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CONTRACT DOCUMENTS

OMNI MT. WASHINGTON HOTEL
WASTEWATER TREATMENT FACILITY UPGRADE
BRETTON WOODS, NEW HAMPSHIRE
JULY 2024

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CONTRACT DOCUMENTS
FOR
OMNI MT. WASHINGTON HOTEL
WASTEWATER TREATMENT FACILITY UPGRADE

BRETTON WOODS, NEW HAMPSHIRE

JULY 2024

Project No. 230570

Horizons Engineering, Inc.

New London, NH • Newport, VT • Littleton, NH • Sharon, VT • Kennebunk, ME • Conway, NH • Newmarket, NH

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ADVERTISEMENT FOR BIDS

Sealed Bids for the construction of **WASTEWATER TREATMENT FACILITY UPGRADE** will be received by **OMNI MOUNT WASHINGTON HOTEL**, at the office of **HORIZONS ENGINEERING, INC**. 34 School Street, Littleton, New Hampshire 03561 until **3:00 PM** local time on **AUGUST 1, 2024**, at which time the Bids received will be publicly opened and read. Submittal of bids by email to **STEPHEN LAFRANCE** at slafrance@horizonsengineering.com is also acceptable.

The Project consists of sewage sludge removal and off-site disposal from three aerated lagoons, installation of new 60 mil HDPE lagoon liners, and the installation of a new Nexom OPTAER aeration system. The sludge removal contractor and aeration system contractor will be under direct contract with the Owner**.** The Contractor will be responsible for coordination of the work for sludge removal and aeration system installation, but the Owner will be invoiced directly for this work.

It is anticipated that this will be a two year contract with sludge removal, liner installation, and aeration installation occurring in Lagoons #2 and #3 in 2024, a winter shutdown, with sludge removal, liner installation and aeration installation in Lagoon #1A/1B occurring in 2025.

Bids will be received for a single prime Contract. Bids shall be on a lump sum and unit price basis as indicated in the Bid Form. Bids must be accompanied by a Bid Bond for 5% of the Bid amount. Payment and Performance Bonds shall be required for the work.

The Issuing Office for the Bidding Documents is: **HORIZONS ENGINEERING INC., 34 SCHOOL STREET, LITTLETON, NEW HAMPSHIRE 03561, 603-444-4111, CONTACT STEPHEN LAFRANCE, SLAFRANCE@HORIZONSENGINEERING.COM**. Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of **8:00 AM AND 4:30 PM**.

Digital copies of the Bidding Documents may be obtained from the Engineer at horizonsengineering.com/projects-to-bid. Hard copies of the Bidding Documents may be obtained from the Issuing Office, during the hours indicated above, upon payment of a non-refundable fee of $150 for each set. Checks for Bidding Documents shall be payable to "**HORIZONS ENGINEERING INC.**". Upon request and receipt of the document deposit indicated above plus a non-refundable shipping charge, the Issuing Office will transmit printed copies of the Bidding Documents via delivery service. The shipping charge amount will depend on the shipping method selected by the prospective Bidder. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the Bidder's date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

Owner: **OMNI MOUNT WASHINGTON HOTEL**

310 Mt. Washington Hotel Road

Bretton Woods, New Hampshire 03575

Date: **July 8, 2024**

+ + END OF ADVERTISEMENT FOR BIDS + +

INSTRUCTIONS TO BIDDERS

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

A. *Issuing Office* – **HORIZONS ENGINEERING INC., 34 SCHOOL STREET, LITTLETON, NEW HAMPSHIRE 03561, 603-444-4111**

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within 10 days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. Evidence of Bidder's authority to do business in the state where the Project is located.

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

C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."

D. Other required information regarding qualifications

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

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

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *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.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.

b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

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

d. Technical Data contained in such reports and drawings.

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.

~~4. Geotechnical Baseline Report: The Bidding Documents contain a Geotechnical Baseline Report (GBR). The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.~~

~~The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.~~

~~Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.~~

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and

Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.

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

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder 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.

D. Bidder shall 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.

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

4.04 *Owner's Safety Program*

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

4.05 *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 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. consider 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 Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

~~6.01 A pre-Bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.~~

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding 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 certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

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 Documents, 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 Documents 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. Such forfeiture shall 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 seven 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 seven 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 substantially completed, and completed and ready for final payment, are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

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

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

~~11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal"~~

~~item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.~~

~~11.02 All prices that Bidder sets forth in its Bid shall 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.~~

11.01 The Contract for the Work, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids in the case of a proposed substitute and 5 days prior in the case of a proposed "or-equal." Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner. Substitutes and "or-equal" materials and equipment may be proposed by Contractor in accordance with Paragraphs 7.04 and 7.05 of the General Conditions after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall 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.

11.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

~~12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.~~

~~12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.~~

~~12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work:~~

~~If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to~~

~~submit an acceptable substitute, in which case apparent Successful Bidder shall 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.~~

12.04 ~~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, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity 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 7.06 of the General Conditions.~~

12.05 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

12.06 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.06.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall 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."~~

13.02 A Bid by a corporation shall 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 shall be shown.

13.03 A Bid by a partnership shall 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 partnership's address for receiving notices shall be shown.

13.04 A Bid by a limited liability company shall 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 firm's address for receiving notices shall be shown.

13.05 A Bid by an individual shall show the Bidder's name and address for receiving notices.

13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture's address for receiving notices shall be shown.

13.07 All names shall be printed in ink below the signatures.

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

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

13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

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 total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. 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.

ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.

15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall 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 shall 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 shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to **HORIZONS ENGINEERING, INC., 34 SCHOOL STREET, LITTLETON. NEW HAMPSHIRE 03561**.

15.03 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 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A 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.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 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, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 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 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 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 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. 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, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

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

19.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not 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. 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.

19.04 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.

19.05 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.

ARTICLE 20 – BONDS AND INSURANCE

20.01 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 and insurance. When the

Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall 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 shall 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 ten days thereafter, Owner shall 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 22 – SALES AND USE TAXES

22.01 ~~Owner is exempt from [_____] state sales and use taxes on materials and equipment to be incorporated in the Work. (Exemption No. [_____]). Said taxes shall not be included in the Bid. Refer to Paragraph SC-7.09 of the Supplementary Conditions for additional information~~. **Section not used.**

ARTICLE 23 – CONTRACTS TO BE ASSIGNED

23.01 **Section not used.**

BID FORM

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to: Horizons Engineering, Inc., 34 School Street, Littleton, New Hampshire 03561.

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 – BIDDER'S ACKNOWLEDGEMENTS

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

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum Date**

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: ~~(1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings~~.

E. 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 any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance

of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. 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.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

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

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. 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;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

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

2. "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;

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

4. "coersive 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 e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 **Bidders must bid on each item.**

5.02 **Bids must include sales tax and all other associated fees.**

5.03 **All bids must be written clearly in ink in both words and figures.**

5.04 **Bidder should multiply the unit bid price by the bid quantity to obtain the total item bid price.**

5.05 **In the event that the total item bid price does not equal the unit bid price written in words multiplied by the bid quantity, the extended total item bid price shall be corrected accordingly and accepted as the assumed total item price bid.**

5.06 **Bidder will complete the Work in accordance with the Contract Documents for the following price(s):**

~~[SUGGESTED FORMAT FOR UNIT PRICE BID]~~

~~Item No.~~	~~Description~~	~~Unit~~	~~Estimated Quantity~~	~~Bid Unit Price~~	~~Bid Price~~
~~Total of All Unit Price Bid Items~~					$

****

Item No.	Brief Description - Unit or Lump Sum Price (both words and numbers)	Quantity and Units	Item Price
1.	Mobilization, per lump sum: _____Dollars and _____Cents ($_____)	1 LS	$_____
2.	Sludge Removal, Transportation, and Off-site Disposal Coordination: _____Dollars and _____Cents ($_____)	1 LS	$_____
3.	Lagoon Reshaping and Liner Replacement, per lump sum: _____Dollars and _____Cents ($_____)	1 LS	$_____
4.	Aeration System, per lump sum: _____Dollars and _____Cents ($_____)	1 LS	$_____
5.	Grading, per lump sum: _____Dollars and _____Cents ($_____)	1 LS	$_____
6.	Restoration of Surfaces, per lump sum: _____Dollars and _____Cents ($_____)	1 LS	$_____

Bidder acknowledges that (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 Bid items will be based on actual quantities, determined as provided in the Contract Documents.

TOTAL BID PRICE $_____

_____Dollars

and _____Cents

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

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 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. List of Project References~~;

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

F. ~~Contractor's License No.: _____ **[or]** Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids~~;

G. ~~Required Bidder Qualification Statement with supporting data~~;

ARTICLE 8 – DEFINED TERMS

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 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

Bidder's License No.: _____
(where applicable)

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name, and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:
Omni Mt. Washington Hotel
310 Mt. Washington Hotel Road
Bretton Woods, New Hampshire 03575

BID
Bid Due Date:

Wastewater Treatment Facility Upgrade
Bretton Woods, New Hampshire

BOND
Bond Number:
Date:
Penal sum _____ $ _____
(Words) (Figures)

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

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature

Title Title

Note: Addresses are to be used for giving any required notice.
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 shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur 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 shall 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 shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action shall 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 shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall 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 Registered or Certified Mail, return receipt requested, postage pre-paid, and shall 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 shall 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 shall

govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term “Bid” as used herein includes a Bid, offer, or proposal as applicable.

NOTICE OF AWARD

Date of Issuance:

Owner:	Omni Mt. Washington Hotel	Owner's Contract No.: n/a
Engineer:	HORIZONS ENGINEERING INC.	Engineer's Project No.: 230570
Project:	Wastewater Treatment Facility Upgrade	Contract Name: Wastewater Treatment Facility Upgrade

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated [_____] 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: $_____

[ ] 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. *[revise if multiple copies accompany the Notice of Award]*

☒ a set of the 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 this Notice of Award:

1. Deliver to Owner three (3) counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance and payment bonds]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

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

Owner**:**

Authorized Signature

By:

Title:

Copy: Engineer

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

THIS AGREEMENT is by and between Omni Mt. Washington Hotel ("Owner") and

("Contractor").

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:

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **WASTEWATER TREATMENT FACILITY UPGRADE**

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by **HORIZONS ENGINEERING, INC.**

3.02 The Owner has retained **HORIZONS ENGINEERING, INC.** ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time 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 *Contract Times: Days*

A. The Work will be substantially completed within 100 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 120 days after the date when the Contract Times commence to run.

4.03 *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 times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. 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 $1,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A 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.

4.04 *Special Damages*

~~A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.~~

~~B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.~~

[Deleted]

ARTICLE 5 – 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 other than Unit Price Work, a lump sum of: $_____.

All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item):

Unit Price Work

Item No.	Description	Unit	Estimated Quantity	Unit Price	Extended Price
Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities)					$

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

C. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment) $_____.

D. 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 account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th 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 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. **90** percent of Work completed (with the balance being retainage)~~.~~**;** If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. **90** percent 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 **100** percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less **100** percent 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 in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of *0* percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

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

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. 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 Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. 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.

G. 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.

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

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

J. 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.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 8, inclusive).
2. Performance bond (pages ___ to ___, inclusive).
3. Payment bond (pages ___ to ___, inclusive).
4. Other bonds.
    a. ___ (pages ___ to ___, inclusive).
5. General Conditions (pages ___ to ___, inclusive).
6. Supplementary Conditions (pages ___ to ___, inclusive).
7. Specifications as listed in the table of contents of the Project Manual.
8. Drawings (not attached but incorporated by reference) consisting of ___ sheets with each sheet bearing the following general title: ___ **[or]** the Drawings listed on the attached sheet index.
9. Addenda (numbers ___ to ___, inclusive).
10. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid (pages ___ to ___, inclusive).
11. 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.

B. The documents listed in Paragraph 9.01.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 9.

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

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

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

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto 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 Documents.

10.03 *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.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall 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.

10.05 *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 10.05:

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

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.

10.06 *Other Provisions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, 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.

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:
Omni Mt. Washington Hotel	
By:	By:
Title:	Title:
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest:	Attest:
Title:	Title:
Address for giving notices:	Address for giving notices:
310 Mt. Washington Hotel Road	
Bretton Woods, New Hampshire 03575	
	License No.: _____ *(where applicable)*
(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)	*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

NOTICE TO PROCEED

Owner:	Omni Mt. Washington Hotel 310 Mt. Washington Hotel Road Bretton Woods, New Hampshire 03575	Owner's Contract No.:	n/a
Contractor:		Contractor's Project No.:	
Engineer:	Horizons Engineering, Inc.	Engineer's Project No.:	230570
Project:	Wastewater Treatment Facility Upgrade	Contract Name:	Wastewater Treatment Facility Upgrade
		Effective Date of Contract:	

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____, 2024.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the date of Substantial Completion is _____, and the date of readiness for final payment is_____.

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

Omni Mt. Washington Hotel

Owner**:**

By:

Title:

Date Issued:

Copy: Engineer

PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER: Omni Mt. Washington Hotel
310 Mt. Washington Hotel Road
Bretton Woods, New Hampshire 03575

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

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

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
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 shall be considered plural where applicable.

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 shall 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 shall 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 shall 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 shall 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 shall 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:

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 shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall 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 shall not be reduced or set off on account of any such unrelated obligations. No right of action shall 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 may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall 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 shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

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 shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER: Omni Mt. Washington Hotel
310 Mt. Washington Hotel Road
Bretton Woods, New Hampshire 03575

CONSTRUCTION CONTRACT

Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND

Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

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

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
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 shall be considered plural where applicable.

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 shall 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 shall 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 shall 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.

8. The Surety's total obligation shall 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 shall 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 shall 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 satisfy 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 shall 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 shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall 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:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
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;
4. A brief description of the labor, materials, or equipment furnished;
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;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
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 shall be 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 shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

Progress Estimate - Unit Price Work

Contractor's Application

For (Contract):	Application Number:
Application Period:	Application Date:

A					B	C	D	E	F		
Item		Contract Information									
Bid Item No.	Description	Item Quantity	Units	Unit Price	Total Value of Item ($)	Estimated Quantity Installed	Value of Work Installed to Date	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (F / B)	Balance to Finish (B - F)
	Totals										

Change Order No. _____

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

The Contract is modified as follows upon execution of this Change Order:

Description:
Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	**CHANGE IN CONTRACT TIMES** *[note changes in Milestones if applicable]*
Original Contract Price: $_____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: $_____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: $_____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: $_____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: $_____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (if required)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title _____	Title _____
Date: _____	Date _____	Date _____

Approved by Funding Agency (if applicable)

By: _____ Date:
Title: _____

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: Omni Mt. Washington Hotel	Owner's Contract No.: N/A
Contractor:	Contractor's Project No.: N/A
Engineer: Horizons Engineering, Inc.	Engineer's Project No.: 230570
Project: Wastewater Treatment Facility Upgrade	Contract Name: Wastewater Treatment Facility Upgrade

This [preliminary] [final] Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

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.

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 shall be as provided in the Contract, except as amended as follows:

Amendments to Owner's responsibilities: ☐ None ☐ As follows

Amendments to Contractor's responsibilities: ☐ None ☐ As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

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.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____

Date:	Date:	Date:

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

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 thereto.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms

SC 1.01.A.48 Add the following language at the end of the last sentence of Paragraph 1.01.A.48:

A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC 1.01.A.49 Add the following new Paragraph after Paragraph 1.01.A.48:

Abnormal Weather Conditions – Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.06 Electronic Submittals

SC- 2.06.B Delete Paragraph 2.06.B and replace it with the term [Deleted].

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01.A **Amend the last sentence of Paragraph 4.01.A by striking out the following words: In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.**

ARTICLE 1 – 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.05 Underground Facilities

SC 5.05 E.1. Add e. Changes in contract price will only be considered when design changes are required as determined by the Engineer.

SC-5.06 Hazardous Environmental Conditions

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

B. Not Used.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.03 Contractor's Insurance

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:		**Statutory**
Federal, if applicable (e.g., Longshoreman's):		**Statutory**
Jones Act coverage, if applicable:		
Bodily injury by accident, each accident	**$**	**NA**
Bodily injury by disease, aggregate	**$**	**NA**
Employer's Liability:		
Bodily injury, each accident	**$**	**500,000**
Bodily injury by disease, each employee	**$**	**NA**
Bodily injury/disease aggregate	**$**	**500,000**
For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	**$**	**NA**
Foreign voluntary worker compensation		**Statutory**

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	**$ 2,000,000**
Products - Completed Operations Aggregate	**$ 1,000,000**
Personal and Advertising Injury	**$ 1,000,000**
Each Occurrence (Bodily Injury and Property Damage)	**$ 1,000,000**

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:	
Each person	**$ 1,000,000**
Each accident	**$ 1,000,000**
Property Damage:	
Each accident	**$ 1,000,000**
[or]	
Combined Single Limit of	**$ 1,000,000**

4. Excess or Umbrella Liability:

Per Occurrence	**$ 5,000,000**
General Aggregate	**$ 5,000,000**

5. ~~Contractor's Pollution Liability:~~

~~Each Occurrence~~	**~~$~~**
~~General Aggregate~~	**~~$~~**

6. Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following: None

7. ~~Contractor's Professional Liability:~~

~~Each Claim~~	**~~$~~**
~~Annual Aggregate~~	**~~$~~**

5. 6.05 Property Insurance

SC 6.05.A. Delete the first sentence of Paragraph 6.05.A and insert the following sentence in its place:

Owner shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations).

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.02 Labor; Working Hours

SC-7.02.B. Add the following new subparagraphs immediately after Paragraph 7.02.B:

1. Regular working hours will be 7:00AM to 6:00PM.

SC-7.02.B. Delete Paragraph 7.02 B. in its entirety, and insert the following:

B. In the absence of any Laws or Regulations to the contrary, Contractor may perform the Work on holidays, during any or all hours of the day, and on any or all days of the week, at Contractor's sole discretion.

SC 7.04.A Amend the third sentence of Paragraph 7.04.A by striking out the following words:

Unless the specification or description contains or is followed by words reading that no like, equivalent, or 'or-equal' item is permitted.

SC 7.04.A.1 Amend the last sentence of Paragraph a.3 by striking out "and;" and adding a period at the end of Paragraph a.3.

SC 7.06.A Amend Paragraph 7.06.A by adding the following text to the end of the Paragraph:

The Contractor shall not award work valued at more than fifty percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Project Representative

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. **Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.**

3. **Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.**

4. **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 proper execution of the Work.**

5. **Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.**

6. **Shop Drawings and Samples:**

    a. **Record date of receipt of Samples and Contractor-approved Shop Drawings.**

    b. **Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.**

    c. **Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.**

7. **Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.**

8. **Review of Work and Rejection of Defective Work:**

    a. **Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.**

    b. **Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer**

of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

9. **Inspections, Tests, and System Start-ups:**

    a. **Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.**

    b. **Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.**

10. **Records:**

    a. **Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.**

    b. **Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.**

    c. **Maintain records for use in preparing Project documentation.**

11. **Reports:**

    a. **Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.**

    b. **Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.**

    c. **Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.**

12. **Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.**

13. **Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents**

to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall 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.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

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. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

DIVISION 01 – GENERAL REQUIREMENTS

SECTION 01 11 12

GENERAL REQUIREMENTS

PART 1 – GENERAL

1.1 GENERAL CONDITIONS

A. All work of this section is specifically subject to the General Conditions for the entire project.

B. Provide all items, articles, materials, operations, or methods listed, mentioned, scheduled on the Drawings and/or specified herein including all labor, materials, equipment and incidentals necessary and required for their completion.

1.2 INTENT

A. The intent of the Specifications and drawings is to call for finish work, tested and ready for operation.

B. Any apparatus, appliance, material or service not specified or indicated but necessary to make the work complete and perfect in all respects and ready for operations shall be provided.

C. The Drawings are generally diagrammatic, intended to convey the scope of the work and indicate the general arrangement of equipment and piping and approximate sizes and locations of equipment.

1.3 WORKMANSHIP

A. All work shall be executed in the best and most thorough manner under the direction of and to the satisfaction of the Engineer.

B. The Contractor shall, at all times, keep a competent foreman in charge of the works on the project, and shall facilitate it's inspection by the Engineer.

1.4 RULES AND REGULATIONS

A. All work shall comply with applicable portions of all state or local laws, ordinances, rules and regulations of local utility companies and fire departments, B.O.C.A., National Plumbing Code, recommendations of the National Board of Fire Underwriters, National Electrical Code and all other authorities having jurisdiction.

B. Nothing contained in these Specifications or indicated on the Drawings shall be construed to conflict with applicable portions of any laws, ordinances, rules and regulations.

1. All pressure vessels shall be furnished and installed in strict accordance with the applicable regulations of the state and the ASME codes and shall be equipped with all appurtenances required by the aforesaid codes.

1.5 GUARANTEE

A. Guarantee all work performed and materials and equipment installed to the full extent required by the Drawings and Specifications to be free from inherent defects.

B. Any materials or equipment which are corroded or otherwise damaged, through the Contractor's failure to properly operate and maintain the installation during construction or testing, shall be replaced prior to final acceptance.

C. Keep the work in repair and replace any defective materials, equipment or workmanship upon notice from the Owner's/Engineer's Representative for a period of one year from date of substantial completion. See Two (2) Year Guarantee period for Automatic Temperature Control System and Control Devices.

D. Materials or equipment requiring excessive service during the first year of operation shall be considered defective.

E. The date of acceptance shall be that which appears on the Owner's/Engineer's Certificate of Substantial Completion.

1.6 SEQUENCE OF WORK

A. Refer to the General Supplementary and Special Conditions for timing and coordination of the work.

B. Schedule the work accordingly and coordinate schedule with other Contractors to prevent delay.

1.7 OPERATING AND MAINTENANCE MANUAL

A. Furnish manufacturer's printed operating and maintenance instructions for each piece of equipment furnished under this Division.

B. Each manual shall be suitably and neatly marked to identify the particular equipment furnished and shall include lubricating charts.

C. All instructions and charts shall be bound in appropriate cover binders properly indexed, identified, and titled to provide three complete manuals.

D. Completed manuals shall be submitted to the Engineer for review and approval.

1.8 CUTTING AND PATCHING

A. The Contractor will provide openings in walls, floors, roof, ceilings and partitions to receive pipe lines, ductwork and other apparatus.

B. All sleeves shall be furnished by the Contractor and securely set as required for piping passing through walls, floors, roofs, ceilings and partitions.

C. All anchors and inserts shall be furnished and securely set as required for piping and equipment furnished under this Division.

1.9 SUBSTITUTES

A. Certain items of equipment have been specified by manufacturer's name and model number. It is not the intent to limit the Contractor to the equipment but to establish a type and quality required. The Contractor may substitute equipment of equal quality and capacity and shall be responsible for any changed required to install the substitution. All shop drawings will indicate the substitution and any deviations from the original specification.

B. Added support steel, anchors, braces, etc. required to permit the use of substituted equipment, shall be the cost and installation responsibility of the Contractor.

End of Section

SECTION 01 11 13

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract apply to this Section.

1.2 PROJECT DESCRIPTION

A. The project consists of the removal, dewatering, transport, and off-site disposal of sewage sludge from three aerated lagoons. The Owner will contract directly with a sludge removal contractor to remove, dewater, transport, and dispose of the sludge. The work also includes the removal, disposal, and replacement of an existing floating baffle curtain and anchors in Lagoon 1A/1B, removal of an existing 36 mil Hypalon® liner from Lagoon 1A/1B, reshaping of the lagoons including supplementing buffer sand in Lagoon 1A/1B and installing 12 inches of buffer sand in Lagoons #2 and #3 that are currently clay lined, installation of three new 60 mil HPDE liners in the existing lagoons, and removal and disposal the existing aeration system. A new aeration system, Nexom OPTAER® fine bubble aeration system, will be pre-purchased by the Owner, to include delivery, storage, installation, start up, and warranty. The Contractor will be responsible for coordinating construction activities with the wastewater operator (Welch's Wastewater & Wastewater), sludge removal contractor (P&H Senesac, Inc.), and aeration installer (NEXOM).

B. It is anticipated that this will be a two year contract with sludge removal, liner installation, and aeration installation occurring in Lagoons #2 and #3 in 2024 and sludge removal, liner installation and aeration installation occurring in Lagoon #1A/1B occurring in 2025.

1.3 WORK SEQUENCE

A. The wastewater treatment facility must remain in service during the work. The work will be conducted in a sequence and in such a manner as to minimize utility interruptions and to minimize the risk to health and the environment.

B. At present, due to limitations on timing of sludge removal, it is anticipated that the Owner's sludge removal contractor will remove sludge in Lagoon #2 and Lagoon #3 in 2024 with sludge removal in Lagoon 1A/1B to occur in 2025.

1.4 CONTRACTOR USE OF PREMISES

A. General: Limit use of the premises to construction activities in areas indicated; allow for Owner operation.

1. Confine operations to minimum areas necessary and as agreed upon by the Owner and Operator. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.

2. Keep driveway and entrances serving the premises clear and available to the Owner. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

3. Disposal of Excess, Unsuitable and/or Waste Materials: Unless otherwise approved by Engineer, all excess, unsuitable or waste materials shall be removed from the project site and shall be lawfully disposed of at Contractor's expense. Do not dispose of material on site, either by burial or by burning.

1.5 OWNER OCCUPANCY

A. Full Owner Occupancy: The Owner will occupy the site during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the work so as not to interfere with the Owner's operations.

1.6 MISCELLANEOUS PROVISIONS

A. The project has been designed and the Contract Documents prepared with the intention that resulting work will comply with applicable local, State, and Federal rules and regulations.

1. Before Substantial Completion inspect, test and adjust performance of every system or facility of the work to ensure that overall performance is in compliance the Contract Documents and all permit requirements.

2. Instruct the Owner's operating personnel (contract operator) on operational requirements needed to maintain compliance.

PART 2 - PRODUCTS

Not Applicable

PART 3 – EXECUTION

Not Applicable

End of Section

SECTION 01 11 14

ITEMS PROVIDED BY OWNER

PART 1 – GENERAL

1.1 DESCRIPTION

A. This Section lists the items provided by the Owner for use by the Contractor and stipulates associated responsibilities and limitations.

B. Related requirements specified elsewhere include:

Summary of Work	01 11 13
Measurement and Payment	01 22 13

1.2 OWNER FURNISHED PRODUCTS

A. Owner Responsibilities

1. Provide the Contractor access to the site.

2. Assist the Contractor in locating existing utilities and treatment equipment.

3. Provide daily operations of the facility through the contract operator (Welch's Water & Wastewater).

4. Provide the Contractor with an approved location for staging and stockpiling.

5. Contract directly with NEXOM for the furnishing and installation of the new aeration System.

6. Contract directly with a sludge removal contractor for the removal, dewatering, transport, and disposal of the wastewater lagoon sludge.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

End of Section

SECTION 01 11 17

DRAWINGS AND SPECIFICATIONS

PART 1 – GENERAL

1.1 DESCRIPTION

A. This Section is intended to describe the general intent of the Drawings and Specifications.

B. The Owner will furnish the Contractor up to five (5) copies of the drawings and specifications without charge.

1.2 EXISTING CONDITIONS

A. All existing conditions shown on the drawings are for information purposes only and are based on limited information. The Contractor shall verify existing conditions and shall not be entitled to extra compensation for failure to do so.

