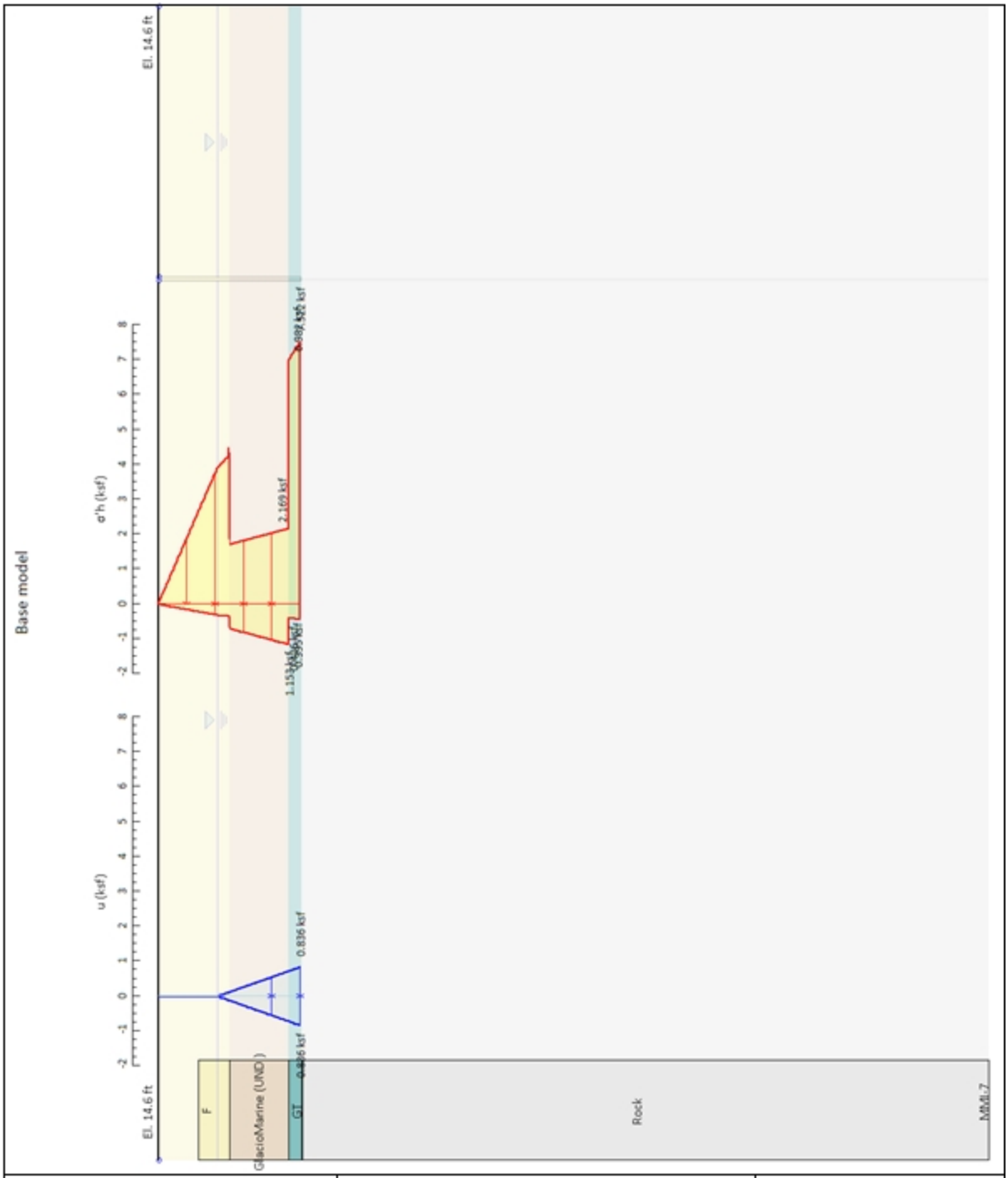
Toe FSpas= driving/resisting pressure safety factor (for limit equilibrium analysis)

EXCAVATION STAGES SKETCHES

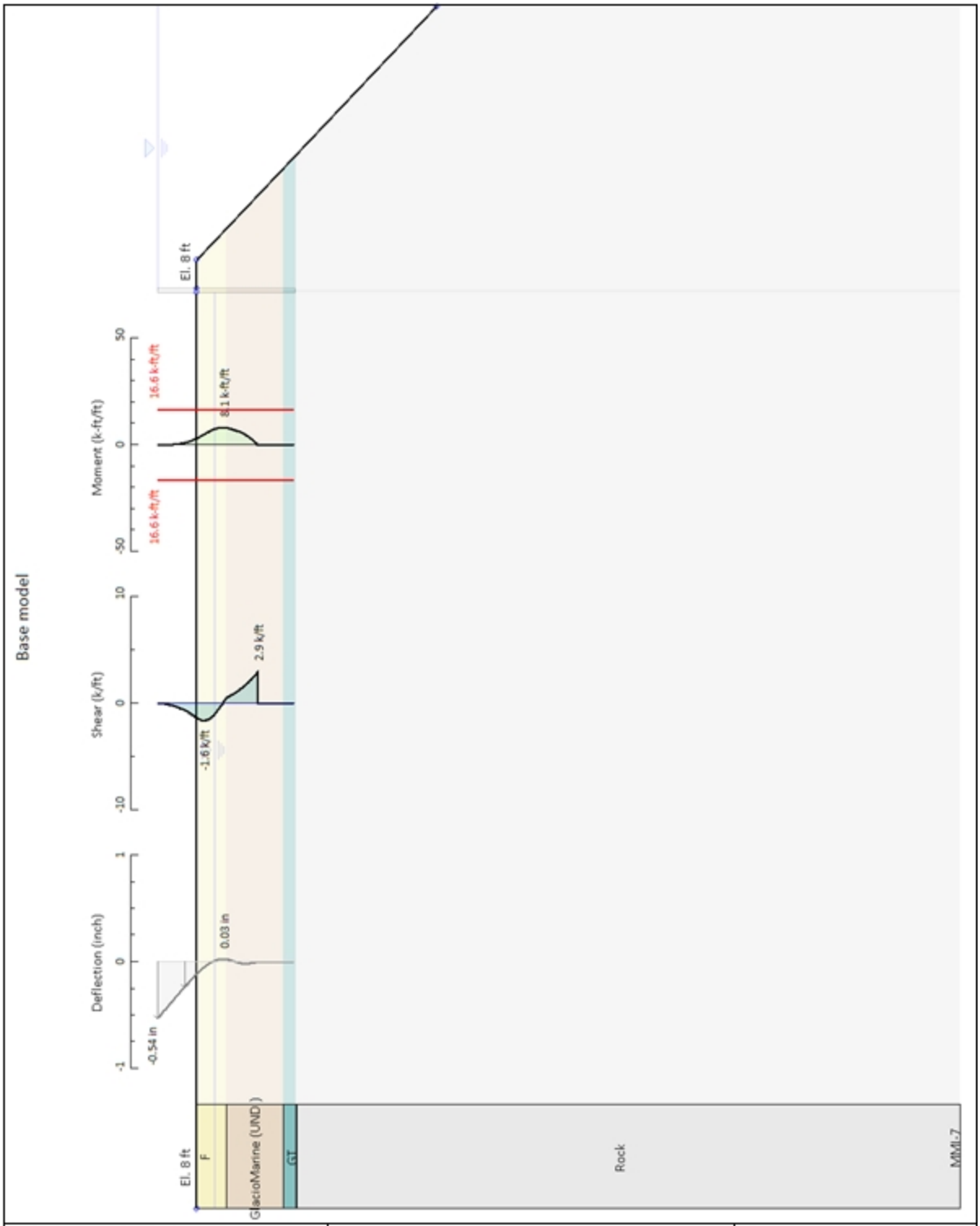
A sequence of figures for each excavation stage is reported



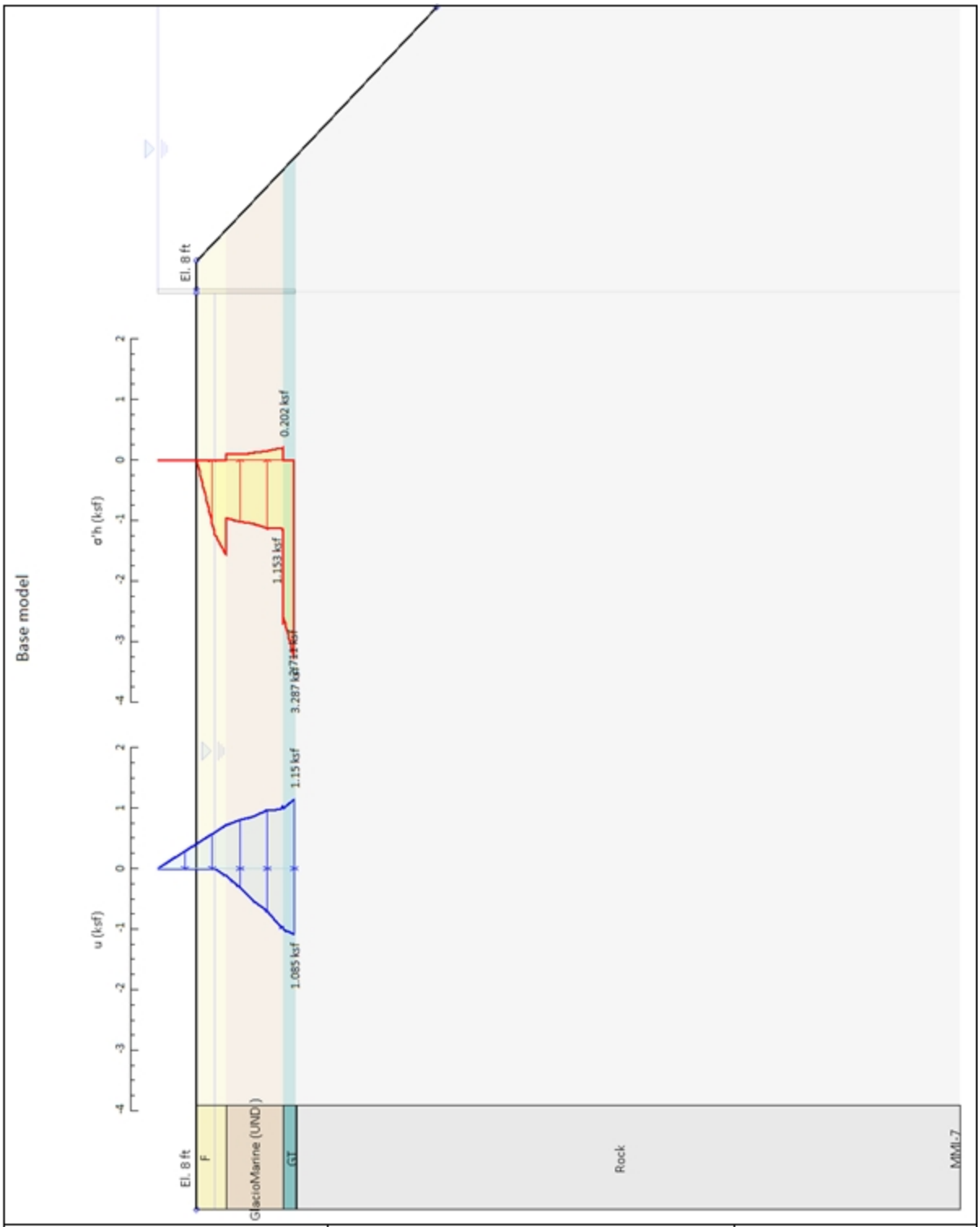
Company: My Company Engineer: Engineer	DS: 0, Stage 0	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP		3/4/2021



Company: My Company Engineer: Engineer	DS: 0, Stage 0	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP		3/4/2021



Company: My Company Engineer: Engineer	DS: 0, Stage 1	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP		3/4/2021



Company: My Company Engineer: Engineer	DS: 0, Stage 1	Deep Excavation LCC DeepEX 2020
B:\65..t Pierce\6541-17 Damariscotta\DeepEx\Sheetpile at MMI-7.DEEP		3/4/2021

Toe stability

Embedment FS vs Stage

	Min Toe FS	FS1 Passive	FS2 Rotation	FS3 Length (from FS1, FS2)	FS4 Mobilized Passive	FS5 Actual Drive Thrust / Theory
Stage 0	5.038	5.038	6.104	191.667	N/A	N/A
Stage 1	1.372	2.346	1.372	1.591	N/A	N/A

Legend: Wall embedment safety factors (toe)
Min Toe FS= Minimum wall embedment safety factor (from all analysis methods)
Limit-equilibrium analysis methods: The following safety factors may not be applicable for all stages.
FS1 Passive: Horizontal force safety factor, FS1= Resisting/Driving force
FS2 Rotation: Rotational safety factor about lowest support, FS2= Resisting moment/Driving moment
FS3 Length (from FS1, FS2): Program determines maximum required wall embedment for safety factor of 1 for methods FS1 and FS2 (say length LFS1). Then FS length= Provided wall embedment/LFS1.
Non-linear elastoplastic analysis safety factors:
FS4 Mobilized Passive: Safety factor on mobilized passive resistance, FS4= Available passive soil resistance/Mobilized passive soil force on excavation side.
FS5 Active Drive Thrust/Theory Active: Ratio of soil thrust on retained side/ Active condition theoretical minimum thrust. This factor is not as critical, and indicates how close to active conditions the model is.
General recommendations on wall embedment (excluding FS5):
When then excavation is designed with allowable standards, engineers generally use minimum safety factors from 1.2 to 1.5 depending on the level of confidence. A minimum safety factor of 1.2 is generally applied on FS3.
With ultimate limit state designs (such as Eurocode 7, and LRFD) the required safety factor must generally be greater than 1.0. In non-linear solutions it might be impossible to achieve exactly 1 on FS4 as this would likely trigger overall failure.

FOUNDATION PROFILE & SOIL CONDITIONS

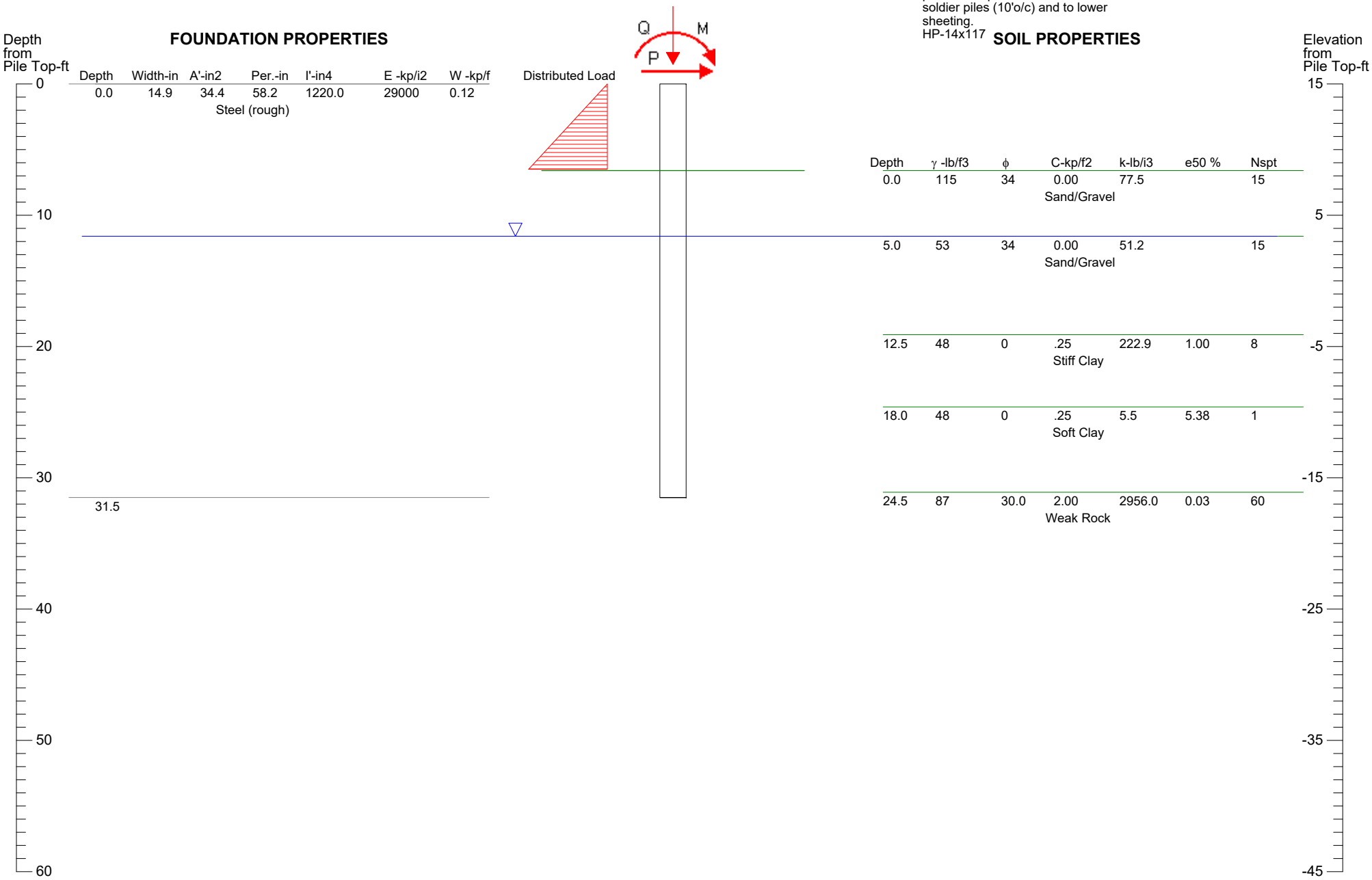
Non-displacement pile: H pile.
Assume shallow sheet piles into glaciomarine soils between soldier piles and a panel that seals to soldier piles (10'o/c) and to lower sheeting.
HP-14x117

FOUNDATION PROPERTIES

Depth	Width-in	A'-in2	Per.-in	I'-in4	E -kp/i2	W -kp/f
0.0	14.9	34.4	58.2	1220.0	29000	0.12
		Steel (rough)				
31.5						

SOIL PROPERTIES

Depth	γ -lb/f3	ϕ	C-kp/f2	k-lb/i3	e50 %	Nspt
0.0	115	34	0.00	77.5		15
			Sand/Gravel			
5.0	53	34	0.00	51.2		15
			Sand/Gravel			
12.5	48	0	.25	222.9	1.00	8
			Stiff Clay			
18.0	48	0	.25	5.5	5.38	1
			Soft Clay			
24.5	87	30.0	2.00	2956.0	0.03	60
			Weak Rock			



Batter Angle=0 (Pile diameter not to scale) Surface Angle=0

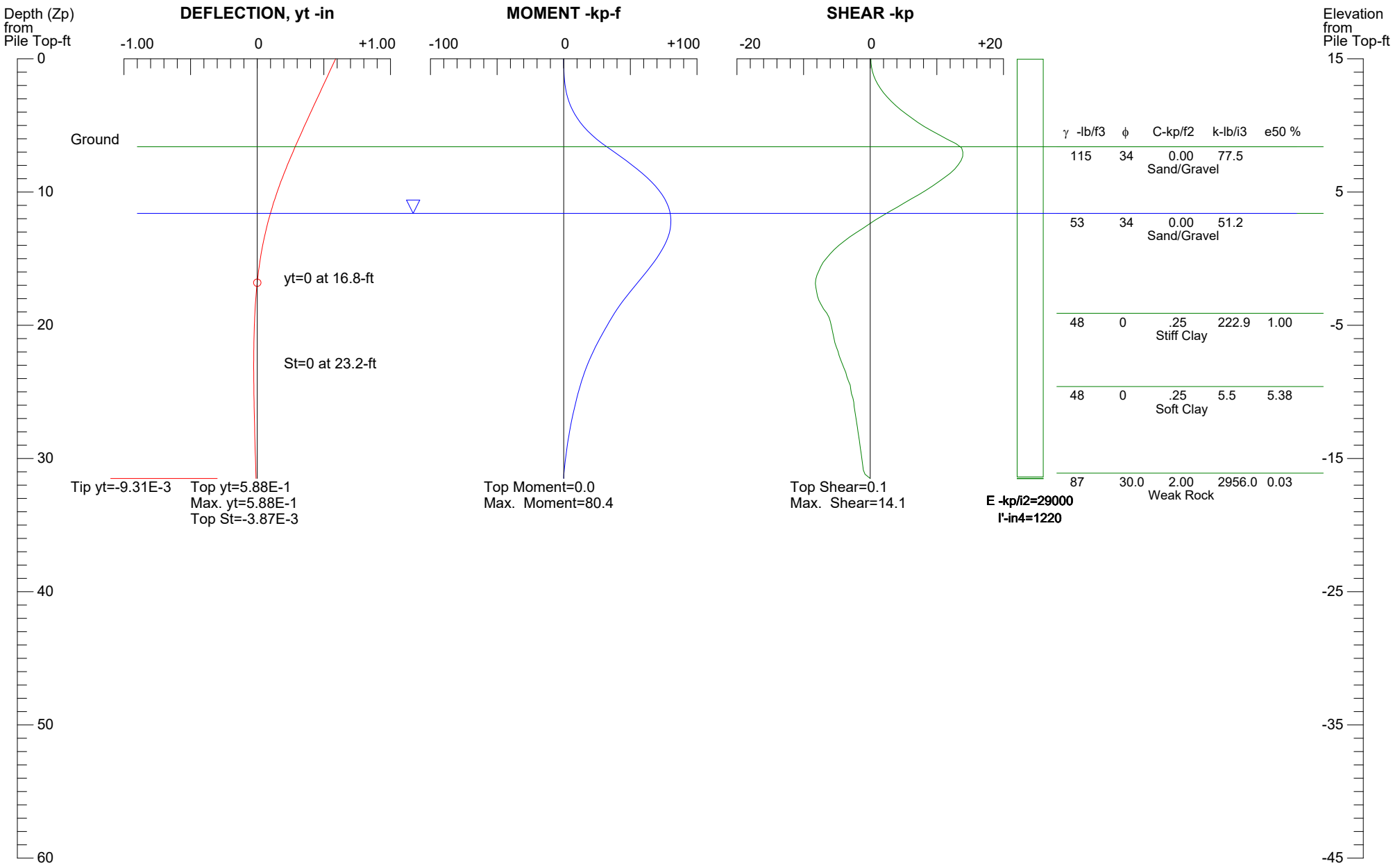
SLR International Corp

Damariscotta Floodwall
Soldier Pile at MMI-3

Figure 1

PILE DEFLECTION & FORCE vs DEPTH

Single Pile, Khead=1, Kbc=1



SLR International Corp

Damariscotta Floodwall
Soldier Pile at MMI-3

Figure 2

```
****************************************************************
                ALLPILE 7
      LATERAL ANALYSIS SUMMARY OUTPUT
    Copyright by CivilTech Software 2005
          www.civiltechsoftware.com
****************************************************************
Licensed to   Erich A. Adler     SLR International Corp.
Date: 3/4/2021  File: B:\6500\6541 Wright Pierce\6541-17
Damariscotta\AllPile\MMI-3.alp

Title 1: Damariscotta Floodwall
Title 2: Soldier Pile at MMI-3


PILE PROFILES:
        Pile Length, L= 31.5 -ft
        Top Height, H= 6.6 -ft
        Slope Angle, As= 0
        Batter Angle, Ab= 0.00

   Distributed Load:
        Depth   Press.          Width
        -ft     -kp/f2          -ft
        0       0               10
        6.5     .43             10

FACTORS AND CONDITIONS:
        Load Factor for Vertical Loads: 1.0    1.0
        Load Factor for Lateral Loads: 1.0
        Loads Supported by Pile Cap: 0 %
        Shear Condition: Static

SINGLE PILE:
        Deduction factor due to Group Effect, R= 1.00
        Vertical Load= 0.10 -kp
        Shear= 0.10 -kp
        Moment= 0.00 -kp-f

Results:
        Top Deflection, yt= 0.58800-in
        Max. Moment, M= 80.42-kp-f
        Top Deflection Slope, St= -0.00387

        Top Deflection, 0.5880-in, OK with the Allowable Deflection= 1.00-in

Note: If program can't find result or the result exceeds the up limits. The result
shows 9999.
```

Notes:

Q - Vertical Load at pile top
P - Lateral Shear Load at pile top
M - Moment at pile top
Xall - Pile top total settlement
yt - Pile top deflection
St - Pile top deflection slope (deflection/unit length)

The Max. Moment calculated by program is an internal moment of shaft due to the loading. Egineers
have to check whether the pile has enough moment capacity to resist the Max. Moment with adequate
factor of safety. If not, the pile may be damaged under the loading.
1 1 1 0 1

R.W. Gillespie & Associates, Inc.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Environmental Consulting • Materials Testing Services

Travis J. Pryor, PLA/LEED-AP
Wright-Pierce
11 Bowdoin Mill Island, Suite 4
Topsham, ME 04086
Email: travis.pryor@wright-pierce.com

Subject: Geotechnical Evaluation
Proposed Waterfront Restroom
Damariscotta, Maine
RWG&A Project No. 0810-006

Dear Mr. Pryor:

R. W. Gillespie & Associates, Inc., (RWG&A) is pleased to provide this geotechnical evaluation related to the planned waterfront restroom in Damariscotta, Maine. This work was performed in general accordance with RWG&A's Proposal P-9720.GI dated 30 November 2017 and Modification No. 1 to Contract for Geotechnical Engineering Services, dated 12 March 2018. The purpose of this evaluation was to obtain subsurface soil and groundwater information on which to base recommendations for geotechnical aspects of design and construction of foundations for the planned building.

1.0 INTRODUCTION

1.01 Proposed Construction

The planned restroom building would be located within more-or-less the same location as a former barber shop building located in the waterfront area. The planned building location is shown on Figure 1, *Locus Map*. It is understood the proposed construction consists of demolition of the existing building and construction of a one-story restroom building with a footprint of about 25 feet by 40 feet. It's understood that the ground floor elevation would be at elevation 12 feet (NAVD88), and that the building will be designed with grade-beams supported on isolated footings and an elevated concrete floor. Lincoln-Haney Engineering Associates, Inc., the project structural engineer, has indicated column loads would be on the order of about 40 kips. RWG&A's understanding of the existing conditions and currently proposed construction is based on review of Drawing No. F-1, *Concept Plan*, prepared by Wright-Pierce, and dated March 2018.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel 23015C0266D, dated 16 July 2015, indicates the building location is located in flood hazard Zone AE with a base flood elevation of 10 feet (NAVD88), which is about 2 feet above current ground surface. It is understood that the intent of the new foundation system design is to meet the National Flood Insurance Program (NFIP) requirements for structures located in flood hazard Zone AE. Measures include the building finished floor above flood level and without backfill, providing break-away walls and/or foundation wall openings, and the use of foundations which extend below design scour depths.

1.02 Scope of Services

This evaluation was performed to develop site-specific soil data, and to make geotechnical evaluations for the proposed construction. Refer to Appendix A for limitations and use of this report. As performed, RWG&A's scope of services included the following items:

1. Reviewed project information and readily available subsurface information.

2. Prepared a geotechnical subsurface exploration and sampling program to obtain subsurface information for use in geotechnical evaluations.

3. Marked the explorations in the field and contacted DigSafe registered public utilities and the Town of Damariscotta to locate underground utilities.

4. Observed, logged, and sampled two test pits excavated by the Town of Damariscotta at a nearby previously planned restroom building location.

5. Arranged to have the subsurface explorations in the currently planned building location performed by a drilling company as a subcontractor to RWG&A. Provided technical monitoring of the exploration activities so that depths, locations, and sampling methods could be modified in response to the subsurface conditions encountered.

6. Performed laboratory tests on selected soil samples recovered from the subsurface explorations to aid in soil description and for determination of engineering properties needed for foundation evaluations.

7. Conducted engineering evaluations of the geotechnical aspects of the planned foundation construction. Emphasis was placed on foundation type(s), allowable foundation loads, lateral load resistance, and groundwater control.

8. Prepared this report summarizing the findings, conclusions, and recommendations of the geotechnical evaluation.

RWG&A's scope of services excluded an environmental site assessment relative to oil and hazardous materials or evidence of a potential release or threat of oil or hazardous materials on, below, or around the site. Any statement in this report, or on the exploration logs, regarding odors or unusual or suspicious conditions is for informational purposes only and is not intended to constitute an environmental assessment. RWG&A's scope of services also excluded any service to investigate or detect the presence of mold or other biological contaminants, or any service that was designed or intended to prevent or lower the risk of the occurrence of an infestation of mold or other biological contaminants (MOBC infestation).

Furthermore, RWG&A's services excluded an evaluation of scour and erosion depth, shoreline stability, or erosion potential, of maximum sea levels, or of sea level rise relative to the proposed construction.

2.0 SUBSURFACE EXPLORATIONS

Exploration activities were coordinated and monitored by RWG&A personnel who prepared the exploration logs. The soils were described in general accordance with *ASTM D2488, Standard*

Practice for Description and Identification of Soils (Visual-Manual Procedure). Logs of the explorations are included in Appendix B. Stratification lines shown on the exploration logs represent the estimated boundaries between the different soil types encountered and approximate refusal depths; the actual transitions will be more gradual and vary over short distances.

Figure 2 shows the approximate locations of the explorations. Exploration locations were selected by RWG&A and were marked in the field by representatives of RWG&A by tape survey methods from identifiable site features. Elevations used in this report and shown on the exploration logs were interpolated from the plans provided. Locations and elevations should be considered accurate only to the degree implied by the methodology used to determine them.

Test Pits: Machine excavated test pits were performed in the previously planned building location on 30 November 2017 by the Town of Damariscotta using a Takeuchi TB153 excavator. The test pits were extended to depths of about 6 to 8.5 feet below ground surface.

Test Borings: The current subsurface exploration program consisted of two test borings designated B-1 and B-2 advanced to depths of about 19.8 to 26.8 feet below local ground surface. Soil borings planned near the west side of the building were not drilled due to the uncertainty of sanitary sewer pipe(s) location. Explorations were drilled on 12 June 2018 by Northern Test Boring, Inc., of Gorham, Maine, using a track-mounted drill rig. Split-barrel sampling with standard penetration testing *(ASTM D1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils)* was generally performed generally continuously through fill and at 5-foot intervals thereafter. Borings were advanced using driven casing and rotary washed boring techniques. Boring B-1 was extended a depth of about 5 feet below top of refusal surface/bedrock using NQ2 rock coring techniques to determine the nature of the refusal surface.

3.0 LABORATORY TESTING

Laboratory testing was performed to assist in soil description and estimation of engineering properties of encountered soils. The laboratory testing program included four grain-size distribution tests and natural moisture content determinations. The grain-size tests were performed in general accordance with *ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates* and natural moisture content tests were performed in general accordance with *ASTM D2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*.

Results of the laboratory tests are presented in Appendix C, *Laboratory Test Results*. All tests were conducted at the RWG&A soil and materials testing laboratory in Biddeford, Maine, which is accredited by the American Association of State Highway and Transportation Officials (AASHTO) for the tests performed.

4.0 SUBSURFACE CONDITIONS

4.01 Subsurface Soils

Subsurface conditions generally consisted of fill underlain by loose silty sand with organic (mud flat) over stiff to very soft silty clay extending to refusal surfaces. The fill consisted of silty sand with gravel and contained construction debris including asphalt, wood, and other organic

material. The fill extended to depths of about 6.5 feet to 10.5 feet below ground surface. The fill was underlain by naturally deposited, loose silty sand with organic material consisting of wood and shells which extended to depths of about 13 feet below ground surface. Stiff to soft silty clay was encountered below the mud flat and extended to refusal surfaces at depths of about 19.8 to 20.8 feet below ground surface. Please refer to the exploration logs in Appendix B for detailed descriptions at specific locations.

4.02 Groundwater

Free water levels were observed at depths of about 3 to 5 feet below ground surface. Water levels observed on the day the explorations were made might have been influenced by the exploration methods (e.g., introduction of wash water) and tides are considered unrepresentative of stabilized groundwater levels. Water levels at the site will fluctuate due to season, temperature, tides, rainfall, nearby utilities, and construction activity in the area.

4.03 Bedrock

Refusal surfaces were encountered at depths ranging from about 19.8 feet to 21 feet below current ground surface. Based on the results of the rock coring and observations during drilling, the refusal surfaces encountered in the explorations are generally interpreted to represent bedrock. The recovered rock core sample from boring B-1 was described as Metawacke of the Bucksport Formation and was very hard, fresh to slightly weathered, aphanitic/amorphous to fine-grained to aphanitic, and gray. The core sample was highly to moderately fractured with jointing that ranged from low to moderately dipping joints depending on location. Joint surfaces were generally slightly weathered, rough, and tight to open. A granitic pegmatite intrusion was noted in the rock core sample at about 24 feet below ground surface.

The rock quality designation (RQD) of a core sample provides an estimate of the in-place bedrock quality; see table below developed by Deere (1968). RQD is calculated by dividing the sum of core pieces 4 inches, or greater, in length by the total length of core run. The RQD of the cored rock was 40 percent indicating poor rock quality. Please refer to the exploration logs for RQD values at specific locations.

RQD (%)	Bedrock Quality
90 to 100	Excellent
75 to 90	Good
50 to 75	Fair
25 to 50	Poor
0 to 25	Very Poor
Source: Engineer Manual 1110-1-2908, Engineering and Design, Rock Foundations	

5.0 ENGINEERING EVALUATIONS

5.01 General

Engineering evaluations for this project are based on the subsurface explorations and construction information currently available to RWG&A. RWG&A should be advised if the current or constructed ground surface elevations vary or are changed from those depicted on the reference plans. The engineering evaluations that follow should be reviewed by RWG&A to confirm their continued applicability if proposed construction changes.

The Town of Damariscotta building code in effect when this report was prepared was the Maine Uniform Building Code, which adopts the *2015 International Building Code*® (IBC) for commercial buildings by reference. It is understood the building will be designed to conform to the 2015 IBC and requirements of the NFIP for structures located in special flood hazard area Zone AE.

Evaluation of long-term erosion processes and determining the most landward shoreline location(s) and lowest service life pre-storm ground surface, excluding localized effects of storm erosion and scour around foundations, are outside RWG&A's scope of services and were not evaluated. RWG&A can prepare a proposal for evaluation of long-term erosion processes if requested.

5.02 Foundations

The primary geotechnical issues regarding the site are the presence of undocumented/uncontrolled fill and soils with organic material beneath the planned building and the location of the building in a FEMA Coastal A Zone (Flood Zone AE). The fill and silty sand with organics is unsuitable for direct or indirect support of spread footings or other types of building foundations and it is understood removal and replacement of these materials is impracticable. FEMA recommends deep foundations for structures located in Coastal A Zones unless the maximum depth of scour and erosion is accurately determined and the foundation extends below the scour depth. The use of ground improvement to support shallow foundations might be technically practicable if the maximum depth of scour and erosion can be accurately determined. For the soil conditions encountered and the uncertain scour depth, deep foundations consisting of timber piles are considered the most suitable foundation. Driven treated timber piles should bear on bedrock. Driven pile lengths of about 20 feet below existing ground surface are anticipated based on the explorations performed.

Lateral load resistance and pile embedment evaluations were based on guidelines for erosion and scour around vertical piles provided in FEMA Document P-55, *Coastal Construction Manual (Fourth Edition)* dated August 2011. For the foundation type planned, the guidelines indicate an erosion and scour depth of 6 times the pile diameter below pre-storm ground surface for piles without grade beams; grade beams and other obstructions can cause locally deeper scour depths depending on exposure to wave action and currents. RWG&A used current ground surface as pre-storm ground surface in geotechnical evaluations. RWG&A should be advised if a lower pre-storm ground surface should be used.

5.03 Construction Considerations

Excavation: The Contractor will need to sequence earthwork activities, and use means and methods that protect against disturbance of abutting properties, nearby buildings and utilities. Temporary excavation support (e.g., driven sheet piles) might be needed to maintain excavation limits within the site and to prevent excessive lateral and vertical movement of active underground utilities. Selecting and designing the means and methods of earthwork construction are the responsibility of the project Contractor.

Construction Dewatering: The on-site soils are sensitive to disturbance when wet. To reduce disturbance of exposed subgrade soils, it will be important to divert runoff, provide positive grading to shed seepage and runoff from flat areas, and compact exposed soils to reduce rutting, ponding, and surface water infiltration.

Groundwater was observed at depths of about 3 to 4 feet below current ground surface in the explorations, and is likely influenced by tidal conditions. RWG&A anticipates that groundwater control can be accomplished through the use of ditches, sumps, and open pumping to depths of about 1 foot below free water levels encountered during construction. Temporary detention ponds, trenches, ditches, and dewatering sumps should not be made within or near areas to be filled.

6.0 RECOMMENDATIONS

6.01 Excavation and Filling

1. Obstructions to pile driving should be removed from the new foundation area. Potential obstructions to pile installation are anticipated to be encountered and include, but are not limited to, previously installed piles, rubble fill, concrete foundations, cisterns, dry wells, and abandoned utilities.

   It is expected obstruction removal will be accomplished by excavation, and that other methods, such as spudding, might be needed. Any existing piles encountered should not be pulled. They may be exposed by excavating around the piles and then cut off below grade. It might be necessary to relocate or increase the number of new piles if obstructions are encountered.

2. Existing utilities to remain in service during and after construction should be protected from excessive lateral and vertical movement, including movements from construction vibrations. The ends of underground pipes and utility conduits outside the proposed building footprint that will be abandoned in-place should be filled with concrete and capped to prevent erosion of material into the conduit or pipe.

3. Site grading should provide positive drainage away from the construction area both during and following construction. It is anticipated that finished grades within and near the proposed building are near current ground surface.

4. In general, it should be practical to accomplish construction dewatering from within open-cut excavations using open pumping methods to a depth of 1 to 2 feet below local

water level. Surface runoff and infiltration of groundwater should be controlled so that excavation, pile driving, pile cap construction, and backfilling are completed in-the-dry.

5. In open areas, backfill should be placed in level, uniform lifts not exceeding 12 inches in uncompacted thickness and compacted with self-propelled compaction equipment. In confined areas, backfill should be placed in lifts not exceeding 6 inches in uncompacted thickness (note: maximum particle size 3 inches) and compacted with hand-operated compaction equipment. Backfill should be compacted to at least 92 percent of the maximum dry density as determined by *ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))*.

6. Only structural fill should be used to backfill excavations and removed obstructions. Structural fill should be a well-graded sand and gravel mixture meeting the following gradation requirements:

Screen or Sieve Size	Percent Passing
6 inches	100
3 inches	75 – 100
No. 4	35 – 70
No. 40	5 – 35
No. 200	0 – 5

(Note: Maximum particle size should be limited to 3 inches within 2 feet of pile caps or if compacted by hand-guided equipment).

7. Utilities within the proposed building should be supported by grade beams and pile caps to minimize abrupt differential settlement due to mixed utility support.

6.02 Foundations

8. The building should be designed to withstand lateral, uplift, and overturning forces due to earthquake and due to the combined effects of wind, hydrodynamic, and hydrostatic loads. The in-place soils encountered in the explorations are not considered susceptible to liquefaction. In accordance with the 2015 IBC, the soil profile at the site is classified as Site Class D.

9. The building should be supported on deep foundations consisting of driven piles. RWG&A recommends the building be supported on *ASTM D25, Standard Specification for Round Timber Piles, Class B* southern yellow pine timber piles. Timber piles should be treated in accordance with the current American Wood Protection Association Standard U1-15, Use Category System: User Specification for Treated Wood, Use Category UC5A Marine Use Northern Waters.

10. Timber piles should be driven to refusal to develop their load carrying capacity at the pile tip. Recommended allowable geotechnical compressive pile capacity and pile dimensions are provided in the table below. If a species of treated timber pile is selected other than the Southern Yellow Pine, RWG&A should be provided the opportunity to review and revise the below allowable pile capacities, as appropriate.

Only one pile size, as determined by the Structural Engineer, should be used in construction. Recommended capacities for two wood pile tip sizes are as follows:

Load	Minimum Tip Diameter (inches)	
	7	8
Minimum Ultimate Geotechnical Capacity For Driving	108 kips	145 kips
Allowable Axial Compression Capacity at Pile Butt (Single Pile)*	42 kips	58 kips
Allowable Axial Uplift Capacity	5 kips	5 kips
* Allowable geotechnical capacity based on a factor of safety of 2.5.		

Piles should be driven to ultimate capacity based on end-of-driving criteria determined from a wave equation analysis of Contractor's pile driving system.

11. Lateral loads from wind and earthquake should be resisted by a combination of battered piles and lateral pile capacity. The pile batter should be no flatter than 3 horizontal to 12 vertical (3H:12V). Allowable working lateral load for vertically installed piles for a tolerable lateral pile head deflection of 1 inch is one kip per pile. Additional lateral capacity can be obtained from the use of battered piles.

    The provided allowable lateral working loads assume a minimum effective embedment depth of 15 feet below pre-storm ground surface. Earth pressure against piles should be ignored in lateral load resistance design.

12. Lateral pile capacity of piles in groups should be reduced based on location in proximity to adjacent piles in accordance with the following reduction factors, where "d" is the outside diameter of the pile.

Center to Center Spacing	Reduction Factor
8d	1.0
6d	0.8
4d	0.6
2d	0.4

13. Pile splices should not be used with treated timber piles.

14. Recommended maximum eccentricity for groups of three or more piles is 3 inches from the design location and 1 inch for single piles and groups of two piles. Piles should be installed as plumb as is practicable unless the pile is designed with a batter for lateral load resistance. A pile should be considered out of plumb if the inclination is greater than 6 inches in 10 feet for groups of 3 or more piles and 1 inch in 10 feet for single piles and groups of two piles. Pile leads should be fixed at two points to control the vertical alignment of driven piles.

15. Documentation describing the proposed pile driving system should be submitted for review by the project Structural Engineer and RWG&A prior to equipment mobilization. The pile driving system should be capable of installing the piles to the specified geotechnical capacity and embedment without damaging the piles. The submittal should include a wave equation analysis of the proposed driving system to evaluate drivability to required embedment and driving stresses.

16. Driving stresses should be limited to a maximum compressive stress of 3.6 kips per square inch (Southern Yellow Pine) for the treated timber piles (i.e., 3 times the allowable design stress of the treated timber pile species).

17. Piles should be driven to the specified criteria with a single or double acting hammer with a rated energy at the anvil as identified in the above table. All piles should be installed in a continuous manner using the same equipment and to approximately the same penetration resistance. Driving criteria should be reviewed by the Structural Engineer and RWG&A based on the pile hammer proposed by the Contractor and the submitted wave equation analysis.

18. Pile driving should be stopped immediately if abrupt high resistance to penetration is encountered. Any sudden decrease in driving resistance should be investigated with regard to the possibility of damage. If the sudden decrease in driving resistance cannot be correlated to load bearing data or subsurface conditions, the pile should be removed for inspection or rejected.

19. Pre-excavation, jetting, and/or augering might be needed for this project. If the Contractor proposes to use any of these methods, the Contractor's submittal should describe his proposed use of these methods in detail, and they should be reviewed by both the Structural Engineer and RWG&A.

20. Adequate provisions should be made to observe pile heave. If measurements indicate more than 1/2 inch of heave to a pile has occurred during installation of adjacent piles, the pile should be re-driven to the required penetration.

6.03 Construction Considerations

21. Dewatering requirements will vary based on groundwater levels, tide level, and weather conditions encountered during construction. In general, it should be practical to accomplish construction dewatering from within excavations by open pumping methods. Footing concrete should not be placed through water. Surface runoff and infiltration of groundwater should be controlled so that foundation construction and backfilling can be completed in-the-dry. Dewatering should be continuous until construction of the foundation is completed and backfilled.

22. Subsurface conditions within the anticipated depths of foundation excavations consist of fill and naturally deposited silty sand with organics. It is anticipated excavations could typically be accomplished using sloped, open-cuts. Temporary excavation support should be used where excavation limits would otherwise extend beyond site boundaries or are in close proximity to underground utilities and other construction sensitive to lateral and vertical movements. Temporary excavations not meeting OSHA criteria

should be designed by a Maine-licensed Professional Engineer engaged by the Contractor.

The Contractor should be aware that excavation height, slope inclination, and/or depth (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations, e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations. Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

23. As a safety measure, it is recommended that all delivery vehicles, haul trucks, and spoil piles be kept a minimum lateral distance from the top of excavations equal to no less than 100 percent of the excavation height. Exposed excavation faces should be protected against the elements.

6.04 Geotechnical Construction Observations

The geotechnical recommendations provided as the basis for design of this project were developed using a limited number of observations and tests. The Owner should be sensitive to the potential need for adjustment in the field. It would be in the best interest of the Owner and project to retain RWG&A to observe geotechnical aspects of foundation construction, observe pile installation, observe general compliance with the design concepts, specifications, and recommendations, and to assist in development of design changes should subsurface conditions differ from those anticipated. Observation improves the likelihood that the design intent will be carried out during construction and allows RWG&A to confirm its design recommendations.

In addition to geotechnical observation, RWG&A can provide full service construction inspection and materials testing. This would include soils and portland cement concrete testing, and special inspection services in fulfillment of building code requirements.

7.0 LIMITATIONS

This report has been prepared for specific application to the waterfront restroom building project in Damariscotta, Maine and for the exclusive use of Wright-Pierce. This work has been completed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. In the event any changes are made in the nature or design of the proposed construction, the conclusions and recommendations of this report should be reviewed by RWG&A.

The recommendations presented are based on the results of a limited number of explorations. The nature of variations between the explorations may not become evident until construction has begun. If variations are encountered, it will be necessary for RWG&A to re-evaluate the recommendations presented in this report. RWG&A requests the opportunity for a general review of the final design and specifications to determine that earthwork and foundation recommendations have been interpreted in the manner in which they were intended.

8.0 CLOSURE

RWG&A appreciates the opportunity to be of service to Wright-Pierce on this project. If you have any questions, or if we may be of further service, please do not hesitate to contact us.

Sincerely,

R.W. GILLESPIE & ASSOCIATES, INC.

Marc R. Grenier, P.E.
Project Geotechnical Engineer

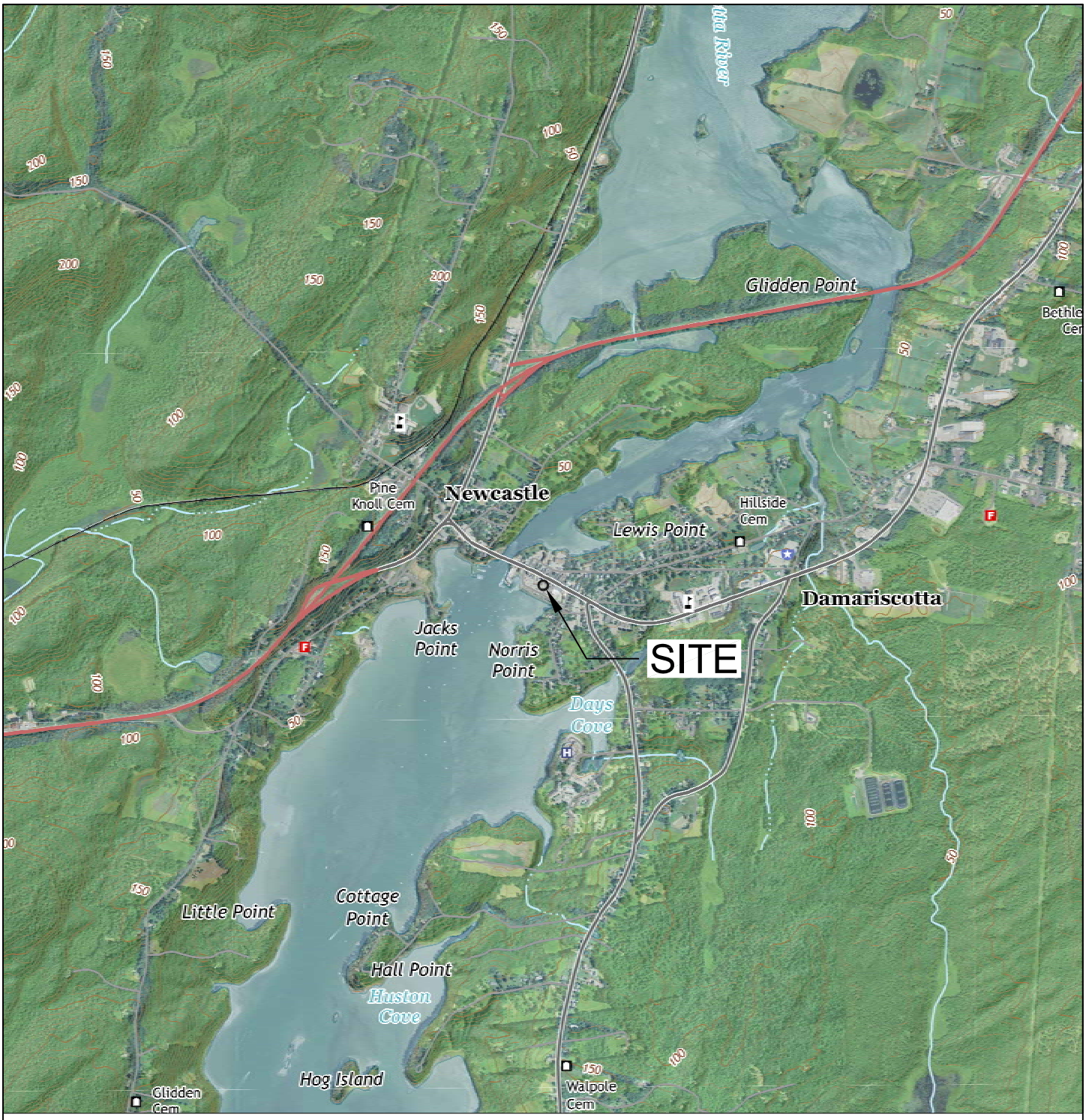
STATE OF MAINE
ERIK J. WIBERG
No. 9178
LICENSED PROFESSIONAL ENGINEER
7/16/18

Erik J. Wiberg, P.E.
Chief Geotechnical Engineer

MRG/EJW:md
In duplicate

FIGURES:
- Figure 1. Locus Map
- Figure 2. Exploration Location Plan

APPENDICES:
- Appendix A. Limitations
- Appendix B. Exploration Logs
- Appendix C. Laboratory Test Results



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SCALE, FEET

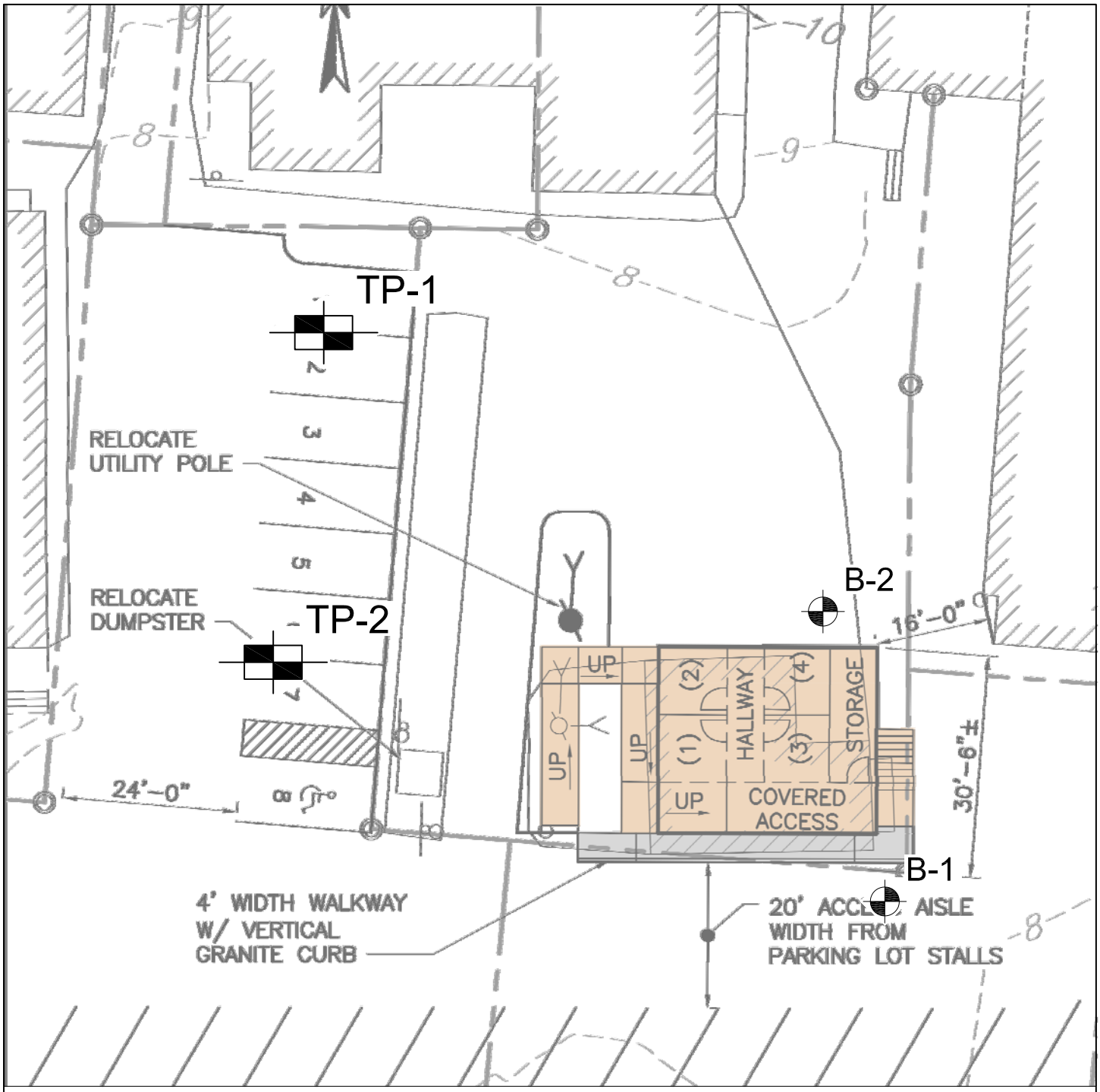
SOURCE:
USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLE OF DAMARISCOTTA, ME, DATED 2014.

FIGURE 1
LOCUS MAP
GEOTECHNICAL EVALUATION
DAMARISCOTTA WATERFRONT RESTROOM
DAMARISCOTTA, MAINE

JULY 2018 PROJECT NO. 0810-006

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Geotechnical Engineering • Materials Testing Servies
Environmental Consulting • www.rwgillespie.com

G:\Autocad\800\810\810-06\FIG 1. LOCUS MAP 0810-006.dwg, 7/9/2018 1:40:24 PM, Adobe PDF (SMALLEST FILE SIZE).pc3



LEGEND:

TP-1 — APPROXIMATE LOCATION OF TEST PIT EXCAVATED JUNE 2016.

B-1 — APPROXIMATE LOCATION OF SOIL BORING DRILLED JUNE 2018.

SOURCE:
DRAWING NO. F-1, TITLED "CONCEPT PLAN", PREPARED BY WRIGHT-PIERCE, DATED MARCH 2018.

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0 20 30 40
SCALE, FEET

FIGURE 2
EXPLORATION LOCATION PLAN
GEOTECHNICAL EVALUATION
DAMARISCOTTA WATERFRONT RESTROOM
DAMARISCOTTA, MAINE

JULY 2018 PROJECT NO. 0810-006

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G:\Autocad\800\810\810-06\FIG 2, ELP 0810-006.dwg, 7/9/2018 1:39:05 PM, Adobe PDF

APPENDIX A

LIMITATIONS

Geotechnical Evaluation
Proposed Waterfront Restroom
Damariscotta, Maine

LIMITATIONS

This evaluation has been limited to consideration of the geotechnical aspects of the proposed Waterfront Restroom Project in Damariscotta, Maine. The purpose of the evaluation was to obtain information regarding subsurface conditions on which to base recommendations about the geotechnical aspects of design and construction of foundations, and seismic considerations. This report is not a technical specification nor is it intended to be used as a specification for bidding or building the project.

This geotechnical evaluation might also aid Contractors responsible for construction of the planned building. However, the recommendations and comments provided hereinafter are not intended to be instructions or directives to the project Contractors. The project Contractors must evaluate construction issues encountered in the work on the basis of their experience with similar projects taking in to account their own methods and procedures.

RWG&A has not considered the construction from a worker safety perspective. Construction safety is the responsibility of the project Contractor, who is also solely responsible for the means, methods, and sequencing of construction operations. RWG&A is providing this information as a service to Wright-Pierce. Under no circumstances should this information be interpreted to mean that RWG&A and/or the Wright-Pierce are assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

RWG&A's services excluded:

- Any environmental site assessment relative to oil and hazardous materials or evidence of a potential release or threat of oil or hazardous materials on, below, or around the site. (Note: any statement in this report, or on the exploration logs, regarding odors or unusual or suspicious conditions is for informational purposes only and is not intended to constitute an environmental assessment.)

- Any service to investigate or detect the presence of mold or other biological contaminants, or any service that was designed or intended to prevent or lower the risk of the occurrence of an infestation of mold or other biological contaminants (MOBC infestation).

- Any service to evaluate shoreline stability or erosion potential, maximum sea levels, or of sea level rise relative to the proposed construction.

APPENDIX B

EXPLORATION LOGS

Geotechnical Evaluation
Proposed Waterfront Restroom
Damariscotta, Maine

RWG&A, Inc. soil descriptions are based on the following criteria. Descriptive terminology is used to denote the grain size and percentage of each component. The soil descriptions are based on visual-manual classification procedures, Standard Penetration Test results, and the results of laboratory testing on selected soil samples, where available. The Unified Soil Classification Group Symbol will be indicated in capital letters.

COMPONENT DEFINITIONS BY GRADATION SIEVE LIMITS

Materials	Definitions	Fractions	Upper	Lower
Boulders	Material too large to pass through an opening 12 in. square.			
Cobbles	Material passing through a 12 in. opening and retained on the 3 in. sieve.			
Gravel	Material passing the 3 in. sieve and retained on 1/4" (No. 4 sieve).	Coarse Fine	3 in. 3/4 in.	3/4 in. 1/4 in.
Sand	Material passing the No. 4 sieve and retained on the No. 200 sieve.	Coarse Medium Fine	No. 4 (1/4") No. 10 (1/8") No. 40 (1/32")	No. 10 (1/8") No. 40 (1/32") No. 200
Silt	Material passing the No. 200 sieve which is usually non-plastic in character and exhibits little or no strength when air dried.		No. 200	
Clay	Material passing the No. 200 sieve which can also be made to exhibit plasticity within a certain range of moisture contents and which exhibits considerable strength when air dried.		No. 200	

SOIL DESCRIPTION

General

Soils are described as to the Unified Soil Classification Systems Group Symbol, density or consistency, color, grain size distribution and other pertinent properties such as plasticity and dry strength. The RWG&A order of descriptors is as follows:

1. USCS Group Name and Symbol, or Fill
2. Density or Consistency
3. Moisture
4. Grain Size & Constituent percentages
5. Other pertinent descriptors
6. Color

DESCRIPTIVE TERMINOLOGY DENOTING COMPONENT PROPORTIONS

Descriptive Terms	Range of Proportions
Noun (major component)	≥50%
Adjective (secondary component)	20 - 50%
Some (third component)	25 - 45%
Little (second or third component)	15 - 25%
Few (second or third component)	5 - 15%
Trace	0 - 5%
With	Amount of component not determined. Used as a conjunction only. Does not indicate component percentile

OTHER DESCRIPTIVE TERMS

Where appropriate, geological classifications are also used (Glacial Till, etc.)

TYPICAL DESCRIPTIONS

SAND WITH SILT (SP-SM): Medium dense, moist, coarse to medium sand, few silt, brown.
FILL; Loose, dry, fine sand, some gravel and silt, with brick and concrete fragments, dark brown.
SILTY CLAY (CL); Very stiff, moist, silty clay, olive-brown.

DENSITY OR CONSISTENCY OF SOILS

COHESIVE SOILS

Consistency of Cohesive Soils	Standard Penetration Test (Blows Per Foot) (N)	Undrained Shear Strength (TSF)
Very Soft	0 - 2	Below 0.13 (250 psf)
Soft	2 - 4	0.13 to 0.25 (to 500 psf)
Medium	4 - 8	0.25 to 0.5 (to 1,000 psf)
Stiff	8 - 15	0.5 to 1.0 (to 2,000 psf)
Very Stiff	15 - 30	1.0 to 2.0 (to 4,000 psf)
Hard	Over 30	over 2.0 (over 4,000 psf)

Consistency of cohesive soils is based upon field vane shear, torvane, or pocket penetrometer, or laboratory vane shear or Unconsolidated-Undrained Triaxial Compression tests. Consistency of cohesive soils is based upon the Standard Penetration test when no other data is available.

COHESIONLESS SOILS

Density of Cohesionless Soils	Standard Penetration Test (Blows per Foot) (in)
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	over 50

PENETRATION RESISTANCE

STANDARD PENETRATION TEST (ASTM D1586) - a 2.0-inch diameter, 1-3/8 inch inside diameter split barrel sample is driven into soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The total number of blows required for penetration from 6 to 18 inches is the Standard Penetration Resistance (N).

COBBLES AND BOULDERS

The percentage of cobbles and boulders is estimated visually where possible.

Descriptive Term	Estimated Percentage
Very Few	0 - 10%
Few	10 - 25%
Common	25 - 40%
Numerous	40 - 50%

If the percentage cannot be determined, as in a typical test boring, then use "with" to indicate the presence of cobbles and/or boulders. (i.e., gravelly sand with cobbles and boulders).

