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Memo

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Date:	November 4, 2019
To:	Beth Callahan, Project Manager, Maine Department of Environmental Protection
	Karem Gungor, Environmental Engineer, Maine Department of Environmental Protection
From:	Elizabeth M. Ransom, P.G. Ransom Consulting, Inc.
Subject:	Nordic Aquafarms, Inc., Land-based Aquaculture Facility, Belfast, Maine L-28319-26-A-N, Review Comments
Project No.:	171.05027

This memo provides responses to the Technical Review Memorandum from Karem Gungor to Beth Callahan dated October 3, 2019. For clarity, the entire comment from the technical memorandum has been copied below and italicized. Responses are in regular text, and on the attached plans and figures as referenced below.

1. First Diversion Trench (Sheet CElll): This trench will not be connected to the edge drain/culvert bypass system as shown in the ESC phasing plans. The trench will intercept the surface runoff from approximately 8.5 acres of upgradient area (see south of Subcatchment 9 flow path in Sheet CW-102) which appears to shed into the streams S3, SS, and S6 under the existing/pre-development conditions. The intercepted flow (surface runoff+ groundwater) will be discharged into an easterly plunge pool based on the underdrain invert elevations provided in Sheet CElll. I recommend the following:

A revised Section 14 Erosion and Sedimentation Control (ESC) Plan has been included as **Attachment A**. Revised phasing plans are included as **Attachment B** and revised phasing plans with aerial background imagery are included as **Attachment C**. Drawings and narratives described in the responses below can be located in the respective attachments.

a. Connect the trench underdrain to a bypass culvert or bypass culverts so that the intercepted flow is conveyed southerly and contributes to the baseflow provided for the streams S3, S5, and S6 under the post-development condition,

1a. A new extended bypass drain has been added to the plans during Phase 2A of the project. The Phase 1 outlets will be eliminated, and the new drain system will convey flows around the site to discharge at Streams S3, S5, and S6, as requested.

b. Eliminate the westerly and easterly outfalls of the trench underdrain shown in Sheet CE118. The outfalls may be necessary during the initial phases of the project; but they need to be removed or

deactivated post construction to simulate the pre-development site hydrology to the extent practicable and mitigating the project's hydrologic impact on the jurisdictional streams,

1b. Elimination of the Phase 1 outlets is shown during Phase 2A of the project and noted on revised sheet CE117.

c. Provide a flat-bottom basin over the diversion trench in lieu of the easterly sloped swale as shown in the grading plans (Sheets CG105 thru CG107). A basin will improve the interception of the upgradient surface runoff by the trench and its conveyance to the streams. The basin can be equipped with catch basins and similar outlet control structures to prevent overflow,

1c. The former swale has been revised to show a flat bottomed basin at this location, as requested. Revised drawings grading plans CG105 to CG107 have been included in **Attachment D**.

d. Clarify how the top of the trench will be permanently stabilized post construction: will it be exposed as shown in Detail ESC-7 in Sheet CE502? The related grading plans (Sheets CG105 thru CG107) do not show any exposed rock surface associated with the diversion trench,

1d. The top of the trench will be stabilized using a sprayed soil/mulch/ seed mix that will be applied over the temporary stone surface at the end of construction. This will provide a stable, vegetated surface to the trench without requiring removal of the riprap stone, and the associated disturbance.

e. Ensure that the phasing and grading plans are consistent on the trench.

As requested, the plans have been made consistent.

2. Second Diversion Trench (Sheet CE112): Since this trench will be below the finished floor elevation of Building 1, will it have a minimum crushed stone reservoir depth of 6 ft as shown in Detail ESC-7 in Sheet CE502? A separate detail drawing for this trench is requested.

During the initial installation, the second diversion trench will be exactly the same as the first, with a crushed stone reservoir to divert groundwater from the surrounding area into the diversion culvert that outlets in a southerly direction to the project limits. The same detail will apply to both trenches (Detail ESC-7 on Sheet CE502). As the excavation and backfill proceeds, the trench will be buried in the backfill section.

3. Bypass Culvert (Sheet CE502): Are perforated pipes necessary for the bypass culverts?

Yes. These culverts are intended to convey surface water from the channels as they are filled during construction. They will also intercept perched groundwater from surrounding areas, as the stream channels currently do. The perforated pipes will allow the bypass culverts to accept groundwater flow approaching from the sides of the channel and will hence continue to operate in a similar manner to the current natural channels.

4. Please provide the approximate length of underdrain network that will drain into the plunge pools shown in Sheet CG102 and CG104 (CG104: the plunge pool will discharge into S3 stream; CG102: westerly plunge pool will discharge into SS stream and easterly plunge pool will discharge into S6 stream). Assuming the underdrain length as a proxy for the flow, demonstrate that the post-development baseflows of the streams S3, S5, and S6 rank similarly with the pre-development flow ranking of the streams obtained from the pre-development hydrologic model results (Subcatchments S2, S3, and S4).

The length of the underdrain network that will drain the site and feed streams S3, S5 and S6 is approximately 12,500 linear feet. The underdrain network is designed to intercept the same

contributing area of surface and groundwater flow that currently provides the base flow for these channels. Therefore, we anticipate that the post-development baseflow conditions will be similar to the pre-development condition where the channels remain downstream of the project site.

5. *Building Excavation Dewatering: The applicant has provided a detailed response to my earlier comment (Comment #1 in my previous memo) on the building pad dewatering. Assuming an average (horizontal) hydraulic conductivity of 2.2xlQ-6 cm/s, the applicant estimated that the groundwater seepage into a 200' (W) x400' (L) x15' (D) excavation pit to be 0.02 cfs (Note: the phasing plan limits the "uncovered grubbed area at any given time" to 80,000 sf). The field conditions can significantly deviate from this assumption and result in higher seepage due to the presence of highly conductive layers (see the shallow water levels observed in the soil borings B102, B105, B107, and B110 within Building 1 and 2 footprints). Therefore, a dewatering contingency plan is necessary particularly for the overburden removal operation during which there will be no edge drains in place. What if temporary sediment basins are overwhelmed by the dewatering? Will the sediment basin be decanted into an undisturbed, well vegetated temporary buffer area? If so, the temporary buffer areas that will be used for emergency dewatering need to be shown in the phasing plans.*

It is understood that ground and groundwater conditions may vary significantly from the average assumption quoted in the previous comment response (0.02cfs over an uncovered area of 80,000sf). The 12" Type C edge drains provided have been designed to accommodate significantly higher flows than the assumed average de-watering load. A 12" pipe operating under channel flow conditions, with a slope of 0.4% and an "n" value of 0.012 has a capacity of 2.4cfs, or 120 times the calculated dewatering flow during average ground conditions. In our opinion this offers a satisfactory factor of safety. However, the erosion control plan also includes the use of temporary sumps and pumping to sediment basins to accommodate excess flows in the event of failure of the edge drains. Further back-up will be provided by the temporary use of dirt bags in isolated areas, if and when necessary. While we acknowledge that that groundwater conditions on the site will only be fully understood when the excavation work is underway, we feel that this offers a suitably robust approach to managing the risks associated with dewatering operations at the site.

6. Soil Stockpiles: The applicant has stated that major on-site stockpiling of soils is not anticipated. If the trucks haul the overburden off site and bring the granular borrow in round trips (see page 14- 5 in Appendix 14-A), there will be a need for stockpiling approximately 50,000 cy of granular borrow until the building excavation reaches the subgrade elevation which may take more than two months (see the phasing summary table in Appendix 14-A). The earth movement logistics warrant more discussion and clarification: Is it more likely that the overburden and granular borrow hauling will be done in round trips? Or will the trucks haul in the granular borrow after the overburden removal is complete? The second alternative is preferable since it will minimize the need for soil stockpiling on site.

It is apparent from this comment that the methodology for major earthworks at the site was not adequately explained in our previous texts. It is our intention that backfill operations under the building footprint areas will proceed immediately after subgrade elevation is reached in the initial part of the excavation (i.e. backfill with granular borrow will not be held back until the entire building footprint is prepared- the two month period quoted in the comment). The excavation will commence with installation of the edge drain outlets and the sand covered edge drains. Excavation will then proceed from west to east, with backfill following immediately behind excavation to reduce exposure of native soils and achieve the most rapid possible stabilization of the excavated areas. In this way, the trucks used to export the unsuitable soil will be available to return to the site with granular backfill for placement in the excavation. The area of uncovered soil at the site will be limited to 80,000sf at any given time.

a. Due to its texture and erodibility, on-site overburden stockpiling needs to be clearly restricted in the ESC plan by inserting the following statement where applicable:

"The overburden shall not be stored on site more than two weeks".

6a. The requested statement has been added to the revised narrative. This can be found in Section 14.6.

b. Soil stockpiling areas need to be shown in the phasing plans if the earth hauling will be performed in round trips.

6b. As noted above, based on the earthworks methodology we do not anticipate generating large soil stockpiles, therefore they are not shown on the plans.

7. Please amend the ESC plan with the response, including the table, provided for Comment 8.a in my previous memo.

A revised narrative is provided with the table added, as requested. This can be found in the Sediment Basin Sizing Narrative

8. Please provide a detail of the temporary structure which will divert the peripheral surface runoff away from the building pad excavation.

A diversion detail has been added to Sheet CE505 (Detail ESC-23). The revised Sheet CE505 is included as **Attachment E**.

9. Flocculant Use: The applicant's concern in regard to flocculants' effectiveness for construction site turbidity control in Maine is noted. Success of flocculation largely depends on the flocculant selection and proper application. I recommend a trial run to determine the effectiveness of powder and solid block flocculants for turbidity control during Phase 1B of the project (particularly during the major earthwork/overburden removal stage). Flocculant selection must be based on the lab analyses (e.g., jar testing) performed on at least three representative (i.e., native silty) soil samples. A copy of the lab reports must be submitted to the Department for its review and feedback. The selected flocculants need to be applied per the manufacturer's instructions and in consultation with the Department. If the flocculant use does not result in noticeable improvement in the turbidity control, the applicant may elect not to use flocculants in the subsequent phases of the construction. Please amend the ESC plan accordingly.

The ESC plan has been revised to include trials of flocculants for use in the sediment basins, as requested. References to this can be found in Section 14.7 (12) and the Sediment Basin Sizing Narrative.

10. The post-development subcatchments 23, 25, and 31 discharge into "Belfast Reservoir One" as shown in Sheet CW-104. In order to eliminate the phosphorus export from the developed areas of these subcatchments into the reservoir, please:

a. Delineate the grassed areas within Subcatchments 25 and 31 in Sheets LP102, LP103, and LP104 and provide the following note for the delineated areas:

"These grassed areas shall not be mowed than more than twice a year and maintained as meadow. No phosphorus containing fertilizer shall be used in these areas except for establishing grass cover on bare soil.",

The plans have been updated to include the language regarding fertilizer and maintenance. See attached Landscape Plans (**Attachment F**).

b. Revise the stormwater drainageway proposed for Subcatchment 23 and direct the subcatchment's entire runoff into the closed drainage system which ultimately discharges into the coastal wetland from the existing clarifier (PTlO shown in Sheet CW- 104).

The plans have been revised to include a catch basin at the end of a drainage swale to collect runoff and direct to the closed system. See attached plans (**Attachment G**).

11. GSF #lB: The actual surface area of the filter appears to be smaller than 773 sf, which is used in the calculations. Please review.

The grading has been revised to adequately show the revised GSF #1B. The filter surface is calculated to be 802, but 773 was left in the calculations. Refer to the Stormwater Drawings (**Attachment G**).

l2. The surface runoff will mostly sheet flow into the proposed GUSFs. Therefore, the finished grades must be consistent with the treatment areas shown in the figures enclosed with the appendix. Please:

a. Provide more spot elevations and arrows indicating the slope and the flow direction in the grading plans,

b. Please provide the following note in a plan sheet where applicable:

"The contractor shall be instructed by the inspecting engineer to ensure that the as-built drainage areas of the grassed underdrained soil filters will be as shown in the revised figures given in Section 12 Appendix B of the permit application."

See attached plans (**Attachment G**).

13. Figure 2: Subcatchment 1B includes areas westerly from GSF 1B which will not be treated by the filter. Please revise the figure. Also, CB-16 rim elevation needs to be 66.90 ft.

Figure 2 has been revised. See attached (**Attachment G**).

14. Figure 4: CB-17 and CB-18 rim elevation needs to be corrected: both elevations need to be 62.0 ft.

The table for Figure 4 has been revised. See attached (**Attachment G**).

15. Figure 6: Will the purple area be treated by GSF15? If so, the treatment area is approximately 9,000 sf. Based on the calculations provided in Appendix A, the filter basin may not have adequate water quality volume for the proposed treatment area. Please review the design and revise it if necessary. Also, Building #7 north of GSFlS will not have a green roof; however, the treatment tables indicate that it will have green roof? SSF43 was mistakenly labeled as SSF13. Please revise.

The area in purple included a portion of a canopy for Building 7. This canopy will have a green roof, but the roof of the building will not be green. Therefore, this is a partial green roof and the calculations are intended to reflect that. The canopy is represented by a different color to reduce confusion. See attached Figure 6 (**Attachment G**).

16. Sheet CGlOl: The 12" storm drain daylighting into GSF24 at the invert elevation of 39.24 ft (P85 in Appendix B) is not clearly shown in this grading plan.

The pipe run has been revised and the invert is 41.5.

17. Sheet CO-501 & CO-502: Please provide information on the subgrade of each grassed underdrained soil filter, subsurface sand filter, and pervious pavers: will it be granular borrow or native soil? Specifically, placing the subsurface sand filters over the granular borrow may help with infiltrating the treated roof runoff which may help with mitigating the hydrologic impact of the project on the jurisdictional streams.

The details have been revised. Refer to Detail drawings (**Attachment G**)

Subsurface Sand Filters: Comment #18 thru #20.

There is no separate bypass manifold which will convey the inflow into the StormTech SC740 chambers when the isolator row capacity is exceeded, or when the isolator row is clogged with sediment. Since the subsurface sand filters will exclusively treat the roof runoff that will contain significantly less sediment load as compared to other impervious surfaces like driveways or parking areas, the design is acceptable.

No action required

18. Larger scale plan view drawings of the proposed subsurface sand filter systems need to be provided. Isolator rows, distribution manifolds, inlet, outlet control structures and maintenance manholes need to be shown instead of the typical "Pretreatment Row - Plan View" presented in Sheet CQ-502. Also, please have the pretreatment row designs reviewed by the StormTech representatives and provide their approval letter per Condition #9 stated in the Department's approval letter dated 7/29/16:

https://www.maine.gov/dep/land/stormwater/stormwaterbmps/manufactured-svstems/stormtech%20isolator%20row%20august%202016.pdf

Larger scale drawings have been provided. See attached details. The pretreatment row will be reviewed by either the StormTech representatives or the Cultech representatives (as they make an equal product). The letter will be provided to the Department.

19. SSF 36: Please check the "underdrain elevation (F)" and "underdrain from SSF pipe elevation" in "SSF Outlet Manhole" and make sure the underdrain system has positive drainage.

Detail sheets have been revised. See attached plans (**Attachment G**).

20. SSF 36 and SSF 40: Please reduce the inlet control structure weir elevations such that they are equal to "Elevation C + 3 ft" which is the top elevation of the Storm Tech SC740 chambers/isolator rows.

See attached plans (**Attachment G**).

Manmade Pervious Pavers: Comment #21 thru #25.

21. Please revise "Manmade Pervious Pavers-Plan View" detail given in CQ-501 so that run-on flow paths and width of pervious pavers for each of the proposed manmade pervious paver (MPP) strip are clearly presented. A table including the paver width, run-on length of each MPP needs to be presented with the detail drawing.

See attached plans (**Attachment G**).

22. MPP14: The grading proposed in Sheet CG103 does not appear to be consistent with the treatment area shown for MPP14 in Appendix B Figure 5. There appears to be an island between the easterly

impervious pavement and the pervious paver strip; the island will not let the surface runoff shed into the pervious paver strip. The grading needs to be revised and spot elevations need to be provided.

See attached plans (**Attachment G**).

23. MPP19: Spot elevations and slope directions need to be shown in Sheet CG104 to ensure that the pervious strip can treat entire Subcatchment 19 shown in Appendix B Figure 5.

See attached grading plans (**Attachment D**).

24. MPP22: The surface area measured in Sheet CG102 is approximately 2,800 sf, which is less than the surface area used in Appendix A Sheet #20 (i.e., 3,240 sf).

The area is smaller and the calculations have been revised (**Attachment G**).

25. MPP30: HydroCAD pond (Pond mpp30) (Page 414 & 415 of the revised post-development HydroCAD model outputs) has an R-Tank configuration different from the other manmade pervious paver ponds since the applicant aimed to provide additional storage volume for the 25- yr storm peak flow attenuation. Please provide the plan and profile view drawings of the proposed R-Tank system.

See revised details (**Attachment G**).

Vegetated Roofs: Comments #26 Thru #30.

26. Sheet CO-503: The applicant proposes to use pregrown modular vegetated roof systems (i.e., Firestone Skyscape Vegetative Roof Systems). The "Vegetated Roof Cross-section" detail needs to be revised to reflect the proposed modular system. Also, my understanding is that the applicant proposes to use two different types of modules (Semi-intensive & Intensive; see Appendix A page #38 & page #34) for the proposed vegetated roofs. Types, specifications, and total number of the modules to be used for each individual vegetated roof needs to be presented in a tabular format in this plan sheet.

Please see revised plan sheet (**Attachment G**).

27. Please review the water storage volume figure used in the sizing calculations. As far as I understand, the "estimated module water storage volume" is reported as 0.20 cf/sf for the semi- intensive module and 0.26 cf/sf for the intensive module in the manufacturer's document presented as Sheet 38 in Appendix A. Both semi-intensive and intensive modules have a surface area of 2.08 sf. Therefore, total estimated water storage volume of a semi-intensive module becomes 2.08 sf x 0.20 cf/sf= 0.416 cf and the same figure for an intensive module becomes 2.08 sf x 0.26 cf/sf= 0.541 cf. Please review the sizing calculations and revise the design if necessary.

Please see the revised sizing calculations and design (**Attachment G**).

28. Subcatchment 15 (GSF15 & GR15): The treatment area breakdown needs to be clarified. Is GR15 proposed as a self-treating surface which receives no runoff from other developed areas? Also, will GSF15 treat 3,184 sf of grass/landscaped area or 4,184 sf of grass/landscaped area? Please revise Figures 6 & 7 in Appendix B by clearly delineating the green roof area. Similar clarifications (e.g., callouts, marking) are necessary in Sheet CG107.

Building 7 has a canopy that will use a vegetated roof. It appears on the figures as the same color as Subcatchment 15. This has been revised on Figure 6 as well as CQ107.

29. Subcatchment 28 {GR28): "Table 1: Stormwater Treatment" states that GR28 will treat 1,407 and 2,429 sf of impervious and landscaped area, respectively. It is unclear which building within Subcatchment 28 will have a vegetated roof. Will the existing building redeveloped into a visitor center (Building 10 shown in Sheet CPlOl) which will have GR28? The extent of redevelopment and new development proposed for Subcatchment 28 needs to be clearly stated in the stormwater management plan and appropriate callouts need to be given in the layout and grading plans (Sheets CP101 and CG101).

The vegetated roof is not for a building, but rather a structural canopy that is proposed over an educational fishpond.

30. Subcatchment 33 (GR33): The "Vegetated Roof' table presented in Appendix A (page #34) shows that the "semi-intensive" modules with water storage volume of 0.2 cf/sf will be used for GR33 whereas GR33 sizing calculations presented in Sheet #31 & #33 indicate that the "intensive" modules with water storage volume of 0.26 cf/sf will be used in GR33. Please review Appendix A and make necessary revisions.

The "semi-intensive" modules with water storage volume of 0.2 cf/sf will be used for GR33. Please see the revised sizing calculations (**Attachment G**).

C. Flooding Standard: Comments #31 Thru #34.

31. This comment is related to Comment #1 provided in this memo:

Based on my analysis of the existing elevation contours and drainageways, the area south of the flow path shown within the pre-development Subcatchment 9 appears to drain into the pre- development Subcatchments 2, 3, and 4 (Sheet CW-102). Subcatchments 2, 3, 4, and 9 of the pre- development model need to be revised to reflect this drainage pattern. The post-development model will also need to be revised per Comment #1: the upgradient surface runoff captured by the northerly interceptor needs to be routed to the southerly analysis point of PT5. The flow due to the groundwater intercepted by the underdrain system can be disregarded in the post- development model.

The Pre- and Post- development analysis has been updated to include the recommended routing. See **Attachment G.**

32. Please provide the technical references justifying the curve number value (i.e., 61) selected for the vegetated roofs.

A curve number of 74 was used for routing vegetated roofs as it best fit with >75% grass cover over a HSG C soil.

33. Subsurface Sand Filter Ponds: The post-development model results show that the "secondary outflow" device (i.e., the weirs) in the inlet control structure (ICS) ponds are triggered by the relatively small one-inch storm which results in significant amount of flow bypassing the subsurface sand filter pond. Please review and revise the ICS and subsurface sand filter ponds in the post-development model.

These are designed to treat only the water quality volume (1-inch storm). Larger storms pass over the weir.

34. "Table 6 - Pipe Capacity":

a. What is the rationale behind providing the "energy grade line (EGL)" in the table? The EGL is the sum of velocity head, pressure head, and elevation head. Since the stormwater drains will have open channel flow, it would be more appropriate to use the hydraulic grade line (HGL), which is essentially equal to the elevation head for open channel flow, for the storm drain capacity analysis,

The slope of the EGL was compared to the slope of the pipe to evaluate whether the pipe was passing Q at higher than full flow capacity.

b. 10-yr 24-h peak flows in multiple pipes exceed their full-flow capacity. Please explain why the diameters of these pipes were not increased to increase the full-flow capacity,

While pipes can convey more than full flow capacity, we have increased pipe diameters as requested.

c. "10-yr EGL" values exceed the flood elevations of CB-16, DMH-59, and DMH-23 which indicate potential flooding around these structures for the 10-yr storm. Please address.

The pipe sizes have been upgraded.

ATTACHMENT A

Revised Soil Erosion and Sedimentation Control Plan

Nordic Aquafarms, Inc., Land-based Aquaculture Facility, Belfast, Maine
L-28319-26-A-N, Review Comments

Ransom Consulting, Inc.
Project 171.05027.008

JOB: L1812057 REPORT STYLE: Data Usability Report
0010: Alpha Analytical Report Cover Page - OK
0015: Sample Cross Reference Summary - OK
0060: Case Narrative - OK
0100: Volatiles Cover Page - OK
0110: Volatiles Sample Results - OK
0120: Volatiles Method Blank Report - OK
0130: Volatiles LCS Report - OK
0180: Semivolatiles Cover Page - OK
0190: Semivolatiles Sample Results - OK
0200: Semivolatiles Method Blank Report - OK
0210: Semivolatiles LCS Report - OK
0900: Pesticides Cover Page - OK
0910: Pesticides Sample Results - OK
0920: Pesticides Method Blank Report - OK
0930: Pesticides LCS Report - OK
1005: Metals Sample Results - OK
1010: Metals Method Blank Report - OK
1020: Metals LCS Report - OK
1040: Metals Matrix Spike Report - OK
1050: Metals Duplicate Report - OK
1180: Inorganics Cover Page - OK
1200: Wet Chemistry Sample Results - OK
1210: Wet Chemistry Method Blank Report - OK
1220: Wet Chemistry LCS Report - OK
1250: Wet Chemistry Duplicate Report - OK
5100: Sample Receipt & Container Information Report - OK
5200: Glossary - OK
5400: References - OK

ANALYTICAL REPORT

Lab Number:	L1812057
Client:	Ransom Consulting, Inc. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Brian Pettingill
Phone:	(207) 772-2891
Project Name:	BELFAST WATER DISTRICT
Project Number:	171.05027.003
Report Date:	04/13/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1812057-01	GWW-101	WATER	BELFAST, ME	04/05/18 08:15	04/06/18
L1812057-02	GWW-101	WATER	BELFAST, ME	04/05/18 08:15	04/06/18
L1812057-03	GWW-103	WATER	BELFAST, ME	04/05/18 08:45	04/06/18
L1812057-04	GWW-103	WATER	BELFAST, ME	04/05/18 08:45	04/06/18
L1812057-05	SS-1	SOIL	BELFAST, ME	04/05/18 09:15	04/06/18
L1812057-06	SS-2	SOIL	BELFAST, ME	04/05/18 11:30	04/06/18
L1812057-07	GWW-101	WATER	BELFAST, ME	04/04/18 08:30	04/06/18
L1812057-08	GWW-103	WATER	BELFAST, ME	04/04/18 09:15	04/06/18
L1812057-09	TRIP BLANK	WATER	BELFAST, ME	04/04/18 00:00	04/06/18

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

Case Narrative (continued)

Report Submission

April 13, 2018: This is a preliminary report.

Sample Receipt

L1812057-06 and -07: The analysis of Pesticides was performed at the client's request.

Semivolatile Organics

The WG1104633-2/-3 LCS/LCSD recoveries, associated with L1812057-01 and -03, are below the acceptance criteria for benzidine (9%/6%); however, it has been identified as a "difficult" analyte. The results of the associated samples are reported.

Total Metals

The WG1105166-1 Method Blank, associated with L1812057-01 and -03, has a concentration above the reporting limit for iron. Since the associated sample concentrations are greater than 10x the blank concentration for this analyte, no corrective action is required.

The WG1105166-2 LCS recovery, associated with L1812057-01 and -03, is above the acceptance criteria for selenium (123%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1105073-3 MS recovery for sulfur (20%), performed on L1812057-03, does not apply because the sample concentration is greater than four times the spike amount added.

Phosphorus, Soluble

The samples were field filtered; a filter blank was not received.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 04/13/18

ORGANICS

VOLATILES

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 04/11/18 21:21
Analyst: NLK

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01 Date Collected: 04/05/18 08:15

Client ID: GWW-101 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01 Date Collected: 04/05/18 08:15

Client ID: GWW-101 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	92		70-130

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 04/11/18 21:49
Analyst: NLK

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03 Date Collected: 04/05/18 08:45

Client ID: GWW-103 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03 Date Collected: 04/05/18 08:45

Client ID: GWW-103 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	94		70-130

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME

Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:26
Analyst: JC
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	14	--	1
1,1-Dichloroethane	ND		ug/kg	2.1	--	1
Chloroform	ND		ug/kg	2.1	--	1
Carbon tetrachloride	ND		ug/kg	1.4	--	1
1,2-Dichloropropane	ND		ug/kg	5.0	--	1
Dibromochloromethane	ND		ug/kg	1.4	--	1
1,1,2-Trichloroethane	ND		ug/kg	2.1	--	1
Tetrachloroethene	ND		ug/kg	1.4	--	1
Chlorobenzene	ND		ug/kg	1.4	--	1
Trichlorofluoromethane	ND		ug/kg	7.1	--	1
1,2-Dichloroethane	ND		ug/kg	1.4	--	1
1,1,1-Trichloroethane	ND		ug/kg	1.4	--	1
Bromodichloromethane	ND		ug/kg	1.4	--	1
trans-1,3-Dichloropropene	ND		ug/kg	1.4	--	1
cis-1,3-Dichloropropene	ND		ug/kg	1.4	--	1
1,3-Dichloropropene, Total	ND		ug/kg	1.4	--	1
1,1-Dichloropropene	ND		ug/kg	7.1	--	1
Bromoform	ND		ug/kg	5.7	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.4	--	1
Benzene	ND		ug/kg	1.4	--	1
Toluene	ND		ug/kg	2.1	--	1
Ethylbenzene	ND		ug/kg	1.4	--	1
Chloromethane	ND		ug/kg	7.1	--	1
Bromomethane	ND		ug/kg	2.8	--	1
Vinyl chloride	ND		ug/kg	2.8	--	1
Chloroethane	ND		ug/kg	2.8	--	1
1,1-Dichloroethene	ND		ug/kg	1.4	--	1
trans-1,2-Dichloroethene	ND		ug/kg	2.1	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05 Date Collected: 04/05/18 09:15

Client ID: SS-1 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Trichloroethene	ND		ug/kg	1.4	--	1
1,2-Dichlorobenzene	ND		ug/kg	7.1	--	1
1,3-Dichlorobenzene	ND		ug/kg	7.1	--	1
1,4-Dichlorobenzene	ND		ug/kg	7.1	--	1
Methyl tert butyl ether	ND		ug/kg	2.8	--	1
p/m-Xylene	ND		ug/kg	2.8	--	1
o-Xylene	ND		ug/kg	2.8	--	1
Xylenes, Total	ND		ug/kg	2.8	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.4	--	1
1,2-Dichloroethene, Total	ND		ug/kg	1.4	--	1
Dibromomethane	ND		ug/kg	14	--	1
1,4-Dichlorobutane	ND		ug/kg	14	--	1
1,2,3-Trichloropropane	ND		ug/kg	14	--	1
Styrene	ND		ug/kg	2.8	--	1
Dichlorodifluoromethane	ND		ug/kg	14	--	1
Acetone	ND		ug/kg	51	--	1
Carbon disulfide	ND		ug/kg	14	--	1
2-Butanone	ND		ug/kg	14	--	1
Vinyl acetate	ND		ug/kg	14	--	1
4-Methyl-2-pentanone	ND		ug/kg	14	--	1
2-Hexanone	ND		ug/kg	14	--	1
Ethyl methacrylate	ND		ug/kg	14	--	1
Acrylonitrile	ND		ug/kg	5.7	--	1
Bromochloromethane	ND		ug/kg	7.1	--	1
Tetrahydrofuran	ND		ug/kg	28	--	1
2,2-Dichloropropane	ND		ug/kg	7.1	--	1
1,2-Dibromoethane	ND		ug/kg	5.7	--	1
1,3-Dichloropropane	ND		ug/kg	7.1	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.4	--	1
Bromobenzene	ND		ug/kg	7.1	--	1
n-Butylbenzene	ND		ug/kg	1.4	--	1
sec-Butylbenzene	ND		ug/kg	1.4	--	1
tert-Butylbenzene	ND		ug/kg	7.1	--	1
o-Chlorotoluene	ND		ug/kg	7.1	--	1
p-Chlorotoluene	ND		ug/kg	7.1	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	7.1	--	1
Hexachlorobutadiene	ND		ug/kg	7.1	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05 Date Collected: 04/05/18 09:15

Client ID: SS-1 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Isopropylbenzene	ND		ug/kg	1.4	--	1
p-Isopropyltoluene	ND		ug/kg	1.4	--	1
Naphthalene	ND		ug/kg	7.1	--	1
n-Propylbenzene	ND		ug/kg	1.4	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	7.1	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	7.1	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	7.1	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	7.1	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	7.1	--	1
Ethyl ether	ND		ug/kg	7.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	82		70-130
Dibromofluoromethane	110		70-130

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:00
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG1105519-5					
Methylene chloride	ND		ug/kg	10	--
1,1-Dichloroethane	ND		ug/kg	1.5	--
Chloroform	ND		ug/kg	1.5	--
Carbon tetrachloride	ND		ug/kg	1.0	--
1,2-Dichloropropane	ND		ug/kg	3.5	--
Dibromochloromethane	ND		ug/kg	1.0	--
1,1,2-Trichloroethane	ND		ug/kg	1.5	--
2-Chloroethylvinyl ether	ND		ug/kg	20	--
Tetrachloroethene	ND		ug/kg	1.0	--
Chlorobenzene	ND		ug/kg	1.0	--
Trichlorofluoromethane	ND		ug/kg	5.0	--
1,2-Dichloroethane	ND		ug/kg	1.0	--
1,1,1-Trichloroethane	ND		ug/kg	1.0	--
Bromodichloromethane	ND		ug/kg	1.0	--
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--
cis-1,3-Dichloropropene	ND		ug/kg	1.0	--
1,3-Dichloropropene, Total	ND		ug/kg	1.0	--
1,1-Dichloropropene	ND		ug/kg	5.0	--
Bromoform	ND		ug/kg	4.0	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	--
Benzene	ND		ug/kg	1.0	--
Toluene	ND		ug/kg	1.5	--
Ethylbenzene	ND		ug/kg	1.0	--
Chloromethane	ND		ug/kg	5.0	--
Bromomethane	ND		ug/kg	2.0	--
Vinyl chloride	ND		ug/kg	2.0	--
Chloroethane	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:00
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG1105519-5					
Trichloroethene	ND		ug/kg	1.0	--
1,2-Dichlorobenzene	ND		ug/kg	5.0	--
1,3-Dichlorobenzene	ND		ug/kg	5.0	--
1,4-Dichlorobenzene	ND		ug/kg	5.0	--
Methyl tert butyl ether	ND		ug/kg	2.0	--
p/m-Xylene	ND		ug/kg	2.0	--
o-Xylene	ND		ug/kg	2.0	--
Xylenes, Total	ND		ug/kg	2.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--
Dibromomethane	ND		ug/kg	10	--
1,4-Dichlorobutane	ND		ug/kg	10	--
1,2,3-Trichloropropane	ND		ug/kg	10	--
Styrene	ND		ug/kg	2.0	--
Dichlorodifluoromethane	ND		ug/kg	10	--
Acetone	ND		ug/kg	36	--
Carbon disulfide	ND		ug/kg	10	--
2-Butanone	ND		ug/kg	10	--
Vinyl acetate	ND		ug/kg	10	--
4-Methyl-2-pentanone	ND		ug/kg	10	--
2-Hexanone	ND		ug/kg	10	--
Ethyl methacrylate	ND		ug/kg	10	--
Acrolein	ND		ug/kg	25	--
Acrylonitrile	ND		ug/kg	4.0	--
Bromochloromethane	ND		ug/kg	5.0	--
Tetrahydrofuran	ND		ug/kg	20	--
2,2-Dichloropropane	ND		ug/kg	5.0	--
1,2-Dibromoethane	ND		ug/kg	4.0	--
1,3-Dichloropropane	ND		ug/kg	5.0	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:00
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG1105519-5					
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.0	--
Bromobenzene	ND		ug/kg	5.0	--
n-Butylbenzene	ND		ug/kg	1.0	--
sec-Butylbenzene	ND		ug/kg	1.0	--
tert-Butylbenzene	ND		ug/kg	5.0	--
1,3,5-Trichlorobenzene	ND		ug/kg	4.0	--
o-Chlorotoluene	ND		ug/kg	5.0	--
p-Chlorotoluene	ND		ug/kg	5.0	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.0	--
Hexachlorobutadiene	ND		ug/kg	5.0	--
Isopropylbenzene	ND		ug/kg	1.0	--
p-Isopropyltoluene	ND		ug/kg	1.0	--
Naphthalene	ND		ug/kg	5.0	--
n-Propylbenzene	ND		ug/kg	1.0	--
1,2,3-Trichlorobenzene	ND		ug/kg	5.0	--
1,2,4-Trichlorobenzene	ND		ug/kg	5.0	--
1,3,5-Trimethylbenzene	ND		ug/kg	5.0	--
1,2,4-Trimethylbenzene	ND		ug/kg	5.0	--
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	--
Ethyl ether	ND		ug/kg	5.0	--
Methyl Acetate	ND		ug/kg	20	--
Ethyl Acetate	ND		ug/kg	20	--
Isopropyl Ether	ND		ug/kg	4.0	--
Cyclohexane	ND		ug/kg	20	--
Tert-Butyl Alcohol	ND		ug/kg	100	--
Ethyl-Tert-Butyl-Ether	ND		ug/kg	4.0	--
Tertiary-Amyl Methyl Ether	ND		ug/kg	4.0	--
1,4-Dioxane	ND		ug/kg	40	--
Methyl cyclohexane	ND		ug/kg	4.0	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
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Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:00
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG1105519-5					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	20	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	81		70-130
Dibromofluoromethane	105		70-130

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 19:58
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1105890-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	1.0	--
Bromoform	ND		ug/l	1.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	0.20	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 19:58
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1105890-5					
1,2-Dichloroethene, Total	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	1.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
Iodomethane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	1.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	1.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrolein	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	1.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	1.0	--
1,2-Dibromoethane	ND		ug/l	1.0	--

Project Name: BELFAST WATER DISTRICT
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Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 19:58
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1105890-5					
1,3-Dichloropropane	ND		ug/l	1.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	1.0	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	1.0	--
o-Chlorotoluene	ND		ug/l	1.0	--
p-Chlorotoluene	ND		ug/l	1.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	1.0	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--
1,3,5-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Halothane	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	1.0	--
Methyl Acetate	ND		ug/l	10	--
Ethyl Acetate	ND		ug/l	10	--
Isopropyl Ether	ND		ug/l	1.0	--
Cyclohexane	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	1.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	1.0	--

Project Name: BELFAST WATER DISTRICT
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Lab Number: L1812057
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Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 19:58
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1105890-5					
1,4-Dioxane	ND		ug/l	250	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	10	--
Methyl cyclohexane	ND		ug/l	10	--
p-Diethylbenzene	ND		ug/l	2.0	--
4-Ethyltoluene	ND		ug/l	2.0	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	95		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG1105519-3 WG1105519-4								
Methylene chloride	92		92		70-130	0		30
1,1-Dichloroethane	96		94		70-130	2		30
Chloroform	83		81		70-130	2		30
Carbon tetrachloride	88		83		70-130	6		30
1,2-Dichloropropane	106		104		70-130	2		30
Dibromochloromethane	80		83		70-130	4		30
1,1,2-Trichloroethane	83		83		70-130	0		30
2-Chloroethylvinyl ether	87		85		70-130	2		30
Tetrachloroethene	98		93		70-130	5		30
Chlorobenzene	92		89		70-130	3		30
Trichlorofluoromethane	80		76		70-139	5		30
1,2-Dichloroethane	84		82		70-130	2		30
1,1,1-Trichloroethane	80		76		70-130	5		30
Bromodichloromethane	83		83		70-130	0		30
trans-1,3-Dichloropropene	71		70		70-130	1		30
cis-1,3-Dichloropropene	92		90		70-130	2		30
1,1-Dichloropropene	84		79		70-130	6		30
Bromoform	75		77		70-130	3		30
1,1,2,2-Tetrachloroethane	84		86		70-130	2		30
Benzene	90		86		70-130	5		30
Toluene	82		79		70-130	4		30
Ethylbenzene	78		75		70-130	4		30
Chloromethane	107		104		52-130	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG1105519-3 WG1105519-4								
Bromomethane	94		93		57-147	1		30
Vinyl chloride	99		93		67-130	6		30
Chloroethane	92		90		50-151	2		30
1,1-Dichloroethene	91		84		65-135	8		30
trans-1,2-Dichloroethene	91		87		70-130	4		30
Trichloroethene	86		82		70-130	5		30
1,2-Dichlorobenzene	96		97		70-130	1		30
1,3-Dichlorobenzene	95		96		70-130	1		30
1,4-Dichlorobenzene	94		96		70-130	2		30
Methyl tert butyl ether	83		83		66-130	0		30
p/m-Xylene	94		90		70-130	4		30
o-Xylene	93		90		70-130	3		30
cis-1,2-Dichloroethene	93		90		70-130	3		30
Dibromomethane	91		92		70-130	1		30
1,4-Dichlorobutane	91		93		70-130	2		30
1,2,3-Trichloropropane	74		75		68-130	1		30
Styrene	94		92		70-130	2		30
Dichlorodifluoromethane	62		58		30-146	7		30
Acetone	**154**	Q	**151**	Q	54-140	2		30
Carbon disulfide	90		84		59-130	7		30
2-Butanone	114		109		70-130	4		30
Vinyl acetate	100		97		70-130	3		30
4-Methyl-2-pentanone	85		80		70-130	6		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG1105519-3 WG1105519-4								
2-Hexanone	79		81		70-130	3		30
Ethyl methacrylate	**68**	Q	**67**	Q	70-130	1		30
Acrolein	108		110		70-130	2		30
Acrylonitrile	104		106		70-130	2		30
Bromochloromethane	112		112		70-130	0		30
Tetrahydrofuran	108		110		66-130	2		30
2,2-Dichloropropane	87		82		70-130	6		30
1,2-Dibromoethane	90		90		70-130	0		30
1,3-Dichloropropane	81		80		69-130	1		30
1,1,1,2-Tetrachloroethane	90		88		70-130	2		30
Bromobenzene	87		88		70-130	1		30
n-Butylbenzene	77		75		70-130	3		30
sec-Butylbenzene	84		83		70-130	1		30
tert-Butylbenzene	84		82		70-130	2		30
1,3,5-Trichlorobenzene	96		96		70-139	0		30
o-Chlorotoluene	75		74		70-130	1		30
p-Chlorotoluene	74		75		70-130	1		30
1,2-Dibromo-3-chloropropane	82		84		68-130	2		30
Hexachlorobutadiene	82		81		67-130	1		30
Isopropylbenzene	81		79		70-130	3		30
p-Isopropyltoluene	87		84		70-130	4		30
Naphthalene	86		87		70-130	1		30
n-Propylbenzene	75		74		70-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG1105519-3 WG1105519-4								
1,2,3-Trichlorobenzene	95		97		70-130	2		30
1,2,4-Trichlorobenzene	93		94		70-130	1		30
1,3,5-Trimethylbenzene	83		82		70-130	1		30
1,2,4-Trimethylbenzene	85		84		70-130	1		30
trans-1,4-Dichloro-2-butene	76		72		70-130	5		30
Ethyl ether	85		86		67-130	1		30
Methyl Acetate	100		98		65-130	2		30
Ethyl Acetate	94		92		70-130	2		30
Isopropyl Ether	101		101		66-130	0		30
Cyclohexane	105		98		70-130	7		30
Tert-Butyl Alcohol	87		87		70-130	0		30
Ethyl-Tert-Butyl-Ether	96		96		70-130	0		30
Tertiary-Amyl Methyl Ether	86		85		70-130	1		30
1,4-Dioxane	133		132		65-136	1		30
Methyl cyclohexane	90		82		70-130	9		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	92		86		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	87		87		70-130
Toluene-d8	90		91		70-130
4-Bromofluorobenzene	82		81		70-130
Dibromofluoromethane	107		107		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	110		110		70-130	0		20
Chloroform	97		99		70-130	2		20
Carbon tetrachloride	86		89		63-132	3		20
1,2-Dichloropropane	110		110		70-130	0		20
Dibromochloromethane	91		92		63-130	1		20
1,1,2-Trichloroethane	110		110		70-130	0		20
2-Chloroethylvinyl ether	90		90		70-130	0		20
Tetrachloroethene	86		89		70-130	3		20
Chlorobenzene	96		98		75-130	2		25
Trichlorofluoromethane	91		96		62-150	5		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	91		95		67-130	4		20
Bromodichloromethane	93		94		67-130	1		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	99		100		70-130	1		20
1,1-Dichloropropene	97		100		70-130	3		20
Bromoform	87		87		54-136	0		20
1,1,2,2-Tetrachloroethane	110		110		67-130	0		20
Benzene	94		97		70-130	3		25
Toluene	98		100		70-130	2		25
Ethylbenzene	97		100		70-130	3		20
Chloromethane	120		130		64-130	8		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4								
Bromomethane	73		78		39-139	7		20
Vinyl chloride	110		120		55-140	9		20
Chloroethane	110		120		55-138	9		20
1,1-Dichloroethene	93		96		61-145	3		25
trans-1,2-Dichloroethene	94		99		70-130	5		20
Trichloroethene	88		91		70-130	3		25
1,2-Dichlorobenzene	93		96		70-130	3		20
1,3-Dichlorobenzene	94		96		70-130	2		20
1,4-Dichlorobenzene	94		96		70-130	2		20
Methyl tert butyl ether	100		100		63-130	0		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		100		70-130	5		20
cis-1,2-Dichloroethene	94		96		70-130	2		20
Dibromomethane	93		94		70-130	1		20
1,4-Dichlorobutane	120		120		70-130	0		20
Iodomethane	**37**	Q	**42**	Q	70-130	13		20
1,2,3-Trichloropropane	110		110		64-130	0		20
Styrene	125		130		70-130	4		20
Dichlorodifluoromethane	110		110		36-147	0		20
Acetone	96		100		58-148	4		20
Carbon disulfide	100		100		51-130	0		20
2-Butanone	120		120		63-138	0		20
Vinyl acetate	110		110		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4								
4-Methyl-2-pentanone	110		110		59-130	0		20
2-Hexanone	110		110		57-130	0		20
Ethyl methacrylate	94		93		70-130	1		20
Acrolein	**280**	Q	**280**	Q	70-130	0		20
Acrylonitrile	110		120		70-130	9		20
Bromochloromethane	90		91		70-130	1		20
Tetrahydrofuran	130		130		58-130	0		20
2,2-Dichloropropane	100		100		63-133	0		20
1,2-Dibromoethane	98		96		70-130	2		20
1,3-Dichloropropane	110		110		70-130	0		20
1,1,1,2-Tetrachloroethane	92		94		64-130	2		20
Bromobenzene	90		94		70-130	4		20
n-Butylbenzene	100		110		53-136	10		20
sec-Butylbenzene	99		100		70-130	1		20
tert-Butylbenzene	95		100		70-130	5		20
o-Chlorotoluene	100		100		70-130	0		20
p-Chlorotoluene	100		100		70-130	0		20
1,2-Dibromo-3-chloropropane	90		90		41-144	0		20
Hexachlorobutadiene	66		71		63-130	7		20
Isopropylbenzene	99		100		70-130	1		20
p-Isopropyltoluene	97		100		70-130	3		20
Naphthalene	91		91		70-130	0		20
n-Propylbenzene	100		110		69-130	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4								
1,2,3-Trichlorobenzene	80		82		70-130	2		20
1,2,4-Trichlorobenzene	81		83		70-130	2		20
1,3,5-Trimethylbenzene	99		100		64-130	1		20
1,3,5-Trichlorobenzene	83		85		70-130	2		20
1,2,4-Trimethylbenzene	90		95		70-130	5		20
trans-1,4-Dichloro-2-butene	110		100		70-130	10		20
Halothane	84		87		70-130	4		20
Ethyl ether	110		110		59-134	0		20
Methyl Acetate	**140**	Q	130		70-130	7		20
Ethyl Acetate	120		120		70-130	0		20
Isopropyl Ether	120		120		70-130	0		20
Cyclohexane	110		120		70-130	9		20
Tert-Butyl Alcohol	86		92		70-130	7		20
Ethyl-Tert-Butyl-Ether	110		110		70-130	0		20
Tertiary-Amyl Methyl Ether	99		100		66-130	1		20
1,4-Dioxane	**48**	Q	60		56-162	**22**	Q	20
1,1,2-Trichloro-1,2,2-Trifluoroethane	93		99		70-130	6		20
Methyl cyclohexane	94		100		70-130	6		20
p-Diethylbenzene	95		98		70-130	3		20
4-Ethyltoluene	100		100		70-130	0		20
1,2,4,5-Tetramethylbenzene	90		93		70-130	3		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	102		101		70-130
Dibromofluoromethane	93		94		70-130