1.3 INTENT OF DRAWINGS AND SPECIFICATIONS

A. The drawings and specifications are intended to show the general intent of the work. The Owner has contracted for a complete project although every detail, component, fitting and appurtenance may not have been shown. The Contractor shall be responsible for all items necessary to make a complete functional system.

1.4 DIMENSIONS

A. Drawings should not be scaled. All dimensions shall be taken from figured dimensions on the drawings or by actual field measurements. The Contractor shall notify the Engineer immediately of any discrepancy between figured dimensions labeled on the drawings and actual field measurements, whenever such discrepancy may impact the installation or operation of the Work.

End of Section

SECTION 01 22 13

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division - 01 General Requirements, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for the measurement and payment of Contract pay items.

1.3 SUBMITTALS

A. See Section 01 33 23

B. Field notes of all measurements for payment purposes.

C. Periodic payment request applications on forms included in the Supplemental General Conditions.

1.4 SCHEDULING

A. Notify Engineer as far in advance as possible of measurements.

B. Allow for and afford Engineer ample time, space and equipment to observe and verify measurements.

1.5 DESCRIPTION

A. For unit price items, the Contractor shall be paid for the actual amount of work accepted and for the actual amount of materials in place during the period of construction. After the work is completed and before final payment is made therefore, the Engineer shall make final measurements to determine the quantities of the various items of work accepted as the basis for final payment.

B. For lump sum items, the Contractor shall be paid on the basis of actual work accepted until the work item is completed. Upon completion of the item, 100 percent of the lump sum price may be paid, subject to the terms of the General Conditions or Supplemental Conditions.

C. 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.

1.6 MEASUREMENT REQUIREMENTS

A. Where payments are to be made on a unit price or adjustment item unit price basis, notify Engineer so that he may observe existing conditions and the status of work-in-place, and witness measurements being made. Where Engineer has not witnessed required measurements and cannot verify or substantiate quantities, he may not recommend payment for same.

B. Maintain complete and legible field notes for all measured items. Notes shall contain spaces for Contractor's and Engineer's signatures plus additional space for comments. An original and copy shall be made for all notes with the copy being submitted to Engineer. The Engineer's signature shall not be construed as an acceptance of the Work, or the measurements made, but shall mean he was present when the measurements were made.

C. The Owner reserves the right to reject the Contractor's measurement of work-in-place and to have this Work measured by the Engineer or independent party acceptable to the Contractor at the Owner's expense.

1.7 LIMITS OF PAYMENT

A. Payments will be made for the quantities installed and accepted in accordance with the Contract. Upon completion of construction, if actual quantities are different than the quantities estimated in the Bid, the contract unit prices will still prevail, except as follows. When alterations in the quantities of work not requiring Change Orders 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 Change Orders will be paid for as stipulated in such Change Orders.

B. The Contractor shall accept as full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to complete the work and for performing all work; 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. No extra payment shall be made to the Contractor for any delays caused by defective workmanship or rescheduling of work by others.

1.8 WORK ELIMINATED FROM CONTRACT

A. Should any work be deleted from the Contract a Change Order shall be issued as stipulated in the General Conditions.

1.9 PARTIAL PAYMENTS

A. Partial payments shall be made monthly as the work progresses. All partial invoices and payments shall be subject to correction in the final quantity invoice and payment. No monthly payment shall be required to be made when, in the judgment of the Engineer, the Work is not proceeding in accordance with the provisions of the Contract.

B. No partial 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.

C. Each subsequent Application for Payment shall include an affidavit of the Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of the Contractor's obligations reflected in prior Applications for Payment. The Owner shall have the right to deduct from the next progress payment an amount equal to payment for said material and/or equipment if reasonable and adequate proof is not submitted.

1.10 FINAL PAYMENT

A. The Contractor will prepare a final payment requisition for review by the Engineer for the work performed. Upon approval by the Engineer, the Owner will pay the entire sum found to be due less any retainage provided for in the General Conditions and any previous payments.

1.11 PAYMENT FOR MATERIALS DELIVERED

A. Payment may be made for all or part of the value of materials stored on site. The application for payment shall be accompanied by a summary of materials stored on site that will establish the Owner's title to the materials and protect the Owner's interest therein, including insurance. The amount thus paid by the Owner shall reduce the estimated amounts due the Contractor as the material is incorporated into the Work. Materials stored on site, that have been paid for by the Owner, shall become the property of the Owner and, in the event of default on the part of the Contractor, the Owner may use these materials in the construction of the Work. The Contractor shall be responsible for any damage to, or loss of, any materials.

PART 2 – PRODUCTS

2.1 GENERAL

A. Provide all labor, materials, facilities, measuring devices and all other equipment necessary to perform all measurements for payment purposes.

PART 3 - EXECUTION

3.1 GENERAL

A. Perform all measuring required by this Section.

B. No separate payments will be made for Work under this Contract except for the pay items stipulated in this Part 3. All costs in connection with the Work shall be included in one or more of the pay items as appropriate.

C. The names of pay items in this Section, the Schedule of Values, or the Bid Form may be abbreviated or non-comprehensive and are for general identification purposes of the item only. The names shall not be construed to represent a complete description of all the Work included under each pay item. Refer to the subsequent paragraphs of this Section for more complete descriptions of Work to be included under each Contract pay item.

3.2 LUMP SUM PRICE PAY ITEMS

A. Measurement - no measurements will be made.

B. Payment shall be on a lump sum basis, based on the percentage of work completed and accepted by the engineer for each lump sum pay item.

3.3 UNIT PRICE PAY ITEMS

A. Measurement and payment shall be made by the unit.

3.4 DESCRIPTION OF PAY ITEMS

The following pay items describe the measurement of and payment for the work to be done under the items listed in the Bid.

Item No. 1 -MOBILIZATION

A. Measurement: Mobilization shall consist of preparatory work and operations including but not limited to, the following items:

1. Testing
2. Equipment delivery
3. Sanitary facilities
4. Furnishing of bonds/insurance
5. Temporary water/sewer/drainage service
6. Erosion control
7. All local (Carroll Building Permit), State, and Federal permits and permit conditions
8. Construction signs/Project signs

9. Cooperation with Contractors and others
10. Submittals
11. Exploratory excavations

B. Payment:

1. Payment shall be made at the contract lump sum price, which price shall be full compensation for all costs incurred in furnishing labor, tools, materials and equipment and incidental work item costs for the preparatory work and operations described in the above Measurement section for Mobilization.

2. For the purpose of computing payments, the adjusted contract price shall include all contract unit price and lump sum items except the contract lump sum price Mobilization.

3. Payments shall be made as follows:

   a. First payment of fifty percent (50%) of the contract lump sum price for Mobilization or 2.5 percent of the adjusted contract price, whichever is less, will be made not later than payment of the first application for payment following the completion of five percent (5%) of the total contract price.

   b. Second payment of twenty five percent (25%) of the contract lump sum price for Mobilization or 1.2 percent of the adjusted contract price, whichever is less, will be made not later than payment of the first application for payment following the completion of fifty percent (50%) of the total contract price.

   c. Upon substantial completion of all work on the project, payment of the remainder of the contract lump sum price for Mobilization will be paid.

<u>Item No. 2 –SLUDGE REMOVAL, DEWATERING, TRANSPORTATION AND OFF- SITE DISPOSAL</u>

A. Measurement – Lump Sum

B. Payment - Payment shall be based on the lump sum price as stated in the bid schedule. Payment shall be based on Engineer's estimate of completion. Item shall consist of physical removal, dewatering, transportation, and off-site disposal of sewage sludge from the three aerated lagoons. The sludge removal contractor will be contracted directly by the Owner and will be responsible for removal, dewatering, transport and disposal. The Contractor shall be responsible for coordination with the sludge removal contractor and on site assistance.

Item No. 3 –LAGOON RESHAPING AND LINER REPLACEMENT

A. Measurement - Lump Sum

B. Payment – Payment shall be made based on the lump sum price as stated in the bid schedule. Payment shall be based on Engineer's estimate of completion. Payment shall include removal of the existing 36 mil Hypalon® liner in Lagoon 1A/1B, removal and disposal of the existing floating lagoon baffle and anchor posts, reshaping and supplementing the liner sand in Lagoon 1A/1B, removal of the clay liners in Lagoon #2 and #3, installation of 12 inches of buffer sand, delivery, storage, and protection of new liner material, installation, seaming, testing, anchor trench excavation and backfill, penetrations, maintenance of facility operations, and for all costs associated with the item not paid for under other items.

Item No. 4 –AERATION SYSTEM

A. Measurement - Lump Sum

B. Payment – Payment shall be made based on the lump sum price as stated in the bid schedule. Payment shall be based on Engineer's estimate of completion. Payment shall include coordination with the Owner's installation contractor, removal and disposal of the existing aeration system including laterals, anchors, supports, and diffusers, coordination of delivery, storage, and protection of materials pre-purchased by Owner, assistance with the installation of new aeration system in the existing aerated lagoons including excavation of lateral locations for new piping connection (by others), installation of anchor posts (supplied by others), backfilling and grading, and for all costs associated with the item not paid for under other items.

Item No. 5 – GRADING

A. Measurement - Lump Sum

B. Payment – Payment shall be made based on the lump sum price as stated in the bid schedule. Payment shall be based on Engineer's estimate of completion. Payment shall include all grading required for shaping the area around the lagoons, construction of the gravel access between the lagoons, construction of the grass lined ditch upgradient of the lagoons, and for all costs associated with the item not paid for under other items.

Item No. 6 – RESTORATION OF SURFACES

A. Measurement - Lump Sum

B. Payment – Payment shall be made based on the lump sum price as stated in the bid schedule. Payment shall be based on Engineer's estimate of completion. Payment shall include all work required to loam, seed, and mulch disturbed areas, repair and/or replace

damaged areas, restore all surfaces to at least pre-construction condition, and for all costs associated with the item not paid for under other items.

End of Section

SECTION 01 33 23

SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division - 01 General Requirements, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;

1. Contractor's construction schedule
2. Submittal schedule
3. Daily construction reports
4. Shop Drawings
5. Product Data
6. Samples

B. Administrative Submittals: Refer to other Division - 01 Sections and other Contract Documents for requirements for administrative submittals. Such submittals may include, but are not limited to:

1. Permits
2. Applications for payment
3. Insurance certificates
4. List of Subcontractors

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

    a. The Engineer reserves the right to withhold action on a submittal requiring

coordination with other submittals until related submittals are received.

3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

    a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Engineer will promptly advise the Contractor when a submittal being processed must be delayed for coordination.

    b. If an intermediate submittal is necessary, process the same as the initial submittal.

    c. No extension of Contract Time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

2. Include the following information on the label for processing and recording action taken.

    a. Project name
    b. Date
    c. Name and address of Engineer
    d. Name and address of Contractor
    e. Name and address of subcontractor
    f. Name and address of supplier
    g. Name of manufacturer
    h. Number and title of appropriate Specification Section
    i. Drawing number and detail references, as appropriate

C. Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Engineer using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

1. On the transmittal record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document

requirements, including minor variations and limitations. Include Contractor's Certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Prepare a fully developed, horizontal bar chart type Contractor's construction schedule. Submit within 15 days of "Notice to Proceed".

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values", if applicable.

2. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.

3. Prepare the schedule on a sheet, or series of sheets, of sufficient width to show data for the entire construction period.

4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.

5. Coordinate the Contractor's construction schedule with the schedule of values (if applicable), list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

D. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

E. Distribution: Following response to the initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their

assigned portion of the Work and are no longer involved in construction activities.

F. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 7 days of the date required for establishment of the Contractor's construction schedule.

B. Distribution: Following response to initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.6 SHOP DRAWINGS

A. Submit newly prepared information, drawn to accurate scale. Indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis for Shop Drawings.

B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

1. Dimensions
2. Identification of products and materials included
3. Compliance with specified standards
4. Notation of coordination requirements
5. Notation of dimensions established by field measurement
6. Sheet Size: Except for templates, patterns and similar full size drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 24" x 36"
7. Submittals: Submit two (2) copies of all information to the Engineer for review.
8. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

9. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

1.7 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves.

1.8 ENGINEER'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Engineer will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: The Engineer will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Reviewed as submitted: Where submittals are marked "Reviewed as submitted," that part of the work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

2. Reviewed – make corrections noted: When submittals are marked "Reviewed – make corrections noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. Rejected – revise and re-submit: When submittal is marked "Rejected - revise and resubmit", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay.

PART 2 - PRODUCTS

Not Applicable

PART 3 – EXECUTION

Not Applicable

End of Section

SECTION 01 42 16

REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division - 01 General Requirements, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.

C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Engineer, requested by the Engineer, and similar phrases.

D. Approve: The term approved, when used in conjunction, with the Engineer's action on the Contractor's submittals, applications, and requests, is limited to the Engineer's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulation: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term furnish means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. Install: The term install describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. Provide: The term provide means to furnish and install, complete and ready for the intended use.

I. Installer: An Installer is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations.

Installers are required to be experienced in the operations they are engaged to perform.

1. The term experienced, when used with the term Installer means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.

2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no choice or option. However, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

    a. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

J. Project Site is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-Division format.

B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

4. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the

sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.

5. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards is specified, and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Engineer for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Engineer for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

2. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

F. The following is a partial listing of organizations and their abbreviations which may apply to the Contract Documents.

AA	Aluminum Association
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACIL	American Council of Independent Laboratories
ACPA	American Concrete Pipe Assoc.
AGA	American Gas Association
AI	Asphalt Institute
AIA	American Institute of Architects
AIHA	American Industrial Hygiene Assoc.
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association, Inc.
ANSI	American National Standards Institute
API	American Petroleum Institute
AREA	American Railway Engineering Association
ARI	Air conditioning and Refrigeration Institute
ASA	Acoustical Society of America
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Assoc.
CBM	Certified Ballast Manufacturers
CE	Corps of Engineers
CFR	Code of Federal Regulations (Available from the Government Printing Office)
CISPI	Cast Iron Soil Pipe Institute
CPSC	Consumer Product Safety Commission
CRSI	Concrete Reinforcing Steel Institute
DHUD	U.S. Department of Housing and Urban Development
EIA	Electronic Industries Association
EIMA	Exterior Insulation Manufacturers Assoc.
EJMA	Expansion Joint Manufacturers Assoc.
EPA	U.S. Environmental Protection Agency (USEPA)
ETL	Electrical Testing Laboratories, Inc.

FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FHA	Federal Housing Administration
FM	Factory Mutual Laboratories
FS	Federal Specification
GSA	General Services Administration
IBR	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers
IPCEA	Insulated Power Cable Engineers Association
NAPA	National Asphalt Pavement Assoc.
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCSPA	National Corrugated Steel Pipe Association
NEC	National Electric Code (from NFPA)
NECA	National Electrical Contractors Assoc.
NEMA	National Electrical Manufacturers Assoc.
NEWWA	New England Water Works Association
NFPA	National Fire Protection Assoc.
NPCA	National Paint and Coatings Assoc.
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Assoc.
PCI	Precast/Prestressed Concrete Institute
PS	Product Standard
RD	Rural Development
SCS	U.S. Soil Conservation Service
SDI	Steel Door Institute
SSPC	Steel Structures Painting Council
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
USDA	U.S. Department of Agriculture
WWPA	Western Wood Products Association

1.5 GOVERNING REGULATIONS AND AUTHORITIES

A. The Engineer has contacted authorities having jurisdiction where necessary to obtain information to prepare Contract Documents. Contact authorities having jurisdiction directly for information and decisions regarding the Work.

B. Copies of Regulations: Obtain copies of the following regulations and retain at the Project site to be available for reference by parties who have a reasonable need.

1.6 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices,

receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS

Not Applicable

PART 3 – EXECUTION

Not Applicable

End of Section

SECTION 01 45 29

TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.1 GENERAL

A. This Section specifies requirements for testing laboratory services. These services include inspections and tests performed by independent contractors, governing authorities, as well as the Contractor.

1.2 QUALITY ASSURANCE

A. Duties of the Testing Company: The company engaged to perform inspections and testing shall cooperate with the Engineer and Contractor in performance of its duties and shall provide qualified personnel to perform inspections and tests.

1. The agency shall notify the Engineer and Contractor promptly of deficiencies observed during performance of its services.

2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

B. Coordination: The Contractor and each agency engaged to perform inspections and tests shall coordinate the sequence of activities to accommodate services with a minimum of delay. The Contractor and each agency shall coordinate activities to avoid removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling inspections, tests, taking samples, and similar activities.

1.3 SUBMITTALS

A. Provide the following submittals in accordance with Section 01 33 23.

B. Submit certified copies of test results from the laboratory to the Engineer.

C. The Contractor shall submit the name, address, and telephone number of a qualified testing laboratory whose services will be used for the testing required under this Contract. Provide documentation outlining the experience, ability, facilities, and fees of the proposed laboratory. The Engineer will authorize or reject the use of the proposed laboratory based on evaluation of this information.

1.4 DELIVERY, HANDLING, AND STORAGE

A. Care shall be taken during the collection, storage, and transportation of samples to prevent disturbances or damage.

B. Follow recognized procedures for collecting, storing, and transporting samples to the testing laboratory.

1.5 SCHEDULING AND PAYMENT

A. The Engineer shall determine the date, time, and quantity of samples and tests to be taken unless otherwise specified. The Engineer shall notify the Contractor of the decision to perform testing. It shall be the Contractor's responsibility to notify the testing laboratory and have the testing performed as requested by the Engineer.

B. Every effort shall be made to avoid delays in the Work which may impact scheduled testing. Should testing be impossible due to construction delays, reschedule testing to a date acceptable to the Engineer.

C. If sampling or testing cannot be performed when required, delay the Work until such testing can be performed. If requested by the Engineer, uncover work which has been covered or hidden without being tested. The Engineer reserves the right to reject any work which cannot be tested, and the Contractor shall be responsible for all costs associated with said rejection.

PART 2 – PRODUCTS

2.1 REPORTING

A. All test reports shall be submitted in writing and shall include date, time, and location of the testing or sampling. The report shall also specify the testing method used, the test results, project name, and any other information pertinent to the report.

B. Each report shall be signed by an officer of the testing laboratory and forwarded to the Engineer.

PART 3 – EXECUTION

3.1 TESTING AND SAMPLING

A. Samples shall be taken by and testing performed by persons who are employed by the testing laboratory and familiar with sampling and testing procedures, unless otherwise directed by the Engineer.

B. Provide the representative of the testing laboratory and the Engineer with all materials, equipment, and facilities necessary to secure samples and otherwise perform work under this Section.

End of Section

SECTION 01 52 13

TEMPORARY FIELD OFFICES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work covered under this Section includes the furnishing and maintenance of temporary field offices.

1.2 CONTRACTOR'S OFFICE

A. The Contractor shall provide its own temporary field offices and storage facilities. All maintenance and utility costs associated with temporary offices shall be borne by the Contractor.

1.3 ENGINEER'S OFFICE

1. None required.

1.4 MAINTENANCE AND UTILITIES

A. GENERAL

1. The Contractor shall maintain, clean, and provide utilities to all temporary field offices.
2. No separate payment shall be made to the Contractor for costs associated with the furnishing and maintenance of temporary field offices.

B. POWER

1. The Owner will provide power on site for the sludge removal contractor. Where power is available at a given construction site, the Contractor shall make arrangements with the Owner for power takeoff points, voltage and phasing requirements. The Contractor will pay for it own power service as well as costs or fees arising from tapping into the system. The Contractor shall provide any special connections required for its operations including the provision and maintenance of all temporary power lines required to perform the Work in a safe and satisfactory manner.
2. All Work conducted under conditions of deficient daylight shall be suitably lighted to insure proper and safe working and inspection conditions.
3. All temporary connections for electricity shall be subject to approval of the Engineer and regulating authorities and shall be removed in like manner at the completion of the Work.
4. Unless otherwise permitted by the Engineer, circuits separate from lighting shall

be used for all power purposes.

5. All construction wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place. All electrical facilities shall conform to the requirements of Subpart K of the OSHA Safety and Health Standards for Construction and the requirements of local authorities.

C. TELEPHONE: Cellular telephone service is acceptable as telephone service.

D. SANITARY FACILITIES: The Contractor shall provide a toilet and handwashing station for its work force at the Site. They shall comply with applicable laws, ordinances, and regulations pertaining to the public health and sanitation of dwellings and camps.

E. TEMPORARY WATER

1. The Owner shall supply water to the project site.
2. Before final acceptance of the Work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the Engineer and to the agency owning the affected utility.

1.5 PROJECT CLOSE-OUT

A. Upon completion of the Work, the Contractor shall remove from the site all temporary field offices, utilities, etc. and leave the site in a condition acceptable to the Engineer.

B. All equipment and facilities under this Section shall be the property of the Contractor at the completion of the Work.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

End of Section

SECTION 01 78 36

WARRANTIES

PART 1 – GENERAL

1.1 GENERAL

A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in Contract Documents, to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

C. Requirements for warranties for products and installations that are specified to be warranted, are included in the individual Specifications.

D. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

E. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

F. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

G. Replacement Cost: On determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through part of its useful service life.

H. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and limit selections to products with warranties not in conflict with requirements of the Contract Documents.

2. The Owner reserves the right to refuse to accept Work where a special warranty, or similar commitment is required, until evidence is presented that entities required to countersign commitments are willing to do so.

I. Submit written warranties to the Engineer prior to the date for Substantial Completion. If the Engineer's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties on the Engineer's request.

1. When a designated portion of the Work is completed and occupied or used, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Engineer within fifteen days of completion of that designated portion of the Work.

J. When a special warranty is to be executed by the Contractor or the Contractor and a subcontractor, supplier, or manufacturer, prepare a written document that contains appropriate terms and identification ready for execution by the required parties. Submit a draft to the Owner through the Engineer for approval prior to final execution.

1. Refer to individual Specifications for specific content and particular requirements for submittal of special warranties.

K. Bind warranties in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.

1. Provide heavy paper dividers with celluloid covered tabs for each warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.

2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES", the Project title or name, and the name of the Contractor.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

End of Section

DIVISION 02 – EXISTING CONDITIONS

SECTION 02 01 00

EXISTING UTILITIES AND UNDERGROUND STRUCTURES

PART 1 – GENERAL

1.1 DESCRIPTION

A. The Engineer and Owner have made limited investigations to determine the locations of underground utilities and structures. Because of the nature of subsurface utilities and the difficulty in determining exact locations, the locations as shown on the plans should be considered approximate. Wherever underground utilities are encountered by the Contractor during construction they shall be protected by the Contractor, at his own expense, until the construction work is complete and the existing structures are made secure. Injury to any such utilities/structures caused by or resulting from the Contractor's work shall be repaired at the Contractor's expense. No additional compensation will be allowed for any delays sustained by the Contractor due to any interference from underground utilities.

B. It shall be the Contractor's responsibility to notify Dig Safe and locate all utilities within the construction area prior to proceeding with construction.

C. The restoration of existing property shall be done as promptly as practicable and shall not be left until the end of the construction period.

D. Cooperation with Utilities:

1. The Contractor shall allow the Owner or its agents and other contractors, and public service corporations, or their agents, to enter upon the work for the purpose of constructing, maintaining, repairing, removing, altering or replacing such pipes, sewers, conduits, manholes, wires, poles, or other structures and appliances as are now located or as may be required or permitted at or on the work by the Engineer.

   The Contractor shall cooperate with all aforesaid parties and shall allow reasonable facilities for the prosecution of any other work by the Owner, or of public service corporation, to be done in connection with this work. Care shall be taken at all times to inconvenience abutters as little as possible.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

End of Section

DIVISION 13 – SPECIAL CONSTRUCTION

SECTION 13 10 00

SEWAGE SLUDGE REMOVAL AND DISPOSAL

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes all work and costs necessary for mobilization, demobilization, coordination, lagoon sidewall washdown, testing, permitting, transportation, and off-site disposal of aerated lagoon wastewater treatment facility sewage sludge. Sludge removal shall remove accumulated volatile organic matter, grit, and other solids from three lagoons (one 36 mil Hypalon® lined baffled wastewater lagoon (Lagoon 1A and 1B), and two clay lined lagoons (Lagoon 2 and 3). The lagoons contain an aeration system. Coordination with the Owner and Operator for removal of the aeration system and baffle and continued operation of the facility will be required. Coordination with the Owner, Operator, and Sludge Removal Contractor will be required.

1.2 SUBMITTALS

A. General: Provide submittals in accordance with Specification 01 33 23.

1. The sludge removal contractor is P&H Senesac, Inc.
   Paul Senesac
   PO Box 577
   Milton, VT 05468
   802.524.7013

1.3 QUALITY ASSURANCE

A. All work shall be completed in accordance with all applicable local, State, and Federal rules and regulations and authorities having jurisdiction.

B. All work shall be completed by contractors duly licensed and certified for the dewatering, handling, transport, and disposal of municipal wastewater sludge.

C. The existing lagoon liners (Hypalon and clay) will be removed, subgrades reshaped, and new sand bedding and HDPE liners installed.

D. Sludge removal shall be completed in a way that will not remove, abrade, or otherwise damage lagoon liner material. In addition, side slopes shall be protected from disturbance and/or damage to minimize re-work and mixing of sludge with underlying materials.

1.4 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of any and all necessary equipment with the Owner and wastewater treatment facility contractor operator.

B. Staging areas and work areas shall be identified and approved by the Owner and operator prior to delivery and set up.

1.5 PROJECT CONDITIONS

A. Access to the site shall be provided to the Contractor by the Owner. The Owner will be responsible for providing temporary power and other required utilities to the Sludge Removal Contractor. Construction of staging areas, equipment storage, access (including temporary access road construction and restoration, etc. shall be the Contractor's responsibility.

B. A copy of the existing laboratory analytical reports on representative samples of sludge from the lagoons is provided in Appendix 1 of these specifications. Any additional analyses of sewage sludge requested or required for disposal will be the responsibility of the Sludge Removal Contractor.

The Sludge Removal Contractor is responsible for the secure and proper transportation of the sewage sludge to the final disposal location and final disposal, under direct contract with the Owner. Transportation services are provided under direct contract with the Owner. Waste disposal services are provided under direct contract with the Owner.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate construction schedule, service interruptions, and project start-up with Owner and Operator. The intent of this project is to complete sludge removal, liner replacement, and aeration system replacement for the lagoons sequentially, bearing in mind that the facility must remain in service during the work.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Do not use chemicals which may be considered hazardous or detrimental to organisms or equipment of wastewater treatment plant or negatively affect effluent quality.

2.2 EQUIPMENT

A. The Sludge Removal Contractor will use appropriate equipment to remove accumulated sludge from the lagoon. The use of heavy construction equipment, including but not

limited to bulldozers, front-end loaders, backhoes, and/or excavators will not be allowed during sludge removal to prevent excavation of or damage to the lagoon lining material and lagoon embankments.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Prior to field activities the Contractor shall be aware of existing conditions including: the locations of influent and effluent piping and treatment equipment; the quantity, distribution, and physical and chemical properties of sludge contained within the lagoon; access limitations; facility operational procedures; and other pertinent information.

3.2 APPLICATION

A. Lagoon preparation and dewatering: Contractor will coordinate with the Owner and Operator to remove all moveable equipment from the lagoon including the aeration system diffusers, floating baffle, etc. The Operator will dewater the lagoon to the limits of the lagoon outlet piping. The Sludge Removal Contractor will then continue dewatering through the use of pumps or other methods to achieve a stabilized water depth appropriate for sludge removal activities.