FILLS

The following terminology is used to denote size range of man-made materials within fill deposits:

Size Range	Comparative Soil Terms
<No. 200 Sieve	Silt - size
No. 200 to 1/4 in.	Sand - size
1/4 in. to 3 in.	Gravel - size
3 in. to 12 in.	Cobble - size
>12 in.	Boulder - size

SUPPLEMENTAL SOIL DESCRIPTION TERMINOLOGY

Term	Example	
Seam	Typically 1/16 to 1/2 inch thick	1/4 inch sand seams
Layer	Greater than 1/2 inch thick	2-inch sand layers
Occasional	One or less per foot of thickness	
Frequent	More than one per foot of thickness	
Interbedded	Alternating soil layers of different composition	
Varved	Alternating thin seams of silt and clay	
Mottled	Variations in color	

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R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-1

Total Depth (ft): 26.8

Sheet 1 of 2

Project Name: Damariscotta Waterfront Restroom
RWG&A Project No. 0810-006
Location: Damariscotta, Maine
Client: Wright-Pierce
RWG&A Representative: Dan Burgess
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 4'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 06/12/2018
Date Completed: 06/12/2018
Surface Elevation: 8 Feet
Drilling Method: Drive + Wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	ASPHALTIC PAVEMENT (1.5 inches).	11	10 14 12	26	7	GS MC
				FILL; Gravelly, coarse to medium sand, little silt, brown.					
			S-2	FILL; Silty sand with gravel, brown. Trace amounts of pavement, medium dense.	7	12 12 12 15 18	27		
5			S-3		5	3 3 3	6		
				Becomes wet.					
			S-4		5	3 4 4 5	9		
				Sand becoming fine, wet, some silt, gravelly, brown.					
10			S-5		13	5 2 3 3 4	6		
				SILTY SAND WITH ORGANIC (SM); Loose, wet, some organics, wood traces, shells, dark gray.					
				SILTY CLAY (CL); Soft to very soft, wet, clay, with silt, dark gray to olive gray.					
15			S-6		24	2 2 2 2	4	33	MC
20			S-7		NR	WOH 50/5"	100+		
			R-1	Top of bedrock. Advance to 21.8' with roller bit and began rock core. Very hard, fresh to slightly weathered, medium gray, aphanitic/amorphous to fine grained, METAWACKE (Bucksport Formation). Highly to moderately fractured with slightly weathered, low to moderately dipping fractures/ joints, tight to open, generally rough fracture surface with some iron staining. Recovery = 24"/60"=40% RQD = 51% At 24' granite intrusion of pegmatite - very hard, fresh to very slightly weathered, white and medium gray, coarse-grained granite PEGMATITE. Top 1" of pegmatite surface has slight iron staining.					
25									
30				Bottom of Exploration at 26.8'; Boring terminated 5.8' below top of					

Notes:

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-1
Total Depth: 26.8
Sheet 2 of 2

Project Name: Damariscotta Waterfront Restroom
Location: Damariscotta Maine
Client: Wright-Pierce
Observed Water Depth: 4'

RWG&A Project No. 0810-006
Surface Elevation: 8 Feet
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30				bedrock.					
35									
40									
45									
50									
55									
60									

Notes:

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-2

Total Depth (ft): 19.8

Sheet 1 of 1

Project Name: Damariscotta Waterfront Restroom
RWG&A Project No. 0810-006
Location: Damariscotta, Maine
Client: Wright-Pierce
RWG&A Representative: Dan Burgess
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 3'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 06/12/2018
Date Completed: 06/12/2018
Surface Elevation: 8 Feet
Drilling Method: Drive + Wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	ASPHALTIC PAVEMENT (1.5 inches).	14	5 6 6	12	4	GS MC
			S-2	FILL; Silty sand with gravel, trace amounts of pavement, brown.	12	4 4 4	8		
				Becomes wet and loose.		4 4 4			
5			S-3		4	16 6 5	11		
				Wet, wood, some organics, silty sand, gray.					
			S-4	SILTY SAND WITH ORGANIC (SM); Loose, wet, organic, wood fragments/shells, fine seams of olive gray, gray.	20	5 4 3	6		
10			S-5		0	3 2 2	7		
				SILTY CLAY (CL); Medium, wet, clay, with silt, gray.		3 4 4			
15			S-6		24	WOR	WOR	30	MC
			FV	Field Vane: Undrained Shear Strength: Su=0.500 ksf, residual=0.050 ksf.		WOR			
			FV	Field Vane: Undrained Shear Strength: Su=0.520 ksf, residual=0.050 ksf.		WOR			
20				Bottom of Exploration at 19.8'; Auger refusal, possible bedrock.		WOR			
25									
30									

Notes: Field Vane tests conducted then sample obtained using split-barrel sampler.

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

TEST PIT LOG

Test Pit No. TP-1

PROJECT	Damariscotta Waterfront Restroom	PROJECT NO.	0810-006
CLIENT	Wright-Pierce	DATE	11/30/2017
LOCATION	Damariscotta	ELEV.	10'
EXCAVATION METHOD	Machine-excavated test pit	LOGGER	C. Nickerson
EXCAVATION LOCATION	See Exploration Location Plan		
DEPTH TO - Water: 5'	When checked: High Tide - 7:51AM, 10' m.l.w	Caving:	

DEPTH	SYMBOL	SAMPLES SAMPLE NUMBER	DESCRIPTION	MOISTURE %	LAB TESTS
0			ASPHALTIC PAVEMENT (3 inches).		
		S-1	FILL; Dry to moist, poorly graded gravel with silt and sand, light brown.	1	GS
			AGGREGATE BASE		
2			FILL; Moist, silty gravel with sand, brownish gray with clay tile pipe fragments, pieces of wood, cobbles, few boulders, approx. 1.5 CF piece of cut granite. PVC sewer clean out at about 1.5'. (See sketch)		
4			Faint petroleum odor at about 4' to 5'; no sheen.		
			5 inch O.D. clay tile sewer pipe on timbers at about 5'. (See sketch) Manually probed below timbers with pry bar. Bottom of machine-excavated test pit at about 5.5'.		
6					
8					
			Bottom of Exploration at about 8.5'; Not refusal.		
10					
12					

Notes: 1. Probed with pry bar near connection of clean out. Very loose/soft soil.
2. Reportedly parking lot filled up to current elevation in 1960s with excess material from construction of Route 1 interchange.

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

TEST PIT LOG

Test Pit No. TP-2

PROJECT	Damariscotta Waterfront Restroom	PROJECT NO.	0810-006
CLIENT	Wright-Pierce	DATE	11/30/2017
LOCATION	Damariscotta	ELEV.	10'
EXCAVATION METHOD	Machine-excavated test pit	LOGGER	C. Nickerson
EXCAVATION LOCATION	See Exploration Location Plan		
DEPTH TO - Water: 4'	When checked: appears perched in fill	Caving:	

DEPTH	SYMBOL	SAMPLES SAMPLE NUMBER	DESCRIPTION	MOISTURE %	LAB TESTS
0			NEWER ASPHALTIC PAVEMENT (3 inches).		
			OLDER ASPHALTIC PAVEMENT (3 inches).		
			FILL; Dry to moist, poorly graded gravel with silt and sand, light brown.		
			AGGREGATE BASE		
2			FILL; Moist, silty gravel with sand, brownish gray.	1	GS
			FILL; Moist to wet, saw dust and wood fragments, light orange.		
			Mixed with silty sand below 3.5'.		
			ORGANIC SILTY SAND (OL-SM); Wet, sand, some to little silt, strong organic odor, buried mud flat.		
6			Bottom of Exploration at about 6; Refusal on nested boulders or bedrock.		
8					
10					
12					

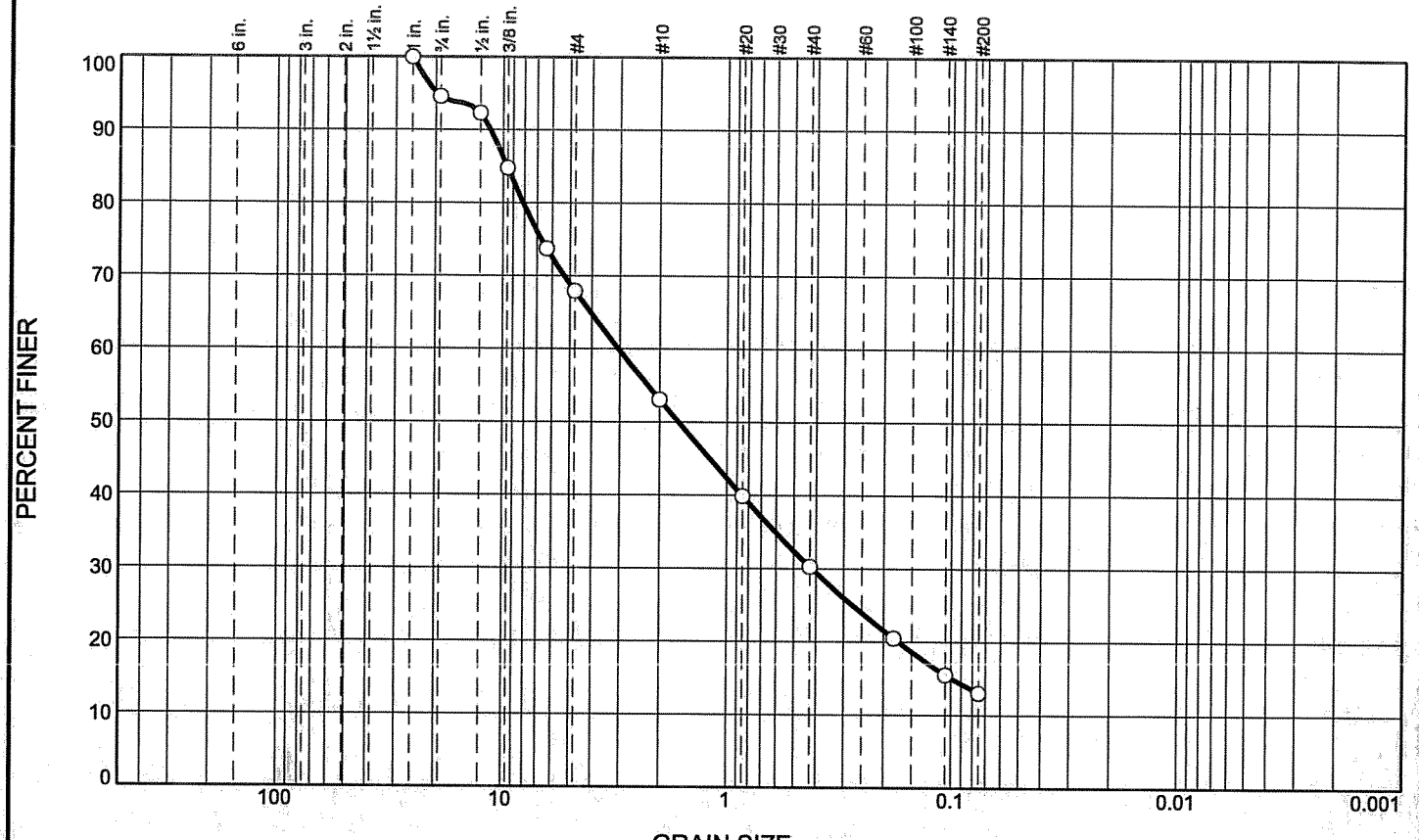
Notes: Test pit dug from 9:15AM to 9:45AM; High tide 7:51AM, 10'm.l.w.

APPENDIX C

LABORATORY TEST RESULTS

Geotechnical Evaluation
Proposed Waterfront Restroom
Damariscotta, Maine

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.4	26.7	14.8	22.8	17.2	13.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	94.6		
1/2"	92.3		
3/8"	84.8		
1/4"	73.8		
#4	67.9		
#10	53.1		
#20	39.9		
#40	30.3		
#80	20.5		
#140	15.5		
#200	13.1		

* (no specification provided)

Soil Description

silty sand with gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 11.3764 D_{85}= 9.5877 D_{60}= 3.0329
D_{50}= 1.6454 D_{30}= 0.4153 D_{15}= 0.0988
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-1-b

Remarks

Moisture Cotent: 7.0%

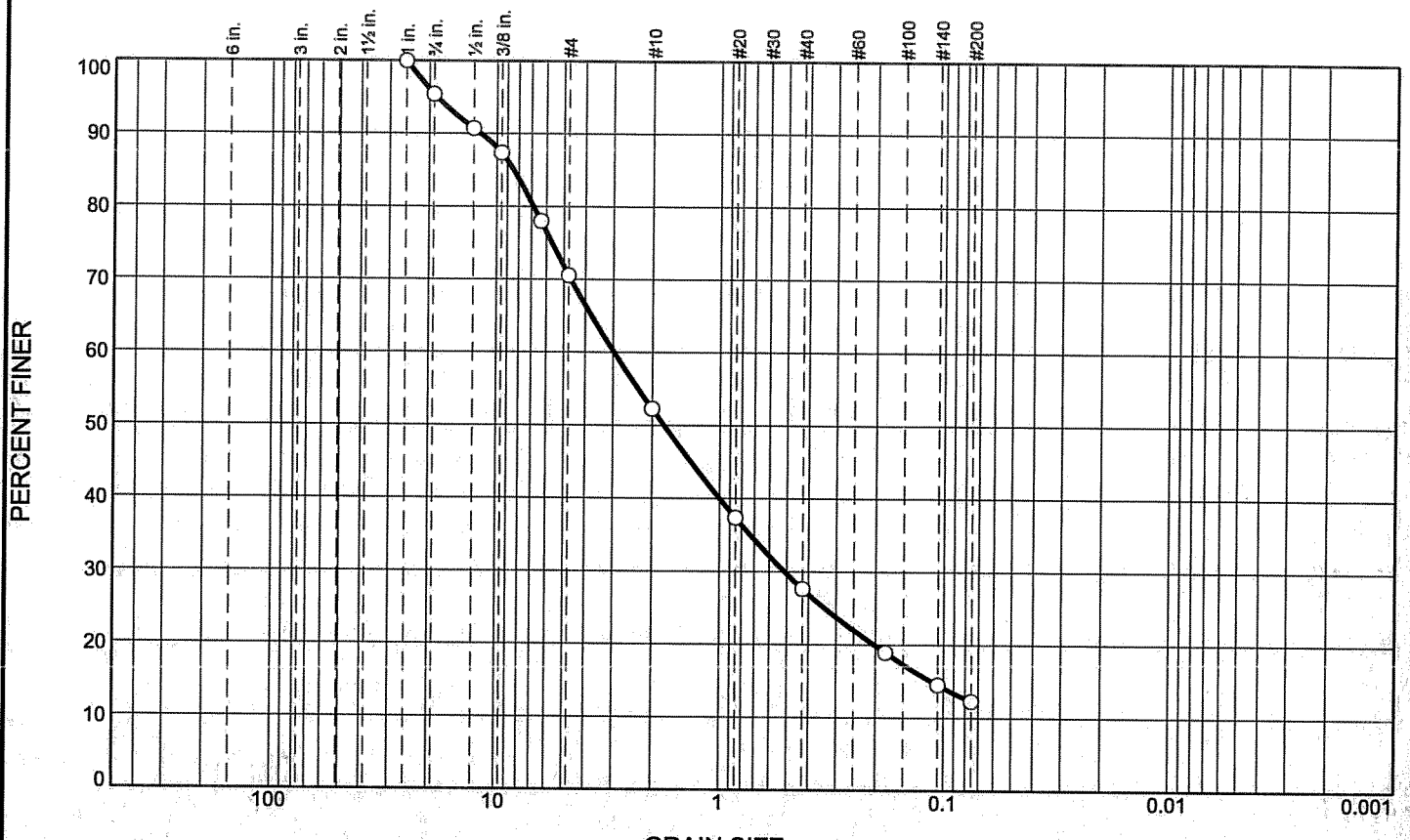
Location: Boring: B-1
Sample Number: S-1 **Depth:** 0'-2' **Date:** 6/18/18

R.W. Gillespie & Associates, Inc.
Biddeford, Maine

Client: Wright-Pierce
Project: Proposed Restrooms
Damariscotta, ME
Project No: 0810-006 **Lab No.** 15045b

Tested By: JJB **Checked By:** DEB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.6	24.8	18.3	24.6	15.4	12.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	95.4		
1/2"	90.7		
3/8"	87.4		
1/4"	78.0		
#4	70.6		
#10	52.3		
#20	37.4		
#40	27.7		
#80	19.0		
#140	14.5		
#200	12.3		

* (no specification provided)

Soil Description

silty sand with gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 11.7603 D_{85}= 8.4182 D_{60}= 2.9580
D_{50}= 1.7644 D_{30}= 0.5116 D_{15}= 0.1130
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-1-b

Remarks

Moisture Content: 3.7%

Location: Boring: B-2
Sample Number: S-1 **Depth:** 0'-2'

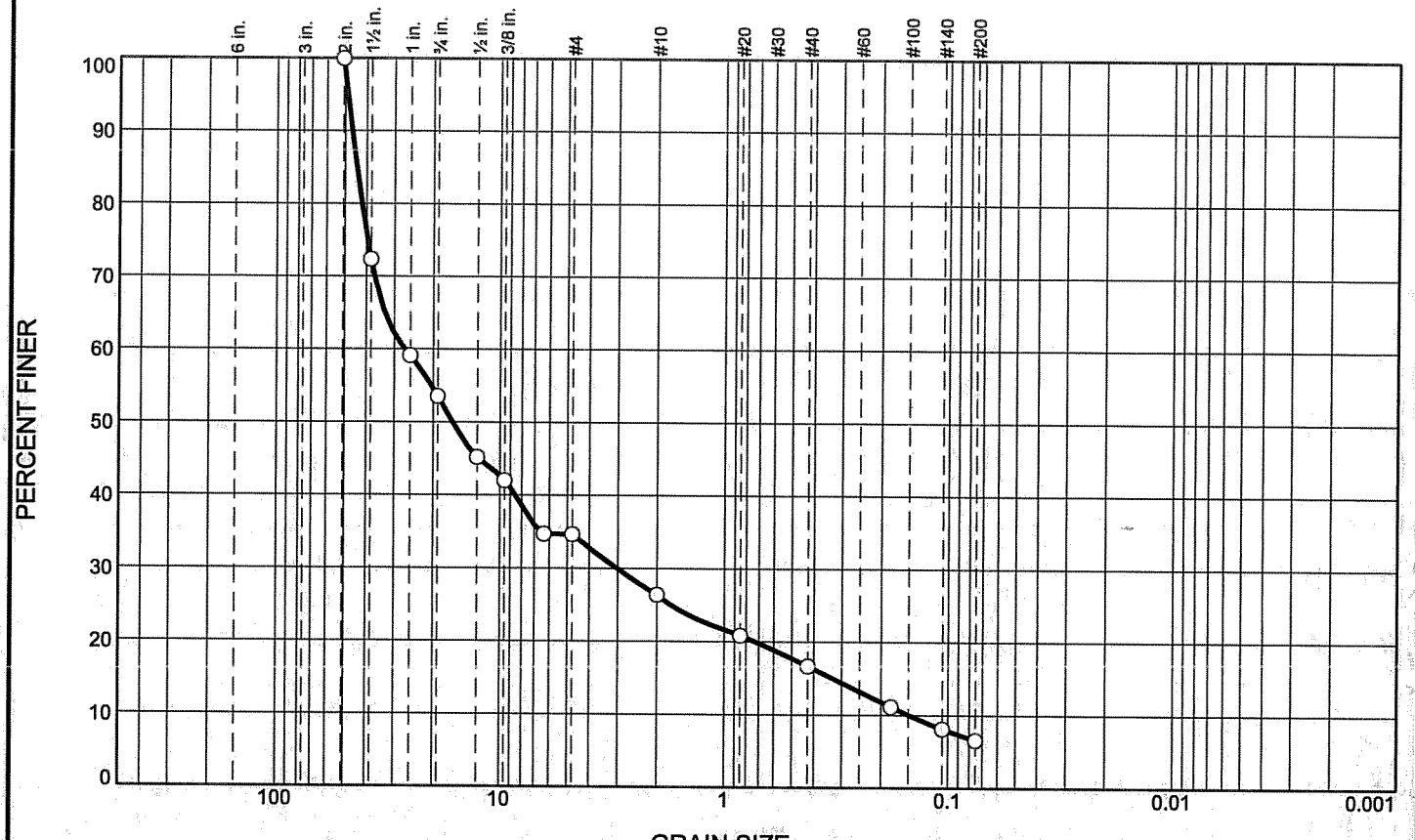
Date: 6/18/18

R.W. Gillespie & Associates, Inc.
Biddeford, Maine

Client: Wright-Pierce
Project: Proposed Restrooms
Damariscotta, ME
Project No: 0810-006 **Lab No.** 15045a

Tested By: JJB **Checked By:** DEB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	46.5	18.8	8.3	9.7	10.1	6.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2"	100.0		
1 1/2"	72.4		
1"	59.2		
3/4"	53.5		
1/2"	45.2		
3/8"	42.1		
1/4"	34.7		
#4	34.7		
#10	26.4		
#20	20.9		
#40	16.7		
#80	11.2		
#140	8.1		
#200	6.6		

* (no specification provided)

Soil Description

poorly graded gravel with silt and sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 46.3126 D_{85}= 44.1131 D_{60}= 26.7269
D_{50}= 16.3149 D_{30}= 3.0134 D_{15}= 0.3277
D_{10}= 0.1486 C_u= 179.88 C_c= 2.29

Classification

USCS= GP-GM AASHTO= A-1-a

Remarks

Moisture Content: 0.7%

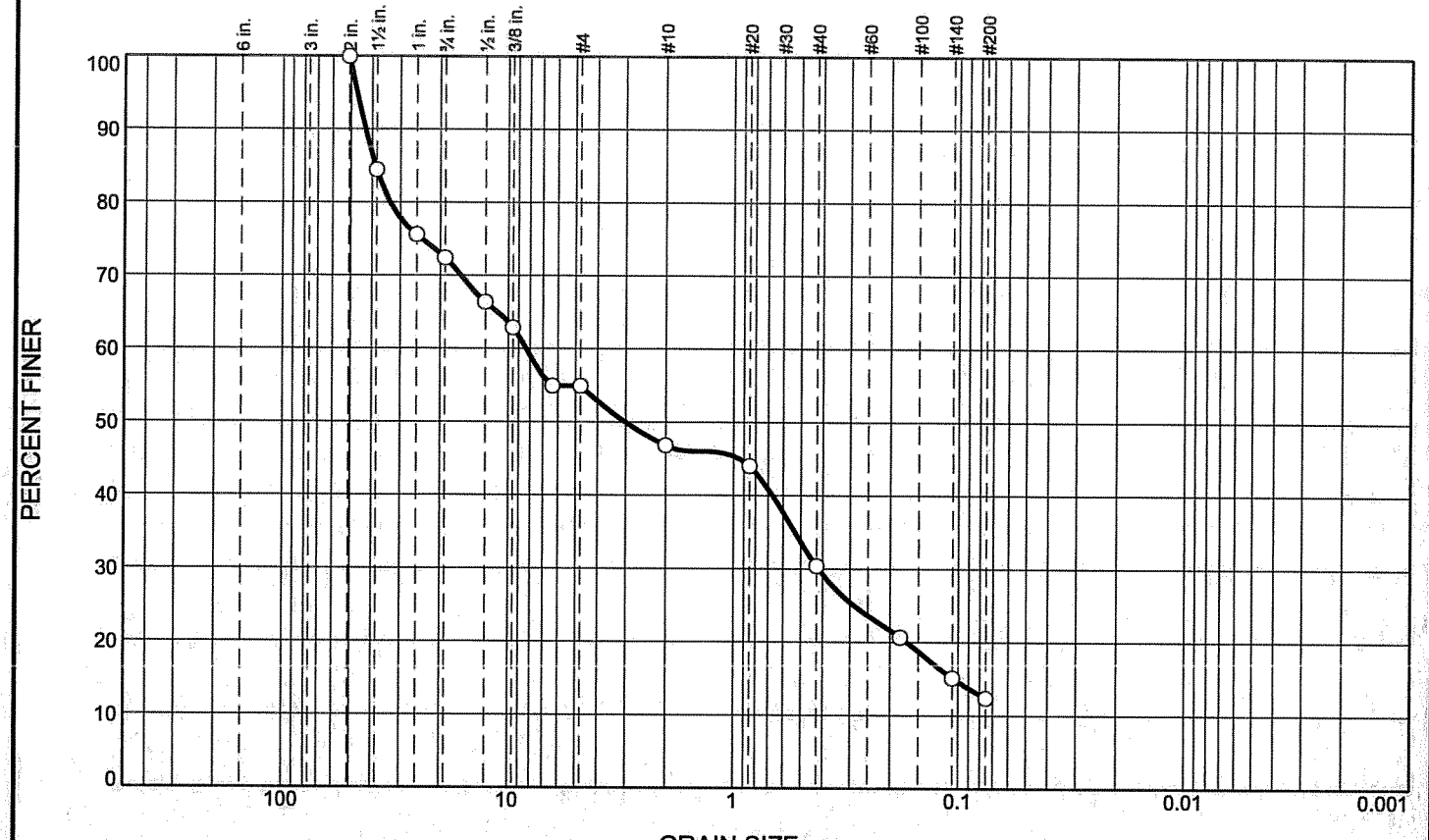
Location: TP-1
Sample Number: S-1 **Depth:** 0.25' to 1' **Date:** 12/06/2017

R.W. Gillespie & Associates, Inc.
Biddeford, Maine

Client: Wright-Pierce
Project: Proposed Restrooms
Damariscotta, ME
Project No: 0810-006 **Lab No.** 14798

Tested By: JJB **Checked By:** MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	27.6	17.5	8.1	16.4	18.0	12.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2"	100.0		
1 1/2"	84.5		
1"	75.6		
3/4"	72.4		
1/2"	66.4		
3/8"	62.9		
1/4"	54.9		
#4	54.9		
#10	46.8		
#20	44.0		
#40	30.4		
#80	20.7		
#140	15.2		
#200	12.4		

* (no specification provided)

Soil Description

silty gravel with sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 42.7805 D_{85}= 38.5988 D_{60}= 8.3074
D_{50}= 3.0051 D_{30}= 0.4157 D_{15}= 0.1041
D_{10}= C_u= C_c=

Classification

USCS= GM AASHTO= A-1-a

Remarks

Moisture Content : 1.1%

Location: TP-2
Sample Number: S-1 **Depth:** 1.5' to 2' **Date:** 12/5/2017

R.W. Gillespie & Associates, Inc.
Biddeford, Maine

Client: Wright-Pierce
Project: Proposed Restrooms
Damariscotta, ME
Project No: 0810-006 **Lab No.** 14799

Tested By: JJB **Checked By:** MTG

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Environmental Consulting • Materials Testing Services

15 August 2018

Travis J. Pryor, PLA/LEED-AP
Wright-Pierce
11 Bowdoin Mill Island, Suite 4
Topsham, ME 04086
Email: travis.pryor@wright-pierce.com

Subject: Addendum 1 to Report of Geotechnical Evaluation
Proposed Waterfront Restroom
Damariscotta, Maine
RWG&A Project No. 0810-006

Dear Mr. Pryor:

This letter is an Addendum to R.W. Gillespie & Associates, Inc.'s (RWG&A's) geotechnical evaluation report dated 16 July 2018 for the proposed waterfront restroom to be built in Damariscotta, Maine. In particular, this Addendum revises Recommendation 17 in Section 6 of the report. For clarity, modifications to Report are indicated by ~~strikeouts~~ and **bold** text.

17. ~~Piles should be driven to the specified criteria with a single or double acting hammer with a rated energy at the anvil as identified in the above table.~~ **To reduce damage to timber piles, the recommended maximum pile hammer energy is 10,500 and 12,000 foot-pounds for 7 and 8-inch diameter piles, respectively.** All piles should be installed in a continuous manner using the same equipment and to approximately the same penetration resistance. Driving criteria should be reviewed by the Structural Engineer and RWG&A based on the pile hammer proposed by the Contractor and the submitted wave equation analysis.

Please contact us if there are any questions about this addendum or if RWG&A may be of further service.

Sincerely,
R. W. GILLESPIE & ASSOCIATES, INC.

STATE OF MAINE
ERIK J. WIBERG
No. 9178
8/15/18
REGISTERED PROFESSIONAL ENGINEER

Erik J. Wiberg, P.E.
Chief Geotechnical Engineer

EJW:md

G:\PROJECTS\0800\0810\0810-006\Reports\2015-08-15 Addendum to GI Report 0810-006.docx

Summit Geotechnical Services

SUMMIT
GEOENGINEERING SERVICES

GEOTECHNICAL REPORT

SHORE AND HARBOR IMPROVEMENTS
MAIN STREET
DAMARISCOTTA, MAINE

Prepared for:

Wright-Pierce

Prepared by:

Summit Geoengineering Services
Project #11155
July 2011

640 Main Street, Lewiston, Maine 04240, (207) 576-3313
434 Cony Road, Augusta, Maine 04330, (207) 318-7761

SUMMIT
GEOENGINEERING SERVICES

July 25, 2011
Summit #11155

Attn: Jonathan C. Edgerton
Wright-Pierce
99 Main Street
Topsham, Maine 04086

Reference: Geotechnical Engineering Services
Shore and Harbor Improvements – Main Street, Damariscotta, Maine

Dear Mr. Edgerton:

We have completed the geotechnical investigation for the shore and harbor improvements project located off Main Street in Damariscotta, Maine. Our scope of services included performing 5 test borings at the site and preparing this report summarizing our findings and geotechnical recommendations.

1.0 Project Description

Summit was asked by Wright-Pierce Architects & Engineers and the Town of Damariscotta to conduct a geotechnical investigation for shore and harbor improvements in downtown Damariscotta. The project consists of constructing a new pedestrian bridge spanning approximately 50 feet from the Schooner Landing parking lot to the Damariscotta municipal parking lot, as well as conducting pavement rehabilitations and water and sewer infrastructure rehabilitations in the Damariscotta municipal parking lot. The project also includes preliminary phases of a proposed boardwalk along the municipal parking lot.

2.0 Explorations and Laboratory Testing

Summit observed the subsurface conditions with the drilling of 5 test borings on July 15, 2011. The borings were pre-located by Wright-Pierce. Northern Test Boring advanced the borings to depth of refusal encountered at 12 to 31.7 feet under contract to Summit. Borings B-1, B-2, B-4 and B-5 were advanced using 2¼ inch hollow stem augers and boring B-3 was advanced using 3 inch casing with rotary wash. Standard penetration tests (SPT) with split spoon samples were obtained continuously to 10 feet and at 5-foot intervals thereafter. Summit was onsite to coordinate and observe the boring explorations. The boring locations are shown on the exploration location plan in Appendix A. Photographs of the site and logs of the borings are provided in Appendix B.

Due to some uncertainty of exact locations for underground utilities, Dig Smart of Maine was subcontracted by Summit to verify that borings were free from subsurface obstructions.
Two samples were tested for grain size analyses, six samples were tested for moisture content,

and an Atterberg limit test was performed on one sample in accordance with ASTM D422. Copies of the laboratory results are provided in Appendix C. Summary of the gradation results are as follows:

LABORATORY SUMMARY TABLE				
Location (Layer)	**USCS**	**%Gravel**	**%Sand**	**%Fines**
B-2, 7' to 9' (Glacial Marine)	SW-SM	8.4%	80.7%	10.9%
B-5, 0.3' to 2.3' (Granular Fill)	SM	18.3%	69.1%	12.6%

Note: Based on ASTM D422 test and Unified Soil Classification System particle distribution.

Samples of glacial marine clay deposits from B-1 S4 and S5, B-2 S6, B-3 S6, and B-4 S6 and S7 were tested for moisture contents. The moisture contents for the marine clay ranged from 27.5 to 38.3 percent. An Atterberg limit test was performed on sample B-4 S7. The sample was identified as a lean clay with a liquid limit of 41 and plastic index of 22.

3.0 Site Description

The site for the shore and harbor improvements consists of the Damariscotta municipal parking lot and boat launch area as well as the Schooner Landing parking lot. The site is generally bordered by; Main Street to the north, Water Street to the east, and Damariscotta River to the south and west.

Topographic survey provided by Wright-Pierce indicates the site is generally flat with an elevation of 8 feet through the parking lots. Site grades within the eastern end of the municipal parking lot slope downward from elevation 24 feet to 8 feet in an east to west direction from Water Street to Reny's. Site grades surrounding both parking lots slope downwards towards the river from elevation 8 feet to a minimum elevation of negative 4 feet at low tide.

4.0 Observed Subsurface Conditions

The encountered subgrade generally consists of ***existing fill*** 5 feet in thickness overlying ***glacial marine deposits*** to a depth of 12 to 23 feet overlying ***glacial till***, where encountered, to a depth of 24 feet to 32 feet overlying ***bedrock***. The subgrade is further described into 4 layers as follows:

Layer 1 – Existing Fill

The existing fill is approximately 5 to 9 feet in thickness and consists of brown sand with some to trace silt and some to little gravel and based on the gradation results and visual observations are classified as SP-SM and SM in accordance with the Unified Soil Classification System (USCS). TA gradation result of the existing fill contained 10.9 percent fine material (percent weight finer than #200, 0.075 mm particle size). Uncorrected SPT-N values for the existing fill ranged from 8 to 26 blows per foot (bpf). Estimated overburden pressures and corrected SPT N-values indicate loose to compact conditions. The existing fill is generally considered humid to damp.

Layer 2 – Glacial Marine Deposits

The glacial marine deposits are approximately 7 to 18 feet in thickness and consist of gray to olive brown clay with some to trace silt and sand, and light brown sand with some to trace silt and little gravel. The clay and sand are visually classified as CL and SP or SM, respectively, in accordance with the Unified Soil Classification System (USCS). The glacial marine deposits contained a varying range of percent fine material. A gradation result for the sandy glacial marine deposits contained 12.6 percent fine material (percent weight finer than #200, 0.075 mm particle size). Uncorrected SPT-N values for the glacial marine deposits ranged from 1 to 13 blows per foot (bpf). Estimated overburden pressures and corrected SPT N-values indicate very loose to compact conditions in the granular material and soft to stiff conditions in the cohesive material. The glacial marine deposits are generally damp to wet.

Layer 3 – Glacial Till

The glacial till, where encountered, is approximately 3 to 8 feet in thickness and consists of olive and mottled sitly sand and is visually classified as SM in accordance with the Unified Soil Classification System (USCS). Uncorrected SPT-N values for the glacial till ranged from 11 to 23 blows per foot (bpf). Estimated overburden pressures and corrected SPT N-values indicate compact conditions. The glacial till is generally considered wet.

Layer 4 – Bedrock

Bedrock refusal was encountered at a depth of 20.3 to 31.7 feet, elevations –12.3 to –23.7 feet. Bedrock mapping by the Maine Geological Survey indicates the bedrock is part of the Bucksport Formation consisting of calc-silicate granofels, biotite granofels, and schist.

Groundwater

Groundwater seepage was measured at depths of 3.5 to 12.1 feet within the granular fill and glacial marine deposits. Groundwater at the site is influenced by local tide fluctuations. In general, groundwater is anticipated to flow along the surface of the glacial marine clay during low tides and rise with the tide into the granular fill layer.

5.0 Geotechnical Evaluation

In general, the geotechnical considerations for shore and harbor improvements include:

- The presence of loose/soft marine deposits and their potential for settlement
- The presence of loose sands and their potential for liquefaction with respect to seismic conditions
- The potential for miscellaneous fill material beneath foundations and within cuts and excavations
- The presence of high ground water in cuts and excavations, particularly at high tide

Based on the potential for soft clays, loose sand, relatively high groundwater, and presence of miscellaneous fill layer we provide the following recommendations for each section of the shore and harbor improvements project.

5.1 Pedestrian Bridge Foundation Recommendations

We understand this project includes construction of a new pedestrian bridge, which spans approximately 50 feet from the Schooner Landing parking lot to the Damariscotta municipal parking lot. We anticipate the foundation of the bridge will consist of cast-in-place reinforced concrete abutments.

We recommend the pedestrian bridge foundation be designed using an allowable bearing pressure of 3,000 psf. Settlement associated with this bearing pressure is estimated at 1 inch or less. We further recommend the following design parameters be used:

PARAMETER	FOUNDATION BACKFILL	EXISTING FILL	GLACIAL MARINE	
			CLAY	SAND
Total Natural (moist) Unit Weight (γ_t)	130 pcf [1]	130 pcf	125 pcf	120 pcf
Saturated (buoyant) Unit Weight (γ_s)	68 pcf [1]	68 pcf	63 pcf	58 pcf
Friction Coefficient (f)	0.55	0.50	0.30	0.35
Passive Earth Pressure Coefficient (K_p)	3.54	3.39	--	3.26
Active Earth Pressure Coefficient (K_a)	0.28	0.30	--	0.31
Friction Angle (f_c)	34^0 [1]	33^0	0^0	32^0 [2]
Cohesion (c)	0	0	1,500 psf	0

[1] Based on 95% compaction of fill by ASTM D1557, Modified Proctor Density
[2] Based on proof rolling of glacial marine sand

We recommend loose existing fill be proof-rolled prior to constructing the foundations or placement of fill. If excessive soil moisture is present, pockets of disturbed soil should be removed and replaced with crushed stone or stabilized with a layer of geotextile fabric (such as Mirafi 500X).

Frost Protection

The frost penetration depth based on a design air-freezing index of 1,250 degree days for the Damariscotta area is 4 feet below exterior finish grade. In determining final design depth for the abutment foundations, the need to resist overturning, lateral, and uplift forces should also be considered.

We recommend abutment foundations be backfilled with Foundation Backfill. Foundation Backfill should have a maximum particle size limited to 6 inches and the portion passing a 3-inch sieve meeting the following gradation specifications:

STRUCTURAL BACKFILL	
Sieve Size	**Percent finer**
3 inch	100
1/4 inch	0 to 70
No. 40	0 to 30
No. 200	0 to 5

Reference: MDOT Specification 703.06, Type C

The Foundation Backfill should be placed in 6 to 12-inch lifts and should be compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557.

Groundwater Control

In general, groundwater is anticipated to fluctuate between depths of 3.5 to 12 feet, elevation 4.5 to negative 4 feet, due to the tidal waters of the Damariscotta River. The groundwater ranges from approximately 0.5 feet above to 8 feet below the base of the foundation. Perched water may be present in the existing fill layer during wet periods or from seasonal runoff such as snowmelt. Based on the potential for high groundwater, we recommend perimeter underdrains be installed near the base of the abutment foundations to permit a positive outlet during wet periods and high tides. We also recommend exterior grades slope away from the abutment foundations to reduce runoff water from infiltrating the Foundation Backfill.

Perimeter underdrains should consist of 4 inch rigid perforated PVC surrounded by a minimum of 6 inches of crushed stone wrapped in filter fabric to prevent clogging from the migration of the fine soil particles. The underdrain pipe should be outlet to a location where it will be free flowing. Where exposed at the ground surface, the ends of pipes should be screened or otherwise protected from entry and nesting of wildlife, which could cause clogging.

Seismic Design

The subgrade profile at the site is categorized as Site Class D in accordance with the 2009 International Building Code (IBC). The following seismic site coefficients should be used:

SUBGRADE SITE SEISMIC DESIGN COEFFICIENTS - IBC	
Seismic Coefficient	**Site Class D**
Short period spectral response (S_S)	0.253
1 second spectral response (S_1)	0.071
Site coefficient (F_a)	1.6
Site Coefficient (F_v)	2.4
Design short period spectral response (S_{DS})	0.269
Design 1 second spectral response (S_{DS})	0.114

The loose sandy glacial marine deposits encountered in boring B-2 are moderately susceptible to liquefaction during seismic events, especially during high tides when the subgrade is saturated. The peak horizontal acceleration with 2 percent probability in 50 years for the site is mapped as 0.10 by the United States Geological Survey (USGS). Based on the fines content, relative density, deposit thickness, and mapped peak horizontal acceleration for the site, the potential for liquefaction during a seismic event is considered moderate and will require ground improvement.

We recommend that the sand layer from 5 to 9 feet beneath the surface be proof-rolled prior to constructing the abutment footings. Proof rolling should consist of a minimum of three passes in a north-south direction and then three passes in an east-west direction using a large vibratory plate compactor or a small remote controlled vibratory roller. Dewatering should be performed approximately 2 to 3 feet below the base of the excavation prior to proof-rolling to prevent subgrade softening. Alternatively, the sand may be removed and replaced with crushed stone overlying geotextile fabric such as Mirafi Polypropylene 500X or equivalent.

5.2 Pavement Section Recommendations

We understand this project may include pavement rehabilitation of the Damariscotta municipal parking lot. We anticipate finished grade will be at or near the existing parking lot grade. Based on this, the subgrade will consist of existing fill, glacial marine deposits, and/or miscellaneous fill, and is considered to be slightly to moderately frost susceptible. The pavement section design recommendations are based on the structure of the parking lot, frost susceptibility of the subgrade soil, and the mean air-freezing index.

The mean annual freezing index for the Damariscotta area is estimated at 750 degree days. Based on the subgrade and mean annual freezing index, the anticipated mean annual frost penetration depth is 36 inches.

We recommend a minimum total pavement section thickness of 50% of the mean annual frost penetration or 18 inches for light duty pavement sections and 60% of the mean annual frost penetration depth or 22 inches for pavements subjected to moderate to heavy truckloads. We further recommend that the pavement section consist of the following materials.

MATERIAL	THICKNESS (in) Light Duty	THICKNESS (in) Heavy Duty	SPECIFICATION
Asphalt Surface Course	1	1.5	MDOT Superpave
Asphalt Binder Course	2	2.5	MDOT Superpave
Base Soil	3	3	MDOT 703.06 Type A
Subbase Soil	12	15	MDOT 703.06 Type D

We recommend the following gradation requirements be used for subbase and base gravel:

Sieve Designation	Percent Passing a 3-inch Sieve	
	MDOT Type A (Base)	MDOT Type D (Subbase)
3 Inch	100	100
2 Inch	100	--
½ Inch	45 – 70	--
¼ Inch	30 – 55	25 – 70
No. 40	0 – 20	0 – 30
No. 200	0 – 5	0 - 7

The material specifications are referenced to the 1995 Maine Department of Transportation Standard Specifications for Highways and Bridges and Maine Department of Transportation Standard Specifications, Revision of 2002.

The maximum particle size should be limited to 2 inches for MDOT Type A base and 6 inches for MDOT Type D subbase. All base and subbase soil should be placed in 3 to 12 inch lifts and be compacted to a minimum of 95 percent of its maximum dry density, determined in accordance with ASTM D1557, Modified Proctor Density.

Grain size analyses were performed for a sample of the existing fill. Based on the gradation results, the existing fill beneath the pavement does not meet MDOT Type A or Type D due to the high fines content. Gradation results are provided in Appendix C.

We recommend the subgrade be proof-rolled prior to placing subbase or base. Proof rolling should consist of a minimum of three passes in a north-south direction and then three passes in an east-west direction using a large (10 ton operating weight) vibratory roller. If excessive soil moisture is present, we recommend proof rolling be performed in the static mode to prevent softening of localized subgrade silt and clay.

5.3 Water and Sewer Infrastructure Rehabilitations

We understand this project includes rehabilitation of the underlying water and sewer infrastructure in the Damariscotta municipal parking lot. We recommend that the outside 6-inches of the sewer mains and storm drains be backfilled with Granular Backfill soil meeting the following gradation specification:

GRANULAR BACKFILL	
Sieve Size	**Percent finer**
1 inch	100
No. 200	0 to 10

The maximum particle size should be limited to 1 inch to prevent damage to the sewer mains and storm drains. Alternatively, ¾ inch minus crushed stone may be substituted for Granular Backfill. Based on the gradation results, the existing fill and glacial marine deposits do not meet specifications for Granular Backfill.

Backfill material placed outside the Granular Backfill and above the sewer mains and storm drains should consist of the existing fill and glacial marine deposits excavated from the trench. The maximum particle size should be limited to 6 inches. The sandy soil should be placed in 12-inch lifts and be compacted to 90 percent of its maximum dry density in accordance with ASTM D1557.

Existing soil conditions will consist of granular fill and glacial marine sand and clay. The glacial marine clay could be difficult to place if excessive soil moisture is present.

Excavations below 4 feet or below groundwater within loose granular fill materials should be performed with excavation support, such as trench boxes or similar.

Depending on depth and location of excavations for water and sewer infrastructure rehabilitations, dewatering may be required. We believe that shallow sumps and conventional submersible pumps will be sufficient to control groundwater during construction for minimal onsite cuts. We recommend that surface water during wet periods be diverted away from the excavations during construction.

Excavations within the glacial marine deposits or below groundwater may be susceptible to subgrade softening. If subgrade softening occurs during construction, we recommend the subgrade beneath the sewer mains and storm drains be over-excavated and replaced with a minimum of 12 inches of crushed stone overlying geotextile fabric such as Mirafi Polypropylene 500X or equivalent. Crushed stone should be tamped to lock the stone structure together.

5.4 Boardwalk Evaluations

We understand a boardwalk is being considered along the Damariscotta municipal parking lot overlooking the harbor. The boardwalk is still in preliminary stages and preliminary design plans and configuration were not available at the time of this report. Based on our knowledge of the site, we anticipate the boardwalk will be supported by a cantilever foundation and/or piles.

The subgrade encountered within the area of the proposed boardwalk consists of existing fill overlying loose to compact sand and soft clay glacial marine deposits. Bedrock was present at a depth range of 20.3 to 31.7 feet, elevation -12.3 to -23.7 feet. We recommend that additional analysis be performed upon the development of preliminary plans and configuration of the boardwalk. Groundwater was present at a depth range of 4.5 to 9 feet, elevation 3.5 to 1 feet, and is anticipated to fluctuate due to the tidal waters of the Damariscotta River.

6.0 Earthwork Considerations

Excavations within the glacial marine deposits or below groundwater may be susceptible to subgrade softening. If subgrade softening occurs during construction, we recommend the base of the subgrade be over-excavated and replaced with a minimum of 12 inches of crushed stone overlying geotextile fabric such as Mirafi Polypropylene 500X or equivalent. Crushed stone should be tamped to lock the stone structure together.

The existing fill and glacial marine sand and clay will not meet the gradation requirements for Foundation Backfill due to the high fines content.

Foundation Backfill, Base and/or Subbase should be placed in 3 to 12 inch lifts and be compacted to a minimum of 95 percent of its maximum dry density, determined in accordance with ASTM D1557, Modified Proctor Density.

Placement of Foundation Backfill at or near groundwater may become difficult if heavy compaction equipment is used near the water surface. We recommend that fill placed at or below the groundwater level be placed after dewatering and compacted using lighter compaction equipment such as a vibratory plate compactor. Alternatively, crushed stone may be used in place of Foundation Backfill.

We recommend loosened granular soil be proof-rolled prior to constructing footings or placing fill. Proof rolling should consist of a minimum of three passes in a north-south direction and then three passes in an east-west direction using a vibratory roller or vibratory plate compactor.

Depending on depth and location of excavations dewatering may be required. We believe that shallow sumps and conventional submersible pumps will be sufficient to control groundwater during construction for minimal onsite cuts. We recommend that surface water during wet periods be diverted away from the footing excavations.

General excavations below 4 feet and above the groundwater table should be sloped no greater than 1H to 1V for cohesive soils and 1.5H to 1V for granular soils. The slope should be reduced to 1.5H to 1V where excavations occur below the groundwater table. These slopes are based on the current OSHA Excavation Guidelines.

We recommend that a qualified geotechnical consultant be retained to monitor and test soil materials used during construction and confirm that soil conditions and construction methods are consistence with this report.

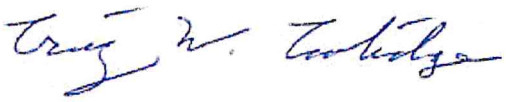
7.0 Closure

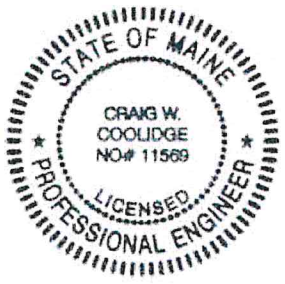
Our recommendations are based on professional judgment and generally accepted principles of geotechnical engineering and project information provided by others. Some changes in subsurface conditions from those presented in this report may occur. Should these conditions differ materially from those described in this report, Summit should be notified so that we can re-evaluate our recommendations.

It is recommended that this report be made available in its entirety to contractors for informational purposes and be incorporated in the construction Contract Documents.

We appreciate the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

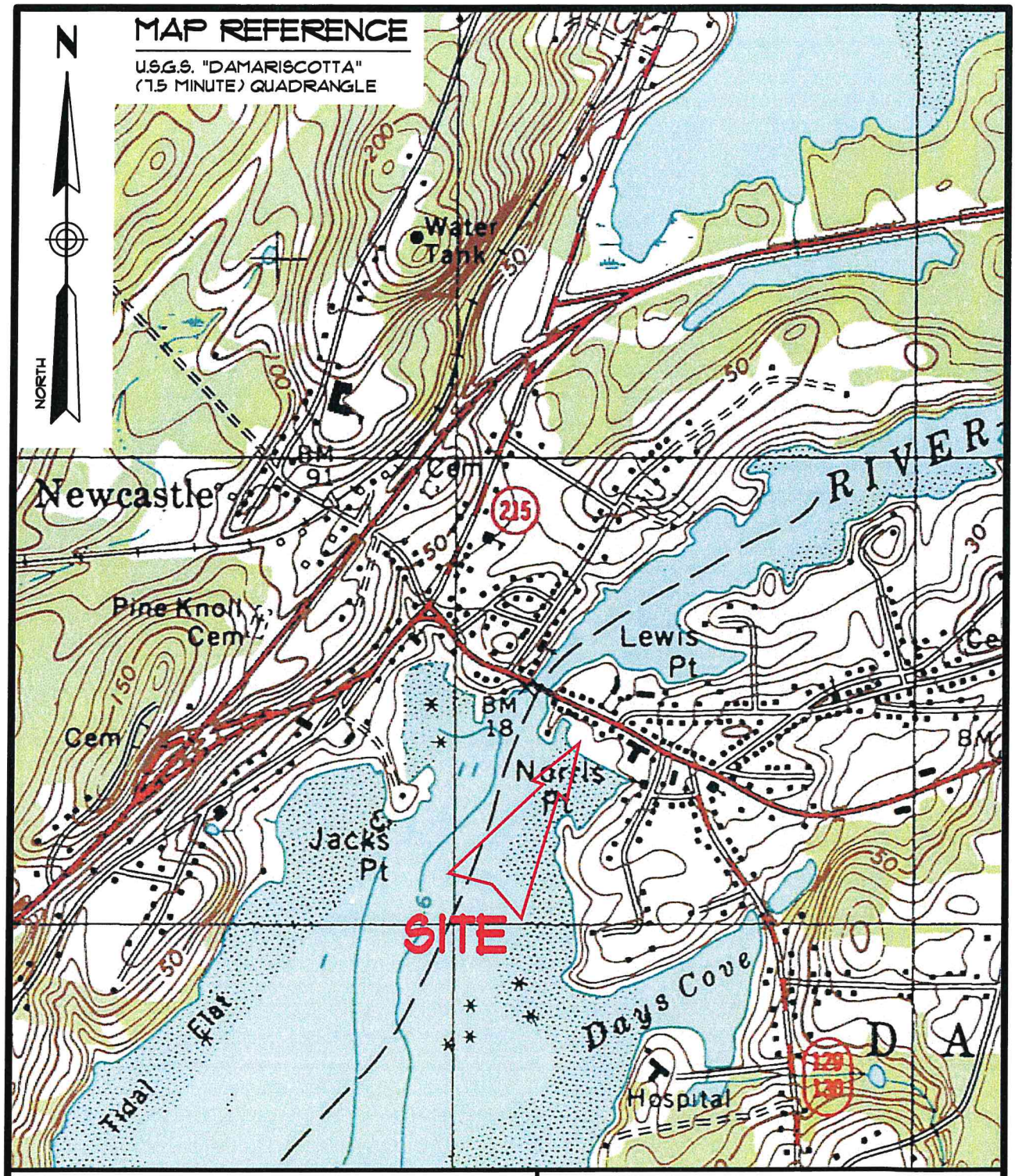
Sincerely yours,
Summit Geoengineering Services





Craig W. Coolidge, P.E.
Vice President
Senior Geotechnical Engineer

APPENDIX A
SITE AND EXPLORATION LOCATION PLANS



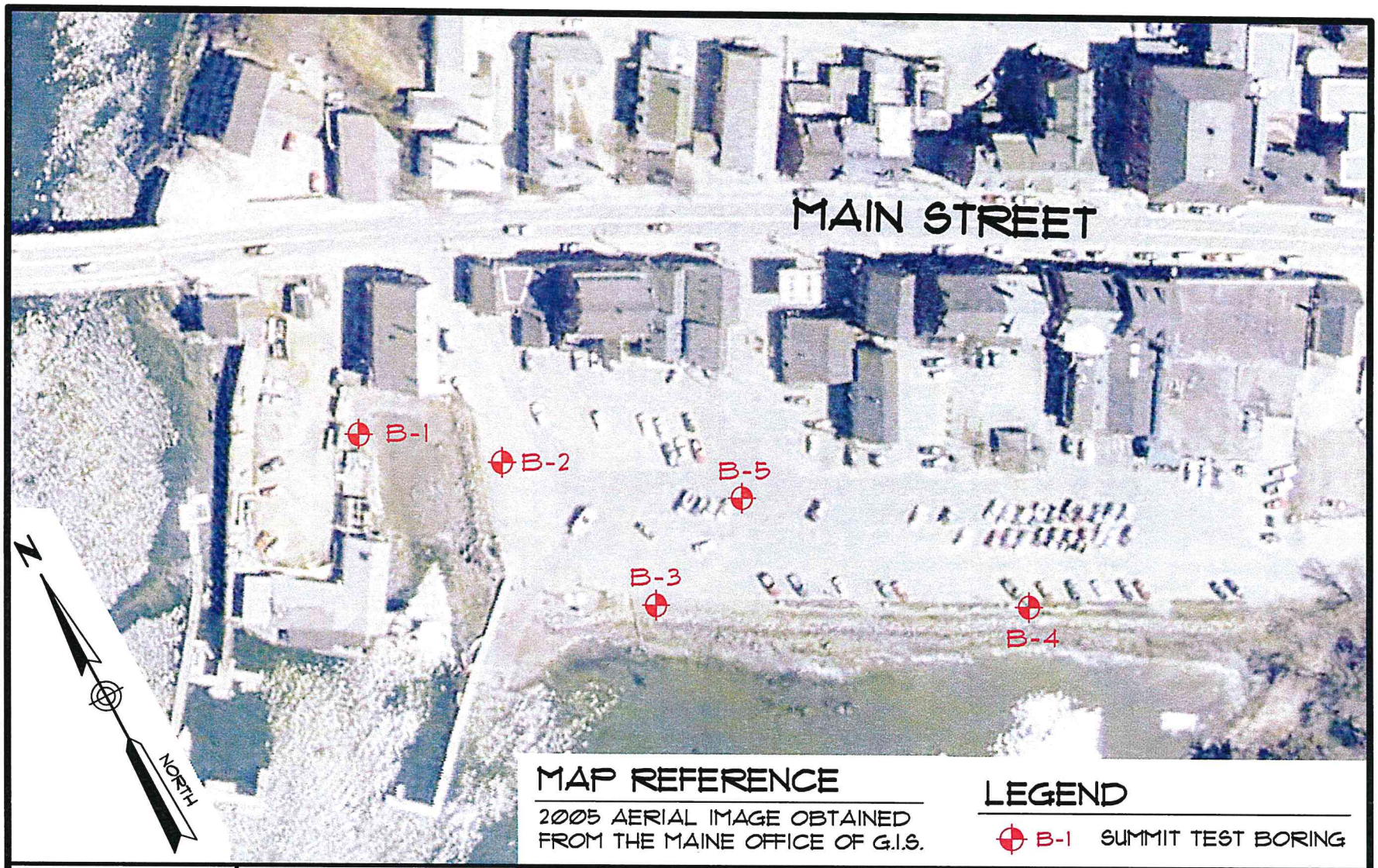
LOCATION MAP
SHORE & HARBOR IMPROVEMENTS

DAMARISCOTTA, MAINE
PREPARED FOR
WRIGHT PIERCE

DATE: JULY 2011	DRAWN BY: KRF	CHECKED BY: CC
JOB: 11155	SCALE: 1"= 1000'	FILE: 11155 MAP

434 CONY ROAD
AUGUSTA, MAINE 04330
Tel.: (207) 318-7761
Fax: (207) 629-9094
www.summitgeoeng.com

SUMMIT
GEOENGINEERING SERVICES



MAP REFERENCE

2005 AERIAL IMAGE OBTAINED FROM THE MAINE OFFICE OF G.I.S.

LEGEND

B-1 SUMMIT TEST BORING

DATE: JULY 2011
JOB: 11155
FILE: 11155 MAP
DRAWN BY: KRF
CHECKED BY: CC
SCALE: 1" = 100'

434 CONY ROAD
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TEST BORING LOCATION PLAN
SHORE & HARBOR IMPROVEMENTS

DAMARISCOTTA, MAINE
PREPARED FOR
WRIGHT PIERCE

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PHOTOGRAPHIC LOG

Client Name:	**Project No.**
Wright-Pierce Architects & Engineers	11155

Photo No. 1

Date: 7-15-2011

Site Location:

Main Street
Damariscotta, Maine

Description:

Photograph of site facing east. (Taken from Schooner Landing parking lot.)

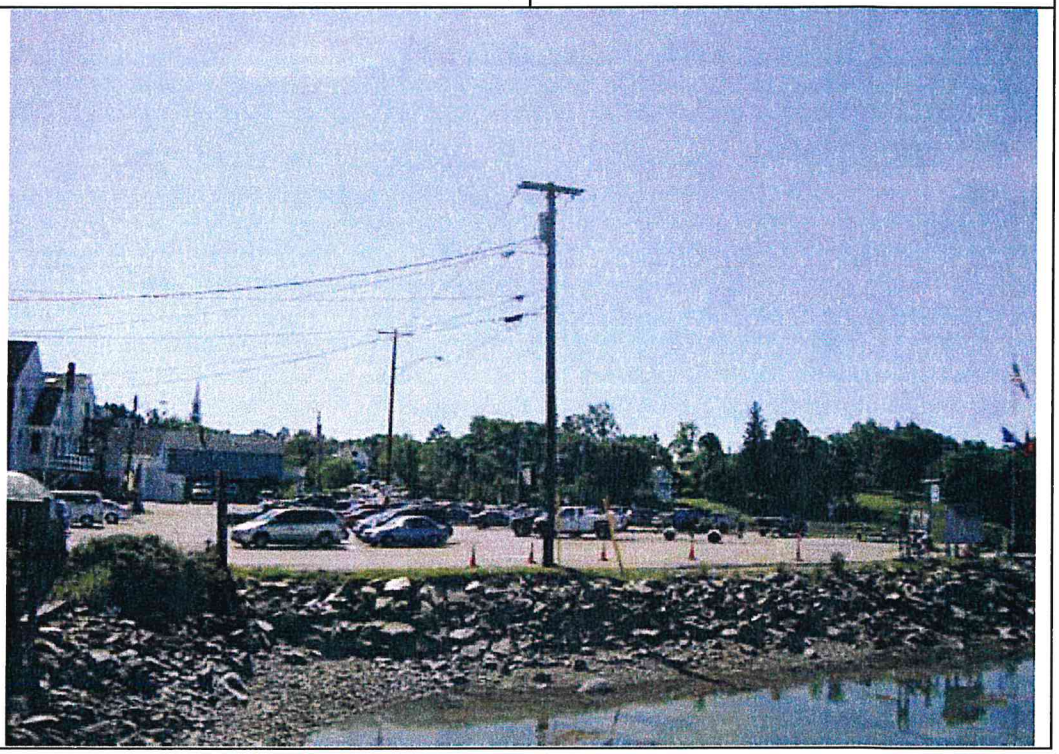


Photo No. 2

Date: 7-15-2011

Site Location:

Main Street
Damariscotta, Maine

Description:

Photograph of boring B-1 in Schooner Landing parking lot, facing north.



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PHOTOGRAPHIC LOG

Client Name:	**Project No.**
Wright-Pierce Architects & Engineers	11155

Photo No. 3

Date: 7-15-2011

Site Location:

Main Street
Damariscotta, Maine

Description:

Photograph of boring B-2 facing southwest.



Photo No. 4

Date: 7-15-2011

Site Location:

Main Street
Damariscotta, Maine

Description:

Photograph of boring B-3 facing west.



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PHOTOGRAPHIC LOG

Client Name:	**Project No.**
Wright-Pierce Architects & Engineers	11155

Photo No. 5

Date: 7-15-2011

Site Location:

Main Street
Damariscotta, Maine

Description:

Photograph of boring B-4 facing east.



Photo No. 6

Date: 7-15-2011

Site Location:

Main Street
Damariscotta, Maine

Description:

Photograph of boring B-5 facing northwest.



640 Main Street, Lewiston, Maine 04240, (207) 576-3313
434 Cony Road, Augusta, Maine 04330, (207) 318-7761

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PHOTOGRAPHIC LOG

Client Name:	**Project No.**
Wright-Pierce Architects & Engineers	11155

Photo No. 7

Date: 7-15-2011

Site Location:

Main Street
Damariscotta, Maine

Description:

Photograph of embankment along parking lot facing east. (Damariscotta River near high tide.)