SEMIVOLATILES

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 04/10/18 16:30
Analyst: EK

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01 Date Collected: 04/05/18 08:15

Client ID: GWW-101 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	68		21-120
Phenol-d6	47		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	85		15-120
2,4,6-Tribromophenol	97		10-120
4-Terphenyl-d14	91		41-149

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 04/10/18 17:23
Analyst: CB

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Extraction Method: EPA 3510C
Extraction Date: 04/09/18 07:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	0.13		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	57		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	89		15-120
2,4,6-Tribromophenol	73		10-120
4-Terphenyl-d14	96		41-149

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 04/10/18 18:39
Analyst: EK

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03 Date Collected: 04/05/18 08:45

Client ID: GWW-103 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		21-120
Phenol-d6	48		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	86		15-120
2,4,6-Tribromophenol	97		10-120
4-Terphenyl-d14	91		41-149

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 04/10/18 17:48
Analyst: CB

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Extraction Method: EPA 3510C
Extraction Date: 04/09/18 07:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03 Date Collected: 04/05/18 08:45

Client ID: GWW-103 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	42		10-120
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	81		15-120
2,4,6-Tribromophenol	64		10-120
4-Terphenyl-d14	121		41-149

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME

Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 04/12/18 02:11
Analyst: CB
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 04/08/18 01:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	170	--	1
Benzidine	ND		ug/kg	700	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	210	--	1
Hexachlorobenzene	ND		ug/kg	130	--	1
Bis(2-chloroethyl)ether	ND		ug/kg	190	--	1
2-Chloronaphthalene	ND		ug/kg	210	--	1
1,2-Dichlorobenzene	ND		ug/kg	210	--	1
1,3-Dichlorobenzene	ND		ug/kg	210	--	1
1,4-Dichlorobenzene	ND		ug/kg	210	--	1
3,3'-Dichlorobenzidine	ND		ug/kg	210	--	1
2,4-Dinitrotoluene	ND		ug/kg	210	--	1
2,6-Dinitrotoluene	ND		ug/kg	210	--	1
Azobenzene	ND		ug/kg	210	--	1
Fluoranthene	330		ug/kg	130	--	1
4-Chlorophenyl phenyl ether	ND		ug/kg	210	--	1
4-Bromophenyl phenyl ether	ND		ug/kg	210	--	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	260	--	1
Bis(2-chloroethoxy)methane	ND		ug/kg	230	--	1
Hexachlorobutadiene	ND		ug/kg	210	--	1
Hexachlorocyclopentadiene	ND		ug/kg	610	--	1
Hexachloroethane	ND		ug/kg	170	--	1
Isophorone	ND		ug/kg	190	--	1
Naphthalene	ND		ug/kg	210	--	1
Nitrobenzene	ND		ug/kg	190	--	1
NDPA/DPA	ND		ug/kg	170	--	1
n-Nitrosodi-n-propylamine	ND		ug/kg	210	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	210	--	1
Butyl benzyl phthalate	ND		ug/kg	210	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05 Date Collected: 04/05/18 09:15

Client ID: SS-1 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Di-n-butylphthalate	ND		ug/kg	210	--	1
Di-n-octylphthalate	ND		ug/kg	210	--	1
Diethyl phthalate	ND		ug/kg	210	--	1
Dimethyl phthalate	ND		ug/kg	210	--	1
Benzo(a)anthracene	240		ug/kg	130	--	1
Benzo(a)pyrene	230		ug/kg	170	--	1
Benzo(b)fluoranthene	340		ug/kg	130	--	1
Benzo(k)fluoranthene	ND		ug/kg	130	--	1
Chrysene	250		ug/kg	130	--	1
Acenaphthylene	ND		ug/kg	170	--	1
Anthracene	ND		ug/kg	130	--	1
Benzo(ghi)perylene	ND		ug/kg	170	--	1
Fluorene	ND		ug/kg	210	--	1
Phenanthrene	ND		ug/kg	130	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	130	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	170	--	1
Pyrene	320		ug/kg	130	--	1
Aniline	ND		ug/kg	260	--	1
4-Chloroaniline	ND		ug/kg	210	--	1
1-Methylnaphthalene	ND		ug/kg	210	--	1
2-Nitroaniline	ND		ug/kg	210	--	1
3-Nitroaniline	ND		ug/kg	210	--	1
4-Nitroaniline	ND		ug/kg	210	--	1
Dibenzofuran	ND		ug/kg	210	--	1
2-Methylnaphthalene	ND		ug/kg	260	--	1
n-Nitrosodimethylamine	ND		ug/kg	430	--	1
2,4,6-Trichlorophenol	ND		ug/kg	130	--	1
p-Chloro-m-cresol	ND		ug/kg	210	--	1
2-Chlorophenol	ND		ug/kg	210	--	1
2,4-Dichlorophenol	ND		ug/kg	190	--	1
2,4-Dimethylphenol	ND		ug/kg	210	--	1
2-Nitrophenol	ND		ug/kg	460	--	1
4-Nitrophenol	ND		ug/kg	300	--	1
2,4-Dinitrophenol	ND		ug/kg	1000	--	1
4,6-Dinitro-o-cresol	ND		ug/kg	550	--	1
Pentachlorophenol	ND		ug/kg	170	--	1
Phenol	ND		ug/kg	210	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05 Date Collected: 04/05/18 09:15

Client ID: SS-1 Date Received: 04/06/18

Sample Location: BELFAST, ME Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2-Methylphenol	ND		ug/kg	210	--	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	310	--	1
2,4,5-Trichlorophenol	ND		ug/kg	210	--	1
Benzoic Acid	ND		ug/kg	690	--	1
Benzyl Alcohol	ND		ug/kg	210	--	1
Carbazole	ND		ug/kg	210	--	1
Pyridine	ND		ug/kg	230	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	36		25-120
Phenol-d6	50		10-120
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	84		30-120
2,4,6-Tribromophenol	88		10-136
4-Terphenyl-d14	71		18-120

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-06
Client ID: SS-2
Sample Location: BELFAST, ME

Date Collected: 04/05/18 11:30
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 04/12/18 08:44
Analyst: TT
Percent Solids: 73%

Extraction Method: EPA 3546
Extraction Date: 04/11/18 14:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	12000	E	ug/kg	180	--	1
2-Chloronaphthalene	ND		ug/kg	220	--	1
Fluoranthene	78000	E	ug/kg	140	--	1
Naphthalene	9900	E	ug/kg	220	--	1
Benzo(a)anthracene	57000	E	ug/kg	140	--	1
Benzo(a)pyrene	48000	E	ug/kg	180	--	1
Benzo(b)fluoranthene	76000	E	ug/kg	140	--	1
Benzo(k)fluoranthene	11000	E	ug/kg	140	--	1
Chrysene	34000	E	ug/kg	140	--	1
Acenaphthylene	1100		ug/kg	180	--	1
Anthracene	22000	E	ug/kg	140	--	1
Benzo(ghi)perylene	28000	E	ug/kg	180	--	1
Fluorene	15000	E	ug/kg	220	--	1
Phenanthrene	66000	E	ug/kg	140	--	1
Dibenzo(a,h)anthracene	6300		ug/kg	140	--	1
Indeno(1,2,3-cd)pyrene	35000	E	ug/kg	180	--	1
Pyrene	61000	E	ug/kg	140	--	1
1-Methylnaphthalene	3200		ug/kg	220	--	1
2-Methylnaphthalene	4100		ug/kg	270	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	56		18-120

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-06 D
Client ID: SS-2
Sample Location: BELFAST, ME

Date Collected: 04/05/18 11:30
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 04/13/18 04:51
Analyst: PS
Percent Solids: 73%

Extraction Method: EPA 3546
Extraction Date: 04/11/18 14:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	10000		ug/kg	3600	--	20
Fluoranthene	90000		ug/kg	2700	--	20
Naphthalene	8200		ug/kg	4500	--	20
Benzo(a)anthracene	45000		ug/kg	2700	--	20
Benzo(a)pyrene	35000		ug/kg	3600	--	20
Benzo(b)fluoranthene	50000		ug/kg	2700	--	20
Benzo(k)fluoranthene	15000		ug/kg	2700	--	20
Chrysene	41000		ug/kg	2700	--	20
Anthracene	23000		ug/kg	2700	--	20
Benzo(ghi)perylene	20000		ug/kg	3600	--	20
Fluorene	14000		ug/kg	4500	--	20
Phenanthrene	82000		ug/kg	2700	--	20
Indeno(1,2,3-cd)pyrene	24000		ug/kg	3600	--	20
Pyrene	70000		ug/kg	2700	--	20

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:07
Analyst: CB

Extraction Method: EPA 3546
Extraction Date: 04/08/18 01:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1104559-1					
Acenaphthene	ND		ug/kg	130	--
Benzidine	ND		ug/kg	540	--
1,2,4-Trichlorobenzene	ND		ug/kg	160	--
Hexachlorobenzene	ND		ug/kg	98	--
Bis(2-chloroethyl)ether	ND		ug/kg	150	--
2-Chloronaphthalene	ND		ug/kg	160	--
1,2-Dichlorobenzene	ND		ug/kg	160	--
1,3-Dichlorobenzene	ND		ug/kg	160	--
1,4-Dichlorobenzene	ND		ug/kg	160	--
3,3'-Dichlorobenzidine	ND		ug/kg	160	--
2,4-Dinitrotoluene	ND		ug/kg	160	--
2,6-Dinitrotoluene	ND		ug/kg	160	--
Azobenzene	ND		ug/kg	160	--
Fluoranthene	ND		ug/kg	98	--
4-Chlorophenyl phenyl ether	ND		ug/kg	160	--
4-Bromophenyl phenyl ether	ND		ug/kg	160	--
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	--
Bis(2-chloroethoxy)methane	ND		ug/kg	180	--
Hexachlorobutadiene	ND		ug/kg	160	--
Hexachlorocyclopentadiene	ND		ug/kg	470	--
Hexachloroethane	ND		ug/kg	130	--
Isophorone	ND		ug/kg	150	--
Naphthalene	ND		ug/kg	160	--
Nitrobenzene	ND		ug/kg	150	--
NDPA/DPA	ND		ug/kg	130	--
n-Nitrosodi-n-propylamine	ND		ug/kg	160	--
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	--
Butyl benzyl phthalate	ND		ug/kg	160	--
Di-n-butylphthalate	ND		ug/kg	160	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:07
Analyst: CB

Extraction Method: EPA 3546
Extraction Date: 04/08/18 01:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1104559-1					
Di-n-octylphthalate	ND		ug/kg	160	--
Diethyl phthalate	ND		ug/kg	160	--
Dimethyl phthalate	ND		ug/kg	160	--
Benzo(a)anthracene	ND		ug/kg	98	--
Benzo(a)pyrene	ND		ug/kg	130	--
Benzo(b)fluoranthene	ND		ug/kg	98	--
Benzo(k)fluoranthene	ND		ug/kg	98	--
Chrysene	ND		ug/kg	98	--
Acenaphthylene	ND		ug/kg	130	--
Anthracene	ND		ug/kg	98	--
Benzo(ghi)perylene	ND		ug/kg	130	--
Fluorene	ND		ug/kg	160	--
Phenanthrene	ND		ug/kg	98	--
Dibenzo(a,h)anthracene	ND		ug/kg	98	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	--
Pyrene	ND		ug/kg	98	--
Biphenyl	ND		ug/kg	370	--
Aniline	ND		ug/kg	200	--
4-Chloroaniline	ND		ug/kg	160	--
1-Methylnaphthalene	ND		ug/kg	160	--
2-Nitroaniline	ND		ug/kg	160	--
3-Nitroaniline	ND		ug/kg	160	--
4-Nitroaniline	ND		ug/kg	160	--
Dibenzofuran	ND		ug/kg	160	--
2-Methylnaphthalene	ND		ug/kg	200	--
n-Nitrosodimethylamine	ND		ug/kg	330	--
2,4,6-Trichlorophenol	ND		ug/kg	98	--
p-Chloro-m-cresol	ND		ug/kg	160	--
2-Chlorophenol	ND		ug/kg	160	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:07
Analyst: CB

Extraction Method: EPA 3546
Extraction Date: 04/08/18 01:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1104559-1					
2,4-Dichlorophenol	ND		ug/kg	150	--
2,4-Dimethylphenol	ND		ug/kg	160	--
2-Nitrophenol	ND		ug/kg	350	--
4-Nitrophenol	ND		ug/kg	230	--
2,4-Dinitrophenol	ND		ug/kg	780	--
4,6-Dinitro-o-cresol	ND		ug/kg	420	--
Pentachlorophenol	ND		ug/kg	130	--
Phenol	ND		ug/kg	160	--
2-Methylphenol	ND		ug/kg	160	--
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	--
2,4,5-Trichlorophenol	ND		ug/kg	160	--
Benzoic Acid	ND		ug/kg	530	--
Benzyl Alcohol	ND		ug/kg	160	--
Carbazole	ND		ug/kg	160	--
Pyridine	ND		ug/kg	180	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	96		25-120
Phenol-d6	105		10-120
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	86		30-120
2,4,6-Tribromophenol	100		10-136
4-Terphenyl-d14	93		18-120

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:12
Analyst: EK

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1104633-1					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:12
Analyst: EK

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1104633-1					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:12
Analyst: EK

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1104633-1					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	3.5	--
Tentatively Identified Compounds					
No Tentatively Identified Compounds	ND		ug/l		

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:12
Analyst: EK

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1104633-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	72		15-120
2,4,6-Tribromophenol	83		10-120
4-Terphenyl-d14	84		41-149

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 04/10/18 09:56
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01,03 Batch: WG1104635-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
1-Methylnaphthalene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 04/10/18 09:56
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01,03 Batch: WG1104635-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		21-120
Phenol-d6	35		10-120
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	68		15-120
2,4,6-Tribromophenol	64		10-120
4-Terphenyl-d14	82		41-149

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/11/18 22:56
Analyst: TT

Extraction Method: EPA 3546
Extraction Date: 04/10/18 17:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 06 Batch: WG1105283-1					
Acenaphthene	ND		ug/kg	130	--
2-Chloronaphthalene	ND		ug/kg	160	--
Fluoranthene	ND		ug/kg	97	--
Naphthalene	ND		ug/kg	160	--
Benzo(a)anthracene	ND		ug/kg	97	--
Benzo(a)pyrene	ND		ug/kg	130	--
Benzo(b)fluoranthene	ND		ug/kg	97	--
Benzo(k)fluoranthene	ND		ug/kg	97	--
Chrysene	ND		ug/kg	97	--
Acenaphthylene	ND		ug/kg	130	--
Anthracene	ND		ug/kg	97	--
Benzo(ghi)perylene	ND		ug/kg	130	--
Fluorene	ND		ug/kg	160	--
Phenanthrene	ND		ug/kg	97	--
Dibenzo(a,h)anthracene	ND		ug/kg	97	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	--
Pyrene	ND		ug/kg	97	--
1-Methylnaphthalene	ND		ug/kg	160	--
2-Methylnaphthalene	ND		ug/kg	190	--
Tentatively Identified Compounds					
No Tentatively Identified Compounds	ND		ug/kg		

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/11/18 22:56
Analyst: TT

Extraction Method: EPA 3546
Extraction Date: 04/10/18 17:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 06 Batch: WG1105283-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	76		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1104559-2 WG1104559-3								
Acenaphthene	96		99		31-137	3		50
Benzidine	21		23		10-66	9		50
1,2,4-Trichlorobenzene	96		97		38-107	1		50
Hexachlorobenzene	96		102		40-140	6		50
Bis(2-chloroethyl)ether	88		94		40-140	7		50
2-Chloronaphthalene	99		102		40-140	3		50
1,2-Dichlorobenzene	91		94		40-140	3		50
1,3-Dichlorobenzene	91		94		40-140	3		50
1,4-Dichlorobenzene	91		94		28-104	3		50
3,3'-Dichlorobenzidine	61		70		40-140	14		50
2,4-Dinitrotoluene	104		109		40-132	5		50
2,6-Dinitrotoluene	108		106		40-140	2		50
Azobenzene	122		130		40-140	6		50
Fluoranthene	100		104		40-140	4		50
4-Chlorophenyl phenyl ether	94		100		40-140	6		50
4-Bromophenyl phenyl ether	99		103		40-140	4		50
Bis(2-chloroisopropyl)ether	105		106		40-140	1		50
Bis(2-chloroethoxy)methane	99		96		40-117	3		50
Hexachlorobutadiene	101		108		40-140	7		50
Hexachlorocyclopentadiene	81		77		40-140	5		50
Hexachloroethane	102		105		40-140	3		50
Isophorone	99		98		40-140	1		50
Naphthalene	96		94		40-140	2		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1104559-2 WG1104559-3								
Nitrobenzene	102		102		40-140	0		50
NDPA/DPA	100		105		36-157	5		50
n-Nitrosodi-n-propylamine	103		103		32-121	0		50
Bis(2-ethylhexyl)phthalate	112		120		40-140	7		50
Butyl benzyl phthalate	112		119		40-140	6		50
Di-n-butylphthalate	108		112		40-140	4		50
Di-n-octylphthalate	109		117		40-140	7		50
Diethyl phthalate	104		108		40-140	4		50
Dimethyl phthalate	103		100		40-140	3		50
Benzo(a)anthracene	100		107		40-140	7		50
Benzo(a)pyrene	103		111		40-140	7		50
Benzo(b)fluoranthene	103		110		40-140	7		50
Benzo(k)fluoranthene	99		109		40-140	10		50
Chrysene	100		105		40-140	5		50
Acenaphthylene	102		102		40-140	0		50
Anthracene	100		103		40-140	3		50
Benzo(ghi)perylene	103		110		40-140	7		50
Fluorene	100		103		40-140	3		50
Phenanthrene	100		103		40-140	3		50
Dibenzo(a,h)anthracene	101		107		40-140	6		50
Indeno(1,2,3-cd)pyrene	106		113		40-140	6		50
Pyrene	98		101		35-142	3		50
Biphenyl	100		102		54-104	2		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1104559-2 WG1104559-3								
Aniline	56		56		40-140	0		50
4-Chloroaniline	104		99		40-140	5		50
1-Methylnaphthalene	108		107		26-130	1		50
2-Nitroaniline	109		106		47-134	3		50
3-Nitroaniline	56		58		26-129	4		50
4-Nitroaniline	90		94		41-125	4		50
Dibenzofuran	97		101		40-140	4		50
2-Methylnaphthalene	95		95		40-140	0		50
n-Nitrosodimethylamine	98		92		22-100	6		50
2,4,6-Trichlorophenol	105		104		30-130	1		50
p-Chloro-m-cresol	**114**	Q	**110**	Q	26-103	4		50
2-Chlorophenol	101		**103**	Q	25-102	2		50
2,4-Dichlorophenol	113		111		30-130	2		50
2,4-Dimethylphenol	111		105		30-130	6		50
2-Nitrophenol	105		108		30-130	3		50
4-Nitrophenol	111		**119**	Q	11-114	7		50
2,4-Dinitrophenol	87		90		4-130	3		50
4,6-Dinitro-o-cresol	105		116		10-130	10		50
Pentachlorophenol	89		94		17-109	5		50
Phenol	**98**	Q	**98**	Q	26-90	0		50
2-Methylphenol	106		109		30-130.	3		50
3-Methylphenol/4-Methylphenol	112		112		30-130	0		50
2,4,5-Trichlorophenol	119		115		30-130	3		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1104559-2 WG1104559-3								
Benzoic Acid	60		54		10-110	11		50
Benzyl Alcohol	111		109		40-140	2		50
Carbazole	101		104		54-128	3		50
Pyridine	80		80		10-93	0		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	96		100		25-120
Phenol-d6	105		107		10-120
Nitrobenzene-d5	87		89		23-120
2-Fluorobiphenyl	88		89		30-120
2,4,6-Tribromophenol	100		110		10-136
4-Terphenyl-d14	87		90		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1104633-2 WG1104633-3								
Acenaphthene	85		78		37-111	9		30
Benzidine	**9**	Q	**6**	Q	10-75	**40**	Q	30
1,2,4-Trichlorobenzene	76		69		39-98	10		30
Hexachlorobenzene	96		90		40-140	6		30
Bis(2-chloroethyl)ether	93		83		40-140	11		30
2-Chloronaphthalene	82		76		40-140	8		30
1,2-Dichlorobenzene	73		64		40-140	13		30
1,3-Dichlorobenzene	70		61		40-140	14		30
1,4-Dichlorobenzene	70		62		36-97	12		30
3,3'-Dichlorobenzidine	63		65		40-140	3		30
2,4-Dinitrotoluene	98		92		48-143	6		30
2,6-Dinitrotoluene	110		104		40-140	6		30
Azobenzene	103		96		40-140	7		30
Fluoranthene	92		86		40-140	7		30
4-Chlorophenyl phenyl ether	88		81		40-140	8		30
4-Bromophenyl phenyl ether	86		80		40-140	7		30
Bis(2-chloroisopropyl)ether	97		87		40-140	11		30
Bis(2-chloroethoxy)methane	98		91		40-140	7		30
Hexachlorobutadiene	68		61		40-140	11		30
Hexachlorocyclopentadiene	51		48		40-140	6		30
Hexachloroethane	73		65		40-140	12		30
Isophorone	110		102		40-140	8		30
Naphthalene	76		69		40-140	10		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1104633-2 WG1104633-3								
Nitrobenzene	98		90		40-140	9		30
NDPA/DPA	90		84		40-140	7		30
n-Nitrosodi-n-propylamine	107		99		29-132	8		30
Bis(2-ethylhexyl)phthalate	106		99		40-140	7		30
Butyl benzyl phthalate	102		96		40-140	6		30
Di-n-butylphthalate	95		90		40-140	5		30
Di-n-octylphthalate	98		92		40-140	6		30
Diethyl phthalate	96		90		40-140	6		30
Dimethyl phthalate	96		93		40-140	3		30
Benzo(a)anthracene	94		88		40-140	7		30
Benzo(a)pyrene	96		89		40-140	8		30
Benzo(b)fluoranthene	95		88		40-140	8		30
Benzo(k)fluoranthene	95		89		40-140	7		30
Chrysene	96		89		40-140	8		30
Acenaphthylene	90		84		45-123	7		30
Anthracene	88		84		40-140	5		30
Benzo(ghi)perylene	98		93		40-140	5		30
Fluorene	89		82		40-140	8		30
Phenanthrene	87		82		40-140	6		30
Dibenzo(a,h)anthracene	95		91		40-140	4		30
Indeno(1,2,3-cd)pyrene	98		92		40-140	6		30
Pyrene	90		86		26-127	5		30
Biphenyl	83		77		40-140	8		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1104633-2 WG1104633-3								
Aniline	**39**	Q	**33**	Q	40-140	17		30
4-Chloroaniline	86		70		40-140	21		30
1-Methylnaphthalene	87		80		41-103	8		30
2-Nitroaniline	99		94		52-143	5		30
3-Nitroaniline	50		48		25-145	4		30
4-Nitroaniline	78		79		51-143	1		30
Dibenzofuran	86		79		40-140	8		30
2-Methylnaphthalene	77		71		40-140	8		30
n-Nitrosodimethylamine	62		52		22-74	18		30
2,4,6-Trichlorophenol	95		91		30-130	4		30
p-Chloro-m-cresol	**98**	Q	94		23-97	4		30
2-Chlorophenol	89		79		27-123	12		30
2,4-Dichlorophenol	96		87		30-130	10		30
2,4-Dimethylphenol	88		76		30-130	15		30
2-Nitrophenol	100		89		30-130	12		30
4-Nitrophenol	62		60		10-80	3		30
2,4-Dinitrophenol	72		70		20-130	3		30
4,6-Dinitro-o-cresol	94		92		20-164	2		30
Pentachlorophenol	74		70		9-103	6		30
Phenol	49		43		12-110	13		30
2-Methylphenol	87		80		30-130	8		30
3-Methylphenol/4-Methylphenol	90		82		30-130	9		30
2,4,5-Trichlorophenol	100		97		30-130	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1104633-2 WG1104633-3								
Benzoic Acid	28		22		10-164	24		30
Benzyl Alcohol	82		74		26-116	10		30
Carbazole	89		84		55-144	6		30
Pyridine	46		32		10-66	**36**	Q	30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	73		64		21-120
Phenol-d6	59		52		10-120
Nitrobenzene-d5	101		89		23-120
2-Fluorobiphenyl	90		84		15-120
2,4,6-Tribromophenol	117		107		10-120
4-Terphenyl-d14	94		87		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01,03 Batch: WG1104635-2 WG1104635-3								
Acenaphthene	76		85		40-140	11		40
2-Chloronaphthalene	72		81		40-140	12		40
Fluoranthene	82		73		40-140	12		40
Hexachlorobutadiene	58		63		40-140	8		40
Naphthalene	71		78		40-140	9		40
Benzo(a)anthracene	75		83		40-140	10		40
Benzo(a)pyrene	76		85		40-140	11		40
Benzo(b)fluoranthene	81		92		40-140	13		40
Benzo(k)fluoranthene	72		81		40-140	12		40
Chrysene	73		80		40-140	9		40
Acenaphthylene	70		78		40-140	11		40
Anthracene	79		85		40-140	7		40
Benzo(ghi)perylene	78		76		40-140	3		40
Fluorene	82		89		40-140	8		40
Phenanthrene	77		84		40-140	9		40
Dibenzo(a,h)anthracene	80		78		40-140	3		40
Indeno(1,2,3-cd)pyrene	79		76		40-140	4		40
Pyrene	78		86		40-140	10		40
1-Methylnaphthalene	69		77		40-140	11		40
2-Methylnaphthalene	70		80		40-140	13		40
Pentachlorophenol	98		104		40-140	6		40
Hexachlorobenzene	70		77		40-140	10		40
Hexachloroethane	59		64		40-140	8		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01,03 Batch: WG1104635-2 WG1104635-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	51		62		21-120
Phenol-d6	38		44		10-120
Nitrobenzene-d5	69		75		23-120
2-Fluorobiphenyl	73		79		15-120
2,4,6-Tribromophenol	63		76		10-120
4-Terphenyl-d14	80		88		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1105283-2 WG1105283-3								
Acenaphthene	69		67		31-137	3		50
2-Chloronaphthalene	71		69		40-140	3		50
Fluoranthene	68		66		40-140	3		50
Naphthalene	67		67		40-140	0		50
Benzo(a)anthracene	72		70		40-140	3		50
Benzo(a)pyrene	73		71		40-140	3		50
Benzo(b)fluoranthene	72		70		40-140	3		50
Benzo(k)fluoranthene	69		68		40-140	1		50
Chrysene	71		70		40-140	1		50
Acenaphthylene	76		75		40-140	1		50
Anthracene	67		67		40-140	0		50
Benzo(ghi)perylene	72		72		40-140	0		50
Fluorene	69		67		40-140	3		50
Phenanthrene	66		65		40-140	2		50
Dibenzo(a,h)anthracene	71		71		40-140	0		50
Indeno(1,2,3-cd)pyrene	74		72		40-140	3		50
Pyrene	67		66		35-142	2		50
1-Methylnaphthalene	77		77		26-130	0		50
2-Methylnaphthalene	71		69		40-140	3		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1105283-2 WG1105283-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	72		71		23-120
2-Fluorobiphenyl	65		64		30-120
4-Terphenyl-d14	64		61		18-120

PESTICIDES

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-07
Client ID: GWW-101
Sample Location: BELFAST, ME

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 04/12/18 08:08
Analyst: SL

Date Collected: 04/04/18 08:30
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Extraction Method: EPA 3510C
Extraction Date: 04/11/18 00:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/l	0.020	--	1	A
Lindane	ND		ug/l	0.020	--	1	A
Alpha-BHC	ND		ug/l	0.020	--	1	A
Beta-BHC	ND		ug/l	0.020	--	1	A
Heptachlor	ND		ug/l	0.020	--	1	A
Aldrin	ND		ug/l	0.020	--	1	A
Heptachlor epoxide	ND		ug/l	0.020	--	1	A
Endrin	ND		ug/l	0.040	--	1	A
Endrin aldehyde	ND		ug/l	0.040	--	1	A
Endrin ketone	ND		ug/l	0.040	--	1	A
Dieldrin	ND		ug/l	0.040	--	1	A
4,4'-DDE	ND		ug/l	0.040	--	1	A
4,4'-DDD	ND		ug/l	0.040	--	1	A
4,4'-DDT	ND		ug/l	0.040	--	1	A
Endosulfan I	ND		ug/l	0.020	--	1	A
Endosulfan II	ND		ug/l	0.040	--	1	A
Endosulfan sulfate	ND		ug/l	0.040	--	1	A
Methoxychlor	ND		ug/l	0.200	--	1	A
Toxaphene	ND		ug/l	0.200	--	1	A
Chlordane	ND		ug/l	0.200	--	1	A
cis-Chlordane	ND		ug/l	0.020	--	1	A
trans-Chlordane	ND		ug/l	0.020	--	1	A

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-07
Client ID: GWW-101
Sample Location: BELFAST, ME

Date Collected: 04/04/18 08:30
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	136		30-150	A
Decachlorobiphenyl	117		30-150	A
2,4,5,6-Tetrachloro-m-xylene	133		30-150	B
Decachlorobiphenyl	124		30-150	B

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/12/18 07:29
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 04/11/18 00:31

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 07 Batch: WG1105367-1						
Delta-BHC	ND		ug/l	0.020	--	A
Lindane	ND		ug/l	0.020	--	A
Alpha-BHC	ND		ug/l	0.020	--	A
Beta-BHC	ND		ug/l	0.020	--	A
Heptachlor	ND		ug/l	0.020	--	A
Aldrin	ND		ug/l	0.020	--	A
Heptachlor epoxide	ND		ug/l	0.020	--	A
Endrin	ND		ug/l	0.040	--	A
Endrin aldehyde	ND		ug/l	0.040	--	A
Endrin ketone	ND		ug/l	0.040	--	A
Dieldrin	ND		ug/l	0.040	--	A
4,4'-DDE	ND		ug/l	0.040	--	A
4,4'-DDD	ND		ug/l	0.040	--	A
4,4'-DDT	ND		ug/l	0.040	--	A
Endosulfan I	ND		ug/l	0.020	--	A
Endosulfan II	ND		ug/l	0.040	--	A
Endosulfan sulfate	ND		ug/l	0.040	--	A
Methoxychlor	ND		ug/l	0.200	--	A
Toxaphene	ND		ug/l	0.200	--	A
Chlordane	ND		ug/l	0.200	--	A
cis-Chlordane	ND		ug/l	0.020	--	A
trans-Chlordane	ND		ug/l	0.020	--	A

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/12/18 07:29
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 04/11/18 00:31

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 07 Batch: WG1105367-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	116		30-150	A
Decachlorobiphenyl	98		30-150	A
2,4,5,6-Tetrachloro-m-xylene	113		30-150	B
Decachlorobiphenyl	108		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 07 Batch: WG1105367-2 WG1105367-3									
Delta-BHC	147		147		30-150	0		20	A
Lindane	132		131		30-150	1		20	A
Alpha-BHC	145		144		30-150	1		20	A
Beta-BHC	122		122		30-150	0		20	A
Heptachlor	124		123		30-150	1		20	A
Aldrin	126		125		30-150	1		20	A
Heptachlor epoxide	123		123		30-150	0		20	A
Endrin	123		124		30-150	1		20	A
Endrin aldehyde	121		124		30-150	2		20	A
Endrin ketone	130		132		30-150	2		20	A
Dieldrin	132		133		30-150	1		20	A
4,4'-DDE	134		135		30-150	1		20	A
4,4'-DDD	128		130		30-150	2		20	A
4,4'-DDT	129		130		30-150	1		20	A
Endosulfan I	125		126		30-150	1		20	A
Endosulfan II	125		126		30-150	1		20	A
Endosulfan sulfate	131		134		30-150	2		20	A
Methoxychlor	116		120		30-150	3		20	A
cis-Chlordane	109		110		30-150	1		20	A
trans-Chlordane	123		123		30-150	0		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Pesticides by GC - Westborough Lab Associated sample(s): 07 Batch: WG1105367-2 WG1105367-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	134		130		30-150	A
Decachlorobiphenyl	105		110		30-150	A
2,4,5,6-Tetrachloro-m-xylene	128		127		30-150	B
Decachlorobiphenyl	106		115		30-150	B

METALS

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Antimony, Total	ND		mg/l	0.00400	--	1	04/09/18 15:30	04/10/18 10:18	EPA 3005A	1,6020A	AM
Arsenic, Total	0.007		mg/l	0.005	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Barium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Beryllium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 10:18	EPA 3005A	1,6020A	AM
Boron, Total	ND		mg/l	0.030	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Cadmium, Total	ND		mg/l	0.00020	--	1	04/09/18 15:30	04/10/18 10:18	EPA 3005A	1,6020A	AM
Calcium, Total	10.8		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Chromium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Cobalt, Total	ND		mg/l	0.020	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Copper, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Iron, Total	3.20		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Lead, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Magnesium, Total	4.72		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Manganese, Total	0.035		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Mercury, Total	ND		mg/l	0.00020	--	1	04/09/18 11:15	04/10/18 20:33	EPA 7470A	1,7470A	EA
Molybdenum, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Nickel, Total	ND		mg/l	0.025	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Potassium, Total	ND		mg/l	2.50	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Selenium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Silicon, Total	11.4		mg/l	0.500	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Silver, Total	ND		mg/l	0.007	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Sodium, Total	12.6		mg/l	2.00	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Strontium, Total	0.048		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Sulfur, Total	4.51		mg/l	0.250	--	1	04/10/18 12:55	04/10/18 19:29	EPA 3015A	1,6010C	AB
Thallium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 10:18	EPA 3005A	1,6020A	AM
Titanium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Vanadium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Zinc, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	46.5		mg/l	0.660	NA	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Antimony, Dissolved	ND		mg/l	0.00400	--	1	04/09/18 14:20	04/10/18 11:18	EPA 3005A	1,6020A	AM
Arsenic, Dissolved	0.008		mg/l	0.005	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Barium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 11:18	EPA 3005A	1,6020A	AM
Boron, Dissolved	ND		mg/l	0.030	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	04/09/18 14:20	04/10/18 11:18	EPA 3005A	1,6020A	AM
Calcium, Dissolved	10.1		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Chromium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Cobalt, Dissolved	ND		mg/l	0.020	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Copper, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Iron, Dissolved	3.00		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Lead, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Magnesium, Dissolved	4.20		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Manganese, Dissolved	0.033		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Mercury, Dissolved	ND		mg/l	0.00020	--	1	04/11/18 12:20	04/11/18 17:34	EPA 7470A	1,7470A	MG
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Nickel, Dissolved	ND		mg/l	0.025	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Potassium, Dissolved	ND		mg/l	2.50	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Selenium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Silicon, Dissolved	10.7		mg/l	0.500	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Silver, Dissolved	ND		mg/l	0.007	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Sodium, Dissolved	12.1		mg/l	2.00	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Strontium, Dissolved	0.051		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Thallium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 11:18	EPA 3005A	1,6020A	AM

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Titanium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Vanadium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Zinc, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Antimony, Total	ND		mg/l	0.00400	--	1	04/09/18 15:30	04/10/18 10:22	EPA 3005A	1,6020A	AM
Arsenic, Total	0.005		mg/l	0.005	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Barium, Total	0.023		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Beryllium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 10:22	EPA 3005A	1,6020A	AM
Boron, Total	0.087		mg/l	0.030	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Cadmium, Total	ND		mg/l	0.00020	--	1	04/09/18 15:30	04/10/18 10:22	EPA 3005A	1,6020A	AM
Calcium, Total	21.0		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Chromium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Cobalt, Total	ND		mg/l	0.020	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Copper, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Iron, Total	1.51		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Lead, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Magnesium, Total	10.2		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Manganese, Total	0.029		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Mercury, Total	ND		mg/l	0.00020	--	1	04/09/18 11:15	04/10/18 20:35	EPA 7470A	1,7470A	EA
Molybdenum, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Nickel, Total	ND		mg/l	0.025	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Potassium, Total	6.58		mg/l	2.50	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Selenium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Silicon, Total	9.04		mg/l	0.500	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Silver, Total	ND		mg/l	0.007	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Sodium, Total	135		mg/l	2.00	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Strontium, Total	0.195		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Sulfur, Total	23.2		mg/l	0.250	--	1	04/10/18 12:55	04/10/18 18:43	EPA 3015A	1,6010C	AB
Thallium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 10:22	EPA 3005A	1,6020A	AM
Titanium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Vanadium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Zinc, Total	0.059		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	94.5		mg/l	0.660	NA	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Antimony, Dissolved	ND		mg/l	0.00400	--	1	04/09/18 14:20	04/10/18 11:22	EPA 3005A	1,6020A	AM
Arsenic, Dissolved	ND		mg/l	0.005	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Barium, Dissolved	0.026		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 11:22	EPA 3005A	1,6020A	AM
Boron, Dissolved	0.081		mg/l	0.030	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	04/09/18 14:20	04/10/18 11:22	EPA 3005A	1,6020A	AM
Calcium, Dissolved	20.5		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Chromium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Cobalt, Dissolved	ND		mg/l	0.020	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Copper, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Iron, Dissolved	1.45		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Lead, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Magnesium, Dissolved	9.36		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Manganese, Dissolved	0.030		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Mercury, Dissolved	ND		mg/l	0.00020	--	1	04/11/18 12:20	04/11/18 17:39	EPA 7470A	1,7470A	MG
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Nickel, Dissolved	ND		mg/l	0.025	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Potassium, Dissolved	6.25		mg/l	2.50	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Selenium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Silicon, Dissolved	8.65		mg/l	0.500	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Silver, Dissolved	ND		mg/l	0.007	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Sodium, Dissolved	134		mg/l	2.00	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Strontium, Dissolved	0.218		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Thallium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 11:22	EPA 3005A	1,6020A	AM

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Titanium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Vanadium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Zinc, Dissolved	0.055		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME
Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/kg	2.48	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Arsenic, Total	13.9		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Beryllium, Total	0.293		mg/kg	0.248	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Cadmium, Total	0.700		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Chromium, Total	15.7		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Copper, Total	36.3		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Lead, Total	263		mg/kg	2.48	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Mercury, Total	0.204		mg/kg	0.081	--	1	04/07/18 09:00	04/09/18 16:04	EPA 7471B	1,7471B	EA
Nickel, Total	22.8		mg/kg	1.24	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Selenium, Total	4.29		mg/kg	0.992	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Silver, Total	ND		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Thallium, Total	11.8		mg/kg	0.992	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Zinc, Total	66.5		mg/kg	2.48	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 05 Batch: WG1104409-1										
Antimony, Total	ND		mg/kg	2.00	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Arsenic, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Beryllium, Total	ND		mg/kg	0.200	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Cadmium, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Chromium, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Copper, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Lead, Total	ND		mg/kg	2.00	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Nickel, Total	ND		mg/kg	1.00	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Selenium, Total	ND		mg/kg	0.800	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Silver, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Thallium, Total	ND		mg/kg	0.800	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Zinc, Total	ND		mg/kg	2.00	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 05 Batch: WG1104410-1										
Mercury, Total	ND		mg/kg	0.083	--	1	04/07/18 09:00	04/09/18 15:27	1,7471B	EA