B. Sludge Removal: Remove accumulated sludge and grit from lagoon bottom without damaging or removing lining material. Exercise appropriate care during sludge removal activities to prevent damage to any facility equipment, aeration, piping, etc.

C. Restoration: Install new lagoon liners immediately following completion of sludge removal operations.

3.3 FIELD QUALITY CONTROL

A. Visually observe sludge removal operations to ensure appropriate equipment operation. Observations must be documented in daily field logs.

B. Visually observe sludge removed from lagoon to confirm that lining material is not being disturbed. Observations must be documented in daily field logs.

End of Section

SECTION 13 20 00

LAGOON AERATION SYSTEM

PART 1 – GENERAL

1.0 Description of Work

1.0.1 The pre-selected Wastewater Treatment System Package consists of multiple processes as designed and supplied by Nexom Inc., and has been chosen by the Engineer to best meet the overall design requirements for this application.

1.0.2 All equipment specified in the OPTAER Wastewater Treatment System Package sections shall be supplied and installed as a complete package, from one supplier (unless specifically noted otherwise in the specifications), in order to unify responsibility for the system warranty, performance, and proper operation.

1.1 Section Includes

1.1.1 In-water aeration process equipment and piping:

1.) Fine bubble aeration diffusers, diffuser ballast and all required hardware

2.) Floating lateral air distribution / diffuser support system, anchor posts, cable, and hardware

1.2 Related Work

1.2.1 Earthwork Section 31 23 16

1.3 Basis of Design

1.3.1 The design drawings, system layout, equipment selection, etc. have been obtained based on the OPTAER aeration system. This system was pre-selected by the Engineer (Contract Administrator) to best meet the design requirements for this application.

1.3.2 The OPTAER system shall be installed, manufactured and supplied by:

Nexom Inc.
Phone: 888-426-8180
Email: kevin.esau@nexom.com

1.3.3 Components specified herein shall be supplied by one supplier and shall be of the manufacturer's latest design.

1.3.4 Under no circumstances will a system consisting of parts compiled and assembled by a manufacturer's representative or distributor be accepted.

1.3.5 No substitutes

1.4 General Layout/Arrangement

1.4.1 The Lagoon aeration system shall generally consist of an existing main air supply headers with distribution laterals:

1.) Lateral piping shall be connected to the main air supply header with a flanged connection.
2.) Each lateral pipe shall have a shutoff valve at the main header connection.
3.) Lateral pipes shall be anchored to shore.
4.) Floating Laterals: diffuser connection ports shall be thermally fused onto the lateral piping. A length of feeder hose (equal to the maximum water depth) shall be connected to the connection port with stainless steel clamps. The aeration diffuser shall be connected to the opposite end of the feeder hose.

1.4.2 Diffusers shall be suspended from a floating lateral to ensure all diffusers remain at a constant depth and are un-affected by sludge accumulation.

1.4.3 The aeration system including diffusers, lateral system, and feeder lines shall ensure that the lagoons do not have to be de-watered or drained for system installation or maintenance.

1.4.4 Non-retrievable submerged aeration headers/laterals will not be accepted. PVC headers will not be accepted.

1.5 Influent/Effluent Design Values

1.5.1 Design aeration system based on the following design values:

1.) Average Design Flow **0.140** MGD
2.) CBOD5 (design): **165** lb/day
3.) TSS (design): **185** lb/day
4.) TKN (design): **26** lb/day
5.) TKN (design concentration): **23** mg/l

1.5.2 Wastewater effluent parameters:

1.) CBOD5 (design): **30** mg/L
2.) TSS (design): **30** mg/L
3.) TKN (design): **20** mg/L

1.6 Aeration Design Criteria

1.6.1 It is entirely the responsibility of the aeration equipment supplier to verify all design parameters. No allowance will be made for design errors or omissions that occur due to insufficient site investigation.

1.6.2 Aeration Design Factors

1.) Alpha: **0.60**
2.) Beta: **0.95**
3.) Theta: **1.024**
4.) Site Elevation: **1,648** ft
5.) Maximum Water Temperature: **68** °F
6.) Minimum Water Temperature: **33** °F

1.6.3 Aeration system shall be designed transfer sufficient oxygen to accommodate loads from:

1.) cBOD removal
2.) Internal sludge digestion

1.6.4 Aeration system shall be designed to transfer sufficient oxygen with any one cell out of service to accommodate loads from:
1.) cBOD removal

1.6.5 The average dissolved oxygen content shall be not less than **2.0** mg/L in any part of the aerated lagoons.

1.6.6 Diffusers shall have a minimum SOTE of 18.45% at a diffuser submergence depth of 9.7 ft

1.6.7 Diffusers shall have a maximum flux rate of 1.86 SCFM/sq.ft of active surface area at the standard design conditions.

1.6.8 Air distribution shall be designed to match the projected oxygen demand and minimum spacing requirements. Minimum requirements are as follows:
1.) Cell #1: 14 H3-4 diffuser assemblies
2.) Cell #2: 8 H3-4 diffuser assemblies
3.) Cell #3: 3 H3-4 diffuser assemblies

1.6.9 All diffuser assemblies shall be same make/model in all cells.

1.6.10 Submit complete aeration design calculations and results of ASCE Standard Oxygen Transfer Efficiency (SOTE) tests conducted by an independent laboratory.

1.6.11 Blower Requirements:
1.) Blowers shall be provided (existing) that will meet the lagoon aeration system airflow requirements in order to provide sufficient airflow and pressures to the treatment system
2.) Aeration System Design Airflow: 300 SCFM
3.) Design Pressure: 5.8 psi
4.) Max (intermittent) Pressure: 7.0 psi

1.7 Qualifications and Experience

1.7.1 The supplier shall have experience in the design, manufacturing, supplying, and commissioning of fine bubble diffuser aeration equipment of the type specified.

1.7.2 Aeration equipment shall be of proven design and shall be referenced by at least four (4) installations in cold climate wastewater treatment lagoons of similar scope, having been in operation for not less than 2 years.

1.8 Insurance Requirements

1.8.1 System supplier shall maintain a minimum $5,000,000 Errors and Omissions insurance policy acceptable to the client.

1.9 Warranty

1.9.1 The aeration system Supplier shall provide written warranties for the aeration system.

1.9.2 The Supplier shall repair or replace defective parts without charge to the Owner.

1.9.3 Lateral Piping and Fittings Warranty

1.) Lateral piping and fittings shall be warranted to be free from defects in material and workmanship for a period of 24 months from the date of start-up.

2.) The cost for removal (disposal) and reinstallation of any defective parts during the warrantee period shall be fully born by the Supplier

1.9.4 Aeration Diffuser Warranty

1.) Aeration diffusers shall be warranted to be free from defects in material and workmanship for a period of 24 months from the date of start-up.

2.) The cost for removal (disposal) and reinstallation of any defective parts during the warrantee period shall be fully born by the Supplier

2 PRODUCTS

2.0 Aeration Piping

2.0.1 High-Density Polyethylene (HDPE) Pipe: butt-fused joints.

2.0.2 The polyethylene pipe shall be PE3408, or PE3608, or PE4710, and conform to the requirements of ASTM D3350

2.0.3 Minimum DR requirements shall be the more stringent of the following:

1.) for buried piping: DR17 for heavy traffic areas; DR21 for light traffic areas; DR26 for non-traffic areas

2.) for other piping: DR17 for 100mm (4”) piping, DR21 for 150mm (6”) piping, DR26 for 200mm (8”) and larger

2.0.4 Minimum aeration header pipe size: 100mm (4”) diameter

2.0.5 Flange assemblies: Polyethylene stub end manufactured to match the pipe, with ductile iron slip-on flange (out of water and buried service), and SS slip-on flange (in-water).

2.0.6 Provide saddles, tees, reducers, and other fittings required for the installation shown.

2.1 Diffusers and Feeder Tubing

2.1.1 H3-4 fine bubble membrane diffuser assemblies consisting of PVC support tubes with EPDM diffuser membranes connected to an HDPE distribution manifold

1.) Maximum dry weight of individual diffuser and ballast assembly shall be 58 lb to allow for safe manual retrieval.

2.) Each diffuser assembly shall consist of four (4) 610mm long membranes

3.) EPDM diffuser membranes shall be fully supported over entire length

4.) EPDM diffuser membranes shall have a design life space of not less than 5 years before replacement is required.

2.1.2 Aeration supplier shall provide precast concrete diffuser ballast weight assemblies including SS support brackets with an HDPE cover around perimeter of weight. No on-site diffuser ballast weight fabrication will be accepted.

2.1.3 Each aeration diffuser shall be individually accessible from the water surface by boat with no additional lifting equipment required. Aeration diffuser replacement shall require no more than a crew of two workers.

2.1.4 Diffusers shall have a history of efficient operation, and freedom from clogging, excessive back pressures, or structural failure when applied to service conditions similar to those indicated for this project.

2.1.5 Provide one (1) complete diffuser assemblies and four (4) membrane assemblies as spare parts

2.1.6 Diffuser outlet connections shall be heavy walled HDPE branch saddles with socket outlet connections and shall be factory side fusion welded to the HDPE lateral pipe.

1.) As determined by the manufacturer and as dictated by site conditions, branch saddles may be factory welded to short lengths of HDPE pipe, and provided as pre-fabricated HDPE branch saddle outlet tee assemblies. Field butt fusion welding of the tee assembly will be required within the lateral at the locations indicated during the field installation procedure.

2.) The branch saddles shall have a welded contact area on the lateral pipe of a minimum of 2.1 square inches.

3.) Mechanical saddles or outlet fittings will not be accepted.

2.1.7 Feeder tubing used as the connection between the fine bubble diffuser and lateral piping shall be flexible PVC or EPDM material reinforced with spiral polyester yarn; UV and weather resistant.

.1 Nominal inside diameter 1” or 1.25”.

.2 Service temperature range -15°F to 149°F

.3 Feeder tubing to be cut to length in factory.

2.2 Lateral Anchoring

2.2.1 Each end of the floating laterals shall be held in place with a stainless steel cable attached to anchor posts

2.2.2 A Self-Adjusting Tension assembly shall be located at the free end of the laterals and shall have the follow characteristics:

.1 Adjustment range: +/- 20”

.2 Tension assembly to provide a minimum constant tension force on lateral of 275 lb

.3 Equipped with winch for initial adjustments

2.2.3 Anchor posts

.1 2.5” diameter, schedule 40 pipe - galvanized

.2 Minimum embedment of post in concrete pier: 24”

.3 Maximum Length – Fixed post: 48”

.4 Minimum Length – Self-Adjusting Tension Assembly post: 72”

2.2.4 Concrete Pier

.1 18” diameter x 36” deep (minimum)

2.3 Miscellaneous Components

2.3.1 Provide all other miscellaneous process equipment accessories including winches, stainless steel cable, concrete diffuser ballasts, rope, clamps, nuts/bolts, etc. as required for a complete system.

3 INSTALLATION

3.1 General

3.1.1 All equipment specified in the OPTAER Wastewater Treatment System Package sections shall be installed as a complete package, from one supplier (unless specifically noted otherwise in the specifications), in order to unify responsibility for the system warranty, performance and proper operation.

3.1.2 The Supplier shall install all supplied components in accordance with the manufacturer's instructions and in conformance with submitted shop drawings.

3.1.3 The installer of the aeration system shall supply all materials, tools, equipment, and services necessary to install the aeration system.

3.1.4 The site shall be kept in a neat and orderly manner throughout the duration of the system installation.

3.2 Aeration Diffuser and Lateral Installation

3.2.1 The Supplier shall provide sufficient labor and equipment to install all in-basin aeration diffuser piping and accessories within the treatment cell(s).

3.2.2 Join HDPE pipe and fittings using the butt-fusion method in accordance with the pipe manufacturer's instructions, and under the supervision of certified fusion technologists.

3.2.3 Keep piping, during the progress of the work and on completion, free from obstructions and thoroughly clean. Remove foreign material from the pipe lines and ensure lines are free from leaks. Remove and replace any defective sections.

3.2.4 Install HDPE lateral piping at flange connection locations as shown on the drawings.

3.2.5 Install diffusers and feeder tubing in accordance with supplier's instructions at locations as shown on the drawings.

3.2.6 Ensure adequate water levels in cell prior to any in-water equipment installation.

3.3 Manufacturers Field Service

3.3.1 Provide services of an experienced, competent, and authorized representative of the Manufacturer (Supplier).

.1 Inspect equipment covered by these specifications

.2 Supervise any adjustments and installation checks

.3 Perform operation checks and tests as outlined below

.4 Perform start-up and commissioning of the system

3.3.2 Visually inspect aeration pattern

.1 Pattern shall be uniform at all diffuser locations

3.3.3 If defects are revealed during testing, the Engineer may issue instructions for removal or correcting defective work and irregularities. If any material, in whole or in part, does not conform to the Specifications or is found to be defective then such material shall be rejected by the Engineer and replaced.

3.4 Commissioning

3.4.1 Supplier shall provide start-up and commissioning for the system including on-site training of the Owner's operators. A minimum of one (1) trip with one (1) day shall be allowed

3.4.2 Check the installation of all components and provide a written commissioning report to the Engineer upon completion of installation and commissioning.

END OF SECTION

DIVISION 31 – EARTHWORK

SECTION 31 08 00

RESTORATION OF SURFACES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work covered in this Section includes the restoration of surfaces and items disturbed during the Work.

B. Related work described elsewhere:

Earthwork	Division - 31

1.2 QUALITY ASSURANCE

A. Restoration of surfaces and items shall be done in accordance with the requirements of those authorities having jurisdiction.

B. Existing pavements and bituminous walks shall be replaced using new pavement equal to or better than the existing in quality and thickness, except where otherwise specified. Pavements shall be free from all noticeable sags, humps, cracks, or other defects.

C. Replacement curbing shall be of the same size, material, and appearance as adjoining curbing.

D. Grassed and vegetated areas shall be loamed and replanted with healthy vegetation of a type and quality equal to or superior to existing vegetation.

E. Miscellaneous items including but not limited to mailboxes, fencing, signage, etc. shall be carefully removed and replaced.

1.3 SUBMITTALS

A. Submittals shall be submitted in accordance with Section - 01 33 23 “Submittals”.

1.4 SCHEDULING

A. All surfaces shall be restores as soon as possible after completion of that portion of the Work.

PART 2 – MATERIALS

2.1 NEW MATERIALS

A. New materials shall comply with the requirements of the authority having jurisdiction.

2.2 REUSED MATERIALS

A. Items such as granite curbs, fencing, signs, walks, etc. which have been disturbed during the Work may be replaced with existing materials when, in the opinion of the Engineer, such materials are in acceptable condition.

PART 3 – EXECUTION

3.1 INSPECTION

A. Prior to restoring any surfaces, carefully inspect the Work to ensure that the work is complete. Unnecessary disturbance of restored surfaces is to be avoided.

3.2 PLANTS

A. Replace in their original locations all surviving, health plants, shrubs, trees, etc. which were removed during installation of the Work.

B. Replace with the same type and size any vegetation which does not survive moving.

3.3 GRASS AND LAWNS

A. Grassed areas are to be restored in accordance with Section 32 92 00 “Loaming, Seeding, and Fertilizing”.

3.4 BITUMINOUS PAVING

A. All Work shall conform to Section 32 12 16.31 “Bituminous Concrete Pavement – NH”.

B. Replace all pavement markings immediately after installation of new pavement.

3.5 MISCELLANEOUS

A. Replace miscellaneous items such as fencing, gates, signage, mailboxes, etc. in the same location as soon as possible after installation of the Work.

End of Section

SECTION 31 23 16

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work covered by this Section includes Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01 and Division 31 Specification Sections.

B. Work performed under this Section is intended to conform with State of New Hampshire, Department of Transportation, "Standard Specifications for Road and Bridge Construction (latest revision)".

1.2 SUMMARY

A. This Section includes the following:

1. Preparing subgrade, subbase and base for building slabs, walks, and pavements.

2. Excavating, trenching and backfilling of underground utilities, structures and foundations.

3. Preparing subgrade and installing earthen material courses for site projects.

1.3 DEFINITIONS

A. Borrow consists of approved material required for the construction of fills or other portions of the work, and shall be obtained from approved sources, which sources may be designated in the Contract.

B. Earth consists of clay, loam, sand, gravel, topsoil and other materials not otherwise classified.

C. Excavation consists of removal of material encountered to subgrade elevations or dimensions indicated and subsequent disposal of materials removed, classified as follows:

1. Earth Excavation includes excavation of pavements and other obstructions visible on surface; underground structures, utilities, and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.

    a. Common Earth Excavation consists of all excavation other than Trench Earth Excavation and Rock Excavation.

b. Trench Earth Excavation consists of excavations for pipelines, cables, conduits, manholes and other related work where the bottom-width limit of excavation does not exceed 8 feet.

2. Rock Excavation consists of all solid rock which cannot be removed without blasting or ripping. Intermittent drilling, blasting, or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.

   a. Site Rock Excavation consists of all rock excavation other than Trench Rock Excavation and includes the excavation of boulders and parts of masonry structures when found to measure 2 cubic yards or more.

   b. Trench Rock Excavation consists of rock excavation where solid rock and boulders or parts of masonry structures found to measure 1 cubic yard of more are removed from trenches where the bottom-width limit of excavation does not exceed 8 feet.

3. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor's expense.

   a. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Engineer.

   b. In locations other than those above, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Engineer.

4. Additional Excavation: When excavation has reached required subgrade elevations, notify Engineer, who will observe subgrade conditions. If Engineer believes that bearing materials at required subgrade elevations are unsuitable, continue excavation until suitable bearing materials are encountered and replace excavated material as directed by Engineer.

   a. Removal of unsuitable material and its replacement as directed will be paid on basis of Conditions of the Contract relative to changes in work.

D. Subgrade consists of the undisturbed earth or the compacted soil layer immediately below indicated surface treatment systems.

E. Structure: Buildings, foundations, slabs, tanks, curbs, or other man-made stationary features occurring above or below ground surface.

F. Unstable Material consists of debris, frozen materials, topsoil, quick-sand, and all wet, soft or loose material which does not provide sufficient bearing capacity to satisfactorily support pipes or other work.

G. Unsuitable Material consists of excavated material which does not meet requirements for backfilling purposes and includes solid and loose rock and unstable material.

H. Paved Areas consist of the area which lies directly under a paved surface, whether it is asphalt, concrete, or other paving materials.

I. Select Fill – Consists of Select Earth, imported sand and or other granular materials as specified and/or approved by the Engineer.

J. Earth Overburden – Earth overlying solid rock and in place during blasting operations or earth not classified as Select or Common Earth.

K. Pipe Bedding – Sand, crushed stone, or other processed granular materials as approved by the Engineer. Pipe bedding material(s) shown on the Drawings take precedence over this paragraph.

L. Wood Sheeting and Bracing – Sound timber, free from defects which might impair its strength and effectiveness.

M. Steel Sheeting and Bracing – ASTM A328.

N. Backfill – General – To the extent suitable materials are available, backfill shall consist of excavated material. Where excavation does not provide sufficient approved material, import additional material from off-site.

O. Backfill-Trenches – Select fill from pipe bedding material up to a minimum of 12” over the top of pipe; suitable Common Earth, Select Earth, of Select Fill for the remainder of the trench. Backfill materials shown on the Drawings take precedence over this paragraph.

P. Backfill – Around Structures – In paved areas, Select Fill, or a better material when required, for the full depth. In unpaved areas, Select Fill for the full depth. Backfill materials shown on the Drawings take precedence over this paragraph.

Q. Concrete for Cradles and Encasements – Class C concrete.

1.4 SUBMITTALS

A. Test Reports: Submit the following reports directly to Engineer from the testing services, with copy to Contractor:

1. Certified copies of all results of moisture-density tests and field compaction density tests.
2. Gradations of materials proposed for use in the Work.
3. Copies of measurements and computed volumes of unstable material removed.
4. Certification from testing laboratory that materials meet permeability requirements at required compaction.
5. Verification of suitability of each footing subgrade material, in accordance with specified requirements.
6. Report of actual unconfined compressive strength and/or results of bearing tests of each strata tested.

1.5 QUALITY ASSURANCE

A. All fill material shall be subject to the approval of the Engineer.

B. Codes and Standards: Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.

C. Testing and Inspection Service: Contractor shall employ and pay for (unless specified otherwise) a qualified independent geotechnical testing laboratory to perform soil testing and inspection service during earthwork operations.

D. Testing Laboratory Qualifications: To qualify for acceptance, the geotechnical testing laboratory must demonstrate to Engineer's satisfaction, based on evaluation of laboratory-submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct required field and laboratory geo-technical testing without delaying the progress of the Work.

E. Moisten or dry backfill to the proper moisture content as determined in accordance with ASTM D1577.

1.6 PROJECT CONDITIONS

A. Site Information: Subsurface explorations data, if made available to the Contractor, is for informational purposes only. Conditions are not intended as representations or warranties of accuracy or continuity between subsurface explorations. The Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor.

1. Additional test pits, borings or other explorations may be performed by Contractor, at the Contractor's option; however, no change in the Contract Sum will be authorized for such additional explorations.

B. Existing Utilities: Locate existing underground utilities in areas of excavation work. If utilities are indicated to remain in place, provide adequate means of support and protection during earthwork operations.

1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

2. Do not interrupt existing utilities serving facilities occupied by Owner or others, during occupied hours, except when permitted in writing by Engineer and then only after acceptable temporary utility services have been provided.

    a. Provide minimum of 48-hour notice to Engineer, and receive written notice to proceed before interrupting any utility.

3. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shutoff of services if lines are active.

C. Use of Explosives: Do not bring explosives onto site or use in work without prior written permission from authorities having jurisdiction.

D. Protection of Persons and Property: Barricade open excavations occurring as part of this work per applicable regulatory requirements.

1. Operate warning lights as recommended by authorities having jurisdiction.

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.

3. Perform excavation by hand within drip-line of large trees to remain. Protect root systems from damage or dry-out to the greatest extent possible. Maintain moist condition for root system and cover exposed roots with moistened burlap.

E. Maintain excavations and trenches free of groundwater, sewage, storm water, ice and snow.

F. Backfilling with frozen materials or when materials already in place are frozen is not permitted.

DELIVERY, STORAGE, AND HANDLING

A. Segregate topsoil, excavated materials, and other earth materials on the site to prevent contamination.

B. Store excavated materials meeting the requirements for backfill a sufficient distance away from excavations and trenches to avoid overloading and to prevent slides or cave-ins. Do not store materials on, over, or adjacent to structures or utilities, which may collapse or become damaged due to the added weight. Remove excess excavated material promptly and dispose of off- site.

C. No construction activity, access, storage or other use shall take place beyond the construction easement boundaries.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Common Earth – Clay, loam, sand, gravel, topsoil and similar materials which may contain some stones, pebbles, lumps and rock fragments up to 6" in largest dimension, nut does not contain debris, organic or frozen material.

B. Select Earth – Sand, gravel and similar materials which may contain small amounts of stones, pebbles, or lumps over 1" but not over 2" in largest dimension, but does not contain clay, silt, loam, organic material, debris and frozen material.

C. Embankment Fill: Shall have no stones larger than six inches in size, organic material or debris, construction debris, clumps of silt or clay, or other deleterious materials.

Gradation:	Passing 6" Sieve	=	100%
	Passing No. 4 Sieve	=	70-100%
	Passing No. 40 Sieve	=	40-80%
	Passing No.100 Sieve	=	25-60%
	Passing No.200 Sieve	=	20-45%

D. Sand - Conforming to NHDOT Item No. 304.1.

Gradation:	Passing 1/2" Sieve	=	100%
	Passing No. 4 Sieve	=	70-100%
	Passing No.200 Sieve	=	0-12%
	(Based on Fraction Passing No. 4)		

E. Gravel (Bank Run) – Conforming to NHDOT Item No. 304.2.

Gradation:	Passing 6" Sieve	=	100%
	Passing No. 4 Sieve	=	25-70%

	Passing No.200 Sieve	=	0-12%
	(Based on Fraction Passing No. 4)		

F. Screened Gravel – Uniformly graded, clean, hard, and durable particles free from an excess of soft, thin, elongated, laminated, or disintegrated pieces and be free form silt, loam, clay, or organic matter.

Gradation:	Passing 1-1/2" Sieve	=	100%
	Passing 3/4" Sieve	=	90-100%
	Passing 3/8" Sieve	=	0-30%
	Passing No. 4 Sieve	=	0-5%

G. Pea Gravel: Natural stone, washed free of clay, shale and organic matter, graded in accordance with ANSI/ASTM C136 to the following: maximum size 5/8 inch, minimum size 1/4 inch.

H. Crushed Gravel – Conforming to NHDOT Item No. 304.3.

Gradation:	Passing 3" Sieve	=	100%
	Passing 2" Sieve	=	95-100%
	Passing 1" Sieve	=	55-85%
	Passing No. 4 Sieve	=	27-52%
	Passing No. 200 Sieve	=	0-12%
	(Based on Fraction Passing No. 4)		

I. Crushed Aggregate For Shoulders - Conforming to NHDOT Item No. 304.33.

Gradation:	Passing 1-1/2" Sieve	=	100%
	Passing 1" Sieve	=	90-100%
	Passing No. 4 Sieve	=	30-65%
	Passing No. 200 Sieve	=	0-10%
	(Based on Total Sample)		

J. Crushed Stone (Fine) - Conforming to NHDOT Item No. 304.4.

Gradation:	Passing 2" Sieve	=	100%
	Passing 1-1/2" Sieve	=	85-100%
	Passing 3/4" Sieve	=	45-75%
	Passing No. 4 Sieve	=	0-45%
	Passing No. 200 Sieve	=	0-5%
	(Based on Total Sample)		

K. Crushed Stone (Course) – Conforming to NHDOT Item No. 304.5.

Gradation:	Passing 3-1/2" Sieve	=	100%
	Passing 3" Sieve	=	85-100%

Passing 1-1/2" Sieve	=	60-90%
Passing 3/4" Sieve	=	40-70%
Passing No. 4 Sieve	=	15-40%
Passing No.200 Sieve	=	0-5%
(Based on Total Sample)		

L. Loam (Topsoil) – Loam shall be the surface layer of natural workable soil containing 3% minimum to10% maximum organic matter (determined by loss by ignition), capable of sustaining the growth of vegetation, with no admixture of refuse or material toxic to plant growth. It shall be relatively free from stones, lumps, stumps or similar objects larger than 1" in greatest diameter, sterile soil, roots and brush. Ordinary sods of herbaceous growth such as grass and non-noxious weeds will be permitted. The loam shall be free from subsoil. The acidity range of the loam prior to treatment as specified herein shall be between pH 5.0 and 6.0 inclusive. Not more than 65% shall pass the No. 200 Sieve as determined by the wash test in accordance with ASTM D 1140. No more than 20% of the material passing the No. 4 Sieve shall consist of clay particles.

M. Silt - Silt Loam or Silt, at least 50% of material by weight shall have a particle size less than 0.05 mm. The material shall be free of debris, frozen material, and stones greater than 3" in largest dimension. The saturated permeability of the compacted material shall not exceed 1 X 10^{-5} as determined by the U.S. Army Corps of Engineers "Falling Head Permeability Test EM1110-2-1906, Appendix 7", when compacted to 85% of the maximum density obtainable at optimum moisture content (as determined by ASTM D1557, Method C).

