TECHNICAL MEMORANDUM

To:	Eric Ford, MA DER
From:	Candice Constantine and Nick Nelson, Inter-Fluve
Date:	August 2, 2019, Revised October, 7, 2020
Re:	Becker Pond Dam Removal – Sediment Management Plan

Introduction

The Becker Pond Dam is located on an unnamed brook in a relatively remote area near Mt. Washington State Forest in the southwestern corner of Massachusetts (Figure 1). The dam is in poor condition with several critical safety and structural issues. Downstream of the dam, the brook flows through Sages Ravine and eventually drains to Schenob Brook, a tributary to the Housatonic River. The dam and surrounding property are part of the 1,600-acre Mt. Plantain Preserve, owned by The Nature Conservancy (TNC), and accessible via an unpaved road through private property off of East Street, south of Mt. Washington. The TNC property is used by the public for hunting, fishing, and other recreation. Downstream, the Appalachian Trail (AT) runs alongside Sages Ravine, which is popular for swimming and picnicking. A campsite is located at the top of the ravine where the AT crosses the brook via a wooden footbridge. The next bridge over the brook (Undermountain Road, Salisbury, Connecticut) is approximately two miles downstream.

Inter-Fluve previously completed draft 30% designs for dam removal on behalf of TNC. At the time, impounded sediment volume was estimated and grain-size sampling was carried out, and both supported passive release as a potential sediment management approach[1]. Inter-Fluve was then contracted by the Massachusetts Division of Ecological Restoration (MA DER) to gather more information on sediment quality and anticipated depositional zones downstream of the dam should some volume of impounded sediment be released passively. Through subsequent discussions with the Massachusetts Department of Environmental Protection (Mass DEP) and the MEPA process, the preferred alternative was identified as partial removal of impounded sediment. The current 75% design plans and report have been updated to reflect this. The purpose of this technical memorandum is to document the findings of the additional sediment sampling and analyses and a reconnaissance level site walk of downstream reaches.

[1] For more information on previous work and site details, see the Becker Pond Dam Removal 30% Design Memorandum dated August 2019

Sediment Due Diligence

MA DER completed a due diligence review in May 2019 and concluded that there is low potential for contamination of the impounded sediment at the site. This corroborates Inter-Fluve's findings reported in the current 75% design memorandum. MA DER's review is attached as Appendix A.

Sediment Sampling and Analyses

Two Inter-Fluve geomorphologists visited the site on May 20, 2019 and collected a total of six sediment samples from the site for testing. Details of methods and materials are provided in the attached sediment sampling plan prepared by MA DER (Appendix B). Sample locations are shown in Figure 1 and described below.

- One sample upstream of the impoundment – Sample location U1 was approximately 100 feet upstream of the TNC footbridge where sediment had accumulated upstream of a riffle (Figure 2).
- Three samples from within the impoundment – Samples U2 and U3 were collected from the thalweg of the channel. Sample U4 was collected on river left in an area of likely future floodplain that contained impounded sediment.
- Two samples downstream of the dam – Areas of fine sediment deposition are generally sparse in the reaches immediately downstream of the dam. Sample location D1 was approximately 350 feet downstream of the dam (Figure 3 and Figure 4) at a location where the valley floor widens and local gradient reduces. The sample was collected from a small channel running through a vegetated island. Sample location D2 was approximately 750 feet downstream of the dam (Figure 5) at the site of local deposition on the left bank immediately upstream of large wood in the channel.

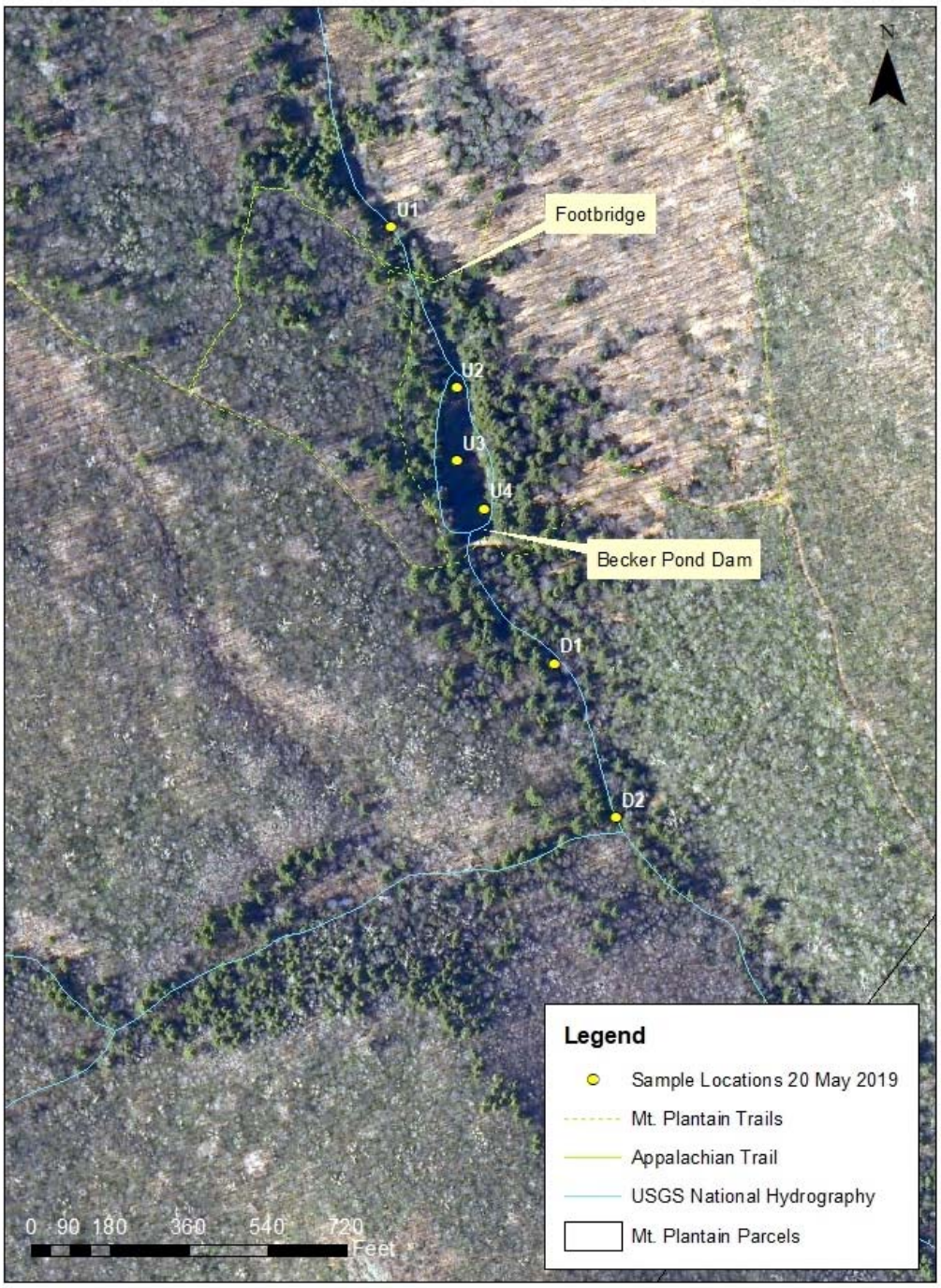

Figure 1. Sample locations 20 May 2019

Figure 2. Sample location U1 on left bank (far side of photo) approximately 100 feet upstream of footbridge upstream of impoundment

Figure 3. Looking downstream at sample location D1

Figure 4. Close-up of sample location D1

Figure 5. Looking downstream at sample location D2 on river left approximately 750 feet downstream of dam

The collected samples were analyzed for metals, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPH), polychlorinated biphenyls (PCBs), pesticides, total organic carbon, and grain size. A summary table of the results and the full laboratory reports are contained in Appendix A. Grain-size data indicates that the impounded sediment is primarily sand with some gravel and fines. Chemical testing results show that concentrations of many of the pollutants were below detection levels (results shown in green). Where concentrations were detected, they were below freshwater probable effects concentrations (PECs)[2] and therefore, exposures caused by the release of sediment from the impoundment are unlikely to result in environmental harm.

[2] Massachusetts Department of Environmental Protection. Revised Sediment Screening Values. Update to Section 9 of *Guidance for Disposal Site Risk Characterization – In Support of Massachusetts Contingency Plan* (1996).

Impounded Sediment Volume

We used bathymetric and depth-of-refusal survey data collected by Inter-Fluve in April 2018 to estimate the volume of impounded sediment. We developed topographic surfaces of the existing pond bed (the top of the impounded sediment) and refusal layer (the bottom of the impounded sediment) from survey data and calculated the volume difference in a GIS environment. The estimated total volume of impounded sediment is approximately 1,500 cubic yards.

The refusal layer through the impoundment is anticipated to be composed of cobbles, boulders, or bedrock based on the sound and feel when probing. This matches with observations of the brook geomorphology upstream and downstream of the impoundment. To estimate the volume of sediment that may be readily mobilized following dam removal, we assumed erosion of a channel along the length of the impoundment. We assumed an average channel width of 25 feet, calculated an average impounded sediment depth of 1.5 feet, and used a channel length of 400 feet. This resulted in an estimated mobilization volume of approximately 550 cubic yards, or roughly one third of the total volume of impounded sediment.

Sediment Yield

As noted above, we have estimated that the volume of impounded sediment between Becker Pond Dam and the footbridge is approximately 1,500 cubic yards (2,250 tons). In order to provide context for the volume of accumulated sediment in the impoundment, we analyzed the potential sediment yield from the unnamed brook and the wider Schenob Brook watersheds as part of preparing the 30% design memorandum. The remaining text in this section is repeated from the design memorandum. Simon et al.[3] completed a regional analysis of suspended sediment discharge measurements at USGS gage sites and found a median yield of $0.87\,\frac{tons}{day \cdot km^2}$ $\left(2.4\,\frac{tons}{day \cdot mi^2}\right)$ for the 1.5-year flood event in EPA Level III Ecoregion 58 – Northeastern Highlands, which includes the study site. The 1.5-year event is considered to be the effective discharge, or the discharge that transports the largest proportion of the annual suspended sediment load over the long term, and so sediment yield calculated for the 1.5-year flow is often used to approximate the long-term sediment yield for a watershed. Using the above yield estimate and drainage areas of 9.4 and 130 square kilometers (3.9 to 46.8 square miles), the estimated average annual suspended sediment loads of the unnamed brook and Schenob Brook are approximately 3,000 tons and 41,300 tons. Thus, the total mass of impounded sediment constitutes 70% of the average annual suspended sediment load of the small brook and 5% of the annual suspended sediment load of Schenob Brook.

[3] Simon, A., Dickerson, W., and Heins, A., 2004. Suspended-sediment transport rates at the 1.5-year recurrence interval for ecoregions of the United States: transport conditions at the bankfull and effective discharge? *Geomorphology* 58 (2004): 243-262. doi: 10.1016/j.geomorph.2003.07.003

Note that these sediment yield estimates are for suspended sediment only. Suspended sediment may comprise nearly all or only a fraction of the total sediment load of a stream, which is made up of both fine-grained material transported in suspension (suspended load) and coarser material traveling along the bed (bedload). Typical proportions of suspended sediment to bedload sediment in gravel bed rivers are 80% to 90% suspended sediment and 10% to 20% bedload. Along the brook where relief is high and soils are shallow and rocky, the bedload fraction is likely high in this range such that the estimated suspended load underpredicts total load by 20% or more. In this case, the mass of impounded sediment would be a smaller proportion of the average annual sediment load.

Sediment Routing

We conducted a reconnaissance-level survey of potential depositional areas downstream of the dam (Figure 6). The purpose of the survey was to provide information on how impounded sediment might move through the system once released and where sediment may temporarily or permanently deposit. We walked the stream from the dam downstream approximately one mile through Sages Ravine to where the Appalachian Trail crosses the stream.

Reaches downstream of the dam are generally lacking fine sediment, reflecting both the effect of the dam in trapping sediment and the high competence of the stream. Fine sediment deposits were observed in areas where gradient is locally reduced or the valley is locally wide; both of these characteristics result in lower flow velocities and shear stresses and thus allow for settling out of finer material. These areas are likely to be locations of sediment deposition and possibly permanent storage in low energy areas of the channel and/or floodplain following dam removal. Two such locations are sample locations D1 and D2 shown in Figure 1, Figure 3, and Figure 5. The site at D1 is likely to be a location of some permanent storage.

Elsewhere, the channel upstream of Sages Ravine generally exhibits a step-pool morphology with temporary deposition likely in pools and upstream of log jams. Examples are the approximately 200-foot reach immediately downstream of the dam (Figure 7) and an approximately 200-foot-long straight reach with deep and long pools (Figure 8). Existing pools are likely to fill temporarily following dam removal. Filling and then remobilization of the material during subsequent higher flow events will help to replenish fine fractions in these reaches and disperse sediment released from the dam. The latter effect will help dampen impacts farther downstream at, for example, Sages Ravine.

Downstream of sample location D2 and a small tributary coming in from river right, the channel enters a relatively steep reach with some bedrock exposures and boulder steps. Cascades, steps, and pools characterize the channel over the next approximately 1,000 feet downstream (Figure 9). Depositional opportunities are minimal in these reaches, and therefore impacts are also likely to be minimal.

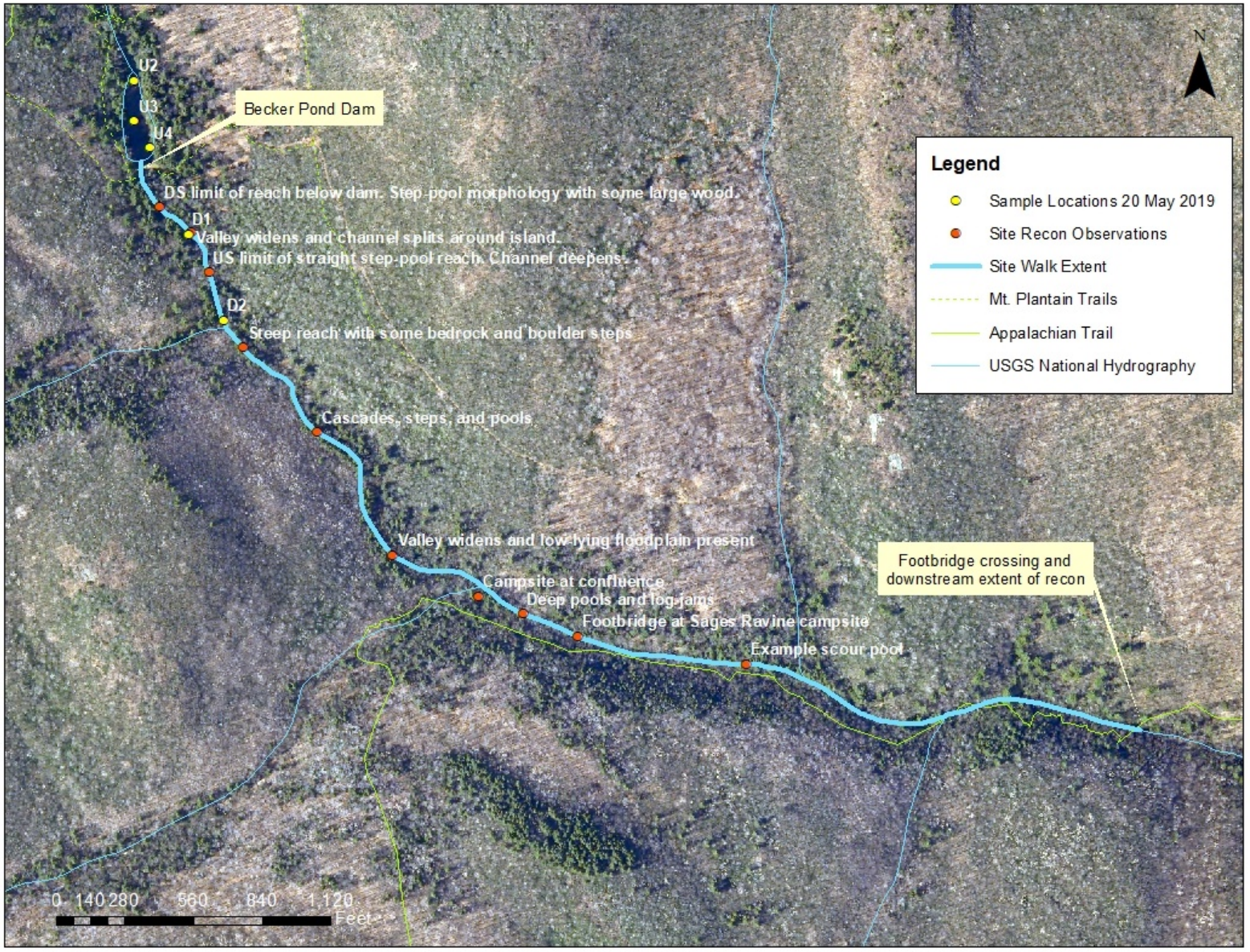

Figure 6. Map of reconnaissance survey extent

Figure 7. Looking upstream at the reach immediately downstream of the dam

Figure 8. Straight reach with relatively deep pools

Figure 9. Steep reach characterized by cascades, steps, and pools

Downstream, before the channel enters Sages Ravine, the valley widens and low-lying forest floodplain is present along the channel (Figure 10). This lower gradient reach is likely to be an area of deposition following dam removal, with possible permanent deposition on the floodplain and in low-energy areas of the channel.