Prep Information

Digestion Method: EPA 7471B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1104756-1										
Mercury, Total	ND		mg/l	0.00020	--	1	04/09/18 11:15	04/10/18 20:11	1,7470A	EA

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1104824-1										
Aluminum, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Arsenic, Dissolved	ND		mg/l	0.005	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Barium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Boron, Dissolved	ND		mg/l	0.030	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Calcium, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Chromium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Cobalt, Dissolved	ND		mg/l	0.020	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Copper, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Lead, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Magnesium, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Nickel, Dissolved	ND		mg/l	0.025	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Potassium, Dissolved	ND		mg/l	2.50	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Selenium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Silicon, Dissolved	ND		mg/l	0.500	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Silver, Dissolved	ND		mg/l	0.007	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Sodium, Dissolved	ND		mg/l	2.00	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Strontium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Titanium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Vanadium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Zinc, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC

Prep Information

Digestion Method: EPA 3005A

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1104839-1										
Antimony, Dissolved	ND		mg/l	0.00400	--	1	04/09/18 14:20	04/10/18 10:54	1,6020A	AM
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 10:54	1,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	04/09/18 14:20	04/10/18 10:54	1,6020A	AM
Thallium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 10:54	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1104843-1										
Antimony, Total	ND		mg/l	0.00400	--	1	04/09/18 15:30	04/10/18 09:17	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 09:17	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	04/09/18 15:30	04/10/18 09:17	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 09:17	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1105073-1										
Sulfur, Total	ND		mg/l	0.250	--	1	04/10/18 12:55	04/10/18 18:39	1,6010C	AB

Prep Information

Digestion Method: EPA 3015A

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057

Project Number: 171.05027.003 **Report Date:** 04/13/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1105166-1										
Aluminum, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Arsenic, Total	ND		mg/l	0.005	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Barium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Boron, Total	ND		mg/l	0.030	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Calcium, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Chromium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Cobalt, Total	ND		mg/l	0.020	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Copper, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Iron, Total	0.081		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Lead, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Magnesium, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Manganese, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Molybdenum, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Nickel, Total	ND		mg/l	0.025	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Potassium, Total	ND		mg/l	2.50	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Selenium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Silicon, Total	ND		mg/l	0.500	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Silver, Total	ND		mg/l	0.007	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Sodium, Total	ND		mg/l	2.00	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Strontium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Titanium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Vanadium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Zinc, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01,03 Batch: WG1105166-1										
Hardness	ND		mg/l	0.660	NA	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1105586-1										
Mercury, Dissolved	ND		mg/l	0.00020	--	1	04/11/18 12:20	04/11/18 17:30	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 05 Batch: WG1104409-2 SRM Lot Number: D098-540								
Antimony, Total	140		-		6-194	-		
Arsenic, Total	93		-		83-117	-		
Beryllium, Total	87		-		83-117	-		
Cadmium, Total	90		-		82-117	-		
Chromium, Total	89		-		83-119	-		
Copper, Total	89		-		84-116	-		
Lead, Total	85		-		82-117	-		
Nickel, Total	88		-		82-117	-		
Selenium, Total	92		-		78-121	-		
Silver, Total	97		-		80-120	-		
Thallium, Total	89		-		80-119	-		
Zinc, Total	87		-		81-119	-		
Total Metals - Mansfield Lab Associated sample(s): 05 Batch: WG1104410-2 SRM Lot Number: D098-540								
Mercury, Total	115		-		50-149	-		
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104756-2								
Mercury, Total	90		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104824-2					
Aluminum, Dissolved	104	-	80-120	-	
Arsenic, Dissolved	106	-	80-120	-	
Barium, Dissolved	98	-	80-120	-	
Boron, Dissolved	103	-	80-120	-	
Calcium, Dissolved	100	-	80-120	-	
Chromium, Dissolved	102	-	80-120	-	
Cobalt, Dissolved	95	-	80-120	-	
Copper, Dissolved	99	-	80-120	-	
Iron, Dissolved	101	-	80-120	-	
Lead, Dissolved	101	-	80-120	-	
Magnesium, Dissolved	95	-	80-120	-	
Manganese, Dissolved	99	-	80-120	-	
Molybdenum, Dissolved	94	-	80-120	-	
Nickel, Dissolved	96	-	80-120	-	
Potassium, Dissolved	95	-	80-120	-	
Selenium, Dissolved	112	-	80-120	-	
Silicon, Dissolved	105	-	80-120	-	
Silver, Dissolved	100	-	80-120	-	
Sodium, Dissolved	101	-	80-120	-	
Strontium, Dissolved	104	-	80-120	-	
Titanium, Dissolved	99	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104824-2					
Vanadium, Dissolved	103	-	80-120	-	
Zinc, Dissolved	100	-	80-120	-	
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104839-2					
Antimony, Dissolved	99	-	80-120	-	
Beryllium, Dissolved	105	-	80-120	-	
Cadmium, Dissolved	108	-	80-120	-	
Thallium, Dissolved	99	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104843-2					
Antimony, Total	108	-	80-120	-	
Beryllium, Total	107	-	80-120	-	
Cadmium, Total	112	-	80-120	-	
Thallium, Total	104	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105073-2					
Sulfur, Total	115	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery		LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105166-2						
Aluminum, Total	114		-	80-120	-	
Arsenic, Total	115		-	80-120	-	
Barium, Total	102		-	80-120	-	
Boron, Total	110		-	80-120	-	
Calcium, Total	109		-	80-120	-	
Chromium, Total	106		-	80-120	-	
Cobalt, Total	104		-	80-120	-	
Copper, Total	102		-	80-120	-	
Iron, Total	111		-	80-120	-	
Lead, Total	98		-	80-120	-	
Magnesium, Total	108		-	80-120	-	
Manganese, Total	104		-	80-120	-	
Molybdenum, Total	90		-	80-120	-	
Nickel, Total	104		-	80-120	-	
Potassium, Total	104		-	80-120	-	
Selenium, Total	**123**	Q	-	80-120	-	
Silicon, Total	84		-	80-120	-	
Silver, Total	107		-	80-120	-	
Sodium, Total	107		-	80-120	-	
Strontium, Total	100		-	80-120	-	
Titanium, Total	104		-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105166-2					
Vanadium, Total	105	-	80-120	-	
Zinc, Total	109	-	80-120	-	
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105166-2					
Hardness	108	-	80-120	-	
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105586-2					
Mercury, Dissolved	102	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104824-3 QC Sample: L1812057-01 Client ID: GWW-101												
Aluminum, Dissolved	ND	2	2.12	106		-	-		75-125	-		20
Arsenic, Dissolved	0.008	0.12	0.132	103		-	-		75-125	-		20
Barium, Dissolved	ND	2	1.97	98		-	-		75-125	-		20
Boron, Dissolved	ND	1	1.05	105		-	-		75-125	-		20
Calcium, Dissolved	10.1	10	19.8	97		-	-		75-125	-		20
Chromium, Dissolved	ND	0.2	0.204	102		-	-		75-125	-		20
Cobalt, Dissolved	ND	0.5	0.476	95		-	-		75-125	-		20
Copper, Dissolved	ND	0.25	0.252	101		-	-		75-125	-		20
Iron, Dissolved	3.00	1	3.95	95		-	-		75-125	-		20
Lead, Dissolved	ND	0.51	0.514	101		-	-		75-125	-		20
Magnesium, Dissolved	4.20	10	13.6	94		-	-		75-125	-		20
Manganese, Dissolved	0.033	0.5	0.526	98		-	-		75-125	-		20
Molybdenum, Dissolved	ND	1	0.940	94		-	-		75-125	-		20
Nickel, Dissolved	ND	0.5	0.477	95		-	-		75-125	-		20
Potassium, Dissolved	ND	10	11.6	116		-	-		75-125	-		20
Selenium, Dissolved	ND	0.12	0.131	109		-	-		75-125	-		20
Silicon, Dissolved	10.7	1	11.5	80		-	-		75-125	-		20
Silver, Dissolved	ND	0.05	0.050	100		-	-		75-125	-		20
Sodium, Dissolved	12.1	10	22.0	99		-	-		75-125	-		20
Strontium, Dissolved	0.051	1	1.09	104		-	-		75-125	-		20
Titanium, Dissolved	ND	1	0.991	99		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104824-3 QC Sample: L1812057-01 Client ID: GWW-101										
Vanadium, Dissolved	ND	0.5	0.519	104		-	-	75-125	-	20
Zinc, Dissolved	ND	0.5	0.532	106		-	-	75-125	-	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104839-3 QC Sample: L1812057-01 Client ID: GWW-101										
Antimony, Dissolved	ND	0.5	0.5680	114		-	-	75-125	-	20
Beryllium, Dissolved	ND	0.05	0.05356	107		-	-	75-125	-	20
Cadmium, Dissolved	ND	0.051	0.05627	110		-	-	75-125	-	20
Thallium, Dissolved	ND	0.12	0.1210	101		-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1105073-3 QC Sample: L1812057-03 Client ID: GWW-103										
Sulfur, Total	23.2	0.5	23.3	**20**	Q	-	-	75-125	-	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1105586-3 QC Sample: L1812057-01 Client ID: GWW-101										
Mercury, Dissolved	ND	0.005	0.00480	96		-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104824-4 QC Sample: L1812057-01 Client ID: GWW-101						
Aluminum, Dissolved	ND	ND	mg/l	NC		20
Arsenic, Dissolved	0.008	0.008	mg/l	2		20
Barium, Dissolved	ND	ND	mg/l	NC		20
Boron, Dissolved	ND	ND	mg/l	NC		20
Calcium, Dissolved	10.1	10.1	mg/l	0		20
Chromium, Dissolved	ND	ND	mg/l	NC		20
Cobalt, Dissolved	ND	ND	mg/l	NC		20
Copper, Dissolved	ND	ND	mg/l	NC		20
Iron, Dissolved	3.00	3.01	mg/l	0		20
Lead, Dissolved	ND	ND	mg/l	NC		20
Magnesium, Dissolved	4.20	4.25	mg/l	1		20
Manganese, Dissolved	0.033	0.034	mg/l	2		20
Molybdenum, Dissolved	ND	ND	mg/l	NC		20
Nickel, Dissolved	ND	ND	mg/l	NC		20
Potassium, Dissolved	ND	ND	mg/l	NC		20
Selenium, Dissolved	ND	ND	mg/l	NC		20
Silicon, Dissolved	10.7	10.7	mg/l	0		20
Silver, Dissolved	ND	ND	mg/l	NC		20
Sodium, Dissolved	12.1	12.1	mg/l	0		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104824-4 QC Sample: L1812057-01 Client ID: GWW-101					
Strontium, Dissolved	0.051	0.051	mg/l	0	20
Titanium, Dissolved	ND	ND	mg/l	NC	20
Vanadium, Dissolved	ND	ND	mg/l	NC	20
Zinc, Dissolved	ND	ND	mg/l	NC	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104839-4 QC Sample: L1812057-01 Client ID: GWW-101					
Antimony, Dissolved	ND	ND	mg/l	NC	20
Beryllium, Dissolved	ND	ND	mg/l	NC	20
Cadmium, Dissolved	ND	ND	mg/l	NC	20
Thallium, Dissolved	ND	ND	mg/l	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1105073-4 QC Sample: L1812057-03 Client ID: GWW-103					
Sulfur, Total	23.2	23.2	mg/l	0	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1105586-4 QC Sample: L1812057-01 Client ID: GWW-101					
Mercury, Dissolved	ND	ND	mg/l	NC	20

INORGANICS
&
MISCELLANEOUS

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
UV Absorbance @ 254nm	0.023		Abs/cm	0.005	NA	1	-	04/07/18 06:10	121,5910B	GD
Alkalinity, Total	54.9		mg CaCO3/L	2.00	NA	1	-	04/10/18 09:33	121,2320B	BR
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/09/18 13:45	121,2540D	DW
Phosphorus, Total	0.122		mg/l	0.010	--	1	04/09/18 12:40	04/10/18 09:37	121,4500P-E	SD
Phosphorus, Soluble	0.125		mg/l	0.010	--	1	04/11/18 11:45	04/12/18 11:10	121,4500P-E	SD

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
UV Absorbance @ 254nm	0.011		Abs/cm	0.005	NA	1	-	04/07/18 06:10	121,5910B	GD
Alkalinity, Total	116.		mg CaCO3/L	2.00	NA	1	-	04/10/18 09:33	121,2320B	BR
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/09/18 13:45	121,2540D	DW
Phosphorus, Total	0.048		mg/l	0.010	--	1	04/09/18 12:40	04/10/18 09:38	121,4500P-E	SD
Phosphorus, Soluble	0.049		mg/l	0.010	--	1	04/11/18 11:45	04/12/18 11:11	121,4500P-E	SD

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME

Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.1		%	0.100	NA	1	-	04/07/18 13:53	121,2540G	RI

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-06
Client ID: SS-2
Sample Location: BELFAST, ME

Date Collected: 04/05/18 11:30
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.2		%	0.100	NA	1	-	04/11/18 11:10	121,2540G	RI

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1104402-1										
UV Absorbance @ 254nm	ND		Abs/cm	0.005	NA	1	-	04/07/18 06:10	121,5910B	GD
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1104700-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/09/18 13:45	121,2540D	DW
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1104782-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	04/09/18 12:40	04/10/18 09:11	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1105083-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	04/10/18 09:33	121,2320B	BR
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1105479-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	04/11/18 11:45	04/12/18 10:58	121,4500P-E	SD

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03 Batch: WG1104402-2								
UV Absorbance @ 254nm	100		-			-		
General Chemistry - Westborough Lab Associated sample(s): 01,03 Batch: WG1104782-2								
Phosphorus, Total	99		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01,03 Batch: WG1105083-2								
Alkalinity, Total	103		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 01,03 Batch: WG1105479-2								
Phosphorus, Soluble	102		-		80-120	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03 QC Batch ID: WG1104402-3 QC Sample: L1812057-03 Client ID: GWW-103						
UV Absorbance @ 254nm	0.011	0.010	Abs/cm	10		
General Chemistry - Westborough Lab Associated sample(s): 05 QC Batch ID: WG1104512-1 QC Sample: L1812057-05 Client ID: SS-1						
Solids, Total	78.1	79.0	%	1		20

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812057-01A	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-01B	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-01C	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-01D	Plastic 250ml unpreserved/No Headspace	A	NA		2.8	Y	Absent		ALK-T-2320(14)
L1812057-01E	Plastic 250ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		SPHOS-4500(28)
L1812057-01F	Plastic 250ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		TPHOS-4500(28)
L1812057-01G	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		B-SI(180),PB-SI(180),FE-SI(180),BA-SI(180),BE-6020S(180),TI-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),MN-SI(180),NA-SI(180),NI-SI(180),AL-SI(180),CO-SI(180),SI-SI(180),SR-SI(180),TL-6020S(180),CR-SI(180),K-SI(180),MG-SI(180),MO-SI(180),SB-6020S(180),CA-SI(180),CD-6020S(180),HG-S(28),SE-SI(180),V-SI(180),ZN-SI(180)
L1812057-01H	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),SI-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)
L1812057-01I	Amber 500ml unpreserved	A	7	7	2.8	Y	Absent		UV-254(2)
L1812057-01J	Plastic 950ml unpreserved	A	7	7	2.8	Y	Absent		TSS-2540(7)
L1812057-01K	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1812057-01L	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1812057-02A	Plastic 250ml unpreserved/No Headspace	A	NA		2.8	Y	Absent		HOLD-WETCHEM()

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812057-03A	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-03B	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-03C	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-03D	Plastic 250ml unpreserved/No Headspace	A	NA		2.8	Y	Absent		ALK-T-2320(14)
L1812057-03E	Plastic 250ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		SPHOS-4500(28)
L1812057-03F	Plastic 250ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		TPHOS-4500(28)
L1812057-03G	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		B-SI(180),PB-SI(180),FE-SI(180),BA-SI(180),BE-6020S(180),TI-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),MN-SI(180),NA-SI(180),NI-SI(180),AL-SI(180),CO-SI(180),SI-SI(180),SR-SI(180),TL-6020S(180),CR-SI(180),K-SI(180),MG-SI(180),MO-SI(180),SB-6020S(180),CA-SI(180),CD-6020S(180),HG-S(28),SE-SI(180),V-SI(180),ZN-SI(180)
L1812057-03H	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),SI-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)
L1812057-03I	Amber 500ml unpreserved	A	7	7	2.8	Y	Absent		UV-254(2)
L1812057-03J	Plastic 950ml unpreserved	A	7	7	2.8	Y	Absent		TSS-2540(7)
L1812057-03K	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1812057-03L	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1812057-04A	Plastic 250ml unpreserved/No Headspace	A	NA		2.8	Y	Absent		HOLD-WETCHEM()
L1812057-05A	Vial MeOH preserved	C	NA		4.2	Y	Absent		8260HLW(14)
L1812057-05B	Vial water preserved	C	NA		4.2	Y	Absent	06-APR-18 12:00	8260HLW(14)
L1812057-05C	Vial water preserved	C	NA		4.2	Y	Absent	06-APR-18 12:00	8260HLW(14)
L1812057-05D	Plastic 2oz unpreserved for TS	C	NA		4.2	Y	Absent		ME-TS-2540(7)
L1812057-05E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.2	Y	Absent		BE-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),HG-T(28),CD-TI(180)
L1812057-05F	Glass 250ml/8oz unpreserved	C	NA		4.2	Y	Absent		8270TCL(14)

*Values in parentheses indicate holding time in days

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812057-06A	Vial MeOH preserved	C	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L1812057-06B	Vial water preserved	C	NA		4.2	Y	Absent	06-APR-18 12:00	HOLD-8260HLW(14)
L1812057-06C	Vial water preserved	C	NA		4.2	Y	Absent	06-APR-18 12:00	HOLD-8260HLW(14)
L1812057-06D	Plastic 2oz unpreserved for TS	C	NA		4.2	Y	Absent		HOLD-WETCHEM(),ME-TS-2540(7)
L1812057-06E	Glass 60mL/2oz unpreserved	C	NA		4.2	Y	Absent		HOLD-METAL(180)
L1812057-06F	Glass 250ml/8oz unpreserved	C	NA		4.2	Y	Absent		8270TCL-PAH(14)
L1812057-07A	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-07B	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-07C	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-07D	Plastic 250ml unpreserved/No Headspace	B	NA		2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07E	Plastic 250ml unpreserved/No Headspace	B	NA		2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07F	Plastic 250ml H2SO4 preserved	B	<2	<2	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07G	Plastic 250ml H2SO4 preserved	B	<2	<2	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07H	Plastic 250ml HNO3 preserved	B	<2	<2	2.4	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1812057-07I	Plastic 250ml HNO3 preserved	B	<2	<2	2.4	Y	Absent		HOLD-METAL-TOTAL(180)
L1812057-07J	Amber 500ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-WETCHEM(),PEST-8081(7)
L1812057-07K	Plastic 950ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07L	Amber 1000ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-8270(7)
L1812057-07M	Amber 1000ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-8270(7)
L1812057-08A	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-08B	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-08C	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-08D	Plastic 250ml unpreserved/No Headspace	B	NA		2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08E	Plastic 250ml unpreserved/No Headspace	B	NA		2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08F	Plastic 250ml H2SO4 preserved	B	<2	<2	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08G	Plastic 250ml H2SO4 preserved	B	<2	<2	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08H	Plastic 250ml HNO3 preserved	B	<2	<2	2.4	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1812057-08I	Plastic 250ml HNO3 preserved	B	<2	<2	2.4	Y	Absent		HOLD-METAL-TOTAL(180)

*Values in parentheses indicate holding time in days

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812057-08J	Amber 500ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08K	Plastic 950ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08L	Amber 1000ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-8270(7)
L1812057-08M	Amber 1000ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-8270(7)
L1812057-09A	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-09B	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-09C	Vial HCl preserved	A	NA		2.8	Y	Absent		HOLD-8260(14)
L1812057-09D	Vial HCl preserved	A	NA		2.8	Y	Absent		HOLD-8260(14)

*Values in parentheses indicate holding time in days

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

3 coolers

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 4/6/18

ALPHA Job #: L1812057

Client Information

Client: Ransom Consulting Inc.
Address: 112 Corporate Drive, Portsmouth, NH 03801
Phone: 603-436-1490
Email: elizabeth.ransom@ransomenv.com
cc: drew.fuchs@ransomenv.com

Project Information

Project Name: Belfast Water District
Project Location: Belfast, ME
Project #: 171.05027.003
Project Manager: Elizabeth Ransom
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #: 10754

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Additional Project Information:
1. Dissolved metals & dissolved phosphorus were field filtered.
2. low level VOC samples for SS-1 & SS-2 were frozen 4/6/18@12:00.

ANALYSIS: VOC: ☒ 8260 ☐ 624 ☐ 524.2 | SVOC: ☒ ABN ☒ PAH 8270 | TAL Metals (Total & Dissolved) | Phosphorus (Total & Dissolved) | TPH: ☐ Quant Only ☐ Fingerprint | Total Sulfur | Boron, Molybdenum, Silicon, Strontium (Total & Dissolved) | Alkalinity & Hardness | Total Suspended Solids | UV Absorbance | Total PP13 Metals | Color/Turbidity/Dissolved CO2

SAMPLE INFO: Filtration ☒ Field ☐ Lab to do; Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC	SVOC	PAH	TAL Metals	Phosphorus	TPH	Total Sulfur	Boron, Molybdenum, Silicon, Strontium	Alkalinity & Hardness	Total Suspended Solids	UV Absorbance	Total PP13 Metals	Color/Turbidity/Dissolved CO2	Sample Comments	TOTAL # BOTTLES
12057-01	GWW-101 DAF 4/6/18	4/5/18	8:15	GW	DAF	X	X	X	X		X		X	X	X	X			Field filtered dissolved metals + Phos	11
-02	[redacted] GWW-101	4/5/18	8:15	GW	DAF												X		HOLD	2
-03	GWW-103	4/5/18	8:45	GW	DAF	X	X	X	X		X		X	X	X	X			Field filtered dissolved metals + Phos	11
-04	GWW-103	4/5/18	8:45	GW	DAF												X		HOLD	2
-05	SS-1	4/5/18	9:15	Soil	DAF	X	X									X			low level VOCs frozen 4/6/18@12:00	6
	[redacted] DAF 4/6/18																			
-06	SS-2	4/5/18	11:30	Soil	DAF														HOLD ALL	6 frozen DAF
-07	GWW-101	4/4/18	8:30	GW	DAF														HOLD ALL	13
-08	GWW-103	4/4/18	9:15	GW	DAF														HOLD ALL	13
-09	Trip Blank					X													HOLD	2

Container Type	V	A	P	P	P		P		P	P	P	P	A	P/A	
Preservative	B/F	A	C	D	C		C		C	A	A	A	N	A	

Container Type: P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle

Preservative: A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H= $Na_2S_2O_3$, I= Ascorbic Acid, J= NH_4Cl, K= Zn Acetate, O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	4/6/18 16:30	[signature]	4/6/18 16:[illegible]
[signature] AAL	4/6/18	[signature] AAL	4/6/18 1750
[signature]	4/6/18 1930	[signature]	4/6/18 1932

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

14. SOIL EROSION AND SEDIMENTATION CONTROL

14.1. INTRODUCTION

Atlantic Resource Consultants (ARC) has been retained for the preparation of soil erosion and sediment control plans for a new aquaculture facility and the associated site improvements on a parcel of land at 285 Northport Avenue in the City of Belfast, Maine. The majority of the site is currently vacant and includes the former Belfast Water District intake and treatment building from Belfast Reservoir Number One, the former water supply source for the City of Belfast. The remainder of the site is largely undeveloped and consists of mature woodland and grass pasture. This site topography slopes in a generally southeasterly direction towards the reservoir and drains via several steep gullies. The majority of these drain into the reservoir, with the exception of the easternmost feature that drains, via a culvert under Route One directly to Penobscot Bay.

The project proposes development of the site to construct a land-based aquaculture facility that will include two large buildings, each consisting of three modules, two smaller Smolt Buildings, a Processing Building, a Central Utility Plant and several other smaller support services and utility buildings. Access roads, parking areas, utility services and stormwater BMPs will be constructed to serve the facility. The overall area of development at the site is approximately 38 acres.

The development will be constructed in two major phases, and these will be further divided into smaller sub-phases in order to effectively manage the construction process and minimize the soil erosion and sediment control risks associated with earthwork development projects of this scale.

A detailed soil erosion and sediment control plan has been developed to guide the management of major earthwork activities at the site. This plan includes a detailed breakdown of project phasing to minimize the exposure of erodible soils and to prevent significant sediment transport both within the site, and to downstream receiving waters. The project Soil Erosion and Sediment Control Plan is intended to be a live document and will be regularly reviewed and amended throughout the construction process to ensure the continued effectiveness of the Best Management Practices at the site, and the adequate protection of downstream resources.

14.2. EXISTING SITE CONDITIONS AND SOIL TYPES

The project site is located at 285 Northport Avenue in the City of Belfast, Maine. The current cover conditions at the site include the impervious paved, gravel and roof areas associated with the previous use. These are all adjacent to the Route One access driveway and encompass an area of approximately 3 acres that formed the Belfast Water District offices and equipment storage facility. The area of the site closest to Reservoir Number One is predominantly wooded, with some unmaintained woods roads providing informal trail access. The northern portion of the development site is currently grassed pasture and has been recently used as a hay field. The grassed area of the site is approximately 11 acres. The topography of the site slopes in a generally southwesterly direction towards the reservoir at an average gradient of between 2 and 3%. There are several steep gullies formed by drainageways that traverse the site. The westerly gullies drain to the reservoir, the easternmost drainageway discharges to a culvert under Route One, crossing the property to the south of the road, and discharging directly to the bay.

Predominant surface soil types at the site are identified as Boothbay and Swanville silt loams by the Natural Resource Conservation Service (NRCS) Web Soil Survey. The susceptibility of soils to erosion is indicated on a relative “K” scale of values over a range of 0.02 to 0.69. The “K” value is frequently used with the universal soil loss equation. The higher values are indicative of the more erodible soils. The K values of the mapped soils at the project site are as follows:

Soil Name	Soil Description	K Value
Boothbay	Silt loam	0.37
Swanville	Silt loam	0.28

Based on a review of the K values, the onsite soils in the area exhibit low to moderately susceptible to erosion after the cover material is stripped.

A more detailed geotechnical investigation of the site has been undertaken by Ransom Consulting, Inc. The explorations generally found glaciomarine silt and clay deposits overlying glacial till and bedrock. A soft, compressible glaciomarine silt and clay deposit was identified and this is likely to consolidate under loading from proposed site fills and building foundations. The current development plan includes removal and off-site disposal of this problematic soil layer. The material will be replaced with imported Granular Borrow material to form a stable and competent subgrade for the proposed improvements.

Natural resource mapping on the site was undertaken in 2018 by Normandeau Associates as part of the site investigations for this project. The mapping identified a number of freshwater wetlands and streams at the site. The natural resources are described in detail in the wetland delineation report that accompanies this submission.

14.3. EXISTING EROSION PROBLEMS

No significant existing erosion problems have been identified at the project site.

14.4. CRITICAL AREAS

The critical areas of the site include the freshwater wetland resources downstream of the construction work area. There are also a number of streams on the project site that fall under the Natural Resource Protection Act jurisdiction. These streams are intermittent and have been designated with the prefix “S” as shown on Figure 14.1 on the following page. Non-jurisdictional drainages are designated with the prefix “D”. Three streams extend off site and drain into the adjacent Reservoir One.

Following development of the site the lower reaches of these streams will have been cut off from the hydrological source which is primarily surface run off and groundwater discharge during seasonal high water tables.

To prevent these streams from drying up they will be fed by clean water from a series of foundation drains and bypass culverts that are intended to intercept groundwater from the site both during and post-construction. Riprap plunge pool outlets will be constructed at the discharge points of the new drains to dissipate flow velocities and allow non-erosive discharge to downstream receiving channels. The bypass culverts, foundation drains, and outlet locations are shown on the Soil Erosion and Sediment Control Phasing Plans (Sheets CE-111 to CE-118). In summary, the volume of water will be sufficient to maintain intermittent flows and the plunge pool outlet design will prevent erosion.

Critical resources downstream from the site include Belfast Reservoir Number One and Penobscot Bay.

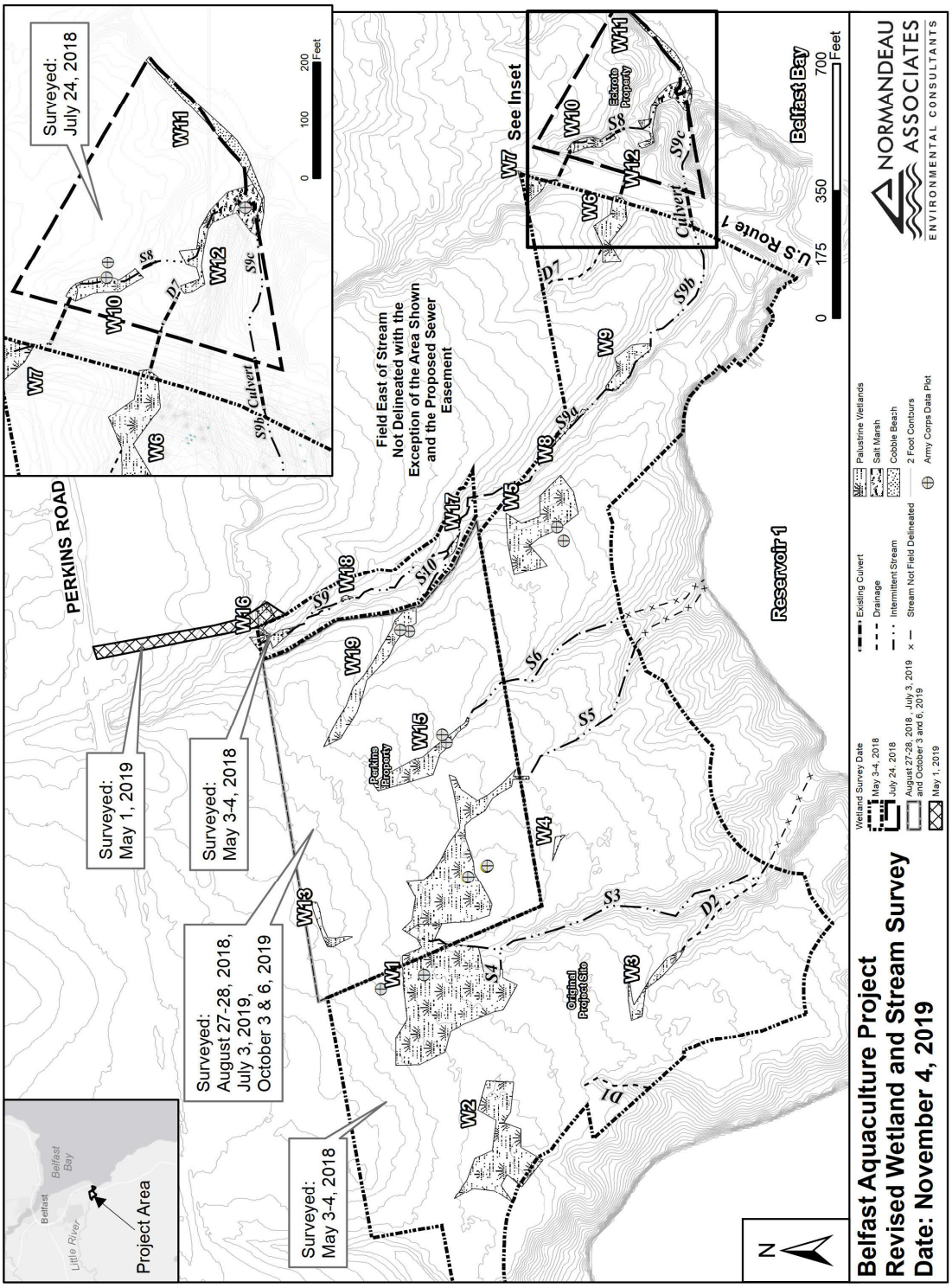
Belfast Aquaculture Project
Revised Wetland and Stream Survey
Date: November 4, 2019
NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS
PERKINS ROAD
Surveyed: May 1, 2019
Surveyed: May 3-4, 2018
Surveyed: August 27-28, 2018, July 3, 2019, October 3 & 6, 2019
Surveyed: May 3-4, 2018
Surveyed: July 24, 2018
See Inset
Field East of Stream Not Delineated with the Exception of the Area Shown and the Proposed Sewer Easement
Reservoir 1
Belfast Bay
U.S. Route 1
Culvert
Project Area
Belfast
Belfast Bay
Little River
Wetland Survey Date
May 3-4, 2018
July 24, 2018
August 27-28, 2018, July 3, 2019 and October 3 and 6, 2019
May 1, 2019
Existing Culvert
Drainage
Intermittent Stream
Stream Not Field Delineated
Palustrine Wetlands
Salt Marsh
Cobble Beach
2 Foot Contours
Army Corps Data Plot
Feet
N

FIGURE 14.1

14.5. SOIL EROSION AND SEDIMENTATION CONTROL PLAN AIMS AND OBJECTIVES

The primary goals of the Soil Erosion and Sediment Control Plan for the project are to avoid and minimize the potential for soil erosion to the maximum extent practical, and to prevent sediment transport to downstream areas, receiving waters and natural resources. Measures will also be taken to ensure sediment is not tracked onto adjacent streets and that stockpiles of controlled imported construction materials are protected from potential contamination by native soils and other deleterious matter. In order to achieve these aims it will be essential to minimize exposure of native soil materials during construction and to install, observe and maintain a range of Best Management Practices.

The primary methods included in the Soil Erosion and Sedimentation Control Plan to be implemented for this project are as follows:

- Construction Phasing - The major earthwork activities will be phased to minimize the area of potentially erodible native soils exposed at any given time. This will minimize the potential for soil erosion and runoff contamination during inclement weather conditions. It will also reduce the potential for sediment transport and result in manageable quantities of accumulation in treatment Best Management Practices. A detailed construction and Soil Erosion and Sediment Control Phasing Plan is included in Attachment A.
- Diversion of Run-on from Upstream Areas – Diversion measures will be installed at the beginning of construction to capture and divert surface runoff and groundwater around the work area, reducing the need for de-watering in excavation areas.
- Perimeter Controls – Perimeter sediment barriers will be installed downstream of all work areas to prevent the transport of sediment to receiving waters and natural resources. Stabilized construction entrances (wheel cleaning pads) will be installed at all site entrances to prevent tracking of sediments onto roadways.
- Temporary Cover Materials – The plan includes the installation of temporary cover materials in some areas to prevent erosion from occurring during construction.
- Rapid Stabilization of Excavated Areas – Cover materials including geotextile fabric and imported granular borrow will be placed over exposed native soils immediately after excavation and subgrade preparation to minimize the period of soil exposure.
- Stabilization of drainage outlets and channels to avoid rill and gully erosion.
- Inlet Protection – Silt sacks and coir logs will be installed to protect drainage inlets and conveyances from sediment contamination.
- On-site sediment barriers - On-site measures to capture sediment (hay bales, silt fence, etc.) before it is conveyed to sediment sumps.
- Temporary Sediment Basins and Sumps – Sediment capture and treatment BMPs will be installed to provide detention, storage and treatment of any sediment contaminated runoff generated at the site. Flocculants will be used, if found to be effective in removing suspended sediments from runoff in sediment traps and sediment basins.
- Permanent Measures – Stormwater BMPs, conveyances and stable permanent cover materials will be installed to provide long-term protection of the site and receiving waters.

14.6. DESCRIPTION AND LOCATION OF LIMITS OF ALL PROPOSED EARTH MOVEMENTS

The proposed project will require major earth moving at the site. The area of proposed development will cover approximately forty acres of the site in total. Substantial cuts and fills will be required to achieve the final grades for the development. Removal of the problematic compressible silt and clay deposits from beneath the proposed improvements will require large volumes of excavation, material export and import of replacement Granular Borrow materials to the site prior to construction of site improvements.

The texture and erodibility of the native overburden material poses an elevated risk of sediment transport. Therefore, these materials shall not be stored on site for a period of more than two weeks.

This obviously has major implications on the scope of earthwork required to prepare the site and on materials handling, haulage and disposal. It also presents a significant opportunity to rapidly stabilize the site at an earlier than normal stage of construction. The removal of fine-grained, native soil materials followed by immediate cover of exposed areas with imported granular borrow will effectively limit the potential for soil erosion and mobilization of fine sediments. Large areas of the site will be quickly stabilized, providing a sound working surface for construction

Careful phasing of the project will allow these activities to occur simultaneously, limiting the area of the site that is "open" (i.e. disturbed and not stabilized) at any given time. This will have the additional benefit of increasing the efficiency of materials haulage. Trucks exporting unsuitable materials from the site will be available to convey imported granular material as part of a round trip operation.

14.7. SOIL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES

Construction Schedule

The primary and most proactive best management practice for soil erosion and sediment control at the site is careful planning and phasing of construction tasks. The major earthwork activities have been broken into manageable phases in order to efficiently accomplish the necessary work while minimizing the risks associated with exposure of native fine-grained soils. The installation of Best Management Practices is integrated into the individual phases to ensure that effective diversion, cover and perimeter control measures are in place to protect the work area, limit soil exposure times and prevent transport of sediment to downstream areas. Major earthwork phasing is described in the narrative and shown on the Earthwork and Soil Erosion and Sediment Control Phasing Plans included in **Attachment A**, and in the project plan set.

Temporary Erosion/Sedimentation Control Measures

As part of the site development, the Contractor will be obligated to implement the following erosion and sediment control devices. These devices shall be installed as indicated on the plans or as described within this report. For further reference on these devices, see the Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual for Designers and Engineers, Maine DEP, October 2016.

1. Crushed stone stabilized construction entrances will be placed at any construction access points from adjacent streets, and at interior locations shown on the phasing plans. The locations of the construction entrances shown on the drawings should be considered illustrative and will need to be adjusted as appropriate and located at any area where there is the potential for tracking of mud and debris onto existing roads or streets. Stone stabilized construction entrances will require the stone to be removed and replaced, as it becomes covered or filled with mud and material tracked by vehicles exiting the site.
2. A Runoff Diversion Trench and upgradient silt fence barrier shall be installed at the northern side of the site prior to major earthmoving activities. The BMPs shall be installed in accordance with the details provided and are intended to divert surface runoff and groundwater around the construction area, minimizing the need for de-watering.
3. Bypass culverts will be installed in gullies and drainageways to intercept groundwater seeps, convey clean water through the construction area and maintain baseflow in downstream receiving channels.
4. Riprap plunge pool outlets shall be constructed at the end of bypass culverts and channels, to dissipate flow velocities and allow non-erosive discharge to downstream receiving channels.

5. Silt fence shall be installed down slope of any disturbed areas to trap runoff borne sediments. The silt fence shall be installed per the detail provided in the plan set and inspected immediately after each rainfall, and at least weekly in the absence of significant rainfall. The Contractor shall make repairs immediately if there are any signs of erosion or sedimentation below the fence line. If such erosion is observed, the Contractor shall take proactive action to identify the cause of the erosion and take action to avoid its reoccurrence. Proper placement of stakes and keying the bottom of the fabric into the ground is critical to the fence's effectiveness. If there are signs of undercutting at the center or the edges or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam and measures taken to avoid the concentration of flows not intended to be directed to the silt fence. Wood chips from clearing can be used in front of the silt fence to provide an extra margin of safety and security for the silt fence. This practice is encouraged, provided the chips are removed when the fence is removed. Silt fencing with a maximum stake spacing of 6 feet should be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence should be properly anchored a minimum of 6" per the plan detail and backfilled. Silt fence shall be installed along the downgradient side of construction work areas, with locations being adjusted along with the construction phasing areas. The Contractor may use erosion mix in place of single row silt fence barrier.
6. Twin rows of siltation fence with hay bales shall be installed at the foot of steep slopes and adjacent to protected natural resources (wetland areas).
7. Erosion Control Mix - Erosion control mix is a dense, processed mixture of intertwining shredded wood fragments and grit that will stabilize a site immediately without vegetation. This product may be used in place of silt fence to protect downstream areas not adjacent to natural resources. Erosion control mix consists primarily of organic material and may include: shredded bark, stump grindings, or partially composted wood products and shall be placed to form berms in accordance with the detail on the plan set. Care shall be taken to ensure berms are level and provide an even depth of protection throughout the length of the berm. The Contractor shall make repairs immediately if there are any signs of erosion or breaches in the berm, and supplement berms with additional material if settlement is observed.
8. Stone check dams, silt logs, or hay bale barriers will be installed at any evident concentrated flow discharge points during construction and earthwork operations.
9. All slopes steeper than 4:1 shall receive erosion control blankets, or temporary riprap stabilization. Where temporary riprap is used, slopes shall be stabilized with loam, seed and erosion control blanket, or sod when the riprap is removed for final stabilization. Slope stabilization fabric shall be a fully biodegradable double net, coir fiber blanket, anchored in accordance with manufacturers recommendations.
10. Areas of visible erosion and the temporary sediment sumps shall be stabilized with crushed stone. The size of the stone shall be determined by the Contractor's designated representative in consultation with the Owner.
11. Temporary sediment sumps and sediment basins will provide sedimentation control for stormwater runoff from disturbed areas during construction until stabilization has been achieved. The sides and floors of sediment basins shall be stabilized with geotextile fabric laid over prepared subgrade materials. Outlets shall be as shown on the construction drawings and shall include sand filters around all risers and outlet pipes.
12. Flocculants will be used to control turbidity in runoff entering the sediment basins and sumps, if found to be effective in doing so. Flocculant selection will be based on lab analysis of at least three samples of native soil materials. A copy of the lab reports shall be issued to Maine DEP for review and approval prior to use. Flocculants shall be used in accordance with manufacturer's instructions.

13. Dirtbags™ will be required to be on site and available for construction dewatering. The Contractor will be required to provide four Dirtbags™ with one prepared for operation prior to commencing any trenching operations.
14. Silt logs may be used in areas where sheet flow drains off impervious surfaces to spread and filter the flow. Silt logs should be anchored in accordance with manufacturer recommendations.

Special Measures for Summer Construction

The summer period is generally optimum for construction in Maine, but it is also the period when intense short duration storms are most common, making denuded areas very susceptible to erosion. Dust control needs to be the most stringent, and the potential to establish vegetation is often restricted by moisture deficit in the summer. During these periods, the Contractor must:

1. Implement a program to apply dust control measures on a daily basis except those days where precipitation is sufficient to suppress dust formation. This program shall extend to and include adjacent streets.
2. Spray any mulches with water after anchoring to dampen the soil and encourage early growth. Spraying may be required several times. Temporary seed may be required until the late summer seeding season.
3. Cover stockpiles of fine-grained materials, or excavated soils which are susceptible to erosion. To protect from the intense, short-duration storms which are more prevalent in the summer months.
4. Take additional steps when needed, including watering, or covering excavated materials to control fugitive dust emissions to minimize reductions in visibility and the airborne disbursement of fine-grained soils. This is particularly important given the potential presence of soil contaminants, and the proximity of along the adjacent streets and properties.
5. These measures may also be required in the spring and fall during the drier periods of these seasons.