N. Spalls - Stones or broken rock ranging downward from the maximum size indicated.

O. Stabilization Fabric: "Mirafi Filterweave FW 700" or approved equivalent.

P. Stone Filter Blanket - Clean durable fragments of either ledge rock, boulders or both, reasonably free of thin or elongated pieces and organic material.

Gradation:	Passing 5" Sieve	=	100%
	Passing 4" Sieve	=	85-100%
	Passing 1-1/2" Sieve	=	20-55%
	Passing ¾" Sieve	=	0-25%

Q. Structural Fill – Hard durable particles or fragments of stone, gravel and natural sand free from deleterious amounts of clay, silt or organic matter. At least 30 percent of the materials retained on the No. 4 sieve shall have a fractured face.

Gradation:	Passing 2" Sieve	=	100%
	Passing 1-1/2" Sieve	=	90-100%
	Passing No. 4 Sieve	=	30-60%
	Passing No.100 Sieve	=	0-12%

Passing No.200 Sieve	=	0-5%
(Based on Fraction Passing No. 4)		

R. Pipe Bedding – Screened gravel and/or crushed stone free from organic matter, clay, and/or loam meeting ASTM C33 Stone Size No. 67.

Gradation:	Passing 1" Sieve	=	100%
	Passing ¾" Sieve	=	90-100%
	Passing 3/8" Sieve	=	20-55%
	Passing No. 4 Sieve	=	0-10%
	Passing No. 8 Sieve	=	0-5%

PART 3 – EXECUTION

3.1 EXCAVATION - GENERAL

A. Notify "Dig Safe" (800-225-4977) of intended excavation.

B. Identify and mark known underground utilities.

C. Identify required lines, levels, contours and datum.

D. Comply with local codes, ordinances, and requirements of agencies having jurisdiction.

E. Do not perform rock excavation work until material to be excavated has been measured and classified by Engineer.

3.2 STABILITY OF EXCAVATIONS

A. Slope sides of excavations to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

B. Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross braces, in good serviceable condition. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Extend shoring and bracing as excavation progresses.

1. Provide permanent steel sheet piling or pressure-creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Unless indicated otherwise, cut off tops a minimum of 2.5 feet below final grade and leave permanently in place.

3.3 DEWATERING

A. Prevent surface and ground water from flowing into excavations and from flooding project site and surrounding area.

1. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations without erosion or sedimentation.

2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary drainage ditches.

3.4 STORAGE OF EXCAVATED MATERIALS

A. Stockpile excavated materials acceptable for backfill and fill where directed. Place, grade, shape and stabilize stockpiles as necessary to prevent storm water erosion.

1. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

2. Dispose of excess excavated soil material and materials not acceptable for use as backfill or fill.

3.5 EXCAVATION FOR STRUCTURES

A. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 foot, and extending a sufficient distance from footings and foundations to permit placing and removal of concrete form-work, installation of services, and other construction and for inspection.

1. Excavations for footings and foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.

2. For pile foundations, stop excavations from 6 inches to 12 inches above bottom of footing before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.

3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Structures: Conform to elevations and dimensions indicated within a tolerance of

plus or minus 0.10 foot; plus a sufficient distance to permit placing and removal of concrete form-work, installation of services, and other construction and for inspection. Do not disturb bottom of excavations, intended for bearing surface.

3.6 EXCAVATION FOR PAVEMENTS

A. Cut surface under pavements to comply with cross-sections, elevations and grades as indicated.

3.7 TRENCH EXCAVATION FOR PIPES AND CONDUIT

A. Excavate trenches sufficiently wide to provide ample working room but not wider than the maximum width indicated.

B. Where it is necessary for pipes to be laid in fill, place Select fill in uniform horizontal layers not over 6" in compacted thickness. Carry fill up to elevation at least two feet above the elevation of the top of the pipe to be laid and then excavate trench.

C. Bedding requirements are detailed on the plans.

D. Excavate trenches and conduit to depth indicated or required to establish indicated slope and invert elevations and to support bottom of pipe or conduit on undisturbed soil or compacted bedding material as indicated. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

1. Where rock is encountered, carry excavation 6 inches below invert elevation and backfill with a 6-inch layer of stone bedding prior to installation of pipe.

2. For pipes or conduit less than 6 inches in nominal size, and for flat-bottomed, multiple-duct conduit units, hand-excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil or compacted bedding material as indicated.

3. For pipes or conduit 6 inches or larger in nominal size, shape trench bottom or bedding to fit bottom of pipe for 90 degrees (bottom 1/4 of the circumference). Where no bedding is indicated, fill depressions with granular fill-sand and tamp. At each pipe joint, dig bell holes to relieve pipe bell of loads to ensure continuous bearing of pipe barrel on bearing surface.

3.8 COLD WEATHER PROTECTION

A. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

3.9 REQUIREMENTS PRIOR TO BACKFILLING

A. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Acceptance of construction below finish grade including, where applicable, damp-proofing, waterproofing, and perimeter insulation.

2. Inspection, testing, approval, and recording locations of underground utilities have been performed and recorded.

3. Removal of concrete form-work.

4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.

5. Removal of trash and debris from excavation.

6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

7. Inspection, testing and approval of subgrade.

3.10 SUBGRADE PREPARATION

A. Clear, grub and dispose of vegetation. Strip humus, excavate unsuitable materials and remove obstructions. Uniformly grade subgrade to indicated lines, grades and acceptable grading tolerances. Grade subgrade to be free of non-draining depressions where practical.

B. When subgrade density is less than that specified under "Compaction" for particular area classification, break up surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.

C. Unless otherwise indicated, roughen sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

3.11 GENERAL BACKFILL AND FILL PLACEMENT

A. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

B. Place backfill and fill materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.

C. Place backfill and fill materials evenly adjacent to structures, piping, or conduit to required elevations. Prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping, or conduit to approximately same elevation in each lift.

D. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and that are carried below bottom of such footings or that pass under wall footings. Place concrete to level of bottom of adjacent footing.

1. Do not backfill trenches until tests and inspections have been made and backfilling is authorized by Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

3.12 PLACING SUB-PAVEMENT GRAVEL COURSES

A. General: Sub-pavement gravel courses consist of placing subbase and base gravel materials, in layers of specified thickness, over subgrade surface to support pavements.

1. Refer to other Division - 31 sections for paving specifications.

B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of sub-pavement gravel courses.

C. Shoulders: Place shoulders along edges of sub-pavement gravel courses to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each sub-pavement gravel course layer. Compact and roll at least a 12-inch width of shoulder simultaneous with the compaction and rolling of each layer of sub-pavement gravel.

D. Placing: Place sub-pavement gravel course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting sub-pavement gravel material during placement operations.

2. When a compacted sub-pavement gravel course is indicated to be 6 inches thick or less, place material in a single layer. When indicated to be more than 6 inches thick, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

3.13 PLACING SLAB STRUCTURAL FILL COURSE

A. General: Structural fill course consists of placement of structural fill material, in layers of indicated thickness, over subgrade surface to support concrete building slabs.

B. Placing: Place structural fill material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content

for compacting material during placement operations.

1. When a compacted structural fill course is indicated to be 6 inches thick or less, place material in a single layer. When indicated to be more than 6 inches thick, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

3.14 BACKFILLING TRENCHES

A. Pipe Bedding – Bedding requirements shall be as shown on the plans. Provide bedding to the spring line of the pipe. Place fill by hand in not greater than 6 inch compacted layers.

B. 12" Over Pipes – Provide 12 inches of Select Fill over the top of the pipe as detailed on the plans. Place fill by hand in not greater than 6 inch layers. Bring Select Fill up evenly on both sides of pipes and carefully and thoroughly compact.

C. Remainder of Trench – Paved Areas – Select Fill, Select Earth, or Common Earth placed no greater than 12 inch compacted layers.

D. Remainder of Trench – Other Areas – Select Fill, Select Earth, or Common Earth placed no greater than 12 inch compacted layers.

3.15 BACKFILLING AROUND STRUCTURES

A. Uniformly spread and deposit backfill in horizontal layers, not over twelve inches in compacted thickness. Take special precautions to prevent damage to new construction.

B. In paved areas, backfill with Select Fill for the full depth. In unpaved areas, backfill with Select Fill, Select Earth or Common Earth.

3.16 SHEETING AND BRACING

A. Provide and maintain adequate sheeting and bracing as required for the safety and protection of the Work, persons and adjacent property and structures in accordance with federal, state and local laws, codes ordinances, and standards.

B. Where sheeting is placed along side pipe and extends below mid-diameter, it shall be cut off and left in place to an elevation not less that one foot above the top of the pipe. The Engineer may, at his discretion, order sheeting and bracing to be cut-off and left in place. Where, in the opinion of the Contractor, damage may result from withdrawing sheeting, he shall immediately notify the Engineer. Sheeting ordered left in place adjacent to piping shall be cut-off at least three feet below grade but not less than one foot above the top of the pipe.

C. Contractor is fully responsible for the design and construction of all sheeting and bracing used and for all damages resulting from improper quality, strength, placing, maintenance or removal of sheeting and bracing.

3.17 UNSTABLE MATERIALS

A. Remove unstable materials in excavations and trench bottoms which are incapable of supporting pipes or structures, to the extent and depths directed by the engineer, and properly dispose of off-site. Refill and compact the excavation as required.

B. Whenever the material encountered is, in the Contractor's opinion, incapable of providing adequate support, he shall immediately notify the Engineer.

3.18 DISPOSAL OF EXCAVATED MATERIALS

A. Excavated materials which meet the requirements for embankment fill or backfill may be used for constructing embankments and backfilling, as possible. Remove excess excavated materials and dispose of off-site.

B. The storing and stockpiling of unsuitable material on-site is not permitted.

3.19 COMPACTION AND MOISTURE CONDITIONING

A. Control soil and fill compaction and moisture conditioning, providing minimum percentage of density specified for each area classification indicated below or in accordance with Section 31 23 23.23. Correct improperly compacted areas or lifts as directed by Engineer if soil density tests indicate inadequate compaction.

1. Percentage of Maximum Density Requirements: Compact soil to not less than 95% of maximum density, in accordance with ASTM D 1557, Method C.

2. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material. Apply water in minimum quantity as necessary to prevent free water from appearing on surface during or subsequent to compaction operations.
   a. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

   b. Stockpile or spread soil material that has been removed because it is too wet to permit compaction. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

3.20 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction: Allow testing service to inspect and approve

each subgrade and fill layer before further backfill or construction work is performed in accordance with Section 31 23 23.23 Soil Compaction.

3.21 GRADING

A. General: Uniformly grade areas within limits of grading, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated or between such points and existing grades.

B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

C. Grading Surface of Fill under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 0.05 foot when tested with a 10-foot straight edge.

D. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.

3.22 EROSION CONTROL

A. Provide measures as necessary to control all erosion and sedimentation resulting from construction activities as indicated, warranted or required by authorities having jurisdiction.

3.23 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.

D. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.24 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Do not dispose of spoil materials on or off site in wetlands or other environmentally sensitive areas unless properly permitted through regulatory authorities having jurisdiction

and conducted in accordance with the permit conditions thereof.

B. Remove spoil materials and legally dispose of off site.

SECTION 31 23 23.23

SOIL COMPACTION

PART 1 — GENERAL

1.1 DESCRIPTION

A. This Section covers the requirements for all soil compaction.

B. Related work specified elsewhere includes:

Earthwork	31 23 16

1.2 QUALITY ASSURANCE

A. The Contractor shall provide at least one person who shall be present at all times during the soil compaction operations and who shall be thoroughly familiar with proper soil compaction techniques.

1.3 SUBMITTALS

A. All submittals shall be in accordance with Section 01 33 23 “Submittals”.

B. Provide copies of the results of the laboratory sieve analyses, moisture density tests, and any other test results required by this or other Sections.

1.4 JOB CONDITIONS

A. Compaction shall not take place in freezing weather or when materials to be compacted are frozen, too wet or moist, or too dry.

B. Schedule the Work to allow ample time for laboratory tests and to permit the collecting of samples and the performing of field density tests during the backfilling and compaction operations.

PART 2 — PRODUCTS

2.1 COMPACTION

A. Utilize the proper compaction methods and equipment to suit the soils and conditions encountered.

2.2 LABORATORY TESTING

A. Testing performed under this Section shall be by an independent testing firm qualified to provide the necessary services. The firm shall be approved by the Engineer before any testing is performed.

2.3 LABORATORY TEST REPORTS

A. As a minimum, the laboratory testing reports shall contain the following:

1. Laboratory's name.
2. Date, time and specific location from which sample was taken and name of person who collected the sample.
3. Designation of the test method used.
4. A description of the sample, the test, and the test results.
5. The date the test was performed and the person who performed the test.
6. The Project name, identification, and Contractor's name.

PART 3 — EXECUTION

3.1 INSPECTION

A. Verify that layers of material are no thicker than twelve (12) inches.

B. Verify that moisture content is nearly optimum.

C. Do not begin compaction operations until conditions are satisfactory.

3.2 PERFORMANCE

A. Compaction densities shown are percentage of the maximum density obtainable at optimum moisture content as determined by ASTM D1557, Method C (Modified Proctor).

B. Compact each layer of material to the following required densities:

Location	Density
Under concrete slabs, foundations and footings	95%
Backfill around structures	95%
Embankments	95%
Cross country areas	85%

3.3 FIELD QUALITY CONTROL

A. Perform a laboratory moisture density test for each type of soil proposed for use or encountered in the Work. Determine optimum moisture content in accordance with ASTM D1557, Method C.

B. Costs for initial field density tests shall be paid for as in Laboratory Services. Costs for retesting shall be borne by the Contractor. Field density tests shall be performed in accordance with the following average frequencies;

1. Under Structures – One test for every 200 square feet of area of each layer of compacted granular.
2. Around Structure – One test for each foot of backfill at intervals of approximately fifty (50) feet around the structure.
3. Trenches – One test at intervals of approximately 300' along the trench.
4. Embankment – Three tests for each foot of compacted fill.

C. Testing frequency indicated in Paragraph 3.3 B is at the discretion of the Engineer and may be decreased as the Project progresses.

D. Field density and moisture testing shall conform to the requirements of ASTM D1556 or D2922 and ASTM D3017. Soils shall be described in accordance with ASTM D2488, Visual-Manual Procedure.

E. Soils not meeting the specified in-place densities shall be excavated and re-compacted at the Contractor's expense.

3.4 COORDINATION

A. Provide all assistance and cooperation during testing and coordinate operations to allow ample time for the required sampling and testing.

End of Section

DIVISION 32 – EXTERIOR SURFACES

SECTION 32 92 00

LOAMING, SEEDING, AND FERTILIZING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included under this Section includes furnishing all labor, materials, equipment, and incidentals necessary to place topsoil, fertilizer, seed and mulch as required.

1.2 QUALITY ASSURANCE

A. Employ trained personnel experienced in this type of work.

1.3 PRODUCT DELIVERY AND STORAGE

A. Fertilizer shall be delivered to the Site showing the manufacturer's guaranteed analysis and stored so that when used it shall be dry and free flowing.

B. Lime shall be delivered and maintained in a dry, free flowing condition until used.

C. All seed shall be delivered in sealed containers bearing the dealer's guaranteed analysis and stored in a dry, protected place.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Loam shall be the surface layer of natural workable soil containing organic matter, or material generally humus in nature capable of sustaining the growth of vegetation. It shall be free from stones, lumps, stumps, or similar objects larger than 2 inches in greatest diameter, sterile soil, roots, and brush. The loam shall be free from subsoil.

B. The acidity range of the loam prior to treatment as specified herein shall be between pH 5.0 and 6.0 inclusive.

C. The gradation analysis of the loam shall be as follows:

Passing	Percentage
1" Screen	100%
¼" Screen	3 %(max)
No. 100 USS mesh sieve	40 to 60 %

D. Loam shall not be delivered until representative samples proposed for use have been furnished by the Contractor and approved by the Engineer. When requested to do so, the Contractor shall furnish at his own expense, a certified analysis of the loam made by an approved soil testing laboratory.

E. Fertilizer shall be a complete commercial fertilizer, 5-10-10 grade.

F. Lime shall be ground limestone containing not less than 85% calcium and magnesium carbonate.

G. Seed shall be from the same or previous year's crop and shall have not more than 1% weed content. Seed shall also meet the following requirements:

1. Grass seed of the specified mixtures shall be furnished in fully labeled, standard, sealed containers.

2. Percentage and germination of each seed type in the mixture, purity and weed seed content of the mixture shall be clearly stated on the label.

3. Seed shall be furnished on a percentage of live seed basis.

H. Lawn areas shall be seeded with a Class A mixture of the following:

Class A (Lawn Seed)

Species	Minimum Purity % / Minimum Germination %	Lbs/Acre
▪ Kentucky Blue Grass (at least two varieties America, Liberty Crest, Monopoly, etc.)	97/85	105
▪ Creeping Red Fescue	96/85	44
▪ Perennial Rye Grass (Manhattan III, Envy, Fiesta II, Caliente, etc.)	98/90	25
TOTAL		**174**

I. Class B shall normally be used for all slope work. And shall conform to the following:

Class B (Slope Seed)

Species	Minimum Purity % / Minimum Germination %	Lbs/Acre
▪ Creeping Red Fescue	96/85	35
▪ Perennial Rye Grass	98/90	30
▪ Redtop	95/80	5
▪ Alsike Clover	97/90	5
▪ Birdsfoot Trefoil (Empire variety preferred Inoculum)	98/80	5
TOTAL		**80**

J. Red clover and birdsfoot trefoil seed shall include not more than 25% hard seed. If necessary, to meet this requirement extra seed shall be supplied at no expense to the Owner.

K. Inoculum specific to birdsfoot trefoil must be used with this mixture. The inoculum shall be a pure culture of nitrogen-fixing bacteria selected for maximum vitality and the ability to transform nitrogen from the air into soluble nitrates and to deposit them in the soil. The inoculum shall not be used later than the date indicated on the container or later than specified. The inoculum shall be subject to approval.

L. Hay and straw mulch shall consist of mowed and properly cured grass or legume mowings, reasonably free from swamp grass, seeds, weeds, twigs, debris or other deleterious material. It shall be free from rot or mold.

PART 3 – EXECUTION

3.1 GENERAL

A. Loosen any heavily compacted subsoil to a depth of 12 inches. Rake the subgrade of all areas to receive loam and remove rubbish, sticks, roots and stones larger than 2 inches in diameter. Spread and lightly compact loam to finish grade as shown on the Drawings.

B. After the loam is placed and before it is raked to true lines and rolled, spread limestone evenly and thoroughly incorporate into the loam by heavy raking to at least one-half the depth of the loam. The amount of limestone shall be based on a soil test with recommendations from the Engineer.

C. Uniformly spread fertilizer and immediately mix with the loam.

D. Immediately following this preparation, uniformly apply the seed and lightly rake the seed in to the surface. Apply mulches before rolling. Lightly compact the soil using a light weight roller or a tracked dozer run parallel with the slope. Water with a fine spray on a regular basis to ensure germination.

E. Seeding and fertilizing shall be done between April 1 and June 1, between August 15 and October 15, or as directed or permitted. Seeding shall not be done during windy weather or when the ground is frozen, excessively wet, or otherwise untellable.

F. Mulching should consist of light and uniform mulch over the area as follows:

Class A areas – use straw mulch
Class B areas – use hay mulch

G. Protect seeded areas from pedestrian and vehicular traffic.

3.2 APPLICATION RATES

A. Spread loam over properly prepared areas to give a covering which will be 4 inches in compacted depth.

B. Apply lime at the recommended rate determined by the Engineer.

C. Apply fertilizer at a rate of 20 pounds per 1,000 square feet.

D. Apply mulch at a rate of 90 pounds per 1,000 square feet.

E. The Engineer reserves the right to vary the amounts of materials used, as required to produce optimum results.

3.3 MAINTENANCE

A. Keep all seeded areas watered, reseeding if and when necessary, until a healthy, uniform growth is established over the entire area.

3.4 GUARANTEE

A. The Contractor shall guarantee for a period of one year from the date of substantial completion that the new grass will be free from dead areas or washout. The Contractor shall reseed areas necessary to establish a firm, healthy stand of grass.

End of Section

APPENDIX 1 – SEWAGE SLUDGE LABORATORY ANALYTICAL RESULTS

Eastern Analytical, Inc.

professional laboratory and drilling services

Valerie Carr
Horizons Engineering, Inc.
34 School Street
Littleton , NH 03561

Laboratory Report for:

Eastern Analytical, Inc. ID:	267080
Client Identification:	Omni-Hotel WWTF
Date Received:	9/21/2023
Report revision/reissue:	Revision, replaces report dated 10/247/2023
Revision information:	Revised to include subcontract data.

Enclosed are the analytical results per the Chain of Custody for sample(s) in the referenced project. All analyses were performed in accordance with our QA/QC Program, NELAP and other applicable state requirements. All quality control criteria was within acceptance criteria unless noted on the report pages. Results are for the exclusive use of the client named on this report and will not be released to a third party without consent.

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the written approval of the laboratory.

The following standard abbreviations and conventions apply to all EAI reports:

< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Certifications:
Eastern Analytical, Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012), New York (12072) and West Virginia (9910C). Please refer to our website at www.easternanalytical.com for a copy of our certificates and accredited parameters.

References:

- EPA 600/4-79-020, 1983
- Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd edition or noted revision year.
- Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- Hach Water Analysis Handbook, 4th edition, 1992

If you have any questions regarding the results contained within, please feel free to contact customer service. Unless otherwise requested, we will dispose of the sample(s) 6 weeks from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director — 11.21.23 Date

SAMPLE CONDITIONS PAGE

EAI ID#: **267080**

Client: **Horizons Engineering, Inc.**

Client Designation: **Omni-Hotel WWTF**

Temperature upon receipt (°C): 2.6 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date/Time Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
267080.01	Lagoon 1A	9/21/23	9/21/23 10:00	sludge	4.6	Adheres to Sample Acceptance Policy
267080.02	Lagoon 1B	9/21/23	9/21/23 11:00	sludge	4.7	Adheres to Sample Acceptance Policy
267080.03	Lagoon 2	9/21/23	9/21/23 12:00	sludge	3.6	Adheres to Sample Acceptance Policy
267080.04	Lagoon 3	9/21/23	9/21/23 13:00	sludge	4.6	Adheres to Sample Acceptance Policy

All results contained in this report relate only to the above listed samples.

Unless otherwise noted:

- *Hold times, preservation, container types, and sample conditions adhered to EPA Protocol.*
- *Solid samples are reported on a dry weight basis, unless otherwise noted. pH/Corrosivity, Flashpoint, Ignitability, Paint Filter, Conductivity and Specific Gravity are always reported on an "as received" basis.*
- *Analysis of pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite were performed at the laboratory outside of the recommended 15 minute hold time.*
- *Samples collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures.*

LABORATORY REPORT

EAI ID#: **267080**

Client: **Horizons Engineering, Inc.**

Client Designation: **Omni-Hotel WWTF**

Sample ID:	Lagoon 1A	Lagoon 1B	Lagoon 2	Lagoon 3
Lab Sample ID:	267080.01	267080.02	267080.03	267080.04
Matrix:	sludge	sludge	sludge	sludge
Date Sampled:	9/21/23	9/21/23	9/21/23	9/21/23
Date Received:	9/21/23	9/21/23	9/21/23	9/21/23
Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date of Analysis:	9/25/23	9/25/23	9/25/23	9/25/23
Analyst:	DGM	DGM	DGM	DGM
Method:	8260C	8260C	8260C	8260C
Dilution Factor:	35	44	50	40
Dichlorodifluoromethane	< 4	< 4	< 5	< 4
Chloromethane	< 4	< 4	< 5	< 4
Vinyl chloride	< 0.7	< 0.9	< 1	< 0.8
Bromomethane	< 4	< 4	< 5	< 4
Chloroethane	< 4	< 4	< 5	< 4
Trichlorofluoromethane	< 4	< 4	< 5	< 4
Diethyl Ether	< 2	< 2	< 2	< 2
Acetone	< 70	< 90	< 100	< 80
1,1-Dichloroethene	< 2	< 2	< 2	< 2
tert-Butyl Alcohol (TBA)	< 70	< 90	< 100	< 80
Methylene chloride	< 4	< 4	< 5	< 4
Carbon disulfide	< 4	< 4	< 5	< 4
Methyl-t-butyl ether(MTBE)	< 4	< 4	< 5	< 4
Ethyl-t-butyl ether(ETBE)	< 4	< 4	< 5	< 4
Isopropyl ether(DIPE)	< 4	< 4	< 5	< 4
tert-amyl methyl ether(TAME)	< 4	< 4	< 5	< 4
trans-1,2-Dichloroethene	< 2	< 2	< 2	< 2
1,1-Dichloroethane	< 2	< 2	< 2	< 2
2,2-Dichloropropane	< 2	< 2	< 2	< 2
cis-1,2-Dichloroethene	< 2	< 2	< 2	< 2
2-Butanone(MEK)	< 20	< 20	< 20	< 20
Bromochloromethane	< 2	< 2	< 2	< 2
Tetrahydrofuran(THF)	< 20	< 20	< 20	< 20
Chloroform	< 2	< 2	< 2	< 2
1,1,1-Trichloroethane	< 2	< 2	< 2	< 2
Carbon tetrachloride	< 2	< 2	< 2	< 2
1,1-Dichloropropene	< 2	< 2	< 2	< 2
Benzene	< 2	< 2	< 2	< 2
1,2-Dichloroethane	< 2	< 2	< 2	< 2
Trichloroethene	< 2	< 2	< 2	< 2
1,2-Dichloropropane	< 2	< 2	< 2	< 2
Dibromomethane	< 2	< 2	< 2	< 2
Bromodichloromethane	< 2	< 2	< 2	< 2
1,4-Dioxane	< 40	< 40	< 50	< 40
4-Methyl-2-pentanone(MIBK)	< 20	< 20	< 20	< 20
cis-1,3-Dichloropropene	< 2	< 2	< 2	< 2
Toluene	< 2	< 2	< 2	< 2
trans-1,3-Dichloropropene	< 2	< 2	< 2	< 2
1,1,2-Trichloroethane	< 2	< 2	< 2	< 2
2-Hexanone	< 4	< 4	< 5	< 4
Tetrachloroethene	< 2	< 2	< 2	< 2
1,3-Dichloropropane	< 2	< 2	< 2	< 2
Dibromochloromethane	< 2	< 2	< 2	< 2
1,2-Dibromoethane(EDB)	< 0.7	< 0.9	< 1	< 0.8
Chlorobenzene	< 2	< 2	< 2	< 2
1,1,1,2-Tetrachloroethane	< 2	< 2	< 2	< 2

LABORATORY REPORT

EAI ID#: **267080**

Client: **Horizons Engineering, Inc.**

Client Designation: **Omni-Hotel WWTF**

Sample ID:	Lagoon 1A	Lagoon 1B	Lagoon 2	Lagoon 3
Lab Sample ID:	267080.01	267080.02	267080.03	267080.04
Matrix:	sludge	sludge	sludge	sludge
Date Sampled:	9/21/23	9/21/23	9/21/23	9/21/23
Date Received:	9/21/23	9/21/23	9/21/23	9/21/23
Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date of Analysis:	9/25/23	9/25/23	9/25/23	9/25/23
Analyst:	DGM	DGM	DGM	DGM
Method:	8260C	8260C	8260C	8260C
Dilution Factor:	35	44	50	40
Ethylbenzene	< 2	< 2	< 2	< 2
mp-Xylene	< 2	< 2	< 2	< 2
o-Xylene	< 2	< 2	< 2	< 2
Styrene	< 2	< 2	< 2	< 2
Bromoform	< 2	< 2	< 2	< 2
IsoPropylbenzene	< 2	< 2	< 2	< 2
Bromobenzene	< 2	< 2	< 2	< 2
1,1,2,2-Tetrachloroethane	< 2	< 2	< 2	< 2
1,2,3-Trichloropropane	< 2	< 2	< 2	< 2
n-Propylbenzene	< 2	< 2	< 2	< 2
2-Chlorotoluene	< 2	< 2	< 2	< 2
4-Chlorotoluene	< 2	< 2	< 2	< 2
1,3,5-Trimethylbenzene	< 2	< 2	< 2	< 2
tert-Butylbenzene	< 2	< 2	< 2	< 2
1,2,4-Trimethylbenzene	< 2	< 2	< 2	< 2
sec-Butylbenzene	< 2	< 2	< 2	< 2
1,3-Dichlorobenzene	< 2	< 2	< 2	< 2
p-Isopropyltoluene	< 2	< 2	< 2	< 2
1,4-Dichlorobenzene	< 2	< 2	< 2	< 2
1,2-Dichlorobenzene	< 2	< 2	< 2	< 2
n-Butylbenzene	< 2	< 2	< 2	< 2
1,2-Dibromo-3-chloropropane	< 2	< 2	< 2	< 2
1,3,5-Trichlorobenzene	< 2	< 2	< 2	< 2
1,2,4-Trichlorobenzene	< 2	< 2	< 2	< 2
Hexachlorobutadiene	< 2	< 2	< 2	< 2
Naphthalene	< 4	< 4	< 5	< 4
1,2,3-Trichlorobenzene	< 2	< 2	< 2	< 2
4-Bromofluorobenzene (surr)	**88 %R**	**88 %R**	**88 %R**	**87 %R**
1,2-Dichlorobenzene-d4 (surr)	**106 %R**	**106 %R**	**107 %R**	**106 %R**
Toluene-d8 (surr)	**94 %R**	**94 %R**	**93 %R**	**93 %R**
1,2-Dichloroethane-d4 (surr)	**109 %R**	**109 %R**	**108 %R**	**108 %R**

Reporting limits are elevated due to the % solids content of the sample or the sample mass used for analysis.