An unofficial campsite is present on the top of the right bank at a tributary confluence and where the Appalachian Trail descends into the valley. Between the confluence and the footbridge crossing at the Sages Ravine campsite, approximately 450 feet, there are a number of large and deep pools that may fill temporarily following dam removal. Some are associated with log jams, which create backwater conditions ideal for deposition (Figure 11).

At the Sages Ravine campsite, large boulders constrain the flow and create turbulence that should help keep pools scoured out (Figure 12). Deposition may occur along the channel periphery on existing gravel and cobble bars. A number of what are likely popular swimming holes are present downstream of the campsite where the Appalachian Trail runs alongside the creek. The deepest pools are located immediately downstream of bedrock or boulder constrictions that create cascades and falls, causing turbulence that produces scour (Figure 13). While there may be deposition at the tails of these scour pools, some pool depth is likely to be maintained at the toes of the cascades and falls where turbulence is greatest.

The cascades and falls are interspersed with lower gradient cross sections where gravel and cobble have been deposited on the bed of the channel (Figure 14). These sections are likely to experience fining of the bed material and localized deposition in low-energy areas such as eddies.

The nearest downstream infrastructure is located approximately 1 mile downstream of the end of our survey where the unnamed brook crosses Underhill Road (State Route 41). In addition to the fact that the volume of impounded sediment is relatively small, our survey indicates that the brook between the dam and the crossing has sufficient roughness and opportunity for sorting and dispersing of sediment that is mobilized from the former impoundment. It is therefore unlikely that sediment pulses would be transported to the crossing as coherent sediment waves and thus, the risk of substantial impacts is low.

Figure 10. Low-lying floodplain on forest floor where valley widens

Figure 11. Large pool upstream of log jam

Figure 12. Looking downstream along reach at Sages Ravine campsite

Figure 13. Cascade caused by bedrock constriction and downstream pool

Figure 14. Cross section with coarse alluvium deposited on the bed

Discussion and Recommendations

As discussed in the previous section, the total mass of impounded sediment constitutes up to approximately 70% of the estimated average annual suspended sediment load of the brook and 5% of the estimated annual suspended sediment load of Schenob Brook. These ratios suggest that the probability of sediment-related impacts along the unnamed brook is small, according to guidelines published by the U.S. Bureau of Reclamation[4]. The same guidelines indicate that the probability of sediment-related impacts along the larger Schenob Brook is negligible.

Material stored within the impoundment and mobilized following dam removal would be dispersed by the brook downstream of the dam because flow competence and transport capacity are generally high relative to the size and volume of the impounded sediment. Given the sandy nature of the material and the characteristics of the channel and valley, the material would likely be transported intermittently with temporary storage in pools, upstream of log jams, on bars, and in other low-velocity areas. Thus, the primary impacts of sediment pulses are likely to include filling of pools, fining of the channel bed, and burial of other habitat features and/or aquatic species that cannot quickly mobilize and adapt to rapidly changing conditions. Most deposition is likely to be temporary; however, permanent deposition of a portion of the mobilized sediment may occur in secondary channels and low-lying floodplain areas where the valley widens locally. These effects would likely decrease with time and with distance downstream as the inputs of sediment are attenuated through repeated deposition and erosion. The size of the sediment waves, scale of sediment-related impacts, and the length of time required to disperse the material and move it through the system would depend on the timing, magnitude, frequency, and duration of flow events following dam removal and the extent to which sediment is eroded from the former impoundment.

Feedback from Mass DEP indicates that the preferred alternative from a permitting perspective is one that will reduce the risk of sediment impacts while being mindful of impacts within the impoundment itself, impacts to local roads if offsite disposal is required, and the burden of increased project costs. Working with the project partners, a preferred alternative has been identified that involves partial mechanical removal of a portion of the 550 cubic yards of impounded sediment that is anticipated to be readily mobilized following dam removal. Sediment will be removed by excavating a pilot channel through the impoundment to facilitate channel formation. Sediment disturbance and erosion will need to be managed during construction by using appropriate water management methods and pollution control BMPs.

Given the shallow depths of impounded sediment, release of the remaining sediment is expected to be somewhat gradual, with mobilization occurring over a period of time. Under the right conditions, some sediment may stabilize in place as vegetation establishes within the former impoundment.

[4] U.S. Bureau of Reclamation, 2017. Dam Removal Analysis Guidelines for Sediment. Advisory Committee on Water Information, Subcommittee on Sedimentation, U.S. Department of the Interior, Bureau of Reclamation, December 2017.

Appendix A – Due Diligence Review

Massachusetts Department of Fish and Game
Division of Ecological Restoration
Invested in Nature and Community

Beth Lambert, Director
Hunt Durey, Deputy Director

Becker Pond Dam Removal Project
Due Diligence Review

May 2019

1.0 Introduction: Project Purpose and Background

The Becker Pond Dam Removal Project is an aquatic habitat restoration project being undertaken by the The Nature Conservancy (TNC; dam owner), in partnership with the Commonwealth of Massachusetts Department of Fish and Game, Division of Ecological Restoration (DER). The dam, which is also known as the Dombrowski Pond Dam, is located within TNC's 800-acre Mount Plantain Preserve, in the Town of Mount Washington, Berkshire County, Massachusetts. The dam is situated near the headwaters of an unnamed tributary of Schenob Brook, which is a tributary of the Housatonic River.

The dam was constructed by the former owners of the property, the Dombrowski family, in the 1930's for personal use. When TNC purchased the property in 1999, the condition of the dam had deteriorated to the point that it was clear that the dam would have to be removed or repaired in the near future. A dam inspection conducted by Fuss and O'Neill in 2016 revealed the dam was in poor condition and a safety hazard in part due to partial failure of the left training wall (Inter-Fluve, Inc., 2018). The results of this report led TNC to pursue dam removal, which will ultimately eliminate the safety hazard posed by the dam and restore aquatic and hydrologic connectivity through the site. Removal will also improve habitat for brook trout (*Savelinus fontinalis*), improve climate resilience of a cold-water stream system, and reconnect the stream to its associated headwater wetlands.

In 2018, Inter-Fluve, Inc. (IFI) was retained by TNC to complete 30% design plans for the dam removal. This work included some initial tasks related to sediment management, including a desktop due diligence review, and sampling of the dam impoundment to estimate sediment volume, grain size, etc. The results of this work are documented in the *Becker Pond Dam 30% Design Memorandum* (Inter-Fluve, Inc., 2018).

As the project moves into the regulatory review phase, additional sediment sampling and testing is needed to satisfy various regulatory requirements, particularly, of Section 401 of the federal Clean Water Act (Act). In accordance with the sampling and analysis requirements for the evaluation of applications for dredging and dredged material management under the Act and implementing regulations (314 CMR 9.00 *et seq.*), an updated due diligence review has been conducted to assess the potential for oil or hazardous materials (OHM) as defined under 310 CMR 40.00 *et seq.* (Massachusetts Contingency Plan). The results of this effort are presented below.

2.0 Information Sources

The following sources were reviewed as part of the due diligence effort:

1. Previous due diligence review conducted by IFI and documented in the report entitled *Becker Pond 30% Design Memorandum* (Inter-Fluve, Inc., 2018);
2. Review of historical and contemporary maps and aerial photographs;
3. Review of Sanborn fire insurance maps;
4. Anecdotal information from the current landowner (TNC);
5. An inquiry with the Egremont Fire Department[1] and the Mt. Washington Board of Health;
6. US Environmental Protection Agency (EPA) List of Superfund NPL Sites in Massachusetts;
7. Review of the Massachusetts Department of Environmental Protection's (DEP) online Reportable Releases database;
8. Massachusetts Hazardous Waste Generators (RCRA);
9. DEP Groundwater Discharge Permits; and
10. Other online databases[1]:
    a. Underground Storage Tanks
    b. DEP 2012 Integrated List of Waters
    c. DEP BWP Major and Minor Facilities
    d. DEP Solid Waste Facilities (including landfills)
    e. DEP Tier Classified Chapter 21E Sites
    f. DEP Oil and/or Hazardous Material Sites with Activity and Use Limitations (AUL)
    g. Water Supply Protection Areas

The approximate extent of the upstream watershed and land use cover percentages were estimated using the USGS *StreamStats* application.

3.0 Results

3.1 Historic and Current Land Use

As noted in the introduction, Becker Pond Dam is located within TNC's 800-acre Mt. Plantain Preserve. As such, the area immediately surrounding the dam and impoundment is entirely forested. The closest developed parcel (190 East Street) is over 0.25 miles away. The upstream watershed is approximately 1.0 square mile in size (see watershed boundary maps in Appendix A), 80% of which is forested, 1.8% developed and an additional 0.05% impervious surface (Streamstats, 2019). Remaining area consists of wetland and agricultural fields. Developed parcels appear to be used as residences and/or for small-scale farming. Historical aerial photography (dating back to 1959) and topographic maps (dating back to 1888) suggest that current land use has not changed appreciably. Anecdotal information from the landowner indicates that Becker Pond Dam was constructed by the Dombrowski Family in the 1930's for "personal use," and there was no mill or other structure on site with the exception of a lean-to which has since been removed. This is corroborated by historical aerial photography and topographic mapping.

3.2 Summary of Findings

According to the databases reviewed as part of this due diligence effort, the Becker Pond sub-watershed does not contain any listed hazardous waste disposal sites ("Chapter 21e sites"), BWP Major and Minor Facilities,

[1] Information obtained via MassGIS OLIVER Interactive Mapping Tool.

hazardous waste generators, solid waste facilities, groundwater discharge permits, integrated waters, AUL sites, water supply protection areas, and underground storage tanks. IFI (2018) previously identified two sites in the Town of Mount Washington, but both were outside of the project sub-watershed and both were given Release Action Outcome statements of "no significant risk":

1. RTN 1-0015514 (2004): Near Hunts Pond, north of the project sub-watershed; and
2. RTN 1-0014693 (2003): At the intersection of East Street and Cross Road, approximately two miles north of the project sub-watershed.

DER review of the database found no other reportable releases of oil or hazardous materials.

It should be noted that Sanborn fire insurance atlases are not available due to the rural nature of the watershed. In addition, phone inquiries with the Egremont Fire Department[2] and the Mt. Washington Board of Health were made via phone on May 6, 2019, but neither call was returned. However, given the current and historic land use, there is a low potential for oil or hazardous materials to be present, and if any release met DEP reporting requirements, it would have been included in the DEP online database.

4.0 Conclusions

The results of the due diligence review suggest that there is a low potential for oil or hazardous materials to be present in the sediment proposed to be sampled in Becker Pond. No spills of oil or hazardous material have been reported within the sub-watershed. These results are consistent with previous due diligence review conducted by IFI in 2018. Future sediment sampling and testing should follow guidelines established in *401 Water Quality Certification for Discharge or Fill Material Dredging, and Dredged Material Disposal in Waters of the United States Within the Commonwealth* (314 CMR 9.00 *et seq*.). However, there is no evidence suggesting the need for analysis of any parameters beyond that specifically required under 314 CMR 9.07(2)6.

[2] Egremont provides fire protection services to the Town of Mt. Washington.

References

401 Water Quality Certification for Discharge of Dredged or Fill Material, Dredging, and Dredged Material Disposal in Waters of the United States within the Commonwealth, 314 CMR 9.00 *et seq*. (2014).

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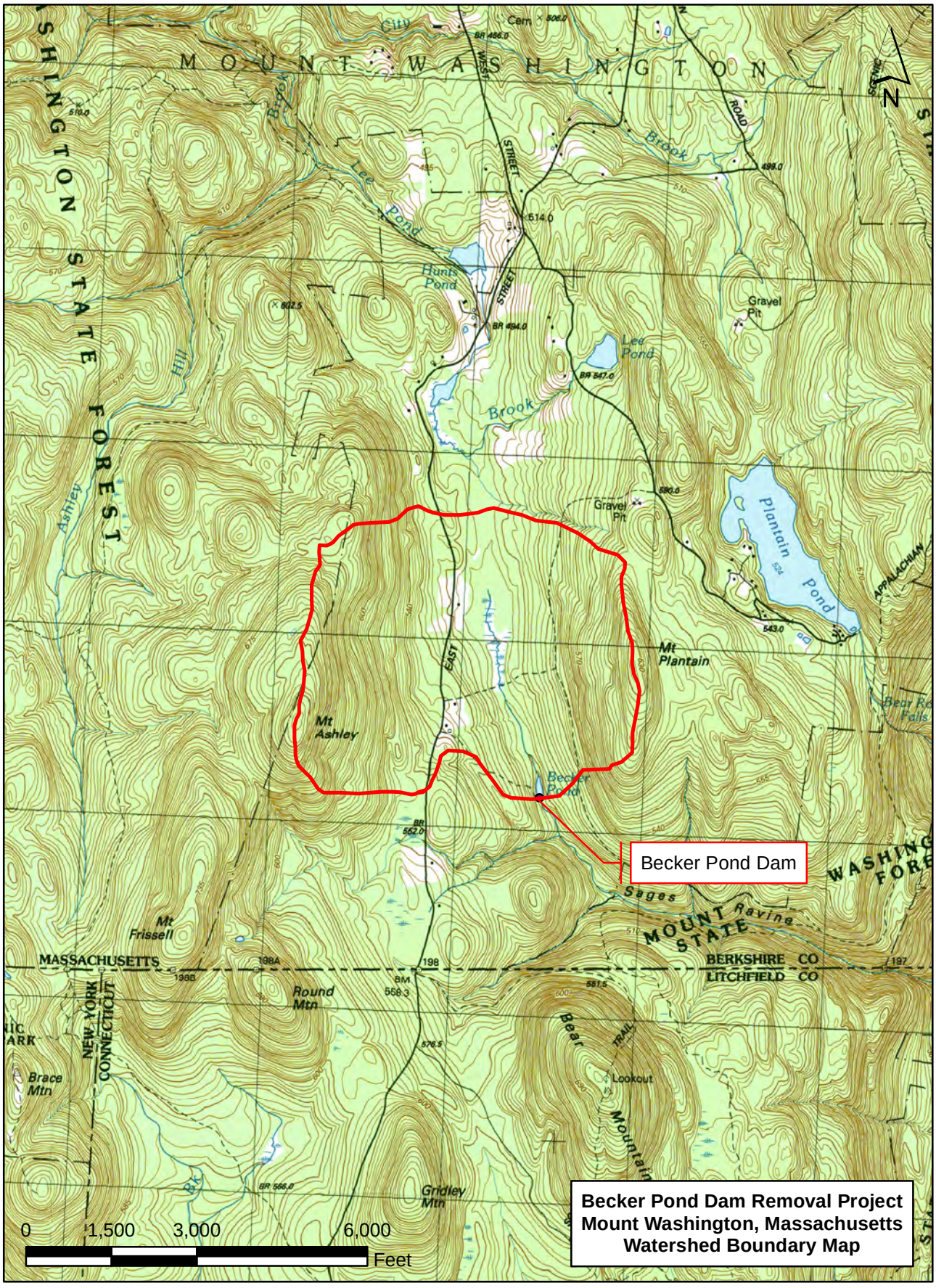
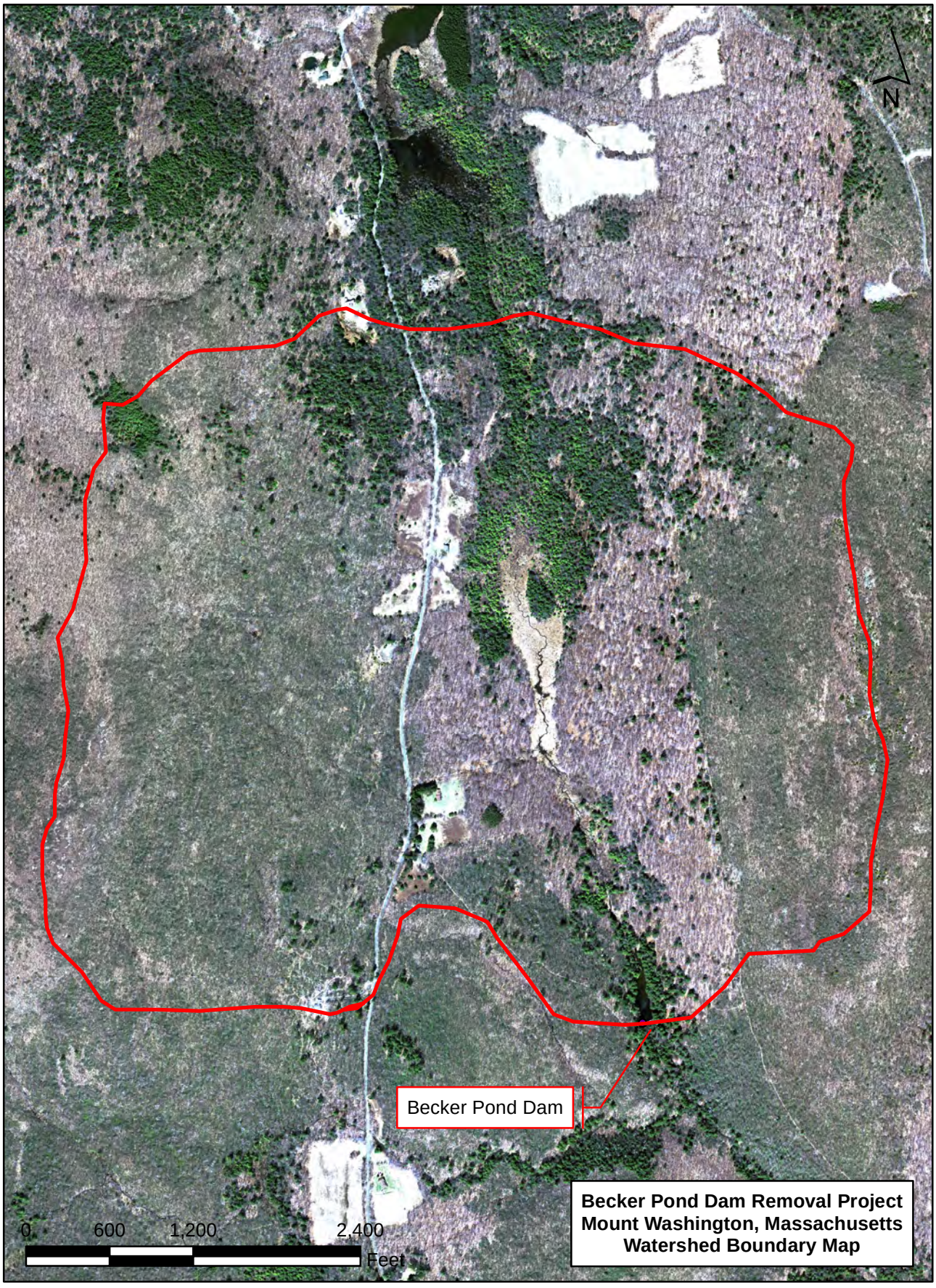
Appendix A