Special Measures for Winter Construction

The winter construction season runs from November 1st through April 15th, however little or no vegetation growth can be anticipated after October 15th. Additional stabilization measures should be provided in the Fall (by November 15th) in preparation for winter conditions and permanent seeding should occur at least 45 days before the first killing frost. More frequent site inspections and BMP maintenance should be scheduled at the site towards the end of winter in preparation for the Spring thaw. The following additional winter measures should be taken:

- Overwinter Hay Mulch should be applied at double the normal rate (150 pounds per 1000 square feet or 3 tons/acre) and should be anchored with netting (peg and twine) or a tackifier to prevent mulch displacement before freezing conditions. No soil should be visible through the mulch. Hay mulch cannot be applied over snow.
- Dormant Seeding and Mulch should be applied at 3 times the specified amount after the first killing frost. All dormant seeding beds should be covered with overwinter mulch or an anchored erosion control blanket.
- Temporary vegetation should be applied by October 1st (to prepare for winter conditions) with winter rye at 3 pounds per 1000 square feet5 and mulched with anchored hay at 75 pounds per 1000 square feet or with erosion control blanket. If the rye fails to grow at least three inches and have 75% coverage by November 1st, the area should be stabilized for overwinter protection.
- Erosion control mix is the best overwinter cover, but is not recommended for slopes steeper than 1:1 or in areas with flowing water.
- Erosion Control Blankets should be used on slopes where hay would be disturbed by wind or water. The matting should be installed, anchored and stapled in accordance with the manufacturer's recommendations. Full contact between the blanket and the soil is critical for an effective erosion control cover.

- **Riprap** should be properly sized and installed to ensure long-term stability. In the winter, newly constructed ditches and channels should be stabilized with riprap. Widening of the channel may be required to accommodate placement of stones. Angular riprap is preferred to round stone.
- **Sod** may be used for late-season stabilization (after October 1st), but it is not recommended for slopes steeper than 3:1 or in areas with groundwater seeps. Follow the supplier's instructions.

A brief Winter Construction Risk Analysis is included below:

Overwinter Construction Risk Analysis		
Subject	**Risk**	**Mitigation**
Increased precipitation with no vegetation uptake or evaporation	More surface runoff that can be directed to erosion control measures	Observation and frequent maintenance of BMPs, temporary dewatering deployment
Frozen Grounds	The soil loses it capacity to retain water and cause more surface runoff and potential erosion	Prompt cover and stabilization of exposed soils, maintenance of fill embankments and high traffic areas
Vegetative Ground Cover	Cannot be established outside of growing season.	Seed areas at least 45 days between first frost
Runoff Diversion	Snow or icing may clog diversion structures.	Observation, maintenance and clearing of snow from BMPs where practical
Sedimentation Basins	Can be overwhelmed by spring flows.	Install before ground is frozen, stabilize upstream areas prior to Spring thaw
Silt Fence	Difficult to install on frozen ground. Often fails during spring melt	Use erosion control mix berms if required during winter conditions
Erosion Control Blankets	Cannot be anchored on frozen ground	Install prior to frost, or replace with temporary riprap stabilization over winter
Hydro-seeding	Stabilizers are ineffective in cold temperatures	Install prior to winter
Vegetated Swales	Cannot be established outside of growing season	Establish and seed 45 days prior to first frost, stabilize with temporary riprap
Impervious Stabilization	Base gravel on driving/parking areas. Pavement cannot be installed in winter.	Install sacrificial surface where necessary, frequent winter maintenance of gravel surfaces
'Mud' Season	Spring thaw	Frequent preventative maintenance of BMPs, focus on stabilization prior to onset of thaw

Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. The drainage conveyance systems have been designed to intercept and convey the 25-year storm.
2. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.), will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples,

shall be placed over the mulch in areas where the finish grade slope is greater than 10 percent. Native topsoil shall be stockpiled and temporarily stabilized with seed and mulch and reused for final restoration when it is of sufficient quality.

3. Stormwater BMPs have been designed to capture, treat and discharge runoff from the developed areas of the site in a non-erosive manner to downstream receiving waters. Details of the Stormwater Management Plan are included in Section 12.
4. Catch basins shall be provided with sediment sumps for all outlet pipes that are 12" in diameter or greater or where winter sand use is contemplated. A sediment collection bag shall be installed in all basins.

Timing and Sequence of Erosion/Sedimentation Control Measures

The following general construction sequence shall be followed to ensure the effectiveness of soil erosion and sediment control measures. The detailed phasing plan and narrative should be referred to for the delineation of individual construction phases and descriptions of the associated BMPs and work methods. It is anticipated that project earthwork progress and phasing will be reviewed throughout the project as part of the overall construction schedule management for the project. Therefore, the following is intended for outline guidance only.

1. Install construction entrances.
2. Install safety and construction fence to secure the site for clearing and mobilization.
3. Install perimeter siltation fence and erosion control barriers. Particular attention shall be paid to areas upstream of protected natural resources and in the vicinity of the streams at the project site. Signs shall be erected periodically along these perimeter barriers indicating that the downstream areas are off limits to all construction activities.
4. Install diversion BMPs and stabilized outlet plunge pools to convey water from upstream areas around the project site.
5. Install temporary sediment basins and sumps as shown on the project plans and details.
6. Construct activities on the site to optimize the handling of materials and restrict the denuded areas to the time stipulated, as described in the project phasing plan.
7. Install granular borrow and pavement gravel materials to raise the site to the design subgrade elevation.
8. Construct stabilized pads for foundation and building construction.
9. Maintain erosion controls and stabilized areas throughout the construction period.
10. Install binder pavement.
11. Landscape (loam and seed).
12. Install surface pavements.
13. Install striping, signage, and miscellaneous site improvements.
14. Review the site improvements, identify punch list items and required revisions.
15. Remove any temporary erosion control measures.

The Contractor must maintain an accurate set of record drawings indicating the date when an area is first denuded, the date of temporary stabilization, and the date of final stabilization. On October 1 of any calendar year, the Contractor shall submit a detailed plan for stabilizing the site for the winter and a description of what activities are planned during the winter.

14.8. PERMIT REQUIREMENTS

This project will require review and approval by Federal, State and Local Regulatory Authorities. Permit approvals from these bodies may include specific conditions related to soil erosion and sediment control in addition to the standards described below. The Owner and Contractor will be responsible for review of, and adherence to any and all specific permit conditions applicable to the project, and these will become part of the Contract Documents for the project.

The scale and nature of the project will require coverage under the Maine Pollutant Discharge Elimination System (MPDES) General Permit - Construction Activity. The following procedures will be required to meet the minimum regulatory standards associated with this permit:

Preconstruction Conference

Prior to any construction at the site, representatives of the Contractor, the Project Engineer, the Owner, Regulatory Agency Representatives and the City of Belfast City Engineer shall meet to discuss the scheduling of the site construction and the designation of the responsible parties for implementing the plan. The Contractor shall be responsible for scheduling the meeting. Prior to the meeting, the Contractor will prepare a detailed schedule and a marked-up site plan indicating areas and components of the work and key dates showing date of disturbance and completion of the work. The Contractor shall conduct a meeting with employees and sub-contractors to review the erosion control plan, the construction techniques which will be employed to implement the plan and provide a list of attendees and items discussed at the meeting to the Owner. Three copies of the schedule, the Contractor's meeting minutes, and marked-up site plan shall be provided to the Owner.

Inspection of Soil Erosion and Sediment Control Measures

The CM shall prepare a list and designate by name, address and telephone number all individuals who will be responsible for implementation, inspection, and maintenance of all erosion control measures identified within this section and as contained in the Erosion and Sedimentation Control Plan of the contract drawings. Specific responsibilities of the inspector(s) will include:

- Execution of the Contractor/Subcontractor Certification contained in **Attachment C** by any and all parties responsible for erosion control measures on the site.
- A weekly certification stating compliance, any deviations, and corrective measures necessary to comply with the erosion control requirements of this section shall be prepared and signed by the inspector(s).

Inspection of the project work site shall include:

1. Identification of proper erosion control measure installation in accordance with the erosion control detail sheet or as specified in this section.
2. Determine whether each erosion control measure is properly operating. If not, identify damage to the control device and determine remedial measures.
3. Identify areas which appear vulnerable to erosion and determine additional erosion control measures which should be used to improve conditions.
4. Inspect areas of recent seeding to determine percent catch of grass. A minimum catch of 90 percent is required prior to removal of erosion control measures.
5. All erosion controls shall be removed within 30 days of permanent stabilization except for mulch and netting not detrimental to the project. Removals shall include but not be limited to all silt fence, hay bales, inlet protection, and stone check dams.
6. Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches.
7. Silt sacks should be removed and replaced at least every three months and at any time where the weekly inspection reveals that siltation has significantly retarded the rate of flow through the silt sack.
8. If inspection of the site indicates a change should be made to the erosion control plan, to either improve effectiveness or correct a site-specific deficiency, the inspector shall immediately implement the corrective measure and notify the Owner of the change.

A summary of standard Erosion Control Inspections is given in the table below. It is anticipated that inspection and maintenance tasks will be adapted throughout the project to reflect field conditions and construction progress:

EROSION AND SEDIMENT CONTROL MEASURES AND ACTIVITY	INSPECTION FREQUENCY		
	Weekly	**Before & After a Storm**	**After Construction**
SEDIMENT BARRIERS			
Sediment barriers are installed prior to soil disturbances	X	X	
Silt fences are keyed in and tight	X	X	
Barriers are repaired and replaced as necessary	X	X	
Barriers are removed when the site is stabilized - Silt fence should be cut at the ground surface			X
TEMPORARY STABILIZATION			
Areas are stabilized if idle for 14 days or more	X	X	
Daily stabilization within 100 ft of a natural resource	X	X	
MULCH			
Seed and mulch within 7 days of final grading. Ground is not visible	X	X	
Erosion control mix is 4-6 inch thick	X	X	
Erosion control blankets or hay mulch are anchored	X	X	
VEGETATION			
Vegetation provides 90% soil cover	X		X
Loam or soil amendment were provided	X		X
New seeded areas are mulched and protected from vehicle, foot traffic and runoff	X	X	X
Areas that will remain unworked for more than 1 year are vegetated with grass	X		
SLOPES AND EMBANKMENTS			
Final graded slopes and embankments are stabilized	X	X	X
Diversions are provided for areas with rill erosion	X	X	X
Areas steeper than 2:1 are riprapped	X		
Stones are angular, durable and various in size	X		
Riprap is underlain with a gravel layer or filter fabric	X		
STORMWATER CHANNELS AND CULVERTS			
Ditches and swales are permanently stabilized– channels that will be riprapped have been over-excavated	X	X	X
Ditches are clear of obstructions, accumulated sediments or debris	X	X	X
Ditch lining/bottoms are free of erosion	X	X	X
Check dams are spaced correctly to slow flow velocity	X		
Underlying filter fabric or gravel is not visible	X	X	X
Culvert aprons and plunge pools are sized for expected flows volume and velocity	X		
Stones are angular, durable and various in size	X		
Culverts are sized to avoid upgradient flooding	X	X	
Culvert protection extends to the maximum flow elevation within the ditch	X	X	X
Culvert is embedded, not hanging	X	X	X

EROSION AND SEDIMENT CONTROL MEASURES AND ACTIVITY	INSPECTION FREQUENCY		
	Weekly	**Before & After a Storm**	**After Construction**
CATCH BASIN SYSTEMS			
Catch basins are built properly	X		
Accumulated sediments and debris are removed from sump, grate and collection area		X	X
Floating debris and floating oils are removed from trap			X
ROADWAYS AND PARKING SURFACES			
The gravel pad at the construction entrance is clear from sediments	X	X	
Roads are crowned		X	X
Cross drainage (culvert) is provided	X		
False ditches (from winter sand) are graded		X	X
BUFFERS			
Buffers are free of erosion or concentrated flows		X	X
The downgradient of spreaders and turnouts is stable		X	X
Level spreaders are on the contour			X
The number of spreaders and ditch turnouts is adequate for flow distribution		X	X
Any sediment accumulation is removed from within spreader or turnouts		X	X
STORMWATER BASINS AND TRAPS			
Embankments are free of settlement, slope erosion, internal piping, and downstream swamping		X	X
All flow control structure or orifices are operational and clear of debris or sediments		X	X
Any pre-treatment structure that collects sediment or hydrocarbons is clean or maintained		X	X
Vegetated filters and infiltration basins have adequate grass growth			X
Any impoundment or forebay is free of sediment		X	X
WINTER CONSTRUCTION (November 1st-April15th)			
Final graded areas are mulched daily at twice the normal rate with hay, and anchor (not on snow)	Daily		
A double row of sediment barrier is provided for all areas within 100 ft of a sensitive resource (use erosion control mix on frozen ground)	Daily		
Newly constructed ditches are riprapped	Daily		
Slopes greater than 8% are covered with an erosion control blanket or a 4-inch layer of erosion control mix	Daily		
HOUSEKEEPING PUNCH LIST			
All disturbed areas are permanently stabilized, and plantings are established (grass seeds have germinated with 90% vegetative cover)			X
All trash, sediments, debris or any solid waste have been removed from stormwater channels, catch basins, detention structures, discharge points, etc.			X
All ESC devices have been removed: (silt fence and posts, diversions and sediment structures, etc.)			X
All deliverables (certifications, survey information, as-built plans, reports, notice of termination (NOT), etc.) in accordance with all permit requirements have been submitted to town, Maine DEP, association, owner, etc.			X

Maintenance of Soil Erosion and Sediment Control Measures

The following general maintenance requirements shall apply to the installed erosion control BMPs. Additional maintenance may be required based on field conditions, or at the recommendation of the Project Engineer, Third Party Inspector, Owners Representative, or regulatory authorities:

1. Stabilized Construction Entrances - Stone stabilized construction entrances will require the stone to be removed and replaced, as it becomes covered or filled with mud and material tracked by vehicles exiting the site.
2. The surface of the Runoff Diversion Trench shall be inspected on a weekly basis and cleared of any accumulating surface debris that could reduce the capacity of the BMP to divert surface water. The outlets should be inspected to ensure that groundwater flows are being adequately conveyed around the construction area.
3. The upgradient (diversion) silt fence barrier shall be repaired or replaced immediately if any breaches are found, or there are signs of undercutting. Sediment and debris shall be removed from the upstream side of the barrier periodically. The downstream ends of the barrier should be checked for any erosion caused by concentrated flows running along the barrier. These areas should be repaired immediately with stone check dams to prevent further damage.
4. Inlets and outlets of bypass culverts shall be cleared of accumulating debris and any signs of erosion shall be repaired immediately with riprap.
5. Riprap plunge pool outlets shall be cleared of debris and monitored for sediment accumulation. If sediment reaches a depth of six inches, it shall be removed, and the plunge pool repaired or re-constructed.
6. Silt Fence Barriers - The Contractor shall make repairs immediately if there are any signs of erosion or sedimentation below the fence line. If such erosion is observed, the Contractor shall take proactive action to identify the cause of the erosion and take action to avoid its reoccurrence. If there are signs of undercutting at the center or the edges or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam and measures taken to avoid the concentration of flows not intended to be directed to the silt fence.
7. Silt Fence Haybale Barriers – The Contractor shall maintain the silt fence as described above. Should the central haybale barrier deteriorate, or show signs of contamination, the material shall be removed and replaced.
8. Erosion Control Mix – The Contractor shall maintain erosion control berms to ensure they remain level and continue to provide an even depth of protection throughout the length of the berm. The Contractor shall make repairs immediately if there are any signs of erosion or breaches in the berm, and supplement berms with additional material if settlement is observed.
9. Stone check dams, silt logs, or hay bale barriers installed at concentrated flow discharge points shall be inspected and cleared of accumulated debris periodically. If sediment accumulation is observed, this shall be removed when it reaches a depth of not more than six inches.
10. Slopes stabilized with erosion control blankets, or temporary riprap stabilization shall be inspected and repaired if any signs of rill erosion or stone displacement are observed. Sloughing of slopes or evidence of slip, rotational or base failure shall be reported immediately to the project engineer for design of remedial actions.
11. Any open graded areas of visible erosion and the temporary sediment sumps shall be stabilized with crushed stone. The size of the stone shall be determined by the contractor's designated representative in consultation with the Owner.
12. Temporary sediment sumps and sediment basins shall be inspected on a weekly basis. Routine maintenance shall include the removal of debris around inlets and outlets, repair of any uneven areas on basin berms, repair of any observed rill erosion in embankments and replacement of bench and outlet control filter material when slow drainage is observed.

13. Anchoring of silt logs shall be checked on a weekly basis. These shall be removed and replaced when clogged with sediment.
14. Mulched areas shall be repaired when ground is visible through the mulch layer. Anchoring of erosion control blankets and hay mulch shall be repaired is any evidence of separation is observed.
15. Vegetated areas shall be over-seeded and stabilized where 90% cover is not achieved.

Reporting Requirements

In addition to the weekly certifications, the inspector(s) shall maintain written reports recording construction activities on site which include:

1. Dates when major grading activities occur in a particular areas of the site.
2. Dates when major construction activities cease in a particular area, either temporarily or permanently.
3. Dates when an area is stabilized.
4. Inspection of the project work site on a weekly basis and after each significant rainfall event (0.25 inch or more within any consecutive 24-hour period) during construction until permanent erosion control measures have been properly installed and the site has been stabilized.
5. A log (report) must be kept summarizing the scope of the inspection, name(s) and qualifications of the personnel making the inspection, the date(s) of the inspection, and major observations relating to operation of erosion and sedimentation controls and pollution prevention measures. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

Record Keeping

1. All certifications, inspection forms, and written reports prepared by the inspector(s) shall be filed with the Owner, and the Permit File contained on the project site, and available for inspection and review upon request. All written certifications, inspection forms, and written reports must be filed within one (1) week of the inspection date.
2. Inspections Reports and Logs must be made accessible to regulatory agency staff and a copy must be provided upon request.
3. Copies of all reports must be kept on file and available upon request for a period of at least three years from the completion of permanent stabilization.

14.9. CONSTRUCTION PROCUREMENT AND ADMINISTRATION

The project will be constructed by a Construction Manager under contract to the Owner/Applicant. The Construction Manager will submit a detailed schedule for the completion of the work, broken into specific tasks, with anticipated milestones and completion dates, at the start of construction. The project schedule will be reviewed at regular bi-weekly project meetings, with updates and amendments to be recorded in the project file.

The work will be conducted in sections which will limit the amount of exposed area to those areas in which work is expected to be undertaken during the next 30 days. Exposed areas will be covered and stabilized as rapidly as practical. All areas will be permanently stabilized within 7 days of final grading and temporarily stabilized within 7 days of initial disturbance or before a predicted storm event of over ½" of rain. The area of denuded, non-stabilized construction shall be limited to the minimum area practicable. An area shall be considered to be denuded until the subbase gravel is installed in parking areas, or the areas of future loam and seed have been loamed, seeded, and mulched, or stabilized with erosion control blanket.

The Contractor must maintain an accurate set of record drawings indicating the date when an area is first denuded, the date of temporary stabilization, and the date of final stabilization. On October 1 of any calendar year, the Contractor shall submit a detailed plan for stabilizing the site for the winter and a description of what activities are planned during the winter.

The Contractor must install any added measures which may be necessary to control erosion/sedimentation and fugitive dust emissions from the site, with adjustments made dependent upon forecasted and actual site and weather conditions.

The Contractor has sole responsibility for complying with the erosion/sediment control report, including control of fugitive dust, and shall be responsible for any monetary penalties resulting from failure to comply with these standards.

Once construction has been completed, long-term maintenance of the stormwater management system will the responsibility of the applicant. Operations & Maintenance items with a list of maintenance requirements and frequency are listed at the end of Section 12 of the Maine DEP Permit Application.

Attachments

Attachment A – Soil Erosion and Sediment Control Phasing Plans and Narrative
Attachment B – Temporary Sediment Basin Sizing Calculations
Attachment C - Sample Erosion Control Compliance Certification and Inspection Forms

ATTACHMENT A

Major Earthwork Phasing Narrative & Soil Erosion and Sediment Control Phasing Plans

Atlantic Resource Consultants
Engineering Strategies and Solutions

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PHASING OF MAJOR EARTHWORK ACTIVITIES

The following is intended to convey the phased progression of major earthwork activities from stripping and grubbing of areas of new development to stabilization of prepared subgrades. In the case of the building pads, subgrade will be formed in compacted Granular Borrow material that will be imported to replace the unsuitable native clay soils beneath the future structures. The roadways providing access to and from construction areas will be paved. Riprap stone will be used to provide temporary and permanent stabilization to slopes and storm drain outlets. The remaining laydown areas and pads will be brought to subgrade in stable granular gravel and crushed stone materials.

It should be noted that subgrade stabilization in the areas described below will not conclude the site/civil works in these areas. Subsequent earth moving activities will include foundation construction, building pad preparation, roadway and stormwater BMP construction, and final hardscaping and landscaping throughout the development area. However, all of these subsequent activities will take place on a stable, prepared granular surface. From the perspective of soil erosion and sediment control, the site will be considered stable once the excavation and exposure of native soils has been completed and stable cover material has been installed across the site.

The major earthwork activities will be divided into several phases to carefully manage the risk associated with exposure of native soils and to minimize the potential for soil erosion and sediment transport. The phases of work are described below and shown on the accompanying drawings.

SITE CLEARING

1. Site Layout -Upon receipt of all permit approvals and after holding pre-construction meetings with regulatory authorities and other stakeholders, the Phase 1 area of the project and tree clearing limits will be defined using stakes and fencing.
2. Site Clearing – Once the clearing limits have been established, clearly marked and approved by the Owner, the Phase 1 area will be cleared of major trees and vegetation. The clearing for Phase 1 may be undertaken in phases, as opposed to at one time, in order to minimize the cleared area to that needed for the next phase of construction.
3. A stabilized construction entrance will be installed at the end of the existing paved driveway to provide wheel cleaning for traffic exiting the site during this phase, and a stable, gravel laydown pad will be constructed on the existing cleared area at the edge of the woodland. Access to the interior of the site will be via existing woods roads. Additional stabilized haul roads will be established throughout the Phase 1 area as the work progresses, and perimeter erosion controls will be established as access becomes available to areas that have been logged.

PHASE 1A – SITE MOBILIZATION

1. Runoff Diversions – Prior to any grubbing or major earthwork, diversion BMPs will be installed around the upslope perimeter of the site. This will include silt fence barriers to direct surface runoff entering the site around the work area. A diversion trench will be constructed along the upper perimeter of the site to intercept additional surface water and groundwater at the upstream side of the project site. Underdrain piping will convey the intercepted flow around the work area before discharging, via outlet plunge pools to existing natural drainageways. Bypass culverts will also be installed in interior drainage channels that will be impacted during the initial work phases. These

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are designed to intercept internal surface water runoff and groundwater flow and divert it around the work area before draining, via stabilized outlet plunge pools into existing channels. The underdrain pipes in the diversion trenches and the bypass culverts installed in the drainage channels will remain in place at the end of construction. These will drain on-site groundwater to the headwaters of the natural drainageways that will remain in place after construction of the facility, providing baseflow to maintain these resources. Temporary access roads will be constructed to facilitate installation of the diversion BMPs and outlet plunge pools.

2. Establishment of site access, laydown area, offices and storage -
    a. Perimeter erosion controls will be installed in all downstream Phase 1A areas where these are not already installed during the tree clearing operations prior to any further work at the site.
    b. The major site improvement work will start with the establishment of a stable access road into the work area. The road will be constructed along the line of the permanent driveway and extend to the site office area before heading west through the site to the Phase 1 Building area.
    c. The site laydown area will be established in the southeast corner of the main site and will have an area of approximately 80,000sf. The area will be stripped and grubbed, graded and covered with a woven geotextile fabric. Panel drains will be places on the geotextile fabric to ensure that the area remains dry and stable. Granular Borrow will then be added to stabilize the area and bring it to grade.
    d. The site office and storage area is located at the northeast corner of the main site and has an area of approximately 15,000sf. Once the main laydown area is stabilized, this area will be stripped and grubbed, graded and covered with a woven geotextile and brought to grade in the same manner as the laydown area.
3. Installation of stabilized construction accesses for further phases of work – Two further stabilized construction accesses will be constructed at the entries to the work area at the west end of Phase 1A. These will protect the completed work area from tracked sediments originating from the Phase 1B work.
4. Phase 1A will also include the preparation of the building pad at the new Water and Wastewater Treatment Plant located towards the site entrance. A temporary crossing will be constructed over the intermittent stream to allow access to this area of the site without disturbing the existing channel. Construction of the permanent crossing will be undertaken in the low flow summer period between July 1st and September 1st. The drainage channel will be maintained through the crossing during construction of the arch culvert abutments. Sheet piling, or other stabilization measures will be used to confine the work area and protect the edges of the channel. Riprap stone scour protection will be installed at the edges of the channel to protect the structure from erosion. Construction of headwalls, wing walls and backfill material will then proceed after the arch structure is installed.
5. Pad preparation for the WTP/WWTP will require excavation of the existing topsoil and overburden materials and the construction of a stabilized working pad to allow access for construction equipment to work on the new building. The stabilized pad area at this location is approximately 35,000sf.

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PHASE 1B – CONSTRUCTION PHASE 1 – CENTRAL CORRIDOR WEST

1. Construction of Temporary Sediment Basins and Stabilized Outlets – The first phase of new construction will begin with the installation of temporary sediment basins at the locations of new stormwater BMPs at the west end of the Phase 1 construction area and along the southern perimeter of the work area. These are designed to receive runoff from exposed areas of the site and filter the water through sand bedding and underdrain backfill before allowing it to discharge to established downstream drainageways. These BMPs will be installed and stabilized prior to exposure of the upstream contributing work areas.
6. Additional bypass culverts will also be installed in interior drainage channels that will be impacted during the Phase 1B work. These are designed to intercept surface water runoff and groundwater flow around the work area and will discharge into stabilized outlet plunge pools before draining into existing natural drainage channels. These bypass culverts will remain in place after construction of the facility, providing groundwater baseflow to maintain these resources.
2. Construction of Phase 1B Access Roads – Access roads will be extended from the stabilized construction entrances installed in Phase 1A to the western work area. Temporary stabilized roads will be constructed and modified as work progresses from west to east. The roads will be completed once the building area is brought to subgrade elevation.
3. Construction of the new facility will require the excavation and removal of a significant layer of unsuitable compressible clay materials that have been identified beneath the building footprints. This material extends to an elevation of approximately 54 feet in this area of the site. This material is not suitable for re-use and will be excavated for disposal off site. As soon as subgrade elevations are established a layer of woven geotextile will be placed on the prepared subgrade and imported Granular Borrow will be placed in compacted lifts to the design subgrade.
    a. Excavation of unsuitable material and the stabilization with Granular Borrow will proceed from west to east starting in the area of the new Smolt Building. The western area will be stabilized and filled as the excavation proceeds to the east, minimizing the area of open exposed soils to less than 80,000sf at any given time.
    b. Edge drains will be installed at the foot of the excavation as it progresses. These will effectively drain the granular fill material to ensure that the surface of the construction area remains dry and stable. The underdrains will discharge, via a stabilized riprap outlet plunge pool to the downstream receiving channel.
    c. Foundation and building construction will commence at the western end of the site as the earthwork moves eastward. The establishment of stabilized subgrades for Phase 1B will end at the eastern end of the new Smolt Buildings. switch yard, just north of the laydown area.

PHASE 1C – CONSTRUCTION PHASE 1 - CENTRAL CORRIDOR EAST

1. Construction of Phase 1C will start once Phase 1B has been brought to subgrade with stable granular material.
2. Construction of Phase 1C Access Roads – Access roads will be constructed between the Smolt Buildings and Oxygen storage area. The roads will be completed once the building area is brought to subgrade elevation and will allow access around the eastern edge of the Smolt Buildings.
3. The Phase 1C Building pad preparation will start at the Oxygen Storage Area and proceed west to east across the site. As described in Phase 1B, above construction of new buildings will require the

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excavation and removal of a significant layer of unsuitable compressible clay materials. This material extends to an elevation of approximately 54 feet in this area of the site. This material is not suitable for re-use and will be excavated for disposal off site. As soon as subgrade elevations are established a layer of woven geotextile will be placed on the prepared subgrade and imported Granular Borrow will be placed in compacted lifts to the design subgrade.

a. Excavation of unsuitable material and the stabilization with Granular Borrow will proceed from west to east starting in the area of the new Smolt Building. The western area will be stabilized and filled as the excavation proceeds to the east, minimizing the area of open exposed soils to less than 80,000sf at any given time.
b. Edge drains will be installed at the foot of the excavation as it progresses. These will effectively drain the granular fill material to ensure that the surface of the construction area remains dry and stable. The underdrains will discharge, via a stabilized riprap outlet plunge pool to the downstream receiving channel.
c. Foundation and building construction will commence at the western end of the site as the earthwork moves eastward. The establishment of stabilized subgrades for Phase 1C will end at the eastern end of the new Switch Yard, just north of the laydown area.

PHASE 1D – CONSTRUCTION PHASE 1 - MODULE 1-3 AREA WEST

1. Construction of Phase 1D will start once Phase 1C has been brought to subgrade with stable granular material.
2. Construction of Phase 1D Access Roads – Access roads will be constructed around the western end of the Phase 1 Module Building, and along the northern side of the building, proceeding from west to east. The roads will be completed once the building area is brought to subgrade elevation and will allow access around the perimeter of the Module 1 Building.
3. Phase 1D building pad construction will proceed in a similar manner to the Central Corridor work, from west to east in the area of the new Grow Module Buildings. Similar to Phase 1B and 1C, this area of new construction will require the excavation and removal of a significant layer of unsuitable compressible clay materials that have been identified beneath the building footprints. This material extends to an elevation of approximately 54 feet in this area of the site. This material is not suitable for re-use and will be excavated for disposal off site. As soon as subgrade elevations are established a layer of woven geotextile will be placed on the prepared subgrade and imported Granular Borrow will be placed in compacted lifts to the design subgrade.
    a. Excavation of unsuitable material and the stabilization with Granular Borrow will proceed from west to east starting in the area of the Module 1. The western area will be stabilized and filled as the excavation proceeds to the east, minimizing the area of open exposed soils to less than 80,000sf at any given time.
    b. Edge drains will be installed at the foot of the excavation as it progresses. These will effectively drain the granular fill material to ensure that the surface of the construction area remains dry and stable. The underdrains will connect to the previously installed diversion culvert, which drains, via a stabilized riprap outlet plunge pool to the downstream receiving channel.
    c. Foundation and building construction will commence at the western end of the site as the earthwork moves eastward. The establishment of stabilized subgrades for Phase 1D will end approximately half way along the Phase 1 Grow Module Building.

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PHASE 1E – CONSTRUCTION PHASE 1 - MODULE 1-3 AREA EAST

1. Construction of Phase 1E will start once Phase 1D has been brought to subgrade with stable granular material.
2. Construction of Phase 1E Access Roads – Access roads will be constructed around the remainder of the northern side of the Phase 1 Module Building, proceeding from west to east. The roads will be completed once the building area is brought to subgrade elevation and will allow access around the entire perimeter of the Module 1 Building.
3. Phase 1E building pad construction will proceed in a similar manner to the previous work at the site. The unsuitable clay material extends to an elevation of approximately 54 feet in this area of the site. This material is not suitable for re-use and will be excavated for disposal off site. As soon as subgrade elevations are established a layer of woven geotextile will be placed on the prepared subgrade and imported Granular Borrow will be placed in compacted lifts to the design subgrade.
    a. Excavation of unsuitable material and the stabilization with Granular Borrow will proceed from west to east starting at the end of the Phase 1D area. The western area will be stabilized and filled as the excavation proceeds to the east, minimizing the area of open exposed soils to less than 80,000sf at any given time.
    b. Edge drains will be installed at the foot of the excavation as it progresses. These will effectively drain the granular fill material to ensure that the surface of the construction area remains dry and stable. The underdrains will connect to the previously installed diversion culvert, which drains, via a stabilized riprap outlet plunge pool to the downstream receiving channel.
    c. Foundation and building construction will commence at the western end of the Phase 1E area as the earthwork moves eastward. The establishment of stabilized subgrades for Phase 1E will end at the eastern end of the Phase 1 Grow Module Building.

PHASE 1 FINISH

1. Upon completion of the major earthwork activities associated with Phase 1 of the project, the interior finishes and landscaping will be installed. It is anticipated that this work will progress with the completion of the remaining building work, so that installed finishes are not damaged by any ongoing construction.
2. Once the final finishes and landscaping is installed and the Phase 1 area of the site is permanently stabilized, the temporary erosion control measures, including perimeter controls will be removed. Portions of the perimeter controls downstream of the Phase 2 work area will remain in place pending the start of that phase of work.
3. Temporary sediment basins will be removed and permanent stormwater BMPs will be installed as construction progresses and the upstream contributing areas are stabilized.

PHASE 2 SITE CLEARING

1. Construction of Phase 2 will start once Phase 1 construction is complete and the site has been completely stabilized.
2. Site Layout - After holding the required Phase 2 pre-construction meetings, the Phase 2 area of the project and tree clearing limits will be defined using stakes and fencing.
3. Site Clearing – Once the clearing limits have been established, clearly marked and approved by the Owner, the Phase 2 area will be cleared of major trees and vegetation.

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4. A stabilized construction entrance will be installed at the intersection of the main driveway with the southern roadway leading to the Phase 2 area, to provide wheel cleaning for traffic exiting the site during this phase. Access to the interior of the site will be via existing woods roads. Additional stabilized haul roads will be established throughout the Phase 2 area as the work progresses.
5. Perimeter Erosion Controls – The Phase 2 perimeter erosion controls will be installed at the downstream side of the site as the clearing progresses. This will connect to the previously installed Phase 1 perimeter controls, where these remain.

PHASE 2A – CONSTRUCTION PHASE 2 - MODULE 4-6 AREA WEST

1. Construction of Phase 2A will start once the phase 2 clearing is complete and access is available to the work area.
2. Bypass Culverts – New riprap stone outlet plunge pools will be constructed in the natural drainageways immediately downstream of the Phase 2 work area. The phase 1 plunge pools will be removed and the bypass culverts installed in the drainageways during the first phase of the project will be extended through the Phase 2 construction area to outlet to the newly installed underdrains.
3. Temporary Sediment Basin – Sediment basin 4 will be installed prior to exposure of the upstream contributing work areas. This is designed to receive runoff from exposed areas of the site and filter the water through sand bedding and underdrain backfill before allowing it to discharge to established downstream drainageways.
4. Construction of Phase 2 Access Roads – Access roads will be constructed around the western end and southern side of the Phase 2 Module Building, proceeding from west to east. The roads will be completed once the building area is brought to subgrade elevation and will allow access around the perimeter of the Module 2 Building.
5. Phase 2A building pad construction will proceed in a similar manner to the Central Corridor work, from west to east in the area of the new Grow Module Buildings. Similar to previous phases of construction, the areas of new construction will require the excavation and removal of a significant layer of unsuitable compressible clay materials that have been identified beneath the building footprints. This material extends to an elevation of approximately 43 feet in this area of the site. This material is not suitable for re-use and will be excavated for disposal off site. As soon as subgrade elevations are established a layer of woven geotextile will be placed on the prepared subgrade and imported Granular Borrow will be placed in compacted lifts to the design subgrade.
    a. Excavation of unsuitable material and the stabilization with Granular Borrow will proceed from west to east starting in the area of the Module 4 and proceeding into Module 5. The western area will be stabilized and filled as the excavation proceeds to the east, minimizing the area of open exposed soils to less than 80,000sf at any given time.
6. Foundation and building construction will commence at the western end of the site as the earthwork moves eastward. The establishment of stabilized subgrades for Phase 2A will end approximately half way along the Phase 2 Grow Module Building.

PHASE 2B – CONSTRUCTION PHASE 2 - MODULE 4-6 AREA EAST

1. Construction of Phase 2B will start once Phase 2A construction is complete and stabilized.
2. Building pad preparation for the southern module buildings will proceed eastwards from the end of Phase 2A, and across the site that was temporarily stabilized as a construction laydown area.

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As soon as subgrade elevations are established a layer of woven geotextile will be placed on the prepared subgrade and imported Granular Borrow will be placed in compacted lifts to the design subgrade.

   a. Excavation of unsuitable material and the stabilization with Granular Borrow will proceed from west to east starting in the area of the Module 5 and proceeding into Module 6. The western area will be stabilized and filled as the excavation proceeds to the east, minimizing the area of open exposed soils to less than 80,000sf at any given time.

3. Foundation and building construction will commence at the western end of the site as the earthwork moves eastward. The establishment of stabilized subgrades for Phase 2B will end at the eastern end of the Phase 2 Grow Module Building, and will complete the major earthwork activities associated with the construction of the facility. Once the site is fully stabilized, the perimeter erosion control BMPs will be removed and the surrounding areas will be permanently stabilized.

PHASE 2 FINISH

1. Upon completion of the major earthwork activities associated with Phase 2 of the project, the interior finishes and landscaping will be installed. It is anticipated that this work will progress with the completion of the remaining building work, so that installed finishes are not damaged by any ongoing construction.
2. Once the final finishes and landscaping is installed and the site is permanently stabilized, the temporary erosion control measures, including perimeter controls will be removed.
3. The final temporary sediment basin will be removed and permanent stormwater system will be installed as construction progresses and the upstream contributing areas are stabilized.
4. Stormwater BMPs and other critical elements of the site infrastructure will be maintained by the Owner in accordance with local, State and federal standards and permit conditions.