LABORATORY REPORT

EAI ID#: **267080**

Client: **Horizons Engineering, Inc.**

Client Designation: **Omni-Hotel WWTF**

Sample ID:	Lagoon 1A	Lagoon 1B	Lagoon 2	Lagoon 3
Lab Sample ID:	267080.01	267080.02	267080.03	267080.04
Matrix:	sludge	sludge	sludge	sludge
Date Sampled:	9/21/23	9/21/23	9/21/23	9/21/23
Date Received:	9/21/23	9/21/23	9/21/23	9/21/23
Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date of Extraction/Prep:	9/25/23	9/25/23	9/25/23	9/25/23
Date of Analysis:	9/26/23	9/26/23	9/26/23	9/26/23
Analyst:	JMR	JMR	JMR	JMR
Method:	8270E	8270E	8270E	8270E
Dilution Factor:	305	255	397	316
alpha-Terpineol	< 100	< 90	< 100	< 100
Phenol	< 20	< 20	< 30	< 20
2-Chlorophenol	< 20	< 20	< 30	< 20
2,4-Dichlorophenol	< 20	< 20	< 30	< 20
2,4,5-Trichlorophenol	< 20	< 20	< 30	< 20
2,4,6-Trichlorophenol	< 20	< 20	< 30	< 20
Pentachlorophenol	< 100	< 90	< 100	< 100
2-Nitrophenol	< 100	< 90	< 100	< 100
4-Nitrophenol	< 100	< 90	< 100	< 100
2,4-Dinitrophenol	< 200	< 200	< 300	< 200
2-Methylphenol	< 20	< 20	< 30	< 20
3/4-Methylphenol	< 20	< 20	< 30	< 20
2,4-Dimethylphenol	< 100	< 90	< 100	< 100
4-Chloro-3-methylphenol	< 20	< 20	< 30	< 20
4,6-Dinitro-2-methylphenol	< 100	< 90	< 100	< 100
Benzoic Acid	< 1000	< 900	< 1000	< 1000
N-Nitrosodimethylamine	< 20	< 20	< 30	< 20
n-Nitroso-di-n-propylamine	< 10	< 10	< 20	< 10
n-Nitrosodiphenylamine	< 20	< 20	< 30	< 20
bis(2-Chloroethyl)ether	< 20	< 20	< 30	< 20
bis(2-chloroisopropyl)ether	< 20	< 20	< 30	< 20
bis(2-Chloroethoxy)methane	< 20	< 20	< 30	< 20
1,3-Dichlorobenzene	< 20	< 20	< 30	< 20
Acetophenone	< 200	< 200	< 300	< 200
1,4-Dichlorobenzene	< 20	< 20	< 30	< 20
1,2-Dichlorobenzene	< 20	< 20	< 30	< 20
1,2,4-Trichlorobenzene	< 20	< 20	< 30	< 20
2-Chloronaphthalene	< 20	< 20	< 30	< 20
4-Chlorophenyl-phenylether	< 20	< 20	< 30	< 20
4-Bromophenyl-phenylether	< 20	< 20	< 30	< 20
Hexachloroethane	< 20	< 20	< 30	< 20
Hexachlorobutadiene	< 20	< 20	< 30	< 20
Hexachlorocyclopentadiene	< 100	< 90	< 100	< 100
Hexachlorobenzene	< 20	< 20	< 30	< 20
4-Chloroaniline	< 20	< 20	< 30	< 20
2,3-Dichloroaniline	< 20	< 20	< 30	< 20
2-Nitroaniline	< 100	< 90	< 100	< 100
3-Nitroaniline	< 100	< 90	< 100	< 100
4-Nitroaniline	< 100	< 90	< 100	< 100
Aniline	< 20	< 20	< 30	< 20
Benzyl alcohol	< 200	< 200	< 300	< 200
Nitrobenzene	< 20	< 20	< 30	< 20
Isophorone	< 20	< 20	< 30	< 20
2,4-Dinitrotoluene	< 40	< 40	< 60	< 40
2,6-Dinitrotoluene	< 40	< 40	< 60	< 40
Benzidine (estimated)	< 100	< 90	< 100	< 100
3,3'-Dichlorobenzidine	< 20	< 20	< 30	< 20

LABORATORY REPORT

EAI ID#: **267080**

Client: **Horizons Engineering, Inc.**

Client Designation: **Omni-Hotel WWTF**

Sample ID:	Lagoon 1A	Lagoon 1B	Lagoon 2	Lagoon 3
Lab Sample ID:	267080.01	267080.02	267080.03	267080.04
Matrix:	sludge	sludge	sludge	sludge
Date Sampled:	9/21/23	9/21/23	9/21/23	9/21/23
Date Received:	9/21/23	9/21/23	9/21/23	9/21/23
Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date of Extraction/Prep:	9/25/23	9/25/23	9/25/23	9/25/23
Date of Analysis:	9/26/23	9/26/23	9/26/23	9/26/23
Analyst:	JMR	JMR	JMR	JMR
Method:	8270E	8270E	8270E	8270E
Dilution Factor:	305	255	397	316
Pyridine	< 100	< 90	< 100	< 100
Azobenzene	< 20	< 20	< 30	< 20
Carbazole	< 20	< 20	< 30	< 20
Dimethylphthalate	< 20	< 20	< 30	< 20
Diethylphthalate	< 100	< 90	< 100	< 100
Di-n-butylphthalate	< 200	< 200	< 200	< 200
Butylbenzylphthalate	< 100	< 90	< 100	< 100
bis(2-Ethylhexyl)phthalate	< 100	< 90	< 100	< 100
Di-n-octylphthalate	< 100	< 90	< 100	< 100
Dibenzofuran	< 20	< 20	< 30	< 20
Naphthalene	< 20	< 20	< 30	< 20
2-Methylnaphthalene	< 20	< 20	< 30	< 20
1-Methylnaphthalene	< 20	< 20	< 30	< 20
Acenaphthylene	< 20	< 20	< 30	< 20
Acenaphthene	< 20	< 20	< 30	< 20
Fluorene	< 20	< 20	< 30	< 20
Phenanthrene	< 20	< 20	< 30	< 20
Anthracene	< 20	< 20	< 30	< 20
Fluoranthene	< 20	< 20	< 30	< 20
Pyrene	< 20	< 20	< 30	< 20
Benzo[a]anthracene	< 20	< 20	< 30	< 20
Chrysene	< 20	< 20	< 30	< 20
Benzo[b]fluoranthene	< 20	< 20	< 30	< 20
Benzo[k]fluoranthene	< 20	< 20	< 30	< 20
Benzo[a]pyrene	< 20	< 20	< 30	< 20
Indeno[1,2,3-cd]pyrene	< 20	< 20	< 30	< 20
Dibenz[a,h]anthracene	< 20	< 20	< 30	< 20
Benzo[g,h,i]perylene	< 20	< 20	< 30	< 20
n-Decane	< 100	< 90	< 100	< 100
n-Octadecane	< 100	< 90	< 100	< 100
2-Fluorophenol (surr)	**64 %R**	**67 %R**	**60 %R**	**60 %R**
Phenol-d6 (surr)	**70 %R**	**73 %R**	**66 %R**	**66 %R**
2,4,6-Tribromophenol (surr)	**72 %R**	**80 %R**	**71 %R**	**71 %R**
Nitrobenzene-D5 (surr)	**76 %R**	**78 %R**	**70 %R**	**70 %R**
2-Fluorobiphenyl (surr)	**81 %R**	**85 %R**	**75 %R**	**75 %R**
p-Terphenyl-D14 (surr)	**79 %R**	**81 %R**	**73 %R**	**77 %R**

Detection limits elevated due to low solids content and in response to the lower initial mass used for analysis.

LABORATORY REPORT

EAI ID#: **267080**

Client: **Horizons Engineering, Inc.**

Client Designation: **Omni-Hotel WWTF**

Sample ID:	Lagoon 1A	Lagoon 1B	Lagoon 2	Lagoon 3
Lab Sample ID:	267080.01	267080.02	267080.03	267080.04
Matrix:	sludge	sludge	sludge	sludge
Date Sampled:	9/21/23	9/21/23	9/21/23	9/21/23
Date Received:	9/21/23	9/21/23	9/21/23	9/21/23
% Solid:	4.6	4.7	3.6	4.6
Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date of Extraction/Prep:	9/25/23	9/25/23	9/25/23	9/25/23
Date of Analysis:	9/26/23	9/26/23	9/26/23	9/26/23
Analyst:	MB	MB	MB	MB
Extraction Method:	3540C	3540C	3540C	3540C
Analysis Method:	8082A	8082A	8082A	8082A
Dilution Factor:	311	268	386	317
PCB-1016	< 5	< 4	< 6	< 5
PCB-1221	< 5	< 4	< 6	< 5
PCB-1232	< 5	< 4	< 6	< 5
PCB-1242	< 5	< 4	< 6	< 5
PCB-1248	< 5	< 4	< 6	< 5
PCB-1254	< 5	< 4	< 6	< 5
PCB-1260	< 5	< 4	< 6	< 5
PCB-1262	< 5	< 4	< 6	< 5
PCB-1268	< 5	< 4	< 6	< 5
TMX (surr)	**87 %R**	**91 %R**	**88 %R**	**89 %R**
DCB (surr)	**76 %R**	**78 %R**	**74 %R**	**78 %R**

Acid clean-up was performed on the samples and associated batch QC.
Detection limits elevated due to sample matrix, a low solids content and in response to the lower initial mass used for analysis.

LABORATORY REPORT

EAI ID#: **267080**

Client: **Horizons Engineering, Inc.**

Client Designation: **Omni-Hotel WWTF**

Sample ID:	Lagoon 1A	Lagoon 1B	Lagoon 2	Lagoon 3					
Lab Sample ID:	267080.01	267080.02	267080.03	267080.04					
Matrix:	sludge	sludge	sludge	sludge					
Date Sampled:	9/21/23	9/21/23	9/21/23	9/21/23		**Analysis**			
Date Received:	9/21/23	9/21/23	9/21/23	9/21/23	**Units**	**Date**	**Time**	**Method**	**Analyst**
Solids Total	**4.6**	**4.7**	**3.6**	**4.6**	Percent	9/22/23	17:00	2540G-11	ABL
Sulfate	< 300	< 200	**260**	**320**	mg/kg	9/25/23	2:51	9056A	MNT
Nitrate/Nitrite-N	< 100	< 100	< 100	< 100	mg/kg	9/25/23	2:51	9056A	MNT
Ammonia-N	**1500**	**5000**	**2200**	**1400**	mg/kg	9/26/23	9:40	4500NH3D-11	PEN
Total Organic Nitrogen	**31500**	**35000**	**32800**	**25600**	mg/kg	9/27/23	10:05	CALC	PEN
TKN	**33000**	**40000**	**35000**	**27000**	mg/kg	9/26/23	16:51	$4500N_{org}C/NH3D$	GRS
pH	**6.10**	**6.25**	**5.98**	**5.97**	SU	9/22/23	13:15	9045D	PHA
Paint Filter (Free Liquid)	**Present**	**Present**	**Present**	**Present**	None	9/27/23	14:43	9095	MNT

LABORATORY REPORT

EAI ID#: **267080**

Client: **Horizons Engineering, Inc.**

Client Designation: **Omni-Hotel WWTF**

Sample ID:	Lagoon 1A	Lagoon 1B	Lagoon 2	Lagoon 3					
Lab Sample ID:	267080.01	267080.02	267080.03	267080.04					
Matrix:	sludge	sludge	sludge	sludge					
Date Sampled:	9/21/23	9/21/23	9/21/23	9/21/23	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	9/21/23	9/21/23	9/21/23	9/21/23					
Antimony	**3.6**	**14**	**11**	**17**	SolTotDry	mg/kg	9/25/23	6020A	DS
Arsenic	**1.2**	**2.7**	**2.0**	**2.2**	SolTotDry	mg/kg	9/25/23	6020A	DS
Beryllium	< 0.5	**1.1**	**1.1**	**1.0**	SolTotDry	mg/kg	9/25/23	6020A	DS
Cadmium	**2.1**	**5.3**	**3.8**	**3.7**	SolTotDry	mg/kg	9/25/23	6020A	DS
Chromium	**14**	**27**	**27**	**26**	SolTotDry	mg/kg	9/25/23	6020A	DS
Copper	**830**	**3100**	**2300**	**2500**	SolTotDry	mg/kg	9/25/23	6020A	DS
Lead	**65**	**120**	**91**	**96**	SolTotDry	mg/kg	9/25/23	6020A	DS
Mercury	**0.36**	**1.3**	**0.97**	**1.0**	SolTotDry	mg/kg	9/25/23	6020A	DS
Molybdenum	**3.0**	**4.2**	**3.9**	**2.6**	SolTotDry	mg/kg	9/25/23	6020A	DS
Nickel	**15**	**24**	**22**	**24**	SolTotDry	mg/kg	9/25/23	6020A	DS
Phosphorus	**6200**	**9500**	**7600**	**5100**	SolTotDry	mg/kg	9/25/23	6020A	DS
Potassium	**1900**	**2300**	**2200**	**1800**	SolTotDry	mg/kg	9/25/23	6020A	DS
Selenium	**0.75**	**4.0**	**2.6**	**3.4**	SolTotDry	mg/kg	9/25/23	6020A	DS
Silver	**3.2**	**11**	**7.9**	**11**	SolTotDry	mg/kg	9/25/23	6020A	DS
Thallium	< 0.5	< 0.5	< 0.5	< 0.5	SolTotDry	mg/kg	9/25/23	6020A	DS
Zinc	**930**	**1900**	**1400**	**1200**	SolTotDry	mg/kg	9/25/23	6020A	DS

ANALYTICAL SERVICES, INC.
Microbiological Testing, Research and Consulting

130 Allen Brook Lane, Williston, VT 05495 USA
800.723.4432 / 802.878.5138
www.analyticalservices.com

11/20/2023

Jennifer Laramie
Eastern Analytical
25 Chennell Drive
Concord, NH 03301

Project # **71425**

Dear Jennifer,

Enclosed please find the results of the analyses performed on the sample(s) received in our laboratory on September 25, 2023.

This report contains three (3) pages, including this cover page and the Chain of Custody form. The results reported herein apply only to the samples included in this report, as received at Analytical Services, Inc. (ASI). These results were generated under ASI's laboratory quality system; any deviations or nonconformances are noted. This report shall not be reproduced, except in full, without written permission from ASI.

Comments: None

Thank you for using ASI for your testing needs. If you have any questions, or if we may be of further service, please contact us at any time.

Sincerely,
ANALYTICAL SERVICES, INC.

Harry D. Christman, PhD (for)
Technical Director

HDC/hdc

ANALYTICAL SERVICES, INC.
Microbiological Testing, Research and Consulting

130 Allen Brook Lane, Williston, VT 05495 USA
1.800.723.4432 / 802.878.5138 Fax: 802.878.6765
www.analyticalservices.com

Client: Eastern Analytical
25 Chennell Drive
Concord, NH 03301

ASI Project ID: 71425
Date Collected: 9/21/2023
Sample Receipt: 9/25/2023

Analytical Results

Client Sample ID	ASI Sample ID	Date/Time Collected	Parameter	Amount Analyzed	Result	Date/Time Analyzed	
						Start	End
Lagoon 1A	71425-01	9/21/2023 10:00	Enteric Viruses	4.73 g Dry Weight	<1 PFU/ 4.73 g Dry Weight	10/3/23 11:30	11/16/23 10:00
Lagoon 1B	71425-02	9/21/2023 11:00	Enteric Viruses	4.40 g Dry Weight	<1 PFU/ 4.40 g Dry Weight	10/3/23 11:30	11/16/23 10:00
Lagoon 2	71425-03	9/21/2023 12:00	Enteric Viruses	4.27 g Dry Weight	<1 PFU/ 4.27 g Dry Weight	10/3/23 11:30	11/16/23 10:00
Lagoon 3	71425-04	9/21/2023 13:00	Enteric Viruses	4.07 g Dry Weight	<1 PFU/ 4.07 g Dry Weight	10/5/23 11:30	11/16/23 10:00

g = Grams; PFU = Plaque Forming Units; MPN = Most Probable Number

Methods Used under 40CFR Part 503

Enteric Viruses (Solids): ASTM Method D 4994-96, 1996, US EPA Manual of Methods for Virology, EPA/600/4-84/013 (R-10), EPA 625/R-92/013 App. H. Enteric Viruses
- Freeze Date: Frozen by EAI on 9/21/2023 16:30 Eastern. Received frozen at ASI and transferred to freezer upon arrival. Sample aliquots were frozen at ASI for up to 14 days from collection while cells were propagated for virus analysis (Ref: US EPA EPA/625/R-92/013, Table 9-2).

Exceptions/Notes:

Total solids data provided by Eastern Analytical, Inc. and used by ASI for sample calculations.
Lagoon 1A Total Solids = 4.6%
Lagoon 1B Total Solids = 4.7%
Lagoon 2 Total Solids = 3.6%
Lagoon 3 Total Solids = 4.6%

CHAIN-OF-CUSTODY RECORD

Eastern Analytical, Inc.
professional laboratory and drilling services

EAI ID# 267080 Page 1

Sample ID	Date Sampled	Matrix	aParameters	Sample Notes
Lagoon 1A	9/21/2023 10:00	sludge	Subcontract - Enteric Virus	
Lagoon 1B	9/21/2023 11:00	sludge	Subcontract - Enteric Virus	
Lagoon 2	9/21/2023 12:00	sludge	Subcontract - Enteric Virus	
Lagoon 3	9/21/2023 13:00	sludge	Subcontract - Enteric Virus	

EAI ID# 267080 **Project State: NH**

Project ID:

Company Analytical Services Inc.
Address 130 Allen Brook Lane
Address Williston, VT 05495
Account #
Phone # 800-723-4432

Results Needed: Preferred Date: Standard
RUSH Due Date: _____

QC Deliverables
☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Notes about project:
Email login confirmation, pdf of results and invoice to customerservice@easternanalytical.com.

3.2° IR2

PO #:60762 **EAI ID# 267080**

Data Deliverable (circle)
Excel NH EMD EQuIS ME EGAD

Call prior to analyzing, if RUSH charges will be applied.

Samples Collected by: 9-25-23 0730

Relinquished by	Date/Time	Received by
	9/25/23 1057	
Relinquished by	**Date/Time**	**Received by**

November 07, 2023

Service Request No:E2300874

Alison Blay
Eastern Analytical, Inc.
51 Antrim Avenue
Concord, NH 03301

Laboratory Results for: Sludge by Method 1613B

Dear Alison,

Enclosed are the results of the sample(s) submitted to our laboratory September 26, 2023
For your reference, these analyses have been assigned our service request number **E2300874.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2190. You may also contact me via email at hussam.kelany@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

H Kelany

Hussam Kelany
Project Manager

CC: Customer Service

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

ALS Environmental

Certificate of Analysis

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

ALS Environmental

Client:	Eastern Analytical, Inc.	**Service Request No.:**	E2300874
Project:	Sludge by Method 1613B	**Date Received:**	09/26/23
Sample Matrix:	Sludge		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four samples were received for analysis at ALS Environmental in Houston on 09/26/23.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2300483: Laboratory Control Spike / Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD for this extraction batch.

B flags – Method Blanks

The Method Blank EQ2300483-01 contained low levels of target compounds below the Method Reporting Limit (MRL). The associated compounds in the samples are flagged with 'B' flags where the sample result is less than ten times the level detected in the method blank.

One compound, OCDD, was above the MRL (CRQL). ALS/Houston follows the ***EPA National Functional Guidelines for CDDs and CDFs, September 2005,*** which states on page 31, "The concentration of OCDD/OCDF in the method blank must be <3x the CRQL (MRL.):"

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

2378-TCDF

Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'

- The 1:1 and associated dilution have been combined into one TEQ Summary report
- EPA-89 TEFs, "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs)", 1989 EPA Update (EPA/625/3-89/016, March 1989)
- WHO-1998 TEFs, for PCBs, PCDDs, 21 PCDFs for humans and wildlife. (M. Van den Berg, et al., Environ Health Perspect 106: 775-792, 1998)

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: Eastern Analytical, Inc. **Service Request:**E2300874

Project: Sludge by Method 1613B/267080

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2300874-001	LAGOON 1A	9/21/2023	1000
E2300874-002	LAGOON 1B	9/21/2023	1100
E2300874-003	LAGOON 2	9/21/2023	1200
E2300874-004	LAGOON 3	9/21/2023	1300

Service Request Summary

Folder #: **E2300874**
Client Name: Eastern Analytical, Inc.
Project Name: Sludge by Method 1613B
Project Number: 267080

Report To: Alison Blay
Eastern Analytical, Inc.
51 Antrim Avenue
Concord, NH 03301
USA
Phone Number: 800-287-0525
Cell Number:
Fax Number: 603-228-4591
E-mail: alisonb@eailabs.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: TWOODS
Date Received: 09/26/23
Internal Due Date: 10/24/2023
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 60761
EDD: No EDD Specified

4 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
Location: EHRMS-WIC 1E
Pressure Gas:

				Semivoa GCMS	
Lab Samp No.	**Client Samp No**	**Matrix**	**Collected**	Dioxins Furans/1613B	Total Solids/ALS SOP
E2300874-001	LAGOON 1A	Sludge, Solid	09/21/23 1000	II	II
E2300874-002	LAGOON 1B	Sludge, Solid	09/21/23 1100	II	II
E2300874-003	LAGOON 2	Sludge, Solid	09/21/23 1200	II	II
E2300874-004	LAGOON 3	Sludge, Solid	09/21/23 1300	II	II

Service Request Summary

Folder #:	**E2300874**
Client Name:	Eastern Analytical, Inc.
Project Name:	Sludge by Method 1613B
Project Number:	267080
Report To:	Alison Blay Eastern Analytical, Inc. 51 Antrim Avenue Concord, NH 03301 USA
Phone Number:	800-287-0525
Cell Number:	
Fax Number:	603-228-4591
E-mail:	alisonb@eailabs.com

Project Chemist:	Hussam Kelany
Originating Lab:	HOUSTON
Logged By:	TWOODS
Date Received:	09/26/23
Internal Due Date:	10/24/2023
QAP:	LAB QAP
Qualifier Set:	HRMS Qualifier Set
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	60761
EDD:	No EDD Specified

4 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: EHRMS-WIC 1E

Pressure Gas:

Data Qualifiers

HRMS Qualifier Set

*	Indicates the samples were extracted outside of the recommended holding time.
B	Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E	Estimated value. The reported concentration is above the calibration range of the instrument.
J	Estimated value. The reported concentration is below the MRL.
K	The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P	Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q	Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S	Signal saturated detector. Result reported from dilution.
U	Compound was analyzed for, but was not detected (ND).
X	See Case Narrative.
Y	Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i	The MDL/MRL have been elevated due to a matrix interference.

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793_2024	5/27/2024
Arkansas Department of Environmental Quality	88-00356	3/27/2024
California State Environmental Laboratory Accreditation Program	2919	4/30/2024
Department of Defense	L22-90	3/31/2024
Department of Defense	L23-358	5/31/2025
Florida Department of Health	E87611-38	6/30/2024
Illinois Environmental Protection Agency	2000322023-11	6/30/2024
Kansas Department of Health and Environment	E-10352 2023-2024	7/31/2024
Louisiana Department of Environmental Quality	03087-2023	6/30/2024
Louisiana Department of Health and Hospitals	LA028-2023	12/31/2023
Maine Department of Health and Human Services	2022017	6/5/2024
Maryland Department of the Environment	343-2023	6/30/2024
Michigan Depratment of Environmental Quality	9971-2023	4/30/2024
Minnesota Department of Health	2368363	12/31/2023
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2024
Nevada Division of Environmental Protection	TX026932024-1	7/31/2024
New Hampshire Environmental Laboratory Accreditation Program	209423	4/24/2024
New Jersey Department of Environmental Protection	TX008-2024	6/30/2024
New York Department of Health	11707	3/31/2024
Oklahoma Department of Environmental Quality	2023-140	8/31/2024
Oregon Environmental Laboratory Accreditation Program	TX200002-011	5/15/2024
Pennsylvania Department of Environmental Protection	68-03441-017	6/30/2024
Perry Johnson Laboratory Accreditation	L22-91	3/31/2024
Tennessee Department of Environment and Concervation	TN04016-2023	4/30/2024
Texas Commision on Environmental Quality	T104704231-23-30	4/30/2024
Utah Department of Health Environmental Laboratory Certification	TX026932023-14	7/31/2024
Washington Department of Ecology	C819-22	11/14/2023

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID: E23008 74 | DB-5MSUI | SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
11/06/23	LKL	001, 002

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
11/07/23	SL	001, 002

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID: E2300874 | DB-5MSUI | SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
11/07/23	LKL	003, 004

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
11/07/23	[illegible]	003, 004

ALS Environmental

Chain of Custody

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

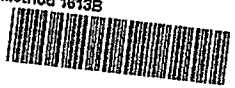
CHAIN-OF-CUSTODY RECORD

Eastern Analytical, Inc.
professional laboratory and drilling services

EAI ID# 267080 Page 1

Sample ID	Date Sampled	Matrix	aParameters	Sample Notes
Lagoon 1A	9/21/2023 10:00	sludge	Subcontract - Dioxin/Furans Full Congeners Method 1613A	
Lagoon 1B	9/21/2023 11:00	sludge	Subcontract - Dioxin/Furans Full Congeners Method 1613A	
Lagoon 2	9/21/2023 12:00	sludge	Subcontract - Dioxin/Furans Full Congeners Method 1613A	
Lagoon 3	9/21/2023 13:00	sludge	Subcontract - Dioxin/Furans Full Congeners Method 1613A	

E2300874
Eastern Analytical, Inc.
Sludge by Method 1613B
5



EAI ID# 267080 **Project State: NH**

Project ID:

Company ALS Environmental – Houston
Address 10450 Stancliff Road, Suite
Address Houston, TX 77099
Account #
Phone # 1 281-530-5656

Results Needed: Preferred Date: Standard

RUSH Due Date: _____

QC Deliverables

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Notes about project:

Email login confirmation, pdf of results and invoice to customerservice@easternanalytical.com.