Watershed Boundary Maps



1. USGS Topo Map courtesy of MassGIS.



1. Orthophotography courtesy of MassGIS.

Appendix B – Sediment Sampling Plan

Massachusetts Department of Fish and Game
Division of Ecological Restoration
Invested in Nature and Community

Beth Lambert, Director
Hunt Durey, Deputy Director

Becker Pond Dam Removal Project
Sediment Sampling and Analysis Plan

May 2019

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As the project moves into the regulatory review phase, additional sediment sampling and testing is needed to satisfy various regulatory requirements, particularly, of Section 401 of the federal Clean Water Act. This sampling plan builds on IFI's previously completed work and seeks to address additional sediment collection and testing needs. Data collected through this process will provide information on the sediments within, and immediately upstream and downstream of, the impoundment, and will help guide future sediment management decisions. To support this sampling plan, a limited due diligence study was performed by DER in accordance with the guidance set forth in 314 CMR 9.07(2). This study indicates that there are limited potential sources of contamination within the Becker Pond Dam sub-watershed, and corroborates previous work completed by IFI (Massachusetts Division of Ecological Restoration, 2019).

2.0 Sediment Sampling Plan

This sediment sampling plan was developed by DER to guide sediment sampling work being performed as part of the Becker Pond Dam Removal Project[1]. This plan incorporates requirements and guidance presented in *Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analysis: Technical Manual (EPA-823-B-01-002)* (U.S. Environmental Protection Agency [USEPA]), 314 CMR 9.07 (*401 Water Quality Certification*) and DEP interim Policy #COMM-94-007 (*Dredged Sediment Reuse and Disposal*).

2.1 Sediment Sampling

IFI has previously estimated the volume of impounded sediment to be less than 1,500 cubic yards (CY), with grain sizes consisting of primarily sand with some gravel and fines (Inter-Fluve, 2018). Three (3) core samples will be taken at representative locations distributed along the path of the proposed channel and future floodplain within the impoundment. In addition, three (3) grab samples will be collected. The purpose of the grab sampling is to characterize mobile material already moving through the system, conditions within the active biological layer, and downstream receiving areas. Approximate sample locations are shown on the attached figure (see Appendix A), and include the following:

1. One (1) grab sample in depositional area upstream of the existing impoundment and footbridge;
2. Two (2) core samples within the thalweg of the proposed channel;
3. One (1) core sample within the area of future floodplain; and
4. Two (2) grab samples within depositional areas downstream of the dam and impoundment area.

Exact locations of these samples will be determined in the field. The following sections outline the general equipment and procedures that will be followed to obtain the sediment samples identified above.

2.2 Equipment and Materials

The following equipment will be utilized as part of the sediment collection work:

- Stainless Steel AMS® (or similar)Extendable Core Sampler
- Stainless Steel Spade
- Stainless Steel Mixing Bowls and Spoons
- Laboratory-Supplied Sample Containers
- Sample Labels
- Nitrile Gloves
- Decontamination Liquids
- Logbook and Sampling Data Forms
- Cooler and Ice
- Camera
- Chest Waders (with Hip-Belt) or Hip Boots
- Small boat or canoe
- Life Preservers

[1] While DER has completed due diligence and this sediment sampling plan, IFI will be managing the actual sediment sampling, testing, and subsequent reporting.

2.3 Equipment Decontamination Procedures

Sediment sampling equipment will be decontaminated before use to prevent foreign contamination of the sample. The following procedures will be followed:

1. Rinse equipment of debris and remnant particles prior to cleaning
2. Wash and scrub with detergent (e.g., liquinox, a laboratory grade, non-phosphate detergent)
3. Rinse with tap water
4. Rinse with deionized water
5. Air dry
6. Rinse with pesticide-grade methanol
7. Air dry

If equipment is decontaminated prior to entering the field, the sampling equipment will be wrapped in aluminum foil (shiny side out) to protect against ambient dust and vapors.

2.4 Sediment Sample Collection

The goal of sample collection is to obtain a sediment samples that are representative of sedimented material. Disposable nitrile gloves will be worn during sediment sampling and will be discarded after collecting and processing each sediment sample.

Sediment cores will be collected from a boat or canoe using a hand core sampler and only vertically compositing (mixing) each core. No horizontal compositing (mixing of separate cores) is proposed, unless visual or olfactory evidence in the field suggests a distinct layer of obvious pollution. Each sediment sample core will extend to the original reservoir bottom grade at that location. If the sediment deposits are too thin (e.g., less than one inch) to obtain a sample, an alternative sampling location may be selected.

Sediment grab samples to be collected from the channel upstream and downstream of the impoundment will be collected by wading and with a stainless steel spade or other sampler. Grab samples will be analyzed individually and not composited.

Upon retrieval of the sampler, the sediment sample will be placed into a clean (i.e., decontaminated) stainless steel bowl and thoroughly homogenized with a stainless steel spoon. Pre-cleaned sampling containers provided by the laboratory will then be filled with the sediment following homogenization of the sample such that no headspace is present. Each sample container will be labeled with the sample identification (ID), time, date, and sample location. Samples will be placed in a cooler on ice for transport to the laboratory.

A sample description, which includes information related to the sample ID, sample location, sediment descriptors (e.g., texture, color, water depth to substrate, depth of sediment layer, and visual moisture content), as well as other pertinent data regarding the sampling event will be recorded in a field notebook or on a data sheet. Copies of field notes or forms will be maintained in the project file.

3.0 Sample Handling

3.1 Sample Documentation

Chain-of-custody forms will be filled out accordingly and be placed inside the cooler in a plastic freezer bag (or per laboratory requirements). Chain-of-custody forms will accompany the samples during shipping and storage.

3.2 Sample Storage and Shipping

Following collection, sample containers will be placed in a cooler with enough ice to maintain a temperature of 4 degrees Celsius. The cooler containing sample containers will be delivered to the laboratory as per laboratory requirements.

4.0 Analytical Evaluation and Reporting

4.1 Sample Analyses

Sediment samples will be analyzed by a Massachusetts-certified laboratory for the parameters and reporting limits listed in 314 CMR 9.07(2)(b)(6). Proposed testing parameters include the following:

- Grain Size (Sieve Nos. 4, 10, 40, 60, and 200)
- Total Organic Carbon (TOC)
- Percent Water
- Total Metals including Arsenic, Cadmium, Chromium (total and VI), Copper, Lead, Mercury, Nickel, and Zinc.
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Polychlorinated Biphenyls (PCBs)
- Extractable Petroleum Hydrocarbons (EPHs)

Laboratory analyses of samples will be conducted in accordance with 314 CMR 9.07(2) testing methods and will meet minimum reporting limits/detection levels to the maximum extent possible.

4.2 Analytical Evaluation

The results of the laboratory analyses will be reviewed, and will include an evaluation of the analytical sample-specific method detection limits (MDL) and reporting limits (RL) as provided by the laboratory. Data will be evaluated against ecological risk-based media standards using the applicable criteria such as the Massachusetts Contingency Plan (MCP; 310 CMR 40.00) Method 1 Standards and the 401 Water Quality Standards. The analytical evaluation will involve assessing any potential impacts of contaminated sediments on the aquatic resources including the corresponding media-specific Threshold Effect Levels (screening values) and Probable Effect Levels (effects values).

4.3 Reporting

A summary report will be provided based on these data and the risk-based evaluation. Data will be compiled and presented in tabular form, and will include the results compared to the appropriate criteria.

References

401 Water Quality Certification for Discharge of Dredged or Fill Material, Dredging, and Dredged Material Disposal in Waters of the United States within the Commonwealth, 314 CMR 9.00 *et seq*. (2014).

Inter-Fluve, Inc. (2018). *Becker Pond Dam 30% Design Memorandum*. Cambridge, Massachusetts.

Massachusetts Contingency Plan, 310 CMR 40.00 *et seq*. (2014).

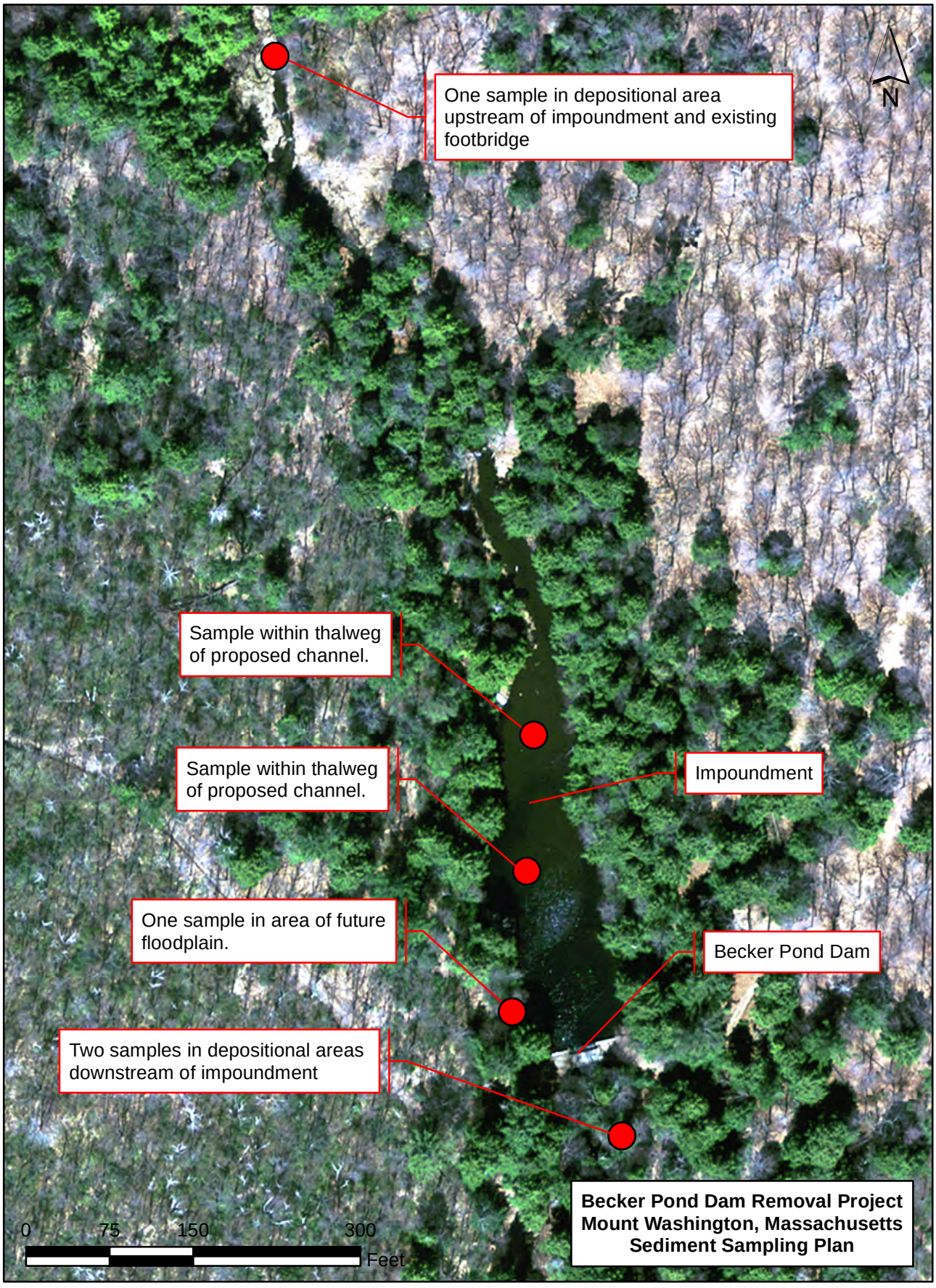
Massachusetts Department of Environmental Protection. (1995). *Interim Policy COMM-94-007: Dredged Sediment Reuse or Disposal*. Retrieved May 14, 2019 from https://www.mass.gov/guides/interim-policy-comm-94-007-dredged-sediment-reuse-or-disposal.

Massachusetts Division of Ecological Restoration. (2019). *Becker Pond Dam Removal Project: Due Diligence Review*. Boston, Massachusetts.

United States Environmental Protection Agency. (2001). *Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analysis: Technical Manual (EPA-823-B-01-002)*. Washington, D.C.

Appendix A

Sampling Map



1. All sampling locations are approximate. Exact locations will be field determined by consultant.
2. Orthophotography courtesy of MassGIS.

Appendix C – Sediment Testing Results

Laboratory Report

Absolute Resource associates
124 Heritage Avenue Portsmouth NH 03801

Candice Constantine
Inter-Fluve Inc
220 Concord Avenue
#2
Cambridge, MA 02138

PO Number: None
Job ID: 48753
Date Received: 5/22/19

Project: Becker Pond Dam Removal

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

Jennifer Lowe
Laboratory Manager

Date of Approval: 6/12/2019
Total number of pages: 39

Absolute Resource Associates Certifications

New Hampshire	1732	Massachusetts	M-NH902
Maine	NH903		

Project ID: Becker Pond Dam Removal

Sample Association Table

Field ID	Matrix	Date-Time Sampled	Lab#	Analysis
D1	Solid	5/20/2019 12:15	48753-001	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Shipping & Handling to Subcontract Lab
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020
D2	Solid	5/20/2019 12:30	48753-002	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020
U1	Solid	5/20/2019 12:45	48753-003	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020