NORDIC AQUAFARMS SOIL EROSION AND SEDIMENT CONTROL PHASING SUMMARY

PHASE	PRIMARY TASKS	PREMANENTLY STABILIZED AREA - START OF PHASE	TOTAL WORK AREA	MAXIMUM OPEN AREA -GRUBBED AND NOT STABILIZED	SESC BMPS	AREA OF NEW ROADS	AREA OF NEW PADS	OTHER STABILIZED AREAS	PERMANENTLY STABILIZED AREA - END OF PHASE	ANTICIPATED TIMELINE
PHASE 1 CLEARING	Site Layout - Layout Phase 1 Limits of Work and tree clearing limits Installation of Stabilized Access Installation of Perimeter Erosion Controls Site Clearing – Logging and Clearing of Vegetation	**22,000**	**795,000**	**0**	Stabilized Construction Entrances Stabilized Haul Roads Stabilized Laydown Area Temporary Stream Crossing	**0**	**0**	**0**	**26,000**	**2-4 weeks**
PHASE 1A	Installation of Additional Perimeter Erosion Controls Construction of Runoff Diversions and Bypass Culverts Establishment of site access, laydown area, offices and storage -	**26,000**	**610,000**	**80,000**	Stabilized Cosntruction Entrances Silt Fence Silt fence/haybale barrier Erosion berms Temporary riprap slope stabilization Diversion trench Outlet plunge pools Bypass culverts Stabilized gravel pads	**51,000**	**130,000**	**60,000**	**267,000**	**6-8 weeks**
PHASE 1B	Construction of Temporary Sediment Basins and Stabilized Outlets Construction of Phase 1B Access Roads Excavation of unsuitable soils and subgrade preparation Pad and foundation preparation -Smolt Building	**267,000**	**408,600**	**80,000**	Temporary sediment basins Bench drain outlets Diversion trench Bypass culverts Building pad stabilization	**260,600**	**104,200**	**60,000**	**691,800**	**8-10 weeks**
PHASE 1C	Construction of Phase 1C Access Roads Excavation of unsuitable soils and subgrade preparation - Pad and foundation prep. - Oxygen Storage, Process, CUP, Switch Yard	**691,800**	**143,600**	**80,000**	Building pad stabilization	**0**	**108,000**	**30,000**	**829,800**	**4-6 weeks**
PHASE 1D	Construction of Phase 1D Access Roads Excavation of unsuitable soils and subgrade preparation - Pad and foundation preparation - Phase 1 Module Buildings West	**829,800**	**199,200**	**80,000**	Building pad stabilization	**26,200**	**150,000**	**15,000**	**1,021,000**	**5-6 weeks**
PHASE 1E	Construction of Phase 1E Access Roads Excavation of unsuitable soils and subgrade preparation - Pad and foundation preparation - Phase 1 Module Buildings East	**1,021,000**	**214,500**	**80,000**	Building pad stabilization	**18,500**	**180,000**	**15,000**	**1,234,500**	**5-6 weeks**
PHASE 1 FINISH	Landscaping, hardscaping and finish surface work in interior areas of Phase 1 work area, filling of temporary ponds, final stormwater BMPs	**1,234,500**	**160,000**	**0**	None	**0**	**0**	**85,000**	**1,319,500**	**4-6 weeks**
PHASE 2 CLEARING	Site Layout - Layout Phase 2 Limits of Work and tree clearing limits Installation of Perimeter Erosion Controls Connect Perimeter Erosion Controls to remaining Phase 1 BMPs Site Clearing – Logging and Clearing of Vegetation	**1,319,500**	**290,000**	**0**	Silt fence/haybale barrier Stabilized Haul Roads Stabilized Laydown Area (in place)	**0**	**0**	**0**	**1,319,500**	**2-4 weeks**
PHASE 2A	Construction of Phase 2A Access Roads Pad and foundation preparation - Phase 2 Module Buildings West	**1,319,500**	**220,000**	**80,000**	Temporary sediment basin Building pad stabilization Bypass culverts	**44,000**	**161,000**	**15,000**	**1,539,500**	**5-6 weeks**
PHASE 2B	Construction of Phase 2B Access Roads Pad and foundation preparation - Phase 2 Module Buildings East	**1,539,500**	**195,500**	**80,000**	Building pad stabilization	**0**	**90,000**	**25,000**	**1,654,500**	**5-6 weeks**

NOTE: AREAS ASSOCIATED WITH EACH PHASE ARE APPROXIMATE AND INTENDED TO GIVE AN OVERVIEW OF THE CONSTRUCTION PHASING

REV	DESCRIPTION	DATE
2	PER MDEP REVIEW COMMENTS	10-25-19
1	PER MDEP REVIEW COMMENTS	7-18-19
0	ISSUED FOR PERMIT	5-14-19

ISSUED FOR PERMIT
5-14-19
CURRENT ISSUE STATUS:

TRUE NORTH:

STATE OF MAINE
ANDREW D. JOHNSTON
NO. 9994
10/25/19
LICENSED
PROFESSIONAL ENGINEER

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NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

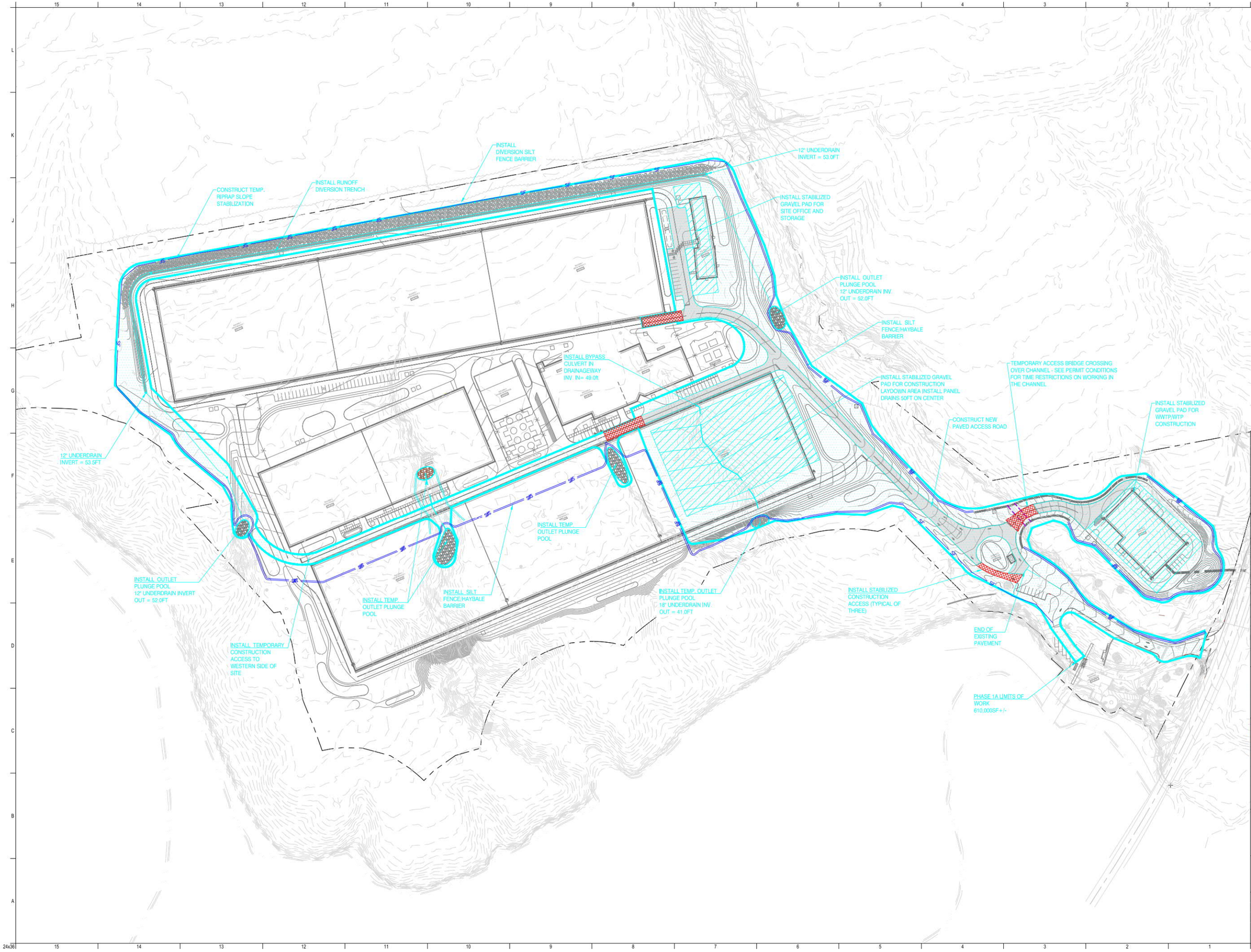
SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -1
PHASE 1 SITE CLEARING
SHEET TITLE:

0 50' 100' 200' 300'
SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		
DRAWN BY:	AJ		
SMRT FILE:	CE110-18076	SHEET No.	CE110

24x36

NOT FOR CONSTRUCTION



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NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -2 PHASE 1A
SHEET TITLE:

0 50' 100' 200' 300'
SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		
DRAWN BY:	AJ		
SMRT FILE:	CE111-18076	SHEET No.	CE111

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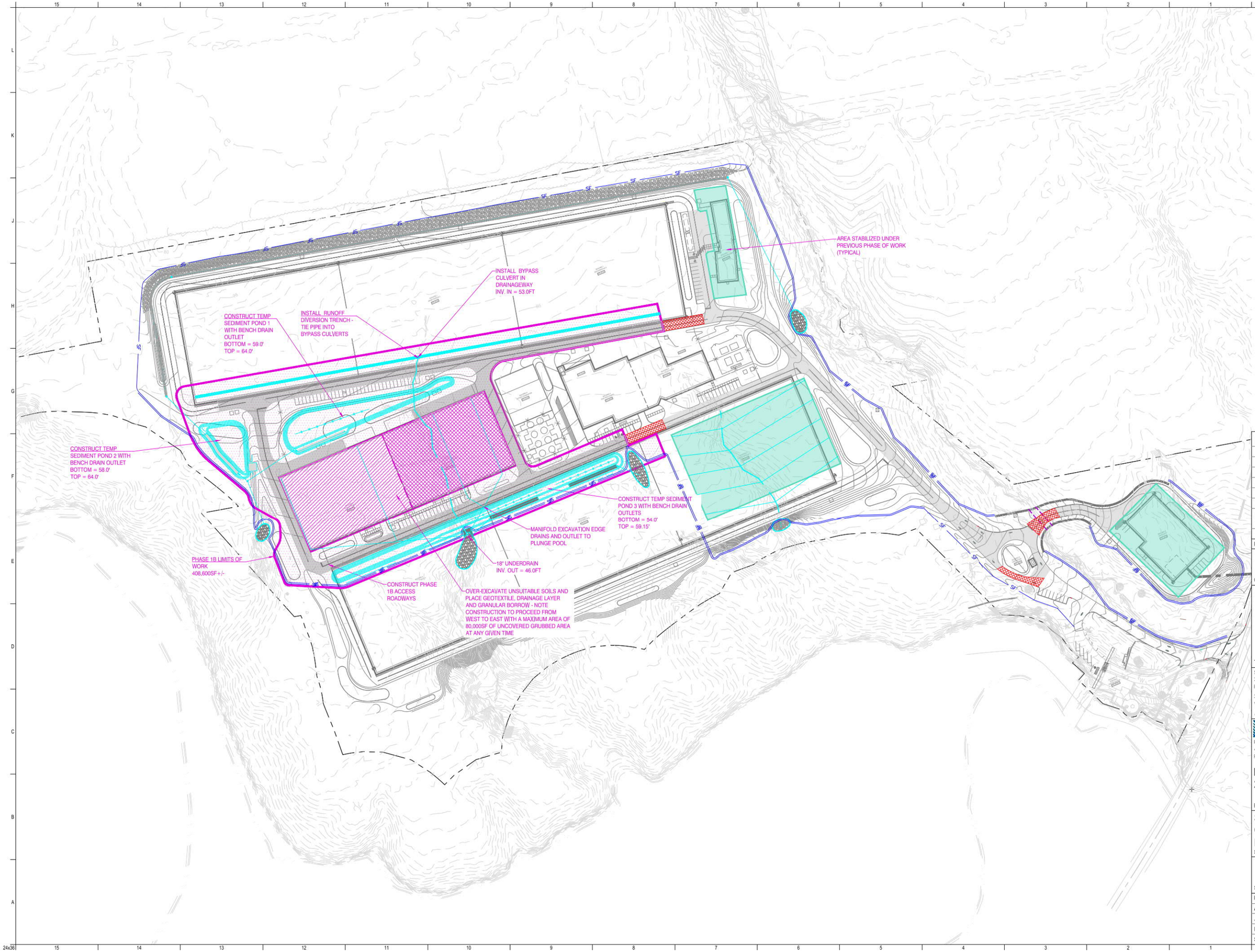

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0	ISSUED FOR PERMIT	5-14-19

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NORDIC AQUAFARMS
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BELFAST, MAINE

SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -3 PHASE 1B

SHEET TITLE:

0 50' 100' 200' 300'

SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP	SHEET No.	CE112
DRAWN BY:	AJ		
SMRT FILE:	CE112-18076		

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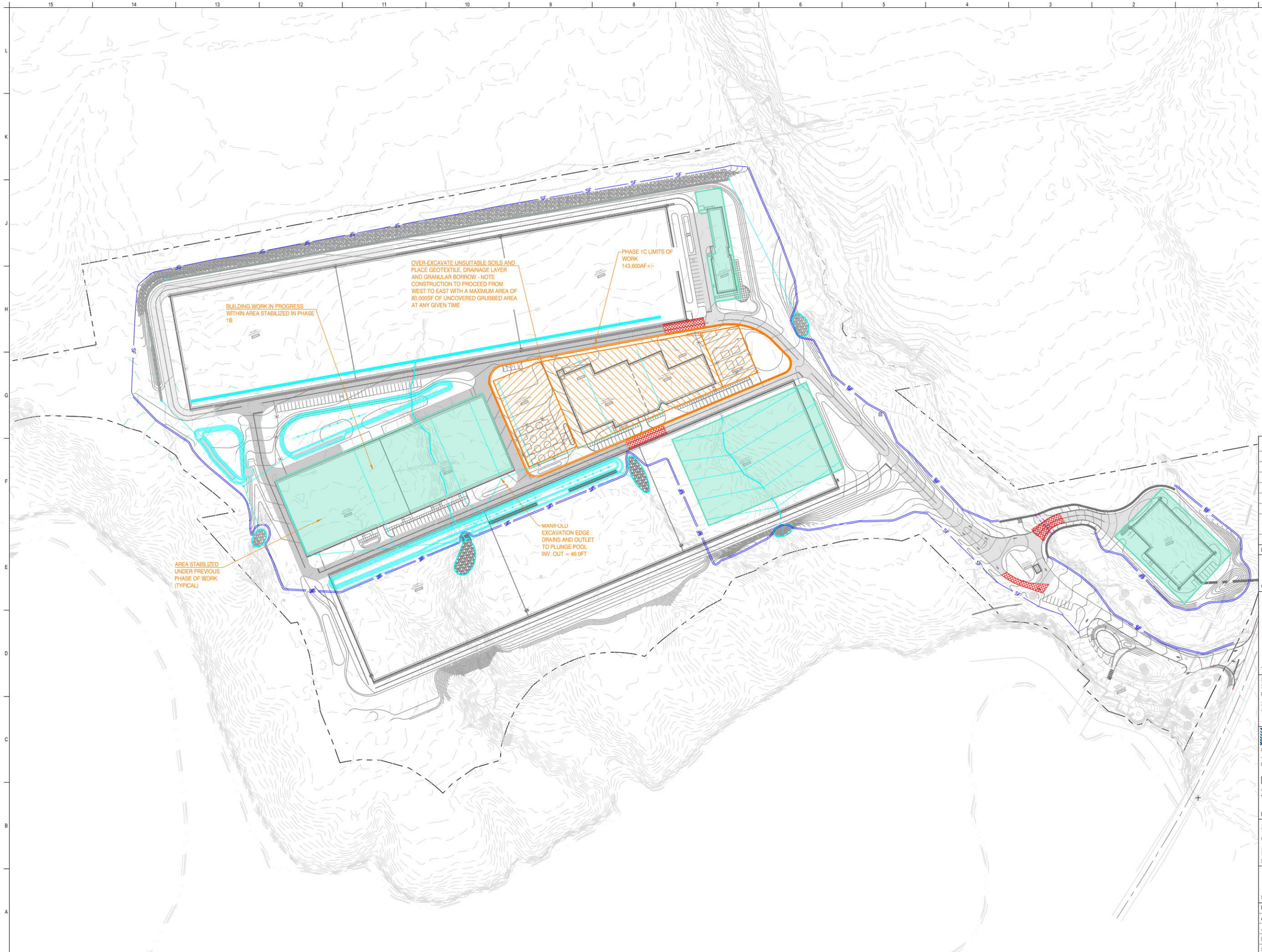
24x36



REV	DESCRIPTION	DATE
0	NRPA-PRINT FOR NAF REVIEW	4-29-19

NRPA-PRINT FOR NAF REVIEW
4-29-19

CURRENT ISSUE STATUS:

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BELFAST, MAINE

SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -4 PHASE 1C

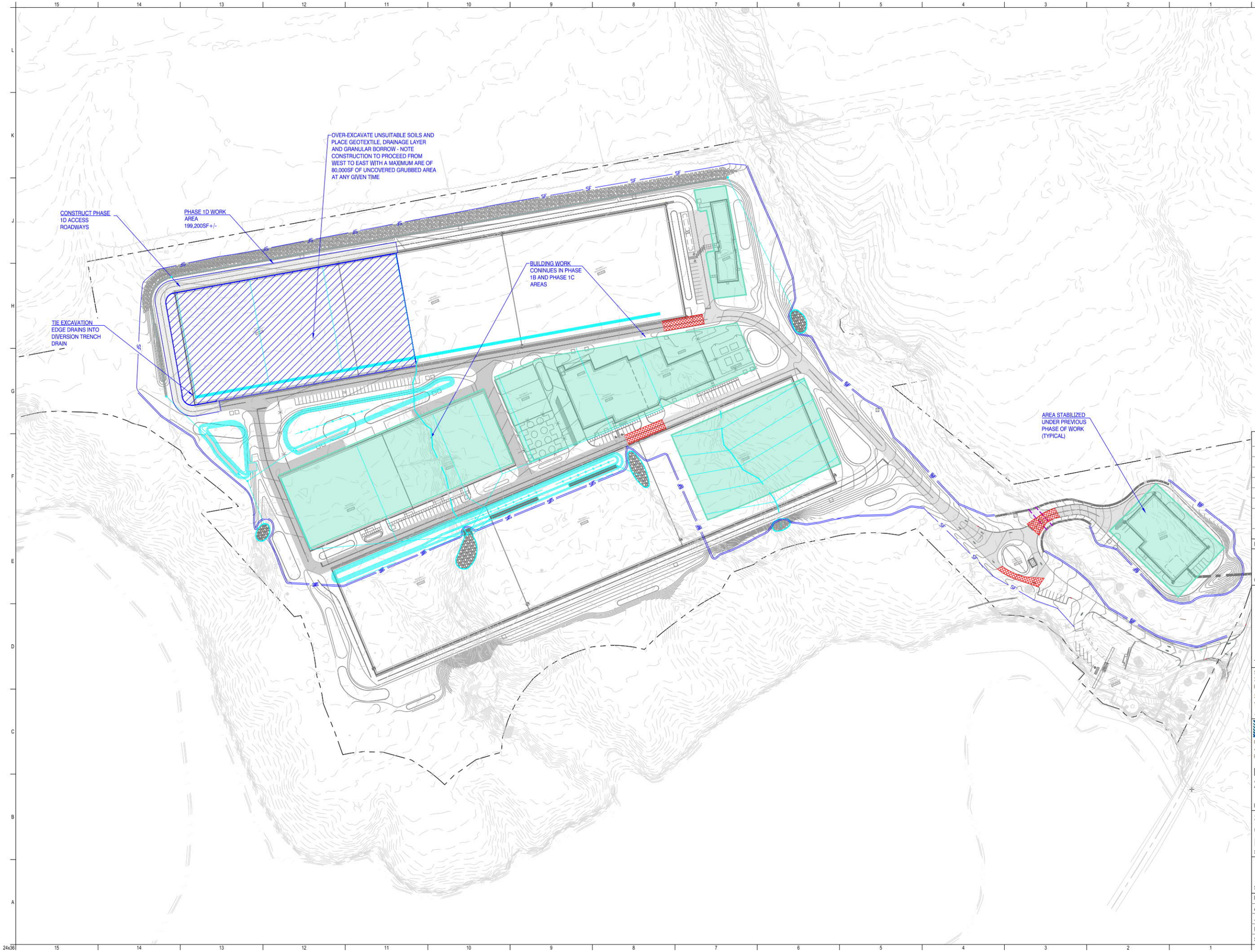
SHEET TITLE:

0 50' 100' 200' 300'

SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		
DRAWN BY:	AJ		
SMRT FILE:	CE113-18076	SHEET No.	CE113

NOT FOR CONSTRUCTION



REV	DESCRIPTION	DATE
2	PER MDEP REVIEW COMMENTS	10-25-19
1	PER MDEP REVIEW COMMENTS	7-18-19
0	ISSUED FOR PERMIT	5-14-19

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5-14-19
CURRENT ISSUE STATUS:

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STATE OF MAINE
ANDREW D. JOHNSTON
NO. 9994
10/25/19
LICENSED
PROFESSIONAL ENGINEER

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NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -5 PHASE 1D

SHEET TITLE:

0 50' 100' 200' 300'

SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		CE114
DRAWN BY:	AJ		
SMRT FILE:	CE114-18076	SHEET No.	

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INSTALL SILT FENCE ALONG DOWNSTREAM SIDE OF NEW FORCE MAIN TRENCH

INSTALL SILT SACKS IN CATCH BASINS ALONG NEW FORCE MAIN ROUTE

INSTALL SILT FENCE ALONG DOWNSTREAM SIDE OF NEW FORCE MAIN TRENCH

CONSTRUCT TEMPORARY STREAM DIVERSION FOR FORCE MAIN CONSTRUCTION - SEE DETAIL G1 SHEET CE-502

CONSTRUCT PHASE 1E ROADWAYS

OVER-EXCAVATE UNSUITABLE SOILS AND PLACE GEOTEXTILE, DRAINAGE LAYER AND GRANULAR BORROW - NOTE CONSTRUCTION TO PROCEED FROM WEST TO EAST WITH A MAXIMUM AREA OF 80,000SF OF UNCOVERED GRUBBED AREA AT ANY GIVEN TIME

AT END OF PHASE 1E RESTORE RIPRPA SLOPE, ADD LOAM, SEED AND STABILIZE SLOPE

PHASE 1E WORK AREA 214,500SF +/-

BUILDING WORK CONTINUES IN PHASE 1B, PHASE 1C AND PHASE 1D AREAS

TIE EXCAVATION EDGE DRAINS INTO DIVERSION TRENCH DRAIN

PHASE 1 PERIMETER EROSION CONTROLS TO BE REMOVED UPON PERMANENT STABILIZATION OF UPSTREAM AREAS

AREA STABILIZED UNDER PREVIOUS PHASE OF WORK (TYPICAL)

PHASE 1 PERIMETER EROSION CONTROLS TO BE REMOVED UPON PERMANENT STABILIZATION OF UPSTREAM AREAS

THIS SECTION OF PHASE 1 PERIMETER EROSION CONTROLS TO REMAIN IN PLACE FOR PHASE 2 CONSTRUCTION

REV	DESCRIPTION	DATE
2	PER MDEP REVIEW COMMENTS	10-25-19
1	PER MDEP REVIEW COMMENTS	7-18-19
0	ISSUED FOR PERMIT	5-14-19

ISSUED FOR PERMIT
5-14-19
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285 NORTHPORT AVENUE
BELFAST, MAINE

SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -6 PHASE 1E
SHEET TITLE:

0 50' 100' 200' 300'
SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		
DRAWN BY:	AJ		
SMRT FILE:	CE115-18076	SHEET No.	CE115

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE
2	PER MDEP REVIEW COMMENTS	10-25-19
1	PER MDEP REVIEW COMMENTS	7-18-19
0	ISSUED FOR PERMIT	5-14-19

ISSUED FOR PERMIT
5-14-19
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BELFAST, MAINE

SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -7
PHASE 2 SITE CLEARING
SHEET TITLE:

0 50' 100' 200' 300'
SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		CE116
DRAWN BY:	AJ		
SMRT FILE:	CE516-18076	SHEET No.	

NOT FOR CONSTRUCTION

24x36

ABANDON PHASE 1 OUTLET - CONNECT NEW DIVERSION DRAIN TO PHASE 2 PLUNGE POOL

PHASE 2 STABILIZED CONSTRUCTION ACCESS

REMOVE PHASE 1 OUTLET PLUNGE POOL - INSTALL NEW BYPASS CULVERT IN DRAINAGEWAY - CONNECT TO EXISTING PHASE 1 OUTLET CULVERT UPSTREAM INV. = 53.0FT

REMOVE PHASE 1 OUTLET PLUNGE POOL - INSTALL NEW BYPASS CULVERT IN DRAINAGEWAY - CONNECT TO EXISTING PHASE 1 BYPASS CULVERT UPSTREAM INV. = 46.0FT

- CONNECT NEW DRAIN TO DIVERSION CULVERT

INSTALL TEMP. OUTLET PLUNGE POOL 18" INV. OUT = 43.0FT

REMOVE PHASE 1 TEMP SEDIMENT BASINS AND INSTALL PERMANENT STORMWATER SYSTEM

ABANDON PHASE 1 OUTLET - CONNECT NEW DIVERSION DRAIN TO PHASE 2 PLUNGE POOL

CONSTRUCT TEMP SEDIMENT POND 4 WITH BENCH DRAIN OUTLETS BOTTOM = 45.0' TOP = 50.0'

INSTALL EXCAVATION EDGE DRAINS AND OUTLET TO PLUNGE POOL INV. OUT = 40.0FT

INSTALL TEMP. OUTLET PLUNGE POOL 18" INV. OUT = 40.0FT

PHASE 2A WORK AREA 220,000SF+/-

- CONNECT NEW DRAIN TO EDGE DRAIN OUTLET

CONSTRUCT PHASE 1B ACCESS ROADWAYS

OVER-EXCAVATE UNSUITABLE SOILS AND PLACE GEOTEXTILE, DRAINAGE LAYER AND GRANULAR BORROW - NOTE CONSTRUCTION TO PROCEED FROM WEST TO EAST WITH A MAXIMUM AREA OF 80,000SF OF UNCOVERED GRUBBED AREA AT ANY GIVEN TIME

REV	DESCRIPTION	DATE
2	PER MDEP REVIEW COMMENTS	10-25-19
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BELFAST, MAINE

SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -8 PHASE 2A

SHEET TITLE:

0 50' 100' 200' 300'

SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		
DRAWN BY:	AJ		
SMRT FILE:	CE117-18076	SHEET No.	CE117

NOT FOR CONSTRUCTION

24x36

PHASE 2B WORK AREA
195,500SF +/-

CONSTRUCTION LAYDOWN AREA TO BE RE-CONFIGURED AND MINIMIZED AS FINAL BUILDING ELEMENTS ARE COMPLETED

REMOVE GRAVEL LAYDOWN AREA AND FINAL GRADE AND LANDSCAPE AREA

REMOVE STABILIZED CONSTRUCTION ACCESS AND PERIMETER EROSION CONTROLS ONCE SITE IS FULLY STABILIZED.

INSTALL PERMANENT RIPRAP SLOPE PROTECTION ON GRADED SLOPE

INSTALL EXCAVATION EDGE DRAINS AND OUTLET TO PLUNGE POOL
INV. OUT = 43.0FT

OVER-EXCAVATE UNSUITABLE SOILS AND PLACE GEOTEXTILE, DRAINAGE LAYER AND GRANULAR BORROW - NOTE CONSTRUCTION TO PROCEED FROM WEST TO EAST WITH A MAXIMUM AREA OF 80,000SF OF UNCOVERED GRUBBED AREA AT ANY GIVEN TIME

AT END OF MAJOR EARTHWORK, AND ONCE THE SITE IS STABILIZED, REMOVE TEMP. SEDIMENT BASIN 4 AND INSTALL PERMANENT STORMWATER SYSTEM

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1	PER MDEP REVIEW COMMENTS	7-18-19
0	ISSUED FOR PERMIT	5-14-19

ISSUED FOR PERMIT
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NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

SOIL EROSION & SEDIMENT CONTROL PHASING PLAN -9
PHASE 2B
SHEET TITLE:

0 50' 100' 200' 300'
SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		
DRAWN BY:	AJ		
SMRT FILE:	CE118-18076	SHEET No.	CE118

NOT FOR CONSTRUCTION

ATTACHMENT B

Temporary Sediment Basin Sizing Calculations

NORDIC AQUAFARMS PROJECT
BELFAST, MAINE
TEMPORARY SEDIMENT BASIN SIZING CALCULATIONS

Introduction

Four temporary sediment basins have been designed to capture and treat runoff from construction areas where native soil materials will be exposed during earthwork activities. In each case, the basins have been sized to operate under the "worst case" scenario as viewed from a soil erosion and sediment control perspective. Site construction activities will be carefully phased to minimize the potential for soil erosion and sediment transport.

The project will require the excavation and removal of a large quantity of unsuitable silt and clay material from beneath the proposed building footprints. Native soils will be excavated from these areas, the subgrade materials will be covered with a geotextile fabric and the excavation will be backfilled with imported granular borrow. Once covered with granular borrow, the area is considered stable from a soil erosion perspective and the pervious nature of the replacement material will significantly reduce surface runoff to downstream areas. Therefore, the most critical period for the sediment basins will be during initial excavation of the native material, when up to 80,000sf is exposed and the remainder of the area is cleared (but not grubbed) in preparation for construction. Each of the basins has been designed for this case. Flocculants will be tested at the site, and used if proven effective in aiding settlement of suspended sediments from runoff in the sediment basins. A summary of the areas draining to each basin and how these will change over time is included in the table on the following page.

Design Summary

The basins are designed to drain via underdrained gravel benches, with overflow risers and to accommodate intermediate storm event flows. An emergency overflow is provided at each structure to pass flows from the most severe storm events. The bench drains are 8ft wide and 125ft long, giving 1,000sf of infiltration area. Assuming an average infiltration rate through the gravel material of 10mins/inch, gives and average infiltration outflow of 0.14cfs for each bench drain.

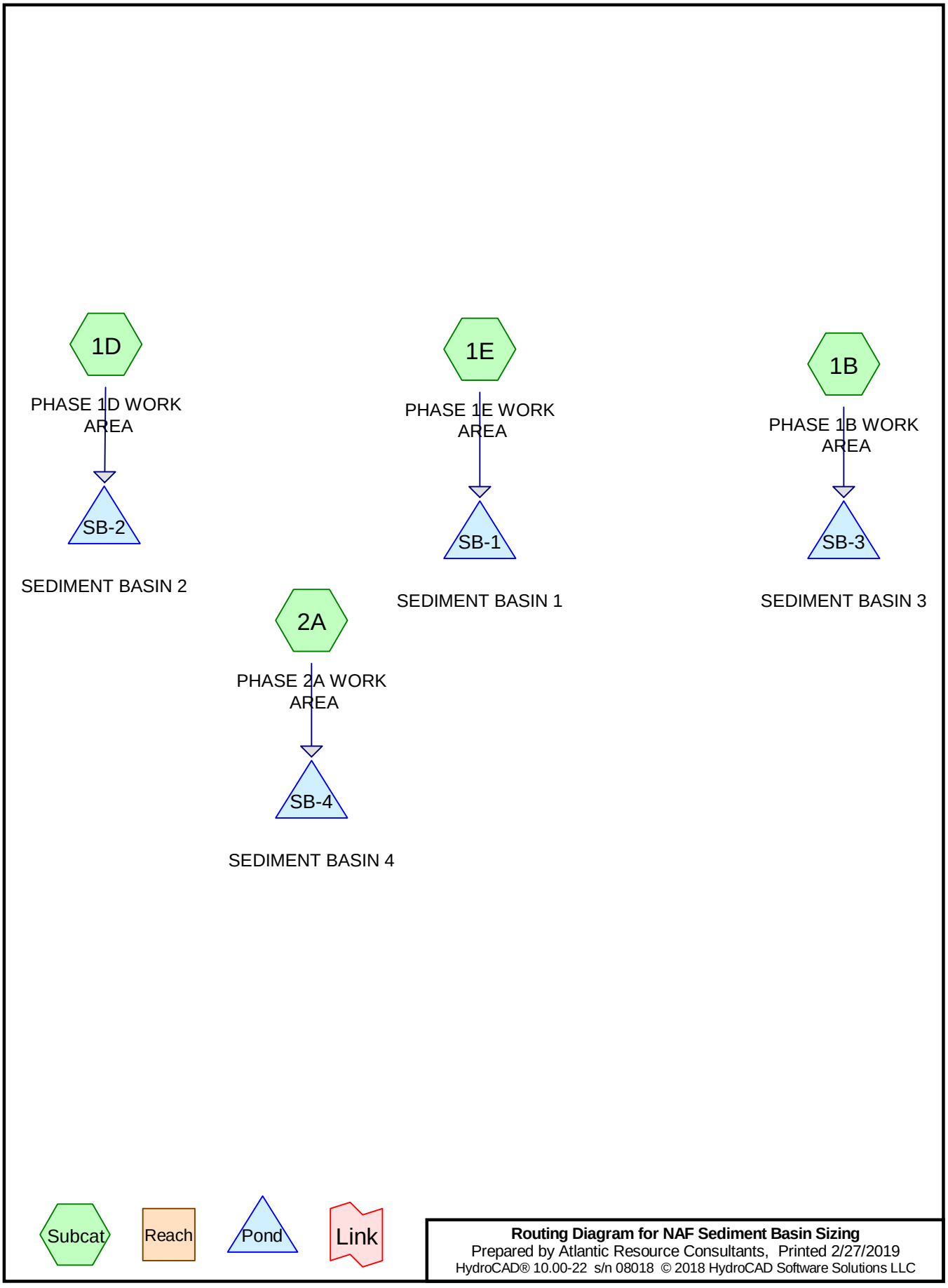
Sediment Basin Numbers 1, 3 and 4 include baffles along the center of each basin between the inlet side and the outlet bench drains. These are necessary to create longer flow paths, and promote increased settling of sediments suspended in the influent to the basins. The layout and details of the temporary sediment basins are included on the Soil Erosion and Sediment Control Detail Sheets in the plan set. The attached HydroCAD model outputs demonstrate that the one-inch storm (90% probability event) passes solely through the gravel bench drain in each case. In addition;

- The 10-year storm event passes through the basins with the bench drains and risers operating only.
- The emergency overflow weirs will operate during larger storm events.
- Output tables showing the permanent pool and potential sediment storage capacity of each basin are included with the HydroCAD results.
- The soil loss summary shows the anticipated volume of sediment discharge to the basins from each working area. The anticipated soil volumes in each case equate to significantly less than six inches over the area of the proposed basins.

Sediment Basin Drainage Area Summary

Basin Number	Drainage Area	Narrative Description
3	1B/1C WORK AREA	Temporary Sediment Basin 3 will be the first to be constructed during Phase 1B of the work. This basin will accept runoff from the earthwork operations during Phase 1B, and Phase 1C. During the initial part of Phase 1B, the excvated area will drain directly into the basin. Diversion BMPs will be used to direct runoff from upstream areas around the main excavation and into the basin for treatment. As the excavation of the building footprint approaches the target elevation of 53 feet, any excess dewatering will be undertaken using sumps and pumping to the basin for treatment. During Phase 1C of the earthwork operations the area directly to the north of the basin will drain directly to the basin. A temporary sump and pump will be required to capture the areas to the east of the subcatchment during the initial disturbance (this area slopes towards the drainage feature at the east of 1C). As the excavation and fill operation progresses to the east, the surface grades will direct runoff towards the south. A diversion BMP will be installed along the downslope side of the roadway to direct surface drainage towards the basin for treatment.
2	1D WORK AREA	Temporary Sediment Basin 2 will be the second to be constructed during Phase 1B of the project, and is intended to provide treatement for areas disturbed during Phase 1D of the earthwork operations. During initial disturbance, the areas to the north of the basin will drain directly to the basin. As the excavated and fill operations proceed, any excess water in the work area will be directed to the basin using sumps and pumping. As the fill operations proceed, grades in the area will be raised such that surface flow can again be directed to the basin for treatment. Diversion BMPs will be placed along the downslope side of the road to assist in directing runoff from the east side of the catchment area.
1	1E WORK AREA	Temporary Sediment Basin 1 will be the third to be constructed during Phase 1B of the project, but is intended to provide treatement for areas disturbed during Phase 1E of the earthwork operations. During initial disturbance, the areas directly to the north of the basin will drain directly to the basin. There will be some areas at the south side of the work area where even the initial grades are too low to allow for surface drainage directly to the basin. During initial disturbance of this area runoff will be directed to a sump located at the low area at the east side of the catchment and pumped to the basin for treatment. As the excavation and fill operations proceed, any excess water in the work area will be directed to the basin using temporary sumps and pumping. As the fill operations proceed, grades in the area will be raised such that surface flow can again be directed to the basin once agian for treatment. Diversion BMPs will be placed along the downslope side of the road to assist in directing runoff from the east side of the catchment area.
4	2 A/B WORK AREA	Temporary Sediment Basin 4 will be constructed during Phase 2A of the project, and will provide treatment from disturbed areas in the Phase 2A and Phase 2B work areas during major earthwork operations. During initial disturbance, the areas directly to the north of the basin will drain directly to the basin. There will be some areas at the west side of the work area where even the initial grades are too low to allow for surface drainage directly to the basin (the areas around the drainage feature towrds the west side of the Phase 2A work area). During initial disturbance of this area runoof will be directed to a sump located at the low area at the east side of the catchment and pumped to the basin for treatment. As the excavation and fill operations proceed, any excess water in the work area will be directed to the basin using temporary sumps and pumping. As the fill operations proceed, grades in the area will be raised such that surface flow can be directed to the basin for treatment. Diversion BMPs will be placed along the downslope side of the road to assist in directing runoff from the west side of the catchment area. During Phase 2B the majority of the disturbed area will drain directly to the basin. As the excavation of the building footprint approaches the target elevation of 43 feet, any excess dewatering will be undertaken using sumps and pumping to the basin for treatment. As the fill operations continue, grades will be raised allowing excess surface water to drain to the basin once again without pumping.

HydroCAD Model Output


1D
PHASE 1D WORK AREA
SB-2
SEDIMENT BASIN 2
1E
PHASE 1E WORK AREA
SB-1
SEDIMENT BASIN 1
1B
PHASE 1B WORK AREA
SB-3
SEDIMENT BASIN 3
2A
PHASE 2A WORK AREA
SB-4
SEDIMENT BASIN 4
Subcat
Reach
Pond
Link
Routing Diagram for NAF Sediment Basin Sizing
Prepared by Atlantic Resource Consultants, Printed 2/27/2019
HydroCAD® 10.00-22 s/n 08018 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1B: PHASE 1B WORK AREA Runoff Area=400,619 sf 0.00% Impervious Runoff Depth=0.17"
Tc=10.0 min CN=85 Runoff=1.18 cfs 0.133 af

Subcatchment 1D: PHASE 1D WORK AREA Runoff Area=175,700 sf 0.00% Impervious Runoff Depth=0.25"
Tc=10.0 min CN=88 Runoff=0.91 cfs 0.085 af

Subcatchment 1E: PHASE 1E WORK AREA Runoff Area=195,500 sf 0.00% Impervious Runoff Depth=0.25"
Tc=10.0 min CN=88 Runoff=1.02 cfs 0.095 af

Subcatchment 2A: PHASE 2A WORK AREA Runoff Area=220,000 sf 0.00% Impervious Runoff Depth=0.22"
Tc=10.0 min CN=87 Runoff=0.97 cfs 0.094 af

Pond SB-1: SEDIMENT BASIN 1 Peak Elev=62.07' Storage=53,626 cf Inflow=1.02 cfs 0.095 af
Outflow=0.14 cfs 0.095 af

Pond SB-2: SEDIMENT BASIN 2 Peak Elev=61.64' Storage=24,789 cf Inflow=0.91 cfs 0.085 af
Primary=0.14 cfs 0.085 af Secondary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.085 af

Pond SB-3: SEDIMENT BASIN 3 Peak Elev=57.07' Storage=45,251 cf Inflow=1.18 cfs 0.133 af
Primary=0.28 cfs 0.133 af Secondary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.133 af

Pond SB-4: SEDIMENT BASIN 4 Peak Elev=48.09' Storage=38,577 cf Inflow=0.97 cfs 0.094 af
Primary=0.14 cfs 0.094 af Secondary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.094 af

Total Runoff Area = 22.769 ac Runoff Volume = 0.407 af Average Runoff Depth = 0.21"
100.00% Pervious = 22.769 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1B: PHASE 1B WORK AREA

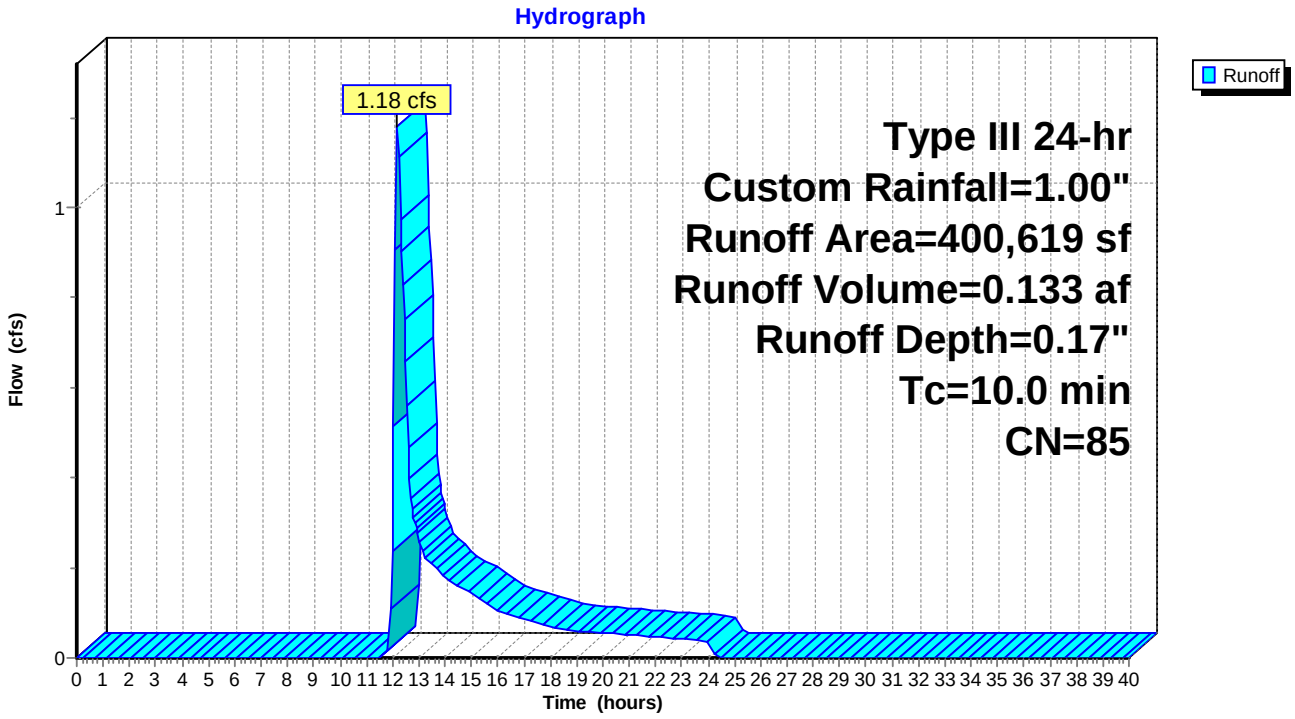
Runoff = 1.18 cfs @ 12.18 hrs, Volume= 0.133 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.00"

Area (sf)	CN	Description
80,000	94	Fallow, bare soil, HSG D
320,619	83	Brush, Poor, HSG D
400,619	85	Weighted Average
400,619		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1B: PHASE 1B WORK AREA



Summary for Subcatchment 1D: PHASE 1D WORK AREA

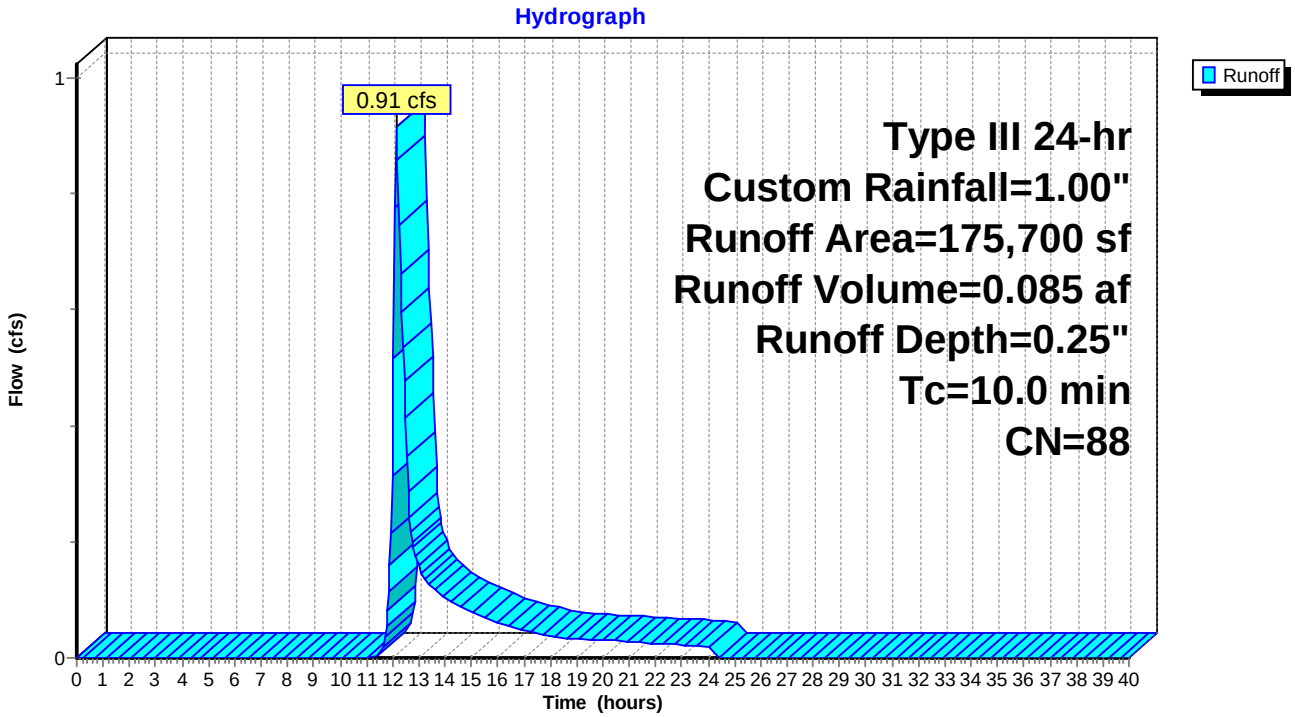
Runoff = 0.91 cfs @ 12.16 hrs, Volume= 0.085 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.00"

Area (sf)	CN	Description
80,000	94	Fallow, bare soil, HSG D
95,700	83	Brush, Poor, HSG D
175,700	88	Weighted Average
175,700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1D: PHASE 1D WORK AREA