PO #:60761 **EAI ID# 267080**

Data Deliverable (circle)

Excel NH EMD EQuIS ME EGAD

Call prior to analyzing, if RUSH charges will be applied.

Samples Collected by: _____

Relinquished by	Date/Time	Received by
	9/25/23 1600	UPS
	9-26-23 0730	CA
Relinquished by	Date/Time	Received by

ALS Environmental

Cooler Receipt Form

Project Chemist _____

Client/Project Eastern Analytical Thermometer ID IR3L

Date/Time Received: 9.26.23 10:30 Initials: CG Date/Time Logged in: 9.26.23 Initials JL

1. Method of delivery: ○ US Mail ● Fed Ex ○ UPS ○ DHL ○ Courier ○ Client
2. Samples received in: ● Cooler ○ Box ○ Envelope ○ Other _____
3. Were custody seals on coolers? ● Yes ○ No If yes, how many and where? _____
   Were they intact? ● Yes ○ No ○ N/A
   Were they signed and dated? ● Yes ○ No ○ N/A
4. Packing Material: ○ Inserts ○ Baggies ○ Bubble Wrap ○ Gel Packs ○ Wet Ice ○ Sleeves ○ Other _____
5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling: _____

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
		9.26.23	10:30	CG	4.4	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ● Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ● Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ● Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ● Yes ○ No
10. Did sample labels and tags agree with custody documents? ● Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: E2300874 5
Eastern Analytical, Inc.
Sludge by Method 1613B

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental - Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6°C.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10°C.
- ✓ Air samples are shipped and stored cold, at 0 to 6°C
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

ALS Environmental

Preparation Information Benchsheets

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 427609
Team: Semivoa GCMS/OOLUJIMI
Prep WorkFlow: OrgExtS(365)
Prep Method: Method Soxhlet
Status: Prepped
Prep Date/Time: 10/4/23 11:41

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2300868-001	Ditch-6	.01	1613B/Dioxins Furans			Soil	10.113g	brown soil
2	E2300868-002	Ditch-7	.01	1613B/Dioxins Furans			Soil	10.240g	brown soil
3	E2300868-003	Ditch-8	.01	1613B/Dioxins Furans			Soil	10.066g	brown soil
4	E2300868-004	Ditch-9	.01	1613B/Dioxins Furans			Soil	10.162g	brown soil
5	E2300868-005	Ditch-10	.01	1613B/Dioxins Furans			Soil	10.184g	brown soil
6	E2300874-001	LAGOON 1A	.01	1613B/Dioxins Furans			Sludge, Solid	10.051g	dark watery soil
7	E2300874-002	LAGOON 1B	.01	1613B/Dioxins Furans			Sludge, Solid	10.142g	dark watery soil
8	E2300874-003	LAGOON 2	.01	1613B/Dioxins Furans			Sludge, Solid	10.167g	dark watery soil
9	E2300874-004	LAGOON 3	.01	1613B/Dioxins Furans			Sludge, Solid	10.129g	brown soil
10	EQ2300483-01	MB		1613B/Dioxins Furans			Solid	10.143g	
11	EQ2300483-02	LCS		1613B/Dioxins Furans			Solid	10.130g	
12	EQ2300483-03	DLCS		1613B/Dioxins Furans			Solid	10.213g	

Spiking Solutions

Name: 1613B Matrix Working Standard Inventory ID 231321 Logbook Ref: OO 9/15/23 MWS Expires On: 03/13/2024

E2300868-001	100.00µL	E2300868-002	100.00µL	E2300868-003	100.00µL	E2300868-004	100.00µL	E2300868-005	100.00µL	E2300874-001	100.00µL
E2300874-002	100.00µL	E2300874-003	100.00µL	E2300874-004	100.00µL	EQ2300483-01	100.00µL	EQ2300483-02	100.00µL	EQ2300483-03	100.00µL

Name: 8290/1613B Cleanup Working Standard Inventory ID 231537 Logbook Ref: JS 9/29/2023 CWS @8ng/mL Expires On: 03/13/2024

E2300868-001	100.00µL	E2300868-002	100.00µL	E2300868-003	100.00µL	E2300868-004	100.00µL	E2300868-005	100.00µL	E2300874-001	100.00µL
E2300874-002	100.00µL	E2300874-003	100.00µL	E2300874-004	100.00µL	EQ2300483-01	100.00µL	EQ2300483-02	100.00µL	EQ2300483-03	100.00µL

Name: 1613B Labeled Working Standard Inventory ID 231591 Logbook Ref: OO 10/4/23LWS@2-4ng/ml Expires On: 12/21/2023

E2300868-001	1,000.00µL	E2300868-002	1,000.00µL	E2300868-003	1,000.00µL	E2300868-004	1,000.00µL	E2300868-005	1,000.00µL	E2300874-001	1,000.00µL
E2300874-002	1,000.00µL	E2300874-003	1,000.00µL	E2300874-004	1,000.00µL	EQ2300483-01	1,000.00µL	EQ2300483-02	1,000.00µL	EQ2300483-03	1,000.00µL

Preparation Materials

Carbon, High Purity	JS 10/6/2023 (231627)	Ethyl Acetate 99.9% Minimum EtOAc	OO 4/24/23 C4H8O4 (228820)	Hexanes 95%	OO 9/26/23 Hexane 95 (231462)
Dichloromethane (Methylene Chloride) 99.9% MeCl2	OO 4/24/23 CH2CL2 (228819)	Sodium Hydroxide 1N NaOH	DD082123 (230964)	Toluene 99.9% Minimum	tw 07/27/23 toluene (230539)
Glass Wool	DD 8/8/2023 (230782)	Sulfuric Acid Reagent Grade H2SO4	TW 04/28/23 (228939)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	OO9/13/23 NaSO4 (231302)
Silica Gel	OO/7/14/23 silica (230290)				

Preparation Information Benchsheet

Prep Run#: 427609
Team: Semivoa GCMS/OOLUJIMI

Prep WorkFlow: OrgExtS(365)
Prep Method: Method Soxhlet

Status: Prepped
Prep Date/Time: 10/4/23 11:41

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	10/4/23 11:41	Started:	10/5/23 09:30	Started:	10/10/23 09:45	Started:	10/10/23 12:00
Finished:	10/5/23 09:00	Finished:	10/5/23 10:00	Finished:	10/10/23 11:45	Finished:	10/10/23 15:30
By:	OOLUJIMI	By:	DDO	By:	DDO	By:	DDO
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

ALS Environmental

Analytical Results

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 10:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1A	**Units:**	ng/Kg
Lab Code:	E2300874-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/03/23 18:08
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.051g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545736	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545732

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	5.56	6.07			1
1,2,3,7,8-PeCDD	ND	U	2.30	30.4			1
1,2,3,4,7,8-HxCDD	ND	U	0.936	30.4			1
1,2,3,6,7,8-HxCDD	ND	U	1.07	30.4			1
1,2,3,7,8,9-HxCDD	2.57**JK**		0.957	30.4	0.89	1.007	1
1,2,3,4,6,7,8-HpCDD	25.3**K**		0.772	0.772	0.87	1.000	1
OCDD	366		1.96	60.7	0.88	1.000	1
2,3,7,8-TCDF	ND	U	3.89	6.07			1
1,2,3,7,8-PeCDF	1.17**JK**		1.06	30.4	1.83	1.001	1
2,3,4,7,8-PeCDF	2.38**J**		0.980	30.4	1.58	1.001	1
1,2,3,4,7,8-HxCDF	ND	U	1.49	30.4			1
1,2,3,6,7,8-HxCDF	ND	U	1.65	30.4			1
1,2,3,7,8,9-HxCDF	2.35**JK**		1.78	30.4	1.64	1.001	1
2,3,4,6,7,8-HxCDF	2.59**JK**		1.47	30.4	0.81	1.001	1
1,2,3,4,6,7,8-HpCDF	14.4**JK**		1.43	30.4	0.69	1.000	1
1,2,3,4,7,8,9-HpCDF	1.98**BJK**		1.61	30.4	3.85	1.001	1
OCDF	180		15.3	60.7	1.00	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 10:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1A	**Units:**	ng/Kg
Lab Code:	E2300874-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/03/23 18:08
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.051g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545736	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545732

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	5.56	6.07			1
Total Penta-Dioxins	ND	U	2.30	30.4			1
Total Hexa-Dioxins	5.59**J**		0.982	30.4	1.06		1
Total Hepta-Dioxins	ND	U	0.772	30.4			1
Total Tetra-Furans	ND	U	3.89	6.07			1
Total Penta-Furans	45.4		0.761	0.761	1.58		1
Total Hexa-Furans	4.36**J**		1.59	30.4	1.26		1
Total Hepta-Furans	23.2**J**		1.52	30.4	1.10		1

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 10:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1A	**Units:**	Percent
Lab Code:	E2300874-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/03/23 18:08
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.051g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545736	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545732

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1384.954	69		25-164	0.74	1.019
13C-1,2,3,7,8-PeCDD	2000	1255.068	63		25-181	1.48	1.172
13C-1,2,3,4,7,8-HxCDD	2000	1287.522	64		32-141	1.24	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1129.129	56		28-130	1.26	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	969.365	48		23-140	1.14	1.066
13C-OCDD	4000	1665.790	42		17-157	0.89	1.141
13C-2,3,7,8-TCDF	2000	1087.027	54		24-169	0.75	0.994
13C-1,2,3,7,8-PeCDF	2000	1058.047	53		24-185	1.66	1.132
13C-2,3,4,7,8-PeCDF	2000	1135.567	57		21-178	1.57	1.163
13C-1,2,3,4,7,8-HxCDF	2000	980.819	49		26-152	0.50	0.972
13C-1,2,3,6,7,8-HxCDF	2000	918.577	46		26-123	0.49	0.975
13C-1,2,3,7,8,9-HxCDF	2000	979.234	49		29-147	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1027.815	51		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	827.644	41		28-143	0.42	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	887.478	44		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	514.334	64		35-197	NA	1.020

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 10:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1A	**Units:**	ng/Kg
Lab Code:	E2300874-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	5.56	6.07	1	1	
1,2,3,7,8-PeCDD	ND	2.30	30.4	1	1	
1,2,3,4,7,8-HxCDD	ND	0.936	30.4	1	0.1	
1,2,3,6,7,8-HxCDD	ND	1.07	30.4	1	0.1	
1,2,3,7,8,9-HxCDD	**2.57**	0.957	30.4	1	0.1	0.257
1,2,3,4,6,7,8-HpCDD	**25.3**	0.772	0.772	1	0.01	0.253
OCDD	**366**	1.96	60.7	1	0.0003	0.110
2,3,7,8-TCDF	ND	3.89	6.07	1	0.1	
1,2,3,7,8-PeCDF	**1.17**	1.06	30.4	1	0.03	0.0351
2,3,4,7,8-PeCDF	**2.38**	0.980	30.4	1	0.3	0.714
1,2,3,4,7,8-HxCDF	ND	1.49	30.4	1	0.1	
1,2,3,6,7,8-HxCDF	ND	1.65	30.4	1	0.1	
1,2,3,7,8,9-HxCDF	**2.35**	1.78	30.4	1	0.1	0.235
2,3,4,6,7,8-HxCDF	**2.59**	1.47	30.4	1	0.1	0.259
1,2,3,4,6,7,8-HpCDF	**14.4**	1.43	30.4	1	0.01	0.144
1,2,3,4,7,8,9-HpCDF	**1.98**	1.61	30.4	1	0.01	0.0198
OCDF	**180**	15.3	60.7	1	0.0003	0.0540
		Total TEQ				2.08

2005 WHO TEFs, ND = 0

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 10:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1A	**Units:**	Percent
Lab Code:	E2300874-001	**Basis:**	NA

Total Solids

Analysis Method:	ALS SOP	**Date Analyzed:**	09/29/23 13:50
	5.575g		NA
			E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Solids	8.19		-	-			1

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 11:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1B	**Units:**	ng/Kg
Lab Code:	E2300874-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/03/23 18:56
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.142g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545737	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545732

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	9.69	10.3			1
1,2,3,7,8-PeCDD	ND	U	2.88	51.7			1
1,2,3,4,7,8-HxCDD	ND	U	3.24	51.7			1
1,2,3,6,7,8-HxCDD	ND	U	3.65	51.7			1
1,2,3,7,8,9-HxCDD	ND	U	3.30	51.7			1
1,2,3,4,6,7,8-HpCDD	48.5**K**		3.22	3.22	1.74	1.000	1
OCDD	746		10.5	103	0.87	1.000	1
2,3,7,8-TCDF	ND	U	6.64	10.3			1
1,2,3,7,8-PeCDF	ND	U	6.36	51.7			1
2,3,4,7,8-PeCDF	ND	U	5.68	51.7			1
1,2,3,4,7,8-HxCDF	ND	U	3.81	51.7			1
1,2,3,6,7,8-HxCDF	ND	U	4.40	51.7			1
1,2,3,7,8,9-HxCDF	ND	U	4.87	51.7			1
2,3,4,6,7,8-HxCDF	ND	U	4.45	51.7			1
1,2,3,4,6,7,8-HpCDF	24.6**JK**		11.0	51.7	0.72	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	9.05	51.7			1
OCDF	275**K**		21.0	103	0.69	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 11:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1B	**Units:**	ng/Kg
Lab Code:	E2300874-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/03/23 18:56
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.142g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545737	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545732

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	9.69	10.3			1
Total Penta-Dioxins	ND	U	2.88	51.7			1
Total Hexa-Dioxins	ND	U	3.39	51.7			1
Total Hepta-Dioxins	ND	U	3.22	51.7			1
Total Tetra-Furans	36.8		6.64	10.3	0.69		1
Total Penta-Furans	ND	U	6.01	6.01			1
Total Hexa-Furans	ND	U	4.36	51.7			1
Total Hepta-Furans	ND	U	9.88	51.7			1

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 11:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1B	**Units:**	Percent
Lab Code:	E2300874-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/03/23 18:56
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.142g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545737	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545732

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1412.417	71		25-164	0.76	1.019
13C-1,2,3,7,8-PeCDD	2000	1371.653	69		25-181	1.58	1.173
13C-1,2,3,4,7,8-HxCDD	2000	1507.410	75		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1427.729	71		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1128.503	56		23-140	1.07	1.065
13C-OCDD	4000	1680.783	42		17-157	0.89	1.141
13C-2,3,7,8-TCDF	2000	1049.198	52		24-169	0.79	0.994
13C-1,2,3,7,8-PeCDF	2000	1069.400	53		24-185	1.58	1.133
13C-2,3,4,7,8-PeCDF	2000	1160.200	58		21-178	1.63	1.163
13C-1,2,3,4,7,8-HxCDF	2000	1226.153	61		26-152	0.50	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1086.514	54		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1138.447	57		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1064.849	53		28-136	0.49	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	942.390	47		28-143	0.43	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1347.042	67		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	506.115	63		35-197	NA	1.020

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 11:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1B	**Units:**	ng/Kg
Lab Code:	E2300874-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	9.69	10.3	1	1	
1,2,3,7,8-PeCDD	ND	2.88	51.7	1	1	
1,2,3,4,7,8-HxCDD	ND	3.24	51.7	1	0.1	
1,2,3,6,7,8-HxCDD	ND	3.65	51.7	1	0.1	
1,2,3,7,8,9-HxCDD	ND	3.30	51.7	1	0.1	
1,2,3,4,6,7,8-HpCDD	**48.5**	3.22	3.22	1	0.01	0.485
OCDD	**746**	10.5	103	1	0.0003	0.224
2,3,7,8-TCDF	ND	6.64	10.3	1	0.1	
1,2,3,7,8-PeCDF	ND	6.36	51.7	1	0.03	
2,3,4,7,8-PeCDF	ND	5.68	51.7	1	0.3	
1,2,3,4,7,8-HxCDF	ND	3.81	51.7	1	0.1	
1,2,3,6,7,8-HxCDF	ND	4.40	51.7	1	0.1	
1,2,3,7,8,9-HxCDF	ND	4.87	51.7	1	0.1	
2,3,4,6,7,8-HxCDF	ND	4.45	51.7	1	0.1	
1,2,3,4,6,7,8-HpCDF	**24.6**	11.0	51.7	1	0.01	0.246
1,2,3,4,7,8,9-HpCDF	ND	9.05	51.7	1	0.01	
OCDF	**275**	21.0	103	1	0.0003	0.0825
		Total TEQ				1.04

2005 WHO TEFs, ND = 0

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 11:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 1B	**Units:**	Percent
Lab Code:	E2300874-002	**Basis:**	NA

Total Solids

Analysis Method:	ALS SOP	**Date Analyzed:**	09/29/23 13:50
	5.4692g		NA
			E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Solids	4.77		-	-			1

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 12:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 2	**Units:**	ng/Kg
Lab Code:	E2300874-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/06/23 16:26
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.167g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545784	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545780

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	9.99	11.4			1
1,2,3,7,8-PeCDD	ND	U	3.87	57.1			1
1,2,3,4,7,8-HxCDD	5.18**JK**		4.85	57.1	2.77	1.000	1
1,2,3,6,7,8-HxCDD	ND	U	5.59	57.1			1
1,2,3,7,8,9-HxCDD	ND	U	5.01	57.1			1
1,2,3,4,6,7,8-HpCDD	186		14.5	14.5	1.03	1.000	1
OCDD	1260		10.9	114	0.95	1.000	1
2,3,7,8-TCDF	ND	U	20.2	20.2			1
1,2,3,7,8-PeCDF	ND	U	9.46	57.1			1
2,3,4,7,8-PeCDF	ND	U	9.02	57.1			1
1,2,3,4,7,8-HxCDF	ND	U	4.39	57.1			1
1,2,3,6,7,8-HxCDF	ND	U	4.66	57.1			1
1,2,3,7,8,9-HxCDF	15.5**J**		6.43	57.1	1.36	1.000	1
2,3,4,6,7,8-HxCDF	16.1**JK**		5.50	57.1	0.84	1.000	1
1,2,3,4,6,7,8-HpCDF	ND	U	43.8	57.1			1
1,2,3,4,7,8,9-HpCDF	ND	U	50.4	57.1			1
OCDF	525		42.6	114	0.86	1.005	1

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Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 12:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 2	**Units:**	ng/Kg
Lab Code:	E2300874-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/06/23 16:26
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.167g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545784	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545780

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	9.99	11.4			1
Total Penta-Dioxins	ND	U	3.87	57.1			1
Total Hexa-Dioxins	6.58**J**		5.15	57.1	1.24		1
Total Hepta-Dioxins	186		14.5	57.1	1.03		1
Total Tetra-Furans	59.7		20.2	20.2	0.75		1
Total Penta-Furans	ND	U	9.24	9.24			1
Total Hexa-Furans	67.6		5.14	57.1	1.09		1
Total Hepta-Furans	ND	U	47.0	57.1			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 12:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 2	**Units:**	Percent
Lab Code:	E2300874-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/06/23 16:26
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.167g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545784	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545780

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	925.936	46		25-164	0.77	1.020
13C-1,2,3,7,8-PeCDD	2000	911.573	46		25-181	1.55	1.174
13C-1,2,3,4,7,8-HxCDD	2000	1043.479	52		32-141	1.35	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1022.343	51		28-130	1.33	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	713.227	36		23-140	1.02	1.066
13C-OCDD	4000	1003.421	25		17-157	0.85	1.141
13C-2,3,7,8-TCDF	2000	728.278	36		24-169	0.81	0.994
13C-1,2,3,7,8-PeCDF	2000	809.428	40		24-185	1.64	1.134
13C-2,3,4,7,8-PeCDF	2000	841.547	42		21-178	1.66	1.165
13C-1,2,3,4,7,8-HxCDF	2000	938.325	47		26-152	0.50	0.972
13C-1,2,3,6,7,8-HxCDF	2000	941.317	47		26-123	0.51	0.975
13C-1,2,3,7,8,9-HxCDF	2000	769.400	38		29-147	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	835.800	42		28-136	0.48	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	695.539	35		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	760.718	38		26-138	0.42	1.079
37Cl-2,3,7,8-TCDD	800	333.225	42		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 12:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 2	**Units:**	ng/Kg
Lab Code:	E2300874-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	9.99	11.4	1	1	
1,2,3,7,8-PeCDD	ND	3.87	57.1	1	1	
1,2,3,4,7,8-HxCDD	**5.18**	4.85	57.1	1	0.1	0.518
1,2,3,6,7,8-HxCDD	ND	5.59	57.1	1	0.1	
1,2,3,7,8,9-HxCDD	ND	5.01	57.1	1	0.1	
1,2,3,4,6,7,8-HpCDD	**186**	14.5	14.5	1	0.01	1.86
OCDD	**1260**	10.9	114	1	0.0003	0.378
2,3,7,8-TCDF	ND	20.2	20.2	1	0.1	
1,2,3,7,8-PeCDF	ND	9.46	57.1	1	0.03	
2,3,4,7,8-PeCDF	ND	9.02	57.1	1	0.3	
1,2,3,4,7,8-HxCDF	ND	4.39	57.1	1	0.1	
1,2,3,6,7,8-HxCDF	ND	4.66	57.1	1	0.1	
1,2,3,7,8,9-HxCDF	**15.5**	6.43	57.1	1	0.1	1.55
2,3,4,6,7,8-HxCDF	**16.1**	5.50	57.1	1	0.1	1.61
1,2,3,4,6,7,8-HpCDF	ND	43.8	57.1	1	0.01	
1,2,3,4,7,8,9-HpCDF	ND	50.4	57.1	1	0.01	
OCDF	**525**	42.6	114	1	0.0003	0.158
		Total TEQ				6.07

2005 WHO TEFs, ND = 0

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 12:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 2	**Units:**	Percent
Lab Code:	E2300874-003	**Basis:**	NA

Total Solids

Analysis Method:	ALS SOP	**Date Analyzed:**	09/29/23 13:50
	5.248g		NA
			E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Solids	4.31		-	-			1

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Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 13:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 3	**Units:**	ng/Kg
Lab Code:	E2300874-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/06/23 17:14
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.129g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545785	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545780

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	7.33	9.42			1
1,2,3,7,8-PeCDD	ND	U	5.30	47.1			1
1,2,3,4,7,8-HxCDD	2.76**JK**		2.60	47.1	0.95	1.000	1
1,2,3,6,7,8-HxCDD	ND	U	2.84	47.1			1
1,2,3,7,8,9-HxCDD	ND	U	2.61	47.1			1
1,2,3,4,6,7,8-HpCDD	76.8**K**		5.25	5.25	1.64	1.001	1
OCDD	989		5.82	94.2	0.79	1.000	1
2,3,7,8-TCDF	ND	U	10.8	10.8			1
1,2,3,7,8-PeCDF	ND	U	6.64	47.1			1
2,3,4,7,8-PeCDF	ND	U	5.94	47.1			1
1,2,3,4,7,8-HxCDF	ND	U	2.97	47.1			1
1,2,3,6,7,8-HxCDF	ND	U	3.34	47.1			1
1,2,3,7,8,9-HxCDF	ND	U	4.25	47.1			1
2,3,4,6,7,8-HxCDF	ND	U	3.62	47.1			1
1,2,3,4,6,7,8-HpCDF	30.6**JK**		25.3	47.1	2.20	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	28.2	47.1			1
OCDF	292		20.7	94.2	0.96	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 13:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 3	**Units:**	ng/Kg
Lab Code:	E2300874-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/06/23 17:14
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.129g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545785	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545780

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	62.3		7.33	9.42	0.83		1
Total Penta-Dioxins	ND	U	5.30	47.1			1
Total Hexa-Dioxins	ND	U	2.69	47.1			1
Total Hepta-Dioxins	118		5.25	47.1	1.12		1
Total Tetra-Furans	19.9		10.8	10.8	0.71		1
Total Penta-Furans	ND	U	6.28	6.28			1
Total Hexa-Furans	17.8**J**		3.51	47.1	1.30		1
Total Hepta-Furans	ND	U	26.8	47.1			1

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 13:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 3	**Units:**	Percent
Lab Code:	E2300874-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	11/06/23 17:14
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.129g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545785	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545780

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1320.916	66		25-164	0.76	1.019
13C-1,2,3,7,8-PeCDD	2000	1395.783	70		25-181	1.53	1.174
13C-1,2,3,4,7,8-HxCDD	2000	1418.892	71		32-141	1.29	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1391.775	70		28-130	1.29	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	911.155	46		23-140	1.09	1.065
13C-OCDD	4000	1321.469	33		17-157	0.93	1.141
13C-2,3,7,8-TCDF	2000	1095.559	55		24-169	0.81	0.994
13C-1,2,3,7,8-PeCDF	2000	1232.854	62		24-185	1.62	1.134
13C-2,3,4,7,8-PeCDF	2000	1337.392	67		21-178	1.64	1.165
13C-1,2,3,4,7,8-HxCDF	2000	1346.335	67		26-152	0.51	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1225.419	61		26-123	0.49	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1166.346	58		29-147	0.53	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1195.891	60		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	855.603	43		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1037.850	52		26-138	0.41	1.079
37Cl-2,3,7,8-TCDD	800	480.188	60		35-197	NA	1.020

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 13:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 3	**Units:**	ng/Kg
Lab Code:	E2300874-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	7.33	9.42	1	1	
1,2,3,7,8-PeCDD	ND	5.30	47.1	1	1	
1,2,3,4,7,8-HxCDD	**2.76**	2.60	47.1	1	0.1	0.276
1,2,3,6,7,8-HxCDD	ND	2.84	47.1	1	0.1	
1,2,3,7,8,9-HxCDD	ND	2.61	47.1	1	0.1	
1,2,3,4,6,7,8-HpCDD	**76.8**	5.25	5.25	1	0.01	0.768
OCDD	**989**	5.82	94.2	1	0.0003	0.297
2,3,7,8-TCDF	ND	10.8	10.8	1	0.1	
1,2,3,7,8-PeCDF	ND	6.64	47.1	1	0.03	
2,3,4,7,8-PeCDF	ND	5.94	47.1	1	0.3	
1,2,3,4,7,8-HxCDF	ND	2.97	47.1	1	0.1	
1,2,3,6,7,8-HxCDF	ND	3.34	47.1	1	0.1	
1,2,3,7,8,9-HxCDF	ND	4.25	47.1	1	0.1	
2,3,4,6,7,8-HxCDF	ND	3.62	47.1	1	0.1	
1,2,3,4,6,7,8-HpCDF	**30.6**	25.3	47.1	1	0.01	0.306
1,2,3,4,7,8,9-HpCDF	ND	28.2	47.1	1	0.01	
OCDF	**292**	20.7	94.2	1	0.0003	0.0876
		Total TEQ				1.73