Project ID: Becker Pond Dam Removal

Sample Association Table

Field ID	Matrix	Date-Time Sampled	Lab#	Analysis
U2	Solid	5/20/2019 18:00	48753-004	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020
U3	Solid	5/20/2019 18:30	48753-005	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020
U4	Solid	5/20/2019 19:00	48753-006	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
2-methylnaphthalene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
acenaphthylene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
acenaphthene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
dibenzofuran	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
fluorene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
phenanthrene	**0.034** B	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
anthracene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
fluoranthene	**0.036**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
pyrene	**0.038**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(a)anthracene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
chrysene	**0.028**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(b)fluoranthene	**0.038**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(k)fluoranthene	**0.019**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(a)pyrene	**0.016**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
indeno(1,2,3-cd)pyrene	**0.012**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
dibenzo(a,h)anthracene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(g,h,i)perylene	**0.018**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**74**	43-116	%	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
o-terphenyl SUR	**91**	33-141	%	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
2-methylnaphthalene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
acenaphthylene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
acenaphthene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
dibenzofuran	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
fluorene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
phenanthrene	**0.0090**	B0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
anthracene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
fluoranthene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
pyrene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(a)anthracene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
chrysene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(b)fluoranthene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(k)fluoranthene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(a)pyrene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
indeno(1,2,3-cd)pyrene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
dibenzo(a,h)anthracene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(g,h,i)perylene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**74**	43-116	%	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
o-terphenyl SUR	**97**	33-141	%	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
naphthalene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
2-methylnaphthalene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
acenaphthylene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
acenaphthene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
dibenzofuran	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
fluorene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
phenanthrene	**0.012** B	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
anthracene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
fluoranthene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
pyrene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(a)anthracene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
chrysene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(b)fluoranthene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(k)fluoranthene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(a)pyrene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
indeno(1,2,3-cd)pyrene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
dibenzo(a,h)anthracene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(g,h,i)perylene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**71**	43-116	%	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
o-terphenyl SUR	**97**	33-141	%	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
2-methylnaphthalene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
acenaphthylene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
acenaphthene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
dibenzofuran	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
fluorene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
phenanthrene	**0.040** B	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
anthracene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
fluoranthene	**0.039**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
pyrene	**0.043**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(a)anthracene	**0.022**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
chrysene	**0.027**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(b)fluoranthene	**0.047**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(k)fluoranthene	**0.030**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(a)pyrene	**0.047**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
indeno(1,2,3-cd)pyrene	**0.035**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
dibenzo(a,h)anthracene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(g,h,i)perylene	**0.039**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**69**	43-116	%	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
o-terphenyl SUR	**87**	33-141	%	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
2-methylnaphthalene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
acenaphthylene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
acenaphthene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
dibenzofuran	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
fluorene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
phenanthrene	**0.066** B	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
anthracene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
fluoranthene	**0.070**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
pyrene	**0.063**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(a)anthracene	**0.022**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
chrysene	**0.040**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(b)fluoranthene	**0.078**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(k)fluoranthene	**0.038**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(a)pyrene	**0.037**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
indeno(1,2,3-cd)pyrene	**0.036**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
dibenzo(a,h)anthracene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(g,h,i)perylene	**0.042**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**76**	43-116	%	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
o-terphenyl SUR	**95**	33-141	%	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
2-methylnaphthalene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
acenaphthylene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
acenaphthene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
dibenzofuran	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
fluorene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
phenanthrene	**0.042** B	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
anthracene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
fluoranthene	**0.052**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
pyrene	**0.048**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(a)anthracene	**0.019**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
chrysene	**0.034**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(b)fluoranthene	**0.057**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(k)fluoranthene	**0.031**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(a)pyrene	**0.028**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
indeno(1,2,3-cd)pyrene	**0.032**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
dibenzo(a,h)anthracene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(g,h,i)perylene	**0.039**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**63**	43-116	%	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
o-terphenyl SUR	**84**	33-141	%	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
alpha-BHC	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
beta-BHC	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
delta-BHC	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
gamma-BHC (Lindane)	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Heptachlor	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Aldrin	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Heptachlor Epoxide	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endosulfan I	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Dieldrin	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
4,4'-DDE	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endrin	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endosulfan II	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
4,4'-DDD	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endosulfan Sulfate	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
4,4'-DDT	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Methoxychlor	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endrin Ketone	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endrin Aldehyde	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
alpha-Chlordane	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
gamma-Chlordane	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Toxaphene	< 0.61	0.61	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**49**	30-150	%	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
decachlorobiphenyl SUR	**48**	30-150	%	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
alpha-BHC	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
beta-BHC	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
delta-BHC	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
gamma-BHC (Lindane)	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Heptachlor	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Aldrin	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Heptachlor Epoxide	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endosulfan I	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Dieldrin	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
4,4'-DDE	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endrin	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endosulfan II	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
4,4'-DDD	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endosulfan Sulfate	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
4,4'-DDT	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Methoxychlor	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endrin Ketone	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endrin Aldehyde	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
alpha-Chlordane	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
gamma-Chlordane	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Toxaphene	< 0.26	0.26	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**69**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
decachlorobiphenyl SUR	**76**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
alpha-BHC	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
beta-BHC	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
delta-BHC	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
gamma-BHC (Lindane)	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Heptachlor	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Aldrin	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Heptachlor Epoxide	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endosulfan I	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Dieldrin	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
4,4'-DDE	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endrin	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endosulfan II	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
4,4'-DDD	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endosulfan Sulfate	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
4,4'-DDT	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Methoxychlor	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endrin Ketone	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endrin Aldehyde	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
alpha-Chlordane	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
gamma-Chlordane	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Toxaphene	< 0.35	0.35	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**61**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
decachlorobiphenyl SUR	**67**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
alpha-BHC	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
beta-BHC	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
delta-BHC	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
gamma-BHC (Lindane)	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Heptachlor	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Aldrin	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Heptachlor Epoxide	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endosulfan I	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Dieldrin	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
4,4'-DDE	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endrin	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endosulfan II	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
4,4'-DDD	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endosulfan Sulfate	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
4,4'-DDT	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Methoxychlor	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endrin Ketone	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endrin Aldehyde	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
alpha-Chlordane	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
gamma-Chlordane	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Toxaphene	< 0.89	0.89	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**39**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
decachlorobiphenyl SUR	**33**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
alpha-BHC	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
beta-BHC	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
delta-BHC	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
gamma-BHC (Lindane)	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Heptachlor	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Aldrin	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Heptachlor Epoxide	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endosulfan I	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Dieldrin	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
4,4'-DDE	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endrin	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endosulfan II	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
4,4'-DDD	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endosulfan Sulfate	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
4,4'-DDT	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Methoxychlor	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endrin Ketone	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endrin Aldehyde	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
alpha-Chlordane	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
gamma-Chlordane	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Toxaphene	< 0.77	0.77	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**36**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
decachlorobiphenyl SUR	**36**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
alpha-BHC	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
beta-BHC	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
delta-BHC	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
gamma-BHC (Lindane)	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Heptachlor	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Aldrin	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Heptachlor Epoxide	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endosulfan I	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Dieldrin	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
4,4'-DDE	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endrin	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endosulfan II	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
4,4'-DDD	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endosulfan Sulfate	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
4,4'-DDT	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Methoxychlor	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endrin Ketone	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endrin Aldehyde	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
alpha-Chlordane	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
gamma-Chlordane	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Toxaphene	< 0.55	0.55	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**48**	30-150	%	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
decachlorobiphenyl SUR	**49**	30-150	%	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
PCB-1016	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1221	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1232	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1242	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1248	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1254	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1260	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1262	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1268	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**53**	30-150	%	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
decachlorobiphenyl SUR	**31**	30-150	%	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A

Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
PCB-1016	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1221	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1232	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1242	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1248	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1254	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1260	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1262	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1268	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**105**	30-150	%	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
decachlorobiphenyl SUR	**89**	30-150	%	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
PCB-1016	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1221	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1232	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1242	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1248	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1254	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1260	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1262	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1268	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**107**	30-150	%	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
decachlorobiphenyl SUR	**95**	30-150	%	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A

Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
PCB-1016	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1221	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1232	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1242	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1248	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1254	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1260	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1262	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1268	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**50**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
decachlorobiphenyl SUR	**24** *	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A

**** The surrogate showed recovery outside the acceptance limits. Reanalysis of the sample showed similar results. Matrix interference suspected.***

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
PCB-1016	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1221	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1232	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1242	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1248	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1254	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1260	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1262	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1268	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**53**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
decachlorobiphenyl SUR	**37**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A

Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
PCB-1016	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1221	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1232	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1242	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1248	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1254	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1260	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1262	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1268	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**58**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
decachlorobiphenyl SUR	**43**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
2-methylnaphthalene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
phenanthrene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
acenaphthene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
acenaphthylene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
fluorene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
anthracene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
fluoranthene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
pyrene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(a)anthracene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
chrysene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(b)fluoranthene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(k)fluoranthene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(a)pyrene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
indeno(1,2,3-cd)pyrene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
dibenzo(a,h)anthracene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(g,h,i)perylene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
Unadjusted C11-C22 Aromatics	**69**	62	ug/g	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
C9-C18 Aliphatics	< 62	62	ug/g	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
C19-C36 Aliphatics	< 62	62	ug/g	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
C11-C22 Aromatics	**69**	62	ug/g	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**48**	40-140	%	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
o-terphenyl SUR	**54**	40-140	%	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
2-fluorobiphenyl SUR	**84**	40-140	%	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
2-bromonaphthalene SUR	**80**	40-140	%	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
2-methylnaphthalene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
phenanthrene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
acenaphthene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
acenaphthylene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
fluorene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
anthracene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
fluoranthene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
pyrene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(a)anthracene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
chrysene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(b)fluoranthene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(k)fluoranthene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(a)pyrene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
indeno(1,2,3-cd)pyrene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
dibenzo(a,h)anthracene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(g,h,i)perylene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
Unadjusted C11-C22 Aromatics	< 25	25	ug/g	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
C9-C18 Aliphatics	< 25	25	ug/g	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
C19-C36 Aliphatics	< 25	25	ug/g	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
C11-C22 Aromatics	< 25	25	ug/g	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**50**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
o-terphenyl SUR	**50**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
2-fluorobiphenyl SUR	**82**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
2-bromonaphthalene SUR	**81**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
2-methylnaphthalene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
phenanthrene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
acenaphthene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
acenaphthylene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
fluorene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
anthracene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
fluoranthene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
pyrene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(a)anthracene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
chrysene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(b)fluoranthene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(k)fluoranthene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(a)pyrene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
indeno(1,2,3-cd)pyrene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
dibenzo(a,h)anthracene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(g,h,i)perylene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
Unadjusted C11-C22 Aromatics	**46**	36	ug/g	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
C9-C18 Aliphatics	< 36	36	ug/g	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
C19-C36 Aliphatics	< 36	36	ug/g	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
C11-C22 Aromatics	**46**	36	ug/g	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**55**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
o-terphenyl SUR	**71**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
2-fluorobiphenyl SUR	**101**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
2-bromonaphthalene SUR	**99**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
2-methylnaphthalene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
phenanthrene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
acenaphthene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
acenaphthylene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
fluorene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
anthracene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
fluoranthene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
pyrene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(a)anthracene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
chrysene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(b)fluoranthene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(k)fluoranthene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(a)pyrene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
indeno(1,2,3-cd)pyrene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
dibenzo(a,h)anthracene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(g,h,i)perylene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
Unadjusted C11-C22 Aromatics	**210**	89	ug/g	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
C9-C18 Aliphatics	< 89	89	ug/g	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
C19-C36 Aliphatics	< 89	89	ug/g	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
C11-C22 Aromatics	**210**	89	ug/g	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**49**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
o-terphenyl SUR	**58**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
2-fluorobiphenyl SUR	**90**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
2-bromonaphthalene SUR	**88**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
2-methylnaphthalene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
phenanthrene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
acenaphthene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
acenaphthylene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
fluorene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
anthracene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
fluoranthene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
pyrene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(a)anthracene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
chrysene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(b)fluoranthene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(k)fluoranthene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(a)pyrene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
indeno(1,2,3-cd)pyrene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
dibenzo(a,h)anthracene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(g,h,i)perylene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
Unadjusted C11-C22 Aromatics	**110**	76	ug/g	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
C9-C18 Aliphatics	< 76	76	ug/g	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
C19-C36 Aliphatics	< 76	76	ug/g	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
C11-C22 Aromatics	**110**	76	ug/g	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**48**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
o-terphenyl SUR	**51**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
2-fluorobiphenyl SUR	**87**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
2-bromonaphthalene SUR	**85**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753
Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
2-methylnaphthalene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
phenanthrene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
acenaphthene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
acenaphthylene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
fluorene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
anthracene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
fluoranthene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
pyrene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(a)anthracene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
chrysene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(b)fluoranthene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(k)fluoranthene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(a)pyrene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
indeno(1,2,3-cd)pyrene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
dibenzo(a,h)anthracene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(g,h,i)perylene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
Unadjusted C11-C22 Aromatics	**64**	54	ug/g	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
C9-C18 Aliphatics	< 54	54	ug/g	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
C19-C36 Aliphatics	< 54	54	ug/g	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
C11-C22 Aromatics	**64**	54	ug/g	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**41**	40-140	%	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
o-terphenyl SUR	**45**	40-140	%	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
2-fluorobiphenyl SUR	**87**	40-140	%	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
2-bromonaphthalene SUR	**86**	40-140	%	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Arsenic	**4.4**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Cadmium	**0.97**	0.10	ug/g	1	AGN	5/30/19	11720	5/30/19	21:22	SW3051A6020A
Chromium	**9.0**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Copper	**10**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Lead	**21**	6.7	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Mercury	< 0.14	0.14	ug/g	1	AGN	5/29/19	11716	5/29/19	16:28	SW7471B
Nickel	**19**	13	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Zinc	**95**	13	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A

Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Arsenic	**2.7**	0.55	ug/g	1	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Cadmium	**0.32**	0.06	ug/g	1	AGN	5/30/19	11720	5/30/19	21:29	SW3051A6020A
Chromium	**5.2**	0.6	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Copper	**5.0**	0.6	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Lead	**7.7**	2.8	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Mercury	< 0.13	0.13	ug/g	1	AGN	5/29/19	11716	5/29/19	16:30	SW7471B
Nickel	**12**	5.5	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Zinc	**40** B	5.5	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A

B = A low level of this analyte was also detected in the method blank.

Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Arsenic	**2.1**	0.80	ug/g	1	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Cadmium	**0.22**	0.08	ug/g	1	AGN	5/30/19	11720	5/30/19	21:36	SW3051A6020A
Chromium	**9.0**	8.0	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Copper	**4.5**	0.8	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Lead	**10**	4.0	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Mercury	< 0.13	0.13	ug/g	1	AGN	5/29/19	11716	5/29/19	16:32	SW7471B
Nickel	**14**	8.0	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Zinc	**64** B	8.0	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Arsenic	**5.4**	2.2	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Cadmium	**1.1**	0.11	ug/g	1	AGN	5/30/19	11720	5/30/19	21:43	SW3051A6020A
Chromium	**17**	2.2	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Copper	**15**	2.2	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Lead	**43**	11	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Mercury	< 0.16	0.16	ug/g	1	AGN	5/29/19	11716	5/29/19	16:34	SW7471B
Nickel	**31**	22	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Zinc	**150**	22	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A

Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Arsenic	**5.0**	1.5	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Cadmium	**1.2**	0.11	ug/g	1	AGN	5/30/19	11720	5/30/19	21:49	SW3051A6020A
Chromium	**18**	15	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Copper	**15**	15	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Lead	**42**	7.4	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Mercury	**0.20**	0.14	ug/g	1	AGN	5/29/19	11716	5/29/19	16:36	SW7471B
Nickel	**22**	15	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Zinc	**120**	15	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A

Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Arsenic	**3.0**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Cadmium	**0.47**	0.09	ug/g	1	AGN	5/30/19	11720	5/30/19	21:56	SW3051A6020A
Chromium	**8.3**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Copper	**11**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Lead	**25**	6.7	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Mercury	< 0.13	0.13	ug/g	1	AGN	5/29/19	11716	5/29/19	16:41	SW7471B
Nickel	**12**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Zinc	**66** B	13	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Percent Solids	**32.1**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-002
Sample ID: D2
Matrix: Solid
Sampled: 5/20/19 12:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Percent Solids	**75.2**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-003
Sample ID: U1
Matrix: Solid
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Percent Solids	**55.5**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-004
Sample ID: U2
Matrix: Solid
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Percent Solids	**21.8**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-005
Sample ID: U3
Matrix: Solid
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Percent Solids	**25.5**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-006
Sample ID: U4
Matrix: Solid
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Percent Solids	**35.2**	1.0	%	1			1901484			SM2540B,G

Quality Control Report

124 Heritage Avenue Unit 16
Portsmouth, NH 03801
www.absoluteresourceassociates.com

Case Narrative
Lab # 48753

Sample Receiving and Chain of Custody Discrepancies

Samples were received in acceptable condition, at 3 degrees C, on ice, and in accordance with sample handling, preservation and integrity guidelines.
The TOC analysis was subcontracted to Eurofins TestAmerica, Pittsburgh, of Pittsburgh, PA.

Calibration

No exceptions noted.

Method Blank

PAH: The compound, phenanthrene, was detected in the BLK11730 at 0.0056 ug/g. The associated results have been qualified accordingly.
Metals: The element, Zinc, was detected in the BLK11707 at 7.4ug/g. There is no impact to the data for samples 48753-001, -004, and -005 as the concentrations detected in these field samples were greater than ten times the blank contamination. The results for samples 48753-002, -003, and -006 have been qualified accordingly.

Surrogate Recoveries

PCB: The surrogate, decachlorobiphenyl, for sample 48753-004, showed recovery outside the acceptance limits. Reanalysis of the sample showed similar results. Matrix interference suspected.

Laboratory Control Sample Results

EPH: The relative percent difference between the LCS and LCSD11718 was outside the acceptance criteria for 2-methylnaphthalene. The percent recovery for this analyte in each QC parameter was within the acceptance criteria. No impact to the data suspected.

Matrix Spike/Matrix Spike Duplicate/Duplicate Results

Not requested for this project.

Other

Reporting Limits: Dilutions performed during the analysis are noted on the result pages.

No other exceptions noted.