Summary for Subcatchment 1E: PHASE 1E WORK AREA

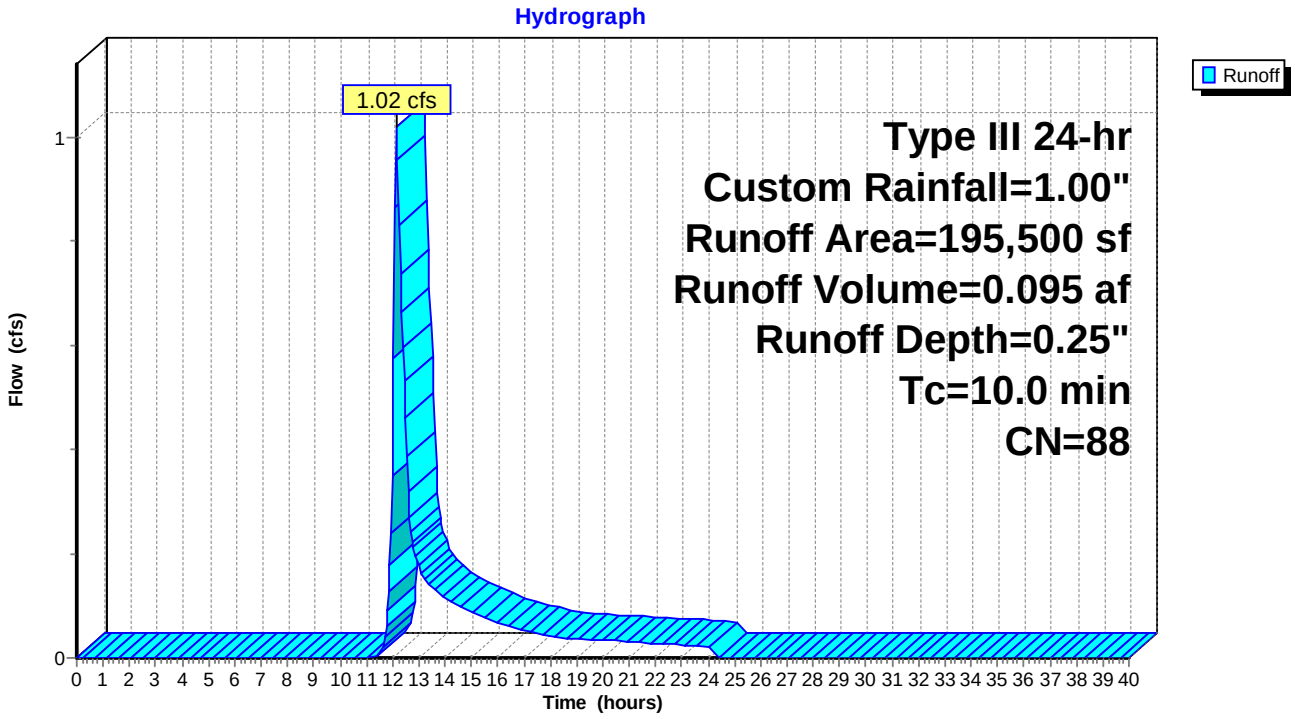
Runoff = 1.02 cfs @ 12.16 hrs, Volume= 0.095 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.00"

Area (sf)	CN	Description
80,000	94	Fallow, bare soil, HSG D
115,500	83	Brush, Poor, HSG D
195,500	88	Weighted Average
195,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1E: PHASE 1E WORK AREA



Summary for Subcatchment 2A: PHASE 2A WORK AREA

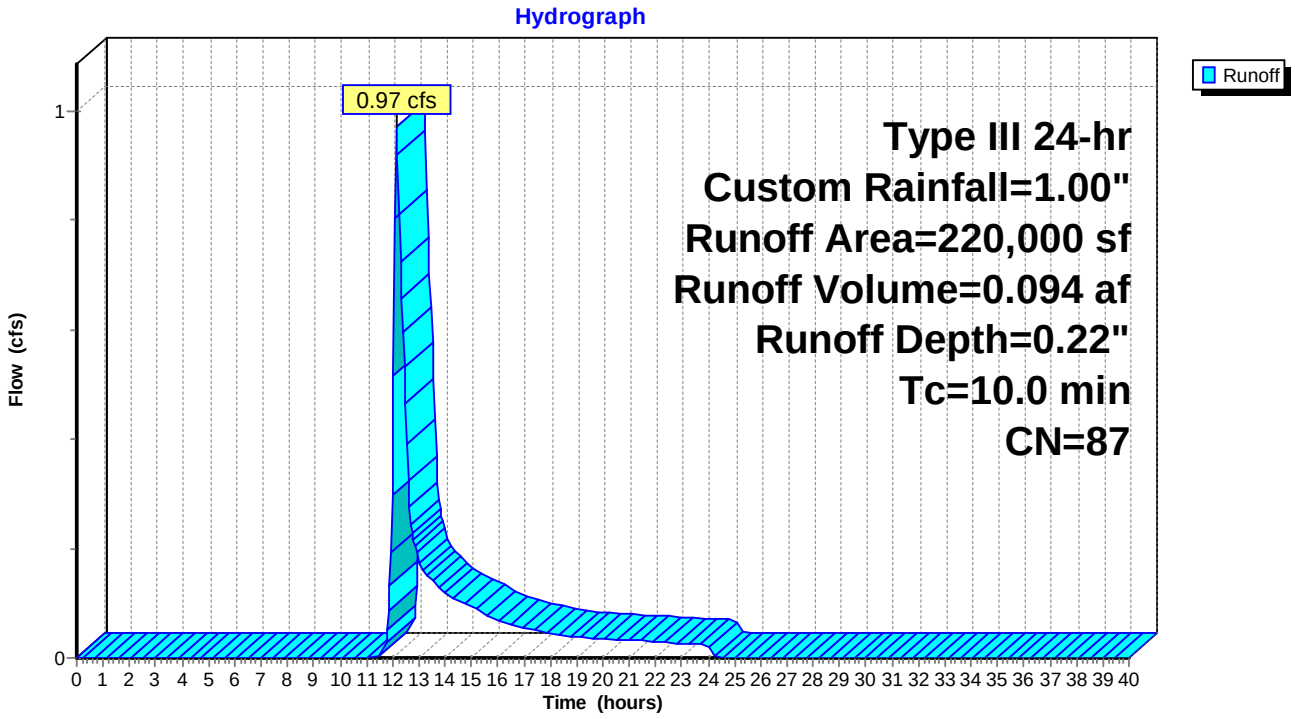
Runoff = 0.97 cfs @ 12.16 hrs, Volume= 0.094 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr Custom Rainfall=1.00"

Area (sf)	CN	Description
80,000	94	Fallow, bare soil, HSG D
140,000	83	Brush, Poor, HSG D
220,000	87	Weighted Average
220,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 2A: PHASE 2A WORK AREA



Summary for Pond SB-1: SEDIMENT BASIN 1

Inflow Area = 4.488 ac, 0.00% Impervious, Inflow Depth = 0.25" for Custom event
Inflow = 1.02 cfs @ 12.16 hrs, Volume= 0.095 af
Outflow = 0.14 cfs @ 12.40 hrs, Volume= 0.095 af, Atten= 86%, Lag= 14.4 min
Primary = 0.14 cfs @ 12.40 hrs, Volume= 0.095 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 21,234 sf Storage= 52,122 cf
Peak Elev= 62.07' @ 13.40 hrs Surf.Area= 21,366 sf Storage= 53,626 cf (1,504 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 143.4 min (1,024.2 - 880.8)

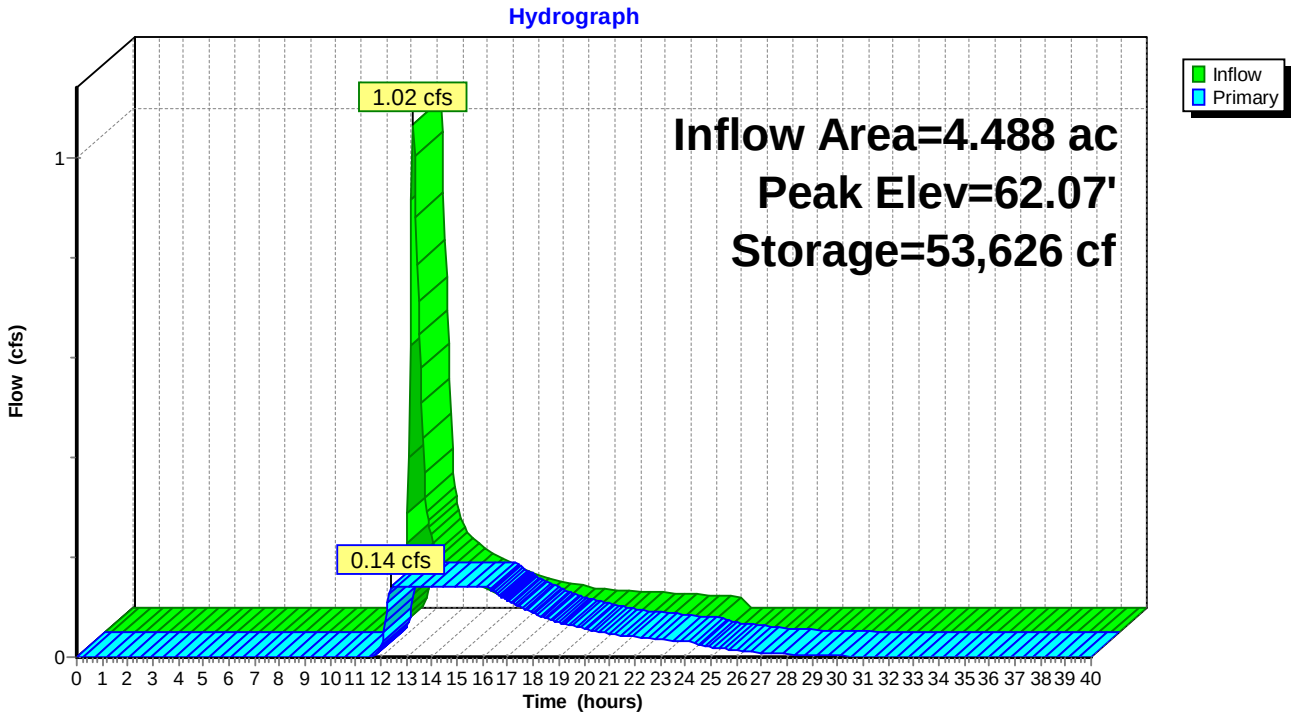
Volume	Invert	Avail.Storage	Storage Description
#1	59.00'	98,359 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	14,450	0	0
60.00	16,235	15,343	15,343
61.00	18,045	17,140	32,483
62.00	21,234	19,640	52,122
63.00	23,110	22,172	74,294
64.00	25,020	24,065	98,359

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.00'	**125.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Device 4	62.00'	**0.14 cfs Exfiltration when above 62.00'**
#3	Device 4	62.67'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	58.00'	**24.0" Round Culvert** L= 220.0' Ke= 0.500 Inlet / Outlet Invert= 58.00' / 57.00' S= 0.0045 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#5	Device 4	63.05'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 12.40 hrs HW=62.05' (Free Discharge)
- **4=Culvert** (Passes 0.14 cfs of 22.49 cfs potential flow)
  - **2=Exfiltration** (Exfiltration Controls 0.14 cfs)
    - **1=Broad-Crested Rectangular Weir** (Passes 0.14 cfs of 3.93 cfs potential flow)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
  - **5=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-1: SEDIMENT BASIN 1



Summary for Pond SB-2: SEDIMENT BASIN 2

Inflow Area = 4.034 ac, 0.00% Impervious, Inflow Depth = 0.25" for Custom event
Inflow = 0.91 cfs @ 12.16 hrs, Volume= 0.085 af
Outflow = 0.14 cfs @ 12.15 hrs, Volume= 0.085 af, Atten= 85%, Lag= 0.0 min
Primary = 0.14 cfs @ 12.15 hrs, Volume= 0.085 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Starting Elev= 61.50' Surf.Area= 8,610 sf Storage= 23,563 cf
Peak Elev= 61.64' @ 13.13 hrs Surf.Area= 8,891 sf Storage= 24,789 cf (1,226 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 88.7 min (969.5 - 880.8)

Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	49,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

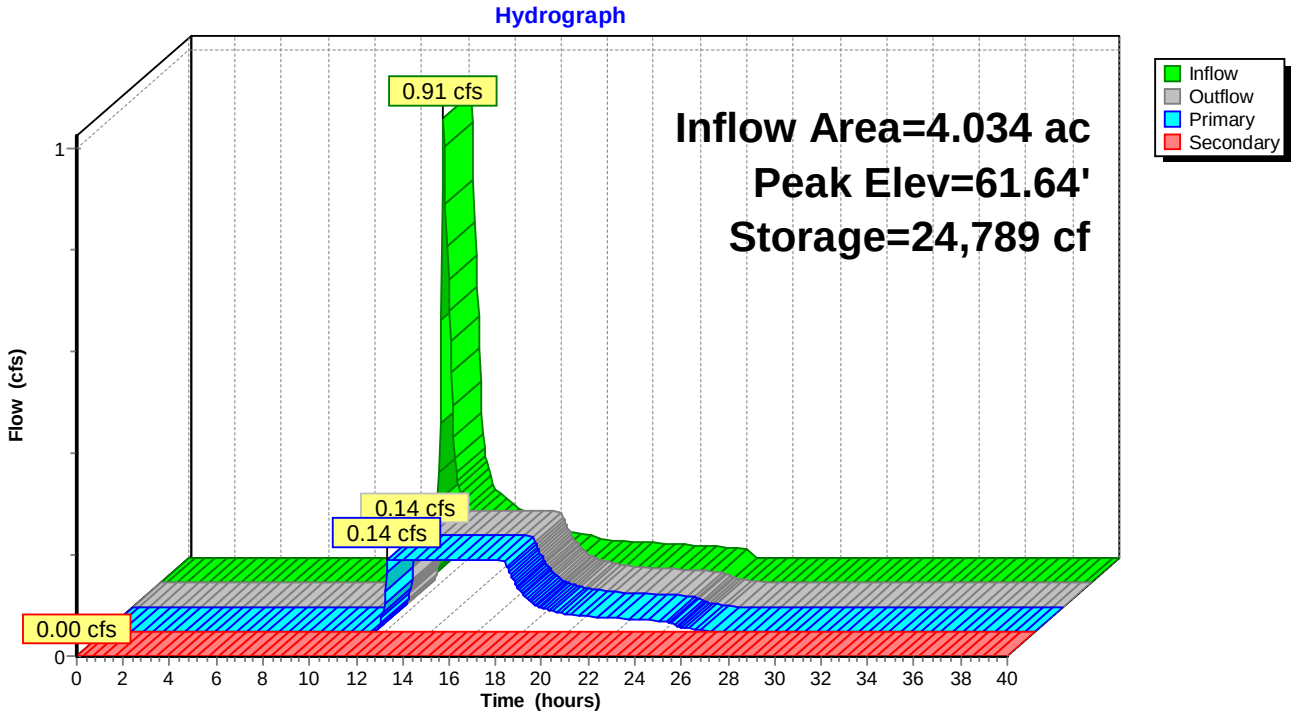
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	5,440	0	0
59.00	6,132	5,786	5,786
60.00	6,855	6,494	12,280
61.00	7,605	7,230	19,510
62.00	9,614	8,610	28,119
63.00	10,437	10,026	38,145
64.00	11,281	10,859	49,004

Device	Routing	Invert	Outlet Devices
#1	Device 5	61.50'	**100.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Device 3	62.00'	**10.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	59.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 59.00' / 58.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#4	Secondary	63.00'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 3	61.50'	**0.14 cfs Exfiltration when above 61.50'**

Primary OutFlow Max=0.14 cfs @ 12.15 hrs HW=61.55' (Free Discharge)
└**3=Culvert** (Passes 0.14 cfs of 4.92 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)
└**5=Exfiltration** (Exfiltration Controls 0.14 cfs)
└**1=Broad-Crested Rectangular Weir** (Passes 0.14 cfs of 2.73 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=61.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SB-2: SEDIMENT BASIN 2



Summary for Pond SB-3: SEDIMENT BASIN 3

Inflow Area = 9.197 ac, 0.00% Impervious, Inflow Depth = 0.17" for Custom event
Inflow = 1.18 cfs @ 12.18 hrs, Volume= 0.133 af
Outflow = 0.28 cfs @ 12.40 hrs, Volume= 0.133 af, Atten= 76%, Lag= 13.5 min
Primary = 0.28 cfs @ 12.40 hrs, Volume= 0.133 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Starting Elev= 57.00' Surf.Area= 21,708 sf Storage= 43,774 cf
Peak Elev= 57.07' @ 12.93 hrs Surf.Area= 21,919 sf Storage= 45,251 cf (1,477 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 70.0 min (973.9 - 904.0)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	93,433 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

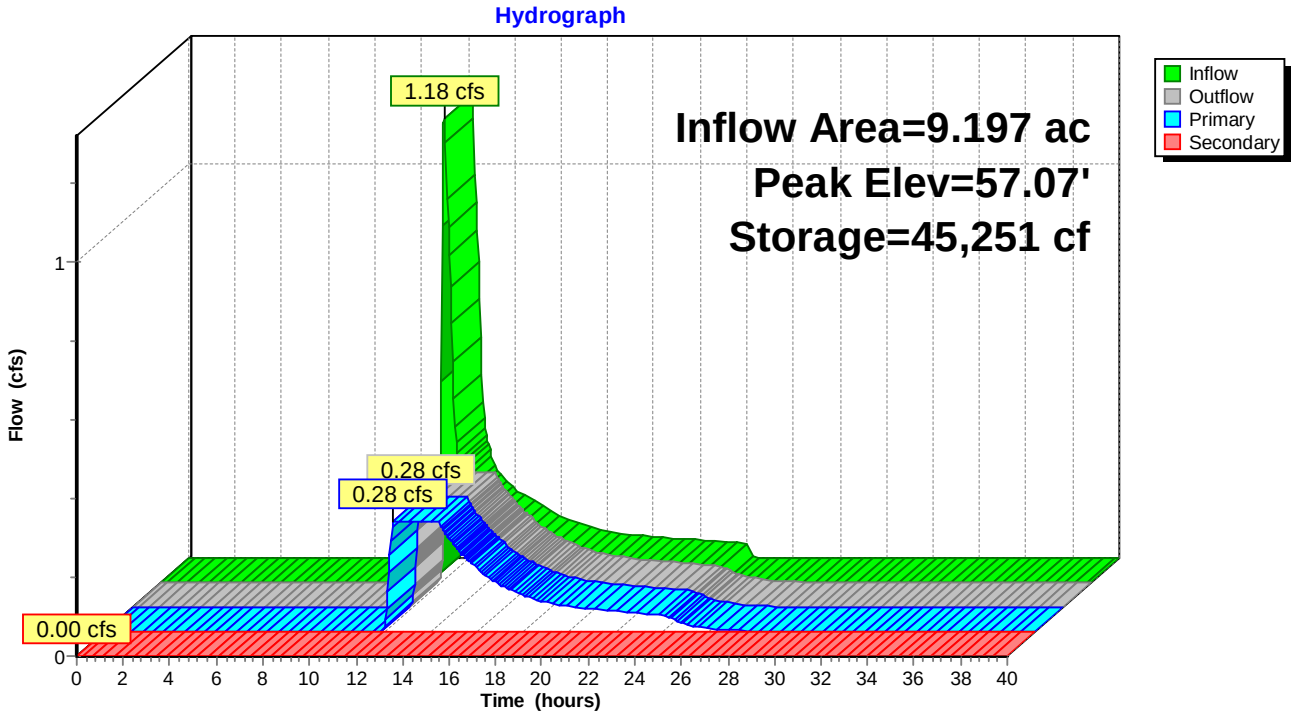
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	9,552	0	0
55.00	12,557	11,055	11,055
56.00	15,587	14,072	25,127
57.00	21,708	18,648	43,774
58.00	24,827	23,268	67,042
59.00	27,955	26,391	93,433

Device	Routing	Invert	Outlet Devices
#1	Device 2	57.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Device 4	57.00'	**0.28 cfs Exfiltration when above 57.00'**
#3	Device 4	57.50'	**12.0" Horiz. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#4	Primary	54.50'	**12.0" Round Culvert X 2.00** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 54.50' / 54.00' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#5	Secondary	58.15'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.28 cfs @ 12.40 hrs HW=57.05' (Free Discharge)
└**4=Culvert** (Passes 0.28 cfs of 10.25 cfs potential flow)
  └**2=Exfiltration** (Exfiltration Controls 0.28 cfs)
    └**1=Broad-Crested Rectangular Weir** (Passes 0.28 cfs of 1.51 cfs potential flow)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SB-3: SEDIMENT BASIN 3



Summary for Pond SB-4: SEDIMENT BASIN 4

Inflow Area = 5.051 ac, 0.00% Impervious, Inflow Depth = 0.22" for Custom event
Inflow = 0.97 cfs @ 12.16 hrs, Volume= 0.094 af
Outflow = 0.14 cfs @ 12.30 hrs, Volume= 0.094 af, Atten= 86%, Lag= 8.1 min
Primary = 0.14 cfs @ 12.30 hrs, Volume= 0.094 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Starting Elev= 48.00' Surf.Area= 15,504 sf Storage= 37,176 cf
Peak Elev= 48.09' @ 13.49 hrs Surf.Area= 15,653 sf Storage= 38,577 cf (1,401 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 121.5 min (1,009.7 - 888.2)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	71,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

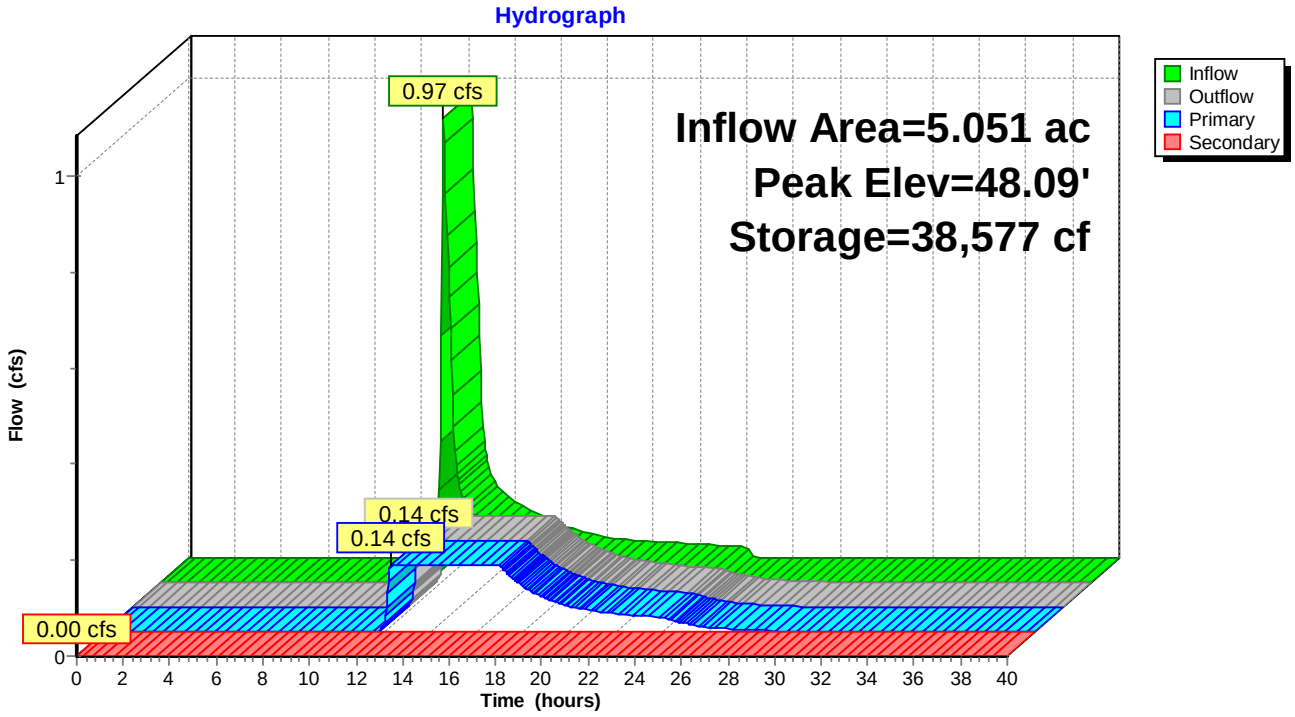
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	9,398	0	0
46.00	11,011	10,205	10,205
47.00	13,714	12,363	22,567
48.00	15,504	14,609	37,176
49.00	17,163	16,334	53,510
50.00	18,889	18,026	71,536

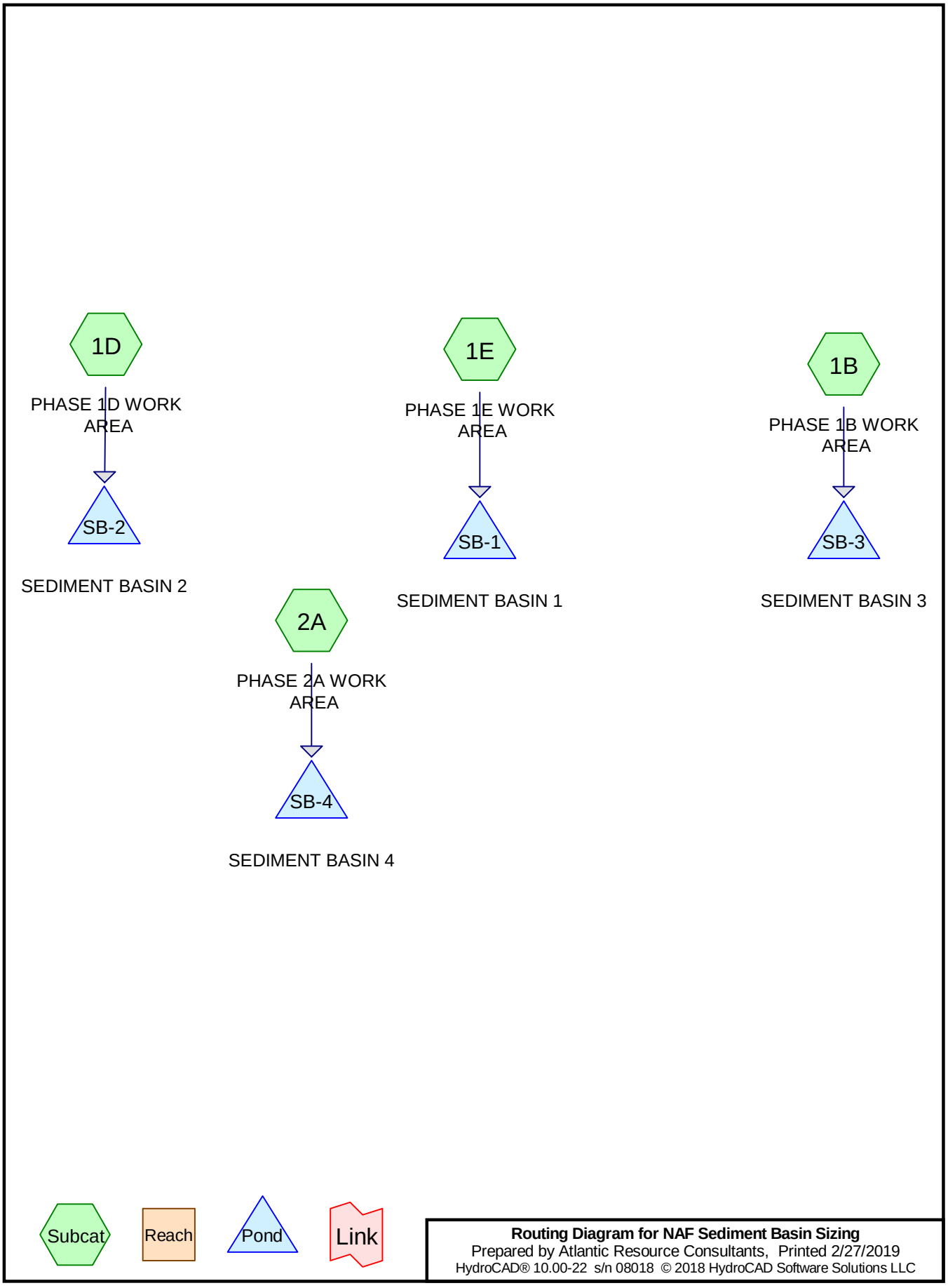
Device	Routing	Invert	Outlet Devices
#1	Device 2	48.00'	**125.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Device 4	48.00'	**0.14 cfs Exfiltration when above 48.00'**
#3	Device 4	48.50'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Primary	45.00'	**12.0" Round Culvert** L= 170.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 43.00' S= 0.0118 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#5	Secondary	49.10'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.14 cfs @ 12.30 hrs HW=48.05' (Free Discharge)
└**4=Culvert** (Passes 0.14 cfs of 5.16 cfs potential flow)
  └**2=Exfiltration** (Exfiltration Controls 0.14 cfs)
    └**1=Broad-Crested Rectangular Weir** (Passes 0.14 cfs of 3.97 cfs potential flow)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SB-4: SEDIMENT BASIN 4




1D
PHASE 1D WORK AREA
SB-2
SEDIMENT BASIN 2
1E
PHASE 1E WORK AREA
SB-1
SEDIMENT BASIN 1
1B
PHASE 1B WORK AREA
SB-3
SEDIMENT BASIN 3
2A
PHASE 2A WORK AREA
SB-4
SEDIMENT BASIN 4
Subcat
Reach
Pond
Link
Routing Diagram for NAF Sediment Basin Sizing
Prepared by Atlantic Resource Consultants, Printed 2/27/2019
HydroCAD® 10.00-22 s/n 08018 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1B: PHASE 1B WORK AREA Runoff Area=400,619 sf 0.00% Impervious Runoff Depth=2.64"
Tc=10.0 min CN=85 Runoff=24.47 cfs 2.021 af

Subcatchment 1D: PHASE 1D WORK AREA Runoff Area=175,700 sf 0.00% Impervious Runoff Depth=2.92"
Tc=10.0 min CN=88 Runoff=11.74 cfs 0.980 af

Subcatchment 1E: PHASE 1E WORK AREA Runoff Area=195,500 sf 0.00% Impervious Runoff Depth=2.92"
Tc=10.0 min CN=88 Runoff=13.07 cfs 1.090 af

Subcatchment 2A: PHASE 2A WORK AREA Runoff Area=220,000 sf 0.00% Impervious Runoff Depth=2.82"
Tc=10.0 min CN=87 Runoff=14.29 cfs 1.187 af

Pond SB-1: SEDIMENT BASIN 1 Peak Elev=63.06' Storage=75,726 cf Inflow=13.07 cfs 1.090 af
Outflow=2.61 cfs 0.925 af

Pond SB-2: SEDIMENT BASIN 2 Peak Elev=62.88' Storage=36,944 cf Inflow=11.74 cfs 0.980 af
Primary=5.08 cfs 0.980 af Secondary=0.00 cfs 0.000 af Outflow=5.08 cfs 0.980 af

Pond SB-3: SEDIMENT BASIN 3 Peak Elev=58.13' Storage=70,321 cf Inflow=24.47 cfs 2.021 af
Primary=12.29 cfs 2.021 af Secondary=0.00 cfs 0.000 af Outflow=12.29 cfs 2.021 af

Pond SB-4: SEDIMENT BASIN 4 Peak Elev=49.12' Storage=55,575 cf Inflow=14.29 cfs 1.187 af
Primary=5.80 cfs 1.177 af Secondary=0.21 cfs 0.003 af Outflow=6.01 cfs 1.180 af

Total Runoff Area = 22.769 ac Runoff Volume = 5.279 af Average Runoff Depth = 2.78"
100.00% Pervious = 22.769 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1B: PHASE 1B WORK AREA

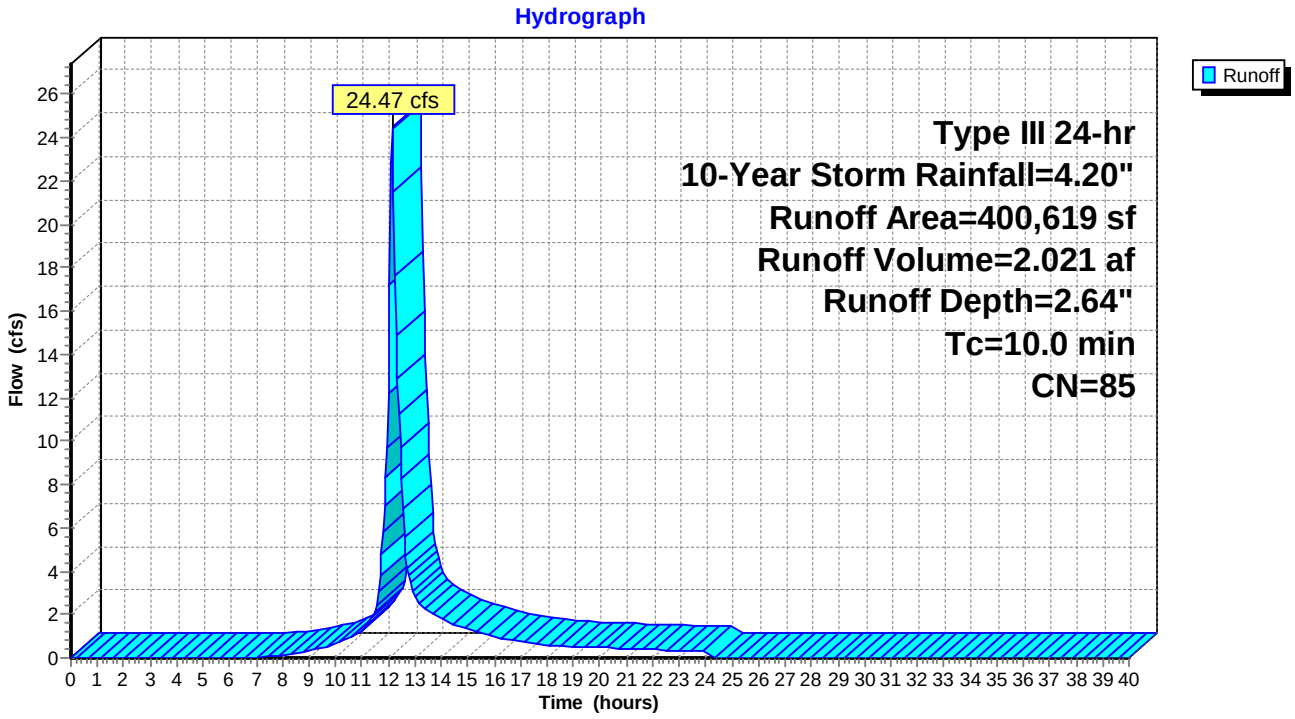
Runoff = 24.47 cfs @ 12.14 hrs, Volume= 2.021 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.20"

Area (sf)	CN	Description
80,000	94	Fallow, bare soil, HSG D
320,619	83	Brush, Poor, HSG D
400,619	85	Weighted Average
400,619		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1B: PHASE 1B WORK AREA



Summary for Subcatchment 1D: PHASE 1D WORK AREA

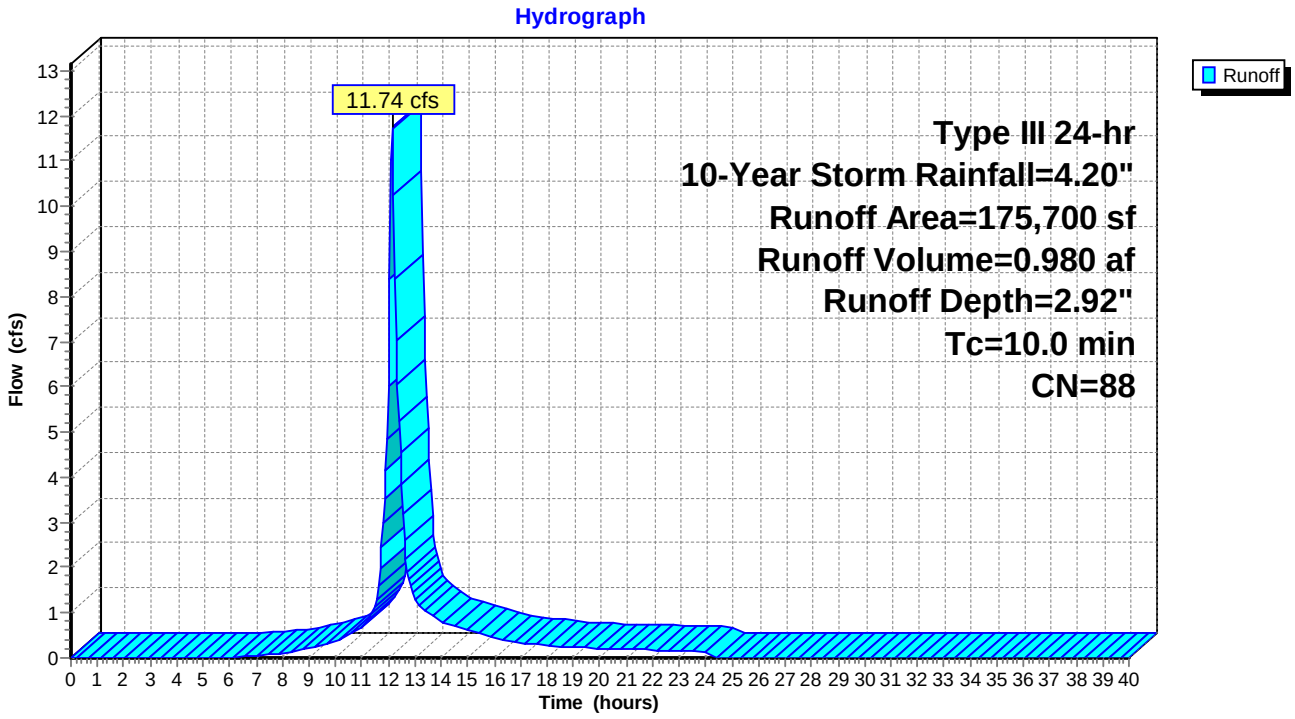
Runoff = 11.74 cfs @ 12.14 hrs, Volume= 0.980 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.20"

Area (sf)	CN	Description
80,000	94	Fallow, bare soil, HSG D
95,700	83	Brush, Poor, HSG D
175,700	88	Weighted Average
175,700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1D: PHASE 1D WORK AREA



Summary for Subcatchment 1E: PHASE 1E WORK AREA

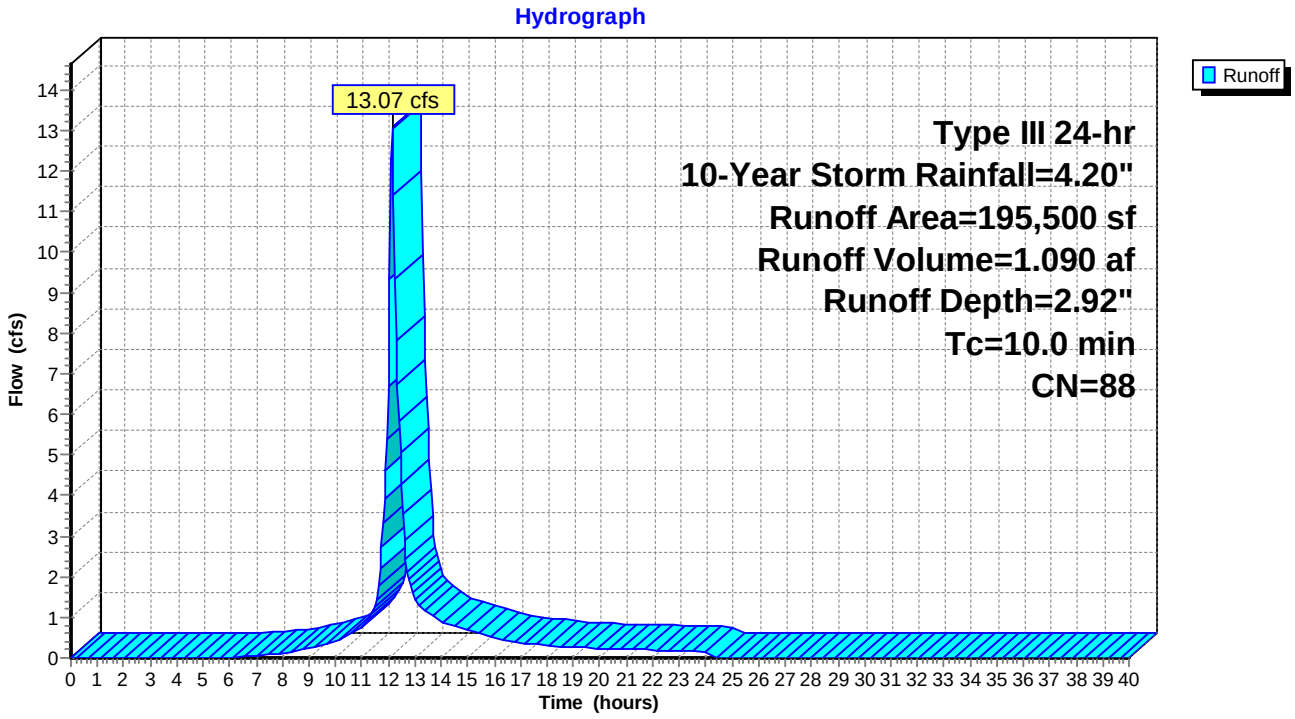
Runoff = 13.07 cfs @ 12.14 hrs, Volume= 1.090 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.20"

Area (sf)	CN	Description
80,000	94	Fallow, bare soil, HSG D
115,500	83	Brush, Poor, HSG D
195,500	88	Weighted Average
195,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1E: PHASE 1E WORK AREA



Summary for Subcatchment 2A: PHASE 2A WORK AREA

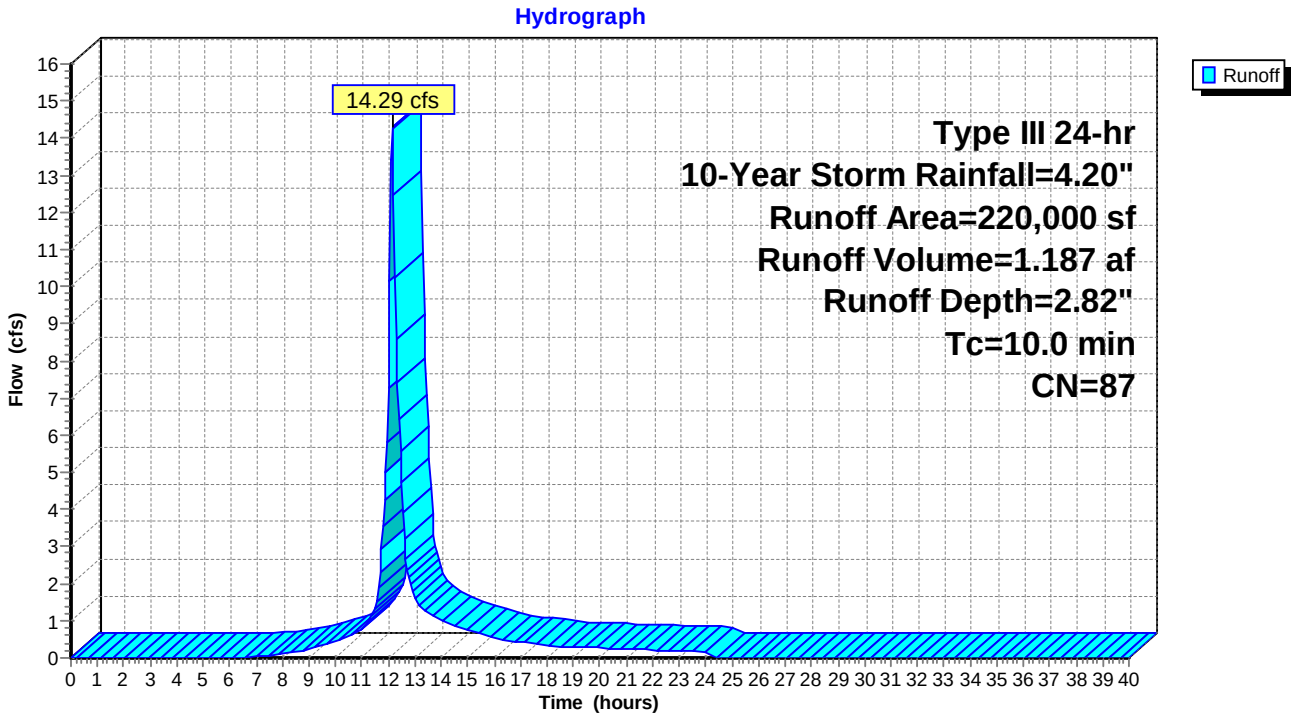
Runoff = 14.29 cfs @ 12.14 hrs, Volume= 1.187 af, Depth= 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.20"

Area (sf)	CN	Description
80,000	94	Fallow, bare soil, HSG D
140,000	83	Brush, Poor, HSG D
220,000	87	Weighted Average
220,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 2A: PHASE 2A WORK AREA



Summary for Pond SB-1: SEDIMENT BASIN 1

Inflow Area = 4.488 ac, 0.00% Impervious, Inflow Depth = 2.92" for 10-Year Storm event
Inflow = 13.07 cfs @ 12.14 hrs, Volume= 1.090 af
Outflow = 2.61 cfs @ 12.63 hrs, Volume= 0.925 af, Atten= 80%, Lag= 29.4 min
Primary = 2.61 cfs @ 12.63 hrs, Volume= 0.925 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Starting Elev= 62.00' Surf.Area= 21,234 sf Storage= 52,122 cf
Peak Elev= 63.06' @ 12.63 hrs Surf.Area= 23,228 sf Storage= 75,726 cf (23,604 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 308.7 min (1,116.7 - 808.0)

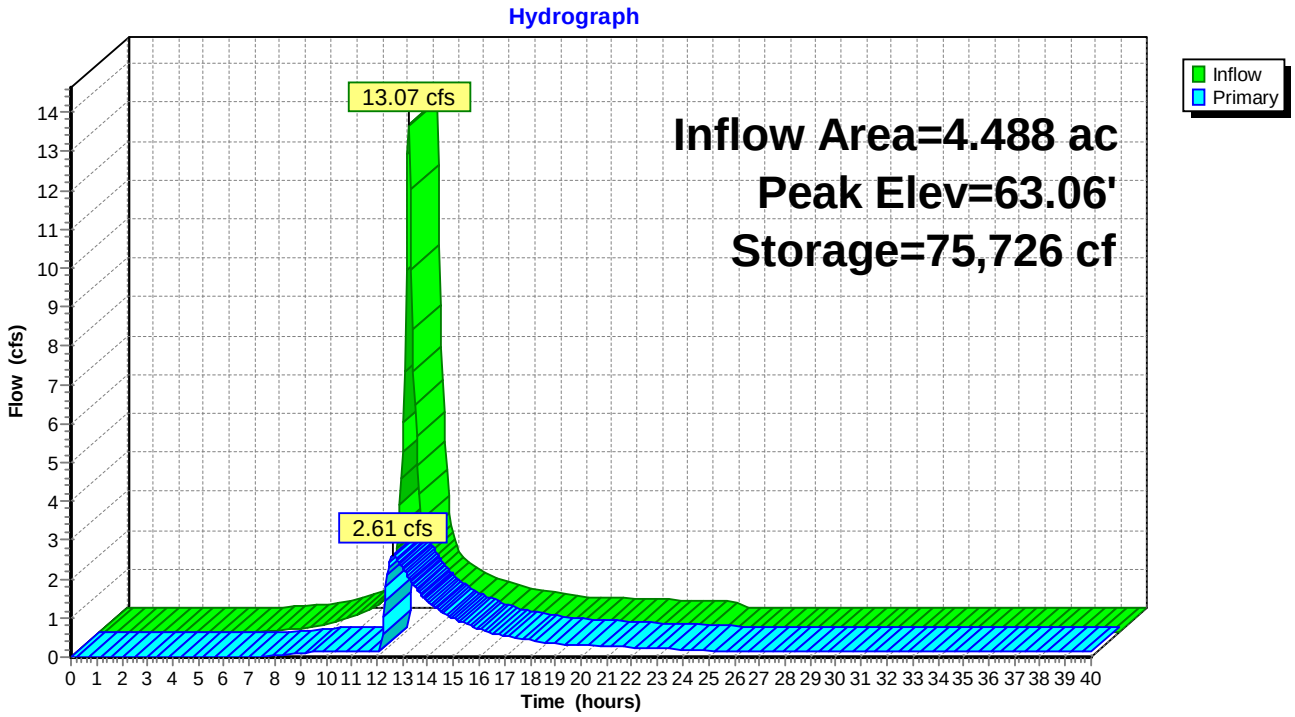
Volume	Invert	Avail.Storage	Storage Description
#1	59.00'	98,359 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	14,450	0	0
60.00	16,235	15,343	15,343
61.00	18,045	17,140	32,483
62.00	21,234	19,640	52,122
63.00	23,110	22,172	74,294
64.00	25,020	24,065	98,359

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.00'	**125.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Device 4	62.00'	**0.14 cfs Exfiltration when above 62.00'**
#3	Device 4	62.67'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	58.00'	**24.0" Round Culvert** L= 220.0' Ke= 0.500 Inlet / Outlet Invert= 58.00' / 57.00' S= 0.0045 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#5	Device 4	63.05'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.56 cfs @ 12.63 hrs HW=63.06' (Free Discharge)
- **4=Culvert** (Passes 2.56 cfs of 25.94 cfs potential flow)
  - **2=Exfiltration** (Exfiltration Controls 0.14 cfs)
    - **1=Broad-Crested Rectangular Weir** (Passes 0.14 cfs of 365.31 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 2.37 cfs @ 3.01 fps)
  - **5=Orifice/Grate** (Weir Controls 0.05 cfs @ 0.35 fps)

Pond SB-1: SEDIMENT BASIN 1



Summary for Pond SB-2: SEDIMENT BASIN 2

Inflow Area = 4.034 ac, 0.00% Impervious, Inflow Depth = 2.92" for 10-Year Storm event
Inflow = 11.74 cfs @ 12.14 hrs, Volume= 0.980 af
Outflow = 5.08 cfs @ 12.41 hrs, Volume= 0.980 af, Atten= 57%, Lag= 16.4 min
Primary = 5.08 cfs @ 12.41 hrs, Volume= 0.980 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Starting Elev= 61.50' Surf.Area= 8,610 sf Storage= 23,563 cf
Peak Elev= 62.88' @ 12.41 hrs Surf.Area= 10,342 sf Storage= 36,944 cf (13,381 cf above start)

Plug-Flow detention time= 499.1 min calculated for 0.439 af (45% of inflow)
Center-of-Mass det. time= 135.0 min (943.0 - 808.0)

Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	49,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

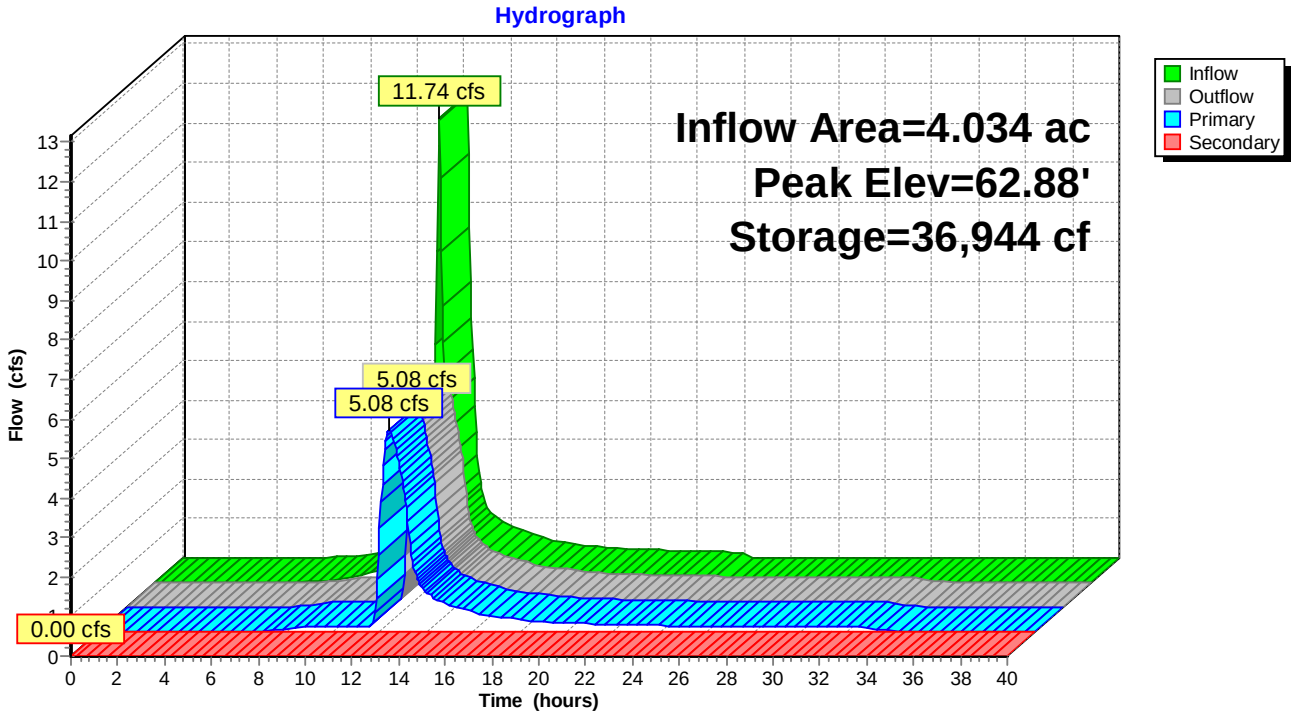
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	5,440	0	0
59.00	6,132	5,786	5,786
60.00	6,855	6,494	12,280
61.00	7,605	7,230	19,510
62.00	9,614	8,610	28,119
63.00	10,437	10,026	38,145
64.00	11,281	10,859	49,004

Device	Routing	Invert	Outlet Devices
#1	Device 5	61.50'	**100.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Device 3	62.00'	**10.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	59.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 59.00' / 58.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#4	Secondary	63.00'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 3	61.50'	**0.14 cfs Exfiltration when above 61.50'**

Primary OutFlow Max=5.08 cfs @ 12.41 hrs HW=62.88' (Free Discharge)
└**3=Culvert** (Passes 5.08 cfs of 6.08 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 4.94 cfs @ 4.52 fps)
└**5=Exfiltration** (Exfiltration Controls 0.14 cfs)
└**1=Broad-Crested Rectangular Weir** (Passes 0.14 cfs of 449.61 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=61.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SB-2: SEDIMENT BASIN 2



Summary for Pond SB-3: SEDIMENT BASIN 3

Inflow Area = 9.197 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10-Year Storm event
Inflow = 24.47 cfs @ 12.14 hrs, Volume= 2.021 af
Outflow = 12.29 cfs @ 12.37 hrs, Volume= 2.021 af, Atten= 50%, Lag= 13.6 min
Primary = 12.29 cfs @ 12.37 hrs, Volume= 2.021 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Starting Elev= 57.00' Surf.Area= 21,708 sf Storage= 43,774 cf
Peak Elev= 58.13' @ 12.37 hrs Surf.Area= 25,237 sf Storage= 70,321 cf (26,547 cf above start)

Plug-Flow detention time= 507.4 min calculated for 1.016 af (50% of inflow)
Center-of-Mass det. time= 161.1 min (979.3 - 818.2)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	93,433 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

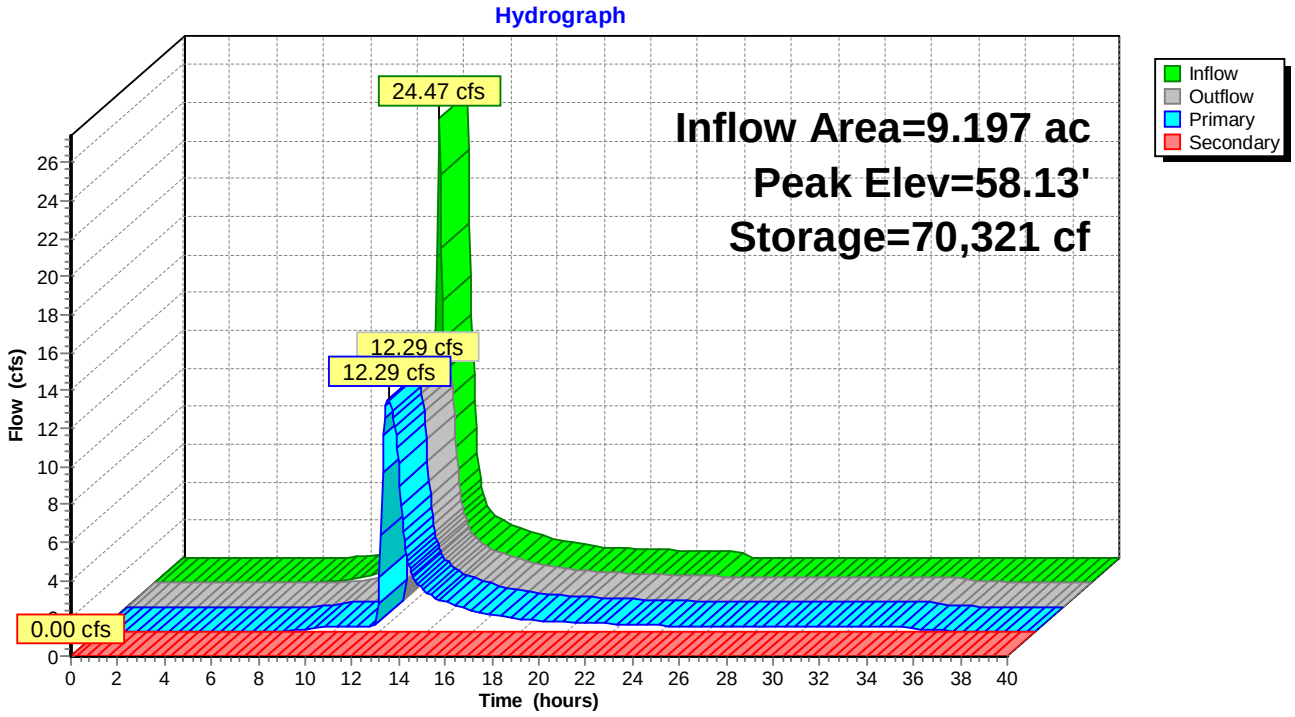
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	9,552	0	0
55.00	12,557	11,055	11,055
56.00	15,587	14,072	25,127
57.00	21,708	18,648	43,774
58.00	24,827	23,268	67,042
59.00	27,955	26,391	93,433

Device	Routing	Invert	Outlet Devices
#1	Device 2	57.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Device 4	57.00'	**0.28 cfs Exfiltration when above 57.00'**
#3	Device 4	57.50'	**12.0" Horiz. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#4	Primary	54.50'	**12.0" Round Culvert X 2.00** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 54.50' / 54.00' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#5	Secondary	58.15'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=12.28 cfs @ 12.37 hrs HW=58.13' (Free Discharge)
└**4=Culvert** (Passes 12.28 cfs of 12.65 cfs potential flow)
  └**2=Exfiltration** (Exfiltration Controls 0.28 cfs)
    └**1=Broad-Crested Rectangular Weir** (Passes 0.28 cfs of 161.20 cfs potential flow)
  └**3=Orifice/Grate** (Orifice Controls 12.00 cfs @ 3.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SB-3: SEDIMENT BASIN 3



Summary for Pond SB-4: SEDIMENT BASIN 4

Inflow Area = 5.051 ac, 0.00% Impervious, Inflow Depth = 2.82" for 10-Year Storm event
Inflow = 14.29 cfs @ 12.14 hrs, Volume= 1.187 af
Outflow = 6.01 cfs @ 12.43 hrs, Volume= 1.180 af, Atten= 58%, Lag= 17.0 min
Primary = 5.80 cfs @ 12.43 hrs, Volume= 1.177 af
Secondary = 0.21 cfs @ 12.43 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Starting Elev= 48.00' Surf.Area= 15,504 sf Storage= 37,176 cf
Peak Elev= 49.12' @ 12.43 hrs Surf.Area= 17,369 sf Storage= 55,575 cf (18,399 cf above start)

Plug-Flow detention time= 934.2 min calculated for 0.326 af (27% of inflow)
Center-of-Mass det. time= 211.9 min (1,023.4 - 811.6)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	71,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

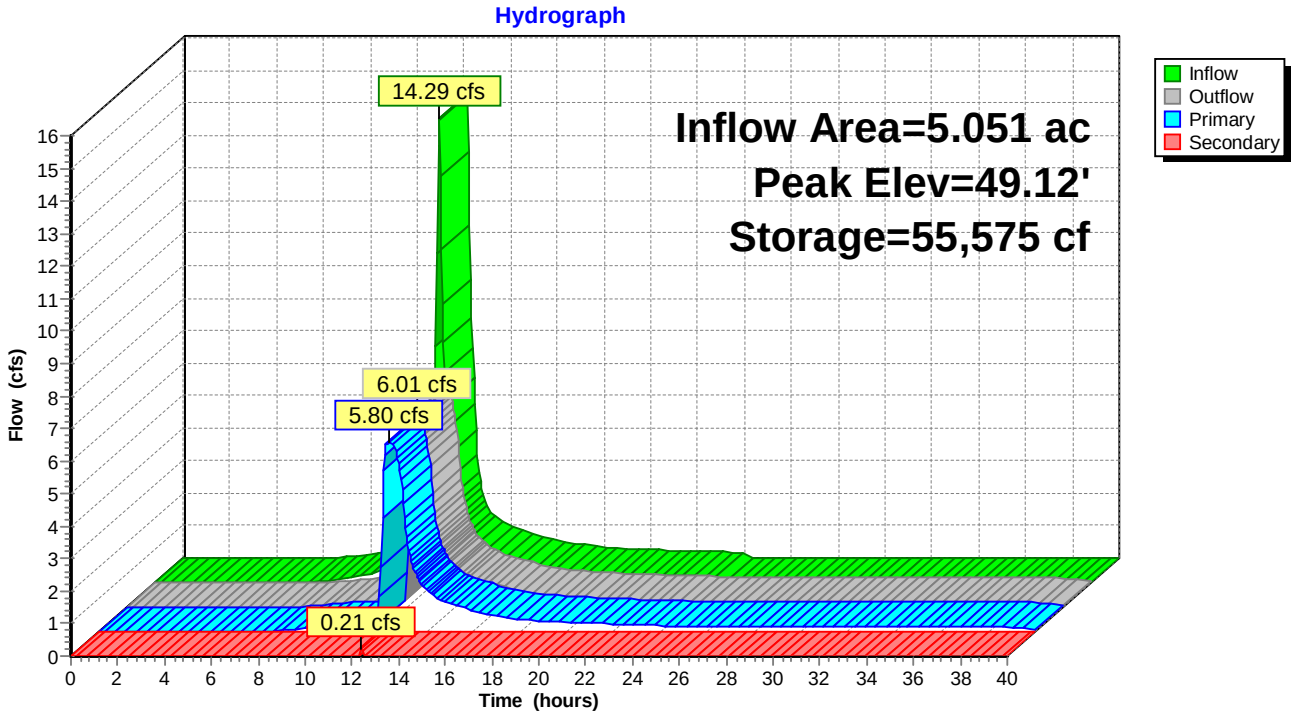
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	9,398	0	0
46.00	11,011	10,205	10,205
47.00	13,714	12,363	22,567
48.00	15,504	14,609	37,176
49.00	17,163	16,334	53,510
50.00	18,889	18,026	71,536

Device	Routing	Invert	Outlet Devices
#1	Device 2	48.00'	**125.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Device 4	48.00'	**0.14 cfs Exfiltration when above 48.00'**
#3	Device 4	48.50'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Primary	45.00'	**12.0" Round Culvert** L= 170.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 43.00' S= 0.0118 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#5	Secondary	49.10'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=5.80 cfs @ 12.43 hrs HW=49.12' (Free Discharge)
└**4=Culvert** (Barrel Controls 5.80 cfs @ 7.38 fps)
└**2=Exfiltration** (Passes < 0.14 cfs potential flow)
└**1=Broad-Crested Rectangular Weir** (Passes < 396.88 cfs potential flow)
└**3=Orifice/Grate** (Passes < 5.95 cfs potential flow)

Secondary OutFlow Max=0.12 cfs @ 12.43 hrs HW=49.12' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 0.12 cfs @ 0.33 fps)

Pond SB-4: SEDIMENT BASIN 4



Stage-Area-Storage for Pond SB-1: SEDIMENT BASIN 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
59.00	14,450	0
59.05	14,539	725
59.10	14,629	1,454
59.15	14,718	2,188
59.20	14,807	2,926
59.25	14,896	3,668
59.30	14,985	4,415
59.35	15,075	5,167
59.40	15,164	5,923
59.45	15,253	6,683
59.50	15,343	7,448
59.55	15,432	8,217
59.60	15,521	8,991
59.65	15,610	9,770
59.70	15,700	10,552
59.75	15,789	11,340
59.80	15,878	12,131
59.85	15,967	12,927
59.90	16,056	13,728
59.95	16,146	14,533
60.00	16,235	15,343
60.05	16,325	16,157
60.10	16,416	16,975
60.15	16,506	17,798
60.20	16,597	18,626
60.25	16,688	19,458
60.30	16,778	20,294
60.35	16,869	21,136
60.40	16,959	21,981
60.45	17,050	22,832
60.50	17,140	23,686
60.55	17,230	24,546
60.60	17,321	25,409
60.65	17,411	26,278
60.70	17,502	27,150
60.75	17,593	28,028
60.80	17,683	28,910
60.85	17,774	29,796
60.90	17,864	30,687
60.95	17,955	31,583
61.00	18,045	32,483
61.05	18,204	33,389
61.10	18,364	34,303
61.15	18,523	35,225
61.20	18,683	36,155
61.25	18,842	37,093
61.30	19,002	38,040
61.35	19,161	38,994
61.40	19,321	39,956
61.45	19,480	40,926
61.50	19,640	41,904
61.55	19,799	42,890
61.60	19,958	43,884
61.65	20,118	44,885
61.70	20,277	45,895
61.75	20,437	46,913
61.80	20,596	47,939
61.85	20,756	48,973
61.90	20,915	50,015
61.95	21,075	51,064
62.00	21,234	52,122
62.05	21,328	53,186
62.10	21,422	54,255
62.15	21,515	55,328
62.20	21,609	56,406
62.25	21,703	57,489
62.30	21,797	58,577
62.35	21,891	59,669
62.40	21,984	60,766
62.45	22,078	61,867
62.50	22,172	62,974
62.55	22,266	64,084
62.60	22,360	65,200
62.65	22,453	66,320
62.70	22,547	67,445
62.75	22,641	68,575
62.80	22,735	69,710
62.85	22,829	70,849
62.90	22,922	71,992
62.95	23,016	73,141
63.00	23,110	74,294
63.05	23,205	75,452
63.10	23,301	76,615
63.15	23,396	77,782
63.20	23,492	78,954
63.25	23,588	80,131
63.30	23,683	81,313
63.35	23,779	82,499
63.40	23,874	83,691
63.45	23,970	84,887
63.50	24,065	86,088
63.55	24,160	87,293
63.60	24,256	88,504
63.65	24,351	89,719
63.70	24,447	90,939
63.75	24,543	92,164
63.80	24,638	93,393
63.85	24,734	94,627
63.90	24,829	95,867
63.95	24,925	97,110
64.00	**25,020**	**98,359**

Stage-Area-Storage for Pond SB-2: SEDIMENT BASIN 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
58.00	5,440	0
58.10	5,509	547
58.20	5,578	1,102
58.30	5,648	1,663
58.40	5,717	2,231
58.50	5,786	2,807
58.60	5,855	3,389
58.70	5,924	3,978
58.80	5,994	4,573
58.90	6,063	5,176
59.00	6,132	5,786
59.10	6,204	6,403
59.20	6,277	7,027
59.30	6,349	7,658
59.40	6,421	8,297
59.50	6,494	8,942
59.60	6,566	9,595
59.70	6,638	10,256
59.80	6,710	10,923
59.90	6,783	11,598
60.00	6,855	12,280
60.10	6,930	12,969
60.20	7,005	13,666
60.30	7,080	14,370
60.40	7,155	15,081
60.50	7,230	15,801
60.60	7,305	16,528
60.70	7,380	17,262
60.80	7,455	18,003
60.90	7,530	18,753
61.00	7,605	19,510
61.10	7,806	20,280
61.20	8,007	21,071
61.30	8,208	21,881
61.40	8,409	22,712
61.50	8,610	23,563
61.60	8,810	24,434
61.70	9,011	25,325
61.80	9,212	26,236
61.90	9,413	27,168
62.00	9,614	28,119
62.10	9,696	29,085
62.20	9,779	30,058
62.30	9,861	31,040
62.40	9,943	32,030
62.50	10,026	33,029
62.60	10,108	34,036
62.70	10,190	35,050
62.80	10,272	36,074
62.90	10,355	37,105
63.00	10,437	38,145
63.10	10,521	39,192
63.20	10,606	40,249
63.30	10,690	41,314
63.40	10,775	42,387
63.50	10,859	43,469
63.60	10,943	44,559
63.70	11,028	45,657
63.80	11,112	46,764
63.90	11,197	47,880
64.00	**11,281**	**49,004**

Stage-Area-Storage for Pond SB-3: SEDIMENT BASIN 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
54.00	9,552	0
54.05	9,702	481
54.10	9,853	970
54.15	10,003	1,467
54.20	10,153	1,971
54.25	10,303	2,482
54.30	10,453	3,001
54.35	10,604	3,527
54.40	10,754	4,061
54.45	10,904	4,603
54.50	11,055	5,152
54.55	11,205	5,708
54.60	11,355	6,272
54.65	11,505	6,844
54.70	11,656	7,423
54.75	11,806	8,009
54.80	11,956	8,603
54.85	12,106	9,205
54.90	12,256	9,814
54.95	12,407	10,430
55.00	12,557	11,055
55.05	12,708	11,686
55.10	12,860	12,325
55.15	13,011	12,972
55.20	13,163	13,627
55.25	13,315	14,288
55.30	13,466	14,958
55.35	13,618	15,635
55.40	13,769	16,320
55.45	13,921	17,012
55.50	14,072	17,712
55.55	14,223	18,419
55.60	14,375	19,134
55.65	14,526	19,857
55.70	14,678	20,587
55.75	14,830	21,324
55.80	14,981	22,070
55.85	15,133	22,823
55.90	15,284	23,583
55.95	15,436	24,351
56.00	15,587	25,127
56.05	15,893	25,914
56.10	16,199	26,716
56.15	16,505	27,533
56.20	16,811	28,366
56.25	17,117	29,215
56.30	17,423	30,078
56.35	17,729	30,957
56.40	18,035	31,851
56.45	18,341	32,760
56.50	18,648	33,685
56.55	18,954	34,625
56.60	19,260	35,580
56.65	19,566	36,551
56.70	19,872	37,537
56.75	20,178	38,538
56.80	20,484	39,555
56.85	20,790	40,587
56.90	21,096	41,634
56.95	21,402	42,696
57.00	21,708	43,774
57.05	21,864	44,863
57.10	22,020	45,960
57.15	22,176	47,065
57.20	22,332	48,178
57.25	22,488	49,298
57.30	22,644	50,427
57.35	22,800	51,563
57.40	22,956	52,707
57.45	23,112	53,858
57.50	23,268	55,018
57.55	23,423	56,185
57.60	23,579	57,360
57.65	23,735	58,543
57.70	23,891	59,734
57.75	24,047	60,932
57.80	24,203	62,138
57.85	24,359	63,353
57.90	24,515	64,574
57.95	24,671	65,804
58.00	24,827	67,042
58.05	24,983	68,287
58.10	25,140	69,540
58.15	25,296	70,801
58.20	25,453	72,069
58.25	25,609	73,346
58.30	25,765	74,630
58.35	25,922	75,923
58.40	26,078	77,223
58.45	26,235	78,530
58.50	26,391	79,846
58.55	26,547	81,169
58.60	26,704	82,501
58.65	26,860	83,840
58.70	27,017	85,187
58.75	27,173	86,542
58.80	27,329	87,904
58.85	27,486	89,274
58.90	27,642	90,653
58.95	27,799	92,039
59.00	**27,955**	**93,433**

Stage-Area-Storage for Pond SB-4: SEDIMENT BASIN 4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
45.00	9,398	0
45.05	9,479	472
45.10	9,559	948
45.15	9,640	1,428
45.20	9,721	1,912
45.25	9,801	2,400
45.30	9,882	2,892
45.35	9,963	3,388
45.40	10,043	3,888
45.45	10,124	4,392
45.50	10,205	4,901
45.55	10,285	5,413
45.60	10,366	5,929
45.65	10,446	6,449
45.70	10,527	6,974
45.75	10,608	7,502
45.80	10,688	8,035
45.85	10,769	8,571
45.90	10,850	9,111
45.95	10,930	9,656
46.00	11,011	10,205
46.05	11,146	10,758
46.10	11,281	11,319
46.15	11,416	11,887
46.20	11,552	12,461
46.25	11,687	13,042
46.30	11,822	13,629
46.35	11,957	14,224
46.40	12,092	14,825
46.45	12,227	15,433
46.50	12,363	16,048
46.55	12,498	16,669
46.60	12,633	17,298
46.65	12,768	17,933
46.70	12,903	18,574
46.75	13,038	19,223
46.80	13,173	19,878
46.85	13,309	20,540
46.90	13,444	21,209
46.95	13,579	21,885
47.00	13,714	22,567
47.05	13,803	23,255
47.10	13,893	23,947
47.15	13,982	24,644
47.20	14,072	25,346
47.25	14,162	26,051
47.30	14,251	26,762
47.35	14,341	27,477
47.40	14,430	28,196
47.45	14,520	28,920
47.50	14,609	29,648
47.55	14,698	30,380
47.60	14,788	31,118
47.65	14,877	31,859
47.70	14,967	32,605
47.75	15,057	33,356
47.80	15,146	34,111
47.85	15,236	34,871
47.90	15,325	35,635
47.95	15,415	36,403
48.00	15,504	37,176
48.05	15,587	37,953
48.10	15,670	38,735
48.15	15,753	39,520
48.20	15,836	40,310
48.25	15,919	41,104
48.30	16,002	41,902
48.35	16,085	42,704
48.40	16,168	43,510
48.45	16,251	44,321
48.50	16,334	45,135
48.55	16,416	45,954
48.60	16,499	46,777
48.65	16,582	47,604
48.70	16,665	48,435
48.75	16,748	49,271
48.80	16,831	50,110
48.85	16,914	50,954
48.90	16,997	51,801
48.95	17,080	52,653
49.00	17,163	53,510
49.05	17,249	54,370
49.10	17,336	55,234
49.15	17,422	56,103
49.20	17,508	56,977
49.25	17,595	57,854
49.30	17,681	58,736
49.35	17,767	59,622
49.40	17,853	60,513
49.45	17,940	61,408
49.50	18,026	62,307
49.55	18,112	63,210
49.60	18,199	64,118
49.65	18,285	65,030
49.70	18,371	65,946
49.75	18,458	66,867
49.80	18,544	67,792
49.85	18,630	68,722
49.90	18,716	69,655
49.95	18,803	70,593
50.00	**18,889**	**71,536**

Nordic Aquafarms

Summary of Soil Loss During Construction

Phase	Working Area	Working Area	RUSLE2 Soil Loss	RUSLE2 Soil Loss	Working Area Soil Loss	Non-Working Area	Non-Working Area	RUSLE2 Soil Loss	RUSLE2 Soil Loss	Non-Working Area Soil Loss	Total Phase Soil Loss
	sf	ac	Tons/ac/yr	cf/ac/yr	cf/yr	sf	ac	Tons/ac/yr	cf/ac/yr	cf/yr	cf/yr
1A	80000	1.84	14.90	248.33	456.08	489000	11.23	5.80	96.67	1085.17	1541.25
1B	80000	1.84	14.90	248.33	459.14	328600	7.54	5.80	96.67	729.22	1188.35
1C	80000	1.84	14.90	248.33	459.14	63600	1.46	5.80	96.67	141.14	600.28
1D	80000	1.84	14.90	248.33	459.14	119200	2.74	5.80	96.67	264.52	723.66
1E	80000	1.84	14.90	248.33	459.14	134500	3.09	5.80	96.67	298.48	757.61
2A	80000	1.84	14.90	248.33	459.14	140000	3.21	5.80	96.67	310.68	769.82
2B	80000	1.84	14.90	248.33	459.14	115500	2.65	5.80	96.67	256.31	715.45

Assumes soil unit weight of 120lbs/cu.ft

VA RUSLE2 Profile Printout w/ Details

Detailed printout of RUSLE2 calculation for one field, one management alternative

I. Client/Field ID & Summary

Client/Owner name: SMRT/Nordic Aquafarms
Field name: Nordic Aquafarms
Project #: 18-041
Location: USA\Maine\Waldo County

Printout date: March 18, 2019
Prepared by (name): Atlantic Resource Consultants, LLC
USDA Service Center/Location:

Narrative description of profile, field, and/or management:
Info: Major earthwork operations- exposed areas

Notes on collection of input data, field visits, etc.:
None

Summary of RUSLE2 output:

Soil Loss	Soil Quality
Soil loss for cons. plan: 15 t/ac/yr.	**Soil conditioning index (SCI): -1.0**
T value: 5.0 t/ac/yr.	**Avg. annual slope STIR: 5.20**

Recommendations / Comments:

II. RUSLE2 Profile Input

1. CLIMATE (R FACTOR)

- Climate Location: USA\Maine\Waldo County (R Factor: 110 US)

2. SOIL (K FACTOR)

- Predominant Soil: Waldo County, Maine\BoB Boothbay silt loam, 3 to 8 percent slopes\Boothbay Silt loam 86% (Erodibility: 0.37 US)
- T value: 5.0 t/ac/yr.

3. TOPOGRAPHY (LS FACTOR)

- RUSLE Slope length (along slope): 300 ft
- Avg. slope steepness: 2.0 %

4. CROP MANAGEMENT (C FACTOR)

- Crop management narrative description / background info:

Info:

- Rotation Duration: 1 yr.

- Crops / vegetations in rotation and long-term yield averages:

Vegetation	*Yield units*	*# yield units, #/ac*
No Vegetation		

- Field operation dates and descriptions, manure application rates, etc.:

Date	*Operation*	*Vegetation*	*Yield (harv. units)*	*Type of cover material*	*Cover matl add/remove, lb/ac*
4/15/19	Bulldozer, filling/leveling				

External residue (i.e., manure) application rates in RUSLE2 are expressed in lbs. of "effective" dry matter per acre. For liquid, slurry, poultry, and semi-solid manures, "effective" dry matter in = 50% of actual dry matter

- Additional RUSLE2 crop management info:
  - Rock cover: 0 %
  - Adjust res. burial level: Normal res. burial
  - RUSLE2 management file name: Base management: Strip/Barrier Managements\Bare ground; rough surface*

5. SUPPORT PRACTICES (P FACTOR)

- Contouring: a. rows up-and-down hill (Actual row grade: 2.0%)

- Strips/barriers: (none)

- Diversion/terrace, sediment basin: (none)

- Subsurface drainage: (none)

6. RUSLE2 SOFTWARE DETAILS

- Program version: Mar 27, 2017
- Database name: MOSES 2016
- Profile file name: profiles\default

III. RUSLE2 Profile Output & Definitions

1. SURFACE RESIDUE COVER ESTIMATES:

Long-term average predicted surface residue cover after each field operation:

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
4/15/19	Bulldozer, filling/leveling		0

One way to verify whether RUSLE2 is properly modeling a situation is to check these long-term average surface residue results. An unexpectedly high or low surface residue cover value after a particular operation indicates that the choice of operation or some other input in the calculation (such as vegetation or yield) should be reviewed.

RUSLE2 counts as surface residue **only** material lying flat on the soil surface (automatically adjusted for overlap). RUSLE2 does **not** count the following as surface residue cover: (a) above-ground or standing material (including live canopy cover and standing dead residue) or (b) buried material (including live roots and dead plant residue). RUSLE2 does account for the erosion control value of standing and buried material when calculating soil loss.

Therefore, these surface residue numbers are most useful for analyzing annual cropping systems in which field operations routinely bury and/or flatten most residue and in which surface residue plays a leading role in erosion prevention. When analyzing results for cropping systems involving perennials and/or no-till planting into large amounts of standing residue (such as a chemically killed cover crop), also consult RUSLE2 canopy cover estimates (available in the VA Basic User Template 2007 Profile Screen).

2. SOIL LOSS ESTIMATES:

- Soil loss for conservation planning:
  - Soil loss for cons. plan: 15 t/ac/yr.
  - T value: 5.0 t/ac/yr.

Estimate of average annual rainfall-induced soil loss (detachment of soil particles & transport downhill) over the length of the modeled slope. It is critical to understand that this value represents a long-term (20- to 30-year) average, not a prediction of actual soil loss in any single year. This is the number to use for conservation planning and to compare with the field's "T" soil loss tolerance value. This number is a measure of the likelihood of degradation by erosion of the soil resource in upslope (steeper) areas of the field. Very little credit is given for any sediment deposition that may occur towards the bottom of the modeled slope (for example, due to an end-of-slope filter strip), because upslope areas are still being degraded.

- Sediment Delivery:
  - Sediment delivery: 14.9 t/ac/yr.

Estimate of the amount of sediment delivered by runoff to the end of the modeled slope. This is RUSLE2's best estimate of long-term average "edge of field" soil loss. Full credit is given for any sediment deposition that occurs anywhere on the modeled slope due to reductions in slope grade, filter strips, terraces, etc. This number is not used for conservation planning but may be used for other environmental applications (e.g., P-Index). In many cases, RUSLE2 users will model slopes as uniform with no structural practices, vegetative features (filter strips), or breaks in topography that result in sediment deposition. In this typical situation, results for sediment delivery and soil loss for conservation planning will be identical.

3. SOIL QUALITY SCORES:

- Soil Conditioning Index:
  - Soil conditioning index (SCI): -1.0

Soil organic matter (SOM) or soil carbon (C) trend score. If SCI is negative (less than zero), SOM and soil C and soil quality are predicted to decline over time on the modeled slope under the modeled management system. If SCI is positive (greater than zero), SOM and soil C and soil quality are predicted to stay the same or to increase over time. SCI scores usually range from -1 to +1 in typical VA situations, although more extreme values are possible. SCI is an index score (no units) designed solely for comparing the relative impact of different management alternatives on long-term soil quality trends. When calculating SCI, RUSLE2 considers three key factors: (1) amount of surface and subsurface biomass returned to the soil; (2) tillage-induced oxidation of soil carbon; and (3) predicted sheet & rill erosion. Climate and soil type inputs are also considered due to the influence of these factors on soil C oxidation trends.

- Soil Tillage Intensity Rating (STIR):

  - Avg. annual slope STIR: 5.20 (averaged across all years in the rotation)

  - STIR value for each individual crop (or vegetation record) in the rotation:

Veg.	*STIR value*	*Start date*	*End date, m/d/y*

Measure of intensity of tillage or soil disturbance. STIR is an index (no units) designed solely for comparing the relative impact of different management alternatives on soil disturbance. STIR increases with increasing tillage and can range from 0 to 200+. Average annual STIR values reflect the total amount of soil disturbance that occurs during the overall rotation, averaged across the number of years in the rotation. STIR values can also be calculated for individual crops. The STIR for an individual crop represents the sum of all soil disturbance associated with establishing and harvesting that crop. Both types of STIR values are shown above. STIR values in the 5 to 20 range are typical of no-till crops and/or continuous no-till or low soil disturbance cropping systems. In long rotations with a mix of tilled and no-till and/or perennial crops, the average annual STIR for the overall rotation may be relatively low even if significant tillage occurs in individual years and STIR values for one or more crops in the rotation are relatively high.

VA RUSLE2 Profile Printout w/ Details

Detailed printout of RUSLE2 calculation for one field, one management alternative

I. Client/Field ID & Summary

Client/Owner name: SMRT/Nordic Aquafarms
Field name: Nordic Aquafarms
Project #: 18-041
Location: USA\Maine\Waldo County

Printout date: March 18, 2019
Prepared by (name): Atlantic Resource Consultants, LLC
USDA Service Center/Location:

Narrative description of profile, field, and/or management:
Info: Cleared areas – not yet grubbed

Notes on collection of input data, field visits, etc.:
None

Summary of RUSLE2 output:

Soil Loss	Soil Quality
Soil loss for cons. plan: 5.8 t/ac/yr.	**Soil conditioning index (SCI): -0.3**
T value: 5.0 t/ac/yr.	**Avg. annual slope STIR: 0**

Recommendations / Comments:

II. RUSLE2 Profile Input

1. CLIMATE (R FACTOR)

- Climate Location: USA\Maine\Waldo County (R Factor: 110 US)

2. SOIL (K FACTOR)

- Predominant Soil: Waldo County, Maine\BoB Boothbay silt loam, 3 to 8 percent slopes\Boothbay Silt loam 86% (Erodibility: 0.37 US)
- T value: 5.0 t/ac/yr.

3. TOPOGRAPHY (LS FACTOR)

- RUSLE Slope length (along slope): 300 ft
- Avg. slope steepness: 2.0 %

4. CROP MANAGEMENT (C FACTOR)

- Crop management narrative description / background info:

Info:

- Rotation Duration: 1 yr.

- Crops / vegetations in rotation and long-term yield averages:

Vegetation	*Yield units*	*# yield units, #/ac*
No Vegetation		

- Field operation dates and descriptions, manure application rates, etc.:

Date	*Operation*	*Vegetation*	*Yield (harv. units)*	*Type of cover material*	*Cover matl add/remove, lb/ac*
4/15/19	No Operation				

External residue (i.e., manure) application rates in RUSLE2 are expressed in lbs. of "effective" dry matter per acre. For liquid, slurry, poultry, and semi-solid manures, "effective" dry matter in = 50% of actual dry matter

- Additional RUSLE2 crop management info:
  - Rock cover: 0 %
  - Adjust res. burial level: Normal res. burial
  - RUSLE2 management file name: Base management: Strip/Barrier Managements\Bare ground; rough surface*

5. SUPPORT PRACTICES (P FACTOR)

- Contouring: a. rows up-and-down hill (Actual row grade: 2.0%)

- Strips/barriers: (none)

- Diversion/terrace, sediment basin: (none)

- Subsurface drainage: (none)

6. RUSLE2 SOFTWARE DETAILS

- Program version: Mar 27, 2017
- Database name: MOSES 2016
- Profile file name: profiles\Nordic Aquafarms

III. RUSLE2 Profile Output & Definitions

1. SURFACE RESIDUE COVER ESTIMATES:

Long-term average predicted surface residue cover after each field operation:

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
4/15/19	No operation		0

One way to verify whether RUSLE2 is properly modeling a situation is to check these long-term average surface residue results. An unexpectedly high or low surface residue cover value after a particular operation indicates that the choice of operation or some other input in the calculation (such as vegetation or yield) should be reviewed.

RUSLE2 counts as surface residue **only** material lying flat on the soil surface (automatically adjusted for overlap). RUSLE2 does **not** count the following as surface residue cover: (a) above-ground or standing material (including live canopy cover and standing dead residue) or (b) buried material (including live roots and dead plant residue). RUSLE2 does account for the erosion control value of standing and buried material when calculating soil loss.

Therefore, these surface residue numbers are most useful for analyzing annual cropping systems in which field operations routinely bury and/or flatten most residue and in which surface residue plays a leading role in erosion prevention. When analyzing results for cropping systems involving perennials and/or no-till planting into large amounts of standing residue (such as a chemically killed cover crop), also consult RUSLE2 canopy cover estimates (available in the VA Basic User Template 2007 Profile Screen).

2. SOIL LOSS ESTIMATES:

- Soil loss for conservation planning:
  - Soil loss for cons. plan: 5.8 t/ac/yr.
  - T value: 5.0 t/ac/yr.

Estimate of average annual rainfall-induced soil loss (detachment of soil particles & transport downhill) over the length of the modeled slope. It is critical to understand that this value represents a long-term (20- to 30-year) average, not a prediction of actual soil loss in any single year. This is the number to use for conservation planning and to compare with the field's "T" soil loss tolerance value. This number is a measure of the likelihood of degradation by erosion of the soil resource in upslope (steeper) areas of the field. Very little credit is given for any sediment deposition that may occur towards the bottom of the modeled slope (for example, due to an end-of-slope filter strip), because upslope areas are still being degraded.

- Sediment Delivery:
  - Sediment delivery: 5.77 t/ac/yr.

Estimate of the amount of sediment delivered by runoff to the end of the modeled slope. This is RUSLE2's best estimate of long-term average "edge of field" soil loss. Full credit is given for any sediment deposition that occurs anywhere on the modeled slope due to reductions in slope grade, filter strips, terraces, etc. This number is not used for conservation planning but may be used for other environmental applications (e.g., P-Index). In many cases, RUSLE2 users will model slopes as uniform with no structural practices, vegetative features (filter strips), or breaks in topography that result in sediment deposition. In this typical situation, results for sediment delivery and soil loss for conservation planning will be identical.

3. SOIL QUALITY SCORES:

- Soil Conditioning Index:
  - Soil conditioning index (SCI): -0.3

Soil organic matter (SOM) or soil carbon (C) trend score. If SCI is negative (less than zero), SOM and soil C and soil quality are predicted to decline over time on the modeled slope under the modeled management system. If SCI is positive (greater than zero), SOM and soil C and soil quality are predicted to stay the same or to increase over time. SCI scores usually range from -1 to +1 in typical VA situations, although more extreme values are possible. SCI is an index score (no units) designed solely for comparing the relative impact of different management alternatives on long-term soil quality trends. When calculating SCI, RUSLE2 considers three key factors: (1) amount of surface and subsurface biomass returned to the soil; (2) tillage-induced oxidation of soil carbon; and (3) predicted sheet & rill erosion. Climate and soil type inputs are also considered due to the influence of these factors on soil C oxidation trends.

- Soil Tillage Intensity Rating (STIR):

  - Avg. annual slope STIR: 0 (averaged across all years in the rotation)

  - STIR value for each individual crop (or vegetation record) in the rotation:

Veg.	*STIR value*	*Start date*	*End date, m/d/y*

Measure of intensity of tillage or soil disturbance. STIR is an index (no units) designed solely for comparing the relative impact of different management alternatives on soil disturbance. STIR increases with increasing tillage and can range from 0 to 200+. Average annual STIR values reflect the total amount of soil disturbance that occurs during the overall rotation, averaged across the number of years in the rotation. STIR values can also be calculated for individual crops. The STIR for an individual crop represents the sum of all soil disturbance associated with establishing and harvesting that crop. Both types of STIR values are shown above. STIR values in the 5 to 20 range are typical of no-till crops and/or continuous no-till or low soil disturbance cropping systems. In long rotations with a mix of tilled and no-till and/or perennial crops, the average annual STIR for the overall rotation may be relatively low even if significant tillage occurs in individual years and STIR values for one or more crops in the rotation are relatively high.

ATTACHMENT C

Sample Erosion Control Compliance Certification and Inspection Forms

CONTRACTOR/SUBCONTRACTOR CERTIFICATION

PROJECT INFORMATION

Project Name:

Address:

CONTRACTOR/SUBCONTRACTOR INFORMATION

Firm Name:

Address:

Telephone:

Type of Firm:

CERTIFICATION STATEMENT

"I certify under penalty of law that I understand the terms and conditions of the Maine Construction General Permit (MCGP) permit that authorizes the stormwater discharges associated with construction activity from the project site identified as part of this certification."

_____
Signature

_____
Typed Name

_____
Title

_____
Date

Soil Erosion and Sedimentation Control
WEEKLY INSPECTION REPORT

Sheet ___ of ___

Project Name:_____
File No._____

Inspection Date:_____ Time:_____ Inspected by:_____

STAGE OF CONSTRUCTION

___ Pre-Construction Conference ___ Rough Grading ___ Finish Grading
___ Clearing and Grubbing ___ Building Construction ___ Final Stabilization

==========

INSPECTION CHECKLIST

Yes	No	NA	
[ ]	[ ]	[ ]	Have Soil Erosion and Sediment Control BMPs been installed in accordance with the plans and/or specifications?
[ ]	[ ]	[ ]	Are SESC measures operating effectively?
[ ]	[ ]	[ ]	Have all SESC control repairs and sediment removal been performed?
[ ]	[ ]	[ ]	Are properties and waterways downstream from development adequately protected from erosion and sediment deposition
[ ]	[ ]	[ ]	Are soil and mud kept off public roadways at intersections with site access roads?
[ ]	[ ]	[ ]	Have all exposed areas requiring temporary or permanent stabilization been stabilized?
[ ]	[ ]	[ ]	Are soil stock piles adequately stabilized with seeding and/or sediment trapping measures?
[ ]	[ ]	[ ]	Is there evidence of scouring velocities in runoff from construction areas?
[ ]	[ ]	[ ]	Are sediment basins installed and operating where needed?
[ ]	[ ]	[ ]	Are finished cut and fill slopes adequately stabilized?
[ ]	[ ]	[ ]	Are on-site channels, inlets and outlets adequately stabilized?
[ ]	[ ]	[ ]	Do all operational storm sewer inlets have adequate inlet protection?
[ ]	[ ]	[ ]	Are storm water conveyance channels adequately stabilized with channel lining and/or outlet protection?
[ ]	[ ]	[ ]	Are utility trenches stabilized properly?
[ ]	[ ]	[ ]	Is there evidence of siltation, or sediment transport in receiving waterways?
[ ]	[ ]	[ ]	Have all temporary control structures that are no longer needed been removed?

==========

Report Date_____ Sheet of

Comments:_____

_____

_____

_____

_____

_____

_____

Verbal/Written notification given to:

Name	Organisation	Email Address	Sent
Andrew Johnston	ARC	andyj@arc-maine.com	
	NAF		
	Maine DEP		
	City of Belfast		

Report by: _____Date:_____

POST-RAINFALL INSPECTION REPORT

Project Name:_____

File No._____

Inspection Date:_____ Time:_____ Inspected by:_____

Total Rainfall Received:_____ Duration Of Storm Event:_____

STAGE OF CONSTRUCTION

___ Pre-Construction Conference ___ Rough Grading ___ Finish Grading
___ Clearing and Grubbing ___ Building Construction ___ Final Stabilization

==========

INSPECTION CHECKLIST

Yes	No	NA	
[ ]	[ ]	[ ]	Have Soil Erosion and Sediment Control BMPs been installed in accordance with the plans and/or specifications?
[ ]	[ ]	[ ]	Are SESC measures operating effectively?
[ ]	[ ]	[ ]	Have all SESC control repairs and sediment removal been performed?
[ ]	[ ]	[ ]	Are properties and waterways downstream from development adequately protected from erosion and sediment deposition
[ ]	[ ]	[ ]	Are soil and mud kept off public roadways at intersections with site access roads?
[ ]	[ ]	[ ]	Have all exposed areas requiring temporary or permanent stabilization been stabilized?
[ ]	[ ]	[ ]	Are soil stock piles adequately stabilized with seeding and/or sediment trapping measures?
[ ]	[ ]	[ ]	Is there evidence of scouring velocities in runoff from construction areas?
[ ]	[ ]	[ ]	Are sediment basins installed and operating where needed?
[ ]	[ ]	[ ]	Are finished cut and fill slopes adequately stabilized?
[ ]	[ ]	[ ]	Are on-site channels, inlets and outlets adequately stabilized?
[ ]	[ ]	[ ]	Do all operational storm sewer inlets have adequate inlet protection?
[ ]	[ ]	[ ]	Are storm water conveyance channels adequately stabilized with channel lining and/or outlet protection?
[ ]	[ ]	[ ]	Are utility trenches stabilized properly?
[ ]	[ ]	[ ]	Is there evidence of siltation, or sediment transport in receiving waterways?
[ ]	[ ]	[ ]	Have all temporary control structures that are no longer needed been removed?

==========

Report Date_____ Sheet ___ of

Comments:_____

_____

_____

_____

_____

_____

_____

Verbal/Written notification given to:

Name	Organisation	Email Address	Sent
Andrew Johnston	ARC	andyj@arc-maine.com	
	NAF		
	Maine DEP		
	City of Belfast		

Report by: _____Date:_____

ATTACHMENT B

Revised Soil Erosion and Sediment Control Phasing Plans

Nordic Aquafarms, Inc., Land-based Aquaculture Facility, Belfast, Maine
L-28319-26-A-N, Review Comments

ATTACHMENT C

Revised Soil Erosion and Sediment Control Phasing Plans with Aerial Imagery

Nordic Aquafarms, Inc., Land-based Aquaculture Facility, Belfast, Maine
L-28319-26-A-N, Review Comments

ATTACHMENT D

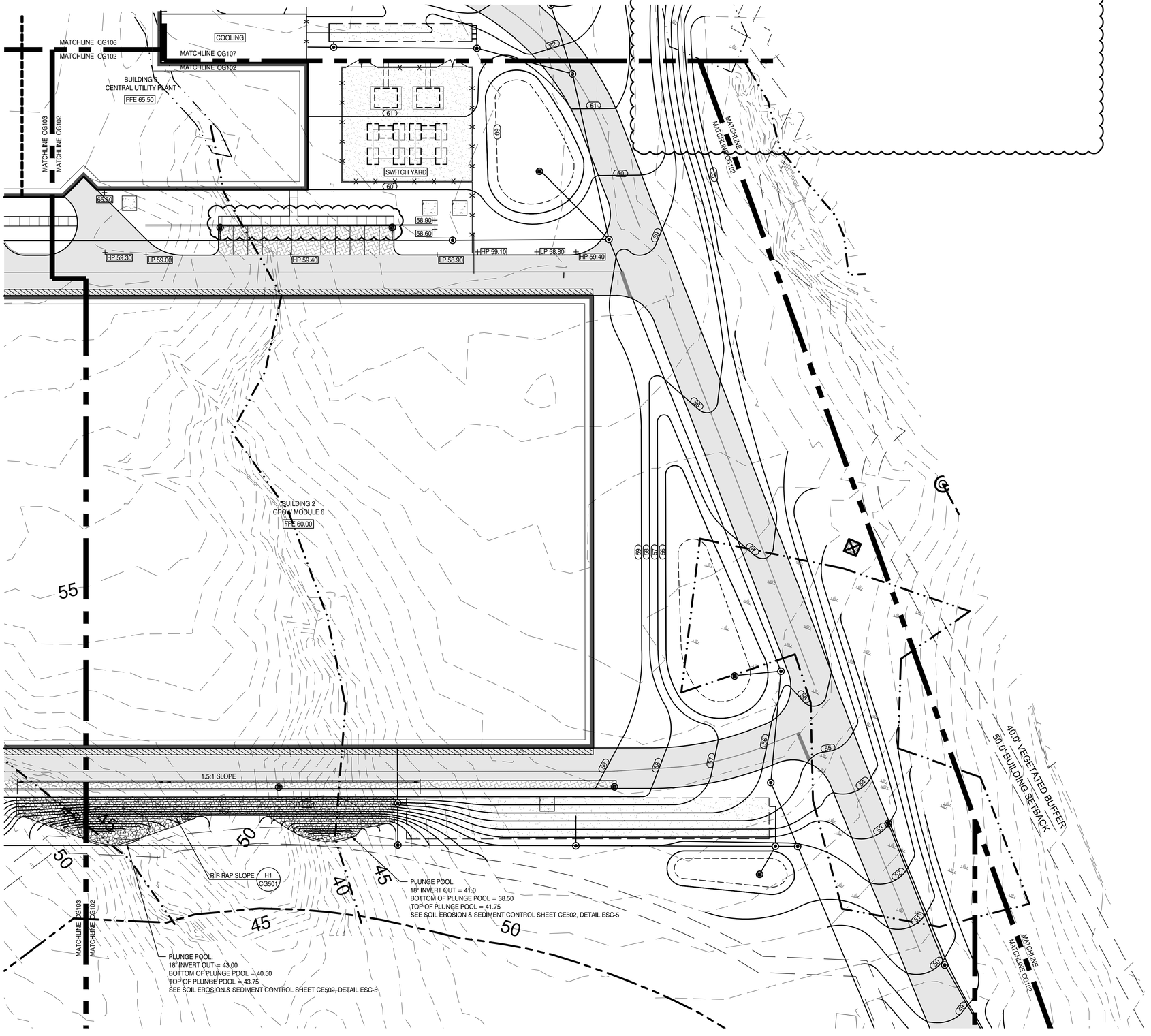
Revised Grading Plans CG-105 to CG-107

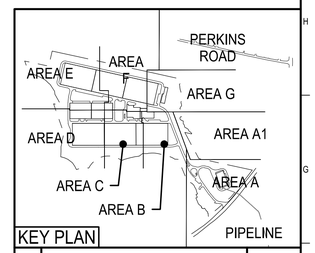
Nordic Aquafarms, Inc., Land-based Aquaculture Facility, Belfast, Maine
L-28319-26-A-N, Review Comments

Ransom Consulting, Inc.
Project 171.05027.008

NOTE:

SEE CS- DRAWING SERIES FOR STORMWATER SYSTEM INFORMATION.





KEY PLAN

REV	DESCRIPTION	DATE
3	DEP REVISIONS	11-04-19
2	RESPONSE TO ADDITIONAL DEP QUESTIONS	7-25-19
1	REISSUED FOR PERMIT	7-03-19
0	ISSUED FOR PERMIT	5-14-19

DEP REVISIONS
11-04-19

CURRENT ISSUE STATUS:

TRUE NORTH

TRUE NORTH:

LICENSED LANDSCAPE ARCHITECT
MARK G. JOHNSON
NO. 1857
STATE OF MAINE
11-4-19

SMRT Architects and Engineers
144 Fore Street/P.O. BOX 618
Portland, Maine 04104
1.877.700.7678
www.smrtinc.com
ARCHITECTURE | ENGINEERING | PLANNING | INTERIORS | ENERGY
SMRT

RANSOM Consulting Engineers and Scientists
Ransom Consulting Engineers and Scientists
400 Commercial Street, Suite 400
Portland, Maine 04101

NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

GRADING PLAN
AREA B

SHEET TITLE:

0 15' 30' 60' 90'

SCALE: 1" = 30'

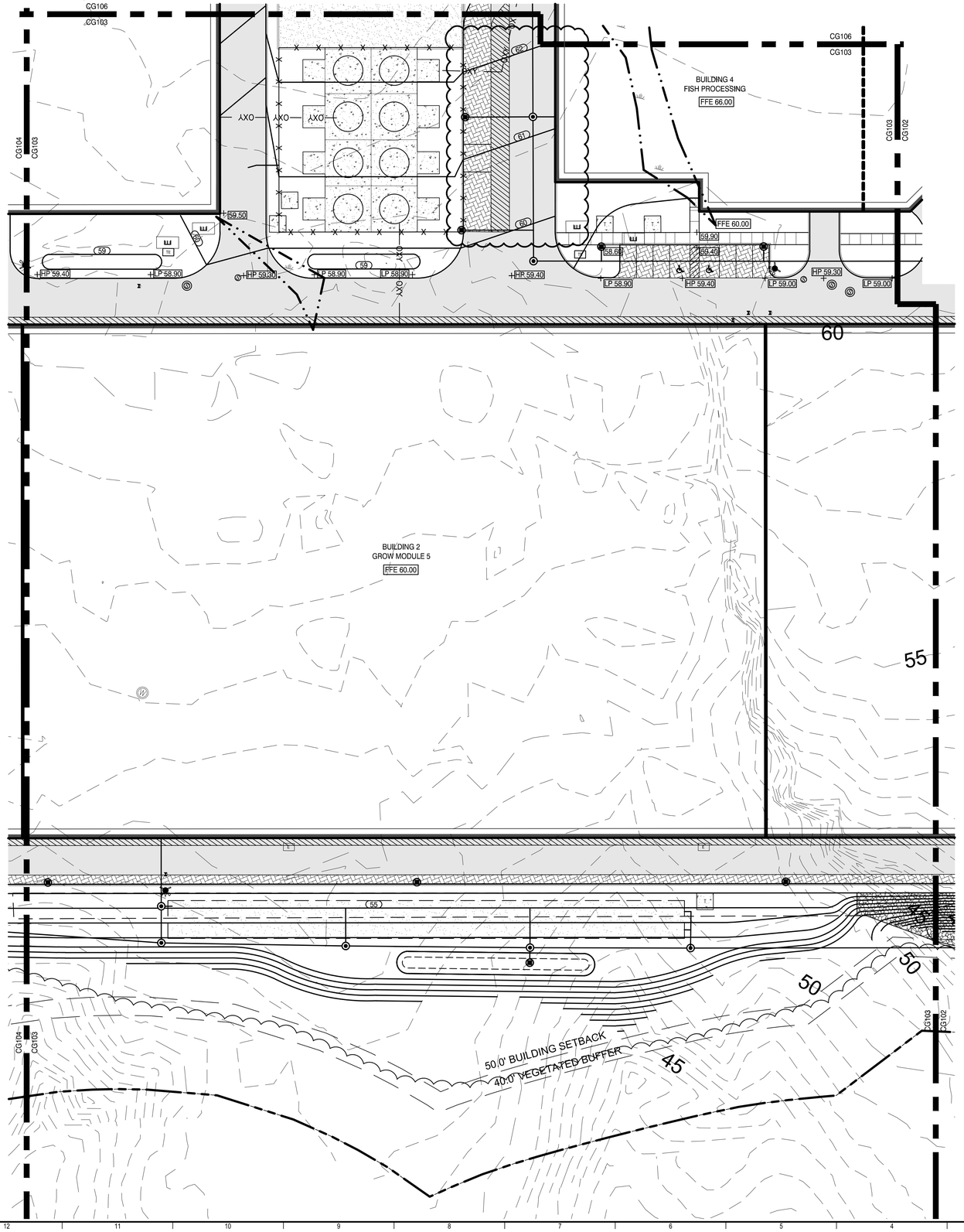
PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		
DRAWN BY:	WSM		
SMRT FILE:	CG102-18076	SHEET No.	CG102

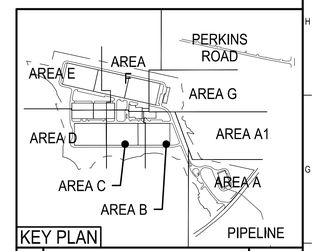
NOT FOR CONSTRUCTION

24x36

NOTE:

SEE CS- DRAWING SERIES FOR STORMWATER SYSTEM INFORMATION.





REV	DESCRIPTION	DATE
2	DEP REVISIONS	11-04-19
1	REISSUED FOR PERMIT	7-03-19
0	ISSUED FOR PERMIT	5-14-19

DEP REVISIONS
11-04-19

CURRENT ISSUE STATUS:

TRUE NORTH

LICENSED LANDSCAPE ARCHITECT
MARK G. JOHNSON
NO. 1857
STATE OF MAINE
11-4-19

TRUE NORTH:

SMRT Architects and Engineers
144 Fore Street/P.O. BOX 618
Portland, Maine 04104
1.877.700.7678
www.smrtinc.com
ARCHITECTURE | ENGINEERING | PLANNING | INTERIORS | ENERGY
SMRT

RANSOM Consulting Engineers and Scientists
Ransom Consulting Engineers and Scientists
400 Commercial Street, Suite 400
Portland, Maine 04101

NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

GRADING PLAN
AREA C

SHEET TITLE:

0 15' 30' 60' 90'

SCALE: 1" = 30'

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:	MGJ		
JOB CAPTAIN:	SP		
DRAWN BY:	WSM		
SMRT FILE:	CG103-18076	SHEET No.	CG103

NOT FOR CONSTRUCTION

24x36

MATCHLINE CG105
MATCHLINE CG104

BUILDING 3
SMOLT PHASE 2
FFE 60.00

BUILDING 3
SMOLT PHASE 1
FFE 60.00

MATCHLINE CG104
MATCHLINE CG103

BUILDING 2
GROW MODULE 4
FFE 60.00

BOC 58.90
TOC 59.40

BOC 59.35
TOC 59.85

BOC 58.90
TOC 59.40

LP 58.90
HP 59.40
LP 58.90
HP 59.65
LP 59.40
HP 59.65
HP 59.20

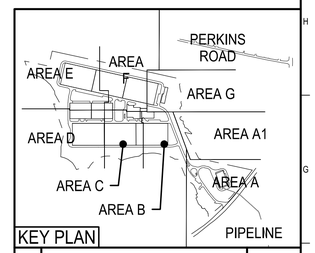
59.50
60.00
59.40
59.90
60

PLUNGE POOL:
18" INVERT OUT = 40.00
BOTTOM OF PLUNGE POOL = 37.50
TOP OF PLUNGE POOL = 40.75
SEE SOIL EROSION & SEDIMENT CONTROL
SHEET CE502, DETAIL ESC-5

40.0' VEGETATED BUFFER
50.0' BUILDING SETBACK

NOTE:

SEE CS- DRAWING SERIES FOR STORMWATER SYSTEM INFORMATION.



REV	DESCRIPTION	DATE
3	DEP REVISIONS	11-04-19
2	RESPONSE TO ADDITIONAL DEP QUESTIONS	7-25-19
1	REISSUED FOR PERMIT	7-03-19
0	ISSUED FOR PERMIT	5-14-19

DEP REVISIONS
11-04-19

CURRENT ISSUE STATUS:

TRUE NORTH

TRUE NORTH:

LICENSED LANDSCAPE ARCHITECT
MARK G. JOHNSON
NO. 1857
STATE OF MAINE
11-4-19

SMRT Architects and Engineers
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Portland, Maine 04104
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400 Commercial Street, Suite 400
Portland, Maine 04101

NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

GRADING PLAN
AREA D

SHEET TITLE:

0 15' 30' 60' 90'

SCALE: 1" = 30'

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:	MGJ		
JOB CAPTAIN:	SP		
DRAWN BY:	WSM		
SMRT FILE:	CG104-18076	SHEET No.	CG104

24x36

NOT FOR CONSTRUCTION

NOTE:

SEE CS- DRAWING SERIES FOR STORMWATER SYSTEM INFORMATION.

3:1 SLOPE

2:1 SLOPE

RIP RAP SLOPE, RE: EROSION CONTROL PLANS

75

70

BUILDING 1
GROW MODULE 1
FFE 70.00

39

65

40.0' VEGETATED BUFFER
50.0' BUILDING SETBACK

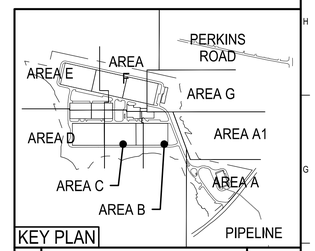
63.55

63.83

67.20

MATCHLINE CG105
MATCHLINE CG104

MATCHLINE CG105
MATCHLINE CG106



KEY PLAN

REV	DESCRIPTION	DATE
2	DEP REVISIONS	11-04-19
1	REISSUED FOR PERMIT	7-03-19
0	ISSUED FOR PERMIT	5-14-19

DEP REVISIONS
11-04-19

CURRENT ISSUE STATUS:

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NO. 1857
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11/4/19

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Portland, Maine 04101

NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

GRADING PLANS
AREA E

SHEET TITLE:

0 15' 30' 60' 90'

SCALE: 1" = 30'

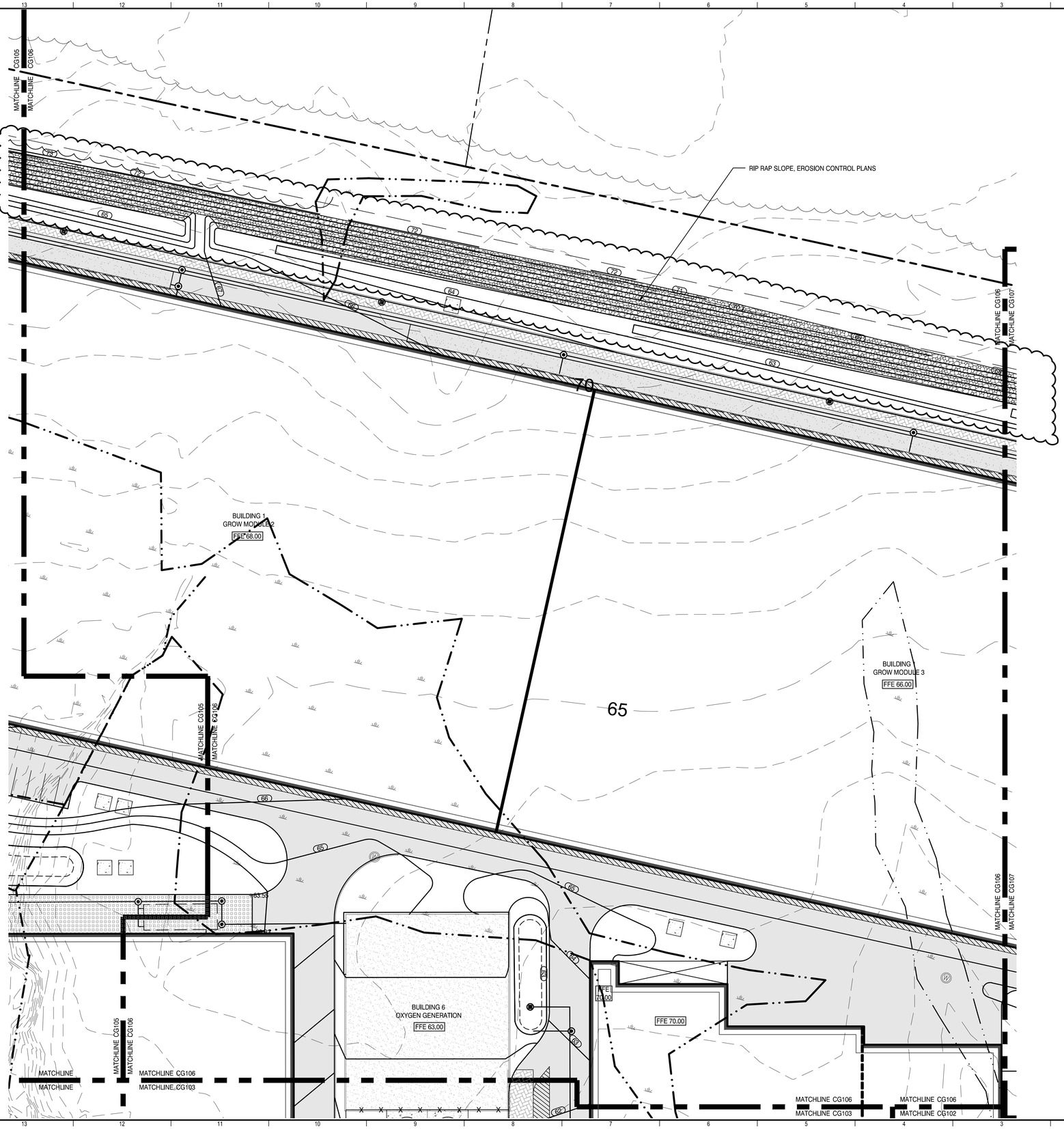
PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP	SHEET No.	CG105
DRAWN BY:	WSM		
SMRT FILE:	CG105-18076		

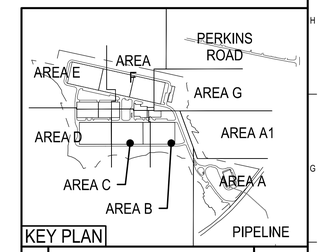
NOT FOR CONSTRUCTION

24x36

NOTE:

SEE CS- DRAWING SERIES FOR STORMWATER SYSTEM INFORMATION.





KEY PLAN

REV	DESCRIPTION	DATE
2	DEP REVISIONS	11-04-19
1	REISSUED FOR PERMIT	7-03-19
0	ISSUED FOR PERMIT	5-14-19

DEP REVISIONS
11-04-19

CURRENT ISSUE STATUS:

TRUE NORTH:

LICENSED LANDSCAPE ARCHITECT
MARK G. JOHNSON
NO. 1857
STATE OF MAINE
11-4-19

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NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

GRADING PLAN
AREA F

SHEET TITLE:

0 15' 30' 60' 90'

SCALE: 1" = 30'

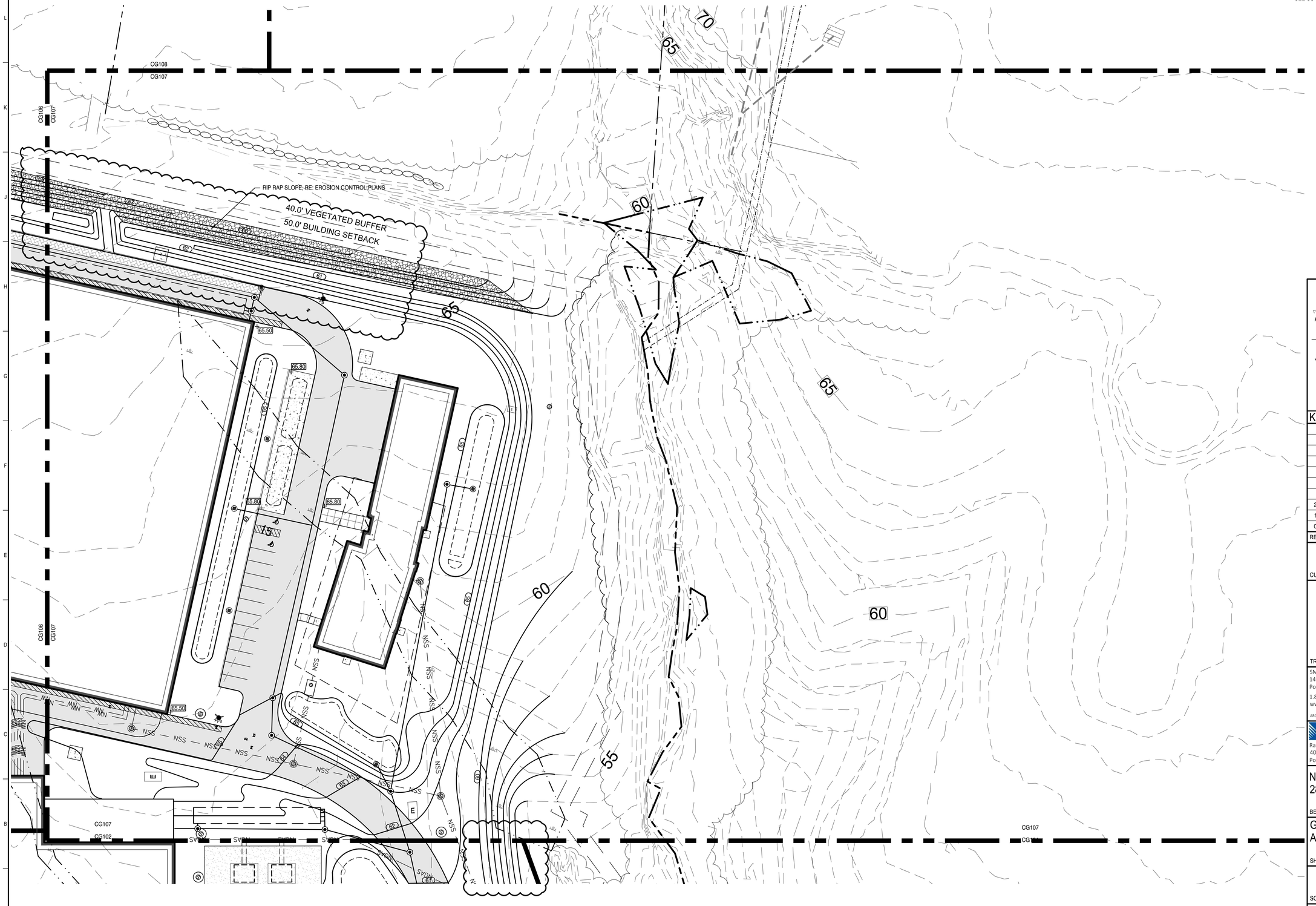
PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		CG106
DRAWN BY:	WSM		
SMRT FILE:	CG106-18076	SHEET No.	

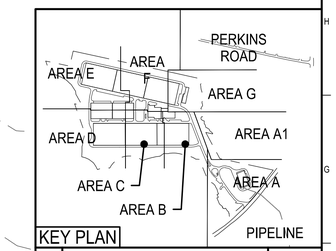
NOT FOR CONSTRUCTION

24x36

NOTE:

SEE CS- DRAWING SERIES FOR STORMWATER SYSTEM INFORMATION.





KEY PLAN

REV	DESCRIPTION	DATE
2	DEP REVISIONS	11-04-19
1	REISSUED FOR PERMIT	7-03-19
0	ISSUED FOR PERMIT	5-14-19

DEP REVISIONS
11-04-19

CURRENT ISSUE STATUS:

TRUE NORTH

LICENSED LANDSCAPE ARCHITECT
MARK G. JOHNSON
NO. 1857
STATE OF MAINE
11-4-19

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NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

GRADING PLAN
AREA G

SHEET TITLE:

0 15' 30' 60' 90'

SCALE: 1" = 30'

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP	CG107	
DRAWN BY:	WSM		
SMRT FILE:	CG107-18076	SHEET No.	

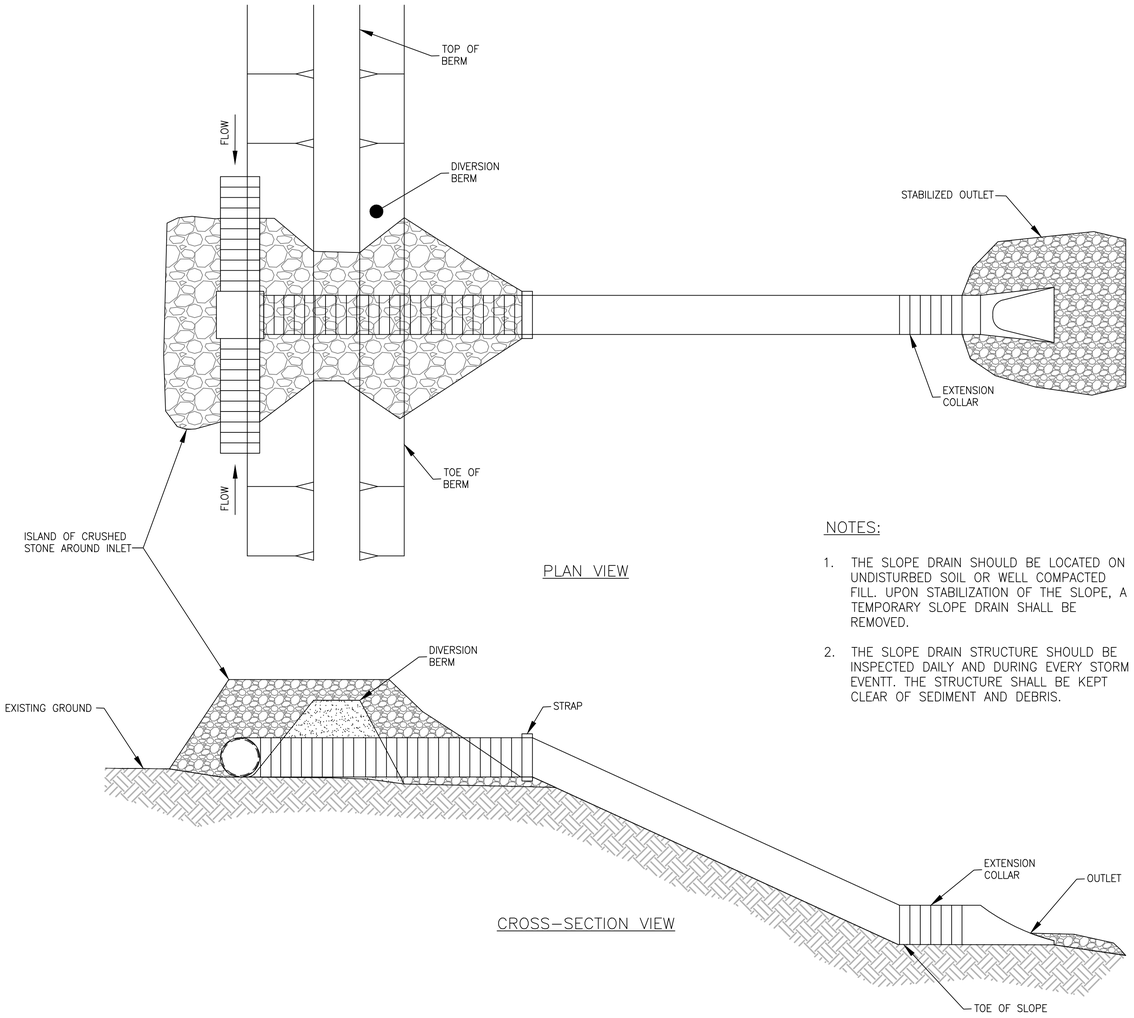
NOT FOR CONSTRUCTION

24x36

ATTACHMENT E

Revised Detail Drawing CE505

Nordic Aquafarms, Inc., Land-based Aquaculture Facility, Belfast, Maine
L-28319-26-A-N, Review Comments



NOTES:

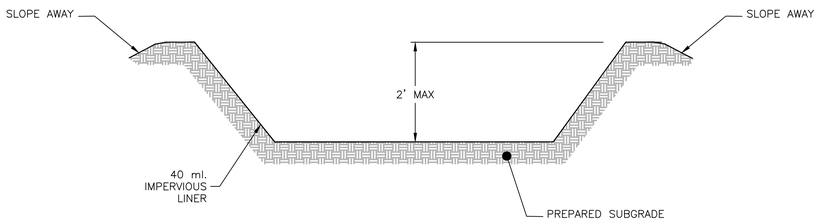
1. THE SLOPE DRAIN SHOULD BE LOCATED ON UNDISTURBED SOIL OR WELL COMPACTED FILL. UPON STABILIZATION OF THE SLOPE, A TEMPORARY SLOPE DRAIN SHALL BE REMOVED.
2. THE SLOPE DRAIN STRUCTURE SHOULD BE INSPECTED DAILY AND DURING EVERY STORM EVENTT. THE STRUCTURE SHALL BE KEPT CLEAR OF SEDIMENT AND DEBRIS.

ESC–20 TEMPORARY SLOPE DRAIN

NOT TO SCALE

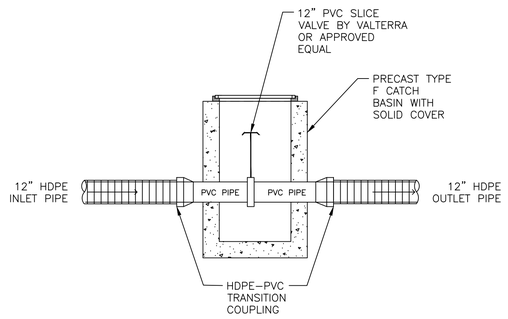
NOTES:

1. ALL CONCRETE WASHOUT AREAS SHALL BE INSPECTED WEEKLY AND AFTER RAIN EVENTS.
2. DIMENSIONS OF WASHOUT AREAS TO WILL VARY ACCORDING TO ANTICIPATED LOADING
3. CONCRETE WASHOUT AREAS SHALL BE FENCED WHEN UNATENDED.



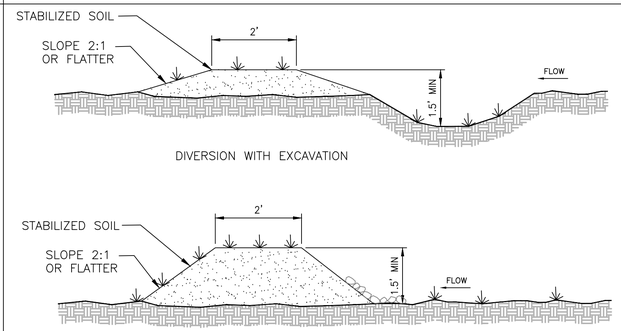
ESC–21 CONCRETE WASHOUT AREA

NOT TO SCALE



ESC–22 SEDIMENT BASIN OUTLET VALVE BOX

NOT TO SCALE



ESC–23 DIVERSION DETAILS

NOT TO SCALE

REV	DESCRIPTION	DATE
2	PER MDEP REVIEW COMMENTS	10-25-19
1	PER MDEP REVIEW COMMENTS	7-18-19
0	ISSUED FOR PERMIT	5-14-19

ISSUED FOR PERMIT
5-14-19

CURRENT ISSUE STATUS:

TRUE NORTH:

STATE OF MAINE
ANDREW D. JOHNSTON
NO. 9994
10/25/19
LICENSED
PROFESSIONAL ENGINEER

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Portland, Maine 04101

NORDIC AQUAFARMS
285 NORTHPORT AVENUE

BELFAST, MAINE

EROSION & SEDIMENT CONTROL DETAILS

SHEET TITLE:

0 1/2" 1" 2" 3"

SCALE: AS SHOWN

PROJECT MANAGER:	ADB	PROJECT NO:	18076
A/E OF RECORD:			
JOB CAPTAIN:	SP		CE505
DRAWN BY:	WSM		
SMRT FILE:	CE501-18076	SHEET No.	

NOT FOR CONSTRUCTION

24x36

ATTACHMENT F

Revised Landscaping Plans LP102 to LP106

Nordic Aquafarms, Inc., Land-based Aquaculture Facility, Belfast, Maine
L-28319-26-A-N, Review Comments

ATTACHMENT G

Updated Stormwater Drawings, Narrative, and Calculations

Nordic Aquafarms, Inc., Land-based Aquaculture Facility, Belfast, Maine
L-28319-26-A-N, Review Comments

Ransom Consulting, Inc.
Project 171.05027.008