2005 WHO TEFs, ND = 0

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	09/21/23 13:00
Sample Matrix:	Sludge, Solid	**Date Received:**	09/26/23 10:30
Sample Name:	LAGOON 3	**Units:**	Percent
Lab Code:	E2300874-004	**Basis:**	NA

Total Solids

Analysis Method:	ALS SOP	**Date Analyzed:**	09/29/23 13:50
	5.7593g		NA
			E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Solids	5.24		-	-			1

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Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ2300483-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 11:45
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.143g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545212	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.201	0.493			1
1,2,3,7,8-PeCDD	ND	U	0.0850	2.46			1
1,2,3,4,7,8-HxCDD	0.217**J**		0.0167	2.46	1.23	1.000	1
1,2,3,6,7,8-HxCDD	0.0916**J**		0.0178	2.46	1.31	1.000	1
1,2,3,7,8,9-HxCDD	0.105**JK**		0.0166	2.46	1.51	1.005	1
1,2,3,4,6,7,8-HpCDD	0.970		0.0501	0.0501	1.17	1.000	1
OCDD	5.61		0.0319	4.93	0.86	1.001	1
2,3,7,8-TCDF	ND	U	0.188	0.493			1
1,2,3,7,8-PeCDF	ND	U	0.0791	2.46			1
2,3,4,7,8-PeCDF	ND	U	0.0736	2.46			1
1,2,3,4,7,8-HxCDF	0.0751**JK**		0.00868	2.46	0.70	1.000	1
1,2,3,6,7,8-HxCDF	0.0939**JK**		0.00957	2.46	0.73	1.000	1
1,2,3,7,8,9-HxCDF	0.230**JK**		0.0129	2.46	1.46	1.000	1
2,3,4,6,7,8-HxCDF	0.0678**JK**		0.0104	2.46	0.61	1.001	1
1,2,3,4,6,7,8-HpCDF	0.195**J**		0.0180	2.46	1.18	1.000	1
1,2,3,4,7,8,9-HpCDF	0.206**J**		0.0203	2.46	1.19	1.000	1
OCDF	0.650**J**		0.181	4.93	0.79	1.006	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ2300483-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 11:45
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.143g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545212	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.201	0.493			1
Total Penta-Dioxins	ND	U	0.0850	2.46			1
Total Hexa-Dioxins	0.355**J**		0.0170	2.46	1.23		1
Total Hepta-Dioxins	0.970**J**		0.0501	2.46	1.17		1
Total Tetra-Furans	ND	U	0.188	0.493			1
Total Penta-Furans	ND	U	0.0764	0.0764			1
Total Hexa-Furans	0.0447**J**		0.0103	2.46	1.28		1
Total Hepta-Furans	0.401**J**		0.0192	2.46	1.18		1

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ2300483-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 11:45
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.143g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545212	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1643.773	82		25-164	0.76	1.020
13C-1,2,3,7,8-PeCDD	2000	1747.842	87		25-181	1.59	1.178
13C-1,2,3,4,7,8-HxCDD	2000	1894.501	95		32-141	1.29	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1969.546	98		28-130	1.26	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1529.777	76		23-140	1.06	1.066
13C-OCDD	4000	2656.696	66		17-157	0.90	1.140
13C-2,3,7,8-TCDF	2000	1517.029	76		24-169	0.77	0.994
13C-1,2,3,7,8-PeCDF	2000	1635.738	82		24-185	1.63	1.137
13C-2,3,4,7,8-PeCDF	2000	1732.145	87		21-178	1.62	1.169
13C-1,2,3,4,7,8-HxCDF	2000	1744.179	87		26-152	0.48	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1671.422	84		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1519.887	76		29-147	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1550.321	78		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1333.863	67		28-143	0.42	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1588.764	79		26-138	0.43	1.079
37Cl-2,3,7,8-TCDD	800	593.111	74		35-197	NA	1.020

ALS Environmental

Accuracy & Precision

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Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Analyzed:**	10/12/23
Sample Matrix:	Sludge, Solid	**Date Extracted:**	10/04/23

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	ng/Kg
Prep Method:	Method Soxhlet	**Basis:**	Dry
		Analysis Lot:	820422

	Lab Control Sample EQ2300483-02			Duplicate Lab Control Sample EQ2300483-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	105	98.7	106	104	97.9	106	70-140	1	50
1,2,3,4,7,8-HxCDD	78.1	98.7	79	74.8	97.9	76	70-164	4	50
1,2,3,6,7,8-HxCDD	87.4	98.7	89	86.6	97.9	88	76-134	<1	50
1,2,3,7,8,9-HxCDD	84.4	98.7	85	77.6	97.9	79	64-162	8	50
1,2,3,7,8-PeCDD	94.6	98.7	96	94.2	97.9	96	70-142	<1	50
2,3,7,8-TCDD	15.3	19.7	78	18.0	19.6	92	67-158	16	50
OCDD	271	197	137	217	196	111	78-144	22	50
1,2,3,4,6,7,8-HpCDF	106	98.7	107	104	97.9	107	82-122	1	50
1,2,3,4,7,8,9-HpCDF	93.1	98.7	94	92.2	97.9	94	78-138	<1	50
1,2,3,4,7,8-HxCDF	87.7	98.7	89	87.3	97.9	89	72-134	<1	50
1,2,3,6,7,8-HxCDF	97.8	98.7	99	91.6	97.9	94	84-130	7	50
1,2,3,7,8,9-HxCDF	91.0	98.7	92	90.8	97.9	93	78-130	<1	50
1,2,3,7,8-PeCDF	99.2	98.7	101	101	97.9	103	80-134	2	50
2,3,4,6,7,8-HxCDF	97.6	98.7	99	101	97.9	103	70-156	3	50
2,3,4,7,8-PeCDF	98.9	98.7	100	94.5	97.9	97	68-160	5	50
2,3,7,8-TCDF	19.6	19.7	99	17.6	19.6	90	75-158	11	50
OCDF	234	197	118	234	196	120	63-170	<1	50

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Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ2300483-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 19:00
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.130g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545221	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	15.3		0.199	0.494	0.75	1.000	1
1,2,3,7,8-PeCDD	94.6		0.0306	2.47	1.63	1.001	1
1,2,3,4,7,8-HxCDD	78.1		0.00830	2.47	1.38	1.000	1
1,2,3,6,7,8-HxCDD	87.4		0.00948	2.47	1.26	1.000	1
1,2,3,7,8,9-HxCDD	84.4		0.00849	2.47	1.27	1.007	1
1,2,3,4,6,7,8-HpCDD	105		0.0500	0.0500	1.03	1.000	1
OCDD	271		0.0263	4.94	0.90	1.000	1
2,3,7,8-TCDF	19.6		0.130	0.494	0.67	1.000	1
1,2,3,7,8-PeCDF	99.2		0.109	2.47	1.43	1.000	1
2,3,4,7,8-PeCDF	98.9		0.0994	2.47	1.48	1.000	1
1,2,3,4,7,8-HxCDF	87.7		0.0390	2.47	1.20	1.001	1
1,2,3,6,7,8-HxCDF	97.8		0.0431	2.47	1.13	1.000	1
1,2,3,7,8,9-HxCDF	91.0		0.0484	2.47	1.17	1.000	1
2,3,4,6,7,8-HxCDF	97.6		0.0436	2.47	1.18	1.000	1
1,2,3,4,6,7,8-HpCDF	106		0.154	2.47	0.99	1.000	1
1,2,3,4,7,8,9-HpCDF	93.1		0.170	2.47	1.00	1.000	1
OCDF	234		0.197	4.94	0.84	1.005	1

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ2300483-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 19:00
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.130g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545221	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	15.3		0.199	0.494	0.75		1
Total Penta-Dioxins	95.3		0.0306	2.47	1.63		1
Total Hexa-Dioxins	250		0.00869	2.47	1.38		1
Total Hepta-Dioxins	113		0.0500	2.47	1.10		1
Total Tetra-Furans	19.8		0.130	0.494	0.80		1
Total Penta-Furans	199		0.104	0.104	1.38		1
Total Hexa-Furans	374		0.0434	2.47	1.20		1
Total Hepta-Furans	202		0.162	2.47	0.99		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ2300483-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 19:00
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.130g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545221	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1558.110	78		25-164	0.76	1.020
13C-1,2,3,7,8-PeCDD	2000	1861.208	93		25-181	1.59	1.178
13C-1,2,3,4,7,8-HxCDD	2000	1835.743	92		32-141	1.37	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1715.704	86		28-130	1.24	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1418.703	71		23-140	1.10	1.066
13C-OCDD	4000	2502.690	63		17-157	0.93	1.140
13C-2,3,7,8-TCDF	2000	1352.825	68		24-169	0.81	0.994
13C-1,2,3,7,8-PeCDF	2000	1695.581	85		24-185	1.62	1.137
13C-2,3,4,7,8-PeCDF	2000	1756.743	88		21-178	1.62	1.169
13C-1,2,3,4,7,8-HxCDF	2000	1574.717	79		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1435.248	72		26-123	0.51	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1513.684	76		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1419.582	71		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1289.096	64		28-143	0.42	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1479.743	74		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	549.351	69		35-197	NA	1.021

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ2300483-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 19:49
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.213g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545222	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	18.0		1.42	1.42	0.78	1.000	1
1,2,3,7,8-PeCDD	94.2		0.0484	2.45	1.57	1.001	1
1,2,3,4,7,8-HxCDD	74.8		0.0378	2.45	1.39	1.000	1
1,2,3,6,7,8-HxCDD	86.6		0.0417	2.45	1.29	1.000	1
1,2,3,7,8,9-HxCDD	77.6		0.0381	2.45	1.24	1.007	1
1,2,3,4,6,7,8-HpCDD	104		0.0428	0.0428	1.10	1.000	1
OCDD	217		0.0922	4.90	0.85	1.000	1
2,3,7,8-TCDF	17.6		1.14	1.14	0.69	1.000	1
1,2,3,7,8-PeCDF	101		0.686	2.45	1.45	1.000	1
2,3,4,7,8-PeCDF	94.5		0.590	2.45	1.44	1.000	1
1,2,3,4,7,8-HxCDF	87.3		0.168	2.45	1.19	1.000	1
1,2,3,6,7,8-HxCDF	91.6		0.181	2.45	1.22	1.000	1
1,2,3,7,8,9-HxCDF	90.8		0.211	2.45	1.12	1.000	1
2,3,4,6,7,8-HxCDF	101		0.203	2.45	1.17	1.000	1
1,2,3,4,6,7,8-HpCDF	104		0.0997	2.45	0.94	1.000	1
1,2,3,4,7,8,9-HpCDF	92.2		0.107	2.45	1.01	1.000	1
OCDF	234		0.440	4.90	0.80	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ2300483-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 19:49
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.213g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545222	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	18.0		1.42	1.42	0.78		1
Total Penta-Dioxins	94.2		0.0484	2.45	1.57		1
Total Hexa-Dioxins	239		0.0392	2.45	1.39		1
Total Hepta-Dioxins	104		0.0428	2.45	1.10		1
Total Tetra-Furans	17.6		1.14	1.14	0.69		1
Total Penta-Furans	196		0.636	0.636	1.49		1
Total Hexa-Furans	371		0.190	2.45	1.19		1
Total Hepta-Furans	197		0.104	2.45	0.94		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Eastern Analytical, Inc.	**Service Request:**	E2300874
Project:	Sludge by Method 1613B/267080	**Date Collected:**	NA
Sample Matrix:	Sludge, Solid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ2300483-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	10/12/23 19:49
Prep Method:	Method Soxhlet	**Date Extracted:**	10/4/23
Sample Amount:	10.213g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P545222	**Blank File Name:**	P545212
ICAL Date:	07/12/23	**Cal Ver. File Name:**	P545209

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1343.251	67		25-164	0.73	1.020
13C-1,2,3,7,8-PeCDD	2000	1956.234	98		25-181	1.54	1.178
13C-1,2,3,4,7,8-HxCDD	2000	1717.192	86		32-141	1.34	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1648.913	82		28-130	1.26	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1580.657	79		23-140	1.04	1.065
13C-OCDD	4000	3482.579	87		17-157	0.93	1.140
13C-2,3,7,8-TCDF	2000	1176.480	59		24-169	0.78	0.994
13C-1,2,3,7,8-PeCDF	2000	1630.582	82		24-185	1.64	1.137
13C-2,3,4,7,8-PeCDF	2000	1829.823	91		21-178	1.74	1.169
13C-1,2,3,4,7,8-HxCDF	2000	1369.222	68		26-152	0.51	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1274.232	64		26-123	0.48	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1311.928	66		29-147	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1209.722	60		28-136	0.47	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1431.771	72		28-143	0.42	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1691.871	85		26-138	0.39	1.079
37Cl-2,3,7,8-TCDD	800	507.985	63		35-197	NA	1.021

October 23, 2023

Enthalpy Analytical - El Dorado Hills
Work Order No. 2309192

Ms. Jennifer Laramie
Eastern Analytical, Inc.
51 Antrim Avenue
Concord, NH 03301

Dear Ms. Laramie,

Enclosed are the results for the sample set received at Enthalpy Analytical - EDH on September 27, 2023 under your Project Name '267080 NH'.

Enthalpy Analytical - EDH is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at rajwinder.kaur@enthalpy.com.

Thank you for choosing Enthalpy Analytical - EDH as part of your analytical support team.

Sincerely,

Kathy Zjon For

Rajwinder Kaur
Project Manager

Enthalpy Analytical - EDH certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Enthalpy Analytical - EDH.

Enthalpy Analytical - EDH Work Order No. 2309192
Case Narrative

Sample Condition on Receipt:

Four sludge samples were received and stored securely in accordance with Enthalpy Analytical - EDH standard operating procedures and EPA methodology. The samples were received in good condition and within the recommended temperature requirements.

Analytical Notes:

PFAS Isotope Dilution/LC-MSMS Method Compliant with Table B-15 of DoD QSM 5.4 (Solid)

The samples were extracted and analyzed for a selected list of PFAS using Isotope Dilution and LC-MS/MS compliant with Table B-15 of DoD QSM 5.4. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the 1/2 the Reporting Limits (RL). The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the acceptance criteria are flagged with an "H" qualifier. The responses of the internal standards with low recoveries were greater than 10:1 signal-to-noise, which is the limit generally considered acceptable for accurate quantitation by isotope dilution analysis.

TABLE OF CONTENTS

ENTHALPY ANALYTICAL

Sample Inventory Report

Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2309192-01	Lagoon 1A	21-Sep-23 10:00	27-Sep-23 16:16	HDPE Jar, 6 oz
2309192-02	Lagoon 1B	21-Sep-23 11:00	27-Sep-23 16:16	HDPE Jar, 6 oz
2309192-03	Lagoon 2	21-Sep-23 12:00	27-Sep-23 16:16	HDPE Jar, 6 oz
2309192-04	Lagoon 3	21-Sep-23 13:00	27-Sep-23 16:16	HDPE Jar, 6 oz

ANALYTICAL RESULTS

ENTHALPY ANALYTICAL

Sample ID: Method Blank — **PFAS Isotope Dilution Table B-15**

Client Data
Name: Eastern Analytical, Inc. Matrix: Solid
Project: 267080 NH

Laboratory Data
Lab Sample: B23J017-BLK1 Column: BEH C18

Analyte	CAS Number	Conc. (ng/g)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFPeA	2706-90-3	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFBS	375-73-5	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
4:2 FTS	757124-72-4	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFHxA	307-24-4	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFPeS	2706-91-4	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFHpA	375-85-9	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFHxS	355-46-4	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
6:2 FTS	27619-97-2	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFOA	335-67-1	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFHpS	375-92-8	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFNA	375-95-1	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFOSA	754-91-6	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFOS	1763-23-1	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFDA	335-76-2	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
8:2 FTS	39108-34-4	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFNS	68259-12-1	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
MeFOSAA	2355-31-9	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
EtFOSAA	2991-50-6	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFUnA	2058-94-8	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFDS	335-77-3	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFDoA	307-55-1	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFTrDA	72629-94-8	ND	1.00		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
PFTeDA	376-06-7	ND	0.500		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	89.6	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C3-PFPeA	IS	84.9	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C3-PFBS	IS	91.6	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C2-4:2 FTS	IS	94.1	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C2-PFHxA	IS	83.4	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C4-PFHpA	IS	86.8	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C3-PFHxS	IS	91.4	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C2-6:2 FTS	IS	88.3	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C2-PFOA	IS	81.4	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C5-PFNA	IS	86.6	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C8-PFOSA	IS	39.7	50 - 150	H	B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C8-PFOS	IS	87.4	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C2-PFDA	IS	67.8	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1

ENTHALPY ANALYTICAL

Sample ID: Method Blank — **PFAS Isotope Dilution Table B-15**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Solid	Lab Sample:	B23J017-BLK1	Column:	BEH C18
Project:	267080 NH						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-8:2 FTS	IS	83.1	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
d3-MeFOSAA	IS	56.3	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
d5-EtFOSAA	IS	55.4	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C2-PFUnA	IS	59.6	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C2-PFDoA	IS	59.8	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1
13C2-PFTeDA	IS	65.5	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:26	1

RL - Reporting limit

The results are reported in dry weight.
The sample size is reported in wet weight.
Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

ENTHALPY ANALYTICAL

Sample ID: OPR

PFAS Isotope Dilution Table B-15

Client Data

Name: Eastern Analytical, Inc.
Project: 267080 NH
Matrix: Solid

Laboratory Data

Lab Sample: B23J017-BS1
Column: BEH C18

Analyte	CAS Number	Amt Found (ng/g)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	10.5	10.0	105	71 - 135		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFPeA	2706-90-3	10.6	10.0	106	69 - 132		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFBS	375-73-5	11.7	10.0	117	72 - 128		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
4:2 FTS	757124-72-4	11.1	10.0	111	62 - 145		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFHxA	307-24-4	11.0	10.0	110	70 - 132		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFPeS	2706-91-4	10.8	10.0	108	73 - 123		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFHpA	375-85-9	10.7	10.0	107	71 - 131		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFHxS	355-46-4	10.6	10.0	106	67 - 130		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
6:2 FTS	27619-97-2	9.79	10.0	97.9	64 - 140		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFOA	335-67-1	11.1	10.0	111	69 - 133		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFHpS	375-92-8	13.1	10.0	131	70 - 132		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFNA	375-95-1	9.54	10.0	95.4	72 - 129		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFOSA	754-91-6	11.5	10.0	115	67 - 137		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFOS	1763-23-1	10.9	10.0	109	68 - 136		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFDA	335-76-2	11.1	10.0	111	69 - 133		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
8:2 FTS	39108-34-4	11.4	10.0	114	65 - 137		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFNS	68259-12-1	11.3	10.0	113	69 - 125		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
MeFOSAA	2355-31-9	9.90	10.0	99.0	63 - 144		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
EtFOSAA	2991-50-6	10.8	10.0	108	61 - 139		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFUnA	2058-94-8	11.6	10.0	116	64 - 136		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFDS	335-77-3	10.5	10.0	105	59 - 134		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFDoA	307-55-1	10.8	10.0	108	69 - 135		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFTrDA	72629-94-8	11.1	10.0	111	66 - 139		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
PFTeDA	376-06-7	11.1	10.0	111	69 - 133		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	103	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C3-PFPeA	IS	102	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C3-PFBS	IS	101	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-4:2 FTS	IS	97.7	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-PFHxA	IS	99.8	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C4-PFHpA	IS	103	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C3-PFHxS	IS	100	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-6:2 FTS	IS	99.0	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-PFOA	IS	94.8	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C5-PFNA	IS	98.7	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1

ENTHALPY ANALYTICAL

Sample ID: OPR

PFAS Isotope Dilution Table B-15

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Solid	Lab Sample:	B23J017-BS1	Column:	BEH C18
Project:	267080 NH						

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C8-PFOSA	IS	38.8	50 - 150	H	B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C8-PFOS	IS	89.5	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-PFDA	IS	82.9	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-8:2 FTS	IS	96.6	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
d3-MeFOSAA	IS	68.8	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
d5-EtFOSAA	IS	59.9	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-PFUnA	IS	69.6	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-PFDoA	IS	66.5	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1
13C2-PFTeDA	IS	70.9	50 - 150		B23J017	09-Oct-23	1.00 g	17-Oct-23 19:36	1

ENTHALPY ANALYTICAL

Sample ID: Lagoon 1A — **PFAS Isotope Dilution Table B-15**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Sludge	Lab Sample:	2309192-01	Column:	BEH C18
Project:	267080 NH	Date Collected:	21-Sep-23 10:00	Date Received:	27-Sep-23 16:16		
Location:	267080			% Solids:	8.84		

Analyte	CAS Number	Conc. (ng/g)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFPeA	2706-90-3	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFBS	375-73-5	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
4:2 FTS	757124-72-4	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFHxA	307-24-4	1.10	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFPeS	2706-91-4	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFHpA	375-85-9	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFHxS	355-46-4	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
6:2 FTS	27619-97-2	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFOA	335-67-1	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFHpS	375-92-8	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFNA	375-95-1	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFOSA	754-91-6	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFOS	1763-23-1	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFDA	335-76-2	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
8:2 FTS	39108-34-4	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFNS	68259-12-1	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
MeFOSAA	2355-31-9	3.43	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
EtFOSAA	2991-50-6	1.31	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFUnA	2058-94-8	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFDS	335-77-3	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFDoA	307-55-1	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFTrDA	72629-94-8	ND	1.99		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
PFTeDA	376-06-7	ND	0.996		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	107	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C3-PFPeA	IS	107	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C3-PFBS	IS	104	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C2-4:2 FTS	IS	122	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C2-PFHxA	IS	101	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C4-PFHpA	IS	100	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C3-PFHxS	IS	107	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C2-6:2 FTS	IS	106	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C2-PFOA	IS	92.9	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C5-PFNA	IS	97.8	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C8-PFOSA	IS	61.3	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C8-PFOS	IS	84.8	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1

ENTHALPY ANALYTICAL

Sample ID: Lagoon 1A — **PFAS Isotope Dilution Table B-15**

Client Data

Name:	Eastern Analytical, Inc.	Matrix:	Sludge
Project:	267080 NH	Date Collected:	21-Sep-23 10:00
Location:	267080		

Laboratory Data

Lab Sample:	2309192-01	Column:	BEH C18
Date Received:	27-Sep-23 16:16		
% Solids:	8.84		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFDA	IS	77.6	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C2-8:2 FTS	IS	91.3	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
d3-MeFOSAA	IS	60.8	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
d5-EtFOSAA	IS	42.7	50 - 150	H	B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C2-PFUnA	IS	59.4	50 - 150		B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C2-PFDoA	IS	37.0	50 - 150	H	B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1
13C2-PFTeDA	IS	29.3	50 - 150	H	B23J017	09-Oct-23	5.68 g	17-Oct-23 23:04	1

RL - Reporting limit

The results are reported in dry weight.
The sample size is reported in wet weight.
Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

ENTHALPY ANALYTICAL

Sample ID: Lagoon 1B — **PFAS Isotope Dilution Table B-15**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Sludge	Lab Sample:	2309192-02	Column:	BEH C18
Project:	267080 NH	Date Collected:	21-Sep-23 11:00	Date Received:	27-Sep-23 16:16		
Location:	267080			% Solids:	4.84		

Analyte	CAS Number	Conc. (ng/g)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFPeA	2706-90-3	ND	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFBS	375-73-5	ND	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
4:2 FTS	757124-72-4	ND	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFHxA	307-24-4	3.71	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFPeS	2706-91-4	ND	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFHpA	375-85-9	ND	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFHxS	355-46-4	4.37	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
6:2 FTS	27619-97-2	ND	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFOA	335-67-1	3.28	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFHpS	375-92-8	ND	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFNA	375-95-1	1.43	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFOSA	754-91-6	ND	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFOS	1763-23-1	8.11	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFDA	335-76-2	4.08	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
8:2 FTS	39108-34-4	ND	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFNS	68259-12-1	ND	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
MeFOSAA	2355-31-9	53.9	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
EtFOSAA	2991-50-6	30.9	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFUnA	2058-94-8	2.09	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFDS	335-77-3	4.73	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFDoA	307-55-1	4.80	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFTrDA	72629-94-8	ND	2.00		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
PFTeDA	376-06-7	1.08	0.999		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	87.8	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C3-PFPeA	IS	88.5	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C3-PFBS	IS	90.0	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C2-4:2 FTS	IS	115	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C2-PFHxA	IS	88.1	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C4-PFHpA	IS	92.3	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C3-PFHxS	IS	95.4	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C2-6:2 FTS	IS	99.9	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C2-PFOA	IS	77.9	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C5-PFNA	IS	69.1	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C8-PFOSA	IS	22.6	50 - 150	H	B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C8-PFOS	IS	63.0	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1

ENTHALPY ANALYTICAL

Sample ID: Lagoon 1B — **PFAS Isotope Dilution Table B-15**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Sludge	Lab Sample:	2309192-02	Column:	BEH C18
Project:	267080 NH	Date Collected:	21-Sep-23 11:00	Date Received:	27-Sep-23 16:16		
Location:	267080			% Solids:	4.84		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFDA	IS	49.6	50 - 150	H	B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C2-8:2 FTS	IS	62.4	50 - 150		B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
d3-MeFOSAA	IS	31.0	50 - 150	H	B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
d5-EtFOSAA	IS	20.4	50 - 150	H	B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C2-PFUnA	IS	36.6	50 - 150	H	B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C2-PFDoA	IS	21.0	50 - 150	H	B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1
13C2-PFTeDA	IS	2.40	50 - 150	H	B23J017	09-Oct-23	10.3 g	17-Oct-23 23:14	1

RL - Reporting limit

The results are reported in dry weight.
The sample size is reported in wet weight.
Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

ENTHALPY ANALYTICAL

Sample ID: Lagoon 2

PFAS Isotope Dilution Table B-15

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Sludge	Lab Sample:	2309192-03	Column:	BEH C18
Project:	267080 NH	Date Collected:	21-Sep-23 12:00	Date Received:	27-Sep-23 16:16		
Location:	267080			% Solids:	4.71		

Analyte	CAS Number	Conc. (ng/g)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFPeA	2706-90-3	1.26	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFBS	375-73-5	ND	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
4:2 FTS	757124-72-4	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFHxA	307-24-4	2.40	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFPeS	2706-91-4	ND	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFHpA	375-85-9	ND	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFHxS	355-46-4	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
6:2 FTS	27619-97-2	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFOA	335-67-1	1.88	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFHpS	375-92-8	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFNA	375-95-1	ND	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFOSA	754-91-6	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFOS	1763-23-1	2.63	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFDA	335-76-2	2.25	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
8:2 FTS	39108-34-4	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFNS	68259-12-1	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
MeFOSAA	2355-31-9	19.1	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
EtFOSAA	2991-50-6	7.39	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFUnA	2058-94-8	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFDS	335-77-3	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFDoA	307-55-1	2.36	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFTrDA	72629-94-8	ND	1.99		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
PFTeDA	376-06-7	ND	0.996		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	91.4	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C3-PFPeA	IS	92.7	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C3-PFBS	IS	96.2	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C2-4:2 FTS	IS	121	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C2-PFHxA	IS	94.4	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C4-PFHpA	IS	94.8	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C3-PFHxS	IS	86.6	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C2-6:2 FTS	IS	104	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C2-PFOA	IS	80.0	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C5-PFNA	IS	78.0	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C8-PFOSA	IS	46.8	50 - 150	H	B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C8-PFOS	IS	70.2	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1