Photo No. 8

Date: 7-15-2011

Site Location:

Main Street
Damariscotta, Maine

Description:

Photograph of Damariscotta River inlet between municipal parking lot and Schooner Landing parking lot with water level between low tide and high tide.



640 Main Street, Lewiston, Maine 04240, (207) 576-3313
434 Cony Road, Augusta, Maine 04330, (207) 318-7761

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-1**

Project: Wright-Pierce Boardwalk
Location: Main Street, Damariscotta, Maine

Project #: 11155
Sheet: 1 of 1
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley

Boring Location: Schooner Landing parking lot
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	12.1'		Measured with Water Meter

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/6	0 - 2	8	Brown SAND, little Silt and Gravel, compact, humid,		GRANULAR FILL
1				8	SM-SP		
				8			
2				8			
	S-2	24/6	2 - 4	8	Brown SAND, little Silt and Gravel, compact, humid,		
3				7	SM-SP		
				8			
4				8			
5							
	S-3	24/10	5 - 7	3	Brown CLAY, some Sand, little Silt, trace Organics, firm,		5' GLACIAL MARINE DEPOSITS
6				3	damp, CL		
				4			
7				4 / Bounce	Wood Debris		
8							
9							
10							
	S-4	24/18	10 - 12	4	Dark gray to black CLAY, some Silt and Sand, stiff, wet,		
11				7	CL		
				5	Bounced at 10'10" on wood debris		
12				10	Organic Odor		
13							
14							
15							
	S-5	24/4	15 - 17	2	Dark gray CLAY, some Silt, soft to firm, wet, CL		
16				2			
				2			
17				3			
18							18' +/-
19							
20							
	S-6	24/4	20 - 22	5	Light brown SAND, little Silt, compact, wet, SM		
21				6			
				7			
22				6			
					Auger Refusal at 22.8'		BEDROCK

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-2**

Project: Wright-Pierce Boardwalk
Location: Main Street, Damariscotta, Maine

Project #: 11155
Sheet: 1 of 2
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley

Boring Location: West end of Main Street parking lot
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	3.5'		Measured in open bore hole after drilling
7/15/2011	6.9'		Measured during drilling with water meter

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					Bituminous Pavement = 3"		PAVEMENT
1	S-1	24/6	0.3 - 2.3	7	Brown SAND, some Gravel, little Silt, compact, humid, SM		0.3'
				10			GRANULAR FILL
2				13			
				13			
3	S-2	24/6	2.3 - 4.3	6	Brown SAND, little Silt, compact, damp, SM		
				7			
4				8			
				8			
5							
	S-3	24/6	5 - 7	1	Light brown SAND, some Silt, little Gravel, very loose,		5'
6				1	moist, SM		GLACIAL MARINE DEPOSITS
				1			
7				WOH			
	S-4	24/12	7 - 9	1	Light brown SAND, little Silt and Gravel, very loose, wet,	Gravel = 8.4%	
8				WOH	SW-SM	Sand = 80.7%	
				1		Fines = 10.9%	
9				WOH			
10							
	S-5	24/24	10 - 12	2	Light brown SAND, some Silt, loose, wet, SM		
11				3			
				2			
12				3			
13							
14							
							14' +/-
15							
	S-6	24/24	15 - 17	1	Gray to olive brown CLAY, trace Sand and Silt, soft to	PP = 3,000 psf	
16				1	firm, CL	MC = 28.0%	
				3		PP = 4,000 psf	
17				5			
18							
19							
							19' +/-
20							
	S-7	24/24	20 - 22	2	Light brown SAND, loose, wet, SW		
21				2	Mottling at tip of spoon		
				7			
22				9	Olive and mottled Silty SAND, some Gravel, compact,		21.8'
					wet, SM		GLACIAL TILL

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition

Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Project:	Wright-Pierce Boardwalk	Boring #:	B-2
Location:	Main Street	Project #:	11155
	Damariscotta, Maine	Sheet:	2 of 2
		Chkd by:	CWC

Drilling Co:	Northern Test Boring	Boring Location:	West end of Main Street parking lot
Personnel:	Mike Nadeau	Elevation:	
Summit Staff:	Craig Coolidge, Erika Hawksley	Date started: 7/15/2011	Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	3.5'		Measured in open bore hole after drilling
7/15/2011	6.9'		Measured during drilling with water meter

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23					Rod Push 22' - 23' = 17 bpf 23' - 24' = 23 bpf 24' - 24.5' = 50/6" bpf		GLACIAL TILL
24							
25					Refusal at 24.5', Bedrock		24.5' BEDROCK
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES: bpf = blows per foot

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-3**

Project: Wright-Pierce Boardwalk
Location: Main Street, Damariscotta, Maine
Project #: 11155
Sheet: 1 of 1
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley
Boring Location: Main Street parking lot, East of boat launching ramp
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	3" Casing	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	4.5'		Observed moisture change

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/6	0 - 2	4	Brown SAND, some Silt, compact, humid, SM		GRANULAR FILL
1				3			
				8			
2				10			
	S-2	24/1	2 - 4	8	Brown SAND, some Gravel, little Silt, compact, damp,		
3				12	SM-SP		
				11			
4				10			
						Water at 4.5'	
5							
	S-3	24/8	5 - 7	3	Brown SAND, some Gravel, trace Silt, compact, wet, SP		5' GLACIAL MARINE DEPOSITS
6				7			
				5			
7				4			
	S-4	24/6	7 - 9	3	Light brown Gravelly SAND, loose, wet, SP		
8				4			
				3			
9				8			
10							
	S-5	24/12	10 - 12	1	Inter-layered Clay and Sand		10'
11				1	Olive brown CLAY, little Silt, soft, wet, CL		
				1	Light brown SAND, some Silt, very loose, wet, SM		
12				1			
13							
14							
15							
	S-6	24/18	15 - 17	2	Olive brown to gray CLAY, some Sand and Silt seams,	PP=1,500 psf	15'
16				2	soft to firm, wet, CL	MC = 27.5%	
				2			
17				2			
18							
					Torevane unable to advance at 18'		18'
19					Well graded SAND, SW		
20							
	S-7	24/8	20 - 20.3	50/4"	Gray SAND, compact, wet, SW		
21					Weathered rock at spoon tip		
					Auger Refusal at 20.3', Bedrock		20.3' BEDROCK
22							

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-4**

Project: Wright-Pierce Boardwalk
Project #: 11155
Location: Main Street
Damariscotta, Maine
Sheet: 1 of 2
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley
Boring Location: East end of Main Street parking lot
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	9'		Observed moisture change

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/3	0 - 2	2	Dark brown organic SILT, rootlets, loose, humid, OL	Lawn	TOPSOIL
1				2	Brown SAND, some Silt, loose to compact, humid, SM		0.2'
				8			GRANULAR
2				10			FILL
	S-2	24/3	2 - 4	5	Brown SAND, some Gravel, trace Silt, loose, humid,		
3				5	SP		
				3			
4				5			
5							
	S-3	24/6	5 - 7	3	Brown Silty SAND, little Gravel, compact, moist, damp,		
6				3	SM		
				3	Moist at spoon tip		
7				2			
	S-4	24/14	7 - 9	1	Light brown Silty SAND, trace Clay, loose, moist, SM		
8				3			
				6			
9				7			
						Water at 9'	9'
10							GLACIAL MARINE
	S-5	24/12	10 - 12	2	Gray well graded medium-course SAND, trace Silt,		DEPOSITS
11				5	compact, wet, SP		
				1			
12				1			
13							
14							
							14' +/-
15							
	S-6	24/16	15 - 17	1	Gray CLAY, little Silt, soft, wet, CL	PP = 1,500 psf	
16				1		MC = 34.5%	
				2			
17				2			
18							
19							
20							
	S-7	24/24	20 - 22	WOH	Gray CLAY, very soft, wet, CL	PP <= 500 psf	
21				WOH		MC = 38.3%	
				1			
22				1			

Granular Soils		Cohesive Soils		% Composition		NOTES:	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency				Dry: S = 0%
0-4	V. Loose	<2	V. soft			Bedrock Joints	Humid: S = 1 to 25%
4-10	Loose	2-4	Soft	<5%	trace	Shallow = 0 to 35 degrees	Damp: S = 26 to 50%
10-30	Compact	4-8	Firm	5-15	little	Dipping = 35 to 55 degrees	Moist: S = 51 to 75%
30-50	Dense	8-15	Stiff	15-25	some	Steep = 55 to 90 degrees	Wet: S = 76 to 99%
>50	V. Dense	15-30	V. Stiff	>25	and		Saturated: S = 100%
		>30	Hard			Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches	

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Project:	Wright-Pierce Boardwalk	Boring #:	B-4
Location:	Main Street	Project #:	11155
	Damariscotta, Maine	Sheet:	2 of 2
		Chkd by:	CWC

Drilling Co:	Northern Test Boring	Boring Location:	East end of Main Street parking lot
Personnel:	Mike Nadeau	Elevation:	
Summit Staff:	Craig Coolidge, Erika Hawksley	Date started: 7/15/2011	Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	9'		Observed moisture change

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23					Rod push advancement		GLACIAL MARINE DEPOSITS
24							
25							
26					Denser material at 25' Sand and Silt mixture		24' GLACIAL TILL
27							
28							
29							
30					Rod Push 30' - 30.5' = 8 blows per 6"		
31					30.5' - 31' = 6 blows per 6" 31' - 31.5' = 5 blows per 6"		
32					31.5' - 31.7' = 50/2" blows per 6"		
33					Auger Refusal at 31.7', Bedrock		31.7' BEDROCK
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							

Granular Soils		Cohesive Soils	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. Loose	<2	V. soft
4-10	Loose	2-4	Soft
10-30	Compact	4-8	Firm
30-50	Dense	8-15	Stiff
>50	V. Dense	15-30	V. Stiff
		>30	Hard

% Composition	
<5%	trace
5-15	little
15-25	some
>25	and

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-5**

Project: Wright-Pierce Boardwalk
Project #: 11155
Location: Main Street
Damariscotta, Maine
Sheet: 1 of 1
Chkd by: CWC

Drilling Co: Northern Test Boring
Personnel: Mike Nadeau
Summit Staff: Craig Coolidge, Erika Hawksley
Boring Location: Middle of Main Street parking lot, behind Irving
Elevation:
Date started: 7/15/2011 Date Completed: 7/15/2011

DRILLING METHOD		SAMPLER	
Vehicle:	Trailer	Type:	24" SS
Model:	Diedrich D-50	Hammer:	140 lb
Method:	2 1/4" HSA	Fall:	30"

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/15/2011	7'		Observed moisture change

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
					Bituminous Pavement = 3"		PAVEMENT
1	S-1	24/10	0.3 - 2.3	8	Brown SAND, some Gravel, little Silt, compact, humid, SM	Gravel = 18.3%	0.3'
				12		Sand = 69.1%	GRANULAR
2				14		Fines = 12.6%	FILL
				10			
3	S-2	24/12	2.3 - 4.3	7	Brown SAND, some Gravel, concrete, and brick,		
				8	compact, damp, SP		
4				10			
				12			
5							
	S-3	24/5	5 - 7	2	Gray GRAVEL, some Sand, trace Silt, dense, moist, GW		5'
6				20			GLACIAL MARINE
				11			DEPOSITS
7				9			(Portions Reworked)
	S-3	24/12	7 - 9	4	Gray GRAVEL, little Sand, dense, wet, GW	Water at 7'	
8				17			
				21			
9				14			
10							
	S-4	24/24	10 - 12	2	Gray CLAY, some Sand and Gravel, trace Silt, stiff, wet,		10'
11				4	CL		
				6			
12				33	Wood at 11.5'		
					Auger Refusal at 12', Wood		12'
13							WOOD
14							
15							
16							
17							
18							
19							
20							
21							
22							

Granular Soils		Cohesive Soils		% Composition	
Blows/ft.	Density	Blows/ft.	Consistency		
0-4	V. Loose	<2	V. soft		
4-10	Loose	2-4	Soft	<5%	trace
10-30	Compact	4-8	Firm	5-15	little
30-50	Dense	8-15	Stiff	15-25	some
>50	V. Dense	15-30	V. Stiff	>25	and
		>30	Hard		

NOTES:

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

APPENDIX C
LABORATORY RESULTS

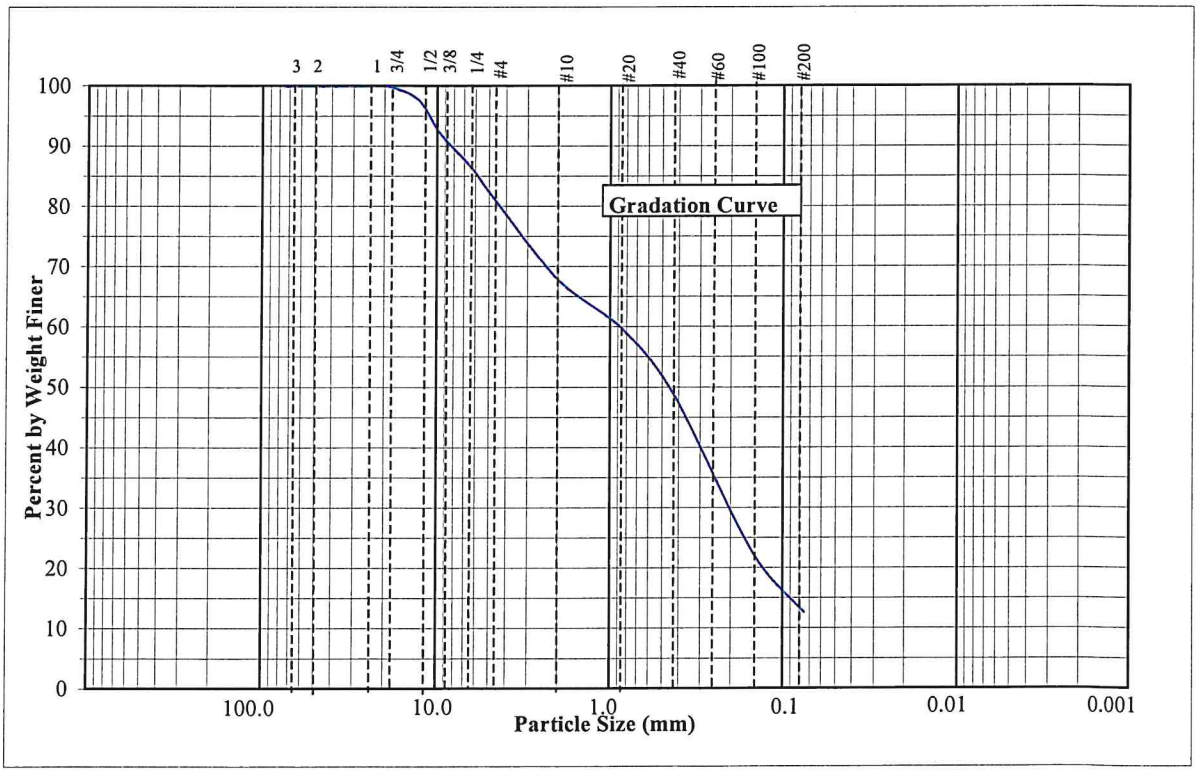
SUMMIT ENVIRONMENTAL CONSULTANTS, INC.
434 Cony Road, Augusta, Maine 04330
Phone:(207) 621-8334 Fax:(207) 626-9094

GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME:	Wright-Pierce; Boardwalk	PROJECT #:	14381 / 11155
CLIENT:	Summit Geoengineering Services	SUMMIT SAMPLE:	S-1
CLIENT SOIL DES:		INTENDED USE:	Subgrade Analysis
SOURCE:	B-5, 0.3' - 2.3'	SPECIFICATION:	Investigation
DATE:	7-18-11	TECHNICIAN:	T. Daniels

DATA

PARTICLE SIZE mm		% BY WT FINER
76.20	(3 in)	100.0
50.80	(2 in)	100.0
38.10	(1-1/2 in)	100.0
25.40	(1 in)	100.0
19.05	(3/4 in)	100.0
12.70	(1/2 in)	97.7
9.53	(3/8 in)	92.0
6.35	(1/4 in)	86.6
4.75	(No. 4)	81.7
2.00	(No. 10)	68.0
0.85	(No. 20)	59.8
0.43	(No. 40)	48.7
0.15	(No. 100)	22.9
0.08	(No. 200)	12.6



REMARKS:

Reviewed: Darrell A. Gilman, CMT Manager
Date: 7/18/11

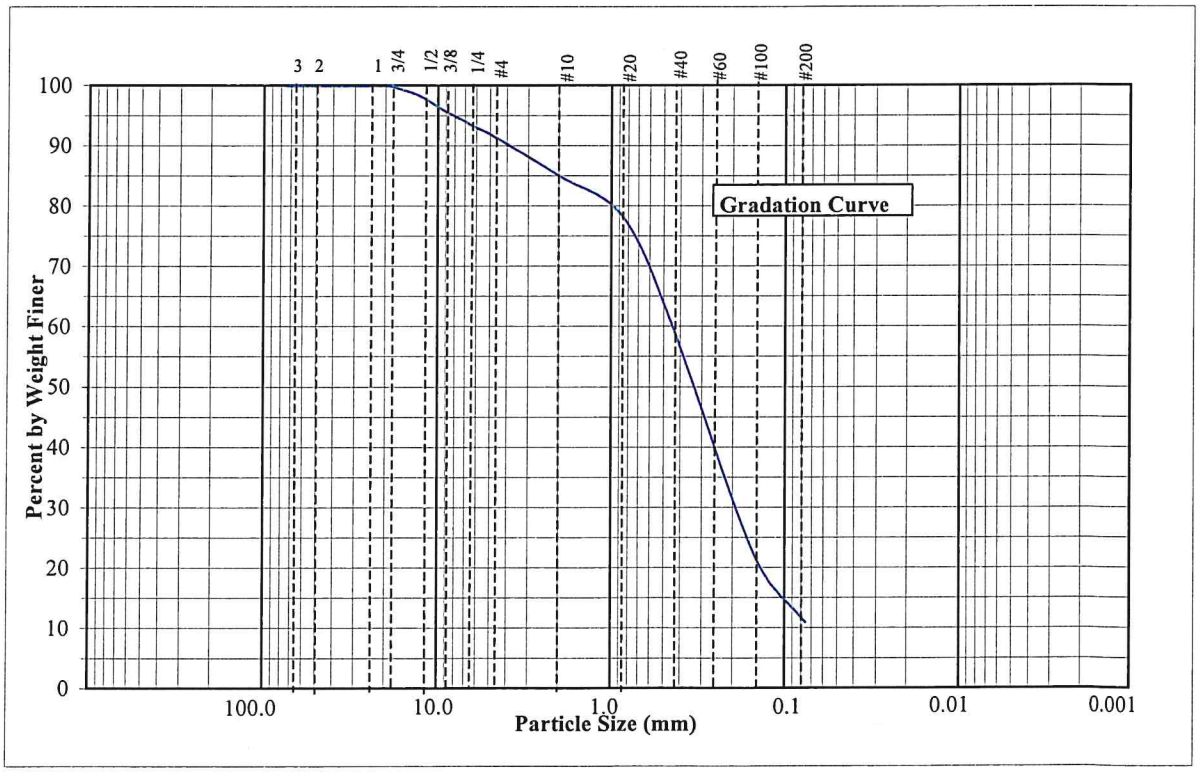
SUMMIT ENVIRONMENTAL CONSULTANTS, INC.
434 Cony Road, Augusta, Maine 04330
Phone:(207) 621-8334 Fax:(207) 626-9094

GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME:	Wright-Pierce Boardwalk	PROJECT #:	14381 / 11155
CLIENT:	Summit Geoengineering Services	SUMMIT SAMPLE:	B-2 - S4
CLIENT SOIL DES:		INTENDED USE:	Liquefaction Analysis
SOURCE:	B-2, 7' - 9'	SPECIFICATION:	Investigation
DATE:	7/18/11	TECHNICIAN:	T. Daniels

DATA

PARTICLE SIZE mm		% BY WT FINER
76.20	(3 in)	100.0
50.80	(2 in)	100.0
38.10	(1-1/2 in)	100.0
25.40	(1 in)	100.0
19.05	(3/4 in)	100.0
12.70	(1/2 in)	98.4
9.53	(3/8 in)	96.2
6.35	(1/4 in)	93.4
4.75	(No. 4)	91.6
2.00	(No. 10)	85.1
0.85	(No. 20)	78.1
0.43	(No. 40)	58.6
0.15	(No. 100)	22.3
0.08	(No. 200)	10.9



REMARKS:

Reviewed: Darrell A. Gilman, CMT Manager
Date: 7/18/11

SUMMIT ENVIRONMENTAL CONSULTANTS, INC.
434 Cony Road, Augusta, Maine 04330
Phone: (207) 621-8334 Fax: (207) 626-9094

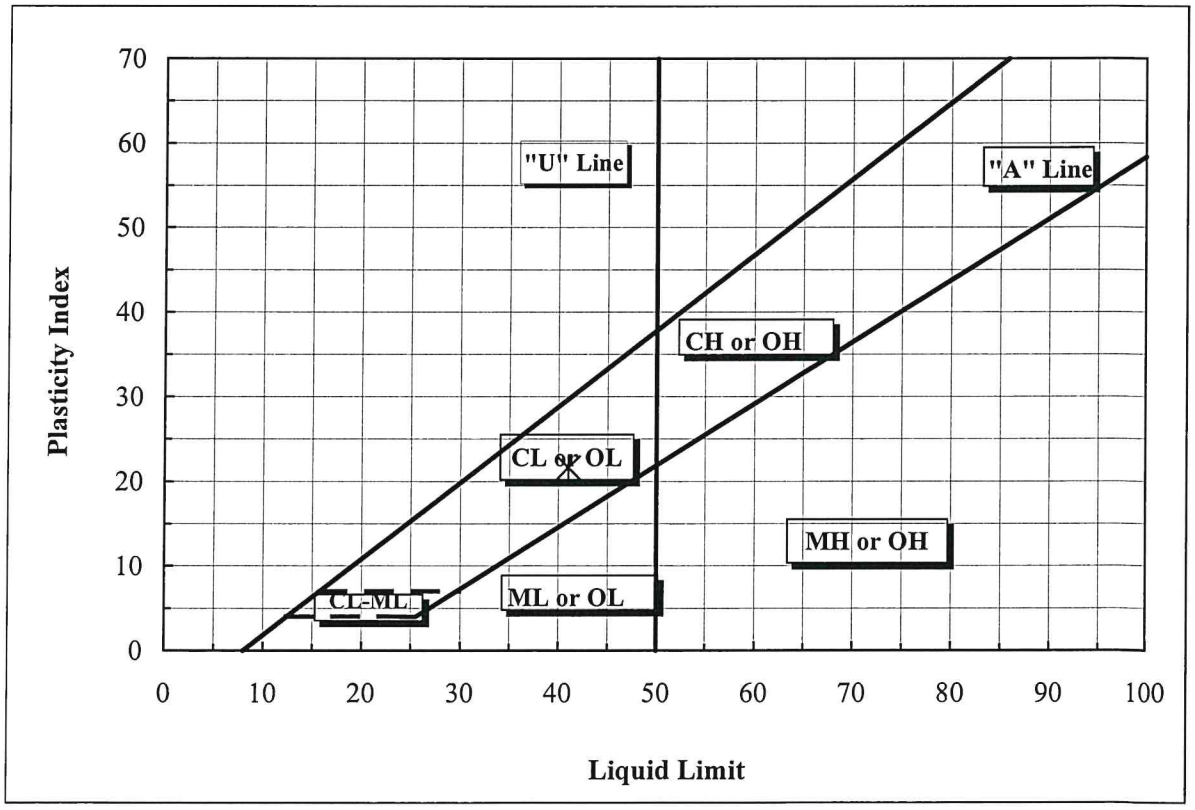
ATTERBERG LIMIT TEST - ASTM D4318

Method "A" (Multi-point)

PROJECT NAME:	Wright Pierce Boardwalk	PROJECT #:	14381 / 11155
CLIENT:	Summit Geoengineering Services	SAMPLE #:	S-7
PROCEDURE:	A	DEPTH:	20' to 22'
INTENDED USE:	Settlement Analysis	DATE:	7/18/11
SAMPLE SOURCE:	B-4	TECHNICIAN:	T. Daniels

DATA

Source	Depth	LL	PL	PI	Classification
B-4	20' to 22'	41	19	22	Lean Clay (CL)



Notes:

Reviewed: Darrell A. Gilman, CMT Manager
Date: 7/20/2011

SUMMIT ENVIRONMENTAL CONSULTANTS, INC.
434 Cony Road, Augusta, Maine
04330
Phone: (207) 621-8334 Fax: (207) 626-9094

Laboratory Determination of Water (Moisture) Content of Soil ASTM D2216

PROJECT NAME:	Wright-Pierce Boardwalk	PROJECT #:	14381 / 11155
CLIENT:	Summit Geoengineering Services	SAMPLE #:	Various
SOIL DESCRIP:		DATE:	7/18/11
INTENDED USE:	Settlement Analysis	SOURCE:	
		TECH:	T. Daniels

Sample Number	Sample Source	Percent Moisture
S5	B1, S5	77.2
S6	B2, S6	28.0
S6	B3, S6	27.5
S4	B1, S4	49.9
S6	B4, S6	34.5
S7	B4, S7	38.3

REMARKS: Samples B-1, S-5 and B-1, S-4 contained wood and/or organic debris in sample.

Reviewed: Darrell Gilman, CMT Manager
Date: 7-19-11

APPENDIX B
Phase II Environmental Assessment



RANSOM
Consulting Engineers and Scientists

Legend & Notes

- Site Boundary
- Lot Boundary
- Catch Basin
- Soil Boring
- Soil Boring/ Monitoring Well
- 1938 Shoreline

Notes

1. Site Plan based on Bing Orthophotography
2. Some features are approximate in location and scale
3. This plan has been prepared for the Lincoln County Planning Commision. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 35 70

1 inch = 70 feet

Prepared For

Lincoln County Regional Planning Commission
35 Water Street
Wiscasset, Maine

Site Address

Former AA Hall Grist Mill
Main Street
Damariscotta, Maine

131.06156 | Dec 2015

Figure 2-2

Site Plan Showing Proposed Exploration Locations

G:\Data\ME\Project\131_06156_007\Grist_Mill\Maps\Figure_2_2.mxd

PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER AA HALL GRIST MILL
MUNICIPAL PARKING LOT
MAIN STREET
DAMARISCOTTA, MAINE

Prepared for:

Lincoln County Regional Planning Commission
35 Water Street, P.O. Box 268
Wiscasset, Maine 04578
Funded by U.S. EPA Brownfields
Assessment Grant No. BF96181901

On Behalf of:

Town of Damariscotta
21 School Street
Damariscotta, Maine 04543

Prepared by:

Ransom Consulting, Inc.
400 Commercial Street, Suite 404
Portland, Maine 04101
(207) 772-2891

Project 131.06156.010
May 24, 2016

Rev. 0

EXECUTIVE SUMMARY

On behalf of the Lincoln County Regional Planning Commission (LCRPC) and the Town of Damariscotta, the following report presents the findings of a Phase II Environmental Site Assessment (ESA) performed by Ransom Consulting, Inc. (Ransom) for the property identified as the former AA Hall Grist Mill (current municipal parking lot) located on Main Street in the Town of Damariscotta, Lincoln County, Maine (the "Site"). The Phase II ESA was performed in conjunction with the United States Environmental Protection Agency (U.S. EPA) and the Maine Department of Environmental Protection (MEDEP) and was conducted using U.S. EPA Brownfield funding under the LCRPC's Brownfields Assessment Grant No. BF96181901.

A Phase I ESA for the Site, dated September 17, 2015, was completed by Ransom. The Phase I ESA identified *Recognized Environmental Conditions* (RECs) in connection with documented and/or unknown/unreported petroleum-releases that have been identified on two of the adjoining properties (the Colby & Gale Service Station located at 105 Main Street, and the former Main Street Gulf located at 189 Main Street) which may have migrated to the Site. Additionally, although not identified as a REC, Ransom noted the on-Site use of fill material from unknown origins. Based on the findings of our Phase I ESA, it was Ransom's opinion that historical Site operations, and current and historical offsite operations, may have impacted the soil and/or groundwater conditions at the Site. The Phase II ESA was designed to confirm or dismiss the *RECs* identified during the Phase I ESA, to identify potential exposure risks, and to evaluate the suitability of the Site for proposed commercial redevelopment. The Phase II scope of work included the performance of a ground penetrating radar (GPR) survey to evaluate the potential presence of subsurface structures and utilities. Additionally, the Phase II scope of work included the advancement of eight soil borings, completion of three groundwater monitoring wells, and the collection and chemical analysis of soil and groundwater samples throughout the Site.

In general, soils encountered during the Phase II Investigation were relatively consistent throughout the Site, with approximately 3 inches of asphalt over approximately 10 to 16 feet of sandy fill with some gravel and wood debris, over native marine clay. No petroleum odors or sheen were observed in the soil samples collected during the Phase II investigation, with the exception of the soils encountered in soil borings B103 and B107. The petroleum odor was encountered at depths between from 10 to 12 feet bgs in soil boring B103, and at depths between 10 to 12 feet bgs in soil boring B107. Photoionization detector (PID) field-screening readings taken at these depths from soil borings B103 and B107 ranged from 2.5 to 4.8 parts per million/volume (ppmv). No petroleum odors or sheen were observed in the groundwater samples collected during the Phase II investigation, with the exception of a petroleum sheen observed in the groundwater in monitoring well MW103.

Additionally, a decaying organics odor was observed in soil borings B102, B105, B106, and B107 in the areas where wood debris was observed. Wood debris was observed in these soil boring locations at depths ranging from 10 to 17 feet bgs. PID readings taken at these depths from soil borings B102, B105, B106, and B107 ranged from 0.4 to 24.5 ppm.

Groundwater was encountered at depths ranging from 4.36 to 6.82 feet bgs during the investigation. Concurrent with the Phase II investigation at the Site, a relative groundwater elevation survey was conducted in order to evaluate the local groundwater flow direction at the Site. The data indicates a hydraulic gradient and associated interpreted groundwater flow to the west/southwest in the direction of the Damariscotta River.

Based on laboratory analytical results, no volatile organic compounds (VOCs), volatile petroleum hydrocarbons (VPH) fractions, extractable petroleum hydrocarbons (EPH) fractions, target polycyclic aromatic hydrocarbons (PAHs), or Resource Conservation and Recovery Act (RCRA) 8 Metals were detected in the soil samples collected from the Site at concentrations above their respective MEDEP Remedial Action Guidelines (RAGs) for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios, with the exception of arsenic detected in surficial soils. The arsenic concentrations detected at the Site are consistent with State-wide background concentrations.

No VOCs, VPH fractions, EPH fractions, target PAHs, or dissolved RCRA 8 Metals were detected in the groundwater samples collected from the Site at concentrations above their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario, with the exception of naphthalene and C_5-C_8 aliphatics detected in the groundwater sample collected from MW103.

Relative to the AOCs identified in this Phase II ESA, the following conclusions are made:

1. *Potential contamination associated with the adjoining Colby & Gale Service Station (105 Main Street)*: low level petroleum-impacted soil and groundwater were detected in locations adjacent to and down-gradient from the adjoining Colby & Gale Service Station. These contaminants are likely related to historic releases of petroleum products from this neighboring site. The detected contaminant concentrations do not exceed their respective MEDEP RAGs, and therefore do not appear to represent an exposure risk to future Site occupants or Site workers.

2. *Potential contamination associated with the adjoining former Main Street Gulf (189 Main Street)*: Petroleum-impacted soil and groundwater was identified in connection with historical OHM releases associated with the adjacent property during this Phase II ESA. The concentrations of naphthalene and C_5-C_8 aliphatics detected in the groundwater sample collected from MW103 exceeded their respective MEDEP RAGs for the "Groundwater Construction Worker" exposure scenario.

3. *Potential contamination associated with fill materials used onsite*: Results of fill material samples were generally consistent with background concentrations. Low level petroleum contamination detected below the groundwater table in the northwestern portion of the Site is likely attributable to impacts from the neighboring Colby & Gale Service Station. The fill materials used at the Site do not appear to represent an exposure risk to future Site occupants or Site workers.

Based on the information obtained during this Phase II Investigation, Ransom recommends the following with respect to the proposed Site redevelopment:

1. A Media Management Plan (specifically for handling and managing contaminated soil and groundwater) should be developed to reduce potential exposure risks to future Site workers, and outline appropriate characterization, management, and disposal methods for contaminated soil and groundwater which may be encountered during future Site redevelopment activities.

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APPENDICES

Appendix A	Boring Logs
Appendix B	Certified Laboratory Analytical Report
Appendix C	Field Screening Data Sheets

1.0 INTRODUCTION

On behalf of the Lincoln County Regional Planning Commission (LCRPC) for the use by the Town of Damariscotta, the following report presents the findings of a Phase II Environmental Site Assessment (ESA) conducted by Ransom Consulting, Inc. (Ransom) at the property identified as former AA Hall Grist Mill (current municipal parking lot) located on Main Street in the Town of Damariscotta, Lincoln County, Maine (the "Site"). This project was performed in conjunction with the United States Environmental Protection Agency (U.S. EPA) and the Maine Department of Environmental Protection (MEDEP) and was completed using U.S. EPA Brownfields funding under the LCRPC's Brownfields Assessment Grant No. BF96181901.

Furthermore, the Phase II ESA was completed in accordance with Ransom's Site-Specific Quality Assurance Project Plan (SSQAPP), Addendum No. 28, dated January 4, 2016. The SSQAPP was reviewed and approved by the MEDEP and the U.S. EPA, prior to implementation of the field activities.

1.1 Purpose

A Phase I ESA for the Site, dated September 17, 2015, was completed by Ransom. The Phase I ESA identified *Recognized Environmental Conditions* (RECs) in connection with the Site including the on-Site use of fill material of unknown origin, and documented and/or unknown/unreported petroleum-releases that have been identified on two of the adjoining properties (the Colby & Gale Service Station located at 105 Main Street, and the former Main Street Gulf located at 189 Main Street) which may have migrated to the Site. Based on the findings of our Phase I ESA, it was Ransom's opinion that historical Site operations, and current and historical offsite operations, may have impacted the soil and/or groundwater conditions at the Site. It was also Ransom's opinion that additional investigation was warranted and recommended to address the identified RECs, document current Site conditions in relation to current regulatory clean up guidelines, and evaluate the suitability of the Site property for proposed future redevelopment.

Based on the Phase I ESA, Ransom recommended a Phase II ESA to evaluate current soil and groundwater conditions at the Site. Findings from the additional investigation(s) should be used to evaluate potential health and environmental risks associated with redevelopment of the Site property and identify whether remediation or mitigation measures are necessary to eliminate these potential health and environmental risks.

1.2 Project Objectives

Based on the findings and recommendations of the Phase I ESA, the activities discussed herein were designed to accomplish the following objectives:

1. To further evaluate the RECs identified in the Phase I ESA;

2. To assess the current Site conditions to determine the suitability of the Site for the proposed redevelopment; and

3. To evaluate potential risks to receptors in accordance with the expectations and requirements of the MEDEP Voluntary Response Action Program (VRAP).

Any activities to accomplish objectives other than those identified above are considered outside the scope of work for this project.

1.3 Special Terms and Conditions

This Phase II ESA was conducted in accordance with our executed Master Services Agreement with the LCRPC. Authorization to perform this Phase II ESA was provided by the LCRPC.

This report was prepared using U.S. EPA Brownfields funding under the LCRPC's Brownfields Assessment Grant No. BF96181901, and therefore is a public document. However, the services, findings, and conclusions noted herein, and associated documents provided to the client by Ransom are solely for the benefit of the LCRPC and the Town of Damariscotta, their affiliates and subsidiaries and their successors, assigns, and grantees. Other than for public informational purposes, reliance or any use of this report by anyone other than LCRPC and the Town of Damariscotta, for whom it was prepared, is prohibited. Furthermore, reliance or use by any such third party without explicit authorization in the report does not make said third party a third-party beneficiary to Ransom's contract with LCRPC. Any such unauthorized reliance on or use of this report, including any of its information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.

1.4 Limitations and Exceptions of Assessment

The Phase II Investigation was executed in accordance with the scope of work proposed in the SSQAPP. Any additional revisions to the scope of work or methodologies outlined in the SSQAPP were implemented based on conditions encountered in the field and following discussions with the MEDEP. Any revisions to the proposed scope of work are discussed in Section 3.1. Furthermore, the findings provided by Ransom in this report are based solely on the information reported in this document and the results of limited explorations and confirmatory laboratory testing. Our findings and conclusions must be considered as our professional opinion concerning the significance of the limited data gathered during the course of the environmental assessments. Ransom does not and cannot represent that the Site contains no additional oil and/or hazardous materials (OHM) or other adverse environmental conditions beyond that observed and noted by Ransom during the environmental assessments and field investigations. Should additional information become available in the future, this information can be reviewed by Ransom and the findings, presented herein, may be modified as a result of the review.

2.0 BACKGROUND

2.1 Site Description, History, and Physical Setting

The Site consists of an approximate 3.17-acre, irregularly-shaped parcel of land located in the downtown commercial area of Damariscotta, Maine. The Site is located to the south of Main Street, approximately 150 feet to the southwest of the intersection of Main Street and Water Street. The Site is bordered to the south/southwest by the Damariscotta River. Adjoining properties to the Site are generally commercial in nature. The Site is currently owned by the Town of Damariscotta, and used as a municipal parking lot. The majority of the Site is paved with asphalt; a boat launch and grass/rip-rap areas are located on the southern portion of the Site adjacent to the outlet of the Damariscotta River.

Based on available information, the first known use of the Site was in circa 1884, when the Site reportedly operated as AA Hall's Saw and Grist Mill, a blacksmith shop, carriage repository, and a wheelwright shop. Prior to circa 1884, the use of the Site is unknown. The Site continued in operation as such until circa 1912, when the saw and gristmill ceased to exist, and the Site was improved with a blacksmith shop, horse sheds, and sheds and storage houses. From circa 1925 through circa 1956 the Site operated as a boat shop, and miscellaneous storage area. In the early 1960's, portions of the Site were filled in and expanded into the Damariscotta River. Since that time, the Site has operated as a municipal parking lot owned by the Town of Damariscotta. A Site Location Map is presented as Figure 1.

2.2 Recognized Environmental Conditions

Ransom's Phase I ESA identified the following RECs associated with the Site:

1. Potential contamination at the adjoining Colby & Gale Service Station (105 Main Street) and adjoining former Main Street Gulf (189 Main Street) properties may have migrated to the Site. The Site has the potential to be impacted by contaminants currently and/or formally associated with these properties.

    - Colby & Gale Service Station property: Historical and current property operations include automobile garage, repair shop, and filling station. Hazardous materials or wastes potentially associated with these activities, including various solvents, heavy metals, polyaromatic hydrocarbons and petroleum products have the potential to have impacted the environmental conditions of the Site.

    - Former Main Street Gulf property: Historical property operations automobile sales and service shop, and filling station. Hazardous materials or wastes potentially associated with these activities, including various solvents, heavy metals, polyaromatic hydrocarbons and petroleum products have the potential to have impacted the environmental conditions of the Site.

Based on Site observations and the findings of this assessment, it was Ransom's opinion that historical Site operations, and current and historical offsite operations, may have impacted the soil and groundwater conditions at the Site.

Ransom recommended that a SSQAPP be developed and a Phase II ESA be implemented to evaluate current soil and groundwater conditions at the Site. Furthermore, the eastern and western portions of the Site were created by filling in the Damariscotta River in the early 1960's. The nature of this fill material

is unknown; therefore, Ransom recommended that the subsurface fill conditions be evaluated as part of the Phase II ESA.

2.3 Areas of Concern

Based on the findings of the Phase I ESA and the identified RECs, the following source areas and contaminants of concern were identified in connection with the Site.

Former Onsite Operations and Fill Material of Unknown Origins

Former Site operations (1892 to circa 1956) include a saw and grist mill, coal storage, a blacksmith shop, a wheelwright shop, and a boat shop. In the early 1960's, portions of the Site were filled in and expanded into the Damariscotta River. Since that time, the Site has operated as a municipal parking lot owned by the Town of Damariscotta. Although not identified as a REC in the Phase I ESA, it is possible potential unknown/unreported releases of oil and/or hazardous materials (OHM) associated with these former Site operations may have adversely impacted environmental conditions at the property.

The contaminants of concern (COCs) associated with onsite operations, including coal storage, a blacksmith shop, and a boat shop, as well as the use of fill material originating from unknown sources, includes solvents, lubricating oils, and petroleum products. Specific COC analytical parameters include volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and Metals. The metals typically associated with former known off-site operations are Resource Conservation Recovery Act (RCRA) 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). If present, these contaminants would likely be detected in subsurface soil and groundwater at the Site. Because the Site is not currently developed with inhabitable buildings, and is proposed to remain as a municipal parking lot, vapor-phase contaminants are not expected to represent an exposure risk unless significant source areas are identified which would represent a risk to the commercial buildings at properties adjacent to the Site.

Potential exposure routes associated with the COCs at the Site include direct contact with impacted soils and ingestion of contaminated dust, particularly during subsurface construction activity at the Site. Excavation/construction workers may also be exposed to dissolved-phase contaminants during construction activities.

Off-Site Sources

As previously discussed, the northern adjoining Colby & Gale Service Station property (105 Main Street) has historically operated as an automobile service and filling station. Additionally, the eastern adjoining former Main Street Gulf property (189 Main Street) has historically operated as an automobile service and filling station, and currently operates a restaurant (Mediterranean Kitchen). Documented petroleum releases have occurred at both properties, and documented petroleum-impacted soils currently remain at the former Main Street Gulf property. Due to the close proximity and upgradient location from the Site relative to the inferred groundwater flow direction (southwest), it is possible potential known and/or unknown/unreported releases of OHM associated with these properties may have adversely impacted environmental conditions at the Site.

The COCs associated with these off-site properties include solvents, waste oils, lubricating oils, and petroleum products. Specific COC analytical parameters include VPHs, EPHs, PAHs, VOCs, and Resource Conservation and RCRA 8 Metals. If present, these contaminants would likely be detected in

subsurface soil and groundwater at the Site. Potential exposure routes associated with the COCs at the Site include direct contact with impacted soils or groundwater, and ingestion of contaminated dust, particularly during any construction activity at the Site.

3.0 INVESTIGATION METHODOLOGY

The Phase II Investigation was designed to collect sufficient data to characterize the environmental condition of the Site in relation to current risk-based regulatory standards, identify potential exposure risks to current and future Site occupants and Site workers, and evaluate the suitability of the Site for proposed municipal/commercial reuse.

The scope of work for the Phase II ESA was developed, based on the conceptual site model presented in the SSQAPP, and included the advancement of soil borings, installation of groundwater monitoring wells, and the collection and chemical analysis of soil and groundwater samples. Soil boring and monitoring well locations are shown on Figure 2.

Utility Locating Survey

On February 16, 2016, Ransom supervised a utility locating survey at the Site, prior to implementation of subsurface investigation activities. The utility locating survey was performed by Digsmart of Maine, Inc. (Digsmart) of Scarborough, Maine, in order to evaluate the potential presence of utilities and various subsurface structures at the Site that may impede our investigation. Findings from the utility locating survey were used to assist in determining the location of soil borings and monitoring wells at the Site. Please note that the utility locating survey was only performed at the Site in the vicinity of the soil borings, and the survey was not conducted throughout the entire Site parcel.

Soil Boring Advancement

On February 17 and18, 2016, Ransom observed the advancement of a total of eight (8) soil borings, identified as B101 through B108, by Technical Drilling Services (TDS) of Sterling, MA. The borings were advanced using 8-inch diameter hollow-stem augers (HSA). Overburden soil samples were collected with a 2-inch ID, split-spoon sampler at the ground surface and 5-foot intervals thereafter, as directed by Ransom. Refusal conditions were encountered at soil boring B102 and B104 at depths of 12.5 and 13.5 below ground surface (bgs), respectively. The soil borings were advanced to depths ranging from 12 to 17 feet bgs.

Soil samples collected during the advancement of the soil borings were visually classified in the field by Ransom in general accordance with the Burmeister Soil Classification System.

Qualitative Field Screening

Soil samples collected during the advancement of the soil borings were screened in the field for the presence of total organic volatile compounds (TVOCs), using a photoionization detector (PID) equipped with a 10.6 eV lamp and calibrated to an isobutylene standard. Samples were collected for laboratory analysis from the locations and depths based on observations in the field (visual or olfactory evidence of contamination) and/or proximity to the groundwater table. Sample intervals, sample recovery, and organic vapor concentrations (as determined by field screening) are included on the soil boring logs provided as Appendix A. Copies of the laboratory chemical analysis data reports are provided as Appendix B. Field screening and, groundwater data sheets are provided in Appendix C.

Soil Sampling and Analytical Testing

Soil samples collected from the soil borings were submitted to Alpha Analytical, LLC (Alpha) of Westborough, Massachusetts, for chemical analysis. Soil samples were collected directly from the sampling equipment and transferred into laboratory-prepared glassware. The samples were preserved in the field in accordance with applicable protocols and delivered on ice under chain-of-custody protocol for laboratory analysis. Soil samples were submitted for the following chemical analysis:

1. VOCs, by U.S. EPA Method 8260B;

2. VPH fractions, excluding the target petroleum VOCs, by Massachusetts Department of Environmental Protection (MA DEP) Method 98-1 (VPH Standard);

3. EPH fractions, including target PAHs, by MA DEP Method 98-1 (EPH Full); and

4. RCRA 8 Metals by U.S. EPA Method Series 6010C/7470A

Soil samples B104-S1, B106-S1, and B108-S1 were collected from surficial soils (0-2 feet bgs). Soil samples B101-S3, B102-S2, B103-S3, B105-S2, and B107-S3 were collected from subsurface depths ranging from 5 to 12 feet bgs.

A duplicate soil sample (B10X) was collected from soil boring B101-S3 (collected from 10-12 feet bgs) and submitted for laboratory analysis for quality assurance/quality control (QA/QC) protocols as outlined in the SSQAPP.

Groundwater Monitoring Well Installation

On February 17, 2016, soil borings B101, B102, and B103 were completed as groundwater monitoring wells MW101, MW102, and MW103, respectively. Groundwater was measured at depths ranging from 4.36 to 6.82 feet bgs. Generally, these borings were advanced through approximately 3 inches of asphalt over approximately 10 to 16 feet of sandy fill with some gravel and wood debris, over native marine clay. Well construction details can be found on the boring logs provided as Appendix A.

Groundwater Sampling and Analytical Testing

Prior to sample collection, the monitoring wells were developed using a peristaltic pump and dedicated tubing. The wells were developed in an effort to remove silt and fines and to restore the natural permeability of the soils surrounding the well screens. During the course of well development, no evidence of light non-aqueous phase liquid (LNAPL) or dense non-aqueous-phase liquid (DNAPL) were observed. A petroleum sheen was initially observed in the groundwater purged from monitoring well MW103. When purging was complete, monitoring wells MW101, MW102, and MW103 were sampled in accordance with the low-flow sampling methods specified in the SSQAPP.

The groundwater samples were collected directly from the sampling equipment and transferred into laboratory-prepared sample containers. The samples were preserved in the field in accordance with applicable protocols and delivered on ice under chain-of-custody protocol to Alpha for laboratory analysis. The groundwater samples were submitted for the following chemical analysis:

1. VOCs by U.S. EPA Method 8260B;

2. VPH fractions, excluding the target petroleum VOCs, by MA DEP Method 98-1 (VPH Standard);

3. EPH fractions, including target PAHs, by MA DEP Method 98-1 (EPH Full); and

4. Dissolved RCRA 8 Metals by U.S. EPA Method Series 6010C/7470A

A duplicate groundwater sample (MW-DUP) was collected from the temporary monitoring well MW103 and submitted for laboratory analysis for QA/QC protocols as outlined in the SSQAPP.

3.1 Limitations and Deviations from the SSQAPP

No deviations from the SSQAPP were made during this investigation.

3.2 Background Samples

Considering the historical operations at the Site and vicinity, soils across the entirety of the Site may have been impacted by historic Site activities or operations. Therefore, Ransom relied on typical Maine background levels as the most representative at this Site, which will allow potential clean-up required at the Site to meet state cleanup guidelines and typical background levels. Background sample determination is discussed by MEDEP in the Remedial Action Guidelines (RAGs) in section VII subsection B. Therefore, Ransom compared the laboratory analytical results of Site soils to "Urban Developed ME Background" levels as defined in Table 1 of the 2016 MEDEP RAGs.

3.3 Former Onsite Operations and Fill Material of Unknown Origins

Although not identified as a REC in the Phase I ESA, several soil borings were advanced throughout the Site in order to address the concerns associated with potential contamination resulting from the Site's former uses as saw and grist mill, a blacksmith shop, carriage repository, a wheelwright shop, and a boat shop.

Soil borings B101, B106, and B108 were advanced in the area of the Site where the property was filled in (circa 1960) to expand the property into the Damariscotta River. These borings were advanced to evaluate the soil conditions of the fill materials. Additionally, B104 was used to evaluate the subsurface soil conditions in the vicinity of the former AA Hall Grist Mill operations.

A soil sample was collected from boring B101 at a depth of 10 to 12 feet bgs, based on a black sand layer visually identified at this depth. No visual, olfactory, or field screening evidence of contamination was observed in soil borings B104, B106 and B108; therefore, a soil sample from the 0 to 2-foot interval was submitted for laboratory analysis from these borings to evaluate potential direct contact exposure risk. Soil boring B101 was subsequently converted into monitoring well MW101 and a groundwater sample was collected for laboratory analysis. Soil and groundwater samples were submitted for laboratory analysis of contaminants of concern as outlined in the SSQAPP.

3.4 Off-Site Sources

Several additional soil borings were advanced to evaluate potential OHM releases from upgradient/adjacent gasoline filling/full service automotive repair facilities that may have migrated onto

the Site in groundwater at concentrations that exceed MEDEP's current guidance values for various exposure scenarios.

Soil borings B102, and B105 were advanced in inferred downgradient locations from the Colby & Gale Service Station property (105 Main Street) to evaluate potential OHM releases that may be attributable to former operations as an auto repair shop, auto garage, and filling station. Soil samples were collected at the approximate groundwater interface from these borings to evaluate potential contaminant migration from the upgradient property. Additionally, soil boring B102 was converted into groundwater monitoring well MW102 and a groundwater sample was collected.

Soil borings B103 and B107 were advanced in inferred downgradient locations from the former Main Street Gulf property (189 Main Street) to evaluate potential OHM releases that may be attributable to former operations as an auto repair shop, auto garage, and filling station. Soil samples were collected at a depth of 10 to 12 feet below grade in these borings based on field screening and olfactory evidence of petroleum contamination at this depth. Soil boring B103 was subsequently converted into groundwater monitoring well MW103.

Soil and groundwater samples collected from the off-site source areas were submitted for laboratory analysis of VOCs, VPH fractions, EPH fractions including Target PAHs, and RCRA 8 Metals as outlined in the SSQAPP.

4.0 RESULTS

The following subsections document the results of the Phase II ESA activities. Soil sample analytical results are summarized in Table 1. Groundwater sample analytical results are summarized in Table 2. Copies of the laboratory chemical analysis data reports are provided as Appendix B.

4.1 Comparison to Regulatory Standards and Guidelines

The analytical results of soil and groundwater samples collected at the Site were compared to the MEDEP Bureau of Remediation and Waste Management's (BRWM's) "*Remedial Action Guidelines (RAGs) for Sites Contaminated with Hazardous Substances,*" dated February 5, 2016.

Soil

The property is currently proposed to be redeveloped for commercial purposes; therefore, the MEDEP RAGs for "Outdoor Commercial Worker" exposure scenarios were the most applicable guidance standards for surficial soils (0 to 2 feet bgs). In addition, potential exposure risks to Site workers during future construction activities and utility work (i.e., subsurface water and sewer lines) exists at the Site and vicinity; therefore, "Excavation/Construction Worker" scenarios also apply to surficial soils (0 to 2 feet bgs) and subsurface soils (deeper than 2 feet bgs).

Groundwater

Municipal water and sewer utilities are available to the Site and surrounding properties. Therefore, ingestion of contaminated groundwater does not represent an exposure risk. Therefore, potential contaminant concentrations in groundwater samples were evaluated for the purpose of evaluating risks to future Site occupants/employees, existing nearby occupants/employees, proposed future construction workers, and identifying source areas and potential remediation scenarios. Based on this understanding, the groundwater results were compared to the MEDEP RAGS for the "Groundwater Construction Worker" exposure scenarios.

4.2 Geology and Hydrogeology

In general, soils encountered during the Phase II Investigation were relatively consistent throughout the Site, with approximately 3 inches of asphalt over approximately 10 to 16 feet of sandy fill with some gravel and wood debris, over native marine clay.

The soil borings were advanced to maximum depths ranging from 12 to 17 feet bgs. Refusal conditions were encountered at soil boring B102 and B104 at depths of 12.5 and 13.5 feet bgs. Groundwater was encountered in all soil borings, and was initially measured at a depth of approximately 5 feet bgs. Ransom recorded static depths to water in the three on-site groundwater wells at depths ranging from 4.36 to 6.82 feet bgs.

No petroleum odors or sheen were observed in the soil samples collected during the Phase II investigation, with the exception of the soils encountered in soil borings B103 and B107. The petroleum odor was encountered at depths between approximately 10 and 12 feet bgs in these soil borings. PID readings taken at these depths from soil borings B103 and B107 ranged from 2.5 to 4.8 ppm. No petroleum odors or sheen were observed in the groundwater samples collected during the Phase II

investigation, with the exception of a petroleum sheen observed on the groundwater purged from monitoring well MW103.

Additionally, a decaying organics odor was observed in soil borings B102, B105, B106, and B107 in the areas where wood debris was observed. Wood debris was observed in these soil boring locations at depths ranging from 10 to 17 feet bgs. PID readings taken at these depths from soil borings B102, B105, B106, and B107 ranged from 0.4 to 24.5 ppm.

Coupled with depth to groundwater data, relative groundwater elevations were calculated as shown in the following table. The data indicates a hydraulic gradient and associated interpreted groundwater flow direction downward to the west in the direction of the Damariscotta River. Please refer to Figure 3 for groundwater elevation contours and calculated groundwater flow directions.

RESULTS OF GROUNDWATER ELEVATION SURVEY

Well	Depth to Groundwater (feet below top of casing)	Relative Top of Casing Elevation	Relative Groundwater Elevation
MW101	4.63	19.06	14.43
MW102	4.36	19.00	14.64
MW103	6.82	22.46	15.64

NOTES:

1. Relative groundwater elevation survey and groundwater measurements conducted by Ransom on February 18, 2016.
2. Elevations are relative to arbitrary benchmark with an assigned elevation of 27 feet above mean sea level (MSL).

4.3 Off-site Sources

Soil Sample Analytical Results

Volatile Organic Compounds

As shown in Table 1, one or more of the following VOCs were detected in the surficial soil samples and subsurface soil samples collected from borings B102, B103, B104, B105, and B107 at concentrations above their respective laboratory detection limits: 1,2,4-trimethylbenzene, 2-butanone, acetone, isopropylbenzene, naphthalene, n-propylbenzene, o-xylene, p/m-xylene, p-isopropyltoluene, and total xylenes. However, these detected concentrations did not exceed their respective MEDEP RAGs for “Outdoor Commercial Worker” or “Excavation/Construction Worker” exposure scenarios.

Volatile Petroleum Hydrocarbons

As shown in Table 1, no VPH fractions were detected in the surficial soil samples or subsurface soil samples collected from borings B102, B103, B104, B105, and B107 at concentrations above their respective laboratory detection limits.

Extractable Petroleum Hydrocarbons

As shown in Table 1, no EPH fractions were detected in the surficial soil samples or subsurface soil samples collected from borings B104 and B107at concentrations above their respective laboratory detection limits.

One or more of the following EPH fractions were detected in the surficial soil samples or subsurface soil samples collected from borings B102, B103, and B105 at concentrations above their respective laboratory detection limits: C_9-C_{18} aliphatics, C_{19}–C_{36} aliphatics, and C_{11}–C_{22} aromatics 1. However, these detected concentrations did not exceed their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios.

Target Polycyclic Aromatic Hydrocarbons

As shown in Table 1, no target PAHs were detected in the surficial soil sample collected from borings B104 at concentrations above its respective laboratory detection limits.

One or more of the following target PAHs were detected in the surficial soil samples and subsurface soil samples collected from borings B102, B103, B105, and B107at concentrations above their respective laboratory detection limits: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene. However, these detected concentrations did not exceed their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios.

RCRA 8 Metals

As shown in Table 1, one or more of the following RCRA 8 Metals were detected in the surficial soil samples and subsurface soil samples collected from borings B102, B103, B104, B105, and B107 at concentrations above their respective laboratory detection limits: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. However, these concentrations did not exceed their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios, with the exception of arsenic detected in surficial soils collected from B104 which exceeded the MEDEP RAGs for "Outdoor Commercial Worker" exposure scenario. However, these concentrations do not exceed the Undeveloped Background concentration for arsenic in the State of Maine.

Groundwater Sample Analytical Results

Volatile Organic Compounds

As shown in Table 2, one or more of the following VOCs were detected in the groundwater samples collected from monitoring wells MW102 and MW103 at concentrations above their respective laboratory detection limits: 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, 2-butanone, acetone, benzene, chloromethane, ethylbenzene, isopropylbenzene, methyl tert butyl ether, naphthalene, n-propylbenzene, o-xylene, p/m-xylene, p-isopropyltoluene, sec-butylbenzene, tert-butylbenzene, toluene, and total xylenes. However, the concentrations

detected in the groundwater samples did not exceed their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario, with the exception of naphthalene detected in the groundwater sample collected from MW103 which exceeded the MEDEP RAG for "Groundwater Construction Worker" exposure scenario.

Volatile Petroleum Hydrocarbons

As shown in Table 2, one or more of the following VPH fractions were detected in the groundwater samples collected from monitoring wells MW102 and MW103 at concentrations above their respective laboratory detection limits: C_5-C_8 aliphatics, C_9-C_{12} aliphatics, C_9-C_{10} aromatics. However, the concentrations detected in the groundwater samples did not exceed their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario, with the exception of C_5-C_8 aliphatics detected in the groundwater sample collected from MW103 which exceeded the MEDEP RAG for "Groundwater Construction Worker" exposure scenario.

Extractable Petroleum Hydrocarbons

As shown in Table 2, EPH fractions were not detected in the groundwater samples collected from monitoring wells MW102 and MW103 at concentrations above their respective laboratory detection limits.

Target Polycyclic Aromatic Hydrocarbons

As shown in Table 2, target PAHs were not detected in the groundwater sample collected from monitoring well MW102 at concentrations above their respective laboratory detection limits.

The following target PAHs were detected in the groundwater samples collected from monitoring well MW103 at concentrations above their respective laboratory detection limits: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. However, the concentrations detected in the groundwater samples did not exceed their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario, with the exception of naphthalene detected in the groundwater sample collected from MW103 which exceeded the MEDEP RAG for "Groundwater Construction Worker" exposure scenario.

Dissolved RCRA 8 Metals

As shown in Table 2, dissolved RCRA 8 Metals were not detected in the groundwater samples collected from monitoring wells MW102 and MW103 at concentrations above their respective laboratory detection limits, with the exception of arsenic detected in the groundwater sample collected from MW103, and barium detected in the groundwater samples collected from MW102 and MW103. However, the concentrations detected in the groundwater sample did not exceed their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario.

Summary of Findings

No VOCs, VPH fractions, EPH fractions, target PAHs, or RCRA 8 Metals were detected in the soil samples collected from the Site at concentrations above their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios, with

the exception of arsenic detected in surficial soils collected from B104 which exceeded the MEDEP RAGs for "Outdoor Commercial Worker" exposure scenario. This concentration does not exceed the Undeveloped Background concentration for arsenic in the State of Maine; therefore, it can be inferred that the presence of arsenic is not attributable to onsite- or offsite-related activities.

No VOCs, VPH fractions, EPH fractions, target PAHs, or dissolved RCRA 8 Metals were detected in the groundwater samples collected from the Site at concentrations above their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario, with the exception of naphthalene and C_5-C_8 aliphatics detected in the groundwater sample collected from MW103 which exceeded their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario.

Slight petroleum impacted groundwater above the RAGs is present at the Site, likely originating from upgradient/adjacent gasoline filling/full service automotive repair facilities located at the former Main Street Gulf property (189 Main Street) that would require MEDEP or U.S. EPA mitigation activities.

4.4 Former Onsite Operations and Fill Material of Unknown Origins

Soil Sample Analytical Results

Volatile Organic Compounds

As shown in Table 1, one or more of the following VOCs were detected in the surficial soil samples and subsurface soil samples collected from borings B101, B106, and B108 at concentrations above their respective laboratory detection limits: 1,2,4-trimethylbenzene, 2-butanone, acetone, isopropylbenzene, naphthalene, n-propylbenzene, o-xylene, p/m-xylene, p-isopropyltoluene, and total xylenes. However, these detected concentrations did not exceed their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios.

Volatile Petroleum Hydrocarbons

As shown in Table 1, no VPH fractions were detected in the surficial soil samples or subsurface soil samples collected from borings B101, B106, and B108 at concentrations above their respective laboratory detection limits.

Extractable Petroleum Hydrocarbons

As shown in Table 1, no EPH fractions were detected in the surficial soil samples or subsurface soil samples collected from borings B106 and B108 at concentrations above their respective laboratory detection limits.

The following EPH fractions were detected in the surficial soil samples or subsurface soil samples collected from borings B101 at concentrations above their respective laboratory detection limits: C_{19}–C_{36} aliphatics, and C_{11}–C_{22} aromatics 1. However, these detected concentrations did not exceed their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios.

Target Polycyclic Aromatic Hydrocarbons

As shown in Table 1, one or more of the following target PAHs were detected in the surficial soil samples and subsurface soil samples collected from borings B101, B106, and B108 at concentrations above their respective laboratory detection limits: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene. However, these detected concentrations did not exceed their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios.

RCRA 8 Metals

As shown in Table 1, one or more of the following RCRA 8 Metals were detected in the surficial soil samples and subsurface soil samples collected from borings B101, B106, and B108 at concentrations above their respective laboratory detection limits: arsenic, barium, chromium, lead, mercury, selenium, and silver. However, these concentrations did not exceed their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios, with the exception of arsenic detected in surficial soils collected from B106 and B108 which exceeded the MEDEP RAGs for "Outdoor Commercial Worker" exposure scenario. However, these concentrations do not exceed the Undeveloped Background concentration for arsenic in the State of Maine.

Groundwater Sample Analytical Results

Volatile Organic Compounds

As shown in Table 2, the following VOCs were detected in the groundwater sample collected from monitoring well MW101 at concentrations above their respective laboratory detection limits: acetone and naphthalene. However, the concentrations detected in the groundwater sample did not exceed their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario.

Volatile Petroleum Hydrocarbons

As shown in Table 2, VPH fractions were not detected in the groundwater sample collected from monitoring well MW101 at concentrations above their respective laboratory detection limits.

Extractable Petroleum Hydrocarbons

As shown in Table 2, EPH fractions were not detected in the groundwater sample collected from monitoring well MW101 at concentrations above their respective laboratory detection limits.

Target Polycyclic Aromatic Hydrocarbons

As shown in Table 2, the following target PAHs were detected in the groundwater sample collected from monitoring well MW101 at concentrations above their respective laboratory detection limits: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluoranthene,

fluorene, naphthalene, phenanthrene, and pyrene. However, the concentrations detected in the groundwater samples did not exceed their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario.

Dissolved RCRA 8 Metals

As shown in Table 2, dissolved RCRA 8 Metals were not detected in the groundwater sample collected from monitoring well MW101 at concentrations above their respective laboratory detection limits, with the exception of arsenic and barium. However, the concentrations detected in the groundwater sample did not exceed their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario.

Summary of Findings

No VOCs, VPH fractions, EPH fractions, target PAHs, or RCRA 8 Metals were detected in the soil samples collected from the Site at concentrations above their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios, with the exception of arsenic detected in surficial soils collected from B106 and B108 which exceeded the MEDEP RAGs for "Outdoor Commercial Worker" exposure scenario. These concentrations do not exceed the Undeveloped Background concentration for arsenic in the State of Maine; therefore, it can be inferred that the presence of arsenic is not attributable to site-related activities.

No VOCs, VPH fractions, EPH fractions, target PAHs, or dissolved RCRA 8 Metals were detected in the groundwater samples collected from the Site at concentrations above their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario.

This data appears to confirm that no impacts are present from historical Site uses including the saw and grist mill, a blacksmith shop, carriage repository, a wheelwright shop, and a boat shop. Based on the calculated groundwater flow direction, the EPH fractions detected in the soil sample collected below the groundwater table in B101 may be attributable to releases associated with the neighboring Colby & Gale service station. Sample results from soil borings B106 and B108 were consistent with background concentrations, and do not suggest impacts from the fill material used in these areas.

5.0 QUALITY ANALYSIS/QUALITY CONTROL

The contracted laboratory, Alpha of Westborough, Massachusetts, provided Level II analytical data according to U.S. EPA protocols and laboratory data validation guidance included in Ransom's Generic QAPP for Brownfield sites in Maine. Analytics provided the following information in analytical reports:

1. Data results sheets;
2. Method blank results;
3. Surrogate recoveries and acceptance limits;
4. Duplicate results/acceptance limits;
5. Spike/duplicate results/acceptance limits;
6. Laboratory control sample results;
7. Description of analytical methods and results; and
8. Other pertinent results/limits as deemed appropriate.

As outlined in the Generic QAPP, at the completion of the field tasks and receipt of the analytical results, a data usability analysis was conducted to document the precision, bias, accuracy, representativeness, comparability, and completeness of the results. The following sections present this analysis.

5.1 Precision

Precision measures the reproducibility of measurements. The precision measurement is established using the relative percent difference (RPD) between the duplicate sample results. Relative percent differences were calculated for soil and groundwater samples where both sample and duplicate values were greater than five times the Practical Quantitation Limit (PQL) of the analyte. The RPD is calculated as follows:

$$RPD = \frac{\text{(Sample Result - Duplicate Result)}}{\text{Mean of the Two Results}} \times 100$$

Duplicate soil and groundwater samples were collected for laboratory analysis. A duplicate soil sample (B10X) was collected from soil boring B101-S3 and was submitted for laboratory analysis of VOCs, VPH fractions, EPH fractions, Target PAHs, and RCRA 8 Metals. A duplicate groundwater sample (MW-DUP) was collected from monitoring well MW103 and was submitted for laboratory analysis of VOCs, VPH fractions, EPH fractions, Target PAHs, and Dissolved RCRA 8 Metals. A summary of duplicate sample analytical results and calculated RPDs is presented in the attached Table 3.

Soil Sample (B101-S3)

The EPH fractions C_{19}-C_{36} aliphatics and C_{11}-C_{22} aromatics, the target PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene, and the RCRA 8 Metals arsenic, barium, chromium,

and lead were detected in the soil sample B101-S3 and its duplicate soil sample (B10X) at a concentration greater than five times the PQL for that compound. The RPD value for this constituent was greater than the 50 percent guideline, and therefore the precision of this sample result is acceptable.

The target PAH phenanthrene was detected in the soil sample B101-S3 and its duplicate soil sample (B10X) at a concentration greater than five times the PQL for that compound. The RPD value for this constituent was greater than the 50 percent guideline; therefore, the precision of these sample results is not acceptable and inferred to be attributable to the non-homogenous composition of the sample matrix.

No additional VOCs, VPHs fractions, EPHs fractions, target PAHs, or RCRA 8 Metals were detected in the soil sample B101-S3 and its duplicate soil sample (B10X) at concentrations greater than five times the PQL for that compound; therefore, no RPD was applicable for these COCs.

Groundwater Sample (MW103)

The VOCs 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, benzene, Isopropylbenzene, methyl tert butyl ether, naphthalene, n-Propylbenzene, o-xylene, p/m-xylene, sec-butylbenzene, toluene, and total xylenes, the VPH fraction C_5-C_8 aliphatics, the target PAHs phenanthrene, pyrene, 2-methylnaphthalene, acenaphthene, fluorene, naphthalene, and the RCRA 8 Metal barium were detected in the groundwater sample MW103 and its duplicate groundwater sample (MW-DUP) at a concentration greater than five times the PQL for that compound. The RPD values for these constituents were below the 30 percent guideline, and therefore the precision of these sample results are acceptable.

No additional VOCs, VPHs fractions, EPHs fractions, target PAHs, or Dissolved RCRA 8 Metals were detected in the groundwater sample MW103 and its duplicate groundwater sample (MW-DUP) at concentrations greater than five times the PQL for that compound; therefore, no RPD was applicable for these COCs.

5.2 Bias

Bias is the systematic or persistent distortion of a measurement process that causes errors in one direction. Bias assessments are made using personnel, equipment, and spiking materials or reference materials, as independent as possible from those used in the calibration of the measurement system. Bias assessments were based on the analysis of spiked samples so that the effect of the matrix on recovery is incorporated into the assessment. A documented spiking protocol and consistency in following that protocol are important to obtaining meaningful data quality estimates.

Matrix spike and matrix spike duplicate samples (MS/MSD) were used to assess bias as prescribed in the specified methods. Acceptable recovery values were within the recoveries specified by each of the analysis methods. Control samples for assessing bias were analyzed at a rate as specified in the analytical SOPs and specified analytical methods.

The lab provides quality control non-conformance reports that indicate if Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD) and/or MS/MSD had low, failing, or high recoveries, and if the sample result was affected. Likewise, the lab reports any compounds that had failing RPDs in the LCS/LCSD pair or the MS/MSD pair. This indicates the percent difference between the lab sample and its duplicate or the spike and its' duplicate. Specific comments from the laboratory included the following:

Volatile Organic Compounds

The following comments were submitted by Alpha regarding the VOC analysis on the soil samples are summarized as follows: Trip Blank: the analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

No additional bias issues identified by the laboratory in the soil or groundwater samples collected and analyzed for VOCs.

Volatile Petroleum Hydrocarbons

The following comments were submitted by Alpha regarding the VPH analysis on the groundwater samples are summarized herein:

1. MW102: The sample has elevated detection limits due to the dilution required by the sample matrix.

2. MW102: It should be noted that based on review of the VPH chromatograms there is the potential that non-hydrocarbon compounds are being included in the summation of the C_9-C_{12} aliphatics range. This could result in a greater concentration being reported for this range than would otherwise be the case. The VPH gas chromatographic method is subject to the inclusion of non-hydrocarbon compounds in carbon range summations if the non-hydrocarbon compound is amenable to the method operating conditions and elutes within the range's retention time window.

No additional bias issues identified by the laboratory in the soil or groundwater samples collected and analyzed for VPH compounds.

Extractable Petroleum Hydrocarbons & Polycyclic Aromatic Hydrocarbons

The following comments were submitted by Alpha regarding the EPH and target PAH analysis on the soil samples are summarized herein:

1. B101-S3, B10X, and B102-S2: The sample has elevated detection limits due to the dilution required by the sample matrix.

2. B105-S2: The surrogate recovery for L1604569-02 is outside the acceptance criteria for o-terphenyl (754%); however, the sample was not re-extracted due to coelution with obvious interferences.

3. B105-S2: The surrogate recovery is below the acceptance criteria for o-terphenyl-ms (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

No additional bias issues identified by the laboratory in the soil or groundwater samples collected and analyzed for EPH and PAH compounds.

RCRA 8 Metals

The following comments were submitted by Alpha regarding the RCRA 8 Metals analysis on the soil and groundwater samples are summarized herein:

1. B103-S3: The sample has an elevated detection limit for Cadmium due to the dilution required by matrix interferences encountered during analysis.

2. The Matrix Spike (WG866618-4) (MS) recoveries, performed on B101-S3, are outside the acceptance criteria for arsenic (71%), cadmium (62%) and chromium (65%). A post digestion spike was performed and yielded unacceptable recoveries for arsenic (64%), cadmium (61%) and chromium (61%). This has been attributed to sample matrix.

3. The MS (WG866955-4) recovery, performed on B106-S1, is outside the acceptance criteria for cadmium (74%). A post digestion spike was performed and yielded an unacceptable recovery of 69%. This has been attributed to sample matrix.

No additional bias issues were identified by the laboratory in the soil or groundwater samples collected and analyzed for RCRA 8 Metals.

5.3 Accuracy

Accuracy is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and systemic error. Therefore, it reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ from the true value or known concentration of the spike or standard. For volatile and semi-volatile organic compounds, surrogate compound recoveries are also used to assess accuracy and method performance for each sample analyzed. Analysis of performance evaluation samples will also be used to provide additional information for assessing the accuracy of the analytical data being produced. Both accuracy and precision are calculated for each analytical batch, and the associated sample results are interpreted by considering these specific measurements.

The lab provides a non-conformance summary that reports if all of the quality control criteria including initial calibration, calibration verification, surrogate recovery, holding time and method accuracy/precision for analysis were within acceptable limits. According to the laboratory, unless noted in the non-conformance summary, all of the quality control criteria for these analyses were within acceptable limits.

5.4 Representativeness

Objectives for representativeness are defined for each sampling and analysis task and are a function of the investigative objectives. Representativeness was accomplished during this project through use of standard field, sampling, and analytical procedures. All objectives for sampling and analytical representativeness, as specified in SSQAPP, were met.

5.5 Comparability

Comparability is the confidence with which one data set can be compared to another data set. The objective for this QA/QC program is to produce data with the greatest possible degree of comparability.

Comparability was achieved by using standard methods for sampling and analysis, reporting data in standard units, normalizing results to standard conditions, and using standard and comprehensive reporting formats. Complete field documentation was used, including standardized data collection forms to support the assessment of comparability. Historical comparability shall be achieved through consistent use of methods and documentation procedures throughout the project.

5.6 Completeness

Completeness is calculated by comparing the number of samples successfully analyzed to the number of samples collected. The goal for completeness is 95 percent. The completeness for this project was 100 percent, as there were no samples that could not be analyzed due to holding time violations, samples spilled or broken, or any other reason.

6.0 CONCLUSIONS

No VOCs, VPH fractions, EPH fractions, target PAHs, or RCRA 8 Metals were detected in the soil samples collected from the Site at concentrations above their respective MEDEP RAGs for "Outdoor Commercial Worker" or "Excavation/Construction Worker" exposure scenarios, with the exception of arsenic detected in surficial soils collected from B104, B106, and B108 which exceeded the MEDEP RAGs for "Outdoor Commercial Worker" exposure scenario. These concentrations do not exceed the Undeveloped Background concentration for arsenic in the State of Maine; therefore, it can be inferred that the presence of arsenic is not attributable to site-related activities.

No VOCs, VPH fractions, EPH fractions, target PAHs, or dissolved RCRA 8 Metals were detected in the groundwater samples collected from the Site at concentrations above their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario, with the exception of naphthalene and C_5-C_8 aliphatics detected in the groundwater sample collected from MW103 which exceeded their respective MEDEP RAGs for "Groundwater Construction Worker" exposure scenario.

These findings suggest that no residual impacts are present from the Site's former uses as a saw and grist mill, blacksmith shop, carriage repository, wheelwright shop, or boat shop; however, low-level EPH and PAH contaminants are present in the surficial material located in the northeastern portion of the Site which may be attributable to the onsite use of fill material of unknown origin.

Low level petroleum contamination is present in soils observed downgradient form the adjoining Colby & Gale Service Station property and the former Main Street Gulf property, and is likely attributable to the adjacent properties current and/or historic uses. Additionally, slight petroleum impacted groundwater above the RAGs is present at the Site, likely originating from upgradient/adjacent gasoline filling/full service automotive repair facilities located at the former Main Street Gulf property (189 Main Street).

Relative to the AOCs identified in this Phase II ESA, the following conclusions are made:

1. *Potential contamination associated with the adjoining Colby & Gale Service Station (105 Main Street)*: low level petroleum-impacted soil and groundwater were detected in locations adjacent to and down-gradient from the adjoining Colby & Gale Service Station. These contaminants are likely related to historic releases of petroleum products from this neighboring site. The detected contaminant concentrations do not exceed their respective MEDEP RAGs, and therefore do not appear to represent an exposure risk to future Site occupants or Site workers.

2. *Potential contamination associated with the adjoining former Main Street Gulf (189 Main Street)*: Petroleum-impacted soil and groundwater was identified in connection with historical OHM releases associated with the adjacent property during this Phase II ESA. The concentrations of naphthalene and C_5-C_8 aliphatics detected in the groundwater sample collected from MW103 exceeded their respective MEDEP RAGs for the "Groundwater Construction Worker" exposure scenario.

i. *Potential contamination associated with fill materials used onsite*: Results of fill material samples were generally consistent with background concentrations. Low level petroleum contamination detected below the groundwater table in the northwestern portion of the Site is likely attributable to impacts from the neighboring Colby & Gale Service Station.

The fill materials used at the Site do not appear to represent an exposure risk to future Site occupants or Site workers.

7.0 RECOMMENDATIONS

Based on the information obtained during this Phase II Investigation, Ransom recommends the following with respect to the proposed Site redevelopment:

1. A Media Management Plan (specifically for handling and managing contaminated soil and groundwater) should be developed to reduce potential exposure risks to future Site workers, and outline appropriate characterization, management, and disposal methods for contaminated soil and groundwater which may be encountered during future Site redevelopment activities.

8.0 REFERENCES

1. MEDEP; February 5, 2016; Maine RAGs for Sites Contaminated with Hazardous Substances.

1. Report on Soil Removal Activities, Main Street Gulf, Damariscotta, Maine, Eco-Analysts, Inc., January 1995.

2. UST Site Assessment, Seacoast Auto Care, Damariscotta, Maine, Fessenden Geo-Environmental Services Construction Materials Testing, November 12, 2003.

3. Underground Storage Tank Site Assessment Report, US Route 1B (Main Street) Highway Improvement Project, Damariscotta/Newcastle, Maine, Hillier & Associates, Inc., June 2007.

4. State of Maine Brownfields Assessment Projects Generic Quality Assurance Project Plan (QAPP) RFA #14028; Ransom, January 24, 2014.

5. Phase I Environmental Site Assessment, Former AA Hall Grist Mill, Municipal Parking Lot, Main Street, Damariscotta, Maine; Ransom, September 17, 2015.

6. Site-Specific Quality Assurance Project Plan Addendum No. 26, Phase II Environmental Site Assessment, Former AA Hall Grist Mill, Municipal Parking Lot, Main Street, Damariscotta, Maine; Ransom, January 4, 2016.

9.0 SIGNATURE(S) OF ENVIRONMENTAL PROFESSIONAL(S)

Ransom performed services in a manner consistent with the guidelines set forth in the ASTM E 1903-97 (Standard Practices for Environmental Site Assessments: Phase II Environmental Site Assessment Process), and in accordance with the scope of work and standard operating procedures outlined in the Generic QAPP and SSQAPP.

The following Ransom personnel possess the sufficient training and experience necessary to conduct a Phase II Environmental Site Assessment, and from the information generated by such activities, have the ability to develop opinions and conclusions regarding recognized environmental conditions in connection with the Site.

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APPENDIX A

Boring Logs

Phase II Environmental Site Assessment
Former AA Hall Grist Mill
Municipal Parking Lot
Main Street
Damariscotta, Maine

TABLE 1: SUMMARY OF SOIL SAMPLE CHEMICAL ANALYSIS RESULTS
Phase II Environmental Site Assessment
Former AA Hall Grist Mill (Municipal Parking Lot)
Main Street
Damariscotta, Maine

Sample Location	**B101**	**B102**	**B103**	**B104**	**B105**	**B106**	**B107**	**B108**	**MEDEP Remedial Action Guidelines for Sites Contaminated with Hazardous Substances (February 5, 2016)**								
Sample Identification	**B101-S3**	**B102-S2**	**B103-S3**	**B104-S1**	**B105-S2**	**B106-S1**	**B107-S3**	**B108-S1**									
Sample Depth (ft bgs)	**10-12**	**5-7**	**10-12**	**0-2**	**5-7**	**0-2**	**10-12**	**0-2**									
Exposure Scenario Based on Soil Sample Depth	**Excavation/ Construction Worker**	**Excavation/ Construction Worker**	**Excavation/ Construction Worker**	**Residential, Outdoor Commercial Worker, Excavation/ Construction Worker**	**Excavation/ Construction Worker**	**Residential, Outdoor Commercial Worker, Excavation/ Construction Worker**	**Excavation/ Construction Worker**	**Residential, Outdoor Commercial Worker, Excavation/ Construction Worker**	**Residential (0-2 ft bgs)**	**Park User (0-2 ft bgs)**	**Outdoor Commercial Worker (0-2 ft bgs)**	**Excavation/ Construction Worker (all soil depths)**	**Undeveloped Background**	**Rural Developed Background**	**Urban Developed Background**	**Urban Fill Background**	**Leaching To Groundwater**
Date Collected	**2/17/16**	**2/17/16**	**2/17/16**	**2/18/16**	**2/18/16**	**2/18/16**	**2/17/16**	**2/18/16**									
Volatile Organic Compounds (VOCs)	Concentrations in Milligrams per Kilogram (mg/kg)																
1,2,4-Trimethylbenzene	BRL (<0.0061)	0.0019 J	BRL (<0.52)	BRL (<0.0047)	BRL (<0.91)	BRL (<0.0045)	BRL (<0.0058)	BRL (<0.0042)	NE	NE	NE	NE	NE	NE	NE	NE	NE
2-Butanone	0.0085 J	0.01	BRL (<1)	BRL (<0.0094)	0.560 J	BRL (<0.009)	BRL (<0.012)	BRL (<0.0085)	10,000	10,000	10,000	10,000	NE	NE	NE	NE	NE
Acetone	0.040 J	0.056	BRL (<3.7)	BRL (<0.034)	2 J	0.0017 J	0.021 J	BRL (<0.03)	10,000	10,000	10,000	10,000	NE	NE	NE	NE	NE
Isopropylbenzene	BRL (<0.0012)	BRL (<0.001)	BRL (<0.1)	BRL (<0.00094)	BRL (<0.18)	BRL (<0.0009)	0.001 J	BRL (<0.00085)	NE	NE	NE	NE	NE	NE	NE	NE	NE
Naphthalene	0.0014 J	BRL (<0.0052)	BRL (<0.52	BRL (<0.0047)	5.1	BRL (<0.0045)	BRL (<0.0058)	0.0029 J	2,500	4,200	10,000	10,000	NE	0.11	0.22	0.82	1.7
n-Propylbenzene	BRL (<0.0012)	BRL (<0.001)	BRL (<0.1)	BRL (<0.00094)	BRL (<0.18)	BRL (<0.0009)	0.0011 J	BRL (<0.00085)	NE	NE	NE	NE	NE	NE	NE	NE	NE
o-Xylene	BRL (<0.0024)	0.97 J	BRL (<0.21)	BRL (<0.0019)	BRL (<0.36)	BRL (<0.0018)	BRL (<0.0023)	BRL (<0.0017)	10,000	10,000	10,000	NE	NE	NE	NE	NE	
p/m-Xylene	BRL (<0.0024)	0.0014 J	BRL (<0.21)	BRL (<0.0019)	BRL (<0.36)	BRL (<0.0018)	BRL (<0.0023)	BRL (<0.0017)	10,000	10,000	10,000	10,000	NE	NE	NE	NE	NE
p-Isopropyltoluene	BRL (<0.0012)	0.0085	BRL (<0.1)	BRL (<0.00094)	0.22	BRL (<0.0009)	0.0035	BRL (<0.00085)	NE	NE	NE	NE	NE	NE	NE	NE	26
Xylenes, Total	BRL (<0.0024)	0.0024 J	BRL (<0.21)	BRL (<0.0019)	BRL (<0.36)	BRL (<0.0018)	BRL (<0.0023)	BRL (<0.0017)	10,000	10,000	10,000	10,000	NE	NE	NE	NE	26
All VOCs	BRL (Varies)	BRL (Varies)	BRL (Varies)	BRL (Varies)	BRL (Varies)	BRL (Varies)	BRL (Varies)	BRL (Varies)	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Volatile Petroleum Hydrocarbon (VPH) Fractions	Concentrations in Milligrams per Kilogram (mg/kg)																
All VPH Fractions	BRL (<5.46)	BRL (<5.64)	BRL (<5.18)	BRL (<4.79)	BRL (<9.14)	BRL (<4.75)	BRL (<5.08)	BRL (<5.27)	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Extractable Petroleum Hydrocarbon (EPH) Fractions	Concentrations in Milligrams per Kilogram (mg/kg)																
C9-C18 Aliphatics	BRL (<8.27)	26.1	61.8	BRL (<7.19)	BRL (<130)	BRL (<6.82)	BRL (<8.38)	BRL (<6.82)	2,700	4,400	10,000	7,300	NE	NE	NE	NE	10,000
C19-C36 Aliphatics	83.8	66.4	347	BRL (<7.19)	168	BRL (<6.82)	BRL (<8.38)	BRL (<6.82)	10,000	10,000	10,000	10,000	NE	NE	NE	NE	10,000
C11-C22 Aromatics	61.8	63	22.2	BRL (<7.19)	2890	BRL (<6.82)	BRL (<8.38)	BRL (<6.82)	750	1,200	4,500	4,700	NE	NE	NE	NE	460
Target Polycyclic Aromatic Hydrocarbons (PAHs)	Concentrations in Milligrams per Kilogram (mg/kg)																
2-Methylnaphthalene	0.076 J	0.025 J	0.036 J	BRL (<0.029)	1.73	BRL (<0.027)	BRL (<0.034)	0.007 J	500	830	3,600	600	NE	0.16	0.089	0.41	3.6
Acenaphthene	0.067 J	BRL (<0.162)	0.028 J	BRL (<0.029)	4.97	BRL (<0.027)	BRL (<0.034)	0.006 J	7,500	10,000	10,000	9,800	NE	0.1	0.2	3.5	170
Acenaphthylene	0.378	0.108 J	0.016 J	BRL (<0.029)	BRL (<1.73)	BRL (<0.027)	BRL (<0.034)	0.009 J	7,500	10,000	10,000	10,000	NE	0.32	0.39	1.4	68
Anthracene	0.496	0.047 J	0.022 J	BRL (<0.029)	25.5	BRL (<0.027)	BRL (<0.034)	0.012 J	10,000	10,000	10,000	3,800	NE	2.9	0.4	6.7	2,400
Benzo(a)anthracene	2.23	0.169	0.044	BRL (<0.029)	47.5	BRL (<0.027)	BRL (<0.034)	0.031	2.6	4.4	35	430	NE	0.86	1.6	16	10,000
Benzo(a)pyrene	2.3	0.217	0.049	BRL (<0.029)	40.6	BRL (<0.027)	BRL (<0.034)	0.029	0.26	0.44	3.5	43	NE	1.5	1.7	5.2	10,000
Benzo(b)fluoranthene	3.21	0.255	0.068	BRL (<0.029)	54	BRL (<0.027)	BRL (<0.034)	0.03	2.6	4.4	35	430	NE	1.3	2	27	10,000
Benzo(ghi)perylene	1.36	0.224	0.04	BRL (<0.029)	17.8	BRL (<0.027)	BRL (<0.034)	0.023 J	3,700	6,200	10,000	10,000	NE	0.57	0.79	12	10,000
Benzo(k)fluoranthene	1.1	0.087 J	0.022 J	BRL (<0.029)	17	BRL (<0.027)	BRL (<0.034)	0.012 J	26	44	350	4300	NE	0.69	0.76	6.8	10,000
Chrysene	2.41	0.199	0.062	BRL (<0.029)	47.4	BRL (<0.027)	BRL (<0.034)	0.037	260	440	3,500	10,000	NE	1	2.3	6.4	10,000
Dibenzo(a,h)anthracene	0.379	BRL (<0.162)	BRL (<0.036)	BRL (<0.029)	6.57	BRL (<0.027)	BRL (<0.034)	BRL (<0.027)	0.26	0.44	4	43	NE	0.32	0.23	4.5	10,000
Fluoranthene	4.38	0.197	0.152	BRL (<0.029)	95.8	BRL (<0.027)	0.011 J	0.067	5,000	8,300	10,000	10,000	NE	2	3.2	10	10,000
Fluorene	0.142 J	BRL (<0.162)	0.034 J	BRL (<0.029)	8.46	BRL (<0.027)	BRL (<0.034)	0.01 J	5,000	8,300	10,000	10,000	NE	0.2	0.29	4.4	120
Indeno(1,2,3-cd)Pyrene	1.48	0.162	0.036	BRL (<0.029)	16.9	BRL (<0.027)	BRL (<0.034)	0.018 J	2.6	4.4	35	430	NE	0.4	0.74	3.3	10,000
Naphthalene	0.097 J	BRL (<0.162)	0.038	BRL (<0.029)	6.63	BRL (<0.027)	0.011 J	0.009 J	2,500	4,200	10,000	10,000	NE	0.11	0.22	0.82	1.7
Phenanthrene	1.6	0.07 J	0.123	BRL (<0.029)	83	BRL (<0.027)	BRL (<0.034)	0.06	3,700	6,200	10,000	10,000	NE	0.83	1.6	6.1	97
Pyrene	3.84	0.252	0.142	BRL (<0.029)	77.5	0.007 J	0.01 J	0.091	3,700	6,200	10,000	10,000	NE	2	2.8	9.5	10,000
Metals	Concentrations in Milligrams per Kilogram (mg/kg)																
Arsenic	6.4	6	12	**8.1**	16	**8.6**	5.7	**9.4**	1.4	2.3	4.2	42	15	NE	NE	NE	NE
Barium	79	40	60	38	61	43	41	52	10,000	10,000	10,000	10,000	470	NE	NE	NE	NE
Cadmium	BRL (<0.49)	BRL (<0.48)	BRL (<5.3)	BRL (<0.43)	3.2	BRL (<0.41)	BRL (<0.5)	BRL (<0.42)	11	18	94	19	0.26	NE	NE	NE	NE
Chromium, Total	27	22	32	24	27	22	33	23	510	850	5,100	2,800	NE	NE	NE	NE	NE
Lead	65	30	BRL (<2.6)	1.6 J	790	4.1	1 J	1.8 J	340	530	1100	950	NE	NE	NE	NE	10,000
Mercury	0.26	0.05 J	0.21	BRL (<0.07)	1.2	BRL (<0.07)	BRL (<0.08)	BRL (<0.07)	51	85	510	930	NE	NE	NE	NE	NE
Selenium	0.7 J	0.29 J	0.9 J	0.19 J	0.18 J	0.4 J	0.33 J	0.43 J	850	1,400	8,500	1,500	0.61	NE	NE	NE	NE
Silver	0.58	BRL (<0.48)	BRL (<5.3)	BRL (<0.43)	0.76	BRL (<0.41)	BRL (<0.5)	BRL (<0.42)	850	1,400	8,500	1,500	NE	NE	NE	NE	NE

Notes:
MEDEP = Maine Department of Environmental Protection
mg/kg = milligrams per kilogram
BRL = Below the laboratory reporting limit ; NA= Not Analyzed; NE= Indicates that a standard or guideline is "not established" for the referenced parameter.
J = Estimated value. The target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL).
NE indicates that a standard or guideline is "not established" for the referenced parameter.
Values in **bold** text exceed applicable MEDEP RAGs for current or proposed reuse/exposure scenarios for Residential, Outdoor Commercial Worker, and/or Excavation/Construction Worker

TABLE 2: SUMMARY OF GROUNDWATER SAMPLE CHEMICAL ANALYSIS RESULTS
Phase II Environmental Site Assessment
Former AA Hall Grist Mill (Municipal Parking Lot)
Main Street
Damariscotta, Maine

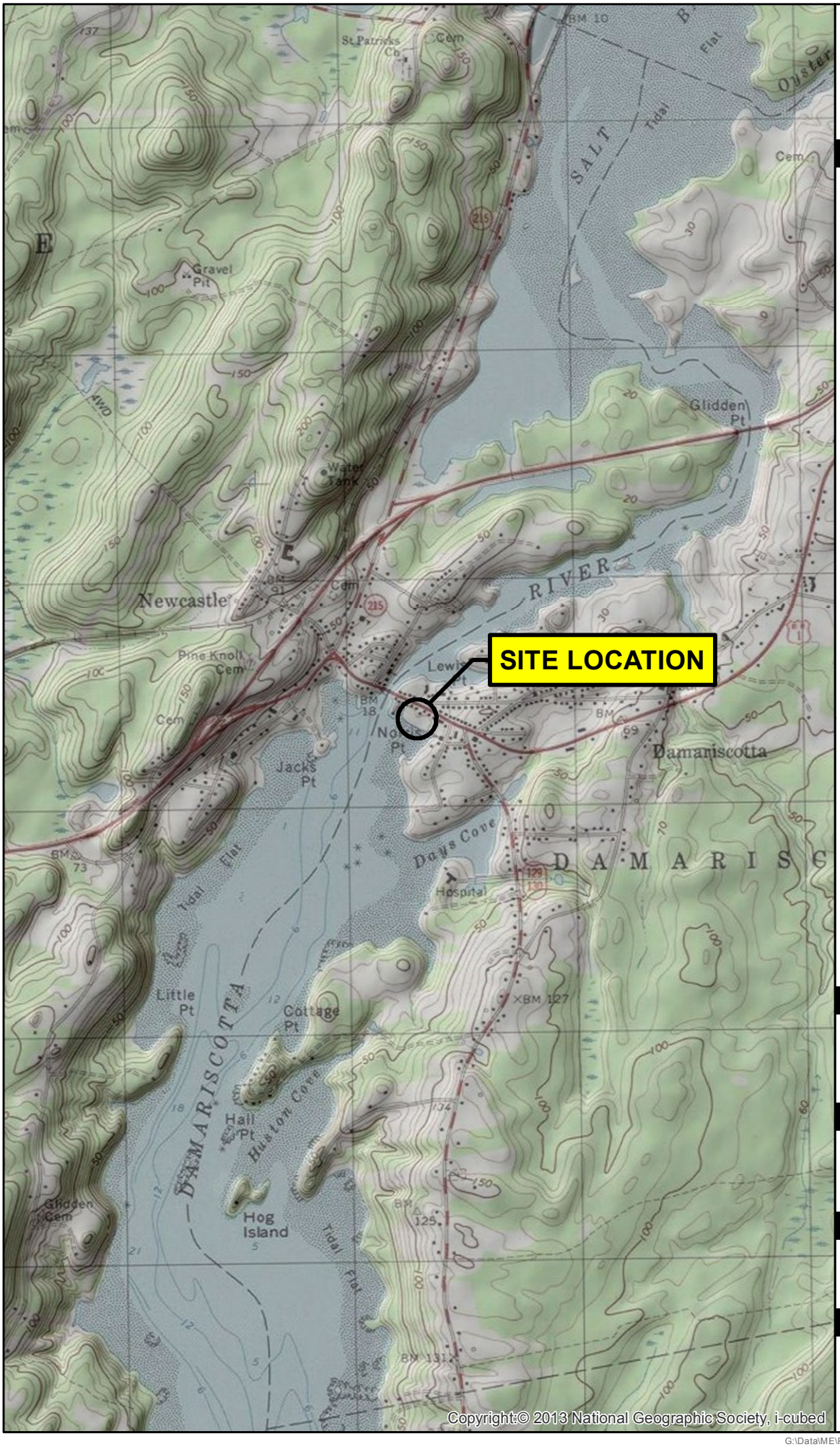
Sample Identification	**MW101**	**MW102**	**MW103**	**MEDEP Remedial Action Guidelines for Sites Contaminated with Hazardous Substances (February 5, 2016)**	
Soil Boring Location	**B101**	**B102**	**B103**		
Date Collected	**2/18/16**	**2/18/16**	**2/18/16**	**Groundwater Residential**	**Groundwater Construction Worker**
Volatile Organic Compounds (VOCs)	Concentrations in Micrograms per Liter (µg/L)				
1,2,4-Trimethylbenzene	BRL (<1)	0.29 J	3.8	NE	NE
1,3,5-Trimethylbenzene	BRL (<1)	BRL (<1)	2.4	NE	NE
1,4-Dichlorobenzene	BRL (<1)	BRL (<1)	2.4	70	400
2-Butanone	BRL (<5)	2.9 J	BRL (<5)	4,000	22,000
Acetone	4.4 J	18	BRL (<5)	6,000	160,000
Benzene	BRL (<0.5)	0.18 J	2.9	4	44
Chloromethane	BRL (<2)	0.66 J	BRL (<2)	20	NE
Ethylbenzene	BRL (<0.5)	BRL (<0.5)	0.19 J	30	1,500
Isopropylbenzene	BRL (<0.5)	BRL (<0.5)	10	NE	NE
Methyl tert butyl ether	BRL (<1)	14	1.3	40	7,800
Naphthalene	1.2	0.77 J	**14**	10	9.7
n-Propylbenzene	BRL (<0.5)	BRL (<0.5)	9.2	NE	NE
o-Xylene	BRL (<1)	BRL (<1)	3.4	1,000	790
p/m-Xylene	BRL (<1)	BRL (<1)	6.2	1,000	790
p-Isopropyltoluene	BRL (<0.5)	130	0.97	70	NE
sec-Butylbenzene	BRL (<0.5)	BRL (<0.5)	1.1	NE	NE
tert-Butylbenzene	BRL (<1)	BRL (<1)	0.61 J	NE	NE
Toluene	BRL (<0.75)	0.33 J	2.4	600	12,000
Xylenes, Total	BRL (<1)	BRL (<1)	9.6	1,000	790
All other VOCs	BRL (Varies)	BRL (Varies)	BRL (Varies)	Varies	Varies
Volatile Petroleum Hydrocarbon (VPH) Fractions	Concentrations in Micrograms per Liter (µg/L)				
C5-C8 Aliphatics	BRL (<50)	BRL (<250)	**692**	300	490
C9-C12 Aliphatics	BRL (<50)	416	239	700	1,800
C9-C10 Aromatics	BRL (<50)	BRL (<250)	186	200	1,400
Extractable Petroleum Hydrocarbon (EPH) Fractions	Concentrations in Micrograms per Liter (µg/L)				
All EPH Fractions	BRL (<100)	BRL (<100)	BRL (<100)	Varies	Varies
Target Polycyclic Aromatic Hydrocarbons (PAHs)	Concentrations in Micrograms per Liter (µg/L)				
2-Methylnaphthalene	0.897	BRL (<0.4)	3.27	30	10
Acenaphthene	0.363 J	BRL (<0.4)	3.11	400	12
Acenaphthylene	0.2 J	BRL (<0.4)	0.222 J	NE	14
Anthracene	0.115 J	BRL (<0.4)	1.12	2,000	20
Fluoranthene	0.201 J	BRL (<0.4)	1.64	300	100,000
Fluorene	0.369 J	BRL (<0.4)	2.89	300	15
Naphthalene	0.757	BRL (<0.4)	**13.7**	10	9.7
Phenanthrene	0.926	BRL (<0.4)	5.25	NE	23
Pyrene	0.164 J	BRL (<0.4)	1.02	200	120,000
All other Target PAHs	BRL (Varies)	BRL (Varies)	BRL (Varies)	Varies	Varies
Metals	Concentrations in Micrograms per Liter (µg/L)				
Arsenic	0.0207	BRL (<0.005)	0.0096	10	1,400
Barium	0.26	0.594	0.201	1,000	1,800,000
All other Metals	BRL (Varies)	BRL (Varies)	BRL (Varies)	Varies	Varies

Notes:
MEDEP = Maine Department of Environmental Protection
MECDC = Maine Center of Disease Control
µg/L = micrograms per liter
BRL = Below the laboratory reporting limit; NE= Indicates that a standard or guideline is "not established" for the referenced parame
Values in **bold** text exceed MEDEP RAGs for Construction Worker exposure scenarios

TABLE 3: SUMMARY OF DUPLICATE SAMPLE ANALYTICAL RESULTS
Phase II Environmental Site Assessment
Former AA Hall Grist Mill (Municipal Parking Lot)
Main Street
Damariscotta, Maine

Sample Location	**B101-S3**	**B10X**	**Relative Percent Difference**	**MW103**	**MW-DUP**	**Relative Percent Difference**
Sample Depth (ft bgs)	**10-12**	**10-12**		**NA**	**NA**	
Sample Date	**2/17/16**	**2/17/2016**		**2/18/2016**	**2/18/2016**	
Volatile Organic Compounds (VOCs)	Concentrations in mg/kg		%	Concentrations in µg/L		%
1,2,4-Trimethylbenzene	NC	NC	--	3.8	3.6	5
1,3,5-Trimethylbenzene	NC	NC	--	2.4	2.4	0
1,4-Dichlorobenzene	NC	NC	--	2.4	2.4	0
Benzene	NC	NC	--	2.9	2.9	0
Isopropylbenzene	NC	NC	--	10	10	0
Methyl tert butyl ether	NC	NC	--	1.3	1.3	0
Naphthalene	NC	NC	--	14	16	13
n-Propylbenzene	NC	NC	--	9.2	9	2
o-Xylene	NC	NC	--	3.4	3.4	0
p/m-Xylene	NC	NC	--	6.2	6	3
sec-Butylbenzene	NC	NC	--	1.1	1.1	0
Toluene	NC	NC	--	2.4	2.5	4
Xylenes, Total	NC	NC	--	9.6	9.4	2
All other VOCs	NC	NC	--	NC	NC	--
Volatile Petroleum Hydrocarbon (VPH) Fractions	Concentrations in mg/kg		%	Concentrations in µg/L		%
C9-C12 Aliphatics	NC	NC	--	NC	NC	--
C5-C8 Aliphatics	NC	NC	--	692	679	2
C9-C10 Aromatics	NC	NC	--	NC	NC	--
Extractable Petroleum Hydrocarbon (EPH) Fractions	Concentrations in mg/kg		%	Concentrations in µg/L		%
C19-C36 Aliphatics	83.8	61.5	31	NC	NC	--
C11-C22 Aromatics	61.8	61.7	0.16	NC	NC	--
All other EPH fractions	NC	NC	--	NC	NC	--
Target Polycyclic Aromatic Hydrocarbons (PAHs)	Concentrations in mg/kg		%	Concentrations in µg/L		%
Benzo(a)anthracene	2.23	2.86	25	NC	NC	--
Benzo(a)pyrene	2.3	2.88	22	NC	NC	--
Benzo(b)fluoranthene	3.21	3.82	17	NC	NC	--
Benzo(ghi)perylene	1.36	1.64	19	NC	NC	--
Benzo(k)fluoranthene	1.1	1.55	34	NC	NC	--
Chrysene	2.41	2.91	19	NC	NC	--
Fluoranthene	4.38	5.79	28	NC	NC	--
Indeno(1,2,3-cd)Pyrene	1.48	1.83	21	NC	NC	--
Phenanthrene	1.6	2.92	58	5.25	5.02	4
Pyrene	3.84	4.77	22	NC	NC	--
2-Methylnaphthalene	NC	NC	--	3.27	3.31	1
Acenaphthene	NC	NC	--	3.11	3.06	2
Fluorene	NC	NC	--	2.89	2.81	3
Naphthalene	NC	NC	--	13.7	13.8	1
All other Target PAHs	NC	NC	--	NC	NC	--
Metals	Concentrations in mg/kg		%	Concentrations in µg/L		%
Arsenic	6.4	7.1	10	NC	NC	--
Barium	79	92	15	0.2	0.204	1
Chromium, Total	27	22	20	NC	NC	--
Lead	65	100	42	NC	NC	--
All other Metals	NC	NC	--	NC	NC	--

Notes:
NA = Not Applicable for the referenced parameter.
NC = Not Calculated; to calculate the RPD, the detected concentrations must be greater than 5 times the the Practical Quantitation Limit (PQL) of the analyte in both sample and duplicate values.



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Regional Locator Map



Notes

1. Data Source: USGS National Map Seamless Server, 24K DRG, 1/3" NED
2. USGS Quad Name: Damariscotta
3. Latitude: 44° 31' 55" N
   Longitude:69° 31' 57" W
   UTM Northing: 4875615 mN
   UTM Easting: 457382 mE

Scale and Orientation

0 1,000 2,000

1 inch = 2,000 feet

Prepared For

Lincoln County Regional Planning Commission
35 Water Street
Wiscasset, Maine

Site Address

Former AA Hall Grist Mill
Main Street
Damariscotta, Maine

131.06156 | July 2015

Figure 1

Site Location

G:\Data\ME\Project\131_06156_007\Grist_Mill\Maps\Figure_1.mxd



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Legend & Notes

- Site Boundary
- Lot Boundary
- Catch Basin
- Soil Boring
- Soil Boring/ Monitoring Well
- 1938 Shoreline

Notes

1. Site Plan based on Bing Orthophotography
2. Some features are approximate in location and scale
3. This plan has been prepared for the Lincoln County Planning Commision All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 35 70

1 inch = 70 feet

Prepared For

Lincoln County Regional Planning Commission
35 Water Street
Wiscasset, Maine

Site Address

Former AA Hall Grist Mill
Main Street
Damariscotta, Maine

131.06156 | Mar 2016

Figure 2

Site Plan

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RANSOM
Consulting Engineers and Scientists

Legend & Notes

- Site Boundary
- Lot Boundary
- Catch Basin
- Soil Boring
- Soil Boring/ Monitoring Well
- 1938 Shoreline
- Groundwater Contour

Notes

1. Site Plan based on Bing Orthophotography
2. Some features are approximate in location and scale
3. This plan has been prepared for the Lincoln County Planning Commision All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 35 70

1 inch = 70 feet

Prepared For

Lincoln County Regional Planning Commission
35 Water Street
Wiscasset, Maine

Site Address

Former AA Hall Grist Mill
Main Street
Damariscotta, Maine

131.06156 | Mar 2016

Figure 3

Groundwater Contour Plan

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APPENDIX A

Boring Logs

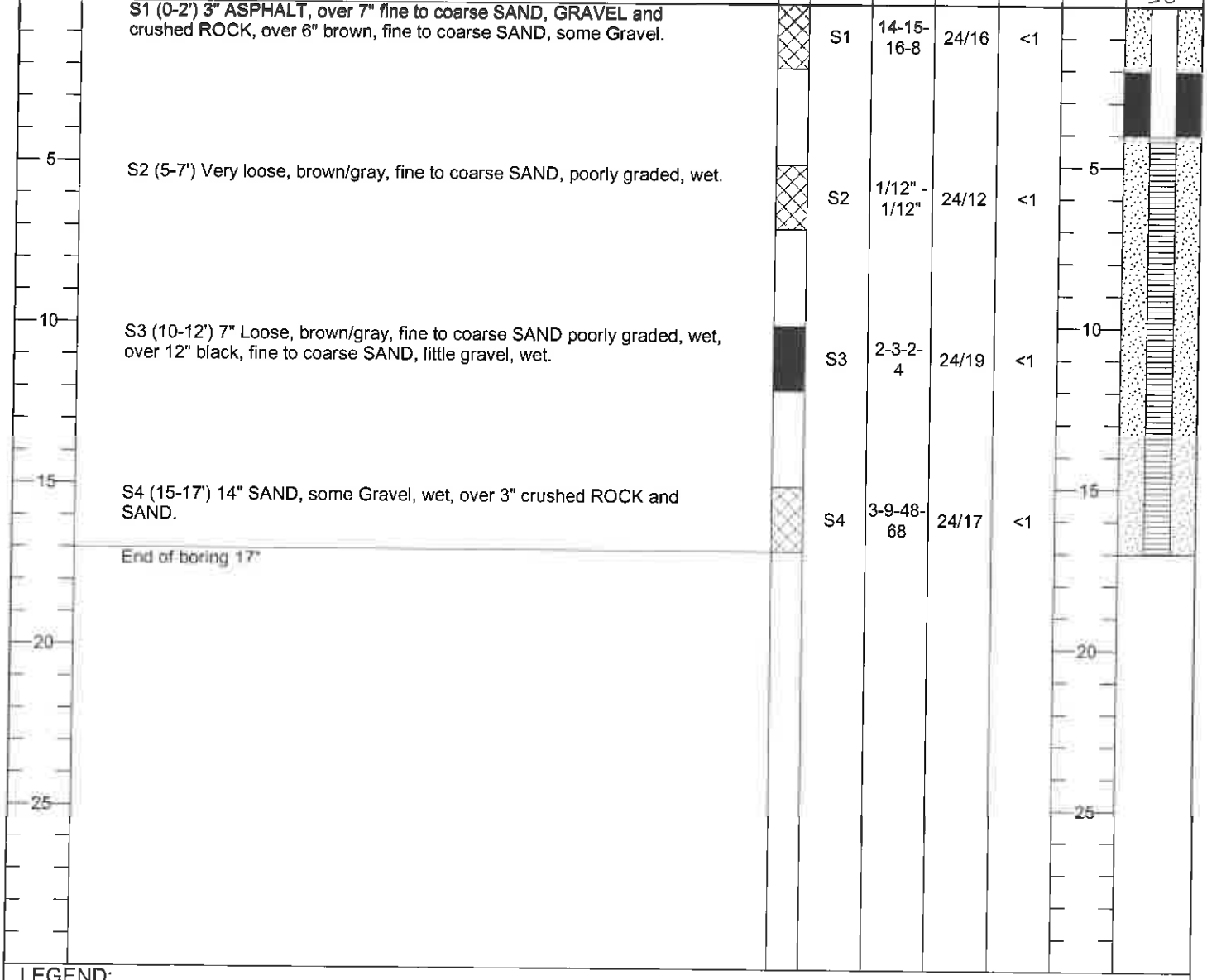
Phase II Environmental Site Assessment
Former AA Hall Grist Mill
Municipal Parking Lot
Main Street
Damariscotta, Maine

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BORING AND MONITORING WELL LOG: B101/MW101

Reviewed by: Eric Rhuse	Total Depth: 17 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/17/16 to 02/17/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmeister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)
	S1 (0-2') 3" ASPHALT, over 7" fine to coarse SAND, GRAVEL and crushed ROCK, over 6" brown, fine to coarse SAND, some Gravel.		S1	14-15-16-8	24/16	<1
5	S2 (5-7') Very loose, brown/gray, fine to coarse SAND, poorly graded, wet.		S2	1/12" - 1/12"	24/12	<1
10	S3 (10-12') 7" Loose, brown/gray, fine to coarse SAND poorly graded, wet, over 12" black, fine to coarse SAND, little gravel, wet.		S3	2-3-2-4	24/19	<1
15	S4 (15-17') 14" SAND, some Gravel, wet, over 3" crushed ROCK and SAND.		S4	3-9-48-68	24/17	<1
	End of boring 17'					
20						
25						



LEGEND:

Filter Sand | Native Fill | Bentonite | Bentonite Grout | Concrete | PVC Screen | Solid PVC Riser

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

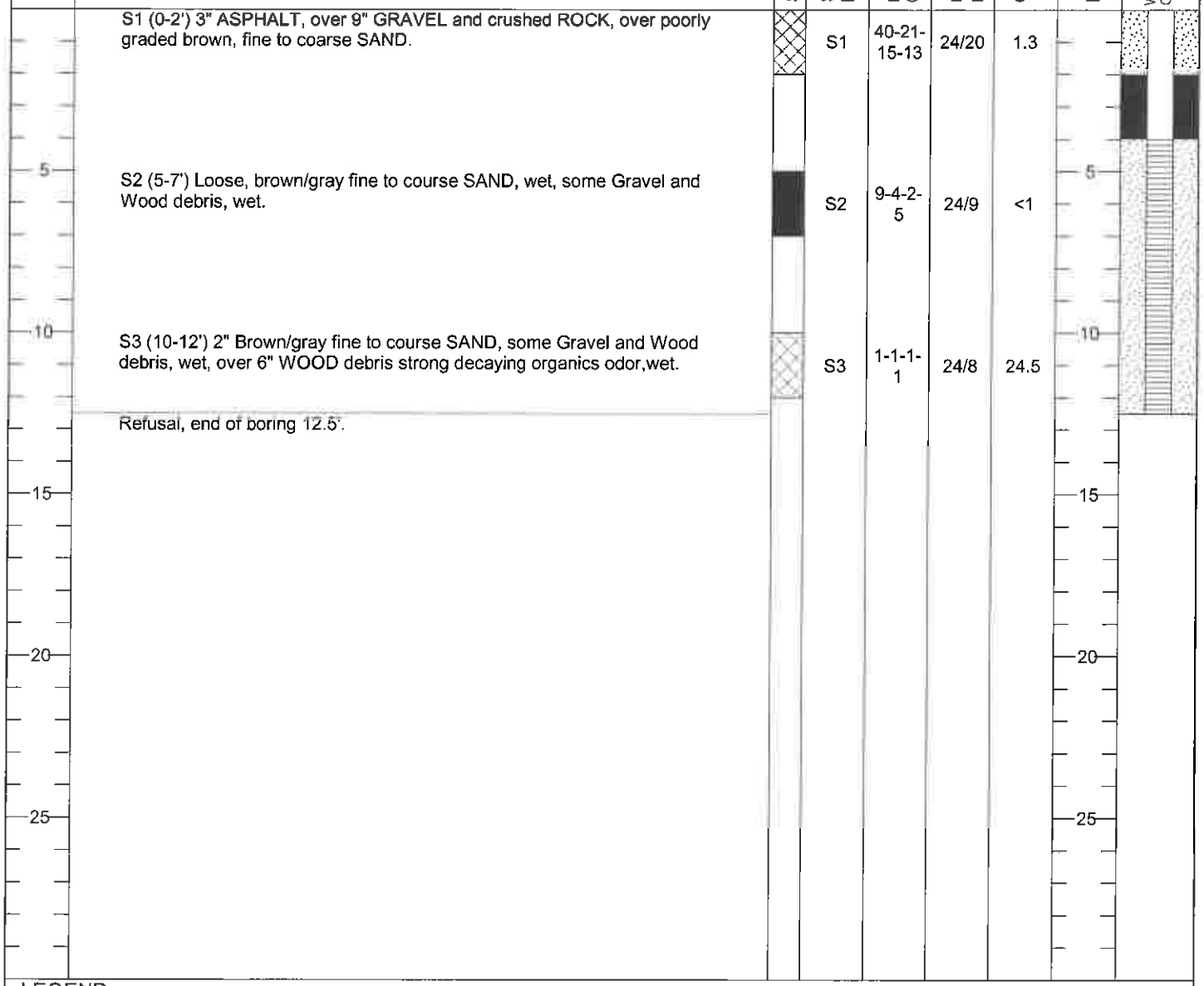
Project No.: 131.06156

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BORING AND MONITORING WELL LOG: B102/MW102

Reviewed by: Erik Rhenz	Total Depth: 12.5 Feet	Logged By: KJQ
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/17/16 to 02/17/16
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS

DEPTH	DESCRIPTION (Based on a modified Burmeister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)
	S1 (0-2') 3" ASPHALT, over 9" GRAVEL and crushed ROCK, over poorly graded brown, fine to coarse SAND.		S1	40-21-15-13	24/20	1.3
5	S2 (5-7') Loose, brown/gray fine to course SAND, wet, some Gravel and Wood debris, wet.		S2	9-4-2-5	24/9	<1
10	S3 (10-12') 2" Brown/gray fine to course SAND, some Gravel and Wood debris, wet, over 6" WOOD debris strong decaying organics odor,wet.		S3	1-1-1-1	24/8	24.5
	Refusal, end of boring 12.5'.					
15						
20						
25						



LEGEND:

Filter Sand | Native Fill | Bentonite | Bentonite Grout | Concrete | PVC Screen | Solid PVC Riser

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

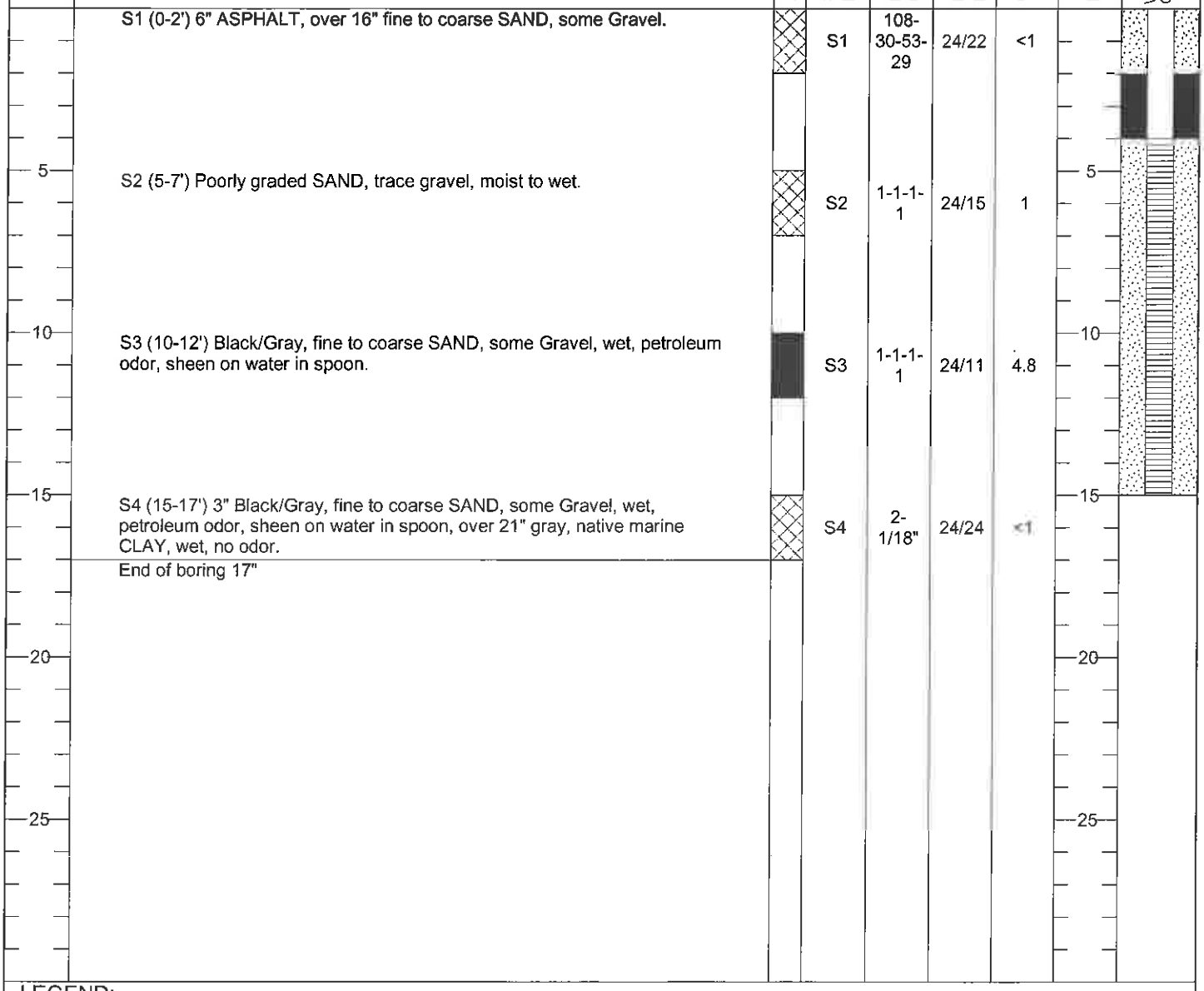
Project No.: 131.06156 | Page: 1

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BORING AND MONITORING WELL LOG: B103/MW103

Reviewed by: Eric Rhein	Total Depth: 17 Feet	Logged By: KJQ
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/17/16 to 02/17/16
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS

DEPTH	DESCRIPTION (Based on a modified Burmeister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)
0	S1 (0-2') 6" ASPHALT, over 16" fine to coarse SAND, some Gravel.		S1	108-30-53-29	24/22	<1
5	S2 (5-7') Poorly graded SAND, trace gravel, moist to wet.		S2	1-1-1-1	24/15	1
10	S3 (10-12') Black/Gray, fine to coarse SAND, some Gravel, wet, petroleum odor, sheen on water in spoon.		S3	1-1-1-1	24/11	4.8
15	S4 (15-17') 3" Black/Gray, fine to coarse SAND, some Gravel, wet, petroleum odor, sheen on water in spoon, over 21" gray, native marine CLAY, wet, no odor.		S4	2-1/18"	24/24	<1
17	End of boring 17"					
20						
25						



LEGEND:

Filter Sand | Native Fill | Bentonite | Bentonite Grout | Concrete | PVC Screen | Solid PVC Riser

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156 | Page: 1

RANSOM Consulting Engineers and Scientists

BORING LOG: B104

Reviewed By: Eric Reed	Total Depth: 13.5 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 2 Inches	Date Drilled: 02/18/16 to 02/18/16	
GW Observed at: 3 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 3" ASPHALT, over 15" fine to coarse SAND, little gravel.		S1	10-12-12-10	24/18	<1		
5	S2 (5-7') Brown, fine to coarse SAND, little gravel and wood debris.		S2	1-1-2-3	24/4	<1		5
10	S3 (10-12') Black/Gray, fine to coarse SAND, trace gravel and wood debris, over 3" WOOD debris, wet.		S3	14-10-8-7	24/9	<1		10
	S4 (12-13.5') 5" Wood debris, over 11" gray, poorly graded, SAND, wet.		S4	4-8-13	17/16	<1		
	Refusal, end of boring 13.5'.							
15								15
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

RANSOM
Consulting
Engineers
and Scientists

BORING LOG: B105

Reviewed By: Eric Rhein	Total Depth: 12 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/18/16 to 02/18/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 4" ASPHALT, over 8" brown, fine to coarse SAND, some Gravel.		S1	19-10-8-9	24/12	<1		
5	S2 (5-7') Brown to black, fine to coarse SAND, little gravel, brick and wood debris, wet.		S2	3-2-1-1	24/5	<1		5
10	S3 (10-12') 3" WOOD debris, decaying organic odor, wet, over 13" gray soft CLAY, wet, no odor.		S3	1-1-1-1	24/16	<1		10
	End of boring 12'							
15								15
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

RANSOM Consulting Engineers and Scientists

BORING LOG: B106

Reviewed By: Erik Phelps	Total Depth: 12 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/18/16 to 02/18/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 3" ASPHALT, over 11" brown, fine to coarse SAND, some Gravel.		S1	12-12-11-12	24/14	<1		
	S2 (2-4') Brown, fine to coarse SAND, some Gravel, wet.		S2	15-15-11-7	24/20	<1		
5	S3 (5-7') Brown, fine to coarse SAND, some Gravel, wet.		S3	4-7-5-9	24/10	<1		5
10	S4 (10-12') 7" Fine to coarse SAND, little gravel, over 13" gray CLAY, wet, decaying organics odor.		S4	1-1-1-1	24/20	<1		10
	End of boring 12'.							
15								15
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

RANSOM Consulting Engineers and Scientists

BORING LOG: B107

Reviewed By: Earl Phelps	Total Depth: 17 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 2 Inches	Date Drilled: 02/17/16 to 02/17/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 3" ASPHALT, over 14" brown, fine to coarse SAND, some Gravel.		S1	21-16-17-13	24/17	<1		
5	S2 (5-7') 13" poorly graded SAND, over 5" fine to coarse SAND, trace gravel, bottom 2" wet.		S2	1-2-1-1	24/18	<1		5
10	S3 (10-12') Gray, poorly graded SAND, trace gravel, wet, slight petroleum odor.		S3	WH 18"-3	24/17	2.5		10
15	S4 (15-17') Soft, gray, silty marine CLAY, wet, decaying organics odor.		S4	1-1-1-1	24/17	<1		15
	End of boring 17' bgs.							
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT:
LCRPC

SITE:
AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

RANSOM Consulting Engineers and Scientists

BORING LOG: B108

Reviewed By: Erik Rhemp	Total Depth: 12 Feet	Logged By: KJQ	
Date Reviewed: 3/25/16	Boring Diameter: 8 Inches	Date Drilled: 02/18/16 to 02/18/16	
GW Observed at: 5 Feet	Well Stickup: 0	Driller: TDS	

DEPTH	DESCRIPTION (Based on a modified Burmister Soil Classification System)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS (per 6 inches)	PENETRATION/ RECOVERY	OVM (ppmv)	DEXSIL (ppm)	DEPTH
	S1 (0-2') 4" ASPHALT, over 12" brown, fine to coarse SAND, some Gravel.		S1	18-14-10-13	24/16	<1		
5	S2 (5-7') Brown, poorly graded SAND, wet.		S2	1-1-1-1	24/15	<1		5
10	S3 (10-12') 12" Very loose, poorly graded SAND, wet, over 12", very soft, gray, marine CLAY, wet.		S3	WH for 18" - 1	24/24	<1		10
	End of boring 12'.							
15								15
20								20
25								25

NOTES:
1. Boring advanced using truck-mounted drilling rig with hollow-stem augers.
2. Soil Sampling: 1 1/2" I.D. split-spoon samples driven with 140 lb. hammer falling 30".
3. Sample designated with solid fill submitted for laboratory analysis.
4. NO=not observed; NM=not measured; NA=not applicable; bgs=below ground surface; WH=weight of hammer; WR=weight of rod.

CLIENT: LCRPC

SITE: AA Hall Grist Mill
Main Street
Damriscotta, Maine

Project No.: 131.06156

APPENDIX B

Certified Laboratory Analytical Reports

Phase II Environmental Site Assessment
Former AA Hall Grist Mill
Municipal Parking Lot
Main Street
Damariscotta, Maine

ANALYTICAL REPORT

Lab Number:	L1604406
Client:	Ransom Consulting, Inc. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Steve Dyer
Phone:	(207) 772-2891
Project Name:	AA HALL GRIST MILL
Project Number:	131.06156.010
Report Date:	02/29/16

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Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1604406-01	B101-S3	SOIL	DAMARISCOTTA, ME	02/17/16 10:55	02/18/16
L1604406-02	B10X	SOIL	DAMARISCOTTA, ME	02/17/16 11:00	02/18/16
L1604406-03	B102-S2	SOIL	DAMARISCOTTA, ME	02/17/16 12:15	02/18/16
L1604406-04	B107-S3	SOIL	DAMARISCOTTA, ME	02/17/16 14:20	02/18/16
L1604406-05	B103-S3	SOIL	DAMARISCOTTA, ME	02/17/16 16:05	02/18/16
L1604406-06	TRIP BLANK	SOIL	DAMARISCOTTA, ME	02/17/16 00:00	02/18/16
L1604406-07	TRIP BLANK	WATER	DAMARISCOTTA, ME	02/17/16 00:00	02/18/16

Project Name:	AA HALL GRIST MILL	**Lab Number:**	L1604406
Project Number:	131.06156.010	**Report Date:**	02/29/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	AA HALL GRIST MILL	**Lab Number:**	L1604406
Project Number:	131.06156.010	**Report Date:**	02/29/16

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

Trip Blanks were received in the laboratory but not listed on the Chain of Custody. At the client's request, the Trip Blanks were analyzed.

Volatile Organics

L1604406-05: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

EPH

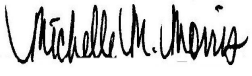
L1604406-01, -02 and -03: The sample has elevated detection limits due to the dilution required by the sample matrix.

Metals

L1604406-05: The sample has an elevated detection limit for Cadmium due to the dilution required by matrix interferences encountered during analysis.

The WG866618-4 MS recoveries, performed on L1604406-01, are outside the acceptance criteria for arsenic (71%), cadmium (62%) and chromium (65%). A post digestion spike was performed and yielded unacceptable recoveries for arsenic (64%), cadmium (61%) and chromium (61%). This has been attributed to sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 02/29/16

ORGANICS

VOLATILES

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-01
Client ID: B101-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/23/16 10:28
Analyst: BN
Percent Solids: 79%

Date Collected: 02/17/16 10:55
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	12	1.3	1
1,1-Dichloroethane	ND		ug/kg	1.8	0.10	1
Chloroform	ND		ug/kg	1.8	0.45	1
Carbon tetrachloride	ND		ug/kg	1.2	0.26	1
1,2-Dichloropropane	ND		ug/kg	4.3	0.28	1
Dibromochloromethane	ND		ug/kg	1.2	0.19	1
1,1,2-Trichloroethane	ND		ug/kg	1.8	0.37	1
Tetrachloroethene	ND		ug/kg	1.2	0.17	1
Chlorobenzene	ND		ug/kg	1.2	0.42	1
Trichlorofluoromethane	ND		ug/kg	6.1	0.47	1
1,2-Dichloroethane	ND		ug/kg	1.2	0.14	1
1,1,1-Trichloroethane	ND		ug/kg	1.2	0.14	1
Bromodichloromethane	ND		ug/kg	1.2	0.21	1
trans-1,3-Dichloropropene	ND		ug/kg	1.2	0.15	1
cis-1,3-Dichloropropene	ND		ug/kg	1.2	0.14	1
1,3-Dichloropropene, Total	ND		ug/kg	1.2	0.14	1
1,1-Dichloropropene	ND		ug/kg	6.1	0.17	1
Bromoform	ND		ug/kg	4.9	0.29	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.2	0.12	1
Benzene	ND		ug/kg	1.2	0.14	1
Toluene	ND		ug/kg	1.8	0.24	1
Ethylbenzene	ND		ug/kg	1.2	0.16	1
Chloromethane	ND		ug/kg	6.1	0.36	1
Bromomethane	ND		ug/kg	2.4	0.41	1
Vinyl chloride	ND		ug/kg	2.4	0.14	1
Chloroethane	ND		ug/kg	2.4	0.38	1
1,1-Dichloroethene	ND		ug/kg	1.2	0.32	1
trans-1,2-Dichloroethene	ND		ug/kg	1.8	0.26	1
Trichloroethene	ND		ug/kg	1.2	0.15	1
1,2-Dichlorobenzene	ND		ug/kg	6.1	0.19	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-01 Date Collected: 02/17/16 10:55

Client ID: B101-S3 Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	6.1	0.16	1
1,4-Dichlorobenzene	ND		ug/kg	6.1	0.17	1
Methyl tert butyl ether	ND		ug/kg	2.4	0.10	1
p/m-Xylene	ND		ug/kg	2.4	0.24	1
o-Xylene	ND		ug/kg	2.4	0.21	1
Xylenes, Total	ND		ug/kg	2.4	0.21	1
cis-1,2-Dichloroethene	ND		ug/kg	1.2	0.17	1
1,2-Dichloroethene, Total	ND		ug/kg	1.2	0.17	1
Dibromomethane	ND		ug/kg	12	0.20	1
1,4-Dichlorobutane	ND		ug/kg	12	0.16	1
1,2,3-Trichloropropane	ND		ug/kg	12	0.20	1
Styrene	ND		ug/kg	2.4	0.49	1
Dichlorodifluoromethane	ND		ug/kg	12	0.23	1
Acetone	40	J	ug/kg	44	1.3	1
Carbon disulfide	ND		ug/kg	12	1.3	1
2-Butanone	8.5	J	ug/kg	12	0.33	1
Vinyl acetate	ND		ug/kg	12	0.16	1
4-Methyl-2-pentanone	ND		ug/kg	12	0.30	1
2-Hexanone	ND		ug/kg	12	0.81	1
Ethyl methacrylate	ND		ug/kg	12	0.19	1
Acrylonitrile	ND		ug/kg	4.9	0.63	1
Bromochloromethane	ND		ug/kg	6.1	0.34	1
Tetrahydrofuran	ND		ug/kg	24	1.2	1
2,2-Dichloropropane	ND		ug/kg	6.1	0.28	1
1,2-Dibromoethane	ND		ug/kg	4.9	0.21	1
1,3-Dichloropropane	ND		ug/kg	6.1	0.18	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.2	0.39	1
Bromobenzene	ND		ug/kg	6.1	0.25	1
n-Butylbenzene	ND		ug/kg	1.2	0.14	1
sec-Butylbenzene	ND		ug/kg	1.2	0.15	1
tert-Butylbenzene	ND		ug/kg	6.1	0.16	1
o-Chlorotoluene	ND		ug/kg	6.1	0.19	1
p-Chlorotoluene	ND		ug/kg	6.1	0.16	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	6.1	0.48	1
Hexachlorobutadiene	ND		ug/kg	6.1	0.28	1
Isopropylbenzene	ND		ug/kg	1.2	0.13	1
p-Isopropyltoluene	ND		ug/kg	1.2	0.15	1
Naphthalene	1.4	J	ug/kg	6.1	0.17	1
n-Propylbenzene	ND		ug/kg	1.2	0.13	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-01 Date Collected: 02/17/16 10:55

Client ID: B101-S3 Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	6.1	0.18	1
1,2,4-Trichlorobenzene	ND		ug/kg	6.1	0.22	1
1,3,5-Trimethylbenzene	ND		ug/kg	6.1	0.17	1
1,2,4-Trimethylbenzene	ND		ug/kg	6.1	0.17	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	6.1	0.48	1
Ethyl ether	ND		ug/kg	6.1	0.32	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-02
Client ID: B10X
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/23/16 10:54
Analyst: BN
Percent Solids: 70%

Date Collected: 02/17/16 11:00
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	11	1.3	1
1,1-Dichloroethane	ND		ug/kg	1.7	0.10	1
Chloroform	ND		ug/kg	1.7	0.42	1
Carbon tetrachloride	ND		ug/kg	1.1	0.24	1
1,2-Dichloropropane	ND		ug/kg	4.0	0.26	1
Dibromochloromethane	ND		ug/kg	1.1	0.18	1
1,1,2-Trichloroethane	ND		ug/kg	1.7	0.35	1
Tetrachloroethene	ND		ug/kg	1.1	0.16	1
Chlorobenzene	ND		ug/kg	1.1	0.40	1
Trichlorofluoromethane	ND		ug/kg	5.7	0.44	1
1,2-Dichloroethane	ND		ug/kg	1.1	0.13	1
1,1,1-Trichloroethane	ND		ug/kg	1.1	0.13	1
Bromodichloromethane	ND		ug/kg	1.1	0.20	1
trans-1,3-Dichloropropene	ND		ug/kg	1.1	0.14	1
cis-1,3-Dichloropropene	ND		ug/kg	1.1	0.14	1
1,3-Dichloropropene, Total	ND		ug/kg	1.1	0.14	1
1,1-Dichloropropene	ND		ug/kg	5.7	0.16	1
Bromoform	ND		ug/kg	4.6	0.27	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.1	0.12	1
Benzene	ND		ug/kg	1.1	0.14	1
Toluene	ND		ug/kg	1.7	0.22	1
Ethylbenzene	ND		ug/kg	1.1	0.15	1
Chloromethane	ND		ug/kg	5.7	0.34	1
Bromomethane	ND		ug/kg	2.3	0.39	1
Vinyl chloride	ND		ug/kg	2.3	0.13	1
Chloroethane	ND		ug/kg	2.3	0.36	1
1,1-Dichloroethene	ND		ug/kg	1.1	0.30	1
trans-1,2-Dichloroethene	ND		ug/kg	1.7	0.24	1
Trichloroethene	ND		ug/kg	1.1	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	5.7	0.18	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-02 Date Collected: 02/17/16 11:00

Client ID: B10X Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	5.7	0.16	1
1,4-Dichlorobenzene	ND		ug/kg	5.7	0.16	1
Methyl tert butyl ether	ND		ug/kg	2.3	0.10	1
p/m-Xylene	ND		ug/kg	2.3	0.23	1
o-Xylene	ND		ug/kg	2.3	0.20	1
Xylenes, Total	ND		ug/kg	2.3	0.20	1
cis-1,2-Dichloroethene	ND		ug/kg	1.1	0.16	1
1,2-Dichloroethene, Total	ND		ug/kg	1.1	0.16	1
Dibromomethane	ND		ug/kg	11	0.19	1
1,4-Dichlorobutane	ND		ug/kg	11	0.15	1
1,2,3-Trichloropropane	ND		ug/kg	11	0.19	1
Styrene	ND		ug/kg	2.3	0.46	1
Dichlorodifluoromethane	ND		ug/kg	11	0.22	1
Acetone	51		ug/kg	41	1.2	1
Carbon disulfide	ND		ug/kg	11	1.3	1
2-Butanone	9.6	J	ug/kg	11	0.31	1
Vinyl acetate	ND		ug/kg	11	0.15	1
4-Methyl-2-pentanone	ND		ug/kg	11	0.28	1
2-Hexanone	ND		ug/kg	11	0.76	1
Ethyl methacrylate	ND		ug/kg	11	0.18	1
Acrylonitrile	ND		ug/kg	4.6	0.59	1
Bromochloromethane	ND		ug/kg	5.7	0.32	1
Tetrahydrofuran	ND		ug/kg	23	1.1	1
2,2-Dichloropropane	ND		ug/kg	5.7	0.26	1
1,2-Dibromoethane	ND		ug/kg	4.6	0.20	1
1,3-Dichloropropane	ND		ug/kg	5.7	0.17	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.1	0.36	1
Bromobenzene	ND		ug/kg	5.7	0.24	1
n-Butylbenzene	ND		ug/kg	1.1	0.13	1
sec-Butylbenzene	ND		ug/kg	1.1	0.14	1
tert-Butylbenzene	ND		ug/kg	5.7	0.16	1
o-Chlorotoluene	ND		ug/kg	5.7	0.18	1
p-Chlorotoluene	ND		ug/kg	5.7	0.15	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.7	0.45	1
Hexachlorobutadiene	ND		ug/kg	5.7	0.26	1
Isopropylbenzene	ND		ug/kg	1.1	0.12	1
p-Isopropyltoluene	ND		ug/kg	1.1	0.14	1
Naphthalene	1.2	J	ug/kg	5.7	0.16	1
n-Propylbenzene	ND		ug/kg	1.1	0.12	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-02 Date Collected: 02/17/16 11:00

Client ID: B10X Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	5.7	0.17	1
1,2,4-Trichlorobenzene	ND		ug/kg	5.7	0.21	1
1,3,5-Trimethylbenzene	ND		ug/kg	5.7	0.16	1
1,2,4-Trimethylbenzene	ND		ug/kg	5.7	0.16	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.7	0.45	1
Ethyl ether	ND		ug/kg	5.7	0.30	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-03
Client ID: B102-S2
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/23/16 11:19
Analyst: BN
Percent Solids: 80%

Date Collected: 02/17/16 12:15
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	10	1.1	1
1,1-Dichloroethane	ND		ug/kg	1.6	0.09	1
Chloroform	ND		ug/kg	1.6	0.38	1
Carbon tetrachloride	ND		ug/kg	1.0	0.22	1
1,2-Dichloropropane	ND		ug/kg	3.6	0.24	1
Dibromochloromethane	ND		ug/kg	1.0	0.16	1
1,1,2-Trichloroethane	ND		ug/kg	1.6	0.32	1
Tetrachloroethene	ND		ug/kg	1.0	0.14	1
Chlorobenzene	ND		ug/kg	1.0	0.36	1
Trichlorofluoromethane	ND		ug/kg	5.2	0.40	1
1,2-Dichloroethane	ND		ug/kg	1.0	0.12	1
1,1,1-Trichloroethane	ND		ug/kg	1.0	0.11	1
Bromodichloromethane	ND		ug/kg	1.0	0.18	1
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.12	1
cis-1,3-Dichloropropene	ND		ug/kg	1.0	0.12	1
1,3-Dichloropropene, Total	ND		ug/kg	1.0	0.12	1
1,1-Dichloropropene	ND		ug/kg	5.2	0.15	1
Bromoform	ND		ug/kg	4.2	0.24	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	0.10	1
Benzene	ND		ug/kg	1.0	0.12	1
Toluene	ND		ug/kg	1.6	0.20	1
Ethylbenzene	ND		ug/kg	1.0	0.13	1
Chloromethane	ND		ug/kg	5.2	0.30	1
Bromomethane	ND		ug/kg	2.1	0.35	1
Vinyl chloride	ND		ug/kg	2.1	0.12	1
Chloroethane	ND		ug/kg	2.1	0.33	1
1,1-Dichloroethene	ND		ug/kg	1.0	0.27	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	0.22	1
Trichloroethene	ND		ug/kg	1.0	0.13	1
1,2-Dichlorobenzene	ND		ug/kg	5.2	0.16	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-03 Date Collected: 02/17/16 12:15

Client ID: B102-S2 Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	5.2	0.14	1
1,4-Dichlorobenzene	ND		ug/kg	5.2	0.14	1
Methyl tert butyl ether	ND		ug/kg	2.1	0.09	1
p/m-Xylene	1.4	J	ug/kg	2.1	0.20	1
o-Xylene	0.97	J	ug/kg	2.1	0.18	1
Xylenes, Total	2.4	J	ug/kg	2.1	0.18	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.15	1
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.15	1
Dibromomethane	ND		ug/kg	10	0.17	1
1,4-Dichlorobutane	ND		ug/kg	10	0.14	1
1,2,3-Trichloropropane	ND		ug/kg	10	0.17	1
Styrene	ND		ug/kg	2.1	0.42	1
Dichlorodifluoromethane	ND		ug/kg	10	0.20	1
Acetone	56		ug/kg	37	1.1	1
Carbon disulfide	ND		ug/kg	10	1.1	1
2-Butanone	10		ug/kg	10	0.28	1
Vinyl acetate	ND		ug/kg	10	0.14	1
4-Methyl-2-pentanone	ND		ug/kg	10	0.25	1
2-Hexanone	ND		ug/kg	10	0.69	1
Ethyl methacrylate	ND		ug/kg	10	0.16	1
Acrylonitrile	ND		ug/kg	4.2	0.53	1
Bromochloromethane	ND		ug/kg	5.2	0.29	1
Tetrahydrofuran	ND		ug/kg	21	1.0	1
2,2-Dichloropropane	ND		ug/kg	5.2	0.23	1
1,2-Dibromoethane	ND		ug/kg	4.2	0.18	1
1,3-Dichloropropane	ND		ug/kg	5.2	0.15	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.0	0.33	1
Bromobenzene	ND		ug/kg	5.2	0.22	1
n-Butylbenzene	ND		ug/kg	1.0	0.12	1
sec-Butylbenzene	ND		ug/kg	1.0	0.13	1
tert-Butylbenzene	ND		ug/kg	5.2	0.14	1
o-Chlorotoluene	ND		ug/kg	5.2	0.16	1
p-Chlorotoluene	ND		ug/kg	5.2	0.14	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.2	0.41	1
Hexachlorobutadiene	ND		ug/kg	5.2	0.24	1
Isopropylbenzene	ND		ug/kg	1.0	0.11	1
p-Isopropyltoluene	8.5		ug/kg	1.0	0.13	1
Naphthalene	ND		ug/kg	5.2	0.14	1
n-Propylbenzene	ND		ug/kg	1.0	0.11	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-03 Date Collected: 02/17/16 12:15

Client ID: B102-S2 Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	5.2	0.15	1
1,2,4-Trichlorobenzene	ND		ug/kg	5.2	0.19	1
1,3,5-Trimethylbenzene	ND		ug/kg	5.2	0.15	1
1,2,4-Trimethylbenzene	1.9	J	ug/kg	5.2	0.15	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.2	0.41	1
Ethyl ether	ND		ug/kg	5.2	0.27	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	100		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-04
Client ID: B107-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/23/16 11:45
Analyst: BN
Percent Solids: 79%

Date Collected: 02/17/16 14:20
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	12	1.3	1
1,1-Dichloroethane	ND		ug/kg	1.7	0.10	1
Chloroform	ND		ug/kg	1.7	0.43	1
Carbon tetrachloride	ND		ug/kg	1.2	0.24	1
1,2-Dichloropropane	ND		ug/kg	4.0	0.26	1
Dibromochloromethane	ND		ug/kg	1.2	0.18	1
1,1,2-Trichloroethane	ND		ug/kg	1.7	0.35	1
Tetrachloroethene	ND		ug/kg	1.2	0.16	1
Chlorobenzene	ND		ug/kg	1.2	0.40	1
Trichlorofluoromethane	ND		ug/kg	5.8	0.45	1
1,2-Dichloroethane	ND		ug/kg	1.2	0.13	1
1,1,1-Trichloroethane	ND		ug/kg	1.2	0.13	1
Bromodichloromethane	ND		ug/kg	1.2	0.20	1
trans-1,3-Dichloropropene	ND		ug/kg	1.2	0.14	1
cis-1,3-Dichloropropene	ND		ug/kg	1.2	0.14	1
1,3-Dichloropropene, Total	ND		ug/kg	1.2	0.14	1
1,1-Dichloropropene	ND		ug/kg	5.8	0.16	1
Bromoform	ND		ug/kg	4.6	0.27	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.2	0.12	1
Benzene	ND		ug/kg	1.2	0.14	1
Toluene	ND		ug/kg	1.7	0.22	1
Ethylbenzene	ND		ug/kg	1.2	0.15	1
Chloromethane	ND		ug/kg	5.8	0.34	1
Bromomethane	ND		ug/kg	2.3	0.39	1
Vinyl chloride	ND		ug/kg	2.3	0.14	1
Chloroethane	ND		ug/kg	2.3	0.36	1
1,1-Dichloroethene	ND		ug/kg	1.2	0.30	1
trans-1,2-Dichloroethene	ND		ug/kg	1.7	0.24	1
Trichloroethene	ND		ug/kg	1.2	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	5.8	0.18	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-04 Date Collected: 02/17/16 14:20

Client ID: B107-S3 Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	5.8	0.16	1
1,4-Dichlorobenzene	ND		ug/kg	5.8	0.16	1
Methyl tert butyl ether	ND		ug/kg	2.3	0.10	1
p/m-Xylene	ND		ug/kg	2.3	0.23	1
o-Xylene	ND		ug/kg	2.3	0.20	1
Xylenes, Total	ND		ug/kg	2.3	0.20	1
cis-1,2-Dichloroethene	ND		ug/kg	1.2	0.16	1
1,2-Dichloroethene, Total	ND		ug/kg	1.2	0.16	1
Dibromomethane	ND		ug/kg	12	0.19	1
1,4-Dichlorobutane	ND		ug/kg	12	0.15	1
1,2,3-Trichloropropane	ND		ug/kg	12	0.19	1
Styrene	ND		ug/kg	2.3	0.46	1
Dichlorodifluoromethane	ND		ug/kg	12	0.22	1
Acetone	21	J	ug/kg	41	1.2	1
Carbon disulfide	ND		ug/kg	12	1.3	1
2-Butanone	ND		ug/kg	12	0.31	1
Vinyl acetate	ND		ug/kg	12	0.15	1
4-Methyl-2-pentanone	ND		ug/kg	12	0.28	1
2-Hexanone	ND		ug/kg	12	0.77	1
Ethyl methacrylate	ND		ug/kg	12	0.18	1
Acrylonitrile	ND		ug/kg	4.6	0.59	1
Bromochloromethane	ND		ug/kg	5.8	0.32	1
Tetrahydrofuran	ND		ug/kg	23	1.1	1
2,2-Dichloropropane	ND		ug/kg	5.8	0.26	1
1,2-Dibromoethane	ND		ug/kg	4.6	0.20	1
1,3-Dichloropropane	ND		ug/kg	5.8	0.17	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.2	0.37	1
Bromobenzene	ND		ug/kg	5.8	0.24	1
n-Butylbenzene	ND		ug/kg	1.2	0.13	1
sec-Butylbenzene	ND		ug/kg	1.2	0.14	1
tert-Butylbenzene	ND		ug/kg	5.8	0.16	1
o-Chlorotoluene	ND		ug/kg	5.8	0.18	1
p-Chlorotoluene	ND		ug/kg	5.8	0.15	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.8	0.46	1
Hexachlorobutadiene	ND		ug/kg	5.8	0.26	1
Isopropylbenzene	1.0	J	ug/kg	1.2	0.12	1
p-Isopropyltoluene	3.5		ug/kg	1.2	0.14	1
Naphthalene	ND		ug/kg	5.8	0.16	1
n-Propylbenzene	1.1	J	ug/kg	1.2	0.12	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-04 Date Collected: 02/17/16 14:20

Client ID: B107-S3 Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	5.8	0.17	1
1,2,4-Trichlorobenzene	ND		ug/kg	5.8	0.21	1
1,3,5-Trimethylbenzene	ND		ug/kg	5.8	0.16	1
1,2,4-Trimethylbenzene	ND		ug/kg	5.8	0.16	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.8	0.45	1
Ethyl ether	ND		ug/kg	5.8	0.30	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-05
Client ID: B103-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:40
Analyst: MV
Percent Solids: 74%

Date Collected: 02/17/16 16:05
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	1000	110	1
1,1-Dichloroethane	ND		ug/kg	160	8.9	1
Chloroform	ND		ug/kg	160	38.	1
Carbon tetrachloride	ND		ug/kg	100	22.	1
1,2-Dichloropropane	ND		ug/kg	360	24.	1
Dibromochloromethane	ND		ug/kg	100	16.	1
1,1,2-Trichloroethane	ND		ug/kg	160	32.	1
Tetrachloroethene	ND		ug/kg	100	14.	1
Chlorobenzene	ND		ug/kg	100	36.	1
Trichlorofluoromethane	ND		ug/kg	520	40.	1
1,2-Dichloroethane	ND		ug/kg	100	12.	1
1,1,1-Trichloroethane	ND		ug/kg	100	11.	1
Bromodichloromethane	ND		ug/kg	100	18.	1
trans-1,3-Dichloropropene	ND		ug/kg	100	12.	1
cis-1,3-Dichloropropene	ND		ug/kg	100	12.	1
1,3-Dichloropropene, Total	ND		ug/kg	100	12.	1
1,1-Dichloropropene	ND		ug/kg	520	15.	1
Bromoform	ND		ug/kg	410	24.	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	100	10.	1
Benzene	ND		ug/kg	100	12.	1
Toluene	ND		ug/kg	160	20.	1
Ethylbenzene	ND		ug/kg	100	13.	1
Chloromethane	ND		ug/kg	520	30.	1
Bromomethane	ND		ug/kg	210	35.	1
Vinyl chloride	ND		ug/kg	210	12.	1
Chloroethane	ND		ug/kg	210	33.	1
1,1-Dichloroethene	ND		ug/kg	100	27.	1
trans-1,2-Dichloroethene	ND		ug/kg	160	22.	1
Trichloroethene	ND		ug/kg	100	13.	1
1,2-Dichlorobenzene	ND		ug/kg	520	16.	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-05 Date Collected: 02/17/16 16:05

Client ID: B103-S3 Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	520	14.	1
1,4-Dichlorobenzene	ND		ug/kg	520	14.	1
Methyl tert butyl ether	ND		ug/kg	210	8.7	1
p/m-Xylene	ND		ug/kg	210	20.	1
o-Xylene	ND		ug/kg	210	18.	1
Xylenes, Total	ND		ug/kg	210	18.	1
cis-1,2-Dichloroethene	ND		ug/kg	100	15.	1
1,2-Dichloroethene, Total	ND		ug/kg	100	15.	1
Dibromomethane	ND		ug/kg	1000	17.	1
1,4-Dichlorobutane	ND		ug/kg	1000	14.	1
1,2,3-Trichloropropane	ND		ug/kg	1000	17.	1
Styrene	ND		ug/kg	210	42.	1
Dichlorodifluoromethane	ND		ug/kg	1000	20.	1
Acetone	ND		ug/kg	3700	110	1
Carbon disulfide	ND		ug/kg	1000	110	1
2-Butanone	ND		ug/kg	1000	28.	1
Vinyl acetate	ND		ug/kg	1000	14.	1
4-Methyl-2-pentanone	ND		ug/kg	1000	25.	1
2-Hexanone	ND		ug/kg	1000	69.	1
Ethyl methacrylate	ND		ug/kg	1000	16.	1
Acrylonitrile	ND		ug/kg	410	53.	1
Bromochloromethane	ND		ug/kg	520	29.	1
Tetrahydrofuran	ND		ug/kg	2100	100	1
2,2-Dichloropropane	ND		ug/kg	520	23.	1
1,2-Dibromoethane	ND		ug/kg	410	18.	1
1,3-Dichloropropane	ND		ug/kg	520	15.	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	100	33.	1
Bromobenzene	ND		ug/kg	520	22.	1
n-Butylbenzene	ND		ug/kg	100	12.	1
sec-Butylbenzene	ND		ug/kg	100	13.	1
tert-Butylbenzene	ND		ug/kg	520	14.	1
o-Chlorotoluene	ND		ug/kg	520	16.	1
p-Chlorotoluene	ND		ug/kg	520	14.	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	520	41.	1
Hexachlorobutadiene	ND		ug/kg	520	24.	1
Isopropylbenzene	ND		ug/kg	100	11.	1
p-Isopropyltoluene	ND		ug/kg	100	13.	1
Naphthalene	ND		ug/kg	520	14.	1
n-Propylbenzene	ND		ug/kg	100	11.	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-05 Date Collected: 02/17/16 16:05

Client ID: B103-S3 Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	520	15.	1
1,2,4-Trichlorobenzene	ND		ug/kg	520	19.	1
1,3,5-Trimethylbenzene	ND		ug/kg	520	15.	1
1,2,4-Trimethylbenzene	ND		ug/kg	520	15.	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	520	41.	1
Ethyl ether	ND		ug/kg	520	27.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	97		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-06
Client ID: TRIP BLANK
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/23/16 12:10
Analyst: BN
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 02/17/16 00:00
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	10	1.1	1
1,1-Dichloroethane	ND		ug/kg	1.5	0.09	1
Chloroform	ND		ug/kg	1.5	0.37	1
Carbon tetrachloride	ND		ug/kg	1.0	0.21	1
1,2-Dichloropropane	ND		ug/kg	3.5	0.23	1
Dibromochloromethane	ND		ug/kg	1.0	0.15	1
1,1,2-Trichloroethane	ND		ug/kg	1.5	0.30	1
Tetrachloroethene	ND		ug/kg	1.0	0.14	1
Chlorobenzene	ND		ug/kg	1.0	0.35	1
Trichlorofluoromethane	ND		ug/kg	5.0	0.39	1
1,2-Dichloroethane	ND		ug/kg	1.0	0.11	1
1,1,1-Trichloroethane	ND		ug/kg	1.0	0.11	1
Bromodichloromethane	ND		ug/kg	1.0	0.17	1
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.12	1
cis-1,3-Dichloropropene	ND		ug/kg	1.0	0.12	1
1,3-Dichloropropene, Total	ND		ug/kg	1.0	0.12	1
1,1-Dichloropropene	ND		ug/kg	5.0	0.14	1
Bromoform	ND		ug/kg	4.0	0.24	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	0.10	1
Benzene	ND		ug/kg	1.0	0.12	1
Toluene	ND		ug/kg	1.5	0.19	1
Ethylbenzene	ND		ug/kg	1.0	0.13	1
Chloromethane	ND		ug/kg	5.0	0.29	1
Bromomethane	ND		ug/kg	2.0	0.34	1
Vinyl chloride	ND		ug/kg	2.0	0.12	1
Chloroethane	ND		ug/kg	2.0	0.32	1
1,1-Dichloroethene	ND		ug/kg	1.0	0.26	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.21	1
Trichloroethene	ND		ug/kg	1.0	0.12	1
1,2-Dichlorobenzene	ND		ug/kg	5.0	0.15	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-06 Date Collected: 02/17/16 00:00

Client ID: TRIP BLANK Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	5.0	0.14	1
1,4-Dichlorobenzene	ND		ug/kg	5.0	0.14	1
Methyl tert butyl ether	ND		ug/kg	2.0	0.08	1
p/m-Xylene	ND		ug/kg	2.0	0.20	1
o-Xylene	ND		ug/kg	2.0	0.17	1
Xylenes, Total	ND		ug/kg	2.0	0.17	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.14	1
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14	1
Dibromomethane	ND		ug/kg	10	0.16	1
1,4-Dichlorobutane	ND		ug/kg	10	0.13	1
1,2,3-Trichloropropane	ND		ug/kg	10	0.16	1
Styrene	ND		ug/kg	2.0	0.40	1
Dichlorodifluoromethane	ND		ug/kg	10	0.19	1
Acetone	1.6	J	ug/kg	36	1.0	1
Carbon disulfide	ND		ug/kg	10	1.1	1
2-Butanone	ND		ug/kg	10	0.27	1
Vinyl acetate	ND		ug/kg	10	0.13	1
4-Methyl-2-pentanone	ND		ug/kg	10	0.24	1
2-Hexanone	ND		ug/kg	10	0.67	1
Ethyl methacrylate	ND		ug/kg	10	0.15	1
Acrylonitrile	ND		ug/kg	4.0	0.51	1
Bromochloromethane	ND		ug/kg	5.0	0.28	1
Tetrahydrofuran	ND		ug/kg	20	1.0	1
2,2-Dichloropropane	ND		ug/kg	5.0	0.23	1
1,2-Dibromoethane	ND		ug/kg	4.0	0.17	1
1,3-Dichloropropane	ND		ug/kg	5.0	0.14	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.0	0.32	1
Bromobenzene	ND		ug/kg	5.0	0.21	1
n-Butylbenzene	ND		ug/kg	1.0	0.11	1
sec-Butylbenzene	ND		ug/kg	1.0	0.12	1
tert-Butylbenzene	ND		ug/kg	5.0	0.14	1
o-Chlorotoluene	ND		ug/kg	5.0	0.16	1
p-Chlorotoluene	ND		ug/kg	5.0	0.13	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.0	0.40	1
Hexachlorobutadiene	ND		ug/kg	5.0	0.23	1
Isopropylbenzene	ND		ug/kg	1.0	0.10	1
p-Isopropyltoluene	ND		ug/kg	1.0	0.12	1
Naphthalene	ND		ug/kg	5.0	0.14	1
n-Propylbenzene	ND		ug/kg	1.0	0.11	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-06 Date Collected: 02/17/16 00:00

Client ID: TRIP BLANK Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	5.0	0.15	1
1,2,4-Trichlorobenzene	ND		ug/kg	5.0	0.18	1
1,3,5-Trimethylbenzene	ND		ug/kg	5.0	0.14	1
1,2,4-Trimethylbenzene	ND		ug/kg	5.0	0.14	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	0.39	1
Ethyl ether	ND		ug/kg	5.0	0.26	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-06
Client ID: TRIP BLANK
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/29/16 14:07
Analyst: BN
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 02/17/16 00:00
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methylene chloride	ND		ug/kg	500	55.	1
1,1-Dichloroethane	ND		ug/kg	75	4.3	1
Chloroform	ND		ug/kg	75	18.	1
Carbon tetrachloride	ND		ug/kg	50	10.	1
1,2-Dichloropropane	ND		ug/kg	180	11.	1
Dibromochloromethane	ND		ug/kg	50	7.7	1
1,1,2-Trichloroethane	ND		ug/kg	75	15.	1
Tetrachloroethene	ND		ug/kg	50	7.0	1
Chlorobenzene	ND		ug/kg	50	17.	1
Trichlorofluoromethane	ND		ug/kg	250	19.	1
1,2-Dichloroethane	ND		ug/kg	50	5.7	1
1,1,1-Trichloroethane	ND		ug/kg	50	5.5	1
Bromodichloromethane	ND		ug/kg	50	8.7	1
trans-1,3-Dichloropropene	ND		ug/kg	50	6.0	1
cis-1,3-Dichloropropene	ND		ug/kg	50	5.9	1
1,3-Dichloropropene, Total	ND		ug/kg	1.0	0.12	1
1,1-Dichloropropene	ND		ug/kg	250	7.1	1
Bromoform	ND		ug/kg	200	12.	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	50	5.0	1
Benzene	ND		ug/kg	50	5.9	1
Toluene	ND		ug/kg	75	9.7	1
Ethylbenzene	ND		ug/kg	50	6.4	1
Chloromethane	ND		ug/kg	250	15.	1
Bromomethane	ND		ug/kg	100	17.	1
Vinyl chloride	ND		ug/kg	100	5.9	1
Chloroethane	ND		ug/kg	100	16.	1
1,1-Dichloroethene	ND		ug/kg	50	13.	1
trans-1,2-Dichloroethene	ND		ug/kg	75	11.	1
Trichloroethene	ND		ug/kg	50	6.2	1
1,2-Dichlorobenzene	ND		ug/kg	250	7.7	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-06 Date Collected: 02/17/16 00:00

Client ID: TRIP BLANK Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	250	6.8	1
1,4-Dichlorobenzene	ND		ug/kg	250	6.9	1
Methyl tert butyl ether	ND		ug/kg	100	4.2	1
p/m-Xylene	ND		ug/kg	100	9.9	1
o-Xylene	ND		ug/kg	100	8.6	1
Xylenes, Total	ND		ug/kg	2.0	0.17	1
cis-1,2-Dichloroethene	ND		ug/kg	50	7.1	1
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14	1
Dibromomethane	ND		ug/kg	500	8.2	1
1,4-Dichlorobutane	ND		ug/kg	500	6.6	1
1,2,3-Trichloropropane	ND		ug/kg	500	8.1	1
Styrene	ND		ug/kg	100	20.	1
Dichlorodifluoromethane	ND		ug/kg	500	9.5	1
Acetone	69	J	ug/kg	1800	52.	1
Carbon disulfide	ND		ug/kg	500	55.	1
2-Butanone	310	J	ug/kg	500	14.	1
Vinyl acetate	ND		ug/kg	500	6.6	1
4-Methyl-2-pentanone	ND		ug/kg	500	12.	1
2-Hexanone	ND		ug/kg	500	33.	1
Ethyl methacrylate	ND		ug/kg	500	7.7	1
Acrylonitrile	ND		ug/kg	200	26.	1
Bromochloromethane	ND		ug/kg	250	14.	1
Tetrahydrofuran	ND		ug/kg	1000	50.	1
2,2-Dichloropropane	ND		ug/kg	250	11.	1
1,2-Dibromoethane	ND		ug/kg	200	8.7	1
1,3-Dichloropropane	ND		ug/kg	250	7.3	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	50	16.	1
Bromobenzene	ND		ug/kg	250	10.	1
n-Butylbenzene	ND		ug/kg	50	5.7	1
sec-Butylbenzene	ND		ug/kg	50	6.1	1
tert-Butylbenzene	ND		ug/kg	250	6.8	1
o-Chlorotoluene	ND		ug/kg	250	8.0	1
p-Chlorotoluene	ND		ug/kg	250	6.6	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	250	20.	1
Hexachlorobutadiene	ND		ug/kg	250	11.	1
Isopropylbenzene	ND		ug/kg	50	5.2	1
p-Isopropyltoluene	ND		ug/kg	50	6.2	1
Naphthalene	ND		ug/kg	250	6.9	1
n-Propylbenzene	ND		ug/kg	50	5.5	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-06 Date Collected: 02/17/16 00:00

Client ID: TRIP BLANK Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	250	7.4	1
1,2,4-Trichlorobenzene	ND		ug/kg	250	9.1	1
1,3,5-Trimethylbenzene	ND		ug/kg	250	7.2	1
1,2,4-Trimethylbenzene	ND		ug/kg	250	7.1	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	250	20.	1
Ethyl ether	ND		ug/kg	250	13.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	97		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-07
Client ID: TRIP BLANK
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 02/28/16 09:30
Analyst: PD

Date Collected: 02/17/16 00:00
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.29	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	ND		ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.13	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	1.0	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	1.0	0.17	1
Bromoform	ND		ug/l	1.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.14	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
Chloromethane	ND		ug/l	2.0	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	0.20	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.14	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Trichloroethene	ND		ug/l	0.50	0.18	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-07 Date Collected: 02/17/16 00:00

Client ID: TRIP BLANK Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	0.18	1
1,3-Dichlorobenzene	ND		ug/l	1.0	0.19	1
1,4-Dichlorobenzene	ND		ug/l	1.0	0.19	1
Methyl tert butyl ether	ND		ug/l	1.0	0.16	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	1.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	1.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	2.0	0.24	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	1.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	1.0	0.14	1
Tetrahydrofuran	ND		ug/l	2.0	0.52	1
2,2-Dichloropropane	ND		ug/l	1.0	0.20	1
1,2-Dibromoethane	ND		ug/l	1.0	0.19	1
1,3-Dichloropropane	ND		ug/l	1.0	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	1.0	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	ND		ug/l	0.50	0.18	1
tert-Butylbenzene	ND		ug/l	1.0	0.18	1
o-Chlorotoluene	ND		ug/l	1.0	0.17	1
p-Chlorotoluene	ND		ug/l	1.0	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	0.33	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
p-Isopropyltoluene	ND		ug/l	0.50	0.19	1
Naphthalene	ND		ug/l	1.0	0.22	1
n-Propylbenzene	ND		ug/l	0.50	0.17	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-07 Date Collected: 02/17/16 00:00

Client ID: TRIP BLANK Date Received: 02/18/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	1.0	0.23	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	0.22	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	0.17	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.17	1
Ethyl ether	ND		ug/l	1.0	0.15	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	89		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/23/16 09:37
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01-04,06 Batch: WG867827-3					
Methylene chloride	ND		ug/kg	10	1.1
1,1-Dichloroethane	ND		ug/kg	1.5	0.09
Chloroform	ND		ug/kg	1.5	0.37
Carbon tetrachloride	ND		ug/kg	1.0	0.21
1,2-Dichloropropane	ND		ug/kg	3.5	0.23
Dibromochloromethane	ND		ug/kg	1.0	0.15
1,1,2-Trichloroethane	ND		ug/kg	1.5	0.30
2-Chloroethylvinyl ether	ND		ug/kg	20	0.62
Tetrachloroethene	ND		ug/kg	1.0	0.14
Chlorobenzene	ND		ug/kg	1.0	0.35
Trichlorofluoromethane	ND		ug/kg	5.0	0.39
1,2-Dichloroethane	ND		ug/kg	1.0	0.11
1,1,1-Trichloroethane	ND		ug/kg	1.0	0.11
Bromodichloromethane	ND		ug/kg	1.0	0.17
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.12
cis-1,3-Dichloropropene	ND		ug/kg	1.0	0.12
1,3-Dichloropropene, Total	ND		ug/kg	1.0	0.12
1,1-Dichloropropene	ND		ug/kg	5.0	0.14
Bromoform	ND		ug/kg	4.0	0.24
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	0.10
Benzene	ND		ug/kg	1.0	0.12
Toluene	ND		ug/kg	1.5	0.19
Ethylbenzene	ND		ug/kg	1.0	0.13
Chloromethane	ND		ug/kg	5.0	0.29
Bromomethane	ND		ug/kg	2.0	0.34
Vinyl chloride	ND		ug/kg	2.0	0.12
Chloroethane	ND		ug/kg	2.0	0.32
1,1-Dichloroethene	ND		ug/kg	1.0	0.26
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.21

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/23/16 09:37
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01-04,06 Batch: WG867827-3					
Trichloroethene	ND		ug/kg	1.0	0.12
1,2-Dichlorobenzene	ND		ug/kg	5.0	0.15
1,3-Dichlorobenzene	ND		ug/kg	5.0	0.14
1,4-Dichlorobenzene	ND		ug/kg	5.0	0.14
Methyl tert butyl ether	ND		ug/kg	2.0	0.08
p/m-Xylene	ND		ug/kg	2.0	0.20
o-Xylene	ND		ug/kg	2.0	0.17
Xylenes, Total	ND		ug/kg	2.0	0.17
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.14
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	10	0.16
1,4-Dichlorobutane	ND		ug/kg	10	0.13
1,2,3-Trichloropropane	ND		ug/kg	10	0.16
Styrene	ND		ug/kg	2.0	0.40
Dichlorodifluoromethane	ND		ug/kg	10	0.19
Acetone	ND		ug/kg	36	1.0
Carbon disulfide	ND		ug/kg	10	1.1
2-Butanone	ND		ug/kg	10	0.27
Vinyl acetate	ND		ug/kg	10	0.13
4-Methyl-2-pentanone	ND		ug/kg	10	0.24
2-Hexanone	ND		ug/kg	10	0.67
Ethyl methacrylate	ND		ug/kg	10	0.15
Acrolein	ND		ug/kg	25	8.1
Acrylonitrile	ND		ug/kg	4.0	0.51
Bromochloromethane	ND		ug/kg	5.0	0.28
Tetrahydrofuran	ND		ug/kg	20	1.0
2,2-Dichloropropane	ND		ug/kg	5.0	0.23
1,2-Dibromoethane	ND		ug/kg	4.0	0.17
1,3-Dichloropropane	ND		ug/kg	5.0	0.14

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/23/16 09:37
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01-04,06 Batch: WG867827-3					
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.0	0.32
Bromobenzene	ND		ug/kg	5.0	0.21
n-Butylbenzene	ND		ug/kg	1.0	0.11
sec-Butylbenzene	ND		ug/kg	1.0	0.12
tert-Butylbenzene	ND		ug/kg	5.0	0.14
1,3,5-Trichlorobenzene	ND		ug/kg	4.0	0.23
o-Chlorotoluene	ND		ug/kg	5.0	0.16
p-Chlorotoluene	ND		ug/kg	5.0	0.13
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.0	0.40
Hexachlorobutadiene	ND		ug/kg	5.0	0.23
Isopropylbenzene	ND		ug/kg	1.0	0.10
p-Isopropyltoluene	ND		ug/kg	1.0	0.12
Naphthalene	ND		ug/kg	5.0	0.14
n-Propylbenzene	ND		ug/kg	1.0	0.11
1,2,3-Trichlorobenzene	ND		ug/kg	5.0	0.15
1,2,4-Trichlorobenzene	ND		ug/kg	5.0	0.18
1,3,5-Trimethylbenzene	ND		ug/kg	5.0	0.14
1,2,4-Trimethylbenzene	ND		ug/kg	5.0	0.14
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	0.39
Ethyl ether	ND		ug/kg	5.0	0.26
Methyl Acetate	ND		ug/kg	20	0.27
Ethyl Acetate	ND		ug/kg	20	0.92
Isopropyl Ether	ND		ug/kg	4.0	0.14
Cyclohexane	ND		ug/kg	20	0.15
Tert-Butyl Alcohol	ND		ug/kg	100	2.9
Ethyl-Tert-Butyl-Ether	ND		ug/kg	4.0	0.12
Tertiary-Amyl Methyl Ether	ND		ug/kg	4.0	0.10
1,4-Dioxane	ND		ug/kg	100	14.
Methyl cyclohexane	ND		ug/kg	4.0	0.15

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/23/16 09:37
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01-04,06 Batch: WG867827-3					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	20	0.27

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	98		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG868972-3					
Methylene chloride	ND		ug/kg	500	55.
1,1-Dichloroethane	ND		ug/kg	75	4.3
Chloroform	ND		ug/kg	75	18.
Carbon tetrachloride	ND		ug/kg	50	10.
1,2-Dichloropropane	ND		ug/kg	180	11.
Dibromochloromethane	ND		ug/kg	50	7.7
1,1,2-Trichloroethane	ND		ug/kg	75	15.
2-Chloroethylvinyl ether	ND		ug/kg	1000	31.
Tetrachloroethene	ND		ug/kg	50	7.0
Chlorobenzene	ND		ug/kg	50	17.
Trichlorofluoromethane	ND		ug/kg	250	19.
1,2-Dichloroethane	ND		ug/kg	50	5.7
1,1,1-Trichloroethane	ND		ug/kg	50	5.5
Bromodichloromethane	ND		ug/kg	50	8.7
trans-1,3-Dichloropropene	ND		ug/kg	50	6.0
cis-1,3-Dichloropropene	ND		ug/kg	50	5.9
1,3-Dichloropropene, Total	ND		ug/kg	50	5.9
1,1-Dichloropropene	ND		ug/kg	250	7.1
Bromoform	ND		ug/kg	200	12.
1,1,2,2-Tetrachloroethane	ND		ug/kg	50	5.0
Benzene	ND		ug/kg	50	5.9
Toluene	ND		ug/kg	75	9.7
Ethylbenzene	ND		ug/kg	50	6.4
Chloromethane	ND		ug/kg	250	15.
Bromomethane	ND		ug/kg	100	17.
Vinyl chloride	ND		ug/kg	100	5.9
Chloroethane	ND		ug/kg	100	16.
1,1-Dichloroethene	ND		ug/kg	50	13.
trans-1,2-Dichloroethene	ND		ug/kg	75	11.

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG868972-3					
Trichloroethene	ND		ug/kg	50	6.2
1,2-Dichlorobenzene	ND		ug/kg	250	7.7
1,3-Dichlorobenzene	ND		ug/kg	250	6.8
1,4-Dichlorobenzene	ND		ug/kg	250	6.9
Methyl tert butyl ether	ND		ug/kg	100	4.2
p/m-Xylene	ND		ug/kg	100	9.9
o-Xylene	ND		ug/kg	100	8.6
Xylenes, Total	ND		ug/kg	100	8.6
cis-1,2-Dichloroethene	ND		ug/kg	50	7.1
1,2-Dichloroethene, Total	ND		ug/kg	50	7.1
Dibromomethane	ND		ug/kg	500	8.2
1,4-Dichlorobutane	ND		ug/kg	500	6.6
1,2,3-Trichloropropane	ND		ug/kg	500	8.1
Styrene	ND		ug/kg	100	20.
Dichlorodifluoromethane	ND		ug/kg	500	9.5
Acetone	ND		ug/kg	1800	52.
Carbon disulfide	ND		ug/kg	500	55.
2-Butanone	ND		ug/kg	500	14.
Vinyl acetate	ND		ug/kg	500	6.6
4-Methyl-2-pentanone	ND		ug/kg	500	12.
2-Hexanone	ND		ug/kg	500	33.
Ethyl methacrylate	ND		ug/kg	500	7.7
Acrolein	ND		ug/kg	1200	400
Acrylonitrile	ND		ug/kg	200	26.
Bromochloromethane	ND		ug/kg	250	14.
Tetrahydrofuran	ND		ug/kg	1000	50.
2,2-Dichloropropane	ND		ug/kg	250	11.
1,2-Dibromoethane	ND		ug/kg	200	8.7
1,3-Dichloropropane	ND		ug/kg	250	7.3

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
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Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG868972-3					
1,1,1,2-Tetrachloroethane	ND		ug/kg	50	16.
Bromobenzene	ND		ug/kg	250	10.
n-Butylbenzene	ND		ug/kg	50	5.7
sec-Butylbenzene	ND		ug/kg	50	6.1
tert-Butylbenzene	ND		ug/kg	250	6.8
1,3,5-Trichlorobenzene	ND		ug/kg	200	12.
o-Chlorotoluene	ND		ug/kg	250	8.0
p-Chlorotoluene	ND		ug/kg	250	6.6
1,2-Dibromo-3-chloropropane	ND		ug/kg	250	20.
Hexachlorobutadiene	ND		ug/kg	250	11.
Isopropylbenzene	ND		ug/kg	50	5.2
p-Isopropyltoluene	ND		ug/kg	50	6.2
Naphthalene	ND		ug/kg	250	6.9
n-Propylbenzene	ND		ug/kg	50	5.5
1,2,3-Trichlorobenzene	ND		ug/kg	250	7.4
1,2,4-Trichlorobenzene	ND		ug/kg	250	9.1
1,3,5-Trimethylbenzene	ND		ug/kg	250	7.2
1,2,4-Trimethylbenzene	ND		ug/kg	250	7.1
trans-1,4-Dichloro-2-butene	ND		ug/kg	250	20.
Ethyl ether	ND		ug/kg	250	13.
Methyl Acetate	ND		ug/kg	1000	14.
Ethyl Acetate	ND		ug/kg	1000	46.
Isopropyl Ether	ND		ug/kg	200	7.0
Cyclohexane	ND		ug/kg	1000	7.3
Tert-Butyl Alcohol	ND		ug/kg	5000	150
Ethyl-Tert-Butyl-Ether	ND		ug/kg	200	5.8
Tertiary-Amyl Methyl Ether	ND		ug/kg	200	4.8
1,4-Dioxane	ND		ug/kg	5000	720
Methyl cyclohexane	ND		ug/kg	200	7.7

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG868972-3					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	1000	14.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	99		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/28/16 09:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 07 Batch: WG869090-3					
Methylene chloride	ND		ug/l	3.0	0.29
1,1-Dichloroethane	ND		ug/l	0.75	0.21
Chloroform	ND		ug/l	0.75	0.16
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.13
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	0.50	0.18
Trichlorofluoromethane	ND		ug/l	1.0	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	1.0	0.17
Bromoform	ND		ug/l	1.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.14
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
Chloromethane	ND		ug/l	2.0	0.18
Bromomethane	ND		ug/l	1.0	0.26
Vinyl chloride	ND		ug/l	0.20	0.07
Chloroethane	ND		ug/l	1.0	0.13
1,1-Dichloroethene	ND		ug/l	0.50	0.14
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16

Project Name: AA HALL GRIST MILL
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Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/28/16 09:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 07 Batch: WG869090-3					
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	1.0	0.18
1,3-Dichlorobenzene	ND		ug/l	1.0	0.19
1,4-Dichlorobenzene	ND		ug/l	1.0	0.19
Methyl tert butyl ether	ND		ug/l	1.0	0.16
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
Dibromomethane	ND		ug/l	1.0	0.36
1,4-Dichlorobutane	ND		ug/l	5.0	0.46
1,2,3-Trichloropropane	ND		ug/l	1.0	0.18
Styrene	ND		ug/l	1.0	0.36
Dichlorodifluoromethane	ND		ug/l	2.0	0.24
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	1.0	0.30
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	0.31
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
2-Hexanone	ND		ug/l	5.0	0.52
Ethyl methacrylate	ND		ug/l	5.0	0.61
Acrylonitrile	ND		ug/l	5.0	0.43
Bromochloromethane	ND		ug/l	1.0	0.14
Tetrahydrofuran	ND		ug/l	2.0	0.52
2,2-Dichloropropane	ND		ug/l	1.0	0.20
1,2-Dibromoethane	ND		ug/l	1.0	0.19
1,3-Dichloropropane	ND		ug/l	1.0	0.21
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16
Bromobenzene	ND		ug/l	1.0	0.15

Project Name: AA HALL GRIST MILL
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Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/28/16 09:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 07 Batch: WG869090-3					
n-Butylbenzene	ND		ug/l	0.50	0.19
sec-Butylbenzene	ND		ug/l	0.50	0.18
tert-Butylbenzene	ND		ug/l	1.0	0.18
o-Chlorotoluene	ND		ug/l	1.0	0.17
p-Chlorotoluene	ND		ug/l	1.0	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	0.33
Hexachlorobutadiene	ND		ug/l	0.50	0.22
Isopropylbenzene	ND		ug/l	0.50	0.19
p-Isopropyltoluene	ND		ug/l	0.50	0.19
Naphthalene	ND		ug/l	1.0	0.22
n-Propylbenzene	ND		ug/l	0.50	0.17
1,2,3-Trichlorobenzene	ND		ug/l	1.0	0.23
1,2,4-Trichlorobenzene	ND		ug/l	1.0	0.22
1,3,5-Trimethylbenzene	ND		ug/l	1.0	0.17
1,2,4-Trimethylbenzene	ND		ug/l	1.0	0.19
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.17
Ethyl ether	ND		ug/l	1.0	0.15

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	89		70-130

Project Name: AA HALL GRIST MILL
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Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/29/16 08:23
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG869317-3					
Methylene chloride	ND		ug/kg	500	55.
1,1-Dichloroethane	ND		ug/kg	75	4.3
Chloroform	ND		ug/kg	75	18.
Carbon tetrachloride	ND		ug/kg	50	10.
1,2-Dichloropropane	ND		ug/kg	180	11.
Dibromochloromethane	ND		ug/kg	50	7.7
1,1,2-Trichloroethane	ND		ug/kg	75	15.
2-Chloroethylvinyl ether	ND		ug/kg	1000	31.
Tetrachloroethene	ND		ug/kg	50	7.0
Chlorobenzene	ND		ug/kg	50	17.
Trichlorofluoromethane	ND		ug/kg	250	19.
1,2-Dichloroethane	ND		ug/kg	50	5.7
1,1,1-Trichloroethane	ND		ug/kg	50	5.5
Bromodichloromethane	ND		ug/kg	50	8.7
trans-1,3-Dichloropropene	ND		ug/kg	50	6.0
cis-1,3-Dichloropropene	ND		ug/kg	50	5.9
1,3-Dichloropropene, Total	ND		ug/kg	50	5.9
1,1-Dichloropropene	ND		ug/kg	250	7.1
Bromoform	ND		ug/kg	200	12.
1,1,2,2-Tetrachloroethane	ND		ug/kg	50	5.0
Benzene	ND		ug/kg	50	5.9
Toluene	ND		ug/kg	75	9.7
Ethylbenzene	ND		ug/kg	50	6.4
Chloromethane	ND		ug/kg	250	15.
Bromomethane	ND		ug/kg	100	17.
Vinyl chloride	ND		ug/kg	100	5.9
Chloroethane	ND		ug/kg	100	16.
1,1-Dichloroethene	ND		ug/kg	50	13.
trans-1,2-Dichloroethene	ND		ug/kg	75	11.

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
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Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/29/16 08:23
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG869317-3					
Trichloroethene	ND		ug/kg	50	6.2
1,2-Dichlorobenzene	ND		ug/kg	250	7.7
1,3-Dichlorobenzene	ND		ug/kg	250	6.8
1,4-Dichlorobenzene	ND		ug/kg	250	6.9
Methyl tert butyl ether	ND		ug/kg	100	4.2
p/m-Xylene	ND		ug/kg	100	9.9
o-Xylene	ND		ug/kg	100	8.6
Xylenes, Total	ND		ug/kg	100	8.6
cis-1,2-Dichloroethene	ND		ug/kg	50	7.1
1,2-Dichloroethene, Total	ND		ug/kg	50	7.1
Dibromomethane	ND		ug/kg	500	8.2
1,4-Dichlorobutane	ND		ug/kg	500	6.6
1,2,3-Trichloropropane	ND		ug/kg	500	8.1
Styrene	ND		ug/kg	100	20.
Dichlorodifluoromethane	ND		ug/kg	500	9.5
Acetone	ND		ug/kg	1800	52.
Carbon disulfide	ND		ug/kg	500	55.
2-Butanone	ND		ug/kg	500	14.
Vinyl acetate	ND		ug/kg	500	6.6
4-Methyl-2-pentanone	ND		ug/kg	500	12.
2-Hexanone	ND		ug/kg	500	33.
Ethyl methacrylate	ND		ug/kg	500	7.7
Acrolein	ND		ug/kg	1200	400
Acrylonitrile	ND		ug/kg	200	26.
Bromochloromethane	ND		ug/kg	250	14.
Tetrahydrofuran	ND		ug/kg	1000	50.
2,2-Dichloropropane	ND		ug/kg	250	11.
1,2-Dibromoethane	ND		ug/kg	200	8.7
1,3-Dichloropropane	ND		ug/kg	250	7.3

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/29/16 08:23
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG869317-3					
1,1,1,2-Tetrachloroethane	ND		ug/kg	50	16.
Bromobenzene	ND		ug/kg	250	10.
n-Butylbenzene	ND		ug/kg	50	5.7
sec-Butylbenzene	ND		ug/kg	50	6.1
tert-Butylbenzene	ND		ug/kg	250	6.8
1,3,5-Trichlorobenzene	ND		ug/kg	200	12.
o-Chlorotoluene	ND		ug/kg	250	8.0
p-Chlorotoluene	ND		ug/kg	250	6.6
1,2-Dibromo-3-chloropropane	ND		ug/kg	250	20.
Hexachlorobutadiene	ND		ug/kg	250	11.
Isopropylbenzene	ND		ug/kg	50	5.2
p-Isopropyltoluene	ND		ug/kg	50	6.2
Naphthalene	ND		ug/kg	250	6.9
n-Propylbenzene	ND		ug/kg	50	5.5
1,2,3-Trichlorobenzene	ND		ug/kg	250	7.4
1,2,4-Trichlorobenzene	ND		ug/kg	250	9.1
1,3,5-Trimethylbenzene	ND		ug/kg	250	7.2
1,2,4-Trimethylbenzene	ND		ug/kg	250	7.1
trans-1,4-Dichloro-2-butene	ND		ug/kg	250	20.
Ethyl ether	ND		ug/kg	250	13.
Methyl Acetate	ND		ug/kg	1000	14.
Ethyl Acetate	ND		ug/kg	1000	46.
Isopropyl Ether	ND		ug/kg	200	7.0
Cyclohexane	ND		ug/kg	1000	7.3
Tert-Butyl Alcohol	ND		ug/kg	5000	150
Ethyl-Tert-Butyl-Ether	ND		ug/kg	200	5.8
Tertiary-Amyl Methyl Ether	ND		ug/kg	200	4.8
1,4-Dioxane	ND		ug/kg	5000	720
Methyl cyclohexane	ND		ug/kg	200	7.7

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/29/16 08:23
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG869317-3					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	1000	14.
p-Diethylbenzene	ND		ug/kg	200	8.0
4-Ethyltoluene	ND		ug/kg	200	6.2
1,2,4,5-Tetramethylbenzene	ND		ug/kg	200	6.5

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	99		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01-04,06 Batch: WG867827-1 WG867827-2								
Methylene chloride	110		108		70-130	2		30
1,1-Dichloroethane	117		115		70-130	2		30
Chloroform	112		111		70-130	1		30
Carbon tetrachloride	113		110		70-130	3		30
1,2-Dichloropropane	116		115		70-130	1		30
Dibromochloromethane	110		108		70-130	2		30
1,1,2-Trichloroethane	112		110		70-130	2		30
2-Chloroethylvinyl ether	95		91		70-130	4		30
Tetrachloroethene	121		115		70-130	5		30
Chlorobenzene	111		109		70-130	2		30
Trichlorofluoromethane	125		124		70-139	1		30
1,2-Dichloroethane	112		111		70-130	1		30
1,1,1-Trichloroethane	116		114		70-130	2		30
Bromodichloromethane	111		110		70-130	1		30
trans-1,3-Dichloropropene	113		108		70-130	5		30
cis-1,3-Dichloropropene	111		110		70-130	1		30
1,1-Dichloropropene	116		114		70-130	2		30
Bromoform	110		108		70-130	2		30
1,1,2,2-Tetrachloroethane	107		107		70-130	0		30
Benzene	112		112		70-130	0		30
Toluene	113		109		70-130	4		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01-04,06 Batch: WG867827-1 WG867827-2								
Ethylbenzene	117		113		70-130	3		30
Chloromethane	128		128		52-130	0		30
Bromomethane	116		108		57-147	7		30
Vinyl chloride	123		121		67-130	2		30
Chloroethane	131		126		50-151	4		30
1,1-Dichloroethene	100		99		65-135	1		30
trans-1,2-Dichloroethene	118		116		70-130	2		30
Trichloroethene	117		115		70-130	2		30
1,2-Dichlorobenzene	113		110		70-130	3		30
1,3-Dichlorobenzene	115		110		70-130	4		30
1,4-Dichlorobenzene	115		108		70-130	6		30
Methyl tert butyl ether	108		109		66-130	1		30
p/m-Xylene	113		109		70-130	4		30
o-Xylene	113		108		70-130	5		30
cis-1,2-Dichloroethene	115		117		70-130	2		30
Dibromomethane	110		111		70-130	1		30
1,4-Dichlorobutane	117		116		70-130	1		30
1,2,3-Trichloropropane	106		106		68-130	0		30
Styrene	112		109		70-130	3		30
Dichlorodifluoromethane	104		103		30-146	1		30
Acetone	127		133		54-140	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01-04,06 Batch: WG867827-1 WG867827-2								
Carbon disulfide	96		100		59-130	4		30
2-Butanone	115		113		70-130	2		30
Vinyl acetate	119		119		70-130	0		30
4-Methyl-2-pentanone	118		124		70-130	5		30
2-Hexanone	121		120		70-130	1		30
Ethyl methacrylate	111		110		70-130	1		30
Acrolein	126		128		70-130	2		30
Acrylonitrile	130		**132**	Q	70-130	2		30
Bromochloromethane	115		114		70-130	1		30
Tetrahydrofuran	122		119		66-130	2		30
2,2-Dichloropropane	115		113		70-130	2		30
1,2-Dibromoethane	112		109		70-130	3		30
1,3-Dichloropropane	110		109		69-130	1		30
1,1,1,2-Tetrachloroethane	111		109		70-130	2		30
Bromobenzene	112		109		70-130	3		30
n-Butylbenzene	120		114		70-130	5		30
sec-Butylbenzene	114		109		70-130	4		30
tert-Butylbenzene	112		109		70-130	3		30
1,3,5-Trichlorobenzene	123		118		70-139	4		30
o-Chlorotoluene	116		110		70-130	5		30
p-Chlorotoluene	116		110		70-130	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01-04,06 Batch: WG867827-1 WG867827-2								
1,2-Dibromo-3-chloropropane	102		103		68-130	1		30
Hexachlorobutadiene	118		109		67-130	8		30
Isopropylbenzene	115		111		70-130	4		30
p-Isopropyltoluene	115		110		70-130	4		30
Naphthalene	110		107		70-130	3		30
n-Propylbenzene	117		113		70-130	3		30
1,2,3-Trichlorobenzene	117		111		70-130	5		30
1,2,4-Trichlorobenzene	120		112		70-130	7		30
1,3,5-Trimethylbenzene	111		107		70-130	4		30
1,2,4-Trimethylbenzene	111		107		70-130	4		30
trans-1,4-Dichloro-2-butene	118		122		70-130	3		30
Ethyl ether	119		118		67-130	1		30
Methyl Acetate	129		125		65-130	3		30
Ethyl Acetate	**173**	Q	**179**	Q	70-130	3		30
Isopropyl Ether	127		126		66-130	1		30
Cyclohexane	127		124		70-130	2		30
Tert-Butyl Alcohol	108		112		70-130	4		30
Ethyl-Tert-Butyl-Ether	117		116		70-130	1		30
Tertiary-Amyl Methyl Ether	107		108		70-130	1		30
1,4-Dioxane	99		101		65-136	2		30
Methyl cyclohexane	111		109		70-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01-04,06 Batch: WG867827-1 WG867827-2								
1,1,2-Trichloro-1,2,2-Trifluoroethane	94		92		70-130	2		30
1,4-Diethylbenzene	118		116		70-130	2		30
4-Ethyltoluene	116		113		70-130	3		30
1,2,4,5-Tetramethylbenzene	117		113		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		100		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	98		99		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG868972-1 WG868972-2								
Methylene chloride	98		96		70-130	2		30
1,1-Dichloroethane	105		104		70-130	1		30
Chloroform	107		107		70-130	0		30
Carbon tetrachloride	112		111		70-130	1		30
1,2-Dichloropropane	92		93		70-130	1		30
Dibromochloromethane	96		96		70-130	0		30
1,1,2-Trichloroethane	100		101		70-130	1		30
2-Chloroethylvinyl ether	74		77		70-130	4		30
Tetrachloroethene	117		118		70-130	1		30
Chlorobenzene	105		106		70-130	1		30
Trichlorofluoromethane	117		113		70-139	3		30
1,2-Dichloroethane	102		104		70-130	2		30
1,1,1-Trichloroethane	112		112		70-130	0		30
Bromodichloromethane	95		97		70-130	2		30
trans-1,3-Dichloropropene	94		94		70-130	0		30
cis-1,3-Dichloropropene	90		92		70-130	2		30
1,1-Dichloropropene	105		107		70-130	2		30
Bromoform	92		94		70-130	2		30
1,1,2,2-Tetrachloroethane	95		96		70-130	1		30
Benzene	102		102		70-130	0		30
Toluene	105		105		70-130	0		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG868972-1 WG868972-2								
Ethylbenzene	106		105		70-130	1		30
Chloromethane	100		94		52-130	6		30
Bromomethane	119		117		57-147	2		30
Vinyl chloride	114		111		67-130	3		30
Chloroethane	103		105		50-151	2		30
1,1-Dichloroethene	112		108		65-135	4		30
trans-1,2-Dichloroethene	106		106		70-130	0		30
Trichloroethene	108		110		70-130	2		30
1,2-Dichlorobenzene	107		110		70-130	3		30
1,3-Dichlorobenzene	112		113		70-130	1		30
1,4-Dichlorobenzene	111		112		70-130	1		30
Methyl tert butyl ether	90		91		66-130	1		30
p/m-Xylene	104		106		70-130	2		30
o-Xylene	102		103		70-130	1		30
cis-1,2-Dichloroethene	104		104		70-130	0		30
Dibromomethane	94		98		70-130	4		30
1,4-Dichlorobutane	92		93		70-130	1		30
1,2,3-Trichloropropane	95		98		68-130	3		30
Styrene	101		102		70-130	1		30
Dichlorodifluoromethane	97		94		30-146	3		30
Acetone	91		83		54-140	9		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG868972-1 WG868972-2								
Carbon disulfide	100		97		59-130	3		30
2-Butanone	76		71		70-130	7		30
Vinyl acetate	90		90		70-130	0		30
4-Methyl-2-pentanone	**64**	Q	**69**	Q	70-130	8		30
2-Hexanone	**60**	Q	**60**	Q	70-130	0		30
Ethyl methacrylate	75		76		70-130	1		30
Acrolein	80		79		70-130	1		30
Acrylonitrile	85		85		70-130	0		30
Bromochloromethane	107		109		70-130	2		30
Tetrahydrofuran	98		86		66-130	13		30
2,2-Dichloropropane	106		105		70-130	1		30
1,2-Dibromoethane	98		98		70-130	0		30
1,3-Dichloropropane	98		98		69-130	0		30
1,1,1,2-Tetrachloroethane	103		105		70-130	2		30
Bromobenzene	106		108		70-130	2		30
n-Butylbenzene	110		112		70-130	2		30
sec-Butylbenzene	109		109		70-130	0		30
tert-Butylbenzene	106		106		70-130	0		30
1,3,5-Trichlorobenzene	109		111		70-139	2		30
o-Chlorotoluene	107		109		70-130	2		30
p-Chlorotoluene	104		103		70-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG868972-1 WG868972-2								
1,2-Dibromo-3-chloropropane	81		83		68-130	2		30
Hexachlorobutadiene	106		110		67-130	4		30
Isopropylbenzene	106		106		70-130	0		30
p-Isopropyltoluene	107		107		70-130	0		30
Naphthalene	87		92		70-130	6		30
n-Propylbenzene	108		107		70-130	1		30
1,2,3-Trichlorobenzene	100		104		70-130	4		30
1,2,4-Trichlorobenzene	100		104		70-130	4		30
1,3,5-Trimethylbenzene	105		105		70-130	0		30
1,2,4-Trimethylbenzene	104		103		70-130	1		30
trans-1,4-Dichloro-2-butene	83		85		70-130	2		30
Halothane	112		113		70-130	1		20
Ethyl ether	98		98		67-130	0		30
Methyl Acetate	90		91		65-130	1		30
Ethyl Acetate	86		86		70-130	0		30
Isopropyl Ether	90		90		66-130	0		30
Cyclohexane	93		95		70-130	2		30
Tert-Butyl Alcohol	75		76		70-130	1		30
Ethyl-Tert-Butyl-Ether	89		91		70-130	2		30
Tertiary-Amyl Methyl Ether	83		87		70-130	5		30
1,4-Dioxane	89		97		65-136	9		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG868972-1 WG868972-2								
Methyl cyclohexane	96		99		70-130	3		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	108		106		70-130	2		30
1,4-Diethylbenzene	104		106		70-130	2		30
4-Ethyltoluene	107		107		70-130	0		30
1,2,4,5-Tetramethylbenzene	94		96		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		107		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	106		106		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 07 Batch: WG869090-1 WG869090-2								
Methylene chloride	91		91		70-130	0		20
1,1-Dichloroethane	92		92		70-130	0		20
Chloroform	90		90		70-130	0		20
Carbon tetrachloride	89		88		63-132	1		20
1,2-Dichloropropane	94		94		70-130	0		20
Dibromochloromethane	82		84		63-130	2		20
1,1,2-Trichloroethane	89		91		70-130	2		20
Tetrachloroethene	99		98		70-130	1		20
Chlorobenzene	94		93		75-130	1		25
Trichlorofluoromethane	80		80		62-150	0		20
1,2-Dichloroethane	83		84		70-130	1		20
1,1,1-Trichloroethane	92		90		67-130	2		20
Bromodichloromethane	83		86		67-130	4		20
trans-1,3-Dichloropropene	82		84		70-130	2		20
cis-1,3-Dichloropropene	83		84		70-130	1		20
1,1-Dichloropropene	101		100		70-130	1		20
Bromoform	79		82		54-136	4		20
1,1,2,2-Tetrachloroethane	86		90		67-130	5		20
Benzene	98		98		70-130	0		25
Toluene	101		100		70-130	1		25
Ethylbenzene	102		102		70-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 07 Batch: WG869090-1 WG869090-2								
Chloromethane	100		103		64-130	3		20
Bromomethane	99		98		39-139	1		20
Vinyl chloride	97		95		55-140	2		20
Chloroethane	93		92		55-138	1		20
1,1-Dichloroethene	92		92		61-145	0		25
trans-1,2-Dichloroethene	96		95		70-130	1		20
Trichloroethene	92		92		70-130	0		25
1,2-Dichlorobenzene	91		92		70-130	1		20
1,3-Dichlorobenzene	96		97		70-130	1		20
1,4-Dichlorobenzene	93		94		70-130	1		20
Methyl tert butyl ether	89		93		63-130	4		20
p/m-Xylene	106		105		70-130	1		20
o-Xylene	110		110		70-130	0		20
cis-1,2-Dichloroethene	95		95		70-130	0		20
Dibromomethane	80		83		70-130	4		20
1,4-Dichlorobutane	95		98		70-130	3		20
1,2,3-Trichloropropane	91		96		64-130	5		20
Styrene	106		106		70-130	0		20
Dichlorodifluoromethane	104		101		36-147	3		20
Acetone	90		97		58-148	7		20
Carbon disulfide	96		94		51-130	2		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 07 Batch: WG869090-1 WG869090-2								
2-Butanone	93		97		63-138	4		20
Vinyl acetate	87		90		70-130	3		20
4-Methyl-2-pentanone	82		89		59-130	8		20
2-Hexanone	73		78		57-130	7		20
Ethyl methacrylate	77		80		70-130	4		20
Acrylonitrile	84		90		70-130	7		20
Bromochloromethane	86		87		70-130	1		20
Tetrahydrofuran	100		105		58-130	5		20
2,2-Dichloropropane	98		98		63-133	0		20
1,2-Dibromoethane	86		89		70-130	3		20
1,3-Dichloropropane	93		94		70-130	1		20
1,1,1,2-Tetrachloroethane	89		90		64-130	1		20
Bromobenzene	97		98		70-130	1		20
n-Butylbenzene	104		104		53-136	0		20
sec-Butylbenzene	100		100		70-130	0		20
tert-Butylbenzene	100		99		70-130	1		20
o-Chlorotoluene	105		103		70-130	2		20
p-Chlorotoluene	106		106		70-130	0		20
1,2-Dibromo-3-chloropropane	82		84		41-144	2		20
Hexachlorobutadiene	94		93		63-130	1		20
Isopropylbenzene	107		107		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 07 Batch: WG869090-1 WG869090-2								
p-Isopropyltoluene	96		97		70-130	1		20
Naphthalene	**46**	Q	**50**	Q	70-130	8		20
n-Propylbenzene	107		106		69-130	1		20
1,2,3-Trichlorobenzene	**47**	Q	**51**	Q	70-130	8		20
1,2,4-Trichlorobenzene	**61**	Q	**64**	Q	70-130	5		20
1,3,5-Trimethylbenzene	108		107		64-130	1		20
1,2,4-Trimethylbenzene	101		102		70-130	1		20
trans-1,4-Dichloro-2-butene	76		80		70-130	5		20
Ethyl ether	83		84		59-134	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	87		89		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	109		108		70-130
Dibromofluoromethane	90		91		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG869317-1 WG869317-2								
Methylene chloride	106		100		70-130	6		30
1,1-Dichloroethane	112		106		70-130	6		30
Chloroform	109		104		70-130	5		30
Carbon tetrachloride	111		102		70-130	8		30
1,2-Dichloropropane	114		108		70-130	5		30
Dibromochloromethane	104		99		70-130	5		30
1,1,2-Trichloroethane	106		102		70-130	4		30
2-Chloroethylvinyl ether	114		106		70-130	7		30
Tetrachloroethene	112		101		70-130	10		30
Chlorobenzene	103		98		70-130	5		30
Trichlorofluoromethane	128		117		70-139	9		30
1,2-Dichloroethane	109		106		70-130	3		30
1,1,1-Trichloroethane	115		105		70-130	9		30
Bromodichloromethane	108		104		70-130	4		30
trans-1,3-Dichloropropene	106		100		70-130	6		30
cis-1,3-Dichloropropene	109		104		70-130	5		30
1,1-Dichloropropene	114		105		70-130	8		30
Bromoform	100		98		70-130	2		30
1,1,2,2-Tetrachloroethane	99		98		70-130	1		30
Benzene	108		102		70-130	6		30
Toluene	104		98		70-130	6		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG869317-1 WG869317-2								
Ethylbenzene	108		101		70-130	7		30
Chloromethane	126		114		52-130	10		30
Bromomethane	111		103		57-147	7		30
Vinyl chloride	118		106		67-130	11		30
Chloroethane	128		117		50-151	9		30
1,1-Dichloroethene	99		91		65-135	8		30
trans-1,2-Dichloroethene	113		105		70-130	7		30
Trichloroethene	113		106		70-130	6		30
1,2-Dichlorobenzene	103		100		70-130	3		30
1,3-Dichlorobenzene	104		100		70-130	4		30
1,4-Dichlorobenzene	104		100		70-130	4		30
Methyl tert butyl ether	107		103		66-130	4		30
p/m-Xylene	105		97		70-130	8		30
o-Xylene	105		98		70-130	7		30
cis-1,2-Dichloroethene	112		106		70-130	6		30
Dibromomethane	112		107		70-130	5		30
1,4-Dichlorobutane	108		108		70-130	0		30
1,2,3-Trichloropropane	98		98		68-130	0		30
Styrene	105		99		70-130	6		30
Dichlorodifluoromethane	107		95		30-146	12		30
Acetone	137		125		54-140	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG869317-1 WG869317-2								
Carbon disulfide	90		83		59-130	8		30
2-Butanone	**133**	Q	122		70-130	9		30
Vinyl acetate	119		111		70-130	7		30
4-Methyl-2-pentanone	120		115		70-130	4		30
2-Hexanone	119		111		70-130	7		30
Ethyl methacrylate	104		100		70-130	4		30
Acrolein	110		102		70-130	8		30
Acrylonitrile	**131**	Q	126		70-130	4		30
Bromochloromethane	112		109		70-130	3		30
Tetrahydrofuran	124		119		66-130	4		30
2,2-Dichloropropane	112		103		70-130	8		30
1,2-Dibromoethane	106		101		70-130	5		30
1,3-Dichloropropane	105		100		69-130	5		30
1,1,1,2-Tetrachloroethane	104		99		70-130	5		30
Bromobenzene	102		100		70-130	2		30
n-Butylbenzene	108		103		70-130	5		30
sec-Butylbenzene	102		96		70-130	6		30
tert-Butylbenzene	100		96		70-130	4		30
1,3,5-Trichlorobenzene	121		113		70-139	7		30
o-Chlorotoluene	104		100		70-130	4		30
p-Chlorotoluene	103		100		70-130	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG869317-1 WG869317-2								
1,2-Dibromo-3-chloropropane	97		92		68-130	5		30
Hexachlorobutadiene	106		98		67-130	8		30
Isopropylbenzene	106		98		70-130	8		30
p-Isopropyltoluene	102		96		70-130	6		30
Naphthalene	101		98		70-130	3		30
n-Propylbenzene	103		100		70-130	3		30
1,2,3-Trichlorobenzene	105		102		70-130	3		30
1,2,4-Trichlorobenzene	109		105		70-130	4		30
1,3,5-Trimethylbenzene	99		96		70-130	3		30
1,2,4-Trimethylbenzene	99		96		70-130	3		30
trans-1,4-Dichloro-2-butene	111		106		70-130	5		30
Ethyl ether	119		116		67-130	3		30
Methyl Acetate	128		120		65-130	6		30
Ethyl Acetate	**163**	Q	**146**	Q	70-130	11		30
Isopropyl Ether	123		119		66-130	3		30
Cyclohexane	130		117		70-130	11		30
Tert-Butyl Alcohol	113		108		70-130	5		30
Ethyl-Tert-Butyl-Ether	115		111		70-130	4		30
Tertiary-Amyl Methyl Ether	106		103		70-130	3		30
1,4-Dioxane	122		113		65-136	8		30
Methyl cyclohexane	115		105		70-130	9		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG869317-1 WG869317-2								
1,1,2-Trichloro-1,2,2-Trifluoroethane	99		90		70-130	10		30
1,4-Diethylbenzene	116		106		70-130	9		30
4-Ethyltoluene	112		104		70-130	7		30
1,2,4,5-Tetramethylbenzene	114		106		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		98		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	99		101		70-130
Dibromofluoromethane	100		102		70-130

PETROLEUM HYDROCARBONS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-01	Date Collected:	02/17/16 10:55
Client ID:	B101-S3	Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/23/16 14:21		
Analyst:	KD		
Percent Solids:	79%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	1.4:1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	5.46	5.46	1
C9-C12 Aliphatics	ND		mg/kg	5.46	5.46	1
C9-C10 Aromatics	ND		mg/kg	5.46	5.46	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	5.46	5.46	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	5.46	5.46	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	107		70-130
2,5-Dibromotoluene-FID	117		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-01			Date Collected:	02/17/16 10:55
Client ID:	B101-S3			Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/25/16 16:46	M.S. Analytical Date:	02/25/16 14:17	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/25/16
Percent Solids:	79%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	8.27	8.27	1
C19-C36 Aliphatics	83.8		mg/kg	8.27	8.27	1
C11-C22 Aromatics	87.0		mg/kg	8.27	8.27	1
C11-C22 Aromatics, Adjusted	61.8		mg/kg	8.27	8.27	1
Naphthalene	0.097	J	mg/kg	0.165	0.041	5
2-Methylnaphthalene	0.076	J	mg/kg	0.165	0.021	5
Acenaphthylene	0.378		mg/kg	0.165	0.020	5
Acenaphthene	0.067	J	mg/kg	0.165	0.014	5
Fluorene	0.142	J	mg/kg	0.165	0.016	5
Phenanthrene	1.60		mg/kg	0.165	0.019	5
Anthracene	0.496		mg/kg	0.165	0.014	5
Fluoranthene	4.38		mg/kg	0.165	0.024	5
Pyrene	3.84		mg/kg	0.165	0.024	5
Benzo(a)anthracene	2.23		mg/kg	0.165	0.016	5
Chrysene	2.41		mg/kg	0.165	0.059	5
Benzo(b)fluoranthene	3.21		mg/kg	0.165	0.053	5
Benzo(k)fluoranthene	1.10		mg/kg	0.165	0.063	5
Benzo(a)pyrene	2.30		mg/kg	0.165	0.013	5
Indeno(1,2,3-cd)Pyrene	1.48		mg/kg	0.165	0.051	5
Dibenzo(a,h)anthracene	0.379		mg/kg	0.165	0.051	5
Benzo(ghi)perylene	1.36		mg/kg	0.165	0.060	5

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-01
Client ID: B101-S3
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/17/16 10:55
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	69		40-140
o-Terphenyl	89		40-140
2-Fluorobiphenyl	69		40-140
2-Bromonaphthalene	71		40-140
O-Terphenyl-MS	85		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-02	Date Collected:	02/17/16 11:00
Client ID:	B10X	Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/23/16 15:01		
Analyst:	KD		
Percent Solids:	70%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	1.5:1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	6.59	6.59	1
C9-C12 Aliphatics	ND		mg/kg	6.59	6.59	1
C9-C10 Aromatics	ND		mg/kg	6.59	6.59	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	6.59	6.59	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	6.59	6.59	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	110		70-130
2,5-Dibromotoluene-FID	120		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-02			Date Collected:	02/17/16 11:00
Client ID:	B10X			Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/25/16 17:35	M.S. Analytical Date:	02/25/16 14:49	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/25/16
Percent Solids:	70%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	9.23	9.23	1
C19-C36 Aliphatics	61.5		mg/kg	9.23	9.23	1
C11-C22 Aromatics	95.1		mg/kg	9.23	9.23	1
C11-C22 Aromatics, Adjusted	61.7		mg/kg	9.23	9.23	1
Naphthalene	0.201		mg/kg	0.184	0.046	5
2-Methylnaphthalene	0.108	J	mg/kg	0.184	0.024	5
Acenaphthylene	0.437		mg/kg	0.184	0.023	5
Acenaphthene	0.155	J	mg/kg	0.184	0.015	5
Fluorene	0.332		mg/kg	0.184	0.017	5
Phenanthrene	2.92		mg/kg	0.184	0.021	5
Anthracene	0.947		mg/kg	0.184	0.016	5
Fluoranthene	5.79		mg/kg	0.184	0.027	5
Pyrene	4.77		mg/kg	0.184	0.026	5
Benzo(a)anthracene	2.86		mg/kg	0.184	0.018	5
Chrysene	2.91		mg/kg	0.184	0.065	5
Benzo(b)fluoranthene	3.82		mg/kg	0.184	0.059	5
Benzo(k)fluoranthene	1.55		mg/kg	0.184	0.071	5
Benzo(a)pyrene	2.88		mg/kg	0.184	0.014	5
Indeno(1,2,3-cd)Pyrene	1.83		mg/kg	0.184	0.057	5
Dibenzo(a,h)anthracene	0.455		mg/kg	0.184	0.056	5
Benzo(ghi)perylene	1.64		mg/kg	0.184	0.067	5

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-02
Client ID: B10X
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/17/16 11:00
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	67		40-140
o-Terphenyl	92		40-140
2-Fluorobiphenyl	69		40-140
2-Bromonaphthalene	70		40-140
O-Terphenyl-MS	86		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-03	Date Collected:	02/17/16 12:15
Client ID:	B102-S2	Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/23/16 15:41		
Analyst:	KD		
Percent Solids:	80%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	1.5:1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	5.64	5.64	1
C9-C12 Aliphatics	ND		mg/kg	5.64	5.64	1
C9-C10 Aromatics	ND		mg/kg	5.64	5.64	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	5.64	5.64	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	5.64	5.64	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	115		70-130
2,5-Dibromotoluene-FID	128		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-03			Date Collected:	02/17/16 12:15
Client ID:	B102-S2			Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/25/16 18:26	M.S. Analytical Date:	02/25/16 15:20	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/25/16
Percent Solids:	80%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	26.1		mg/kg	8.10	8.10	1
C19-C36 Aliphatics	66.4		mg/kg	8.10	8.10	1
C11-C22 Aromatics	64.7		mg/kg	8.10	8.10	1
C11-C22 Aromatics, Adjusted	63.0		mg/kg	8.10	8.10	1
Naphthalene	ND		mg/kg	0.162	0.040	5
2-Methylnaphthalene	0.025	J	mg/kg	0.162	0.021	5
Acenaphthylene	0.108	J	mg/kg	0.162	0.020	5
Acenaphthene	ND		mg/kg	0.162	0.013	5
Fluorene	ND		mg/kg	0.162	0.015	5
Phenanthrene	0.070	J	mg/kg	0.162	0.019	5
Anthracene	0.047	J	mg/kg	0.162	0.014	5
Fluoranthene	0.197		mg/kg	0.162	0.024	5
Pyrene	0.252		mg/kg	0.162	0.023	5
Benzo(a)anthracene	0.169		mg/kg	0.162	0.015	5
Chrysene	0.199		mg/kg	0.162	0.057	5
Benzo(b)fluoranthene	0.255		mg/kg	0.162	0.052	5
Benzo(k)fluoranthene	0.087	J	mg/kg	0.162	0.062	5
Benzo(a)pyrene	0.217		mg/kg	0.162	0.012	5
Indeno(1,2,3-cd)Pyrene	0.162		mg/kg	0.162	0.050	5
Dibenzo(a,h)anthracene	ND		mg/kg	0.162	0.049	5
Benzo(ghi)perylene	0.224		mg/kg	0.162	0.059	5

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-03
Client ID: B102-S2
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/17/16 12:15
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	60		40-140
o-Terphenyl	67		40-140
2-Fluorobiphenyl	71		40-140
2-Bromonaphthalene	68		40-140
O-Terphenyl-MS	83		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-04	Date Collected:	02/17/16 14:20
Client ID:	B107-S3	Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/23/16 16:21		
Analyst:	KD		
Percent Solids:	79%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	1.3:1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	5.08	5.08	1
C9-C12 Aliphatics	ND		mg/kg	5.08	5.08	1
C9-C10 Aromatics	ND		mg/kg	5.08	5.08	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	5.08	5.08	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	5.08	5.08	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	111		70-130
2,5-Dibromotoluene-FID	122		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-04			Date Collected:	02/17/16 14:20
Client ID:	B107-S3			Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/25/16 12:36	M.S. Analytical Date:	02/25/16 11:38	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/25/16
Percent Solids:	79%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	8.38	8.38	1
C19-C36 Aliphatics	ND		mg/kg	8.38	8.38	1
C11-C22 Aromatics	ND		mg/kg	8.38	8.38	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	8.38	8.38	1
Naphthalene	0.011	J	mg/kg	0.034	0.008	1
2-Methylnaphthalene	ND		mg/kg	0.034	0.004	1
Acenaphthylene	ND		mg/kg	0.034	0.004	1
Acenaphthene	ND		mg/kg	0.034	0.003	1
Fluorene	ND		mg/kg	0.034	0.003	1
Phenanthrene	ND		mg/kg	0.034	0.004	1
Anthracene	ND		mg/kg	0.034	0.003	1
Fluoranthene	0.011	J	mg/kg	0.034	0.005	1
Pyrene	0.010	J	mg/kg	0.034	0.005	1
Benzo(a)anthracene	ND		mg/kg	0.034	0.003	1
Chrysene	ND		mg/kg	0.034	0.012	1
Benzo(b)fluoranthene	ND		mg/kg	0.034	0.011	1
Benzo(k)fluoranthene	ND		mg/kg	0.034	0.013	1
Benzo(a)pyrene	ND		mg/kg	0.034	0.003	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.034	0.010	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.034	0.010	1
Benzo(ghi)perylene	ND		mg/kg	0.034	0.012	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-04
Client ID: B107-S3
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/17/16 14:20
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	69		40-140
o-Terphenyl	60		40-140
2-Fluorobiphenyl	67		40-140
2-Bromonaphthalene	67		40-140
O-Terphenyl-MS	77		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-05	Date Collected:	02/17/16 16:05
Client ID:	B103-S3	Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/23/16 17:01		
Analyst:	KD		
Percent Solids:	74%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	1:1 +/- 25%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	5.18	5.18	1
C9-C12 Aliphatics	ND		mg/kg	5.18	5.18	1
C9-C10 Aromatics	ND		mg/kg	5.18	5.18	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	5.18	5.18	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	5.18	5.18	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	103		70-130
2,5-Dibromotoluene-FID	112		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604406

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID:	L1604406-05			Date Collected:	02/17/16 16:05
Client ID:	B103-S3			Date Received:	02/18/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/25/16 15:56	M.S. Analytical Date:	02/25/16 12:09	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/25/16
Percent Solids:	74%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	61.8		mg/kg	8.97	8.97	1
C19-C36 Aliphatics	347		mg/kg	8.97	8.97	1
C11-C22 Aromatics	23.0		mg/kg	8.97	8.97	1
C11-C22 Aromatics, Adjusted	22.2		mg/kg	8.97	8.97	1
Naphthalene	0.038		mg/kg	0.036	0.009	1
2-Methylnaphthalene	0.036	J	mg/kg	0.036	0.005	1
Acenaphthylene	0.016	J	mg/kg	0.036	0.004	1
Acenaphthene	0.028	J	mg/kg	0.036	0.003	1
Fluorene	0.034	J	mg/kg	0.036	0.003	1
Phenanthrene	0.123		mg/kg	0.036	0.004	1
Anthracene	0.022	J	mg/kg	0.036	0.003	1
Fluoranthene	0.152		mg/kg	0.036	0.005	1
Pyrene	0.142		mg/kg	0.036	0.005	1
Benzo(a)anthracene	0.044		mg/kg	0.036	0.003	1
Chrysene	0.062		mg/kg	0.036	0.013	1
Benzo(b)fluoranthene	0.068		mg/kg	0.036	0.011	1
Benzo(k)fluoranthene	0.022	J	mg/kg	0.036	0.014	1
Benzo(a)pyrene	0.049		mg/kg	0.036	0.003	1
Indeno(1,2,3-cd)Pyrene	0.036		mg/kg	0.036	0.011	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.036	0.011	1
Benzo(ghi)perylene	0.040		mg/kg	0.036	0.013	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-05
Client ID: B103-S3
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/17/16 16:05
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	70		40-140
o-Terphenyl	47		40-140
2-Fluorobiphenyl	57		40-140
2-Bromonaphthalene	57		40-140
O-Terphenyl-MS	59		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 02/25/16 10:07
Analyst: DV

M.S. Analytical Date: 02/25/16 09:59
M.S. Analyst: KV

Extraction Method: EPA 3546
Extraction Date: 02/23/16 09:30
Cleanup Method: EPH-04-1
Cleanup Date: 02/25/16

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 01-05 Batch: WG867534-1					
C9-C18 Aliphatics	ND		mg/kg	6.43	6.43
C19-C36 Aliphatics	ND		mg/kg	6.43	6.43
C11-C22 Aromatics	ND		mg/kg	6.43	6.43
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.43	6.43
Naphthalene	ND		mg/kg	0.026	0.006
2-Methylnaphthalene	ND		mg/kg	0.026	0.003
Acenaphthylene	ND		mg/kg	0.026	0.003
Acenaphthene	ND		mg/kg	0.026	0.002
Fluorene	ND		mg/kg	0.026	0.002
Phenanthrene	ND		mg/kg	0.026	0.003
Anthracene	ND		mg/kg	0.026	0.002
Fluoranthene	ND		mg/kg	0.026	0.004
Pyrene	ND		mg/kg	0.026	0.004
Benzo(a)anthracene	ND		mg/kg	0.026	0.002
Chrysene	ND		mg/kg	0.026	0.009
Benzo(b)fluoranthene	ND		mg/kg	0.026	0.008
Benzo(k)fluoranthene	ND		mg/kg	0.026	0.010
Benzo(a)pyrene	ND		mg/kg	0.026	0.002
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.026	0.008
Dibenzo(a,h)anthracene	ND		mg/kg	0.026	0.008
Benzo(ghi)perylene	ND		mg/kg	0.026	0.009

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 02/25/16 10:07
Analyst: DV

02/25/16 09:59
KV

Extraction Method: EPA 3546
Extraction Date: 02/23/16 09:30
Cleanup Method: EPH-04-1
Cleanup Date: 02/25/16

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 01-05 Batch: WG867534-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	66		40-140
o-Terphenyl	82		40-140
2-Fluorobiphenyl	81		40-140
2-Bromonaphthalene	81		40-140
O-Terphenyl-MS	89		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 100,VPH-04-1.1
Analytical Date: 02/23/16 10:21
Analyst: KD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Petroleum Hydrocarbons - Westborough Lab for sample(s): 01-05 Batch: WG867628-3					
C5-C8 Aliphatics	ND		mg/kg	2.67	2.67
C9-C12 Aliphatics	ND		mg/kg	2.67	2.67
C9-C10 Aromatics	ND		mg/kg	2.67	2.67
C5-C8 Aliphatics, Adjusted	ND		mg/kg	2.67	2.67
C9-C12 Aliphatics, Adjusted	ND		mg/kg	2.67	2.67

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	95		70-130
2,5-Dibromotoluene-FID	103		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-05 Batch: WG867534-2 WG867534-3								
C9-C18 Aliphatics	58		53		40-140	9		25
C19-C36 Aliphatics	72		70		40-140	3		25
C11-C22 Aromatics	74		84		40-140	13		25
Naphthalene	72		75		40-140	4		25
2-Methylnaphthalene	79		85		40-140	7		25
Acenaphthylene	77		85		40-140	10		25
Acenaphthene	86		95		40-140	10		25
Fluorene	89		103		40-140	15		25
Phenanthrene	90		103		40-140	13		25
Anthracene	93		107		40-140	14		25
Fluoranthene	99		116		40-140	16		25
Pyrene	95		109		40-140	14		25
Benzo(a)anthracene	88		108		40-140	20		25
Chrysene	91		112		40-140	21		25
Benzo(b)fluoranthene	96		117		40-140	20		25
Benzo(k)fluoranthene	91		114		40-140	22		25
Benzo(a)pyrene	83		105		40-140	23		25
Indeno(1,2,3-cd)Pyrene	91		113		40-140	22		25
Dibenzo(a,h)anthracene	78		105		40-140	**30**	Q	25
Benzo(ghi)perylene	89		109		40-140	20		25
Nonane (C9)	49		44		30-140	11		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-05 Batch: WG867534-2 WG867534-3								
Decane (C10)	57		52		40-140	9		25
Dodecane (C12)	62		58		40-140	7		25
Tetradecane (C14)	64		60		40-140	6		25
Hexadecane (C16)	67		63		40-140	6		25
Octadecane (C18)	72		69		40-140	4		25
Nonadecane (C19)	73		70		40-140	4		25
Eicosane (C20)	74		72		40-140	3		25
Docosane (C22)	75		72		40-140	4		25
Tetracosane (C24)	74		72		40-140	3		25
Hexacosane (C26)	73		71		40-140	3		25
Octacosane (C28)	73		70		40-140	4		25
Triacontane (C30)	71		69		40-140	3		25
Hexatriacontane (C36)	66		65		40-140	2		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-05 Batch: WG867534-2 WG867534-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	68		62		40-140
o-Terphenyl	62		71		40-140
2-Fluorobiphenyl	68		69		40-140
2-Bromonaphthalene	73		73		40-140
O-Terphenyl-MS	90		96		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-05 Batch: WG867628-1 WG867628-2								
C5-C8 Aliphatics	97		97		70-130	0		25
C9-C12 Aliphatics	109		108		70-130	1		25
C9-C10 Aromatics	103		102		70-130	1		25
Benzene	102		103		70-130	1		25
Toluene	104		104		70-130	0		25
Ethylbenzene	106		106		70-130	0		25
p/m-Xylene	104		104		70-130	0		25
o-Xylene	105		105		70-130	0		25
Methyl tert butyl ether	110		110		70-130	0		25
Naphthalene	103		103		70-130	0		25
1,2,4-Trimethylbenzene	103		102		70-130	1		25
Pentane	87		89		70-130	2		25
2-Methylpentane	100		101		70-130	1		25
2,2,4-Trimethylpentane	102		103		70-130	1		25
n-Nonane	106		106		30-130	0		25
n-Decane	108		107		70-130	1		25
n-Butylcyclohexane	111		111		70-130	0		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-05 Batch: WG867628-1 WG867628-2								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,5-Dibromotoluene-PID	100		100		70-130
2,5-Dibromotoluene-FID	110		109		70-130

METALS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-01
Client ID: B101-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 79%

Date Collected: 02/17/16 10:55
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	6.4		mg/kg	0.49	0.10	1	02/19/16 08:22	02/22/16 23:37	EPA 3050B	1,6010C	PS
Barium, Total	79		mg/kg	0.49	0.15	1	02/19/16 08:22	02/22/16 23:37	EPA 3050B	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.49	0.04	1	02/19/16 08:22	02/22/16 23:37	EPA 3050B	1,6010C	PS
Chromium, Total	27		mg/kg	0.49	0.10	1	02/19/16 08:22	02/22/16 23:37	EPA 3050B	1,6010C	PS
Lead, Total	65		mg/kg	2.5	0.10	1	02/19/16 08:22	02/22/16 23:37	EPA 3050B	1,6010C	PS
Mercury, Total	0.26		mg/kg	0.08	0.02	1	02/19/16 07:50	02/22/16 20:15	EPA 7471B	1,7471B	JH
Selenium, Total	0.70	J	mg/kg	0.99	0.15	1	02/19/16 08:22	02/22/16 23:37	EPA 3050B	1,6010C	PS
Silver, Total	0.58		mg/kg	0.49	0.10	1	02/19/16 08:22	02/22/16 23:37	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-02
Client ID: B10X
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 70%

Date Collected: 02/17/16 11:00
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	7.1		mg/kg	0.56	0.11	1	02/19/16 08:22	02/23/16 00:20	EPA 3050B	1,6010C	PS
Barium, Total	92		mg/kg	0.56	0.17	1	02/19/16 08:22	02/23/16 00:20	EPA 3050B	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.56	0.04	1	02/19/16 08:22	02/23/16 00:20	EPA 3050B	1,6010C	PS
Chromium, Total	22		mg/kg	0.56	0.11	1	02/19/16 08:22	02/23/16 00:20	EPA 3050B	1,6010C	PS
Lead, Total	100		mg/kg	2.8	0.11	1	02/19/16 08:22	02/23/16 00:20	EPA 3050B	1,6010C	PS
Mercury, Total	0.21		mg/kg	0.09	0.02	1	02/19/16 07:50	02/22/16 20:17	EPA 7471B	1,7471B	JH
Selenium, Total	0.55	J	mg/kg	1.1	0.17	1	02/19/16 08:22	02/23/16 00:20	EPA 3050B	1,6010C	PS
Silver, Total	1.2		mg/kg	0.56	0.11	1	02/19/16 08:22	02/23/16 00:20	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-03
Client ID: B102-S2
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 80%

Date Collected: 02/17/16 12:15
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	6.0		mg/kg	0.48	0.10	1	02/19/16 08:22	02/23/16 00:25	EPA 3050B	1,6010C	PS
Barium, Total	40		mg/kg	0.48	0.14	1	02/19/16 08:22	02/23/16 00:25	EPA 3050B	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.48	0.03	1	02/19/16 08:22	02/23/16 00:25	EPA 3050B	1,6010C	PS
Chromium, Total	22		mg/kg	0.48	0.10	1	02/19/16 08:22	02/23/16 00:25	EPA 3050B	1,6010C	PS
Lead, Total	30		mg/kg	2.4	0.10	1	02/19/16 08:22	02/23/16 00:25	EPA 3050B	1,6010C	PS
Mercury, Total	0.05	J	mg/kg	0.08	0.02	1	02/19/16 07:50	02/22/16 20:19	EPA 7471B	1,7471B	JH
Selenium, Total	0.29	J	mg/kg	0.97	0.14	1	02/19/16 08:22	02/23/16 00:25	EPA 3050B	1,6010C	PS
Silver, Total	ND		mg/kg	0.48	0.10	1	02/19/16 08:22	02/23/16 00:25	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Lab Number: L1604406
Project Number: 131.06156.010
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-04
Client ID: B107-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 79%

Date Collected: 02/17/16 14:20
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	5.7		mg/kg	0.50	0.10	1	02/19/16 08:50	02/23/16 00:29	EPA 3050B	1,6010C	PS
Barium, Total	41		mg/kg	0.50	0.15	1	02/19/16 08:50	02/23/16 00:29	EPA 3050B	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.50	0.04	1	02/19/16 08:50	02/23/16 00:29	EPA 3050B	1,6010C	PS
Chromium, Total	33		mg/kg	0.50	0.10	1	02/19/16 08:50	02/23/16 00:29	EPA 3050B	1,6010C	PS
Lead, Total	1.0	J	mg/kg	2.5	0.10	1	02/19/16 08:50	02/23/16 00:29	EPA 3050B	1,6010C	PS
Mercury, Total	ND		mg/kg	0.08	0.02	1	02/19/16 07:50	02/22/16 20:21	EPA 7471B	1,7471B	JH
Selenium, Total	0.33	J	mg/kg	1.0	0.15	1	02/19/16 08:50	02/23/16 00:29	EPA 3050B	1,6010C	PS
Silver, Total	ND		mg/kg	0.50	0.10	1	02/19/16 08:50	02/23/16 00:29	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Lab Number: L1604406
Project Number: 131.06156.010
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-05
Client ID: B103-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 74%

Date Collected: 02/17/16 16:05
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	12		mg/kg	0.53	0.10	1	02/19/16 08:50	02/23/16 00:33	EPA 3050B	1,6010C	PS
Barium, Total	60		mg/kg	0.53	0.16	1	02/19/16 08:50	02/23/16 00:33	EPA 3050B	1,6010C	PS
Cadmium, Total	ND		mg/kg	5.3	0.37	10	02/19/16 08:50	02/23/16 03:40	EPA 3050B	1,6010C	PS
Chromium, Total	32		mg/kg	0.53	0.10	1	02/19/16 08:50	02/23/16 00:33	EPA 3050B	1,6010C	PS
Lead, Total	ND		mg/kg	2.6	0.10	1	02/19/16 08:50	02/23/16 00:33	EPA 3050B	1,6010C	PS
Mercury, Total	0.21		mg/kg	0.09	0.02	1	02/19/16 07:50	02/22/16 20:23	EPA 7471B	1,7471B	JH
Selenium, Total	0.90	J	mg/kg	1.0	0.16	1	02/19/16 08:50	02/23/16 00:33	EPA 3050B	1,6010C	PS
Silver, Total	ND		mg/kg	0.53	0.10	1	02/19/16 08:50	02/23/16 00:33	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604406
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01-05 Batch: WG866586-1										
Mercury, Total	ND		mg/kg	0.08	0.02	1	02/19/16 07:50	02/22/16 19:58	1,7471B	JH

Prep Information

Digestion Method: EPA 7471B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01-05 Batch: WG866618-1										
Arsenic, Total	ND		mg/kg	0.40	0.08	1	02/19/16 08:22	02/22/16 23:20	1,6010C	PS
Barium, Total	ND		mg/kg	0.40	0.12	1	02/19/16 08:22	02/22/16 23:20	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.40	0.03	1	02/19/16 08:22	02/22/16 23:20	1,6010C	PS
Chromium, Total	ND		mg/kg	0.40	0.08	1	02/19/16 08:22	02/22/16 23:20	1,6010C	PS
Lead, Total	ND		mg/kg	2.0	0.08	1	02/19/16 08:22	02/22/16 23:20	1,6010C	PS
Selenium, Total	ND		mg/kg	0.80	0.12	1	02/19/16 08:22	02/22/16 23:20	1,6010C	PS
Silver, Total	ND		mg/kg	0.40	0.08	1	02/19/16 08:22	02/22/16 23:20	1,6010C	PS

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604406

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-05 Batch: WG866586-2 SRM Lot Number: D088-540								
Mercury, Total	86		-		72-128	-		
Total Metals - Westborough Lab Associated sample(s): 01-05 Batch: WG866618-2 SRM Lot Number: D088-540								
Arsenic, Total	105		-		79-121	-		
Barium, Total	99		-		83-117	-		
Cadmium, Total	100		-		83-117	-		
Chromium, Total	101		-		80-120	-		
Lead, Total	94		-		81-117	-		
Selenium, Total	97		-		78-122	-		
Silver, Total	105		-		75-124	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG866586-4 QC Sample: L1604511-02 Client ID: MS Sample												
Mercury, Total	1.0	0.155	1.4	**258**	Q	-	-		80-120	-		20
Total Metals - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG866618-4 QC Sample: L1604406-01 Client ID: B101-S3												
Arsenic, Total	6.4	12.1	15	**71**	Q	-	-		75-125	-		20
Barium, Total	79.	201	230	75		-	-		75-125	-		20
Cadmium, Total	ND	5.13	3.2	**62**	Q	-	-		75-125	-		20
Chromium, Total	27.	20.1	40	**65**	Q	-	-		75-125	-		20
Lead, Total	65.	51.3	110	88		-	-		75-125	-		20
Selenium, Total	0.70J	12.1	9.9	82		-	-		75-125	-		20
Silver, Total	0.58	30.2	25	81		-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG866586-3 QC Sample: L1604511-02 Client ID: DUP Sample						
Mercury, Total	1.0	0.91	mg/kg	9		20
Total Metals - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG866618-3 QC Sample: L1604406-01 Client ID: B101-S3						
Arsenic, Total	6.4	5.8	mg/kg	10		20
Barium, Total	79.	65	mg/kg	19		20
Cadmium, Total	ND	ND	mg/kg	NC		20
Chromium, Total	27.	22	mg/kg	20		20
Lead, Total	65.	73	mg/kg	12		20
Selenium, Total	0.70J	0.51J	mg/kg	NC		20
Silver, Total	0.58	0.51	mg/kg	13		20

INORGANICS
&
MISCELLANEOUS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-01
Client ID: B101-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/17/16 10:55
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.8		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-02
Client ID: B10X
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/17/16 11:00
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.2		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-03
Client ID: B102-S2
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/17/16 12:15
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.3		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-04
Client ID: B107-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/17/16 14:20
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.9		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604406-05
Client ID: B103-S3
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/17/16 16:05
Date Received: 02/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.2		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Lab Duplicate Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG866885-1 QC Sample: L1604406-01 Client ID: B101-S3						
Solids, Total	78.8	79.8	%	1		20

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: 02/19/2016 03:34

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1604406-01A	Vial MeOH preserved	A	N/A	2.8	Y	Absent	8260HLW(14),VPH-10(28)
L1604406-01B	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-01C	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-01D	Glass 60mL/2oz unpreserved	A	N/A	2.8	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),CD-TI(180),EPHD-GC-10(14)
L1604406-01E	Plastic 2oz unpreserved for TS	A	N/A	2.8	Y	Absent	ME-TS-2540(7)
L1604406-02A	Vial MeOH preserved	A	N/A	2.8	Y	Absent	8260HLW(14),VPH-10(28)
L1604406-02B	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-02C	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-02D	Glass 60mL/2oz unpreserved	A	N/A	2.8	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),CD-TI(180),EPHD-GC-10(14)
L1604406-02E	Plastic 2oz unpreserved for TS	A	N/A	2.8	Y	Absent	ME-TS-2540(7)
L1604406-03A	Vial MeOH preserved	A	N/A	2.8	Y	Absent	8260HLW(14),VPH-10(28)
L1604406-03B	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-03C	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-03D	Glass 60mL/2oz unpreserved	A	N/A	2.8	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),ME-TS-2540(7),CD-TI(180),EPHD-GC-10(14)
L1604406-04A	Vial MeOH preserved	A	N/A	2.8	Y	Absent	8260HLW(14),VPH-10(28)
L1604406-04B	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-04C	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-04D	Glass 60mL/2oz unpreserved	A	N/A	2.8	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),CD-TI(180),EPHD-GC-10(14)

*Values in parentheses indicate holding time in days

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604406
Report Date: 02/29/16

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1604406-04E	Plastic 2oz unpreserved for TS	A	N/A	2.8	Y	Absent	ME-TS-2540(7)
L1604406-05A	Vial MeOH preserved	A	N/A	2.8	Y	Absent	8260HLW(14),VPH-10(28)
L1604406-05B	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-05C	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-05D	Glass 60mL/2oz unpreserved	A	N/A	2.8	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),CD-TI(180),EPHD-GC-10(14)
L1604406-05E	Plastic 2oz unpreserved for TS	A	N/A	2.8	Y	Absent	ME-TS-2540(7)
L1604406-06A	Vial MeOH preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-06B	Vial water preserved	A	N/A	2.8	Y	Absent	8260HLW(14)
L1604406-07A	Vial HCl preserved	A	N/A	2.8	Y	Absent	ME-8260(14)
L1604406-07B	Vial HCl preserved	A	N/A	2.8	Y	Absent	ME-8260(14)
L1604406-07C	Vial HCl preserved	A	N/A	2.8	Y	Absent	HOLD-VPH(14)
L1604406-07D	Vial HCl preserved	A	N/A	2.8	Y	Absent	HOLD-VPH(14)

Container Comments

L1604406-05A

*Values in parentheses indicate holding time in days

Project Name:	AA HALL GRIST MILL	**Lab Number:**	L1604406
Project Number:	131.06156.010	**Report Date:**	02/29/16

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

Report Format: DU Report with 'J' Qualifiers

Project Name:	AA HALL GRIST MILL	**Lab Number:**	L1604406
Project Number:	131.06156.010	**Report Date:**	02/29/16

Data Qualifiers

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	AA HALL GRIST MILL	**Lab Number:**	L1604406
Project Number:	131.06156.010	**Report Date:**	02/29/16

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

98 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, July 2010.

100 Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of VPH under the Massachusetts Contingency Plan, WSC-CAM-IVA, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, m/p-xylene, o-xylene
EPA 624: 2-Butanone (MEK), 1,4-Dioxane, tert-Amylmethyl Ether, tert-Butyl Alcohol, m/p-xylene, o-xylene
EPA 625: Aniline, Benzoic Acid, Benzyl Alcohol, 4-Chloroaniline, 3-Methylphenol, 4-Methylphenol.
EPA 1010A: NPW: Ignitability
EPA 6010C: NPW: Strontium; SCM: Strontium
EPA 8151A: NPW: 2,4-DB, Dicamba, Dichloroprop, MCPA, MCPP; SCM: 2,4-DB, Dichloroprop, MCPA, MCPP
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene, Isopropanol; SCM: Iodomethane (methyl iodide), Methyl methacrylate (soil); 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 9010: NPW: Amenable Cyanide Distillation, Total Cyanide Distillation
EPA 9038: NPW: Sulfate
EPA 9050A: NPW: Specific Conductance
EPA 9056: NPW: Chloride, Nitrate, Sulfate
EPA 9065: NPW: Phenols
EPA 9251: NPW: Chloride
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: ***8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:*** Lead***; 8270D:*** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 2/18/16

ALPHA Job #: L1604406

Client Information

Client: Ransom Consulting
Address: 100 Commercial St
Portland, ME
Phone: 207 772 2891
Email: Kit.quay@ransomenv.com

Additional Project Information:

Project Information

Project Name: AA Hall Grist Mill
Project Location: Damariscotta, ME
Project #: 131.06156.010
Project Manager: Steve Dyer
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☒ Other State /Fed Program Maine DEP Criteria Brownfields
☐ Yes ☒ No CT RCP Analytical Methods

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624	SVOC: ☐ ABN ☐ 524.2 ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☒ RCRA8 ☐ PP13	EPH: ☒ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☒ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Sample Comments	TOTAL # BOTTLES
04406_01	B101-S3	2/17/16	1055	S	KJQ	X			X	X	X				5
02	B10X	2/17/16	1100	S	KJQ	X			X	X	X				5
03	B102-S2	2/17/16	1215	S	KJQ	X			X	X	X				4
04	B107-S3	2/17/16	1420	S	KJQ	X			X	X	X				5
05	B103-S3	2/17/16	1605	S	KJQ	X			X	X	X				5
Container Type						V			A	A	V				
Preservative						F			A	A	O				

SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Kit Quay	2/17/16 1750	T Huddleston	2/18/16 1335
T Huddleston	2/18/16 1930		2/18/16 1930

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO. 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1604569
Client:	Ransom Consulting, Inc. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Steve Dyer
Phone:	(207) 772-2891
Project Name:	AA HALL GRIST MILL
Project Number:	131.06156.010
Report Date:	02/29/16

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1604569-01	B106-S1	SOIL	DAMARISCOTTA, ME	02/18/16 10:00	02/19/16
L1604569-02	B105-S2	SOIL	DAMARISCOTTA, ME	02/18/16 11:00	02/19/16
L1604569-03	B104-S1	SOIL	DAMARISCOTTA, ME	02/18/16 12:10	02/19/16
L1604569-04	B108-S1	SOIL	DAMARISCOTTA, ME	02/18/16 13:10	02/19/16
L1604569-05	MW101	WATER	DAMARISCOTTA, ME	02/18/16 12:30	02/19/16
L1604569-06	MW102	WATER	DAMARISCOTTA, ME	02/18/16 13:45	02/19/16
L1604569-07	MW103	WATER	DAMARISCOTTA, ME	02/18/16 14:35	02/19/16
L1604569-08	MW-DUP	WATER	DAMARISCOTTA, ME	02/18/16 14:35	02/19/16

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569
Project Number: 131.06156.010 **Report Date:** 02/29/16

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

VPH

L1604569-06: The sample has elevated detection limits due to the dilution required by the sample matrix.
L1604569-06: It should be noted that based on review of the VPH chromatograms there is the potential that non-hydrocarbon compounds are being included in the summation of the C9-C12 Aliphatics range. This could result in a greater concentration being reported for this range than would otherwise be the case. The VPH gas chromatographic method is subject to the inclusion of non-hydrocarbon compounds in carbon range summations if the non-hydrocarbon compound is amenable to the method operating conditions and elutes within the range's retention time window. A copy of the chromatogram is included as an attachment to this report.

EPH

L1604569-02: The surrogate recovery for L1604569-02 is outside the acceptance criteria for o-terphenyl (754%); however, the sample was not re-extracted due to coelution with obvious interferences. A copy of the chromatogram is included as an attachment to this report.
L1604569-02: The surrogate recovery is below the acceptance criteria for o-terphenyl-ms (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

Total Metals

The WG866955-4 MS recovery, performed on L1604569-01, is outside the acceptance criteria for cadmium (74%). A post digestion spike was performed and yielded an unacceptable recovery of 69%. This has been attributed to sample matrix.

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569
Project Number: 131.06156.010 **Report Date:** 02/29/16

Case Narrative (continued)

Dissolved Metals

The WG867580-3 Laboratory Duplicate RPD, performed on L1604569-07, is outside the acceptance criteria for arsenic (51%). The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 02/29/16

ORGANICS

VOLATILES

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-01
Client ID: B106-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/27/16 13:24
Analyst: MV
Percent Solids: 96%

Date Collected: 02/18/16 10:00
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	9.0	0.99	1
1,1-Dichloroethane	ND		ug/kg	1.3	0.08	1
Chloroform	ND		ug/kg	1.3	0.33	1
Carbon tetrachloride	ND		ug/kg	0.90	0.19	1
1,2-Dichloropropane	ND		ug/kg	3.1	0.20	1
Dibromochloromethane	ND		ug/kg	0.90	0.14	1
1,1,2-Trichloroethane	ND		ug/kg	1.3	0.27	1
Tetrachloroethene	ND		ug/kg	0.90	0.13	1
Chlorobenzene	ND		ug/kg	0.90	0.31	1
Trichlorofluoromethane	ND		ug/kg	4.5	0.35	1
1,2-Dichloroethane	ND		ug/kg	0.90	0.10	1
1,1,1-Trichloroethane	ND		ug/kg	0.90	0.10	1
Bromodichloromethane	ND		ug/kg	0.90	0.16	1
trans-1,3-Dichloropropene	ND		ug/kg	0.90	0.11	1
cis-1,3-Dichloropropene	ND		ug/kg	0.90	0.10	1
1,3-Dichloropropene, Total	ND		ug/kg	0.90	0.10	1
1,1-Dichloropropene	ND		ug/kg	4.5	0.13	1
Bromoform	ND		ug/kg	3.6	0.21	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.90	0.09	1
Benzene	ND		ug/kg	0.90	0.11	1
Toluene	ND		ug/kg	1.3	0.18	1
Ethylbenzene	ND		ug/kg	0.90	0.11	1
Chloromethane	ND		ug/kg	4.5	0.26	1
Bromomethane	ND		ug/kg	1.8	0.30	1
Vinyl chloride	ND		ug/kg	1.8	0.10	1
Chloroethane	ND		ug/kg	1.8	0.28	1
1,1-Dichloroethene	ND		ug/kg	0.90	0.24	1
trans-1,2-Dichloroethene	ND		ug/kg	1.3	0.19	1
Trichloroethene	ND		ug/kg	0.90	0.11	1
1,2-Dichlorobenzene	ND		ug/kg	4.5	0.14	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-01 Date Collected: 02/18/16 10:00

Client ID: B106-S1 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	4.5	0.12	1
1,4-Dichlorobenzene	ND		ug/kg	4.5	0.12	1
Methyl tert butyl ether	ND		ug/kg	1.8	0.08	1
p/m-Xylene	ND		ug/kg	1.8	0.18	1
o-Xylene	ND		ug/kg	1.8	0.15	1
Xylenes, Total	ND		ug/kg	1.8	0.15	1
cis-1,2-Dichloroethene	ND		ug/kg	0.90	0.13	1
1,2-Dichloroethene, Total	ND		ug/kg	0.90	0.13	1
Dibromomethane	ND		ug/kg	9.0	0.15	1
1,4-Dichlorobutane	ND		ug/kg	9.0	0.12	1
1,2,3-Trichloropropane	ND		ug/kg	9.0	0.15	1
Styrene	ND		ug/kg	1.8	0.36	1
Dichlorodifluoromethane	ND		ug/kg	9.0	0.17	1
Acetone	1.7	J	ug/kg	32	0.93	1
Carbon disulfide	ND		ug/kg	9.0	0.99	1
2-Butanone	ND		ug/kg	9.0	0.24	1
Vinyl acetate	ND		ug/kg	9.0	0.12	1
4-Methyl-2-pentanone	ND		ug/kg	9.0	0.22	1
2-Hexanone	ND		ug/kg	9.0	0.60	1
Ethyl methacrylate	ND		ug/kg	9.0	0.14	1
Acrylonitrile	ND		ug/kg	3.6	0.46	1
Bromochloromethane	ND		ug/kg	4.5	0.25	1
Tetrahydrofuran	ND		ug/kg	18	0.90	1
2,2-Dichloropropane	ND		ug/kg	4.5	0.20	1
1,2-Dibromoethane	ND		ug/kg	3.6	0.16	1
1,3-Dichloropropane	ND		ug/kg	4.5	0.13	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.90	0.29	1
Bromobenzene	ND		ug/kg	4.5	0.19	1
n-Butylbenzene	ND		ug/kg	0.90	0.10	1
sec-Butylbenzene	ND		ug/kg	0.90	0.11	1
tert-Butylbenzene	ND		ug/kg	4.5	0.12	1
o-Chlorotoluene	ND		ug/kg	4.5	0.14	1
p-Chlorotoluene	ND		ug/kg	4.5	0.12	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	4.5	0.36	1
Hexachlorobutadiene	ND		ug/kg	4.5	0.20	1
Isopropylbenzene	ND		ug/kg	0.90	0.09	1
p-Isopropyltoluene	ND		ug/kg	0.90	0.11	1
Naphthalene	ND		ug/kg	4.5	0.12	1
n-Propylbenzene	ND		ug/kg	0.90	0.10	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-01 Date Collected: 02/18/16 10:00

Client ID: B106-S1 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	4.5	0.13	1
1,2,4-Trichlorobenzene	ND		ug/kg	4.5	0.16	1
1,3,5-Trimethylbenzene	ND		ug/kg	4.5	0.13	1
1,2,4-Trimethylbenzene	ND		ug/kg	4.5	0.13	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.5	0.35	1
Ethyl ether	ND		ug/kg	4.5	0.23	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	107		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-02
Client ID: B105-S2
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/27/16 12:32
Analyst: MV
Percent Solids: 75%

Date Collected: 02/18/16 11:00
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	1800	200	1
1,1-Dichloroethane	ND		ug/kg	270	16.	1
Chloroform	ND		ug/kg	270	68.	1
Carbon tetrachloride	ND		ug/kg	180	38.	1
1,2-Dichloropropane	ND		ug/kg	640	42.	1
Dibromochloromethane	ND		ug/kg	180	28.	1
1,1,2-Trichloroethane	ND		ug/kg	270	56.	1
Tetrachloroethene	ND		ug/kg	180	26.	1
Chlorobenzene	ND		ug/kg	180	64.	1
Trichlorofluoromethane	ND		ug/kg	910	71.	1
1,2-Dichloroethane	ND		ug/kg	180	21.	1
1,1,1-Trichloroethane	ND		ug/kg	180	20.	1
Bromodichloromethane	ND		ug/kg	180	32.	1
trans-1,3-Dichloropropene	ND		ug/kg	180	22.	1
cis-1,3-Dichloropropene	ND		ug/kg	180	21.	1
1,3-Dichloropropene, Total	ND		ug/kg	180	21.	1
1,1-Dichloropropene	ND		ug/kg	910	26.	1
Bromoform	ND		ug/kg	730	43.	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	180	18.	1
Benzene	ND		ug/kg	180	22.	1
Toluene	ND		ug/kg	270	36.	1
Ethylbenzene	ND		ug/kg	180	23.	1
Chloromethane	ND		ug/kg	910	54.	1
Bromomethane	ND		ug/kg	360	62.	1
Vinyl chloride	ND		ug/kg	360	21.	1
Chloroethane	ND		ug/kg	360	58.	1
1,1-Dichloroethene	ND		ug/kg	180	48.	1
trans-1,2-Dichloroethene	ND		ug/kg	270	39.	1
Trichloroethene	ND		ug/kg	180	23.	1
1,2-Dichlorobenzene	ND		ug/kg	910	28.	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-02 Date Collected: 02/18/16 11:00

Client ID: B105-S2 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	910	25.	1
1,4-Dichlorobenzene	ND		ug/kg	910	25.	1
Methyl tert butyl ether	ND		ug/kg	360	15.	1
p/m-Xylene	ND		ug/kg	360	36.	1
o-Xylene	ND		ug/kg	360	31.	1
Xylenes, Total	ND		ug/kg	360	31.	1
cis-1,2-Dichloroethene	ND		ug/kg	180	26.	1
1,2-Dichloroethene, Total	ND		ug/kg	180	26.	1
Dibromomethane	ND		ug/kg	1800	30.	1
1,4-Dichlorobutane	ND		ug/kg	1800	24.	1
1,2,3-Trichloropropane	ND		ug/kg	1800	30.	1
Styrene	ND		ug/kg	360	73.	1
Dichlorodifluoromethane	ND		ug/kg	1800	35.	1
Acetone	2000	J	ug/kg	6600	190	1
Carbon disulfide	ND		ug/kg	1800	200	1
2-Butanone	560	J	ug/kg	1800	50.	1
Vinyl acetate	ND		ug/kg	1800	24.	1
4-Methyl-2-pentanone	ND		ug/kg	1800	44.	1
2-Hexanone	ND		ug/kg	1800	120	1
Ethyl methacrylate	ND		ug/kg	1800	28.	1
Acrylonitrile	ND		ug/kg	730	94.	1
Bromochloromethane	ND		ug/kg	910	50.	1
Tetrahydrofuran	ND		ug/kg	3600	180	1
2,2-Dichloropropane	ND		ug/kg	910	41.	1
1,2-Dibromoethane	ND		ug/kg	730	32.	1
1,3-Dichloropropane	ND		ug/kg	910	26.	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	180	58.	1
Bromobenzene	ND		ug/kg	910	38.	1
n-Butylbenzene	ND		ug/kg	180	21.	1
sec-Butylbenzene	ND		ug/kg	180	22.	1
tert-Butylbenzene	ND		ug/kg	910	25.	1
o-Chlorotoluene	ND		ug/kg	910	29.	1
p-Chlorotoluene	ND		ug/kg	910	24.	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	910	72.	1
Hexachlorobutadiene	ND		ug/kg	910	42.	1
Isopropylbenzene	ND		ug/kg	180	19.	1
p-Isopropyltoluene	220		ug/kg	180	23.	1
Naphthalene	5100		ug/kg	910	25.	1
n-Propylbenzene	ND		ug/kg	180	20.	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-02 Date Collected: 02/18/16 11:00

Client ID: B105-S2 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	910	27.	1
1,2,4-Trichlorobenzene	ND		ug/kg	910	33.	1
1,3,5-Trimethylbenzene	ND		ug/kg	910	26.	1
1,2,4-Trimethylbenzene	ND		ug/kg	910	26.	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	910	72.	1
Ethyl ether	ND		ug/kg	910	48.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	98		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-03
Client ID: B104-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/27/16 13:50
Analyst: MV
Percent Solids: 92%

Date Collected: 02/18/16 12:10
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	9.4	1.0	1
1,1-Dichloroethane	ND		ug/kg	1.4	0.08	1
Chloroform	ND		ug/kg	1.4	0.35	1
Carbon tetrachloride	ND		ug/kg	0.94	0.20	1
1,2-Dichloropropane	ND		ug/kg	3.3	0.21	1
Dibromochloromethane	ND		ug/kg	0.94	0.14	1
1,1,2-Trichloroethane	ND		ug/kg	1.4	0.28	1
Tetrachloroethene	ND		ug/kg	0.94	0.13	1
Chlorobenzene	ND		ug/kg	0.94	0.33	1
Trichlorofluoromethane	ND		ug/kg	4.7	0.36	1
1,2-Dichloroethane	ND		ug/kg	0.94	0.11	1
1,1,1-Trichloroethane	ND		ug/kg	0.94	0.10	1
Bromodichloromethane	ND		ug/kg	0.94	0.16	1
trans-1,3-Dichloropropene	ND		ug/kg	0.94	0.11	1
cis-1,3-Dichloropropene	ND		ug/kg	0.94	0.11	1
1,3-Dichloropropene, Total	ND		ug/kg	0.94	0.11	1
1,1-Dichloropropene	ND		ug/kg	4.7	0.13	1
Bromoform	ND		ug/kg	3.7	0.22	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.94	0.09	1
Benzene	ND		ug/kg	0.94	0.11	1
Toluene	ND		ug/kg	1.4	0.18	1
Ethylbenzene	ND		ug/kg	0.94	0.12	1
Chloromethane	ND		ug/kg	4.7	0.28	1
Bromomethane	ND		ug/kg	1.9	0.32	1
Vinyl chloride	ND		ug/kg	1.9	0.11	1
Chloroethane	ND		ug/kg	1.9	0.30	1
1,1-Dichloroethene	ND		ug/kg	0.94	0.24	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	0.20	1
Trichloroethene	ND		ug/kg	0.94	0.12	1
1,2-Dichlorobenzene	ND		ug/kg	4.7	0.14	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-03 Date Collected: 02/18/16 12:10

Client ID: B104-S1 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	4.7	0.13	1
1,4-Dichlorobenzene	ND		ug/kg	4.7	0.13	1
Methyl tert butyl ether	ND		ug/kg	1.9	0.08	1
p/m-Xylene	ND		ug/kg	1.9	0.18	1
o-Xylene	ND		ug/kg	1.9	0.16	1
Xylenes, Total	ND		ug/kg	1.9	0.16	1
cis-1,2-Dichloroethene	ND		ug/kg	0.94	0.13	1
1,2-Dichloroethene, Total	ND		ug/kg	0.94	0.13	1
Dibromomethane	ND		ug/kg	9.4	0.15	1
1,4-Dichlorobutane	ND		ug/kg	9.4	0.12	1
1,2,3-Trichloropropane	ND		ug/kg	9.4	0.15	1
Styrene	ND		ug/kg	1.9	0.38	1
Dichlorodifluoromethane	ND		ug/kg	9.4	0.18	1
Acetone	ND		ug/kg	34	0.97	1
Carbon disulfide	ND		ug/kg	9.4	1.0	1
2-Butanone	ND		ug/kg	9.4	0.25	1
Vinyl acetate	ND		ug/kg	9.4	0.12	1
4-Methyl-2-pentanone	ND		ug/kg	9.4	0.23	1
2-Hexanone	ND		ug/kg	9.4	0.62	1
Ethyl methacrylate	ND		ug/kg	9.4	0.14	1
Acrylonitrile	ND		ug/kg	3.7	0.48	1
Bromochloromethane	ND		ug/kg	4.7	0.26	1
Tetrahydrofuran	ND		ug/kg	19	0.93	1
2,2-Dichloropropane	ND		ug/kg	4.7	0.21	1
1,2-Dibromoethane	ND		ug/kg	3.7	0.16	1
1,3-Dichloropropane	ND		ug/kg	4.7	0.14	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.94	0.30	1
Bromobenzene	ND		ug/kg	4.7	0.19	1
n-Butylbenzene	ND		ug/kg	0.94	0.11	1
sec-Butylbenzene	ND		ug/kg	0.94	0.11	1
tert-Butylbenzene	ND		ug/kg	4.7	0.13	1
o-Chlorotoluene	ND		ug/kg	4.7	0.15	1
p-Chlorotoluene	ND		ug/kg	4.7	0.12	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	4.7	0.37	1
Hexachlorobutadiene	ND		ug/kg	4.7	0.21	1
Isopropylbenzene	ND		ug/kg	0.94	0.10	1
p-Isopropyltoluene	ND		ug/kg	0.94	0.12	1
Naphthalene	ND		ug/kg	4.7	0.13	1
n-Propylbenzene	ND		ug/kg	0.94	0.10	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-03 Date Collected: 02/18/16 12:10

Client ID: B104-S1 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	4.7	0.14	1
1,2,4-Trichlorobenzene	ND		ug/kg	4.7	0.17	1
1,3,5-Trimethylbenzene	ND		ug/kg	4.7	0.13	1
1,2,4-Trimethylbenzene	ND		ug/kg	4.7	0.13	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.7	0.37	1
Ethyl ether	ND		ug/kg	4.7	0.24	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	104		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-04
Client ID: B108-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 02/27/16 14:16
Analyst: MV
Percent Solids: 95%

Date Collected: 02/18/16 13:10
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	8.5	0.94	1
1,1-Dichloroethane	ND		ug/kg	1.3	0.07	1
Chloroform	ND		ug/kg	1.3	0.31	1
Carbon tetrachloride	ND		ug/kg	0.85	0.18	1
1,2-Dichloropropane	ND		ug/kg	3.0	0.19	1
Dibromochloromethane	ND		ug/kg	0.85	0.13	1
1,1,2-Trichloroethane	ND		ug/kg	1.3	0.26	1
Tetrachloroethene	ND		ug/kg	0.85	0.12	1
Chlorobenzene	ND		ug/kg	0.85	0.30	1
Trichlorofluoromethane	ND		ug/kg	4.2	0.33	1
1,2-Dichloroethane	ND		ug/kg	0.85	0.10	1
1,1,1-Trichloroethane	ND		ug/kg	0.85	0.09	1
Bromodichloromethane	ND		ug/kg	0.85	0.15	1
trans-1,3-Dichloropropene	ND		ug/kg	0.85	0.10	1
cis-1,3-Dichloropropene	ND		ug/kg	0.85	0.10	1
1,3-Dichloropropene, Total	ND		ug/kg	0.85	0.10	1
1,1-Dichloropropene	ND		ug/kg	4.2	0.12	1
Bromoform	ND		ug/kg	3.4	0.20	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.85	0.09	1
Benzene	ND		ug/kg	0.85	0.10	1
Toluene	ND		ug/kg	1.3	0.16	1
Ethylbenzene	ND		ug/kg	0.85	0.11	1
Chloromethane	ND		ug/kg	4.2	0.25	1
Bromomethane	ND		ug/kg	1.7	0.29	1
Vinyl chloride	ND		ug/kg	1.7	0.10	1
Chloroethane	ND		ug/kg	1.7	0.27	1
1,1-Dichloroethene	ND		ug/kg	0.85	0.22	1
trans-1,2-Dichloroethene	ND		ug/kg	1.3	0.18	1
Trichloroethene	ND		ug/kg	0.85	0.11	1
1,2-Dichlorobenzene	ND		ug/kg	4.2	0.13	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-04 Date Collected: 02/18/16 13:10

Client ID: B108-S1 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	4.2	0.11	1
1,4-Dichlorobenzene	ND		ug/kg	4.2	0.12	1
Methyl tert butyl ether	ND		ug/kg	1.7	0.07	1
p/m-Xylene	ND		ug/kg	1.7	0.17	1
o-Xylene	ND		ug/kg	1.7	0.14	1
Xylenes, Total	ND		ug/kg	1.7	0.14	1
cis-1,2-Dichloroethene	ND		ug/kg	0.85	0.12	1
1,2-Dichloroethene, Total	ND		ug/kg	0.85	0.12	1
Dibromomethane	ND		ug/kg	8.5	0.14	1
1,4-Dichlorobutane	ND		ug/kg	8.5	0.11	1
1,2,3-Trichloropropane	ND		ug/kg	8.5	0.14	1
Styrene	ND		ug/kg	1.7	0.34	1
Dichlorodifluoromethane	ND		ug/kg	8.5	0.16	1
Acetone	ND		ug/kg	30	0.88	1
Carbon disulfide	ND		ug/kg	8.5	0.94	1
2-Butanone	ND		ug/kg	8.5	0.23	1
Vinyl acetate	ND		ug/kg	8.5	0.11	1
4-Methyl-2-pentanone	ND		ug/kg	8.5	0.21	1
2-Hexanone	ND		ug/kg	8.5	0.56	1
Ethyl methacrylate	ND		ug/kg	8.5	0.13	1
Acrylonitrile	ND		ug/kg	3.4	0.44	1
Bromochloromethane	ND		ug/kg	4.2	0.23	1
Tetrahydrofuran	ND		ug/kg	17	0.85	1
2,2-Dichloropropane	ND		ug/kg	4.2	0.19	1
1,2-Dibromoethane	ND		ug/kg	3.4	0.15	1
1,3-Dichloropropane	ND		ug/kg	4.2	0.12	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.85	0.27	1
Bromobenzene	ND		ug/kg	4.2	0.18	1
n-Butylbenzene	ND		ug/kg	0.85	0.10	1
sec-Butylbenzene	ND		ug/kg	0.85	0.10	1
tert-Butylbenzene	ND		ug/kg	4.2	0.12	1
o-Chlorotoluene	ND		ug/kg	4.2	0.14	1
p-Chlorotoluene	ND		ug/kg	4.2	0.11	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	4.2	0.34	1
Hexachlorobutadiene	ND		ug/kg	4.2	0.19	1
Isopropylbenzene	ND		ug/kg	0.85	0.09	1
p-Isopropyltoluene	ND		ug/kg	0.85	0.11	1
Naphthalene	2.9	J	ug/kg	4.2	0.12	1
n-Propylbenzene	ND		ug/kg	0.85	0.09	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-04 Date Collected: 02/18/16 13:10

Client ID: B108-S1 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	4.2	0.12	1
1,2,4-Trichlorobenzene	ND		ug/kg	4.2	0.15	1
1,3,5-Trimethylbenzene	ND		ug/kg	4.2	0.12	1
1,2,4-Trimethylbenzene	ND		ug/kg	4.2	0.12	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.2	0.33	1
Ethyl ether	ND		ug/kg	4.2	0.22	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	110		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-05
Client ID: MW101
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 02/28/16 09:53
Analyst: PD

Date Collected: 02/18/16 12:30
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.29	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	ND		ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.13	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	1.0	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	1.0	0.17	1
Bromoform	ND		ug/l	1.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.14	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
Chloromethane	ND		ug/l	2.0	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	0.20	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.14	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Trichloroethene	ND		ug/l	0.50	0.18	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-05 Date Collected: 02/18/16 12:30

Client ID: MW101 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	0.18	1
1,3-Dichlorobenzene	ND		ug/l	1.0	0.19	1
1,4-Dichlorobenzene	ND		ug/l	1.0	0.19	1
Methyl tert butyl ether	ND		ug/l	1.0	0.16	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	1.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	1.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	2.0	0.24	1
Acetone	4.4	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	1.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	1.0	0.14	1
Tetrahydrofuran	ND		ug/l	2.0	0.52	1
2,2-Dichloropropane	ND		ug/l	1.0	0.20	1
1,2-Dibromoethane	ND		ug/l	1.0	0.19	1
1,3-Dichloropropane	ND		ug/l	1.0	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	1.0	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	ND		ug/l	0.50	0.18	1
tert-Butylbenzene	ND		ug/l	1.0	0.18	1
o-Chlorotoluene	ND		ug/l	1.0	0.17	1
p-Chlorotoluene	ND		ug/l	1.0	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	0.33	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
p-Isopropyltoluene	ND		ug/l	0.50	0.19	1
Naphthalene	1.2		ug/l	1.0	0.22	1
n-Propylbenzene	ND		ug/l	0.50	0.17	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-05 Date Collected: 02/18/16 12:30

Client ID: MW101 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	1.0	0.23	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	0.22	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	0.17	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.17	1
Ethyl ether	ND		ug/l	1.0	0.15	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	90		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-06
Client ID: MW102
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 02/28/16 10:16
Analyst: PD

Date Collected: 02/18/16 13:45
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.29	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	ND		ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.13	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	1.0	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	1.0	0.17	1
Bromoform	ND		ug/l	1.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.14	1
Benzene	0.18	J	ug/l	0.50	0.16	1
Toluene	0.33	J	ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
Chloromethane	0.66	J	ug/l	2.0	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	0.20	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.14	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Trichloroethene	ND		ug/l	0.50	0.18	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-06 Date Collected: 02/18/16 13:45

Client ID: MW102 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	0.18	1
1,3-Dichlorobenzene	ND		ug/l	1.0	0.19	1
1,4-Dichlorobenzene	ND		ug/l	1.0	0.19	1
Methyl tert butyl ether	14		ug/l	1.0	0.16	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	1.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	1.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	2.0	0.24	1
Acetone	18		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	1.0	0.30	1
2-Butanone	2.9	J	ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	1.0	0.14	1
Tetrahydrofuran	ND		ug/l	2.0	0.52	1
2,2-Dichloropropane	ND		ug/l	1.0	0.20	1
1,2-Dibromoethane	ND		ug/l	1.0	0.19	1
1,3-Dichloropropane	ND		ug/l	1.0	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	1.0	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	ND		ug/l	0.50	0.18	1
tert-Butylbenzene	ND		ug/l	1.0	0.18	1
o-Chlorotoluene	ND		ug/l	1.0	0.17	1
p-Chlorotoluene	ND		ug/l	1.0	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	0.33	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
p-Isopropyltoluene	130		ug/l	0.50	0.19	1
Naphthalene	0.77	J	ug/l	1.0	0.22	1
n-Propylbenzene	ND		ug/l	0.50	0.17	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-06 Date Collected: 02/18/16 13:45

Client ID: MW102 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	1.0	0.23	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	0.22	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	0.17	1
1,2,4-Trimethylbenzene	0.29	J	ug/l	1.0	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.17	1
Ethyl ether	ND		ug/l	1.0	0.15	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	89		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-07
Client ID: MW103
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 02/28/16 10:39
Analyst: PD

Date Collected: 02/18/16 14:35
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.29	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	ND		ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.13	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	1.0	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	1.0	0.17	1
Bromoform	ND		ug/l	1.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.14	1
Benzene	2.9		ug/l	0.50	0.16	1
Toluene	2.4		ug/l	0.75	0.16	1
Ethylbenzene	0.19	J	ug/l	0.50	0.17	1
Chloromethane	ND		ug/l	2.0	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	0.20	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.14	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Trichloroethene	ND		ug/l	0.50	0.18	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-07 Date Collected: 02/18/16 14:35

Client ID: MW103 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	0.18	1
1,3-Dichlorobenzene	ND		ug/l	1.0	0.19	1
1,4-Dichlorobenzene	2.4		ug/l	1.0	0.19	1
Methyl tert butyl ether	1.3		ug/l	1.0	0.16	1
p/m-Xylene	6.2		ug/l	1.0	0.33	1
o-Xylene	3.4		ug/l	1.0	0.33	1
Xylenes, Total	9.6		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	1.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	1.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	2.0	0.24	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	1.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	1.0	0.14	1
Tetrahydrofuran	ND		ug/l	2.0	0.52	1
2,2-Dichloropropane	ND		ug/l	1.0	0.20	1
1,2-Dibromoethane	ND		ug/l	1.0	0.19	1
1,3-Dichloropropane	ND		ug/l	1.0	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	1.0	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	1.1		ug/l	0.50	0.18	1
tert-Butylbenzene	0.61	J	ug/l	1.0	0.18	1
o-Chlorotoluene	ND		ug/l	1.0	0.17	1
p-Chlorotoluene	ND		ug/l	1.0	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	0.33	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	10		ug/l	0.50	0.19	1
p-Isopropyltoluene	0.97		ug/l	0.50	0.19	1
Naphthalene	14		ug/l	1.0	0.22	1
n-Propylbenzene	9.2		ug/l	0.50	0.17	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-07 Date Collected: 02/18/16 14:35

Client ID: MW103 Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	1.0	0.23	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	0.22	1
1,3,5-Trimethylbenzene	2.4		ug/l	1.0	0.17	1
1,2,4-Trimethylbenzene	3.8		ug/l	1.0	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.17	1
Ethyl ether	ND		ug/l	1.0	0.15	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	82		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-08
Client ID: MW-DUP
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 02/28/16 11:02
Analyst: PD

Date Collected: 02/18/16 14:35
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.29	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	ND		ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.13	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	1.0	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	1.0	0.17	1
Bromoform	ND		ug/l	1.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.14	1
Benzene	2.9		ug/l	0.50	0.16	1
Toluene	2.5		ug/l	0.75	0.16	1
Ethylbenzene	0.20	J	ug/l	0.50	0.17	1
Chloromethane	ND		ug/l	2.0	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	0.20	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.14	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Trichloroethene	ND		ug/l	0.50	0.18	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-08 Date Collected: 02/18/16 14:35

Client ID: MW-DUP Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	0.18	1
1,3-Dichlorobenzene	ND		ug/l	1.0	0.19	1
1,4-Dichlorobenzene	2.4		ug/l	1.0	0.19	1
Methyl tert butyl ether	1.3		ug/l	1.0	0.16	1
p/m-Xylene	6.0		ug/l	1.0	0.33	1
o-Xylene	3.4		ug/l	1.0	0.33	1
Xylenes, Total	9.4		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	1.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	1.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	2.0	0.24	1
Acetone	4.2	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	1.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	1.0	0.14	1
Tetrahydrofuran	ND		ug/l	2.0	0.52	1
2,2-Dichloropropane	ND		ug/l	1.0	0.20	1
1,2-Dibromoethane	ND		ug/l	1.0	0.19	1
1,3-Dichloropropane	ND		ug/l	1.0	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	1.0	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	1.1		ug/l	0.50	0.18	1
tert-Butylbenzene	0.61	J	ug/l	1.0	0.18	1
o-Chlorotoluene	ND		ug/l	1.0	0.17	1
p-Chlorotoluene	ND		ug/l	1.0	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	0.33	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	10		ug/l	0.50	0.19	1
p-Isopropyltoluene	0.44	J	ug/l	0.50	0.19	1
Naphthalene	16		ug/l	1.0	0.22	1
n-Propylbenzene	9.0		ug/l	0.50	0.17	1

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-08 Date Collected: 02/18/16 14:35

Client ID: MW-DUP Date Received: 02/19/16

Sample Location: DAMARISCOTTA, ME Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	1.0	0.23	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	0.22	1
1,3,5-Trimethylbenzene	2.4		ug/l	1.0	0.17	1
1,2,4-Trimethylbenzene	3.6		ug/l	1.0	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.17	1
Ethyl ether	ND		ug/l	1.0	0.15	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	83		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 02 Batch: WG868972-3					
Methylene chloride	ND		ug/kg	500	55.
1,1-Dichloroethane	ND		ug/kg	75	4.3
Chloroform	ND		ug/kg	75	18.
Carbon tetrachloride	ND		ug/kg	50	10.
1,2-Dichloropropane	ND		ug/kg	180	11.
Dibromochloromethane	ND		ug/kg	50	7.7
1,1,2-Trichloroethane	ND		ug/kg	75	15.
2-Chloroethylvinyl ether	ND		ug/kg	1000	31.
Tetrachloroethene	ND		ug/kg	50	7.0
Chlorobenzene	ND		ug/kg	50	17.
Trichlorofluoromethane	ND		ug/kg	250	19.
1,2-Dichloroethane	ND		ug/kg	50	5.7
1,1,1-Trichloroethane	ND		ug/kg	50	5.5
Bromodichloromethane	ND		ug/kg	50	8.7
trans-1,3-Dichloropropene	ND		ug/kg	50	6.0
cis-1,3-Dichloropropene	ND		ug/kg	50	5.9
1,3-Dichloropropene, Total	ND		ug/kg	50	5.9
1,1-Dichloropropene	ND		ug/kg	250	7.1
Bromoform	ND		ug/kg	200	12.
1,1,2,2-Tetrachloroethane	ND		ug/kg	50	5.0
Benzene	ND		ug/kg	50	5.9
Toluene	ND		ug/kg	75	9.7
Ethylbenzene	ND		ug/kg	50	6.4
Chloromethane	ND		ug/kg	250	15.
Bromomethane	ND		ug/kg	100	17.
Vinyl chloride	ND		ug/kg	100	5.9
Chloroethane	ND		ug/kg	100	16.
1,1-Dichloroethene	ND		ug/kg	50	13.
trans-1,2-Dichloroethene	ND		ug/kg	75	11.

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 02 Batch: WG868972-3					
Trichloroethene	ND		ug/kg	50	6.2
1,2-Dichlorobenzene	ND		ug/kg	250	7.7
1,3-Dichlorobenzene	ND		ug/kg	250	6.8
1,4-Dichlorobenzene	ND		ug/kg	250	6.9
Methyl tert butyl ether	ND		ug/kg	100	4.2
p/m-Xylene	ND		ug/kg	100	9.9
o-Xylene	ND		ug/kg	100	8.6
Xylenes, Total	ND		ug/kg	100	8.6
cis-1,2-Dichloroethene	ND		ug/kg	50	7.1
1,2-Dichloroethene, Total	ND		ug/kg	50	7.1
Dibromomethane	ND		ug/kg	500	8.2
1,4-Dichlorobutane	ND		ug/kg	500	6.6
1,2,3-Trichloropropane	ND		ug/kg	500	8.1
Styrene	ND		ug/kg	100	20.
Dichlorodifluoromethane	ND		ug/kg	500	9.5
Acetone	ND		ug/kg	1800	52.
Carbon disulfide	ND		ug/kg	500	55.
2-Butanone	ND		ug/kg	500	14.
Vinyl acetate	ND		ug/kg	500	6.6
4-Methyl-2-pentanone	ND		ug/kg	500	12.
2-Hexanone	ND		ug/kg	500	33.
Ethyl methacrylate	ND		ug/kg	500	7.7
Acrolein	ND		ug/kg	1200	400
Acrylonitrile	ND		ug/kg	200	26.
Bromochloromethane	ND		ug/kg	250	14.
Tetrahydrofuran	ND		ug/kg	1000	50.
2,2-Dichloropropane	ND		ug/kg	250	11.
1,2-Dibromoethane	ND		ug/kg	200	8.7
1,3-Dichloropropane	ND		ug/kg	250	7.3

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 02 Batch: WG868972-3					
1,1,1,2-Tetrachloroethane	ND		ug/kg	50	16.
Bromobenzene	ND		ug/kg	250	10.
n-Butylbenzene	ND		ug/kg	50	5.7
sec-Butylbenzene	ND		ug/kg	50	6.1
tert-Butylbenzene	ND		ug/kg	250	6.8
1,3,5-Trichlorobenzene	ND		ug/kg	200	12.
o-Chlorotoluene	ND		ug/kg	250	8.0
p-Chlorotoluene	ND		ug/kg	250	6.6
1,2-Dibromo-3-chloropropane	ND		ug/kg	250	20.
Hexachlorobutadiene	ND		ug/kg	250	11.
Isopropylbenzene	ND		ug/kg	50	5.2
p-Isopropyltoluene	ND		ug/kg	50	6.2
Naphthalene	ND		ug/kg	250	6.9
n-Propylbenzene	ND		ug/kg	50	5.5
1,2,3-Trichlorobenzene	ND		ug/kg	250	7.4
1,2,4-Trichlorobenzene	ND		ug/kg	250	9.1
1,3,5-Trimethylbenzene	ND		ug/kg	250	7.2
1,2,4-Trimethylbenzene	ND		ug/kg	250	7.1
trans-1,4-Dichloro-2-butene	ND		ug/kg	250	20.
Ethyl ether	ND		ug/kg	250	13.
Methyl Acetate	ND		ug/kg	1000	14.
Ethyl Acetate	ND		ug/kg	1000	46.
Isopropyl Ether	ND		ug/kg	200	7.0
Cyclohexane	ND		ug/kg	1000	7.3
Tert-Butyl Alcohol	ND		ug/kg	5000	150
Ethyl-Tert-Butyl-Ether	ND		ug/kg	200	5.8
Tertiary-Amyl Methyl Ether	ND		ug/kg	200	4.8
1,4-Dioxane	ND		ug/kg	5000	720
Methyl cyclohexane	ND		ug/kg	200	7.7

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 02 Batch: WG868972-3					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	1000	14.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	99		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01,03-04 Batch: WG868973-3					
Methylene chloride	ND		ug/kg	10	1.1
1,1-Dichloroethane	ND		ug/kg	1.5	0.09
Chloroform	ND		ug/kg	1.5	0.37
Carbon tetrachloride	ND		ug/kg	1.0	0.21
1,2-Dichloropropane	ND		ug/kg	3.5	0.23
Dibromochloromethane	ND		ug/kg	1.0	0.15
1,1,2-Trichloroethane	ND		ug/kg	1.5	0.30
2-Chloroethylvinyl ether	ND		ug/kg	20	0.62
Tetrachloroethene	ND		ug/kg	1.0	0.14
Chlorobenzene	ND		ug/kg	1.0	0.35
Trichlorofluoromethane	ND		ug/kg	5.0	0.39
1,2-Dichloroethane	ND		ug/kg	1.0	0.11
1,1,1-Trichloroethane	ND		ug/kg	1.0	0.11
Bromodichloromethane	ND		ug/kg	1.0	0.17
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.12
cis-1,3-Dichloropropene	ND		ug/kg	1.0	0.12
1,3-Dichloropropene, Total	ND		ug/kg	1.0	0.12
1,1-Dichloropropene	ND		ug/kg	5.0	0.14
Bromoform	ND		ug/kg	4.0	0.24
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	0.10
Benzene	ND		ug/kg	1.0	0.12
Toluene	ND		ug/kg	1.5	0.19
Ethylbenzene	ND		ug/kg	1.0	0.13
Chloromethane	ND		ug/kg	5.0	0.29
Bromomethane	ND		ug/kg	2.0	0.34
Vinyl chloride	ND		ug/kg	2.0	0.12
Chloroethane	ND		ug/kg	2.0	0.32
1,1-Dichloroethene	ND		ug/kg	1.0	0.26
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.21

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01,03-04 Batch: WG868973-3					
Trichloroethene	ND		ug/kg	1.0	0.12
1,2-Dichlorobenzene	ND		ug/kg	5.0	0.15
1,3-Dichlorobenzene	ND		ug/kg	5.0	0.14
1,4-Dichlorobenzene	ND		ug/kg	5.0	0.14
Methyl tert butyl ether	ND		ug/kg	2.0	0.08
p/m-Xylene	ND		ug/kg	2.0	0.20
o-Xylene	ND		ug/kg	2.0	0.17
Xylenes, Total	ND		ug/kg	2.0	0.17
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.14
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	10	0.16
1,4-Dichlorobutane	ND		ug/kg	10	0.13
1,2,3-Trichloropropane	ND		ug/kg	10	0.16
Styrene	ND		ug/kg	2.0	0.40
Dichlorodifluoromethane	ND		ug/kg	10	0.19
Acetone	ND		ug/kg	36	1.0
Carbon disulfide	ND		ug/kg	10	1.1
2-Butanone	ND		ug/kg	10	0.27
Vinyl acetate	ND		ug/kg	10	0.13
4-Methyl-2-pentanone	ND		ug/kg	10	0.24
2-Hexanone	ND		ug/kg	10	0.67
Ethyl methacrylate	ND		ug/kg	10	0.15
Acrolein	ND		ug/kg	25	8.1
Acrylonitrile	ND		ug/kg	4.0	0.51
Bromochloromethane	ND		ug/kg	5.0	0.28
Tetrahydrofuran	ND		ug/kg	20	1.0
2,2-Dichloropropane	ND		ug/kg	5.0	0.23
1,2-Dibromoethane	ND		ug/kg	4.0	0.17
1,3-Dichloropropane	ND		ug/kg	5.0	0.14

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01,03-04 Batch: WG868973-3					
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.0	0.32
Bromobenzene	ND		ug/kg	5.0	0.21
n-Butylbenzene	ND		ug/kg	1.0	0.11
sec-Butylbenzene	ND		ug/kg	1.0	0.12
tert-Butylbenzene	ND		ug/kg	5.0	0.14
1,3,5-Trichlorobenzene	ND		ug/kg	4.0	0.23
o-Chlorotoluene	ND		ug/kg	5.0	0.16
p-Chlorotoluene	ND		ug/kg	5.0	0.13
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.0	0.40
Hexachlorobutadiene	ND		ug/kg	5.0	0.23
Isopropylbenzene	ND		ug/kg	1.0	0.10
p-Isopropyltoluene	ND		ug/kg	1.0	0.12
Naphthalene	ND		ug/kg	5.0	0.14
n-Propylbenzene	ND		ug/kg	1.0	0.11
1,2,3-Trichlorobenzene	ND		ug/kg	5.0	0.15
1,2,4-Trichlorobenzene	ND		ug/kg	5.0	0.18
1,3,5-Trimethylbenzene	ND		ug/kg	5.0	0.14
1,2,4-Trimethylbenzene	ND		ug/kg	5.0	0.14
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	0.39
Ethyl ether	ND		ug/kg	5.0	0.26
Methyl Acetate	ND		ug/kg	20	0.27
Ethyl Acetate	ND		ug/kg	20	0.92
Isopropyl Ether	ND		ug/kg	4.0	0.14
Cyclohexane	ND		ug/kg	20	0.15
Tert-Butyl Alcohol	ND		ug/kg	100	2.9
Ethyl-Tert-Butyl-Ether	ND		ug/kg	4.0	0.12
Tertiary-Amyl Methyl Ether	ND		ug/kg	4.0	0.10
1,4-Dioxane	ND		ug/kg	100	14.
Methyl cyclohexane	ND		ug/kg	4.0	0.15

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/27/16 11:15
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01,03-04 Batch: WG868973-3					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	20	0.27

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	99		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/28/16 09:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 05-08 Batch: WG869090-3					
Methylene chloride	ND		ug/l	3.0	0.29
1,1-Dichloroethane	ND		ug/l	0.75	0.21
Chloroform	ND		ug/l	0.75	0.16
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.13
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	0.50	0.18
Trichlorofluoromethane	ND		ug/l	1.0	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	1.0	0.17
Bromoform	ND		ug/l	1.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.14
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
Chloromethane	ND		ug/l	2.0	0.18
Bromomethane	ND		ug/l	1.0	0.26
Vinyl chloride	ND		ug/l	0.20	0.07
Chloroethane	ND		ug/l	1.0	0.13
1,1-Dichloroethene	ND		ug/l	0.50	0.14
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/28/16 09:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 05-08 Batch: WG869090-3					
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	1.0	0.18
1,3-Dichlorobenzene	ND		ug/l	1.0	0.19
1,4-Dichlorobenzene	ND		ug/l	1.0	0.19
Methyl tert butyl ether	ND		ug/l	1.0	0.16
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
Dibromomethane	ND		ug/l	1.0	0.36
1,4-Dichlorobutane	ND		ug/l	5.0	0.46
1,2,3-Trichloropropane	ND		ug/l	1.0	0.18
Styrene	ND		ug/l	1.0	0.36
Dichlorodifluoromethane	ND		ug/l	2.0	0.24
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	1.0	0.30
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	0.31
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
2-Hexanone	ND		ug/l	5.0	0.52
Ethyl methacrylate	ND		ug/l	5.0	0.61
Acrylonitrile	ND		ug/l	5.0	0.43
Bromochloromethane	ND		ug/l	1.0	0.14
Tetrahydrofuran	ND		ug/l	2.0	0.52
2,2-Dichloropropane	ND		ug/l	1.0	0.20
1,2-Dibromoethane	ND		ug/l	1.0	0.19
1,3-Dichloropropane	ND		ug/l	1.0	0.21
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16
Bromobenzene	ND		ug/l	1.0	0.15

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 02/28/16 09:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 05-08 Batch: WG869090-3					
n-Butylbenzene	ND		ug/l	0.50	0.19
sec-Butylbenzene	ND		ug/l	0.50	0.18
tert-Butylbenzene	ND		ug/l	1.0	0.18
o-Chlorotoluene	ND		ug/l	1.0	0.17
p-Chlorotoluene	ND		ug/l	1.0	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	0.33
Hexachlorobutadiene	ND		ug/l	0.50	0.22
Isopropylbenzene	ND		ug/l	0.50	0.19
p-Isopropyltoluene	ND		ug/l	0.50	0.19
Naphthalene	ND		ug/l	1.0	0.22
n-Propylbenzene	ND		ug/l	0.50	0.17
1,2,3-Trichlorobenzene	ND		ug/l	1.0	0.23
1,2,4-Trichlorobenzene	ND		ug/l	1.0	0.22
1,3,5-Trimethylbenzene	ND		ug/l	1.0	0.17
1,2,4-Trimethylbenzene	ND		ug/l	1.0	0.19
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.17
Ethyl ether	ND		ug/l	1.0	0.15

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	89		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 02 Batch: WG868972-1 WG868972-2								
Methylene chloride	98		96		70-130	2		30
1,1-Dichloroethane	105		104		70-130	1		30
Chloroform	107		107		70-130	0		30
Carbon tetrachloride	112		111		70-130	1		30
1,2-Dichloropropane	92		93		70-130	1		30
Dibromochloromethane	96		96		70-130	0		30
1,1,2-Trichloroethane	100		101		70-130	1		30
2-Chloroethylvinyl ether	74		77		70-130	4		30
Tetrachloroethene	117		118		70-130	1		30
Chlorobenzene	105		106		70-130	1		30
Trichlorofluoromethane	117		113		70-139	3		30
1,2-Dichloroethane	102		104		70-130	2		30
1,1,1-Trichloroethane	112		112		70-130	0		30
Bromodichloromethane	95		97		70-130	2		30
trans-1,3-Dichloropropene	94		94		70-130	0		30
cis-1,3-Dichloropropene	90		92		70-130	2		30
1,1-Dichloropropene	105		107		70-130	2		30
Bromoform	92		94		70-130	2		30
1,1,2,2-Tetrachloroethane	95		96		70-130	1		30
Benzene	102		102		70-130	0		30
Toluene	105		105		70-130	0		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 02 Batch: WG868972-1 WG868972-2								
Ethylbenzene	106		105		70-130	1		30
Chloromethane	100		94		52-130	6		30
Bromomethane	119		117		57-147	2		30
Vinyl chloride	114		111		67-130	3		30
Chloroethane	103		105		50-151	2		30
1,1-Dichloroethene	112		108		65-135	4		30
trans-1,2-Dichloroethene	106		106		70-130	0		30
Trichloroethene	108		110		70-130	2		30
1,2-Dichlorobenzene	107		110		70-130	3		30
1,3-Dichlorobenzene	112		113		70-130	1		30
1,4-Dichlorobenzene	111		112		70-130	1		30
Methyl tert butyl ether	90		91		66-130	1		30
p/m-Xylene	104		106		70-130	2		30
o-Xylene	102		103		70-130	1		30
cis-1,2-Dichloroethene	104		104		70-130	0		30
Dibromomethane	94		98		70-130	4		30
1,4-Dichlorobutane	92		93		70-130	1		30
1,2,3-Trichloropropane	95		98		68-130	3		30
Styrene	101		102		70-130	1		30
Dichlorodifluoromethane	97		94		30-146	3		30
Acetone	91		83		54-140	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 02 Batch: WG868972-1 WG868972-2								
Carbon disulfide	100		97		59-130	3		30
2-Butanone	76		71		70-130	7		30
Vinyl acetate	90		90		70-130	0		30
4-Methyl-2-pentanone	**64**	Q	**69**	Q	70-130	8		30
2-Hexanone	**60**	Q	**60**	Q	70-130	0		30
Ethyl methacrylate	75		76		70-130	1		30
Acrolein	80		79		70-130	1		30
Acrylonitrile	85		85		70-130	0		30
Bromochloromethane	107		109		70-130	2		30
Tetrahydrofuran	98		86		66-130	13		30
2,2-Dichloropropane	106		105		70-130	1		30
1,2-Dibromoethane	98		98		70-130	0		30
1,3-Dichloropropane	98		98		69-130	0		30
1,1,1,2-Tetrachloroethane	103		105		70-130	2		30
Bromobenzene	106		108		70-130	2		30
n-Butylbenzene	110		112		70-130	2		30
sec-Butylbenzene	109		109		70-130	0		30
tert-Butylbenzene	106		106		70-130	0		30
1,3,5-Trichlorobenzene	109		111		70-139	2		30
o-Chlorotoluene	107		109		70-130	2		30
p-Chlorotoluene	104		103		70-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 02 Batch: WG868972-1 WG868972-2								
1,2-Dibromo-3-chloropropane	81		83		68-130	2		30
Hexachlorobutadiene	106		110		67-130	4		30
Isopropylbenzene	106		106		70-130	0		30
p-Isopropyltoluene	107		107		70-130	0		30
Naphthalene	87		92		70-130	6		30
n-Propylbenzene	108		107		70-130	1		30
1,2,3-Trichlorobenzene	100		104		70-130	4		30
1,2,4-Trichlorobenzene	100		104		70-130	4		30
1,3,5-Trimethylbenzene	105		105		70-130	0		30
1,2,4-Trimethylbenzene	104		103		70-130	1		30
trans-1,4-Dichloro-2-butene	83		85		70-130	2		30
Halothane	112		113		70-130	1		20
Ethyl ether	98		98		67-130	0		30
Methyl Acetate	90		91		65-130	1		30
Ethyl Acetate	86		86		70-130	0		30
Isopropyl Ether	90		90		66-130	0		30
Cyclohexane	93		95		70-130	2		30
Tert-Butyl Alcohol	75		76		70-130	1		30
Ethyl-Tert-Butyl-Ether	89		91		70-130	2		30
Tertiary-Amyl Methyl Ether	83		87		70-130	5		30
1,4-Dioxane	89		97		65-136	9		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 02 Batch: WG868972-1 WG868972-2								
Methyl cyclohexane	96		99		70-130	3		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	108		106		70-130	2		30
1,4-Diethylbenzene	104		106		70-130	2		30
4-Ethyltoluene	107		107		70-130	0		30
1,2,4,5-Tetramethylbenzene	94		96		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		107		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	106		106		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,03-04 Batch: WG868973-1 WG868973-2								
Methylene chloride	98		96		70-130	2		30
1,1-Dichloroethane	105		104		70-130	1		30
Chloroform	107		107		70-130	0		30
Carbon tetrachloride	112		111		70-130	1		30
1,2-Dichloropropane	92		93		70-130	1		30
Dibromochloromethane	96		96		70-130	0		30
1,1,2-Trichloroethane	100		101		70-130	1		30
2-Chloroethylvinyl ether	74		77		70-130	4		30
Tetrachloroethene	117		118		70-130	1		30
Chlorobenzene	105		106		70-130	1		30
Trichlorofluoromethane	117		113		70-139	3		30
1,2-Dichloroethane	102		104		70-130	2		30
1,1,1-Trichloroethane	112		112		70-130	0		30
Bromodichloromethane	95		97		70-130	2		30
trans-1,3-Dichloropropene	94		94		70-130	0		30
cis-1,3-Dichloropropene	90		92		70-130	2		30
1,1-Dichloropropene	105		107		70-130	2		30
Bromoform	92		94		70-130	2		30
1,1,2,2-Tetrachloroethane	95		96		70-130	1		30
Benzene	102		102		70-130	0		30
Toluene	105		105		70-130	0		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,03-04 Batch: WG868973-1 WG868973-2								
Ethylbenzene	106		105		70-130	1		30
Chloromethane	100		94		52-130	6		30
Bromomethane	119		117		57-147	2		30
Vinyl chloride	114		111		67-130	3		30
Chloroethane	103		105		50-151	2		30
1,1-Dichloroethene	112		108		65-135	4		30
trans-1,2-Dichloroethene	106		106		70-130	0		30
Trichloroethene	108		110		70-130	2		30
1,2-Dichlorobenzene	107		110		70-130	3		30
1,3-Dichlorobenzene	112		113		70-130	1		30
1,4-Dichlorobenzene	111		112		70-130	1		30
Methyl tert butyl ether	90		91		66-130	1		30
p/m-Xylene	104		106		70-130	2		30
o-Xylene	102		103		70-130	1		30
cis-1,2-Dichloroethene	104		104		70-130	0		30
Dibromomethane	94		98		70-130	4		30
1,4-Dichlorobutane	92		93		70-130	1		30
1,2,3-Trichloropropane	95		98		68-130	3		30
Styrene	101		102		70-130	1		30
Dichlorodifluoromethane	97		94		30-146	3		30
Acetone	91		83		54-140	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,03-04 Batch: WG868973-1 WG868973-2								
Carbon disulfide	100		97		59-130	3		30
2-Butanone	76		71		70-130	7		30
Vinyl acetate	90		90		70-130	0		30
4-Methyl-2-pentanone	**64**	Q	**69**	Q	70-130	8		30
2-Hexanone	**60**	Q	**60**	Q	70-130	0		30
Ethyl methacrylate	75		76		70-130	1		30
Acrolein	80		79		70-130	1		30
Acrylonitrile	85		85		70-130	0		30
Bromochloromethane	107		109		70-130	2		30
Tetrahydrofuran	98		86		66-130	13		30
2,2-Dichloropropane	106		105		70-130	1		30
1,2-Dibromoethane	98		98		70-130	0		30
1,3-Dichloropropane	98		98		69-130	0		30
1,1,1,2-Tetrachloroethane	103		105		70-130	2		30
Bromobenzene	106		108		70-130	2		30
n-Butylbenzene	110		112		70-130	2		30
sec-Butylbenzene	109		109		70-130	0		30
tert-Butylbenzene	106		106		70-130	0		30
1,3,5-Trichlorobenzene	109		111		70-139	2		30
o-Chlorotoluene	107		109		70-130	2		30
p-Chlorotoluene	104		103		70-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,03-04 Batch: WG868973-1 WG868973-2								
1,2-Dibromo-3-chloropropane	81		83		68-130	2		30
Hexachlorobutadiene	106		110		67-130	4		30
Isopropylbenzene	106		106		70-130	0		30
p-Isopropyltoluene	107		107		70-130	0		30
Naphthalene	87		92		70-130	6		30
n-Propylbenzene	108		107		70-130	1		30
1,2,3-Trichlorobenzene	100		104		70-130	4		30
1,2,4-Trichlorobenzene	100		104		70-130	4		30
1,3,5-Trimethylbenzene	105		105		70-130	0		30
1,2,4-Trimethylbenzene	104		103		70-130	1		30
trans-1,4-Dichloro-2-butene	83		85		70-130	2		30
Halothane	112		113		70-130	1		20
Ethyl ether	98		98		67-130	0		30
Methyl Acetate	90		91		65-130	1		30
Ethyl Acetate	86		86		70-130	0		30
Isopropyl Ether	90		90		66-130	0		30
Cyclohexane	93		95		70-130	2		30
Tert-Butyl Alcohol	75		76		70-130	1		30
Ethyl-Tert-Butyl-Ether	89		91		70-130	2		30
Tertiary-Amyl Methyl Ether	83		87		70-130	5		30
1,4-Dioxane	89		97		65-136	9		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,03-04 Batch: WG868973-1 WG868973-2								
Methyl cyclohexane	96		99		70-130	3		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	108		106		70-130	2		30
1,4-Diethylbenzene	104		106		70-130	2		30
4-Ethyltoluene	107		107		70-130	0		30
1,2,4,5-Tetramethylbenzene	94		96		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		107		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	94		94		70-130
Dibromofluoromethane	106		106		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05-08 Batch: WG869090-1 WG869090-2								
Methylene chloride	91		91		70-130	0		20
1,1-Dichloroethane	92		92		70-130	0		20
Chloroform	90		90		70-130	0		20
Carbon tetrachloride	89		88		63-132	1		20
1,2-Dichloropropane	94		94		70-130	0		20
Dibromochloromethane	82		84		63-130	2		20
1,1,2-Trichloroethane	89		91		70-130	2		20
Tetrachloroethene	99		98		70-130	1		20
Chlorobenzene	94		93		75-130	1		25
Trichlorofluoromethane	80		80		62-150	0		20
1,2-Dichloroethane	83		84		70-130	1		20
1,1,1-Trichloroethane	92		90		67-130	2		20
Bromodichloromethane	83		86		67-130	4		20
trans-1,3-Dichloropropene	82		84		70-130	2		20
cis-1,3-Dichloropropene	83		84		70-130	1		20
1,1-Dichloropropene	101		100		70-130	1		20
Bromoform	79		82		54-136	4		20
1,1,2,2-Tetrachloroethane	86		90		67-130	5		20
Benzene	98		98		70-130	0		25
Toluene	101		100		70-130	1		25
Ethylbenzene	102		102		70-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05-08 Batch: WG869090-1 WG869090-2								
Chloromethane	100		103		64-130	3		20
Bromomethane	99		98		39-139	1		20
Vinyl chloride	97		95		55-140	2		20
Chloroethane	93		92		55-138	1		20
1,1-Dichloroethene	92		92		61-145	0		25
trans-1,2-Dichloroethene	96		95		70-130	1		20
Trichloroethene	92		92		70-130	0		25
1,2-Dichlorobenzene	91		92		70-130	1		20
1,3-Dichlorobenzene	96		97		70-130	1		20
1,4-Dichlorobenzene	93		94		70-130	1		20
Methyl tert butyl ether	89		93		63-130	4		20
p/m-Xylene	106		105		70-130	1		20
o-Xylene	110		110		70-130	0		20
cis-1,2-Dichloroethene	95		95		70-130	0		20
Dibromomethane	80		83		70-130	4		20
1,4-Dichlorobutane	95		98		70-130	3		20
1,2,3-Trichloropropane	91		96		64-130	5		20
Styrene	106		106		70-130	0		20
Dichlorodifluoromethane	104		101		36-147	3		20
Acetone	90		97		58-148	7		20
Carbon disulfide	96		94		51-130	2		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05-08 Batch: WG869090-1 WG869090-2								
2-Butanone	93		97		63-138	4		20
Vinyl acetate	87		90		70-130	3		20
4-Methyl-2-pentanone	82		89		59-130	8		20
2-Hexanone	73		78		57-130	7		20
Ethyl methacrylate	77		80		70-130	4		20
Acrylonitrile	84		90		70-130	7		20
Bromochloromethane	86		87		70-130	1		20
Tetrahydrofuran	100		105		58-130	5		20
2,2-Dichloropropane	98		98		63-133	0		20
1,2-Dibromoethane	86		89		70-130	3		20
1,3-Dichloropropane	93		94		70-130	1		20
1,1,1,2-Tetrachloroethane	89		90		64-130	1		20
Bromobenzene	97		98		70-130	1		20
n-Butylbenzene	104		104		53-136	0		20
sec-Butylbenzene	100		100		70-130	0		20
tert-Butylbenzene	100		99		70-130	1		20
o-Chlorotoluene	105		103		70-130	2		20
p-Chlorotoluene	106		106		70-130	0		20
1,2-Dibromo-3-chloropropane	82		84		41-144	2		20
Hexachlorobutadiene	94		93		63-130	1		20
Isopropylbenzene	107		107		70-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05-08 Batch: WG869090-1 WG869090-2								
p-Isopropyltoluene	96		97		70-130	1		20
Naphthalene	**46**	Q	**50**	Q	70-130	8		20
n-Propylbenzene	107		106		69-130	1		20
1,2,3-Trichlorobenzene	**47**	Q	**51**	Q	70-130	8		20
1,2,4-Trichlorobenzene	**61**	Q	**64**	Q	70-130	5		20
1,3,5-Trimethylbenzene	108		107		64-130	1		20
1,2,4-Trimethylbenzene	101		102		70-130	1		20
trans-1,4-Dichloro-2-butene	76		80		70-130	5		20
Ethyl ether	83		84		59-134	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	87		89		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	109		108		70-130
Dibromofluoromethane	90		91		70-130

PETROLEUM HYDROCARBONS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-01	Date Collected:	02/18/16 10:00
Client ID:	B106-S1	Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/24/16 13:23		
Analyst:	KD		
Percent Solids:	96%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	1.7:1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	4.75	4.75	1
C9-C12 Aliphatics	ND		mg/kg	4.75	4.75	1
C9-C10 Aromatics	ND		mg/kg	4.75	4.75	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	4.75	4.75	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	4.75	4.75	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	104		70-130
2,5-Dibromotoluene-FID	116		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-01			Date Collected:	02/18/16 10:00
Client ID:	B106-S1			Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/25/16 15:06	M.S. Analytical Date:	02/25/16 12:38	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/25/16
Percent Solids:	96%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	6.82	6.82	1
C19-C36 Aliphatics	ND		mg/kg	6.82	6.82	1
C11-C22 Aromatics	ND		mg/kg	6.82	6.82	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.82	6.82	1
Naphthalene	ND		mg/kg	0.027	0.007	1
2-Methylnaphthalene	ND		mg/kg	0.027	0.004	1
Acenaphthylene	ND		mg/kg	0.027	0.003	1
Acenaphthene	ND		mg/kg	0.027	0.002	1
Fluorene	ND		mg/kg	0.027	0.003	1
Phenanthrene	ND		mg/kg	0.027	0.003	1
Anthracene	ND		mg/kg	0.027	0.002	1
Fluoranthene	ND		mg/kg	0.027	0.004	1
Pyrene	0.007	J	mg/kg	0.027	0.004	1
Benzo(a)anthracene	ND		mg/kg	0.027	0.003	1
Chrysene	ND		mg/kg	0.027	0.010	1
Benzo(b)fluoranthene	ND		mg/kg	0.027	0.009	1
Benzo(k)fluoranthene	ND		mg/kg	0.027	0.010	1
Benzo(a)pyrene	ND		mg/kg	0.027	0.002	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.027	0.008	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.027	0.008	1
Benzo(ghi)perylene	ND		mg/kg	0.027	0.010	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-01
Client ID: B106-S1
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/18/16 10:00
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	70		40-140
o-Terphenyl	77		40-140
2-Fluorobiphenyl	77		40-140
2-Bromonaphthalene	79		40-140
O-Terphenyl-MS	88		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-02	Date Collected:	02/18/16 11:00
Client ID:	B105-S2	Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/24/16 14:04		
Analyst:	KD		
Percent Solids:	75%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	2.3:1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	9.14	9.14	1
C9-C12 Aliphatics	ND		mg/kg	9.14	9.14	1
C9-C10 Aromatics	ND		mg/kg	9.14	9.14	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	9.14	9.14	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	9.14	9.14	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	103		70-130
2,5-Dibromotoluene-FID	110		70-130

Project Name: AA HALL GRIST MILL **Lab Number:** L1604569

Project Number: 131.06156.010 **Report Date:** 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-02 D			Date Collected:	02/18/16 11:00
Client ID:	B105-S2			Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/28/16 21:12	M.S. Analytical Date:	02/26/16 11:02	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/27/16
Percent Solids:	75%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	130	130.	15
C19-C36 Aliphatics	168		mg/kg	130	130.	15
C11-C22 Aromatics	3440		mg/kg	130	130.	15
C11-C22 Aromatics, Adjusted	2890		mg/kg	130	130.	15
Naphthalene	6.63		mg/kg	1.73	0.430	50
2-Methylnaphthalene	1.73		mg/kg	1.73	0.223	50
Acenaphthylene	ND		mg/kg	1.73	0.214	50
Acenaphthene	4.97		mg/kg	1.73	0.143	50
Fluorene	8.46		mg/kg	1.73	0.162	50
Phenanthrene	83.0		mg/kg	1.73	0.198	50
Anthracene	25.5		mg/kg	1.73	0.148	50
Fluoranthene	95.8		mg/kg	1.73	0.255	50
Pyrene	77.5		mg/kg	1.73	0.247	50
Benzo(a)anthracene	47.5		mg/kg	1.73	0.164	50
Chrysene	47.4		mg/kg	1.73	0.612	50
Benzo(b)fluoranthene	54.0		mg/kg	1.73	0.553	50
Benzo(k)fluoranthene	17.0		mg/kg	1.73	0.662	50
Benzo(a)pyrene	40.6		mg/kg	1.73	0.132	50
Indeno(1,2,3-cd)Pyrene	16.9		mg/kg	1.73	0.539	50
Dibenzo(a,h)anthracene	6.57		mg/kg	1.73	0.528	50
Benzo(ghi)perylene	17.8		mg/kg	1.73	0.626	50

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-02 D
Client ID: B105-S2
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/18/16 11:00
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	53		40-140
o-Terphenyl	**754**	Q	40-140
2-Fluorobiphenyl	73		40-140
2-Bromonaphthalene	76		40-140
O-Terphenyl-MS	**0**	Q	40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-03	Date Collected:	02/18/16 12:10
Client ID:	B104-S1	Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/24/16 14:44		
Analyst:	KD		
Percent Solids:	92%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	1.6:1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	4.79	4.79	1
C9-C12 Aliphatics	ND		mg/kg	4.79	4.79	1
C9-C10 Aromatics	ND		mg/kg	4.79	4.79	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	4.79	4.79	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	4.79	4.79	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	109		70-130
2,5-Dibromotoluene-FID	120		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-03			Date Collected:	02/18/16 12:10
Client ID:	B104-S1			Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/25/16 13:27	M.S. Analytical Date:	02/25/16 13:11	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/25/16
Percent Solids:	92%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	7.19	7.19	1
C19-C36 Aliphatics	ND		mg/kg	7.19	7.19	1
C11-C22 Aromatics	ND		mg/kg	7.19	7.19	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	7.19	7.19	1
Naphthalene	ND		mg/kg	0.029	0.007	1
2-Methylnaphthalene	ND		mg/kg	0.029	0.004	1
Acenaphthylene	ND		mg/kg	0.029	0.004	1
Acenaphthene	ND		mg/kg	0.029	0.002	1
Fluorene	ND		mg/kg	0.029	0.003	1
Phenanthrene	ND		mg/kg	0.029	0.003	1
Anthracene	ND		mg/kg	0.029	0.002	1
Fluoranthene	ND		mg/kg	0.029	0.004	1
Pyrene	ND		mg/kg	0.029	0.004	1
Benzo(a)anthracene	ND		mg/kg	0.029	0.003	1
Chrysene	ND		mg/kg	0.029	0.010	1
Benzo(b)fluoranthene	ND		mg/kg	0.029	0.009	1
Benzo(k)fluoranthene	ND		mg/kg	0.029	0.011	1
Benzo(a)pyrene	ND		mg/kg	0.029	0.002	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.029	0.009	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.029	0.009	1
Benzo(ghi)perylene	ND		mg/kg	0.029	0.010	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-03
Client ID: B104-S1
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/18/16 12:10
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	53		40-140
o-Terphenyl	58		40-140
2-Fluorobiphenyl	75		40-140
2-Bromonaphthalene	76		40-140
O-Terphenyl-MS	74		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-04	Date Collected:	02/18/16 13:10
Client ID:	B108-S1	Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Not Specified
Matrix:	Soil		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/24/16 15:24		
Analyst:	KD		
Percent Solids:	95%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Were samples received in methanol?	Yes (Covering the Soil)
Methanol ratio:	1.8:1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		mg/kg	5.27	5.27	1
C9-C12 Aliphatics	ND		mg/kg	5.27	5.27	1
C9-C10 Aromatics	ND		mg/kg	5.27	5.27	1
C5-C8 Aliphatics, Adjusted	ND		mg/kg	5.27	5.27	1
C9-C12 Aliphatics, Adjusted	ND		mg/kg	5.27	5.27	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	101		70-130
2,5-Dibromotoluene-FID	112		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-04			Date Collected:	02/18/16 13:10
Client ID:	B108-S1			Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Not Specified
Matrix:	Soil			Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/23/16 09:30
Analytical Date:	02/25/16 14:16	M.S. Analytical Date:	02/25/16 13:45	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/25/16
Percent Solids:	95%				

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	6.82	6.82	1
C19-C36 Aliphatics	ND		mg/kg	6.82	6.82	1
C11-C22 Aromatics	ND		mg/kg	6.82	6.82	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.82	6.82	1
Naphthalene	0.009	J	mg/kg	0.027	0.007	1
2-Methylnaphthalene	0.007	J	mg/kg	0.027	0.004	1
Acenaphthylene	0.009	J	mg/kg	0.027	0.003	1
Acenaphthene	0.006	J	mg/kg	0.027	0.002	1
Fluorene	0.010	J	mg/kg	0.027	0.003	1
Phenanthrene	0.060		mg/kg	0.027	0.003	1
Anthracene	0.012	J	mg/kg	0.027	0.002	1
Fluoranthene	0.067		mg/kg	0.027	0.004	1
Pyrene	0.091		mg/kg	0.027	0.004	1
Benzo(a)anthracene	0.031		mg/kg	0.027	0.003	1
Chrysene	0.037		mg/kg	0.027	0.010	1
Benzo(b)fluoranthene	0.030		mg/kg	0.027	0.009	1
Benzo(k)fluoranthene	0.012	J	mg/kg	0.027	0.010	1
Benzo(a)pyrene	0.029		mg/kg	0.027	0.002	1
Indeno(1,2,3-cd)Pyrene	0.018	J	mg/kg	0.027	0.008	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.027	0.008	1
Benzo(ghi)perylene	0.023	J	mg/kg	0.027	0.010	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-04
Client ID: B108-S1
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/18/16 13:10
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	68		40-140
o-Terphenyl	63		40-140
2-Fluorobiphenyl	72		40-140
2-Bromonaphthalene	73		40-140
O-Terphenyl-MS	79		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-05	Date Collected:	02/18/16 12:30
Client ID:	MW101	Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Field Filtered (Metals)
Matrix:	Water		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/24/16 13:39		
Analyst:	KD		

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	50.0	1
C9-C12 Aliphatics	ND		ug/l	50.0	50.0	1
C9-C10 Aromatics	ND		ug/l	50.0	50.0	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	50.0	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	50.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	94		70-130
2,5-Dibromotoluene-FID	101		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-05			Date Collected:	02/18/16 12:30
Client ID:	MW101			Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Field Filtered (Metals)
Matrix:	Water			Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/25/16 09:13
Analytical Date:	02/26/16 16:12	M.S. Analytical Date:	02/28/16 06:17	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/26/16

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	100.	1
C19-C36 Aliphatics	ND		ug/l	100	100.	1
C11-C22 Aromatics	ND		ug/l	100	100.	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	100.	1
Naphthalene	0.757		ug/l	0.400	0.136	1
2-Methylnaphthalene	0.897		ug/l	0.400	0.077	1
Acenaphthylene	0.200	J	ug/l	0.400	0.054	1
Acenaphthene	0.363	J	ug/l	0.400	0.091	1
Fluorene	0.369	J	ug/l	0.400	0.097	1
Phenanthrene	0.926		ug/l	0.400	0.084	1
Anthracene	0.115	J	ug/l	0.400	0.079	1
Fluoranthene	0.201	J	ug/l	0.400	0.121	1
Pyrene	0.164	J	ug/l	0.400	0.114	1
Benzo(a)anthracene	ND		ug/l	0.400	0.088	1
Chrysene	ND		ug/l	0.400	0.102	1
Benzo(b)fluoranthene	ND		ug/l	0.400	0.102	1
Benzo(k)fluoranthene	ND		ug/l	0.400	0.126	1
Benzo(a)pyrene	ND		ug/l	0.200	0.072	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	0.095	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	0.091	1
Benzo(ghi)perylene	ND		ug/l	0.400	0.102	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-05
Client ID: MW101
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/18/16 12:30
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	75		40-140
o-Terphenyl	61		40-140
2-Fluorobiphenyl	61		40-140
2-Bromonaphthalene	63		40-140
O-Terphenyl-MS	47		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-06			Date Collected:	02/18/16 13:45
Client ID:	MW102			Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Field Filtered (Metals)
Matrix:	Water			Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/25/16 09:13
Analytical Date:	02/26/16 16:43	M.S. Analytical Date:	02/28/16 06:48	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/26/16

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	100.	1
C19-C36 Aliphatics	ND		ug/l	100	100.	1
C11-C22 Aromatics	ND		ug/l	100	100.	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	100.	1
Naphthalene	ND		ug/l	0.400	0.136	1
2-Methylnaphthalene	ND		ug/l	0.400	0.077	1
Acenaphthylene	ND		ug/l	0.400	0.054	1
Acenaphthene	ND		ug/l	0.400	0.091	1
Fluorene	ND		ug/l	0.400	0.097	1
Phenanthrene	ND		ug/l	0.400	0.084	1
Anthracene	ND		ug/l	0.400	0.079	1
Fluoranthene	ND		ug/l	0.400	0.121	1
Pyrene	ND		ug/l	0.400	0.114	1
Benzo(a)anthracene	ND		ug/l	0.400	0.088	1
Chrysene	ND		ug/l	0.400	0.102	1
Benzo(b)fluoranthene	ND		ug/l	0.400	0.102	1
Benzo(k)fluoranthene	ND		ug/l	0.400	0.126	1
Benzo(a)pyrene	ND		ug/l	0.200	0.072	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	0.095	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	0.091	1
Benzo(ghi)perylene	ND		ug/l	0.400	0.102	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-06
Client ID: MW102
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/18/16 13:45
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	69		40-140
o-Terphenyl	61		40-140
2-Fluorobiphenyl	58		40-140
2-Bromonaphthalene	58		40-140
O-Terphenyl-MS	89		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-06 D	Date Collected:	02/18/16 13:45
Client ID:	MW102	Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Field Filtered (Metals)
Matrix:	Water		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/24/16 14:20		
Analyst:	KD		

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Volatile Petroleum Hydrocarbons - Westborough Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
C5-C8 Aliphatics	ND		ug/l	250	250.	5
C9-C12 Aliphatics	416		ug/l	250	250.	5
C9-C10 Aromatics	ND		ug/l	250	250.	5
C5-C8 Aliphatics, Adjusted	ND		ug/l	250	250.	5
C9-C12 Aliphatics, Adjusted	416		ug/l	250	250.	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	96		70-130
2,5-Dibromotoluene-FID	102		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-07	Date Collected:	02/18/16 14:35
Client ID:	MW103	Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Field Filtered (Metals)
Matrix:	Water		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/24/16 15:00		
Analyst:	KD		

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Volatile Petroleum Hydrocarbons - Westborough Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
C5-C8 Aliphatics	698		ug/l	50.0	50.0	1
C9-C12 Aliphatics	434		ug/l	50.0	50.0	1
C9-C10 Aromatics	186		ug/l	50.0	50.0	1
C5-C8 Aliphatics, Adjusted	692		ug/l	50.0	50.0	1
C9-C12 Aliphatics, Adjusted	239		ug/l	50.0	50.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	102		70-130
2,5-Dibromotoluene-FID	109		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-07			Date Collected:	02/18/16 14:35
Client ID:	MW103			Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Field Filtered (Metals)
Matrix:	Water			Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/25/16 09:13
Analytical Date:	02/26/16 17:15	M.S. Analytical Date:	02/28/16 07:19	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/26/16

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	100.	1
C19-C36 Aliphatics	ND		ug/l	100	100.	1
C11-C22 Aromatics	116		ug/l	100	100.	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	100.	1
Naphthalene	13.7		ug/l	0.400	0.136	1
2-Methylnaphthalene	3.27		ug/l	0.400	0.077	1
Acenaphthylene	0.222	J	ug/l	0.400	0.054	1
Acenaphthene	3.11		ug/l	0.400	0.091	1
Fluorene	2.89		ug/l	0.400	0.097	1
Phenanthrene	5.25		ug/l	0.400	0.084	1
Anthracene	1.12		ug/l	0.400	0.079	1
Fluoranthene	1.64		ug/l	0.400	0.121	1
Pyrene	1.02		ug/l	0.400	0.114	1
Benzo(a)anthracene	ND		ug/l	0.400	0.088	1
Chrysene	ND		ug/l	0.400	0.102	1
Benzo(b)fluoranthene	ND		ug/l	0.400	0.102	1
Benzo(k)fluoranthene	ND		ug/l	0.400	0.126	1
Benzo(a)pyrene	ND		ug/l	0.200	0.072	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	0.095	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	0.091	1
Benzo(ghi)perylene	ND		ug/l	0.400	0.102	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-07
Client ID: MW103
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/18/16 14:35
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	62		40-140
o-Terphenyl	65		40-140
2-Fluorobiphenyl	64		40-140
2-Bromonaphthalene	64		40-140
O-Terphenyl-MS	86		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-08	Date Collected:	02/18/16 14:35
Client ID:	MW-DUP	Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME	Field Prep:	Field Filtered (Metals)
Matrix:	Water		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	02/24/16 15:40		
Analyst:	KD		

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	685		ug/l	50.0	50.0	1
C9-C12 Aliphatics	426		ug/l	50.0	50.0	1
C9-C10 Aromatics	186		ug/l	50.0	50.0	1
C5-C8 Aliphatics, Adjusted	679		ug/l	50.0	50.0	1
C9-C12 Aliphatics, Adjusted	230		ug/l	50.0	50.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	103		70-130
2,5-Dibromotoluene-FID	104		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID:	L1604569-08			Date Collected:	02/18/16 14:35
Client ID:	MW-DUP			Date Received:	02/19/16
Sample Location:	DAMARISCOTTA, ME			Field Prep:	Field Filtered (Metals)
Matrix:	Water			Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1			Extraction Date:	02/25/16 09:13
Analytical Date:	02/26/16 17:46	M.S. Analytical Date:	02/28/16 07:50	Cleanup Method1:	EPH-04-1
Analyst:	DV	M.S. Analyst:	KV	Cleanup Date1:	02/26/16

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	100.	1
C19-C36 Aliphatics	ND		ug/l	100	100.	1
C11-C22 Aromatics	103		ug/l	100	100.	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	100.	1
Naphthalene	13.8		ug/l	0.400	0.136	1
2-Methylnaphthalene	3.31		ug/l	0.400	0.077	1
Acenaphthylene	0.219	J	ug/l	0.400	0.054	1
Acenaphthene	3.06		ug/l	0.400	0.091	1
Fluorene	2.81		ug/l	0.400	0.097	1
Phenanthrene	5.02		ug/l	0.400	0.084	1
Anthracene	1.06		ug/l	0.400	0.079	1
Fluoranthene	1.55		ug/l	0.400	0.121	1
Pyrene	0.951		ug/l	0.400	0.114	1
Benzo(a)anthracene	ND		ug/l	0.400	0.088	1
Chrysene	ND		ug/l	0.400	0.102	1
Benzo(b)fluoranthene	ND		ug/l	0.400	0.102	1
Benzo(k)fluoranthene	ND		ug/l	0.400	0.126	1
Benzo(a)pyrene	ND		ug/l	0.200	0.072	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	0.095	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	0.091	1
Benzo(ghi)perylene	ND		ug/l	0.400	0.102	1

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-08
Client ID: MW-DUP
Sample Location: DAMARISCOTTA, ME
Date Collected: 02/18/16 14:35
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

EPH w/MS Targets - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	61		40-140
o-Terphenyl	63		40-140
2-Fluorobiphenyl	63		40-140
2-Bromonaphthalene	63		40-140
O-Terphenyl-MS	82		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 02/25/16 10:07
Analyst: DV

M.S. Analytical Date: 02/25/16 09:59
M.S. Analyst: KV

Extraction Method: EPA 3546
Extraction Date: 02/23/16 09:30
Cleanup Method: EPH-04-1
Cleanup Date: 02/25/16

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 01-04 Batch: WG867534-1					
C9-C18 Aliphatics	ND		mg/kg	6.43	6.43
C19-C36 Aliphatics	ND		mg/kg	6.43	6.43
C11-C22 Aromatics	ND		mg/kg	6.43	6.43
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.43	6.43
Naphthalene	ND		mg/kg	0.026	0.006
2-Methylnaphthalene	ND		mg/kg	0.026	0.003
Acenaphthylene	ND		mg/kg	0.026	0.003
Acenaphthene	ND		mg/kg	0.026	0.002
Fluorene	ND		mg/kg	0.026	0.002
Phenanthrene	ND		mg/kg	0.026	0.003
Anthracene	ND		mg/kg	0.026	0.002
Fluoranthene	ND		mg/kg	0.026	0.004
Pyrene	ND		mg/kg	0.026	0.004
Benzo(a)anthracene	ND		mg/kg	0.026	0.002
Chrysene	ND		mg/kg	0.026	0.009
Benzo(b)fluoranthene	ND		mg/kg	0.026	0.008
Benzo(k)fluoranthene	ND		mg/kg	0.026	0.010
Benzo(a)pyrene	ND		mg/kg	0.026	0.002
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.026	0.008
Dibenzo(a,h)anthracene	ND		mg/kg	0.026	0.008
Benzo(ghi)perylene	ND		mg/kg	0.026	0.009

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 02/25/16 10:07
Analyst: DV

02/25/16 09:59
KV

Extraction Method: EPA 3546
Extraction Date: 02/23/16 09:30
Cleanup Method: EPH-04-1
Cleanup Date: 02/25/16

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 01-04 Batch: WG867534-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	66		40-140
o-Terphenyl	82		40-140
2-Fluorobiphenyl	81		40-140
2-Bromonaphthalene	81		40-140
O-Terphenyl-MS	89		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 02/26/16 08:38
Analyst: DV

M.S. Analytical Date: 02/26/16 06:51
M.S. Analyst: KV

Extraction Method: EPA 3510C
Extraction Date: 02/25/16 09:13
Cleanup Method: EPH-04-1
Cleanup Date: 02/25/16

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 05-08 Batch: WG868248-1					
C9-C18 Aliphatics	ND		ug/l	100	100.
C19-C36 Aliphatics	ND		ug/l	100	100.
C11-C22 Aromatics	ND		ug/l	100	100.
C11-C22 Aromatics, Adjusted	ND		ug/l	100	100.
Naphthalene	ND		ug/l	0.400	0.136
2-Methylnaphthalene	ND		ug/l	0.400	0.077
Acenaphthylene	ND		ug/l	0.400	0.054
Acenaphthene	ND		ug/l	0.400	0.091
Fluorene	ND		ug/l	0.400	0.097
Phenanthrene	ND		ug/l	0.400	0.084
Anthracene	ND		ug/l	0.400	0.079
Fluoranthene	ND		ug/l	0.400	0.121
Pyrene	ND		ug/l	0.400	0.114
Benzo(a)anthracene	ND		ug/l	0.400	0.088
Chrysene	ND		ug/l	0.400	0.102
Benzo(b)fluoranthene	ND		ug/l	0.400	0.102
Benzo(k)fluoranthene	ND		ug/l	0.400	0.126
Benzo(a)pyrene	ND		ug/l	0.200	0.072
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	0.095
Dibenzo(a,h)anthracene	ND		ug/l	0.400	0.091
Benzo(ghi)perylene	ND		ug/l	0.400	0.102

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 02/26/16 08:38
Analyst: DV

02/26/16 06:51
KV

Extraction Method: EPA 3510C
Extraction Date: 02/25/16 09:13
Cleanup Method: EPH-04-1
Cleanup Date: 02/25/16

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 05-08 Batch: WG868248-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	94		40-140
o-Terphenyl	79		40-140
2-Fluorobiphenyl	80		40-140
2-Bromonaphthalene	78		40-140
O-Terphenyl-MS	77		40-140

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 100,VPH-04-1.1
Analytical Date: 02/24/16 09:57
Analyst: KD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Petroleum Hydrocarbons - Westborough Lab for sample(s): 05-08 Batch: WG868263-3					
C5-C8 Aliphatics	ND		ug/l	50.0	50.0
C9-C12 Aliphatics	ND		ug/l	50.0	50.0
C9-C10 Aromatics	ND		ug/l	50.0	50.0
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	50.0
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	50.0

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	90		70-130
2,5-Dibromotoluene-FID	95		70-130

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 100,VPH-04-1.1
Analytical Date: 02/24/16 09:57
Analyst: KD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Petroleum Hydrocarbons - Westborough Lab for sample(s): 01-04 Batch: WG868268-3					
C5-C8 Aliphatics	ND		mg/kg	2.67	2.67
C9-C12 Aliphatics	ND		mg/kg	2.67	2.67
C9-C10 Aromatics	ND		mg/kg	2.67	2.67
C5-C8 Aliphatics, Adjusted	ND		mg/kg	2.67	2.67
C9-C12 Aliphatics, Adjusted	ND		mg/kg	2.67	2.67

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	96		70-130
2,5-Dibromotoluene-FID	105		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-04 Batch: WG867534-2 WG867534-3								
C9-C18 Aliphatics	58		53		40-140	9		25
C19-C36 Aliphatics	72		70		40-140	3		25
C11-C22 Aromatics	74		84		40-140	13		25
Naphthalene	72		75		40-140	4		25
2-Methylnaphthalene	79		85		40-140	7		25
Acenaphthylene	77		85		40-140	10		25
Acenaphthene	86		95		40-140	10		25
Fluorene	89		103		40-140	15		25
Phenanthrene	90		103		40-140	13		25
Anthracene	93		107		40-140	14		25
Fluoranthene	99		116		40-140	16		25
Pyrene	95		109		40-140	14		25
Benzo(a)anthracene	88		108		40-140	20		25
Chrysene	91		112		40-140	21		25
Benzo(b)fluoranthene	96		117		40-140	20		25
Benzo(k)fluoranthene	91		114		40-140	22		25
Benzo(a)pyrene	83		105		40-140	23		25
Indeno(1,2,3-cd)Pyrene	91		113		40-140	22		25
Dibenzo(a,h)anthracene	78		105		40-140	**30**	Q	25
Benzo(ghi)perylene	89		109		40-140	20		25
Nonane (C9)	49		44		30-140	11		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-04 Batch: WG867534-2 WG867534-3								
Decane (C10)	57		52		40-140	9		25
Dodecane (C12)	62		58		40-140	7		25
Tetradecane (C14)	64		60		40-140	6		25
Hexadecane (C16)	67		63		40-140	6		25
Octadecane (C18)	72		69		40-140	4		25
Nonadecane (C19)	73		70		40-140	4		25
Eicosane (C20)	74		72		40-140	3		25
Docosane (C22)	75		72		40-140	4		25
Tetracosane (C24)	74		72		40-140	3		25
Hexacosane (C26)	73		71		40-140	3		25
Octacosane (C28)	73		70		40-140	4		25
Triacontane (C30)	71		69		40-140	3		25
Hexatriacontane (C36)	66		65		40-140	2		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-04 Batch: WG867534-2 WG867534-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	68		62		40-140
o-Terphenyl	62		71		40-140
2-Fluorobiphenyl	68		69		40-140
2-Bromonaphthalene	73		73		40-140
O-Terphenyl-MS	90		96		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

Lab Control Sample Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 05-08 Batch: WG868248-2 WG868248-3								
C9-C18 Aliphatics	64		67		40-140	5		25
C19-C36 Aliphatics	91		92		40-140	1		25
C11-C22 Aromatics	79		86		40-140	8		25
Naphthalene	69		70		40-140	1		25
2-Methylnaphthalene	78		78		40-140	0		25
Acenaphthylene	86		84		40-140	2		25
Acenaphthene	89		87		40-140	2		25
Fluorene	96		92		40-140	4		25
Phenanthrene	85		83		40-140	2		25
Anthracene	97		95		40-140	2		25
Fluoranthene	102		100		40-140	2		25
Pyrene	96		95		40-140	1		25
Benzo(a)anthracene	87		86		40-140	1		25
Chrysene	96		95		40-140	1		25
Benzo(b)fluoranthene	106		108		40-140	2		25
Benzo(k)fluoranthene	91		91		40-140	0		25
Benzo(a)pyrene	93		94		40-140	1		25
Indeno(1,2,3-cd)Pyrene	93		96		40-140	3		25
Dibenzo(a,h)anthracene	86		89		40-140	3		25
Benzo(ghi)perylene	89		95		40-140	7		25
Nonane (C9)	32		34		30-140	6		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 05-08 Batch: WG868248-2 WG868248-3								
Decane (C10)	45		48		40-140	6		25
Dodecane (C12)	65		67		40-140	3		25
Tetradecane (C14)	79		78		40-140	1		25
Hexadecane (C16)	85		85		40-140	0		25
Octadecane (C18)	89		91		40-140	2		25
Nonadecane (C19)	90		92		40-140	2		25
Eicosane (C20)	92		94		40-140	2		25
Docosane (C22)	92		93		40-140	1		25
Tetracosane (C24)	92		93		40-140	1		25
Hexacosane (C26)	91		93		40-140	2		25
Octacosane (C28)	93		95		40-140	2		25
Triacontane (C30)	91		93		40-140	2		25
Hexatriacontane (C36)	91		93		40-140	2		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 05-08 Batch: WG868248-2 WG868248-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	80		81		40-140
o-Terphenyl	81		82		40-140
2-Fluorobiphenyl	70		76		40-140
2-Bromonaphthalene	71		77		40-140
O-Terphenyl-MS	82		79		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 05-08 Batch: WG868263-1 WG868263-2								
C5-C8 Aliphatics	88		88		70-130	0		25
C9-C12 Aliphatics	100		99		70-130	1		25
C9-C10 Aromatics	98		99		70-130	1		25
Benzene	94		95		70-130	1		25
Toluene	95		96		70-130	1		25
Ethylbenzene	101		102		70-130	1		25
p/m-Xylene	99		100		70-130	1		25
o-Xylene	97		98		70-130	1		25
Methyl tert butyl ether	94		95		70-130	1		25
Naphthalene	97		98		70-130	1		25
1,2,4-Trimethylbenzene	98		99		70-130	1		25
Pentane	79		80		70-130	1		25
2-Methylpentane	89		90		70-130	1		25
2,2,4-Trimethylpentane	93		93		70-130	0		25
n-Nonane	96		95		30-130	1		25
n-Decane	94		94		70-130	1		25
n-Butylcyclohexane	98		98		70-130	0		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 05-08 Batch: WG868263-1 WG868263-2								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,5-Dibromotoluene-PID	108		105		70-130
2,5-Dibromotoluene-FID	112		110		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-04 Batch: WG868268-1 WG868268-2								
C5-C8 Aliphatics	95		96		70-130	1		25
C9-C12 Aliphatics	107		105		70-130	2		25
C9-C10 Aromatics	100		99		70-130	1		25
Benzene	101		101		70-130	0		25
Toluene	102		102		70-130	0		25
Ethylbenzene	104		103		70-130	1		25
p/m-Xylene	102		101		70-130	1		25
o-Xylene	103		103		70-130	0		25
Methyl tert butyl ether	106		107		70-130	1		25
Naphthalene	96		96		70-130	0		25
1,2,4-Trimethylbenzene	100		99		70-130	1		25
Pentane	86		85		70-130	1		25
2-Methylpentane	98		99		70-130	1		25
2,2,4-Trimethylpentane	101		101		70-130	0		25
n-Nonane	105		104		30-130	1		25
n-Decane	106		104		70-130	2		25
n-Butylcyclohexane	109		108		70-130	1		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-04 Batch: WG868268-1 WG868268-2								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,5-Dibromotoluene-PID	97		95		70-130
2,5-Dibromotoluene-FID	105		106		70-130

METALS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-01
Client ID: B106-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 96%

Date Collected: 02/18/16 10:00
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	8.6		mg/kg	0.41	0.08	1	02/20/16 09:24	02/22/16 10:57	EPA 3050B	1,6010C	PS
Barium, Total	43		mg/kg	0.41	0.12	1	02/20/16 09:24	02/22/16 10:57	EPA 3050B	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.41	0.03	1	02/20/16 09:24	02/22/16 10:57	EPA 3050B	1,6010C	PS
Chromium, Total	22		mg/kg	0.41	0.08	1	02/20/16 09:24	02/22/16 10:57	EPA 3050B	1,6010C	PS
Lead, Total	4.1		mg/kg	2.0	0.08	1	02/20/16 09:24	02/22/16 10:57	EPA 3050B	1,6010C	PS
Mercury, Total	ND		mg/kg	0.07	0.01	1	02/23/16 09:20	02/23/16 23:10	EPA 7471B	1,7471B	EA
Selenium, Total	0.40	J	mg/kg	0.82	0.12	1	02/20/16 09:24	02/22/16 10:57	EPA 3050B	1,6010C	PS
Silver, Total	ND		mg/kg	0.41	0.08	1	02/20/16 09:24	02/22/16 10:57	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Lab Number: L1604569
Project Number: 131.06156.010
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-02
Client ID: B105-S2
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 75%

Date Collected: 02/18/16 11:00
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	16		mg/kg	0.53	0.11	1	02/20/16 09:24	02/22/16 15:37	EPA 3050B	1,6010C	PS
Barium, Total	61		mg/kg	0.53	0.16	1	02/20/16 09:24	02/22/16 15:37	EPA 3050B	1,6010C	PS
Cadmium, Total	3.2		mg/kg	0.53	0.04	1	02/20/16 09:24	02/22/16 15:37	EPA 3050B	1,6010C	PS
Chromium, Total	27		mg/kg	0.53	0.11	1	02/20/16 09:24	02/22/16 15:37	EPA 3050B	1,6010C	PS
Lead, Total	790		mg/kg	2.6	0.11	1	02/20/16 09:24	02/22/16 15:37	EPA 3050B	1,6010C	PS
Mercury, Total	1.2		mg/kg	0.09	0.02	1	02/23/16 09:20	02/23/16 23:12	EPA 7471B	1,7471B	EA
Selenium, Total	0.18	J	mg/kg	1.1	0.16	1	02/20/16 09:24	02/22/16 15:37	EPA 3050B	1,6010C	PS
Silver, Total	0.76		mg/kg	0.53	0.11	1	02/20/16 09:24	02/22/16 15:37	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Lab Number: L1604569
Project Number: 131.06156.010
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-03
Client ID: B104-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 92%

Date Collected: 02/18/16 12:10
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	8.1		mg/kg	0.43	0.09	1	02/20/16 09:24	02/22/16 15:41	EPA 3050B	1,6010C	PS
Barium, Total	38		mg/kg	0.43	0.13	1	02/20/16 09:24	02/22/16 15:41	EPA 3050B	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.43	0.03	1	02/20/16 09:24	02/22/16 15:41	EPA 3050B	1,6010C	PS
Chromium, Total	24		mg/kg	0.43	0.09	1	02/20/16 09:24	02/22/16 15:41	EPA 3050B	1,6010C	PS
Lead, Total	1.6	J	mg/kg	2.2	0.09	1	02/20/16 09:24	02/22/16 15:41	EPA 3050B	1,6010C	PS
Mercury, Total	ND		mg/kg	0.07	0.02	1	02/23/16 09:20	02/23/16 23:14	EPA 7471B	1,7471B	EA
Selenium, Total	0.19	J	mg/kg	0.87	0.13	1	02/20/16 09:24	02/22/16 15:41	EPA 3050B	1,6010C	PS
Silver, Total	ND		mg/kg	0.43	0.09	1	02/20/16 09:24	02/22/16 15:41	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-04
Client ID: B108-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil
Percent Solids: 95%

Date Collected: 02/18/16 13:10
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Arsenic, Total	9.4		mg/kg	0.42	0.08	1	02/20/16 09:24	02/22/16 15:46	EPA 3050B	1,6010C	PS
Barium, Total	52		mg/kg	0.42	0.12	1	02/20/16 09:24	02/22/16 15:46	EPA 3050B	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.42	0.03	1	02/20/16 09:24	02/22/16 15:46	EPA 3050B	1,6010C	PS
Chromium, Total	23		mg/kg	0.42	0.08	1	02/20/16 09:24	02/22/16 15:46	EPA 3050B	1,6010C	PS
Lead, Total	1.8	J	mg/kg	2.1	0.08	1	02/20/16 09:24	02/22/16 15:46	EPA 3050B	1,6010C	PS
Mercury, Total	ND		mg/kg	0.07	0.02	1	02/23/16 09:20	02/23/16 23:16	EPA 7471B	1,7471B	EA
Selenium, Total	0.43	J	mg/kg	0.84	0.12	1	02/20/16 09:24	02/22/16 15:46	EPA 3050B	1,6010C	PS
Silver, Total	ND		mg/kg	0.42	0.08	1	02/20/16 09:24	02/22/16 15:46	EPA 3050B	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-05
Client ID: MW101
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Date Collected: 02/18/16 12:30
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Westborough Lab											
Arsenic, Dissolved	0.0207		mg/l	0.0050	0.0020	1	02/23/16 11:35	02/25/16 22:30	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.260		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 22:30	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	ND		mg/l	0.0050	0.0007	1	02/23/16 11:35	02/25/16 22:30	EPA 3005A	1,6010C	PS
Chromium, Dissolved	ND		mg/l	0.010	0.0020	1	02/23/16 11:35	02/25/16 22:30	EPA 3005A	1,6010C	PS
Lead, Dissolved	ND		mg/l	0.0100	0.0020	1	02/23/16 11:35	02/25/16 22:30	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	02/23/16 14:43	02/25/16 15:35	EPA 7470A	1,7470A	JH
Selenium, Dissolved	ND		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 22:30	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.0070	0.0020	1	02/23/16 11:35	02/25/16 22:30	EPA 3005A	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-06
Client ID: MW102
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Date Collected: 02/18/16 13:45
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Westborough Lab											
Arsenic, Dissolved	ND		mg/l	0.0050	0.0020	1	02/23/16 11:35	02/25/16 23:30	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.594		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 23:30	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	ND		mg/l	0.0050	0.0007	1	02/23/16 11:35	02/25/16 23:30	EPA 3005A	1,6010C	PS
Chromium, Dissolved	ND		mg/l	0.010	0.0020	1	02/23/16 11:35	02/25/16 23:30	EPA 3005A	1,6010C	PS
Lead, Dissolved	ND		mg/l	0.0100	0.0020	1	02/23/16 11:35	02/25/16 23:30	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	02/23/16 14:43	02/25/16 15:41	EPA 7470A	1,7470A	JH
Selenium, Dissolved	ND		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 23:30	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.0070	0.0020	1	02/23/16 11:35	02/25/16 23:30	EPA 3005A	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-07
Client ID: MW103
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Date Collected: 02/18/16 14:35
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Westborough Lab											
Arsenic, Dissolved	0.0096		mg/l	0.0050	0.0020	1	02/23/16 11:35	02/25/16 19:21	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.201		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 19:21	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	ND		mg/l	0.0050	0.0007	1	02/23/16 11:35	02/25/16 19:21	EPA 3005A	1,6010C	PS
Chromium, Dissolved	ND		mg/l	0.010	0.0020	1	02/23/16 11:35	02/25/16 19:21	EPA 3005A	1,6010C	PS
Lead, Dissolved	ND		mg/l	0.0100	0.0020	1	02/23/16 11:35	02/25/16 19:21	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	02/23/16 14:43	02/25/16 15:47	EPA 7470A	1,7470A	JH
Selenium, Dissolved	ND		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 19:21	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.0070	0.0020	1	02/23/16 11:35	02/25/16 19:21	EPA 3005A	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-08
Client ID: MW-DUP
Sample Location: DAMARISCOTTA, ME
Matrix: Water
Date Collected: 02/18/16 14:35
Date Received: 02/19/16
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Westborough Lab											
Arsenic, Dissolved	0.0030	J	mg/l	0.0050	0.0020	1	02/23/16 11:35	02/25/16 23:34	EPA 3005A	1,6010C	PS
Barium, Dissolved	0.204		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 23:34	EPA 3005A	1,6010C	PS
Cadmium, Dissolved	ND		mg/l	0.0050	0.0007	1	02/23/16 11:35	02/25/16 23:34	EPA 3005A	1,6010C	PS
Chromium, Dissolved	ND		mg/l	0.010	0.0020	1	02/23/16 11:35	02/25/16 23:34	EPA 3005A	1,6010C	PS
Lead, Dissolved	ND		mg/l	0.0100	0.0020	1	02/23/16 11:35	02/25/16 23:34	EPA 3005A	1,6010C	PS
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	02/23/16 14:43	02/25/16 15:49	EPA 7470A	1,7470A	JH
Selenium, Dissolved	ND		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 23:34	EPA 3005A	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.0070	0.0020	1	02/23/16 11:35	02/25/16 23:34	EPA 3005A	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01-04 Batch: WG866955-1										
Arsenic, Total	ND		mg/kg	0.40	0.08	1	02/20/16 09:24	02/22/16 10:40	1,6010C	PS
Barium, Total	ND		mg/kg	0.40	0.12	1	02/20/16 09:24	02/22/16 10:40	1,6010C	PS
Cadmium, Total	ND		mg/kg	0.40	0.03	1	02/20/16 09:24	02/22/16 10:40	1,6010C	PS
Chromium, Total	ND		mg/kg	0.40	0.08	1	02/20/16 09:24	02/22/16 10:40	1,6010C	PS
Lead, Total	ND		mg/kg	2.0	0.08	1	02/20/16 09:24	02/22/16 10:40	1,6010C	PS
Selenium, Total	ND		mg/kg	0.80	0.12	1	02/20/16 09:24	02/22/16 10:40	1,6010C	PS
Silver, Total	ND		mg/kg	0.40	0.08	1	02/20/16 09:24	02/22/16 10:40	1,6010C	PS

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01-04 Batch: WG867429-1										
Mercury, Total	ND		mg/kg	0.08	0.02	1	02/23/16 09:20	02/23/16 22:46	1,7471B	EA

Prep Information

Digestion Method: EPA 7471B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Westborough Lab for sample(s): 05-08 Batch: WG867580-1										
Arsenic, Dissolved	0.0037	J	mg/l	0.0050	0.0020	1	02/23/16 11:35	02/25/16 22:25	1,6010C	PS
Barium, Dissolved	ND		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 22:25	1,6010C	PS
Cadmium, Dissolved	ND		mg/l	0.0050	0.0007	1	02/23/16 11:35	02/25/16 22:25	1,6010C	PS
Chromium, Dissolved	ND		mg/l	0.010	0.0020	1	02/23/16 11:35	02/25/16 22:25	1,6010C	PS
Lead, Dissolved	ND		mg/l	0.0100	0.0020	1	02/23/16 11:35	02/25/16 22:25	1,6010C	PS
Selenium, Dissolved	ND		mg/l	0.0100	0.0030	1	02/23/16 11:35	02/25/16 22:25	1,6010C	PS
Silver, Dissolved	ND		mg/l	0.0070	0.0020	1	02/23/16 11:35	02/25/16 22:25	1,6010C	PS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010
Lab Number: L1604569
Report Date: 02/29/16

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Westborough Lab for sample(s): 05-08 Batch: WG867646-1										
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	02/23/16 14:43	02/25/16 15:32	1,7470A	JH

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-04 Batch: WG866955-2 SRM Lot Number: D088-540								
Arsenic, Total	105		-		79-121	-		
Barium, Total	88		-		83-117	-		
Cadmium, Total	107		-		83-117	-		
Chromium, Total	92		-		80-120	-		
Lead, Total	97		-		81-117	-		
Selenium, Total	102		-		78-122	-		
Silver, Total	88		-		75-124	-		
Total Metals - Westborough Lab Associated sample(s): 01-04 Batch: WG867429-2 SRM Lot Number: D088-540								
Mercury, Total	107		-		72-128	-		
Dissolved Metals - Westborough Lab Associated sample(s): 05-08 Batch: WG867580-2								
Arsenic, Dissolved	110		-		80-120	-		
Barium, Dissolved	100		-		80-120	-		
Cadmium, Dissolved	108		-		80-120	-		
Chromium, Dissolved	100		-		80-120	-		
Lead, Dissolved	106		-		80-120	-		
Selenium, Dissolved	110		-		80-120	-		
Silver, Dissolved	100		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: AA HALL GRIST MILL

Project Number: 131.06156.010

Lab Number: L1604569

Report Date: 02/29/16

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Westborough Lab Associated sample(s): 05-08 Batch: WG867646-2					
Mercury, Dissolved	112	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG866955-4 QC Sample: L1604569-01 Client ID: B106-S1												
Arsenic, Total	8.6	9.91	17	85		-	-		75-125	-		20
Barium, Total	43.	165	180	83		-	-		75-125	-		20
Cadmium, Total	ND	4.21	3.1	**74**	Q	-	-		75-125	-		20
Chromium, Total	22.	16.5	35	79		-	-		75-125	-		20
Lead, Total	4.1	42.1	37	78		-	-		75-125	-		20
Selenium, Total	0.40J	9.91	8.7	88		-	-		75-125	-		20
Silver, Total	ND	24.8	20	81		-	-		75-125	-		20
Total Metals - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG867429-4 QC Sample: L1604529-02 Client ID: MS Sample												
Mercury, Total	1.6	0.14	0.90	**0**	Q	-	-		80-120	-		20
Dissolved Metals - Westborough Lab Associated sample(s): 05-08 QC Batch ID: WG867580-4 QC Sample: L1604569-07 Client ID: MW103												
Arsenic, Dissolved	0.0096	0.12	0.123	94		-	-		75-125	-		20
Barium, Dissolved	0.201	2	2.10	95		-	-		75-125	-		20
Cadmium, Dissolved	ND	0.051	0.0472	92		-	-		75-125	-		20
Chromium, Dissolved	ND	0.2	0.18	90		-	-		75-125	-		20
Lead, Dissolved	ND	0.51	0.506	99		-	-		75-125	-		20
Selenium, Dissolved	ND	0.12	0.130	108		-	-		75-125	-		20
Silver, Dissolved	ND	0.05	0.0483	97		-	-		75-125	-		20
Dissolved Metals - Westborough Lab Associated sample(s): 05-08 QC Batch ID: WG867646-4 QC Sample: L1604569-05 Client ID: MW101												
Mercury, Dissolved	ND	0.005	0.00518	104		-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG866955-3 QC Sample: L1604569-01 Client ID: B106-S1						
Arsenic, Total	8.6	8.6	mg/kg	0		20
Barium, Total	43.	40	mg/kg	7		20
Cadmium, Total	ND	ND	mg/kg	NC		20
Chromium, Total	22.	20	mg/kg	10		20
Lead, Total	4.1	4.0	mg/kg	2		20
Selenium, Total	0.40J	0.35J	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
Total Metals - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG867429-3 QC Sample: L1604529-02 Client ID: DUP Sample						
Mercury, Total	1.6	0.74	mg/kg	**74**	Q	20
Dissolved Metals - Westborough Lab Associated sample(s): 05-08 QC Batch ID: WG867580-3 QC Sample: L1604569-07 Client ID: MW103						
Arsenic, Dissolved	0.0096	0.0057	mg/l	**51**	Q	20
Barium, Dissolved	0.201	0.199	mg/l	1		20
Cadmium, Dissolved	ND	ND	mg/l	NC		20
Chromium, Dissolved	ND	ND	mg/l	NC		20
Lead, Dissolved	ND	ND	mg/l	NC		20
Selenium, Dissolved	ND	ND	mg/l	NC		20
Silver, Dissolved	ND	ND	mg/l	NC		20
Dissolved Metals - Westborough Lab Associated sample(s): 05-08 QC Batch ID: WG867646-3 QC Sample: L1604569-05 Client ID: MW101						
Mercury, Dissolved	ND	ND	mg/l	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-01
Client ID: B106-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/18/16 10:00
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.8		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-02
Client ID: B105-S2
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/18/16 11:00
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.2		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-03
Client ID: B104-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/18/16 12:10
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.0		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

SAMPLE RESULTS

Lab ID: L1604569-04
Client ID: B108-S1
Sample Location: DAMARISCOTTA, ME
Matrix: Soil

Date Collected: 02/18/16 13:10
Date Received: 02/19/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.9		%	0.100	NA	1	-	02/20/16 01:34	30,2540G	RT

Lab Duplicate Analysis
Batch Quality Control

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG866885-1 QC Sample: L1604406-01 Client ID: DUP Sample						
Solids, Total	78.8	79.8	%	1		20

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: 02/19/2016 20:33

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1604569-01A	Vial MeOH preserved	A	N/A	3.2	Y	Absent	8260HLW(14),VPH-10(28)
L1604569-01B	Vial water preserved	A	N/A	3.2	Y	Absent	8260HLW(14)
L1604569-01C	Vial water preserved	A	N/A	3.2	Y	Absent	8260HLW(14)
L1604569-01D	Glass 60mL/2oz unpreserved	A	N/A	3.2	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),CD-TI(180),EPHD-GC-10(14)
L1604569-01E	Plastic 2oz unpreserved for TS	A	N/A	3.2	Y	Absent	ME-TS-2540(7)
L1604569-02A	Vial MeOH preserved	A	N/A	3.2	Y	Absent	8260HLW(14),VPH-10(28)
L1604569-02B	Vial water preserved	A	N/A	3.2	Y	Absent	8260HLW(14)
L1604569-02C	Vial water preserved	A	N/A	3.2	Y	Absent	8260HLW(14)
L1604569-02D	Glass 60mL/2oz unpreserved	A	N/A	3.2	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),CD-TI(180),EPHD-GC-10(14)
L1604569-02E	Plastic 2oz unpreserved for TS	A	N/A	3.2	Y	Absent	ME-TS-2540(7)
L1604569-03A	Vial MeOH preserved	A	N/A	3.2	Y	Absent	8260HLW(14),VPH-10(28)
L1604569-03B	Vial water preserved	A	N/A	3.2	Y	Absent	8260HLW(14)
L1604569-03C	Vial water preserved	A	N/A	3.2	Y	Absent	8260HLW(14)
L1604569-03D	Glass 60mL/2oz unpreserved	A	N/A	3.2	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),CD-TI(180),EPHD-GC-10(14)
L1604569-03E	Plastic 2oz unpreserved for TS	A	N/A	3.2	Y	Absent	ME-TS-2540(7)
L1604569-04A	Vial MeOH preserved	A	N/A	3.2	Y	Absent	8260HLW(14),VPH-10(28)
L1604569-04B	Vial water preserved	A	N/A	3.2	Y	Absent	8260HLW(14)
L1604569-04C	Vial water preserved	A	N/A	3.2	Y	Absent	8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1604569-04D	Glass 60mL/2oz unpreserved	A	N/A	3.2	Y	Absent	AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),EPH-MS-10(14),HG-T(28),CD-TI(180),EPHD-GC-10(14)
L1604569-04E	Plastic 2oz unpreserved for TS	A	N/A	3.2	Y	Absent	ME-TS-2540(7)
L1604569-05A	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-05B	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-05C	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-05D	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-05E	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-05F	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-05G	Plastic 250ml HNO3 preserved	A	<2	3.2	Y	Absent	PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),CD-SI(180),CR-SI(180),HG-S(28),SE-SI(180)
L1604569-05H	Amber 1000ml HCl preserved	A	<2	3.2	Y	Absent	EPH-MS-10(14),EPHD-GC-10(14)
L1604569-05I	Amber 1000ml HCl preserved	A	<2	3.2	Y	Absent	EPH-MS-10(14),EPHD-GC-10(14)
L1604569-06A	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-06B	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-06C	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-06D	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-06E	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-06F	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-06G	Plastic 250ml HNO3 preserved	A	<2	3.2	Y	Absent	PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),CD-SI(180),CR-SI(180),HG-S(28),SE-SI(180)
L1604569-06H	Amber 1000ml HCl preserved	A	<2	3.2	Y	Absent	EPH-MS-10(14),EPHD-GC-10(14)
L1604569-06I	Amber 1000ml HCl preserved	A	<2	3.2	Y	Absent	EPH-MS-10(14),EPHD-GC-10(14)
L1604569-07A	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-07B	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-07C	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-07D	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-07E	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-07F	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-07G	Plastic 250ml HNO3 preserved	A	<2	3.2	Y	Absent	PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),CD-SI(180),CR-SI(180),HG-S(28),SE-SI(180)

*Values in parentheses indicate holding time in days

Project Name: AA HALL GRIST MILL
Project Number: 131.06156.010

Lab Number: L1604569
Report Date: 02/29/16

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1604569-07H	Amber 1000ml HCl preserved	A	<2	3.2	Y	Absent	EPH-MS-10(14),EPHD-GC-10(14)
L1604569-07I	Amber 1000ml HCl preserved	A	<2	3.2	Y	Absent	EPH-MS-10(14),EPHD-GC-10(14)
L1604569-08A	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-08B	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-08C	Vial HCl preserved	A	N/A	3.2	Y	Absent	ME-8260(14)
L1604569-08D	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-08E	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-08F	Vial HCl preserved	A	N/A	3.2	Y	Absent	VPH-10(14)
L1604569-08G	Plastic 250ml HNO3 preserved	A	<2	3.2	Y	Absent	PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),CD-SI(180),CR-SI(180),HG-S(28),SE-SI(180)
L1604569-08H	Amber 1000ml HCl preserved	A	<2	3.2	Y	Absent	EPH-MS-10(14),EPHD-GC-10(14)
L1604569-08I	Amber 1000ml HCl preserved	A	<2	3.2	Y	Absent	EPH-MS-10(14),EPHD-GC-10(14)

*Values in parentheses indicate holding time in days

Project Name:	AA HALL GRIST MILL	**Lab Number:**	L1604569
Project Number:	131.06156.010	**Report Date:**	02/29/16

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

Report Format: DU Report with 'J' Qualifiers

Project Name:	AA HALL GRIST MILL	**Lab Number:**	L1604569
Project Number:	131.06156.010	**Report Date:**	02/29/16

Data Qualifiers

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	AA HALL GRIST MILL	**Lab Number:**	L1604569
Project Number:	131.06156.010	**Report Date:**	02/29/16

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

98 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, July 2010.

100 Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of VPH under the Massachusetts Contingency Plan, WSC-CAM-IVA, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, m/p-xylene, o-xylene
EPA 624: 2-Butanone (MEK), 1,4-Dioxane, tert-Amylmethyl Ether, tert-Butyl Alcohol, m/p-xylene, o-xylene
EPA 625: Aniline, Benzoic Acid, Benzyl Alcohol, 4-Chloroaniline, 3-Methylphenol, 4-Methylphenol.
EPA 1010A: NPW: Ignitability
EPA 6010C: NPW: Strontium; SCM: Strontium
EPA 8151A: NPW: 2,4-DB, Dicamba, Dichloroprop, MCPA, MCPP; SCM: 2,4-DB, Dichloroprop, MCPA, MCPP
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene, Isopropanol; SCM: Iodomethane (methyl iodide), Methyl methacrylate (soil); 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 9010: NPW: Amenable Cyanide Distillation, Total Cyanide Distillation
EPA 9038: NPW: Sulfate
EPA 9050A: NPW: Specific Conductance
EPA 9056: NPW: Chloride, Nitrate, Sulfate
EPA 9065: NPW: Phenols
EPA 9251: NPW: Chloride
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: ***8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:*** Lead***; 8270D:*** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF

Date Rec'd in Lab: 2/19/16

ALPHA Job #: L1604569

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Lunsen Consulting
Address: 100 Commercial St
Portland, ME
Phone: 207 772 2891
Email: Kit.Quay@lunsenmd.com

Additional Project Information:

Project Information

Project Name: AA Hall Christ Mill
Project Location: Damariscotta, ME
Project #: 131.06.156.010
Project Manager: Steve Dyer
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program ME DEP Criteria Bleeding Fields

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☒ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☒ RCRA8 ☐ PP13	EPH: ☒ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☒ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Dissolved RCRA8 Metals	Sample Comments	TOTAL # BOTTLES
04569-01	B106-S1	2/18/16	1000	S	KJQ	X			X	X	X					5
02	B105-S2	2/18/16	1100	S	KJQ	X			X	X	X					5
03	B104-S1	2/18/16	1210	S	KJQ	X			X	X	X					5
04	B108-S1	2/18/16	1340	S	KJQ	X			X	X	X					5
05	MW101	2/18/16	1230	GW	EPP	X				X	X		X			9
06	MW102	2/18/16	1345	GW	EPP	X				X	X		X			9
07	MW103	2/18/16	1435	GW	EPP	X				X	X		X			9
08	MW-DUP	2/18/16	1435	GW	EPP	X				X	X		X			9
Container Type						V			A	A	V		P			
Preservative						E/F			A	A	B		C			

SAMPLE INFO
Filtration
☐ Field ☐ Lab to do
Preservation
☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Kit Quay	2/19/16 1205	T. Hendrickson	2/19/16 1205
T. Hendrickson	2/19/16 1620		2/19/16 1620

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

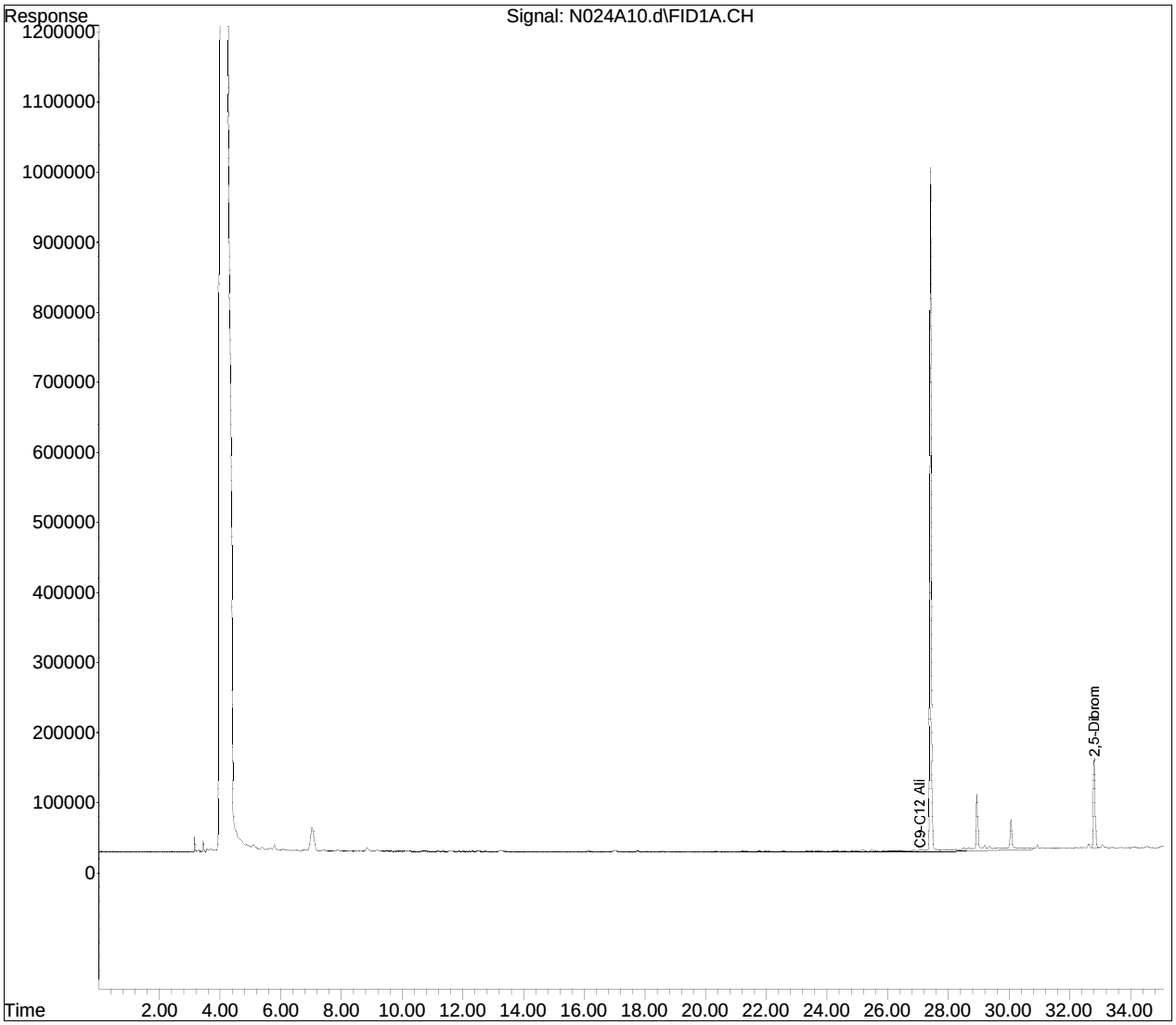
Quantitation Report (QT Reviewed)

Data Path : I:\NVPH\160224ali\
Data File : N024A10.d
Signal(s) : FID1A.CH
Acq On : 24 Feb 2016 2:20 pm
Operator : NVPH:KD
Sample : l1604569-06D,41,1,5
Misc : WG868263,ICAL11964
ALS Vial : 10 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Feb 25 09:42:33 2016
Quant Method : I:\NVPH\160224ali\vph-ali.m
Quant Title : VPH ALIPHATIC
QLast Update : Thu Jan 21 09:10:35 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

Sub List : Default - All compounds listed



Serial_No:02291616:15

Data File: \\orgserv1\ee\chem\GCEXT\Petro10.i\160228arolist.b\0228B002.D

Date : 28-FEB-2016 21:12

Client ID:

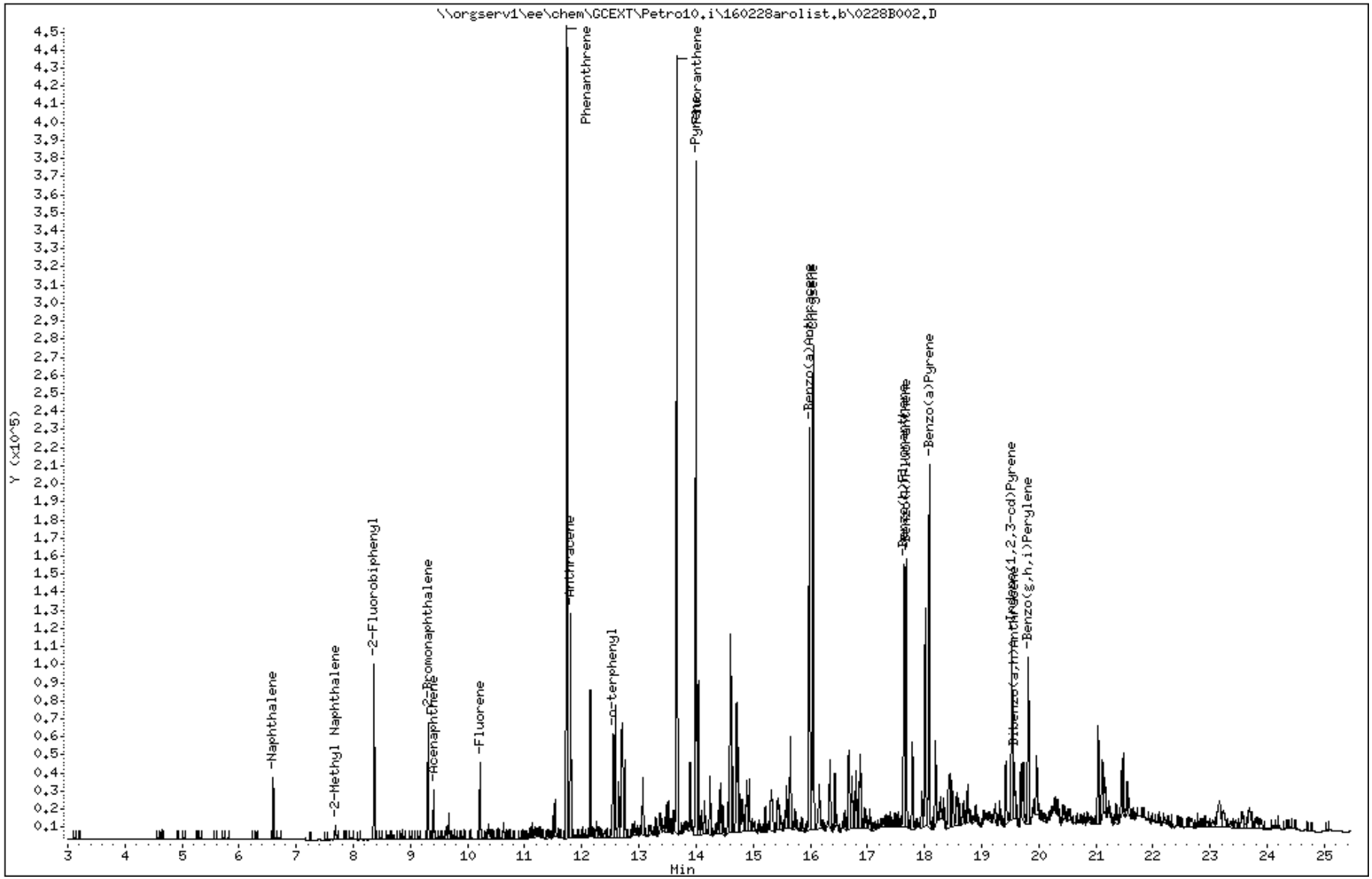
Instrument: Petro10.i

Sample Info: 11604569-02d,42,x5rffv3

Operator: sr

Column phase:

Column diameter: 0.53



APPENDIX C

Field Screening Sheets

Phase II Environmental Site Assessment
Former AA Hall Grist Mill
Municipal Parking Lot
Main Street
Damariscotta, Maine

Well# MW101

Date 2/18/16

Static Water Level 4.63

Begin Time of Purge 11:55

Monitoring Well Purge and Sample Data Sheet

Site Name A.A. Grist Mill, Damariscotta ME

Total Depth 17 Well Diameter 2"

Screen Interval 4-17 Formation Fill Sample Device Peristaltic

DEPARTMENT OF ENVIRONMENTAL PROTECTION · STATE OF MAINE

Time	Water Level	Flow	DO	Temp.	Cond.	pH	ORP	Turb.	
Min.	Feet below MP	mL/Min	mg/L	Celcius		-log[H+]	mV	NTU	
Write Meter Number of Instrument Used									Comments
12:10	4.75	105	1.80	7.90	8.265	6.96	-118.4	50.4	
12:15	4.80	105	1.13	7.62	8.332	6.97	-123.2	83.7	
12:20	4.85	105	1.06	7.91	8.346	6.97	-157.8	28.4	
12:25	4.85	105	0.90	7.88	8.382	6.98	-164.0	27.7	
12:30	COLLECT SAMPLE MW101								
	*Field Filtered for Metals								

Equilibrium Goals
3 consecutive readings 3-5 min. apart

Flow 1-2 mL/Min	Cond. +- 3%
Water Level +- 0.01	pH +- 0.1
DO +- 10%	eH +- 10 mV
Turb +- 10%	Temp. +- 0.1

Eh Correction for Ag/AgCl probe:
Add 199 mV to ORP value

mL/Ft Information
3/4 in well = 87 mL/Ft
2 in well = 617mL/Ft
4 in well = 2470 mL/Ft

Record all instrument calibrations in Instrument Calibration Log Book or Field Book

Samplers: E. Phenix

Laboratory Sample Numbers
Analysis / Depth — Number

Date Revised 1/28/2002

Well# MW102

Date 2/18/16

Static Water Level 4.45

Begin Time of Purge 13:20

Monitoring Well Purge and Sample Data Sheet

Site Name A.A. Grist Mill, Damariscotta ME

Total Depth 12.5 Well Diameter 2"

Screen Interval 4-12.5 Formation Fill Sample Device Peristaltic

Time	Water Level	Flow	DO	Temp.	Cond.	pH	ORP	Turb.	
Min.	Feet below MP	mL/Min	mg/L	Celcius		-log[H+]	mV	NTU	
Write Meter Number of Instrument Used									Comments
13:32	4.46	95	4.37	7.03	15.37	6.49	16.5	71.8	
13:37	4.49	95	2.06	7.29	15.40	6.48	22.6	59.0	
13:42	4.49	95	1.86	7.51	15.39	6.48	22.9	55.6	
13:45	COLLECT	SAMPLE	MW102						
	* Field Filtered for Metals								

Equilibrium Goals
3 consecutive readings 3-5 min. apart

Flow 1-2 mL/Min	Cond. +- 3%
Water Level +- 0.01	pH +- 0.1
DO +- 10%	eH +- 10 mV
Turb +- 10%	Temp. +- 0.1

Eh Correction for Ag/AgCl probe:
Add 199 mV to ORP value

mL/Ft Information
3/4 in well = 87 mL/Ft
2 in well = 617mL/Ft
4 in well = 2470 mL/Ft

Record all instrument calibrations in Instrument Calibration Log Book or Field Book

Samplers: E. Phenix

Date Revised 1/28/2002

Laboratory Sample Numbers

Analysis / Depth	Number

Well# MW103

Date 2/18/16

Static Water Level 6.80

Begin Time of Purge 14:15

Monitoring Well Purge and Sample Data Sheet

Site Name A.A. Grist Mill, Damariscotta ME

Total Depth 15 Well Diameter 2"

Screen Interval 4-15 Formation Fill Sample Device Peristaltic

Time	Water Level	Flow	DO	Temp.	Cond.	pH	ORP	Turb.	
Min.	Feet below MP	mL/Min	mg/L	Celcius		-log[H+]	mV	NTU	
Write Meter Number of Instrument Used									Comments
1423	6.91	115	1.02	8.03	3.700	6.86	-107.4	78.5	
1428	6.93	115	0.80	8.50	3.575	6.84	-113.3	25.4	
1433	6.93	115	0.55	8.43	3.529	6.83	-111.3	17.2	
1435	COLLECT SAMPLE MW103								
	* Field filtered for Metals								
	* Sample MW-DUP collected from this location								

Equilibrium Goals
3 consecutive readings 3-5 min. apart

Flow 1-2 mL/Min	Cond. +- 3%
Water Level +- 0.01	pH +- 0.1
DO +- 10%	eH +- 10 mV
Turb +- 10%	Temp. +- 0.1

Eh Correction for Ag/AgCl probe:
Add 199 mV to ORP value

mL/Ft Information
3/4 in well = 87 mL/Ft
2 in well = 617mL/Ft
4 in well = 2470 mL/Ft

Record all instrument calibrations in Instrument Callbration Log Book or Field Book

Samplers: E. Phenix

Date Revised 1/28/2002

Laboratory Sample Numbers

Analysis / Depth	Number

WRIGHT-PIERCE

Engineering a Better Environment