GLOSSARY

%R	Percent Recovery
BLK	Blank (Method Blank, Preparation Blank)
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
Dil'n	Dilution
DL	Detection Limit
DUP	Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantitation
MB	Methanol Blank (associated with solid VOC samples)
MLCS	Methanol Laboratory Control Sample (associated with solid VOC samples)
MLCSD	Methanol Laboratory Control Sample Duplicate (associated with solid VOC samples)
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PB	Preparation Blank
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
SUR	Surrogate

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
MA EPH	BLK11718	naphthalene		<	0.2	ug/g						
		2-methylnaphthalene		<	0.2	ug/g						
		phenanthrene		<	0.2	ug/g						
		acenaphthene		<	0.2	ug/g						
		acenaphthylene		<	0.2	ug/g						
		fluorene		<	0.2	ug/g						
		anthracene		<	0.2	ug/g						
		fluoranthene		<	0.2	ug/g						
		pyrene		<	0.2	ug/g						
		benzo(a)anthracene		<	0.2	ug/g						
		chrysene		<	0.2	ug/g						
		benzo(b)fluoranthene		<	0.2	ug/g						
		benzo(k)fluoranthene		<	0.2	ug/g						
		benzo(a)pyrene		<	0.2	ug/g						
		indeno(1,2,3-cd)pyrene		<	0.2	ug/g						
		dibenzo(a,h)anthracene		<	0.2	ug/g						
		benzo(g,h,i)perylene		<	0.2	ug/g						
		Unadjusted C11-C22 Aromatics		<	20	ug/g						
		C9-C18 Aliphatics		<	20	ug/g						
		C19-C36 Aliphatics		<	20	ug/g						
		C11-C22 Aromatics		<	20	ug/g						
		1-chloro-octadecane SUR			52	%			40	140		
		o-terphenyl SUR			57	%			40	140		
		2-fluorobiphenyl SUR			83	%			40	140		
		2-bromonaphthalene SUR			82	%			40	140		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD		RPD Limit
MA EPH	LCS11718	naphthalene			4.1	ug/g	6	69	40	140			
		2-methylnaphthalene			4.7	ug/g	6	78	40	140			
		phenanthrene			5.0	ug/g	6	83	40	140			
		acenaphthene			4.4	ug/g	6	73	40	140			
		acenaphthylene			4.3	ug/g	6	71	40	140			
		fluorene			4.5	ug/g	6	74	40	140			
		anthracene			4.8	ug/g	6	80	40	140			
		fluoranthene			5.0	ug/g	6	83	40	140			
		pyrene			5.0	ug/g	6	84	40	140			
		benzo(a)anthracene			5.0	ug/g	6	84	40	140			
		chrysene			4.9	ug/g	6	81	40	140			
		benzo(b)fluoranthene			5.3	ug/g	6	88	40	140			
		benzo(k)fluoranthene			5.3	ug/g	6	88	40	140			
		benzo(a)pyrene			5.2	ug/g	6	87	40	140			
		indeno(1,2,3-cd)pyrene			4.6	ug/g	6	77	40	140			
		dibenzo(a,h)anthracene			4.8	ug/g	6	80	40	140			
		benzo(g,h,i)perylene			4.5	ug/g	6	76	40	140			
		Unadjusted C11-C22 Aromatics			82	ug/g	102	81	40	140			
		C9-C18 Aliphatics			26	ug/g	36	72	40	140			
		C19-C36 Aliphatics			45	ug/g	48	95	40	140			
		C11-C22 Aromatics		<	20	ug/g			40	140			
		1-chloro-octadecane SUR			64	%			40	140			
		o-terphenyl SUR			69	%			40	140			
		2-fluorobiphenyl SUR			86	%			40	140			
		2-bromonaphthalene SUR			84	%			40	140			
MA EPH	LCSD11718	naphthalene			3.3	ug/g	6	55	40	140	23		25
		2-methylnaphthalene			3.6	ug/g	6	60	40	140	26	*	25
		phenanthrene			4.1	ug/g	6	69	40	140	19		25
		acenaphthene			3.4	ug/g	6	57	40	140	24		25
		acenaphthylene			3.4	ug/g	6	57	40	140	23		25
		fluorene			3.6	ug/g	6	60	40	140	22		25
		anthracene			4.1	ug/g	6	68	40	140	16		25
		fluoranthene			4.0	ug/g	6	67	40	140	22		25
		pyrene			4.5	ug/g	6	75	40	140	11		25
		benzo(a)anthracene			4.4	ug/g	6	74	40	140	13		25
		chrysene			4.3	ug/g	6	72	40	140	12		25
		benzo(b)fluoranthene			4.8	ug/g	6	79	40	140	10		25
		benzo(k)fluoranthene			4.7	ug/g	6	78	40	140	11		25
		benzo(a)pyrene			4.6	ug/g	6	76	40	140	14		25
		indeno(1,2,3-cd)pyrene			4.2	ug/g	6	69	40	140	11		25
		dibenzo(a,h)anthracene			4.3	ug/g	6	72	40	140	10		25
		benzo(g,h,i)perylene			4.1	ug/g	6	69	40	140	10		25
		Unadjusted C11-C22 Aromatics			77	ug/g	102	75	40	140	7		25
		C9-C18 Aliphatics			26	ug/g	36	71	40	140	1		25
		C19-C36 Aliphatics			45	ug/g	48	94	40	140	1		25
		C11-C22 Aromatics		<	20	ug/g			40	140			25
		1-chloro-octadecane SUR			63	%			40	140			
		o-terphenyl SUR			72	%			40	140			
		2-fluorobiphenyl SUR			86	%			40	140			
		2-bromonaphthalene SUR			85	%			40	140			

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3546/8081B	BLK11724	alpha-BHC		<	0.040	ug/g						
		beta-BHC		<	0.040	ug/g						
		delta-BHC		<	0.040	ug/g						
		gamma-BHC (Lindane)		<	0.040	ug/g						
		Heptachlor		<	0.040	ug/g						
		Aldrin		<	0.040	ug/g						
		Heptachlor Epoxide		<	0.040	ug/g						
		Endosulfan I		<	0.040	ug/g						
		Dieldrin		<	0.040	ug/g						
		4,4'-DDE		<	0.040	ug/g						
		Endrin		<	0.040	ug/g						
		Endosulfan II		<	0.040	ug/g						
		4,4'-DDD		<	0.040	ug/g						
		Endosulfan Sulfate		<	0.040	ug/g						
		4,4'-DDT		<	0.040	ug/g						
		Methoxychlor		<	0.040	ug/g						
		Endrin Ketone		<	0.040	ug/g						
		Endrin Aldehyde		<	0.040	ug/g						
		alpha-Chlordane		<	0.040	ug/g						
		gamma-Chlordane		<	0.040	ug/g						
		Toxaphene		<	0.20	ug/g						
		tetrachloro-m-xylene SUR			69	%			30	150		
		decachlorobiphenyl SUR			69	%			30	150		
SW3546/8081B	DUP11724	alpha-BHC	48782-005	<	0.046	ug/g						30
		beta-BHC	48782-005	<	0.046	ug/g						30
		delta-BHC	48782-005	<	0.046	ug/g						30
		gamma-BHC (Lindane)	48782-005	<	0.046	ug/g						30
		Heptachlor	48782-005	<	0.046	ug/g						30
		Aldrin	48782-005	<	0.046	ug/g						30
		Heptachlor Epoxide	48782-005	<	0.046	ug/g						30
		Endosulfan I	48782-005	<	0.046	ug/g						30
		Dieldrin	48782-005	<	0.046	ug/g						30
		4,4'-DDE	48782-005	<	0.046	ug/g						30
		Endrin	48782-005	<	0.046	ug/g						30
		Endosulfan II	48782-005	<	0.046	ug/g						30
		4,4'-DDD	48782-005	<	0.046	ug/g						30
		Endosulfan Sulfate	48782-005	<	0.046	ug/g						30
		4,4'-DDT	48782-005	<	0.046	ug/g						30
		Methoxychlor	48782-005	<	0.046	ug/g						30
		Endrin Ketone	48782-005	<	0.046	ug/g						30
		Endrin Aldehyde	48782-005	<	0.046	ug/g						30
		alpha-Chlordane	48782-005	<	0.046	ug/g						30
		gamma-Chlordane	48782-005	<	0.046	ug/g						30
		Toxaphene	48782-005	<	0.23	ug/g						30
		tetrachloro-m-xylene SUR	48782-005		34	%			30	150		
		decachlorobiphenyl SUR	48782-005		42	%			30	150		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3546/8081B	LCS11724	alpha-BHC			0.24	ug/g	0.4	60	40	140		
		beta-BHC			0.24	ug/g	0.4	59	40	140		
		delta-BHC			0.25	ug/g	0.4	62	40	140		
		gamma-BHC (Lindane)			0.25	ug/g	0.4	61	40	140		
		Heptachlor			0.24	ug/g	0.4	61	40	140		
		Aldrin			0.24	ug/g	0.4	59	40	140		
		Heptachlor Epoxide			0.26	ug/g	0.4	64	40	140		
		Endosulfan I			0.24	ug/g	0.4	59	40	140		
		Dieldrin			0.25	ug/g	0.4	63	40	140		
		4,4'-DDE			0.25	ug/g	0.4	63	40	140		
		Endrin			0.20	ug/g	0.4	51	40	140		
		Endosulfan II			0.27	ug/g	0.4	68	40	140		
		4,4'-DDD			0.25	ug/g	0.4	64	40	140		
		Endosulfan Sulfate			0.24	ug/g	0.4	61	40	140		
		4,4'-DDT			0.26	ug/g	0.4	65	40	140		
		Methoxychlor			0.26	ug/g	0.4	66	40	140		
		Endrin Ketone			0.31	ug/g	0.4	77	40	140		
		Endrin Aldehyde			0.24	ug/g	0.4	60	40	140		
		alpha-Chlordane			0.25	ug/g	0.4	63	40	140		
		gamma-Chlordane			0.25	ug/g	0.4	62	40	140		
		Toxaphene		<	0.20	ug/g						
		tetrachloro-m-xylene SUR			67	%			30	150		
		decachlorobiphenyl SUR			71	%			30	150		
SW3546/8081B	MS11724	alpha-BHC	48782-005		0.16	ug/g	0.48	34	30	150		
		beta-BHC	48782-005		0.16	ug/g	0.48	33	30	150		
		delta-BHC	48782-005		0.18	ug/g	0.48	37	30	150		
		gamma-BHC (Lindane)	48782-005		0.17	ug/g	0.48	35	30	150		
		Heptachlor	48782-005		0.19	ug/g	0.48	39	30	150		
		Aldrin	48782-005		0.18	ug/g	0.48	37	30	150		
		Heptachlor Epoxide	48782-005		0.22	ug/g	0.48	47	30	150		
		Endosulfan I	48782-005		0.17	ug/g	0.48	35	30	150		
		Dieldrin	48782-005		0.22	ug/g	0.48	45	30	150		
		4,4'-DDE	48782-005		0.19	ug/g	0.48	40	30	150		
		Endrin	48782-005		0.15	ug/g	0.48	31	30	150		
		Endosulfan II	48782-005		0.22	ug/g	0.48	45	30	150		
		4,4'-DDD	48782-005		0.21	ug/g	0.48	43	30	150		
		Endosulfan Sulfate	48782-005		0.18	ug/g	0.48	39	30	150		
		4,4'-DDT	48782-005		0.23	ug/g	0.48	49	30	150		
		Methoxychlor	48782-005		0.19	ug/g	0.48	40	30	150		
		Endrin Ketone	48782-005		0.23	ug/g	0.48	49	30	150		
		Endrin Aldehyde	48782-005		0.17	ug/g	0.48	35	30	150		
		alpha-Chlordane	48782-005		0.17	ug/g	0.48	36	30	150		
		gamma-Chlordane	48782-005		0.18	ug/g	0.48	37	30	150		
		Toxaphene	48782-005	<	0.24	ug/g						
		tetrachloro-m-xylene SUR	48782-005		45	%			30	150		
		decachlorobiphenyl SUR	48782-005		44	%			30	150		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3546/8082A	BLK11710	PCB-1016		<	0.2	ug/g						
		PCB-1221		<	0.2	ug/g						
		PCB-1232		<	0.2	ug/g						
		PCB-1242		<	0.2	ug/g						
		PCB-1248		<	0.2	ug/g						
		PCB-1254		<	0.2	ug/g						
		PCB-1260		<	0.2	ug/g						
		PCB-1262		<	0.2	ug/g						
		PCB-1268		<	0.2	ug/g						
		tetrachloro-m-xylene SUR			94	%			30	150		
		decachlorobiphenyl SUR			87	%			30	150		
SW3546/8082A	LCS11710	PCB-1016			2.7	ug/g	3.33	82	40	140		
		PCB-1221		<	0.2	ug/g						
		PCB-1232		<	0.2	ug/g						
		PCB-1242		<	0.2	ug/g						
		PCB-1248		<	0.2	ug/g						
		PCB-1254		<	0.2	ug/g						
		PCB-1260			2.1	ug/g	3.33	64	40	140		
		PCB-1262		<	0.2	ug/g						
		PCB-1268		<	0.2	ug/g						
		tetrachloro-m-xylene SUR			95	%			30	150		
		decachlorobiphenyl SUR			76	%			30	150		
SW3546/8082A	LCSD11710	PCB-1016			2.9	ug/g	3.33	86	40	140	5	30
		PCB-1221		<	0.2	ug/g						
		PCB-1232		<	0.2	ug/g						
		PCB-1242		<	0.2	ug/g						
		PCB-1248		<	0.2	ug/g						
		PCB-1254		<	0.2	ug/g						
		PCB-1260			2.3	ug/g	3.33	68	40	140	6	30
		PCB-1262		<	0.2	ug/g						
		PCB-1268		<	0.2	ug/g						
		tetrachloro-m-xylene SUR			93	%			30	150		
		decachlorobiphenyl SUR			82	%			30	150		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW3550C8270D	BLK11730	naphthalene		<	0.0040	ug/g							
		2-methylnaphthalene		<	0.0040	ug/g							
		acenaphthylene		<	0.0040	ug/g							
		acenaphthene		<	0.0040	ug/g							
		dibenzofuran		<	0.0040	ug/g							
		fluorene		<	0.0040	ug/g							
		phenanthrene			0.0056	ug/g			*				
		anthracene		<	0.0040	ug/g							
		fluoranthene		<	0.0040	ug/g							
		pyrene		<	0.0040	ug/g							
		benzo(a)anthracene		<	0.0040	ug/g							
		chrysene		<	0.0040	ug/g							
		benzo(b)fluoranthene		<	0.0040	ug/g							
		benzo(k)fluoranthene		<	0.0040	ug/g							
		benzo(a)pyrene		<	0.0040	ug/g							
		indeno(1,2,3-cd)pyrene		<	0.0040	ug/g							
		dibenzo(a,h)anthracene		<	0.0040	ug/g							
		benzo(g,h,i)perylene		<	0.0040	ug/g							
		2-fluorobiphenyl SUR			73	%				43	116		
		o-terphenyl SUR			103	%				33	141		
SW3550C8270D	LCS11730	naphthalene			1.2	ug/g	1.54	77		40	140		
		2-methylnaphthalene			1.3	ug/g	1.54	82		40	140		
		acenaphthylene			1.3	ug/g	1.54	81		40	140		
		acenaphthene			1.3	ug/g	1.54	81		40	140		
		dibenzofuran		<	0.019	ug/g							
		fluorene			1.3	ug/g	1.54	81		40	140		
		phenanthrene			1.4	ug/g	1.54	93		40	140		
		anthracene			1.4	ug/g	1.54	92		40	140		
		fluoranthene			1.2	ug/g	1.54	79		40	140		
		pyrene			1.8	ug/g	1.54	116		40	140		
		benzo(a)anthracene			1.5	ug/g	1.54	98		40	140		
		chrysene			1.4	ug/g	1.54	93		40	140		
		benzo(b)fluoranthene			1.6	ug/g	1.54	105		40	140		
		benzo(k)fluoranthene			1.5	ug/g	1.54	98		40	140		
		benzo(a)pyrene			1.3	ug/g	1.54	85		40	140		
		indeno(1,2,3-cd)pyrene			1.5	ug/g	1.54	98		40	140		
		dibenzo(a,h)anthracene			1.5	ug/g	1.54	97		40	140		
		benzo(g,h,i)perylene			1.4	ug/g	1.54	92		40	140		
		2-fluorobiphenyl SUR			81	%				43	116		
		o-terphenyl SUR			106	%				33	141		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3550C8270D	LCSD11730	naphthalene		1.2	ug/g	1.59	74	40	140	4	30
		2-methylnaphthalene		1.3	ug/g	1.59	80	40	140	3	30
		acenaphthylene		1.2	ug/g	1.59	78	40	140	4	30
		acenaphthene		1.2	ug/g	1.59	78	40	140	4	30
		dibenzofuran		< 0.020	ug/g						
		fluorene		1.3	ug/g	1.59	81	40	140	0	30
		phenanthrene		1.5	ug/g	1.59	93	40	140	0	30
		anthracene		1.5	ug/g	1.59	92	40	140	0	30
		fluoranthene		1.4	ug/g	1.59	88	40	140	11	30
		pyrene		1.8	ug/g	1.59	110	40	140	5	30
		benzo(a)anthracene		1.5	ug/g	1.59	97	40	140	1	30
		chrysene		1.5	ug/g	1.59	95	40	140	2	30
		benzo(b)fluoranthene		1.7	ug/g	1.59	105	40	140	0	30
		benzo(k)fluoranthene		1.6	ug/g	1.59	100	40	140	2	30
		benzo(a)pyrene		1.3	ug/g	1.59	82	40	140	3	30
		indeno(1,2,3-cd)pyrene		1.5	ug/g	1.59	96	40	140	2	30
		dibenzo(a,h)anthracene		1.5	ug/g	1.59	96	40	140	1	30
		benzo(g,h,i)perylene		1.4	ug/g	1.59	89	40	140	3	30
		2-fluorobiphenyl SUR		74	%			43	116		
		o-terphenyl SUR		105	%			33	141		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW3051A6020A	BLK11707	Arsenic		<	2.5	ug/g							
		Chromium		<	5.0	ug/g							
		Copper		<	5.0	ug/g							
		Nickel		<	5.0	ug/g							
		Lead		<	2.5	ug/g							
		Zinc			7.4	ug/g			*				
SW3051A6020A	CRM11707	Arsenic			155	ug/g	219			129	240		
		Chromium			283	ug/g	375			223	414		
		Copper			144	ug/g	198			128	218		
		Nickel			234	ug/g	318			193	358		
		Lead			260	ug/g	321			207	353		
		Zinc			245	ug/g	311			190	352		
SW3051A6020A	CRMD11707	Arsenic			159	ug/g	219			129	240	3	35
		Chromium			284	ug/g	375			223	414	0	35
		Copper			147	ug/g	198			128	218	2	35
		Nickel			235	ug/g	318			193	358	1	35
		Lead			273	ug/g	321			207	353	5	35
		Zinc			247	ug/g	311			190	352	1	35
SW3051A6020A	DUP11707	Arsenic	48752-001	<	5.0	ug/g							20
		Chromium	48752-001		390	ug/g						4	20
		Lead	48752-001		100	ug/g						100 *	20
SW3051A6020A	MS11707	Arsenic	48752-001		350	ug/g	500	69	*	75	125		
		Chromium	48752-001		700	ug/g	500	57	*	75	125		
		Lead	48752-001		480	ug/g	500	35	*	75	125		
SW3051A6020A	BLK11720	Cadmium		<	0.50	ug/g							
SW3051A6020A	CRM11720	Cadmium			140	ug/g	175			111	192		
SW3051A6020A	CRMD11720	Cadmium			140	ug/g	175			111	192	0	35
SW3051A6020A	MS11720	Cadmium	48796-003		290	ug/g	316	92		75	125		
SW3051A6020A	MSD11720	Cadmium	48796-003		290	ug/g	310	95		75	125	1	20
SW7471B	BLK11716	Mercury		<	0.14	ug/g							
SW7471B	CRM11716	Mercury			0.22	ug/g	0.22			0.0908	0.351		
SW7471B	CRMD11716	Mercury			0.20	ug/g	0.22			0.0908	0.351	10	35
SW7471B	DUP11716	Mercury	48735-001	<	0.13	ug/g							35
SW7471B	MS11716	Mercury	48735-001		0.54	ug/g	0.344	157	*	80	120		

Absolute Resource associates
124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

48753

Company Name: Inter-Fluve
Company Address: 220 Concord Ave, 2nd floor Cambridge MA 02138
Report To: Candice Constantine
Phone #: 617-909-7569
Invoice to: Candice Constantine
Email: cconstantine@interfluve.com
PO #:

Project Name: Becker Pond Dam Removal
Project #:
Project Location: NH (MA) ME VT
Accreditation Required? N/Y:
Protocol: RCRA SDWA NPDES MCP NHDES DOD
Reporting Limits: QAPP GW-1 S-1 EPA DW Other
Quote #
❑ NH Reimbursement Pricing

ANALYSIS REQUEST

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	NaOH	MeOH	Sampling: DATE	TIME	SAMPLER
487530 01	D1										5/20/19	12:15	
02	D2											12:30	
03	U1											12:45	
04	U2											18:00	
05	U3											18:30	
06	U4											19:00	
												AS per bottles	

❑ VOC 8260 ❑ VOC 8260 NHDES ❑ VOC 8260 MADEP
❑ VOC 624.1 ❑ VOC BTEX MtBE, only ❑ VOC 8021VT
❑ VPH MADEP ❑ GRO 8015 ❑ 1,4-Dioxane
❑ VOC 524.2 ❑ VOC 524.2 NH List ❑ Gases-List:
☒ TPH ❑ DRO 8015 ☒ EPH MADEP ❑ TPH Fingerprint
☒ 8270PAH ❑ 8270ABN ❑ 625.1 ❑ EDB
☒ 8082 PCB ☒ 8081 Pesticides ❑ 608.3 Pest/PCB
❑ O&G 1664 ❑ Mineral O&G 1664
❑ pH ❑ BOD ❑ Conductivity ❑ Turbidity ❑ Apparent Color
❑ TSS ❑ TDS ❑ TS ❑ TVS ❑ Alkalinity ❑ Acidity
❑ RCRA Metals ❑ Priority Pollutant Metals ❑ TAL Metals ❑ Hardness
❑ Total Metals-list: As, Cd, Cr, Hg, Ni, Pb, Zn
❑ Dissolved Metals-list:
❑ Ammonia ❑ COD ❑ TKN ❑ TN ❑ TON ❑ TOC ❑ Ferrous Iron
❑ T-Phosphorus ❑ Bacteria P/A ❑ Bacteria MPN ❑ Enterococci
❑ Cyanide ❑ Sulfide ❑ Nitrate + Nitrite ❑ Ortho P ❑ Phenols
❑ Nitrate ❑ Nitrite ❑ Chloride ❑ Sulfate ❑ Bromide ❑ Fluoride
❑ Corrosivity ❑ Reactive CN ❑ Reactive S- ❑ Ignitibility/FP
❑ TCLP Metals ❑ TCLP VOC ❑ TCLP SVOC ❑ TCLP Pesticide
Subcontract: ☒ Grain Size ❑ Herbicides ❑ Asbestos ❑ PFAS
TOC - Sub
% Moisture
Grab (G) or Composite (C)

TAT REQUESTED
Priority (24 hr)* ❑
Expedited (48 hr)* ❑
Standard ❑
(10 Business Days)
*Date Needed

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ❑ PDF (e-mail address)
❑ HARD COPY REQUIRED ❑ EDD

RECEIVED ON ICE ☒YES ❑NO
TEMPERATURE 13 °C

CUSTODY RECORD
QSD-01 Revision 11/08/18

	Relinquished by Sampler:	Date	Time	Received by:	Date	Time
	Candice Constantine	5/21/19	2:15	UPS	5/21/19	2:15
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by: UPS	Date 5/22/19	Time 1415	Received by Laboratory:	Date 5/22/19	Time 1415

S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

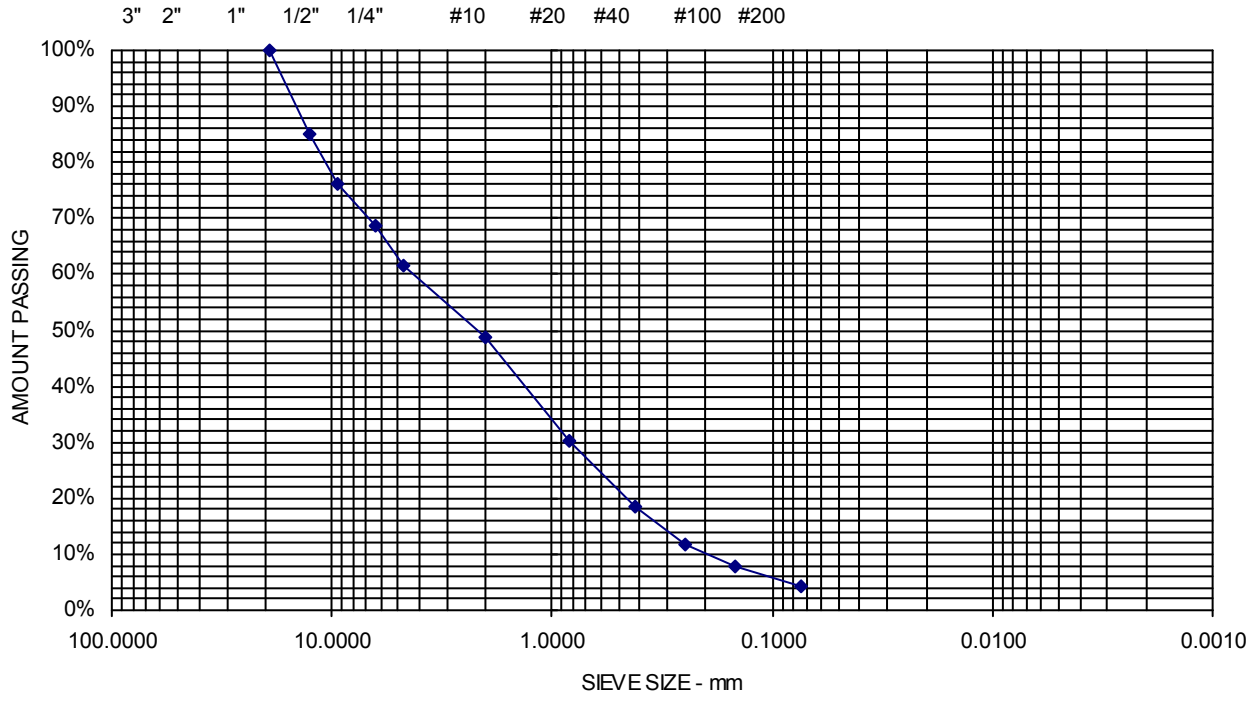
Project Name: PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES

Client: ABSOLUTE RESOURCE ASSOCIATES

Material Source: **D1**

Project Number: 19-0720
Lab ID: 18497S
Date Received: 6/5/2019
Date Completed: 6/12/2019
Tested By: BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**85**	
9.5 mm	**3/8"**	**76**	
6.3 mm	**1/4"**	**69**	
4.75 mm	**No. 4**	**62**	38.3% Gravel
2.00 mm	**No. 10**	**49**	
850 um	**No. 20**	**30**	
425 um	**No. 40**	**18**	57.3% Sand
250 um	**No. 60**	**12**	
150 um	**No. 100**	**8**	
75 um	**No. 200**	**4.4**	4.4% Fines



Comments:

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S.W.COLE ENGINEERING, INC.

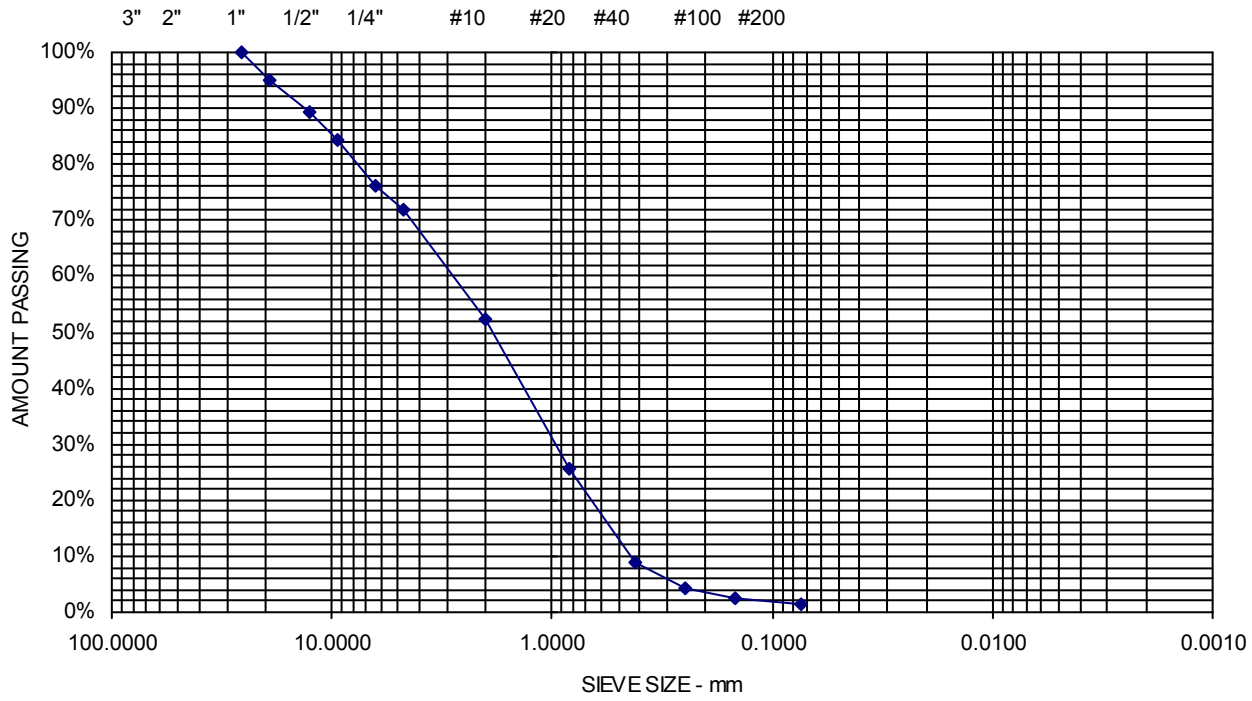
Report of Gradation

ASTM C-117 & C-136

Project Name: PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES
Client: ABSOLUTE RESOURCE ASSOCIATES
Material Source: **D2**

Project Number: 19-0720
Lab ID: 18498S
Date Received: 6/5/2019
Date Completed: 6/12/2019
Tested By: BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**95**	
12.5 mm	**1/2"**	**89**	
9.5 mm	**3/8"**	**84**	
6.3 mm	**1/4"**	**76**	
4.75 mm	**No. 4**	**72**	28% Gravel
2.00 mm	**No. 10**	**52**	
850 um	**No. 20**	**26**	
425 um	**No. 40**	**9**	70.5% Sand
250 um	**No. 60**	**4**	
150 um	**No. 100**	**3**	
75 um	**No. 200**	**1.5**	1.5% Fines



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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

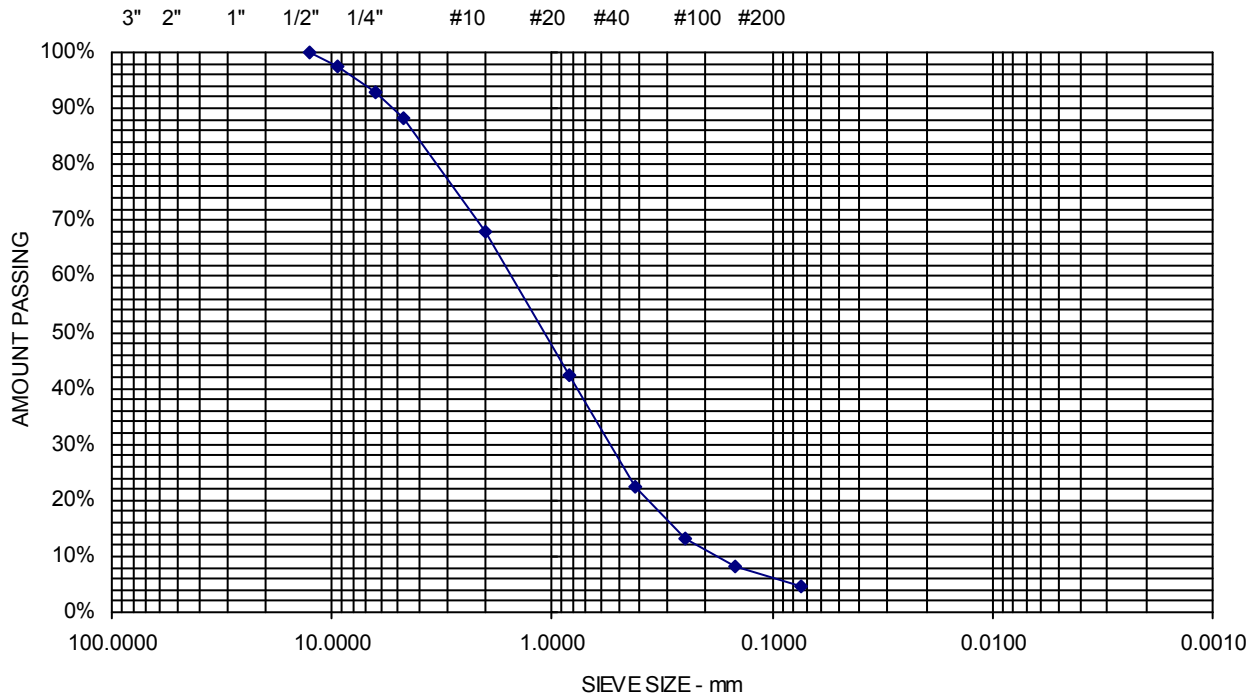
Project Name PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES

Client ABSOLUTE RESOURCE ASSOCIATES

Material Source **U1**

Project Number 19-0720
Lab ID 18499S
Date Received 6/5/2019
Date Completed 6/12/2019
Tested By BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
12.5 mm	**1/2"**	**100**	
9.5 mm	**3/8"**	**97**	
6.3 mm	**1/4"**	**93**	
4.75 mm	**No. 4**	**88**	11.8% Gravel
2.00 mm	**No. 10**	**68**	
850 um	**No. 20**	**43**	
425 um	**No. 40**	**22**	83.4% Sand
250 um	**No. 60**	**13**	
150 um	**No. 100**	**8**	
75 um	**No. 200**	**4.8**	4.8% Fines



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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

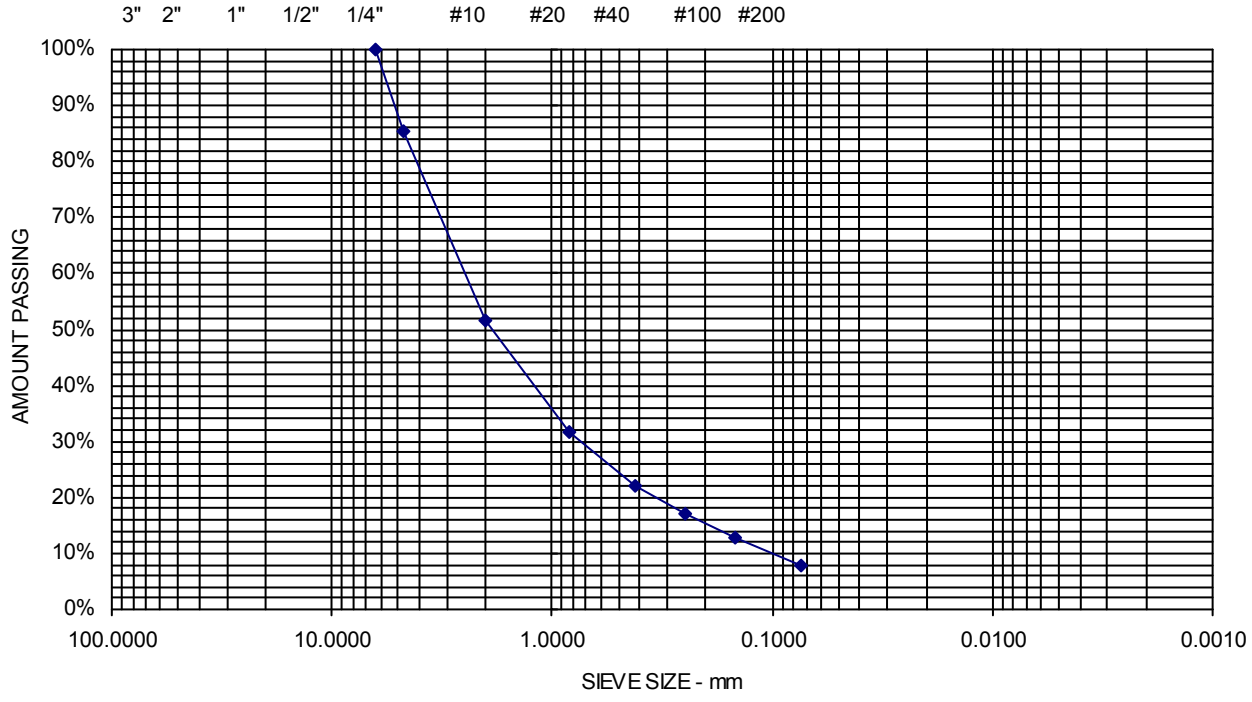
Project Name: PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES

Client: ABSOLUTE RESOURCE ASSOCIATES

Material Source: **U2**

Project Number: 19-0720
Lab ID: 18500S
Date Received: 6/5/2019
Date Completed: 6/12/2019
Tested By: BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**86**	14.4% Gravel
2.00 mm	**No. 10**	**52**	
850 um	**No. 20**	**32**	
425 um	**No. 40**	**22**	77.7% Sand
250 um	**No. 60**	**17**	
150 um	**No. 100**	**13**	
75 um	**No. 200**	**7.8**	7.8% Fines



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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

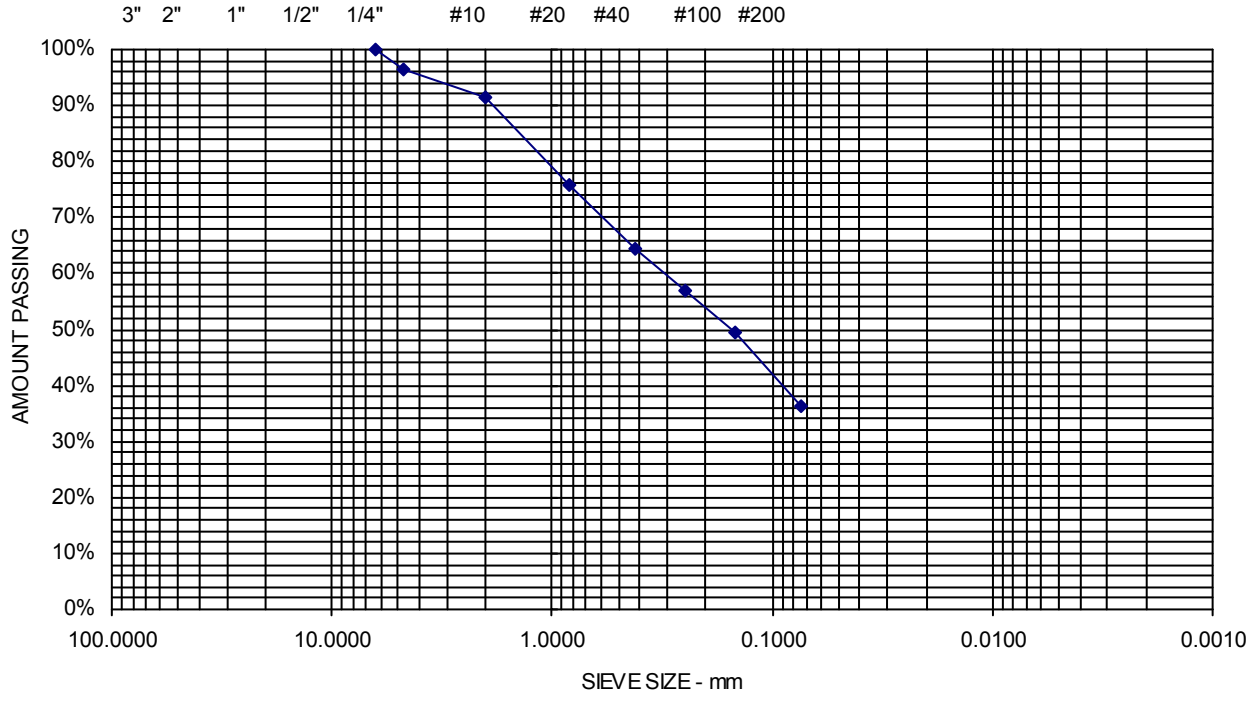
Project Name: PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES

Client: ABSOLUTE RESOURCE ASSOCIATES

Material Source: **U3**

Project Number: 19-0720
Lab ID: 18501S
Date Received: 6/5/2019
Date Completed: 6/12/2019
Tested By: BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**96**	3.6% Gravel
2.00 mm	**No. 10**	**91**	
850 um	**No. 20**	**76**	
425 um	**No. 40**	**64**	60.1% Sand
250 um	**No. 60**	**57**	
150 um	**No. 100**	**50**	
75 um	**No. 200**	**36.3**	36.3% Fines



Comments:

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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

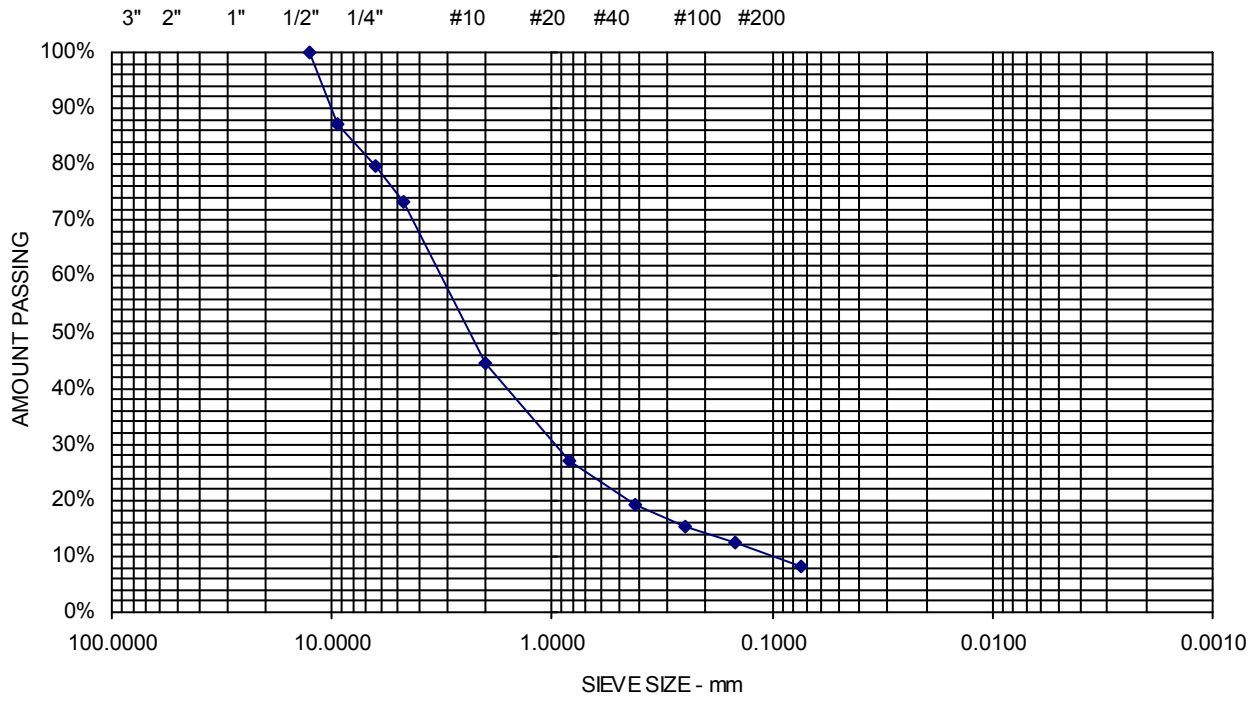
Project Name: PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES

Client: ABSOLUTE RESOURCE ASSOCIATES

Material Source: **U4**

Project Number: 19-0720
Lab ID: 18502S
Date Received: 6/5/2019
Date Completed: 6/12/2019
Tested By: BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
12.5 mm	**1/2"**	**100**	
9.5 mm	**3/8"**	**87**	
6.3 mm	**1/4"**	**80**	
4.75 mm	**No. 4**	**73**	26.6% Gravel
2.00 mm	**No. 10**	**45**	
850 um	**No. 20**	**27**	
425 um	**No. 40**	**19**	65.1% Sand
250 um	**No. 60**	**15**	
150 um	**No. 100**	**12**	
75 um	**No. 200**	**8.3**	8.3% Fines



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Comments:

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Absolute Resource associates
124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

48753

Company Name: Inter-Fluve
Company Address: 220 Concord Ave, 2nd floor Cambridge MA 02138
Report To: Candice Constantine
Phone #: 617-909-7569
Invoice to: Candice Constantine
Email: cconstantine@interfluve.com
PO #:

Project Name: Becker Pond Dam Removal
Project #:
Project Location: NH (MA) ME VT
Accreditation Required? N/Y:
Protocol: RCRA SDWA NPDES MCP NHDES DOD
Reporting Limits: QAPP GW-1 S-1 EPA DW Other
Quote #
❑ NH Reimbursement Pricing

ANALYSIS REQUEST

❑ VOC 8260 ❑ VOC 8260 NHDES ❑ VOC 8260 MADEP
❑ VOC 624.1 ❑ VOC BTEX MtBE, only ❑ VOC 8021VT
❑ VPH MADEP ❑ GRO 8015 ❑ 1,4-Dioxane
❑ VOC 524.2 ❑ VOC 524.2 NH List ❑ Gases-List:
❑ TPH ❑ DRO 8015 ☒ EPH MADEP ❑ TPH Fingerprint
❑ 8270PAH ❑ 8270ABN ❑ 625.1 ❑ EDB
☒ 8082 PCB ☒ 8081 Pesticides ❑ 608.3 Pest/PCB
❑ O&G 1664 ❑ Mineral O&G 1664
❑ pH ❑ BOD ❑ Conductivity ❑ Turbidity ❑ Apparent Color
❑ TSS ❑ TDS ❑ TS ❑ TVS ❑ Alkalinity ❑ Acidity
❑ RCRA Metals ❑ Priority Pollutant Metals ❑ TAL Metals ❑ Hardness
❑ Total Metals-list: As Cd Cr, Hg, Ni, Pb, Zn
❑ Dissolved Metals-list:
❑ Ammonia ❑ COD ❑ TKN ❑ TN ❑ TON ❑ TOC ❑ Ferrous Iron
❑ T-Phosphorus ❑ Bacteria P/A ❑ Bacteria MPN ❑ Enterococci
❑ Cyanide ❑ Sulfide ❑ Nitrate + Nitrite ❑ Ortho P ❑ Phenols
❑ Nitrate ❑ Nitrite ❑ Chloride ❑ Sulfate ❑ Bromide ❑ Fluoride
❑ Corrosivity ❑ Reactive CN ❑ Reactive S- ❑ Ignitibility/FP
❑ TCLP Metals ❑ TCLP VOC ❑ TCLP SVOC ❑ TCLP Pesticide
Subcontract: ☒ Grain Size ❑ Herbicides ❑ Asbestos ❑ PFAS
TOC - Sub
% Moisture
Grab (G) or Composite (C)

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	NaOH	MeOH	Sampling: DATE	TIME	SAMPLER
487530 01	D1										5/20/19	12:15	
02	D2											12:30	
03	U1											12:45	
04	U2											18:00	
05	U3											18:30	
06	U4											19:00	
												AS per bottles	

TAT REQUESTED
Priority (24 hr)* ❑
Expedited (48 hr)* ❑
Standard ❑
(10 Business Days)
*Date Needed

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ❑ PDF (e-mail address) ❑ HARD COPY REQUIRED ❑ EDD

RECEIVED ON ICE ☒YES ❑NO
TEMPERATURE 13 °C

CUSTODY RECORD
QSD-01 Revision 11/08/18

	Relinquished by Sampler:	Date	Time	Received by:	Date	Time
	Candice Constantine	5/21/19	2:15	UPS	5/21/19	2:15
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by: UPS	Date 5/22/19	Time 1415	Received by Laboratory:	Date 5/22/19	Time 1415

Recommended Analyses for Dam Removal Projects

Parameters	Units	MA DEP BWSC Soil Standards and Guidance Values (columns C-F) Cleanup Standard (S-1/GW-1)	"Natural Soil" Background	"Urban Soil" Backgrond	Upper Concentration Limit (UCL)	Sediment Thresholds (columns G-H) Freshwater PEC	Marine PEL	Dam Impoundment Samples US2 *5/20/2019*	US3 *5/20/2019*	US4 *5/20/2019*	Downstream Samples Results D1 *5/20/2019*	D2 *5/20/2019*	Upstream Samples US1 *5/20/2019*	Summary Calculations Impoundment Min	Impoundment Max	Impoundment Mean	Downstream Mean	Upstream Mean
Metals, Total [mg/kg or ppm]																		
Arsenic (ppm)	mg/kg (ppm)	20	20	20	500	33	41.6	5.4	5	3	4.4	2.7	2.1	3	5.4	4	3.6	2.1
Cadmium (ppm)	mg/kg (ppm)	70	2	3	1,000	4.98	4.2	1.1	1.2	0.47	0.97	0.32	0.22	0.47	1.2	0.9	0.65	0.22
Chromium (TOTAL)(ppm)	mg/kg (ppm)	100	30	40	2,000	111	160.4	17	18	8.3	9	5.2	9	8.3	18	14	7	9
Chromium VI (ppm)	mg/kg (ppm)	100	30	40	2,000													
Copper (ppm)	mg/kg (ppm)		40	200		149	108.2	15	15	11	10	5	4.5	11	15	14	8	4.5
Lead (ppm)	mg/kg (ppm)	200	100	600	6,000	128	112.2	43	42	25	21	7.7	10	25	43	37	14	10
Mercury (ppm)	mg/kg (ppm)	20	0	1	300	1.06	0.7	0.08	0.2	0.065	0.07	0.065	0.065	0.065	0.2	0.1	0.07	0.065
Nickel (ppm)	mg/kg (ppm)	600	20	30	10,000	48.6	42.8	31	22	12	19	12	14	12	31	22	16	14
Zinc (ppm)	mg/kg (ppm)	1,000	100	300	10,000	459	271.0	150	120	66	95	40	64	66	150	112	68	64
PAHs (ug/kg or ppb)																		
Anthracene (ppb)	ug/kg (ppb)	1,000,000	1,000	4,000	10,000,000	845	245.0	9	8	5.5	6	2.6	3.6	5.5	9	8	4	3.6
Benzo[a]anthracene (ppb)	ug/kg (ppb)	7,000	2,000	9,000	3,000,000	1050	693.0	22	22	19	6	2.6	3.6	19	22	21	4	3.6
Benzo[a]pyrene (ppb)	ug/kg (ppb)	2,000	2,000	7,000	300,000	1450	763.0	47	37	28	16	2.6	3.6	28	47	37	9	3.6
Benzo[b]fluoranthene (ppb)	ug/kg (ppb)	7,000	2,000	8,000	3,000,000	13400		47	78	57	38	2.6	3.6	47	78	61	20	3.6
Chrysene (ppb)	ug/kg (ppb)	70,000	2,000	7,000	10,000,000	1290	846.0	27	40	34	28	2.6	3.6	27	40	34	15	3.6
Dibenz[a,h]anthracene (ppb)	ug/kg (ppb)	700	500	1,000	300,000	260	134.6	9	8	5.5	6	2.6	3.6	5.5	9	8	4	3.6
Fluoranthene (ppb)	ug/kg (ppb)	1,000,000	4,000	10,000	10,000,000	2230	1,493.5	39	70	52	36	2.6	3.6	39	70	54	19	3.6
Fluorene (ppb)	ug/kg (ppb)	1,000,000	1,000	2,000	10,000,000	536	144.4	9	8	5.5	6	2.6	3.6	5.5	9	8	4	3.6
Naphthalene (ppb)	ug/kg (ppb)	4,000	500	1,000	10,000,000	561	390.6	9	8	5.5	6	2.6	3.6	5.5	9	8	4	3.6
Phenanthrene (ppb)	ug/kg (ppb)	10,000	3,000	20,000	10,000,000	1170	543.5	40	66	42	34	9	12	40	66	49	22	12
Pyrene (ppb)	ug/kg (ppb)	1,000,000	4,000	20,000	10,000,000	1520	1,397.6	43	63	48	38	2.6	3.6	43	63	51	20	3.6
Total PAHs (ppb)	ug/kg (ppb)	4,100,700	22,000	89,000	76,600,000	22800	16,770.4	301	408	302	220	35	48	301	408	337	128	48
PCBs (mg/kg or ppm)																		
Total PCBs (ppm)	mg/kg (ppm)	1			100	0.676	0.2	3.15	2.7	2.25	2.25	0.9	1.35	2.25	3.15	2.7	1.6	1.35
Pesticides (ug/kg)																		
2-4' DDD (ppb)	ug/kg (ppb)																	
4-4' DDD (ppb)	ug/kg (ppb)	8,000			600,000		7.81	90	75	55	60	26	35.5	55	90	73	43	35.5
Sum DDD (ppb)	ug/kg (ppb)					28												
2-4' DDE (ppb)	ug/kg (ppb)																	
4-4' DDE (ppb)	ug/kg (ppb)	6,000			600,000		374.00	90	75	55	60	26	35.5	55	90	73	43	35.5
Sum DDE (ppb)	ug/kg (ppb)					31.3												
2-4' DDT (ppb)	ug/kg (ppb)																	
4-4' DDT (ppb)	ug/kg (ppb)	6,000			600,000		4.77	90	75	55	60	26	35.5	55	90	73	43	35.5
Sum DDT (ppb)	ug/kg (ppb)					62.9												
Total DDTs (ppb)	ug/kg (ppb)					572	51.70											
Chlordane (ppb)	ug/kg (ppb)	5,000			600,000	17.6	4.79											
Dieldrin (ppb)	ug/kg (ppb)	80			30,000	61.8	4.30	90	75	55	60	26	35.5	55	90	73	43	35.5
Endrin (ppb)	ug/kg (ppb)	10,000			200,000	207		90	75	55	60	26	35.5	55	90	73	43	35.5
gamma-BHC (Lindane) (ppb)	ug/kg (ppb)					4.99	0.99	90	75	55	60	26	35.5	55	90	73	43	35.5
Heptachlor epoxide (ppb)	ug/kg (ppb)	100			10,000	16	2.74	90	75	55	60	26	35.5	55	90	73	43	35.5
TPH and EPH (mg/kg or ppm)																		
Total Petrolem Hydrocarbons [TPH] (ppm)	mg/kg (ppm)	1,000			10,000													
C9-C18 Aliphatic Hydrocarbons (ppm)	mg/kg (ppm)	1,000			20,000			44.5	38	27	32	12.5	18	27	44.5	37	22	18
C19-C36 Aliphatic Hydrocarbons (ppm)	mg/kg (ppm)	3,000			20,000			44.5	38	27	32	12.5	18	27	44.5	37	22	18
C11-C22 Aromatic Hydrocarbons (ppm)	mg/kg (ppm)	1,000			10,000			210	110	64	69	12.5	46	64	210	128	41	46
Physical Characteristics																		
Total Organic Carbon (%)	%							13	13	11	3	0.5	1.5	11	13	12	1.8	1.5
Percent Water (%)	%							78.2	74.5	64.8	67.9	24.8	44.5	65	78	73	46.4	44.5
Sieve No. 4 (% passing)	% passing							86	96	73	62	72	88	73	96	85	67	88
Sieve No. 10 (% passing)	% passing							52	91	45	49	52	68	45	91	63	50.5	68
Sieve No. 40 (% passing)	% passing							22	64	19	18	9	22	19	64	35	13.5	22
Sieve No. 60 (% passing)	% passing							17	57	15	12	4	13	15	57	30	8	13
Sieve No. 200 (% passing)	% passing							7.8	36.3	8.3	4.4	1.5	4.8	8	36	17	3	4.8

COMMONWEALTH OF MASSACHUSETTS
Division *of* Ecological Restoration

Notes:
Green text indicates results below detection levels.

Questions, comments, corrections?
Please contact Alex Hackman, MA DFG DER
alex.hackman@state.ma.us / 617-626-1548

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-90529-1
Client Project/Site: 48753

For:
Absolute Resource Associates
124 Heritage Ave
Unit 16
Portsmouth, New Hampshire 03801

Attn: Mr. Aaron DeWees

Authorized for release by:
6/10/2019 4:15:22 PM

Debra Bowen, Project Manager I
(412)963-2445
debra.bowen@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

Table of Contents

Case Narrative

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Job ID: 180-90529-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-90529-1

Receipt
The samples were received on 5/24/2019 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0º C.

General Chemistry
Several samples were analyed at a dilution due to the abundance of target analytes. The reporting limits have been adjusted accordingly.

Definitions/Glossary

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Absolute Resource Associates
Job ID: 180-90529-1
Project/Site: 48753

Laboratory: Eurofins TestAmerica, Pittsburgh

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
New Hampshire	NELAP	1	2030	04-04-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
2540G		Solid	Percent Moisture
2540G		Solid	Percent Solids
WALKLEY BLACK		Solid	Total Organic Carbon

Sample Summary

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-90529-1	D1	Solid	05/20/19 12:15	05/24/19 08:40	
180-90529-2	D2	Solid	05/20/19 12:30	05/24/19 08:40	
180-90529-3	U1	Solid	05/20/19 12:45	05/24/19 08:40	
180-90529-4	U2	Solid	05/20/19 18:00	05/24/19 08:40	
180-90529-5	U3	Solid	05/20/19 18:30	05/24/19 08:40	
180-90529-6	U4	Solid	05/20/19 19:00	05/24/19 08:40	

Method Summary

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Method	Method Description	Protocol	Laboratory
2540G	SM 2540G	SM22	TAL PIT
WALKLEY BLACK	Organic Carbon, Total (TOC)	MSA	TAL PIT

Protocol References:

MSA = "Methods Of Soil Analysis, Chemical And Microbiological Properties", Part 2, 2nd Ed., 1982 And Subsequent Revisions.
SM22 = Standard Methods For The Examination Of Water And Wastewater, 22nd Edition

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Client Sample ID: D1
Date Collected: 05/20/19 12:15
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: D1
Date Collected: 05/20/19 12:15
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-1
Matrix: Solid
Percent Solids: 33.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		1	2.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: D2
Date Collected: 05/20/19 12:30
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: D2
Date Collected: 05/20/19 12:30
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-2
Matrix: Solid
Percent Solids: 70.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		1	2.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U1
Date Collected: 05/20/19 12:45
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U1
Date Collected: 05/20/19 12:45
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-3
Matrix: Solid
Percent Solids: 56.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		2	1.25 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Client Sample ID: U2
Date Collected: 05/20/19 18:00
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U2
Date Collected: 05/20/19 18:00
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-4
Matrix: Solid
Percent Solids: 21.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		5	0.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U3
Date Collected: 05/20/19 18:30
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U3
Date Collected: 05/20/19 18:30
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-5
Matrix: Solid
Percent Solids: 26.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		5	0.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U4
Date Collected: 05/20/19 19:00
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U4
Date Collected: 05/20/19 19:00
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-6
Matrix: Solid
Percent Solids: 28.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		5	0.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Analyst References:

Lab: TAL PIT

Batch Type: Analysis

CAK = Chuck Kieda

RJP = Rockwell Pokrant

Client Sample ID: D1
Lab Sample ID: 180-90529-1
Date Collected: 05/20/19 12:15
Matrix: Solid
Date Received: 05/24/19 08:40

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	66.7		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	33.3		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: D1
Lab Sample ID: 180-90529-1
Date Collected: 05/20/19 12:15
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 33.3

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	30000		750	750	mg/Kg	☼		05/31/19 14:01	1

Client Sample ID: D2
Lab Sample ID: 180-90529-2
Date Collected: 05/20/19 12:30
Matrix: Solid
Date Received: 05/24/19 08:40

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	29.3		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	70.7		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: D2
Lab Sample ID: 180-90529-2
Date Collected: 05/20/19 12:30
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 70.7

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	5600		350	350	mg/Kg	☼		05/31/19 14:01	1

Client Sample ID: U1
Lab Sample ID: 180-90529-3
Date Collected: 05/20/19 12:45
Matrix: Solid
Date Received: 05/24/19 08:40

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	43.1		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	56.9		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U1
Lab Sample ID: 180-90529-3
Date Collected: 05/20/19 12:45
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 56.9

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	15000		880	880	mg/Kg	☼		05/31/19 14:01	2

Client Sample ID: U2
Lab Sample ID: 180-90529-4
Date Collected: 05/20/19 18:00
Matrix: Solid
Date Received: 05/24/19 08:40

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	79.0		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U2
Date Collected: 05/20/19 18:00
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-4
Matrix: Solid

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	21.0		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U2
Date Collected: 05/20/19 18:00
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-4
Matrix: Solid
Percent Solids: 21.0

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	130000		5900	5900	mg/Kg	☼		05/31/19 14:01	5

Client Sample ID: U3
Date Collected: 05/20/19 18:30
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-5
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	73.6		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	26.4		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U3
Date Collected: 05/20/19 18:30
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-5
Matrix: Solid
Percent Solids: 26.4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	130000		4700	4700	mg/Kg	☼		05/31/19 14:01	5

Client Sample ID: U4
Date Collected: 05/20/19 19:00
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-6
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	71.5		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	28.5		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U4
Date Collected: 05/20/19 19:00
Date Received: 05/24/19 08:40

Lab Sample ID: 180-90529-6
Matrix: Solid
Percent Solids: 28.5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	110000		4400	4400	mg/Kg	☼		05/31/19 14:01	5

QC Sample Results

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Method: WALKLEY BLACK - Organic Carbon, Total (TOC)

Lab Sample ID: MB 180-280364/2
Matrix: Solid
Analysis Batch: 280364

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		250	250	mg/Kg			05/31/19 14:01	1

Lab Sample ID: LCS 180-280364/1
Matrix: Solid
Analysis Batch: 280364

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			471000	490000		mg/Kg		104	80 - 120		

Lab Sample ID: 180-90529-3 DU
Matrix: Solid
Analysis Batch: 280364

Client Sample ID: U1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon	15000			15600		mg/Kg	☼			6	20

QC Association Summary

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

General Chemistry

Analysis Batch: 280172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90529-1	D1	Total/NA	Solid	2540G	
180-90529-2	D2	Total/NA	Solid	2540G	
180-90529-3	U1	Total/NA	Solid	2540G	
180-90529-4	U2	Total/NA	Solid	2540G	
180-90529-5	U3	Total/NA	Solid	2540G	
180-90529-6	U4	Total/NA	Solid	2540G	

Analysis Batch: 280364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90529-1	D1	Total/NA	Solid	WALKLEY BLACK	
180-90529-2	D2	Total/NA	Solid	WALKLEY BLACK	
180-90529-3	U1	Total/NA	Solid	WALKLEY BLACK	
180-90529-4	U2	Total/NA	Solid	WALKLEY BLACK	
180-90529-5	U3	Total/NA	Solid	WALKLEY BLACK	
180-90529-6	U4	Total/NA	Solid	WALKLEY BLACK	
MB 180-280364/2	Method Blank	Total/NA	Solid	WALKLEY BLACK	
LCS 180-280364/1	Lab Control Sample	Total/NA	Solid	WALKLEY BLACK	
180-90529-3 DU	U1	Total/NA	Solid	WALKLEY BLACK	

Absolute Resource associates

SUBCONTRACT CHAIN OF CUSTODY DOCUMENTATION

Client:	Absolute Resource Associates	Contact:	Jennifer Lowe	Phone: 603-436-2001 Fax:	Page 1 of 1
Report to:	Jennifer Lowe/Charles Leahy	Address:	124 Heritage Ave, #16	Project Name/Number: 48753	
Invoice to:	cathyd@absoluteresourceassociates.com		Portsmouth, NH 03801	Project State: NH MA ME VT	
PO#: 48753	Quote #:			Protocol: RCRA SDWA NPDES MCP NHDES Other	

Lab Number: (assigned by laboratory)	Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Container Size (mL)	Container Type (P/G/T)	Field Preservation	Matrix S=Soil W=Water	Analyses Requested: Special Instructions:
	D1	5/20/19	12:15		2oz	G	None	S	TOC
	D2		12:30						
	U1		12:45						
	U2		18:00						
	U3		18:30						
	U4		19:00						

180-90529 Chain of Custody

Subcontract Laboratory: Test America - Pittsburgh

Relinquished by:	Andrew Rodella	Date:	5/23/19	Time:	12:07pm	Received by:	Date: 5/23/19 Time: 1207
Relinquished by:		Date:	5-23-19	Time:	1800	Received by: TAB	Date: 5/24/19 Time: 0840
Relinquished by:		Date:		Time:		Received by:	Date: Time:

Reporting Instructions: PDF (Email Address: jenniferl@absoluteresourceassociates.com; charlesl@absoluteresourceassociates.com)

Excel File: Y / N

Received on ice? (Y) N

Temp: 4.0

TAT Requested: Priority (24hr) Expedited (48hr) 10 Business days Date needed:

Comments:

QSD-21 2/15/19 Rev1 ajd (pg 1/1)

Login Sample Receipt Checklist

Client: Absolute Resource Associates

Job Number: 180-90529-1

Login Number: 90529
List Number: 1
Creator: Neri, Tom

List Source: Eurofins TestAmerica, Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Absolute Resource associates
124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

48753

Company Name: Inter-Fluve
Company Address: 220 Concord Ave, 2nd floor Cambridge MA 02138
Report To: Candice Constantine
Phone #: 617-909-7569
Invoice to: Candice Constantine
Email: cconstantine@interfluve.com
PO #:

Project Name: Becker Pond Dam Removal
Project #:
Project Location: NH (MA) ME VT
Accreditation Required? N/Y:
Protocol: RCRA SDWA NPDES MCP NHDES DOD
Reporting Limits: QAPP GW-1 S-1 EPA DW Other
Quote #
❑ NH Reimbursement Pricing

ANALYSIS REQUEST

❑ VOC 8260 ❑ VOC 8260 NHDES ❑ VOC 8260 MADEP
❑ VOC 624.1 ❑ VOC BTEX MtBE, only ❑ VOC 8021VT
❑ VPH MADEP ❑ GRO 8015 ❑ 1,4-Dioxane
❑ VOC 524.2 ❑ VOC 524.2 NH List ❑ Gases-List:
❑ TPH ❑ DRO 8015 ☒ EPH MADEP ❑ TPH Fingerprint
❑ 8270PAH ❑ 8270ABN ❑ 625.1 ❑ EDB
☒ 8082 PCB ☒ 8081 Pesticides ❑ 608.3 Pest/PCB
❑ O&G 1664 ❑ Mineral O&G 1664
❑ pH ❑ BOD ❑ Conductivity ❑ Turbidity ❑ Apparent Color
❑ TSS ❑ TDS ❑ TS ❑ TVS ❑ Alkalinity ❑ Acidity
❑ RCRA Metals ❑ Priority Pollutant Metals ❑ TAL Metals ❑ Hardness
❑ Total Metals-list: As Cd Cr, Hg, Ni, Pb, Zn
❑ Dissolved Metals-list:
❑ Ammonia ❑ COD ❑ TKN ❑ TN ❑ TON ❑ TOC ❑ Ferrous Iron
❑ T-Phosphorus ❑ Bacteria P/A ❑ Bacteria MPN ❑ Enterococci
❑ Cyanide ❑ Sulfide ❑ Nitrate + Nitrite ❑ Ortho P ❑ Phenols
❑ Nitrate ❑ Nitrite ❑ Chloride ❑ Sulfate ❑ Bromide ❑ Fluoride
❑ Corrosivity ❑ Reactive CN ❑ Reactive S- ❑ Ignitibility/FP
❑ TCLP Metals ❑ TCLP VOC ❑ TCLP SVOC ❑ TCLP Pesticide
Subcontract: ☒ Grain Size ❑ Herbicides ❑ Asbestos ❑ PFAS
TOC - Sub
% Moisture
Grab (G) or Composite (C)

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	NaOH	MeOH	Sampling: DATE	TIME	SAMPLER
487530 01	D1										5/20/19	12:15	
02	D2											12:30	
03	U1											12:45	
04	U2											18:00	
05	U3											18:30	
06	U4											19:00	
												AS per bottles	

TAT REQUESTED
Priority (24 hr)* ❑
Expedited (48 hr)* ❑
Standard ❑
(10 Business Days)
*Date Needed

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ❑ PDF (e-mail address) ❑ HARD COPY REQUIRED ❑ EDD

RECEIVED ON ICE ☒YES ❑NO
TEMPERATURE 13 °C

CUSTODY RECORD
QSD-01 Revision 11/08/18

	Relinquished by Sampler:	Date	Time	Received by:	Date	Time
	Candice Constantine	5/21/19	2:15	UPS	5/21/19	2:15
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by: UPS	Date 5/22/19	Time 1415	Received by Laboratory:	Date 5/22/19	Time 1415