ENTHALPY ANALYTICAL

Sample ID: Lagoon 2 — **PFAS Isotope Dilution Table B-15**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Sludge	Lab Sample:	2309192-03	Column:	BEH C18
Project:	267080 NH	Date Collected:	21-Sep-23 12:00	Date Received:	27-Sep-23 16:16		
Location:	267080			% Solids:	4.71		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFDA	IS	59.0	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C2-8:2 FTS	IS	83.2	50 - 150		B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
d3-MeFOSAA	IS	41.5	50 - 150	H	B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
d5-EtFOSAA	IS	34.5	50 - 150	H	B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C2-PFUnA	IS	47.2	50 - 150	H	B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C2-PFDoA	IS	33.1	50 - 150	H	B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1
13C2-PFTeDA	IS	28.5	50 - 150	H	B23J017	09-Oct-23	10.7 g	17-Oct-23 23:24	1

RL - Reporting limit

The results are reported in dry weight.
The sample size is reported in wet weight.
Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

ENTHALPY ANALYTICAL

Sample ID: Lagoon 3

PFAS Isotope Dilution Table B-15

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Sludge	Lab Sample:	2309192-04	Column:	BEH C18
Project:	267080 NH	Date Collected:	21-Sep-23 13:00	Date Received:	27-Sep-23 16:16		
Location:	267080			% Solids:	6.49		

Analyte	CAS Number	Conc. (ng/g)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFPeA	2706-90-3	ND	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFBS	375-73-5	ND	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
4:2 FTS	757124-72-4	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFHxA	307-24-4	1.52	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFPeS	2706-91-4	ND	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFHpA	375-85-9	ND	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFHxS	355-46-4	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
6:2 FTS	27619-97-2	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFOA	335-67-1	1.46	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFHpS	375-92-8	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFNA	375-95-1	ND	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFOSA	754-91-6	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFOS	1763-23-1	2.78	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFDA	335-76-2	2.44	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
8:2 FTS	39108-34-4	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFNS	68259-12-1	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
MeFOSAA	2355-31-9	25.4	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
EtFOSAA	2991-50-6	8.49	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFUnA	2058-94-8	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFDS	335-77-3	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFDoA	307-55-1	2.87	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFTrDA	72629-94-8	ND	2.00		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
PFTeDA	376-06-7	ND	0.998		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	96.3	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C3-PFPeA	IS	94.9	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C3-PFBS	IS	115	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C2-4:2 FTS	IS	117	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C2-PFHxA	IS	99.8	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C4-PFHpA	IS	96.0	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C3-PFHxS	IS	103	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C2-6:2 FTS	IS	98.0	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C2-PFOA	IS	91.1	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C5-PFNA	IS	87.3	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C8-PFOSA	IS	63.1	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C8-PFOS	IS	97.0	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1

ENTHALPY ANALYTICAL

Sample ID: Lagoon 3 — **PFAS Isotope Dilution Table B-15**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Sludge	Lab Sample:	2309192-04	Column:	BEH C18
Project:	267080 NH	Date Collected:	21-Sep-23 13:00	Date Received:	27-Sep-23 16:16		
Location:	267080			% Solids:	6.49		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFDA	IS	72.4	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C2-8:2 FTS	IS	102	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
d3-MeFOSAA	IS	57.0	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
d5-EtFOSAA	IS	56.8	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C2-PFUnA	IS	66.0	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C2-PFDoA	IS	56.9	50 - 150		B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1
13C2-PFTeDA	IS	47.6	50 - 150	H	B23J017	09-Oct-23	7.72 g	17-Oct-23 23:35	1

RL - Reporting limit

The results are reported in dry weight.
The sample size is reported in wet weight.
Results reported to RL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection Limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
MDL	Method Detection Limit
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
RL	For 537.1, the reported RLs are the MRLs.
TEQ	Toxic Equivalency, sum of the toxic equivalency factors (TEF) multiplied by the sample concentrations.
TEQMax	TEQ calculation that uses the detection limit as the concentration for non-detects
TEQMin	TEQ calculation that uses zero as the concentration for non-detects
TEQRisk	TEQ calculation that uses ½ the detection limit as the concentration for non-detects
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Enthalpy Analytical - EDH Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	21-023-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2020018
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	2211390
Nevada Division of Environmental Protection	CA00413
New Hampshire Environmental Accreditation Program	207721
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Ohio Environmental Protection Agency	87778
Oregon Laboratory Accreditation Program	4042-021
Texas Commission on Environmental Quality	T104704189-22-13
Vermont Department of Health	VT-4042
Virginia Department of General Services	11276
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters can be found at Enthalpy.com/Resources/Accreditations.

CHAIN-OF-CUSTODY RECORD

Eastern Analytical, Inc.
professional laboratory and drilling services

EAI ID# **267080** Page 1

2309192 2.9°C

Sample ID	Date Sampled	Matrix	aParameters	Sample Notes
Lagoon 1A	9/21/2023 10:00	sludge	Subcontract - Perfluorinated Compounds EPA Method 537 modified	
Lagoon 1B	9/21/2023 11:00	sludge	Subcontract - Perfluorinated Compounds EPA Method 537 modified	
Lagoon 2	9/21/2023 12:00	sludge	Subcontract - Perfluorinated Compounds EPA Method 537 modified	
Lagoon 3	9/21/2023 13:00	sludge	Subcontract - Perfluorinated Compounds EPA Method 537 modified	

EAI ID# **267080** Project State: NH

Project ID:

Company Vista Analytical Laboratory
Address 1104 Windfield Way
Address El Dorado Hills, CA 95762
Account #
Phone # (916) 673-1520

Results Needed: Preferred Date: Standard
RUSH Due Date: _____

QC Deliverables
☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Notes about project:
Email login confirmation, pdf of results and invoice to customerservice@easternanalytical.com.

24 Compound List

PO #:60763 EAI ID# **267080**

Data Deliverable (circle)
Excel NH EMD EQuIS ME EGAD

Call prior to analyzing, if RUSH charges will be applied.

Samples Collected by: _____

Relinquished by	Date/Time	Received by
	9/26/23 1600	UPS
WDS	09/27/23 1615	
Relinquished by	Date/Time	Received by

Eastern Analytical, Inc. 51 Antrim Ave Concord, NH 03301 Phone: (603)228-0525 1-800-287-0525 customerservice@easternanalytical.com

Sample Log-In Checklist

ENTHALPY ANALYTICAL

Page # 1 of 1

Work Order #: 2309192 TAT Std

Samples Arrival:	**Date/Time** 09/27/23 1616		**Initials:** MWS		**Location:** WR-2 **Shelf/Rack:** N/A	
Delivered By:	FedEx	(UPS)	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice	Techni Ice	Dry Ice	None
Temp °C: 2.9 (uncorrected) / **Temp °C:** 2.9 (corrected)		**Probe used:** Y / (N)		**Thermometer ID:** IR-4		

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Airbill —— Trk # 1Z X46 599 01 9492 4991	✓		
Shipping Documentation Present?	✓		
Shipping Container: Enthalpy / (Client) / Retain / (Return) / Dispose			
Chain of Custody / Sample Documentation Present?	✓		
Chain of Custody / Sample Documentation Complete?	✓		
Holding Time Acceptable?	✓		

Logged In:	**Date/Time** 09/28/23 09:54	**Initials:** JA	**Location:** R-13, WR-1 **Shelf/Rack:** A-2, J-4

	YES	NO	NA
COC Anomaly/Sample Acceptance Form completed?		✓	✓

Comments:

ID.: LR – SLC *Rev No.: 7* *Rev Date: 01/02/2023* *Page: 1 of 1*

CoC/Label Reconciliation Report WO# 2309192

LabNumber	CoC Sample ID		SampleAlias	Sample Date/Time			Container	BaseMatrix	Sample Comments
2309192-01	A Lagoon 1A	☑	267080	21-Sep-23 10:00	☐	A	HDPE Jar, 6 oz	Solid	
2309192-02	A Lagoon 1B	☑	267080	21-Sep-23 11:00	☐		HDPE Jar, 6 oz	Solid	
2309192-03	A Lagoon 2	☑	267080	21-Sep-23 12:00	☐		HDPE Jar, 6 oz	Solid	
2309192-04	A Lagoon 3	☑	267080	21-Sep-23 13:00	☐		HDPE Jar, 6 oz	Solid	

Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Adequate Sample Volume?	✓		
Container Type Appropriate for Analysis(es)	✓		

Comments: A) No time listed on sample label. Date reconciled.

Preservation Documented: Na2S2O3 Trizma NH4CH3CO2 (None) Other

Verifed by/Date: WG 09/28/23
WWD 09/28/23

Eastern Analytical, Inc. CHAIN-OF-CUSTODY RECORD

267080

Sample IDs	Date/Time *Composites need start and stop dates/times*	Matrix	Parameters and Sample Notes	# of containers
~~Sludge-1~~ Lagoon 1A	9/21/23 9:00AM - 10:00AM	sludge Grab or (Comp)	SolTotDry/V8260/ABN/ICPMets.As.Cd.Cr.Cu.K.P.Pb.Mo.Ni.Se.Zn.Sb.Be.Ag.Tl. Hg/PCB/NO3NO2/TKN/NH3/TON/DioxFurSol1613SubALSTX/EntericVirusSubASI/SO4/PFCsSubVAL SolAsRec/pH/TS/PtFltr	7
☑ Sampler confirms ID and parameters are accurate	*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH (MEOH) $Na_2S_2O_3$ ICE		Dissolved Sample Field Filtered ☐	
~~Sludge-2~~ Lagoon 1B	9/21/23 10:00AM - 11:00AM	sludge Grab or (Comp)	SolTotDry/V8260/ABN/ICPMets.As.Cd.Cr.Cu.K.P.Pb.Mo.Ni.Se.Zn.Sb.Be.Ag.Tl. Hg/PCB/NO3NO2/TKN/NH3/TON/DioxFurSol1613SubALSTX/EntericVirusSubASI/SO4/PFCsSubVAL SolAsRec/pH/TS/PtFltr	7
☑ Sampler confirms ID and parameters are accurate	*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH (MEOH) $Na_2S_2O_3$ ICE		Dissolved Sample Field Filtered ☐	
~~Sludge-3~~ Lagoon 2	9/21/23 11:00AM - 12:00PM	sludge Grab or (Comp)	SolTotDry/V8260/ABN/ICPMets.As.Cd.Cr.Cu.K.P.Pb.Mo.Ni.Se.Zn.Sb.Be.Ag.Tl. Hg/PCB/NO3NO2/TKN/NH3/TON/DioxFurSol1613SubALSTX/EntericVirusSubASI/SO4/PFCsSubVAL SolAsRec/pH/TS/PtFltr	7
☑ Sampler confirms ID and parameters are accurate	*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH (MEOH) $Na_2S_2O_3$ ICE		Dissolved Sample Field Filtered ☐	
~~Sludge-4~~ Lagoon 3	9/21/23 12:00PM - 13:00	sludge Grab or (Comp)	SolTotDry/V8260/ABN/ICPMets.As.Cd.Cr.Cu.K.P.Pb.Mo.Ni.Se.Zn.Sb.Be.Ag.Tl. Hg/PCB/NO3NO2/TKN/NH3/TON/DioxFurSol1613SubALSTX/EntericVirusSubASI/SO4/PFCsSubVAL SolAsRec/pH/TS/PtFltr	7
☑ Sampler confirms ID and parameters are accurate	*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH (MEOH) $Na_2S_2O_3$ ICE		Dissolved Sample Field Filtered ☐	

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAI Project ID

Project Name ~~Sludge~~ Omni - Hotel WWTF

State NH

Client (Pro Mgr) Valerie Carr

Customer Horizons Engineering, Inc.

Address 34 School Street

City Littleton NH 03561

Phone 444-4111 Fax 444-1343 (12)

Email: vcarr@horizonsengineering.com

Direct x10

Results Needed by: Preferred date _____

Notes:

24 Compound List needed

QC deliverables

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

ReportingOptions

☐ HC	☐ NO FAX	PO# Verbal
☒ EDD PDF	☐ Partial FAX	Quote#:
☒ EDD email	☒ PDF Invoice	
☒ PDF prelim, NO FAX	☐ EQUIS	Temp 2.6°C
☒ e-mail Login Confirmation		Ice Y☒N☐

Samples Collected by: Derrick Carruthers

Relinquished by	Date/Time	Received by
	09/21/23 14:10	BAF
Relinquished by	Date/Time	Received by

ENDYNE Inc.
Environmental Laboratories

P&H Senesac, Inc	
PO Box 577	101295
Milton, VT 05468	
Atten: Alyssa Newell	

PROJECT: Omni Mt. Washington WWTP
WORK ORDER: **2406-17676**
DATE RECEIVED: June 18, 2024
DATE REPORTED: June 26, 2024
SAMPLER: Alyssa Newell

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and "N" the Plattsburgh, NY lab under certification ELAP 11892. "Sub" indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corres ponding NELAC and Qual fields. The Williston, VT facility is also ISO/IEC 17025:2017 accredited for Total Coliform and E coli by SM9223B.

The NELAC column also denotes the accredit ation status of each laboratory for each reported parameter. "A" indicates the referenced laboratory is NELAC accredited for the parameter reported. "N" indicates the laboratory is not accredited. "U" indicates that NELAC does not offer accreditation fo r that parameter in that specific matrix. Test results denoted with an "A" meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as t hey were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of mercha ntability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 06/26/2024

CLIENT: P&H Senesac, Inc
PROJECT: Omni Mt. Washington WWTP

WORK ORDER: **2406-17676**
DATE RECEIVED: 06/18/2024

001 Site: Lagoon Cleaning Dewatered Sludge Date Sampled: 6/17/24 Time: 14:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Solids, Total	16.9	%	SM 2540 G.-15	6/20/24	W JSS	U	
Free Liquid-Paint Filter Test	No Free Lq		EPA 9095B	6/18/24	W MGT	N	
Mercury Digestion	Digested		EPA 7471B	6/26/24	W RSB	A	
Metals Solids Digestion	Digested		EPA 3050B	6/19/24	W MLR	A	
Arsenic, Total	< 5.1	mg/Kg Dry	EPA 6010C	6/24/24 15:48	W MLR	A	
Barium, Total	170	mg/Kg Dry	EPA 6010C	6/24/24 15:48	W MLR	A	
Cadmium, Total	1.7	mg/Kg Dry	EPA 6010C	6/24/24 15:48	W MLR	A	
Chromium, Total	15	mg/Kg Dry	EPA 6010C	6/24/24 15:48	W MLR	A	
Lead, Total	41	mg/Kg Dry	EPA 6010C	6/24/24 15:48	W MLR	A	
Mercury, Total	0.49	mg/Kg, dry	EPA 7471B	6/26/24	W RSB	A	
Selenium, Total	< 5.1	mg/Kg Dry	EPA 6010C	6/24/24 15:48	W MLR	A	
Silver, Total	4.4	mg/Kg Dry	EPA 6010C	6/24/24 15:48	W MLR	N	
Volatile Organic Compounds							
Prep EPA 5035A	Complete		EPA 5035A-H	6/20/24	W TRP	A	
Dichlorodifluoromethane	< 4,690	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Chloromethane	< 4,690	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Vinyl chloride	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Bromomethane	< 4,690	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Chloroethane	< 4,690	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Trichlorofluoromethane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Diethyl ether	< 4,690	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
1,1-Dichloroethene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Acetone	< 9,380	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Carbon disulfide	< 4,690	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Methylene chloride	< 4,690	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
t-Butanol	< 23,500	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Methyl-t-butyl ether (MTBE)	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
trans-1,2-Dichloroethene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Di-isopropyl ether (DIPE)	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	U	
1,1-Dichloroethane	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Ethyl-t-butyl ether (ETBE)	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	U	
2-Butanone	< 9,380	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
2,2-Dichloropropane	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
cis-1,2-Dichloroethene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Bromochloromethane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Chloroform	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Tetrahydrofuran	< 9,380	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	U	
1,1,1-Trichloroethane	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Carbon tetrachloride	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,1-Dichloropropene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Benzene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
t-Amylmethyl ether (TAME)	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	U	
1,2-Dichloroethane	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Trichloroethene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,2-Dichloropropane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Dibromomethane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	

Laboratory Report DATE REPORTED: 06/26/2024

CLIENT: P&H Senesac, Inc
PROJECT: Omni Mt. Washington WWTP

WORK ORDER: **2406-17676**
DATE RECEIVED: 06/18/2024

001 Site: Lagoon Cleaning Dewatered Sludge Date Sampled: 6/17/24 Time: 14:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Bromodichloromethane	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
cis-1,3-Dichloropropene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
4-Methyl-2-pentanone (MIBK)	< 9,380	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Toluene	21,100	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
trans-1,3-Dichloropropene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,1,2-Trichloroethane	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Tetrachloroethene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,3-Dichloropropane	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
2-Hexanone	< 9,380	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Dibromochloromethane	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,2-Dibromoethane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Chlorobenzene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Ethylbenzene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,1,1,2-Tetrachloroethane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Xylenes, Total	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Styrene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Bromoform	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Isopropylbenzene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,1,2,2-Tetrachloroethane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
Bromobenzene	< 938	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
n-Propylbenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,2,3-Trichloropropane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
2-Chlorotoluene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
1,3,5-Trimethylbenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
4-Chlorotoluene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
t-Butylbenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,2,4-Trimethylbenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
s-Butylbenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
4-Isopropyltoluene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,3-Dichlorobenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,4-Dichlorobenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,2,3-Trimethylbenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
n-Butylbenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,2-Dichlorobenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,2-Dibromo-3-Chloropropane	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
1,2,4-Trichlorobenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
1,3,5-Trichlorobenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Hexachlorobutadiene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Naphthalene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	A	
1,2,3-Trichlorobenzene	< 1,880	ug/Kg, Dry	EPA 8260C	6/20/24	W TRP	N	
Surr. 1 (Dibromofluoromethane)	94	%	EPA 8260C	6/20/24	W TRP	U	
Surr. 2 (Toluene d8)	98	%	EPA 8260C	6/20/24	W TRP	U	
Surr. 3 (4-Bromofluorobenzene)	99	%	EPA 8260C	6/20/24	W TRP	U	
Unidentified Peaks	>10		EPA 8260C	6/20/24	W TRP	U	
Poly-Chlorinated Biphenyls							
Extraction	Completed		EPA 3545A	6/18/24	W CLD	A	

Laboratory Report DATE REPORTED: 06/26/2024

CLIENT: P&H Senesac, Inc
PROJECT: Omni Mt. Washington WWTP

WORK ORDER: **2406-17676**
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001 Site: Lagoon Cleaning Dewatered Sludge Date Sampled: 6/17/24 Time: 14:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Aroclor 1016 (PCB-1016)	< 78.4	ug/Kg, dry	EPA 8082A	6/19/24	W DPD	A	
Aroclor 1221 (PCB-1221)	< 78.4	ug/Kg, dry	EPA 8082A	6/19/24	W DPD	A	
Aroclor 1232 (PCB-1232)	< 78.4	ug/Kg, dry	EPA 8082A	6/19/24	W DPD	A	
Aroclor 1242 (PCB-1242)	< 78.4	ug/Kg, dry	EPA 8082A	6/19/24	W DPD	A	
Aroclor 1248 (PCB-1248)	< 78.4	ug/Kg, dry	EPA 8082A	6/19/24	W DPD	A	
Aroclor 1254 (PCB-1254)	< 78.4	ug/Kg, dry	EPA 8082A	6/19/24	W DPD	A	
Aroclor 1260 (PCB-1260)	< 78.4	ug/Kg, dry	EPA 8082A	6/19/24	W DPD	A	
Surrogate-TCMX	73	%	EPA 8082A	6/19/24	W DPD	A	
Surrogate-DCB	55	%	EPA 8082A	6/19/24	W DPD	A	
EPA 8270C Semi-VOA							
Extraction	Completed		EPA 3550C	6/24/24	W CLD	A	
N-Nitrosodimethylamine	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Pyridine	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Aniline	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
Bis(2-chloroethyl)ether	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
1,2-Dichlorobenzene	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
1,3-Dichlorobenzene	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
1,4-Dichlorobenzene	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Benzyl alcohol	< 4,260	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
2,2'-Oxybis(1-chloropropane)	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
N-Nitrosodi-n-propylamine	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Hexachloroethane	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Nitrobenzene	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
N-Nitrosopiperidine	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
Isophorone	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Bis(2-chloroethoxy)methane	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
1,2,4-Trichlorobenzene	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Naphthalene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
4-Chloroaniline	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
Hexachlorobutadiene	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
N-Nitrosodi-n-butylamine	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
2-Methylnaphthalene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
1-Methylnaphthalene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	U	
Hexachlorocyclopentadiene	< 4,260	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2-Chloronaphthalene	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
1-Chloronaphthalene	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
2-Nitroaniline	< 4,260	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
Dimethyl phthalate	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2,6-Dinitrotoluene	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Acenaphthylene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
3-Nitroaniline	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
Acenaphthene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Dibenzofuran	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
2,4-Dinitrotoluene	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
1-Naphthylamine	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
2-Naphthylamine	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	

Laboratory Report DATE REPORTED: 06/26/2024

CLIENT: P&H Senesac, Inc
PROJECT: Omni Mt. Washington WWTP

WORK ORDER: **2406-17676**
DATE RECEIVED: 06/18/2024

001 Site: Lagoon Cleaning Dewatered Sludge Date Sampled: 6/17/24 Time: 14:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Fluorene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Diethyl phthalate	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
4-Chlorophenyl phenyl ether	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
4-Nitroaniline	< 4,260	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
N-Nitrosodiphenylamine	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Azobenzene/1,2-Diphenylhydrazine	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	U	
4-Bromophenyl phenyl ether	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Hexachlorobenzene	< 213	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Phenanthrene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Anthracene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Carbazole	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
Di-n-butylphthalate	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Fluoranthene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Benzidine	< 4,260	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Pyrene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Butyl benzyl phthalate	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Benzo(a)anthracene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Chrysene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
3,3'-Dichlorobenzidine	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Bis(2-ethylhexyl)phthalate	1,640	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	AN1
Di-n-octylphthalate	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Benzo(b)fluoranthene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Benzo(k)fluoranthene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Benzo(a)pyrene	< 53.3	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Indeno(1,2,3-cd)pyrene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Dibenzo(a,h)anthracene	< 53.3	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Benzo(g,h,i)perylene	< 107	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Phenol	< 426	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2-Chlorophenol	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2-Methylphenol (o-cresol)	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
3&4-Methylphenol (m&p-cresol)	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Cresols, Total	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	U	
2-Nitrophenol	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2,4-Dimethylphenol	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2,4-Dichlorophenol	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2,6-Dichlorophenol	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	N	
4-Chloro-3-methylphenol	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2,4,5-Trichlorophenol	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2,4,6-Trichlorophenol	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
2,4-Dinitrophenol	< 4,260	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
4-Nitrophenol	< 1,070	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
4,6-Dinitro-2-methylphenol	< 4,260	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
Pentachlorophenol	< 2,130	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	A	
BaP Toxic Equiv. Quotient	< 140	ug/Kg, dry	EPA 8270D	6/25/24	W EEP	U	
B/N Surr.1 Nitrobenzene-d5	68	%	EPA 8270D	6/25/24	W EEP	U	
B/N Surr.2 2-Fluorobiphenyl	71	%	EPA 8270D	6/25/24	W EEP	U	

Laboratory Report DATE REPORTED: 06/26/2024

CLIENT: P&H Senesac, Inc
PROJECT: Omni Mt. Washington WWTP

WORK ORDER: **2406-17676**
DATE RECEIVED: 06/18/2024

001 Site: Lagoon Cleaning Dewatered Sludge Date Sampled: 6/17/24 Time: 14:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
B/N Surr.3 Terphenyl-d14	85	%	EPA 8270D	6/25/24	W EEP	U	
Acid Surr.1 2-Fluorophenol	75	%	EPA 8270D	6/25/24	W EEP	U	
Acid Surr.2 Phenol-d5	78	%	EPA 8270D	6/25/24	W EEP	U	
Acid Surr.3 Tribromophenol	99	%	EPA 8270D	6/25/24	W EEP	U	
Unidentified Peaks	> 10		EPA 8270D	6/25/24	W EEP	U	

Report Summary of Qualifiers and Notes

AN1: Laboratory Internal Standard response associated with this compound was below method control limits due to matrix interference. The reported result has a higher degree of uncertainty.

Do Not use this form for WSID Samples or Residential Drinking Water Samples

ENDYNE Inc. 160 James Brown Dr. Williston VT 05495 Ph 802-879-4333

Chain-of-Custody-Record *Required Fields

PO#

*EMAIL pnsenesacinc@gmail.com

*Project Name: Omni Mt Washington WWTP Lagoon cleaning	*Company Name: P+H Senesac, Inc	*Sampler Name: Allyssa Senesac
	*Phone # (802) 524-7013	*Phone # (802) 524-7013
*State of Origin VT NY (NH) Other	*Mailing Address: PO Box 577 Milton VT 05468	*Billing Address: PO Box 577 Milton VT 05468

*Sample Location (Please Print Clearly)	*Matrix	GRAB	COMP	*Date/Time Sampled	Container Volume. Ex. 16oz, 1/2 gal.	Sample Preservation	*Analysis Required: Enter Number from Choices Below	Field Results/Remarks
lagoon cleaning dewatered			X	6/17/24 @ 1400	1400	verify	RCRA 8 metals	
sludge							VOC'S	
							SVOC'S	
RUSH							paint filter	
							% solids	
							Total PCB'S	

2406-17676

2406-17676
P&H Senesac, Inc
Omni Mt. Washington WWTP

*Relinquished By:	Date/Time	Received By:	Date/Time	Received By:	Date/Time
[signature]	6/17/24 @ 1400			[signature]	6/18/24 11am

1. pH	6. TKN	(11.) Total Solids	16. Sulfate	21. F.O.G	26. 8270 B/N only 827B-W	31. PP13 Metals PP13-W	Lab Use Only Below
2. Chloride	7. TP	12. TSS	17. *E. coli*	22. 8015 GRO	27. 8270 Acid only 827A-W	(32.) Total RCRA 8 Metals RCRA8-W	Delivery: G
3. Ammonia N	8. TDP	13. TDS	18.COD	23. 8015 DRO	28. 8270 PAH Only 827P	33. Corrosivity	Temp C: 11.5
4. Nitrate N	9. BOD	14. Turbidity	19. VOC 8021B VT21-W Low	(24. Full 8260) NH60-W Low Level or High Level	29. 8081 Pest 881-W	34. Ignitability	Delivered on Ice (Y) N
5. Nitrite N	10. Alkalinity	15. Conductivity	20. 8260 Halocarbons HAL60-	(25. Full 8270) 827-W	(30. 8082 PCB) 882-W	35. Reactivity	

36. Metals Total or Diss. Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sn Tl U V Zn (circle)

37. TCLP (circle) Metals, Volatiles, Semi-volatiles, Pesticides, Hericides 38. PFAS (circle) Drinking Water Non-potable Solid

39. Other: