NOTICE OF INTENT FOR DISCHARGE PURSUANT TO MASSACHUSETTS DEWATERING GENERAL PERMIT MAG070000

40 STOW STREET

CONCORD, MASSACHUSETTS

NOVEMBER 28, 2017

Prepared For:
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
DEWATERING GP PROCESSING
INDUSTRIAL PERMIT UNIT (OEP 06-4)
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MA 02109-3912

On Behalf Of:
The Umbrella Community Arts Center
40 Stow Street
Concord, MA 01742

PROJECT NO. 6180

McPHAIL ASSOCIATES, LLC
2269 Massachusetts Avenue
Cambridge, MA 02140
www.mcphailgeo.com
(617) 868-1420

November 28, 2017

United States Environmental Protection Agency
Dewatering GP Processing
Industrial Permit Unit (OEP 06-4)
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Attention: To Whom It May Concern

Reference: 40 Stow Street; Concord, Massachusetts
Notice of Intent for Temporary Construction Dewatering Discharge;
Massachusetts Dewatering General Permit MAG070000

Ladies and Gentlemen:

In accordance with the provisions of the Dewatering General Permit MAG070000 (DGP) that was issued to the Commonwealth of Massachusetts by the US EPA, the following is a summary of the site and groundwater quality information in support of a Notice of Intent (NOI) for the discharge of construction dewatering into Mill Brook via the Town of Concord storm drain system. The temporary discharge of construction dewatering will occur during redevelopment of the 40 Stow Street property in Concord, Massachusetts (the "subject site"). Refer to **Figure 1,** Project Location Plan for the general site locus.

These services were performed and this permit application was prepared in accordance with our proposal dated March 13, 2017, and the subsequent authorization of The Umbrella Community Arts Center. These services are subject to the limitations contained in **Appendix A**.

The applicable DGP Notice of Intent (NOI) Form is included in **Appendix B**.

Applicant / Operator

The applicant for the Notice of Intent-Dewatering General Permit is:

C.E. Floyd Company, Inc.
135 South Road
Bedford, MA 01730

Attention: Mr. Chris Merrick
Email: cmerrick@cefloyd.com

Telephone: (781)-271-9006

Existing Conditions

The 40 Stow Street property is an approximate 3-acre, L-shaped parcel. Fronting onto Stow Street to the northeast, the subject site is generally bounded by residential property on the remaining sides with the exception of the northwest corner which is bound by Sudbury Road. The existing Umbrella Community Arts Center building is located in the central portion of the property. The building is a 2 to 3-story, T-shaped structure with a partial below grade basement which occupies a footprint of approximately 18,000 square feet. The structure has two (2) wings: the Main Wing which runs parallel to Stow Street and the West Wing which runs perpendicular to Stow Street. The remainder of the property is occupied by paved parking and landscaped spaces.

The existing ground surface across the property is understood to be generally level, with elevations ranging from approximately Elevation +133 to +136. The existing floor slab in the partial basement area in the West Wing is understood to be located at approximately Elevation +128.3 and the first floor across the remainder of the building is at approximately Elevation +138.8.

The approximate location of the subject site is indicated on **Figure 2.**

Proposed Scope of Site Development

The proposed building renovations are understood to include the demolition of the West Wing and the construction of a new two (2) story addition with one (1) level of below grade space in its place. The new addition will occupy a footprint of approximately 11,000 square-feet. The lowest level slab within the new wing will be at approximately Elevation +127, with the exception of a depressed seating pit which will have a lowest level slab at Elevation +124.

The Main Wing will also be renovated during the proposed construction. The renovations within the Main Wing will include the installation of a new elevator.

Additional site improvements will include installation of new utilities and repaving of the parking areas.

Site Environmental Setting, Review of MA DEP-listed Disposal Sites, Endangered Species and Surrounding Historical Places

Based on an on-line edition of the Massachusetts Geographic Information Systems MassDEP Phase I Site Assessment Map (GIS Map) viewed on September 8, 2017 the subject site is not located within the boundaries of a Sole Source Aquifer, Potentially Productive Aquifer or within a Zone II Interim Wellhead Protection Area as defined by the Massachusetts Department of Environmental Protection (MA DEP). Further, there are no public drinking water supply wells, no Areas of Critical Environmental Concern, no fish habitats, no habitats of Species of Special Concern or Threatened or Endangered Species within specified

distances of the subject site. The site is not located within the limits of the 100-year flood plain.

The GIS Map indicates that there are no water bodies or wetland areas at the subject site. The nearest water body is Mill Brook which is located approximately 1,100 feet northeast of the subject site. No areas designated as solid waste sites (landfills) are noted as being located within 1,000 feet of the site. According to the GIS Map, the nearest protected open space is located about 1,500 to the southwest of the project site. A copy of the GIS Map is included in **Appendix C**.

Based on our review, the project site is not listed on the MA DEP on-line data base of listed DEP release sites.

Based upon a review of information provided in an Information for Planning and Conservation Trust Resource Report (IPaC Report) prepared by the U.S. Fish and Wildlife Service for the subject site, the proposed discharge site is located within the territory of the Northern Long-eared Bat which is a threatened species in the northeastern portions of the United States. However, the Long-eared Bat is not a species of concern under the Endangered Species Act and the DGP, and therefore the proposed discharge is not considered likely to adversely affect the species. In addition, the IPaC Report did not identify the presence of a critical habitat in the vicinity of the discharge. Based upon the above, the site is considered a Criterion C pursuant to Appendix IV of the DGP. A copy of the IPaC Report is included in **Appendix C**.

A review of the Massachusetts Cultural Resource Information System (MACRIS) identified the existing site structure as a state historic place. A copy of the MACRIS report is included in **Appendix C**. However, additional research indicated the property is not listed as a national historical structure. A list of the National Register of Historic Places located in Concord, Massachusetts is also included in **Appendix C**. The purpose of the dewatering is to allow for improvements and renovations to the existing site structure. Therefore, the dewatering activities will not negatively impact a historic place.

Construction Site Dewatering

Stabilized groundwater levels observed within the groundwater monitoring wells installed at the site ranged from about Elevation +123.4 to Elevation +126.7. It is anticipated that excavation for the lowest level floor slabs and depressed portions within the lowest level floor slab, such as elevator pits and pile caps, will extend up to about 8 feet below the observed groundwater level. In order to facilitate construction of the basement levels, a wellpoint system will be installed around the applicable portions of the site for the purpose of temporarily lowering the groundwater table to allow for the new construction.

It is anticipated that construction dewatering discharge during could be as high as 200 gallons per minute (gpm) during initial dewatering operations. It is anticipated that these flows would be reduced as the groundwater level stabilizes below the bottom of the

excavation. These estimates do not include surface water run-off which will be removed from the excavation during and following precipitation events.

Given that the subsurface conditions consist of highly permeable outwash sand and gravel, temporary on-site collection and recharge of groundwater is not feasible. As a result, construction dewatering will require the discharge of collected groundwater into the storm drain system.

A review of stormwater and sewer plans provided by the Town of Concord Water Department of Public Works indicates catch basins adjacent to the site located within Stow Street flow to a dedicated storm drain. The storm drain system ultimately discharges at an outfall location within Mill Brook. The location of the discharge locations in relation to the subject site are indicated on **Figure 2**. The flow path of the discharge is shown on **Figure 3**.

Summary of Groundwater Analysis

On May 17, 2017 a groundwater sample was obtained from monitoring well B-4(OW) that was installed at the subject site as part of our geotechnical related assessment of the site for foundation design recommendations. The purpose of the groundwater sample was to characterize the groundwater for off-site discharge in anticipation of construction dewatering activities. The pH of the groundwater was measured using a YSI meter.

The sample was submitted for chemical testing for the Dewatering General Permit (DGP) parameters which included chemical testing for presence of Total Petroleum hydrocarbons (TPH), cyanide, DGP Total Metals, Hexavalent Chromium (Hex-Cr), Total Suspended Solids (TSS), and Total Residual Chorine.

Cyanide was detected at a concentration of 6 micrograms per liter (ug/l) in the sample obtained in May 2017. A second sample of groundwater was collected from the site on September 12, 2017 and tested for cyanide, and the results indicated cyanide was not detected above the laboratory reporting limits. Given the lack of a historical release at the subject site and the fact that the site has been occupied by a school since 1929, the initial detection of cyanide is considered to be an anomaly and cyanide is not considered to be present in the groundwater.

The results of the laboratory analysis did not detect the presence of the remaining constituents tested for at concentrations in excess of the applicable RGP effluent limits or in excess of the applicable Massachusetts Department of Environmental Protection (MA DEP) RCGW-2 reporting standards. Furthermore, the results of the chemical testing for the presence of TSS, TPH, Total Residual Chorine, Hexavalent Chromium, lead, mercury, selenium, silver, and zinc were not detected above the laboratory detection limits. A summary of the chemical test results is provided in **Table 1** and chemical test data is included in **Appendix D**.

Groundwater Treatment

Based on the results of the above referenced groundwater analyses, it is recommended that that an 18,000-gallon capacity settling tank and bag filters in series be utilized to settle out suspended particulates in the discharge during construction dewatering to meet applicable effluent limits established by the US EPA prior to off-site discharge. A schematic of the treatment system is shown on **Figure 4**.

Summary and Conclusions

The purpose of this report is to assess site environmental conditions and groundwater data to support an application for a Massachusetts Dewatering General Permit (DGP) for off-site discharge of dewatered groundwater which will be encountered during redevelopment of the project site located at 40 Stow Street in Concord, Massachusetts.

Based on the results of the above referenced groundwater analyses, it is recommended that treatment of construction dewatering will be utilized which consists of one 18,000-gallon capacity settling tank and bag filters in series to meet the applicable discharge limits of TSS. However, should the effluent monitoring results indicate levels of TSS in excess of the limits established in the Massachusetts DGP, additional mitigative measures will be implemented to meet the allowable discharge limits.

We trust that the above satisfies your present requirements. Should you have any questions or comments concerning the above, please do not hesitate to contact us.

Very truly yours,

McPHAIL ASSOCIATES, LLC

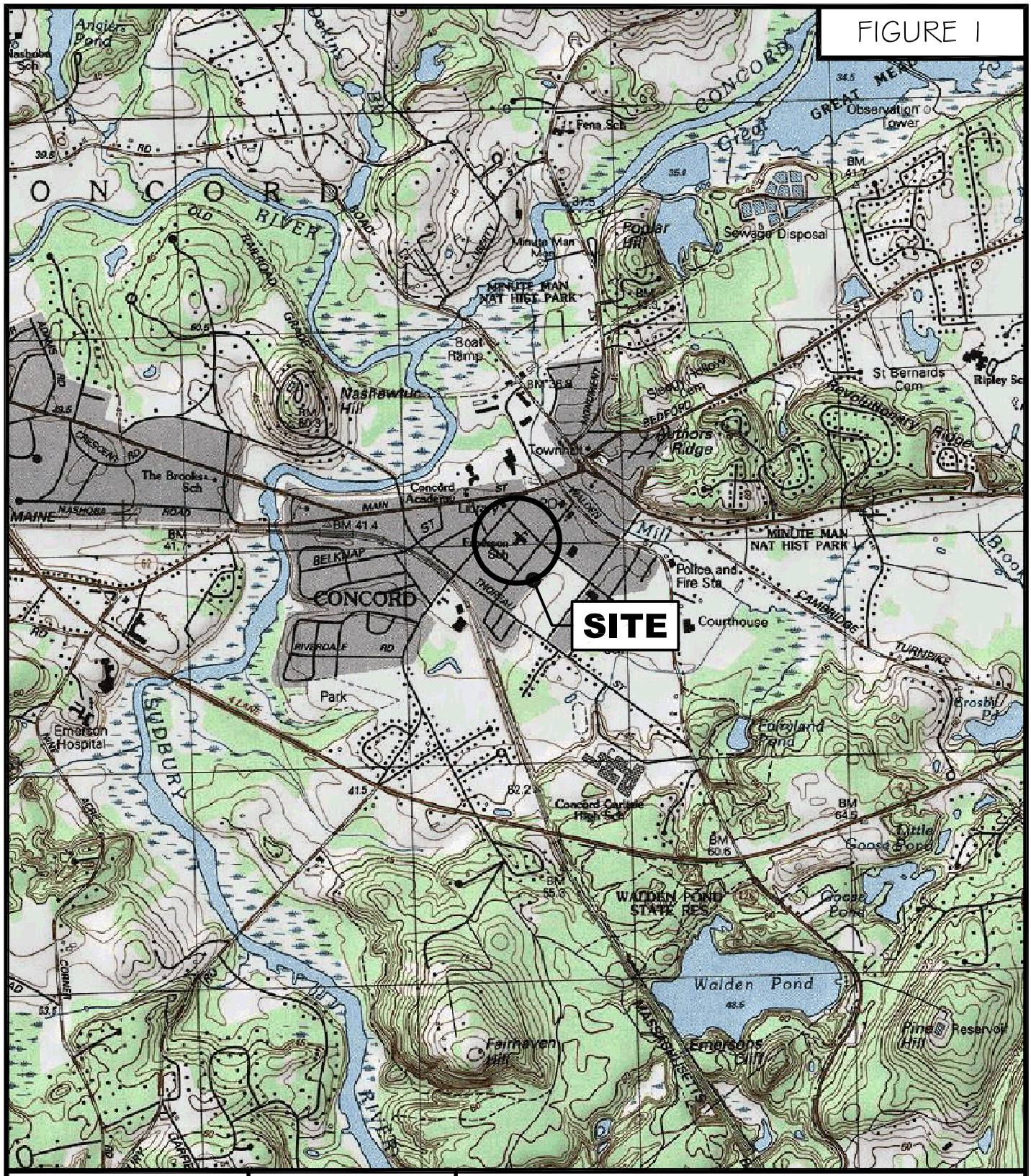
Benjamin E. Downing, P.E.

Ambrose J. Donovan, P.E., L.S.P.

BED/ajd

N:\Working Documents\Reports\6180_DGP_112817.docx

FIGURE 1



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N

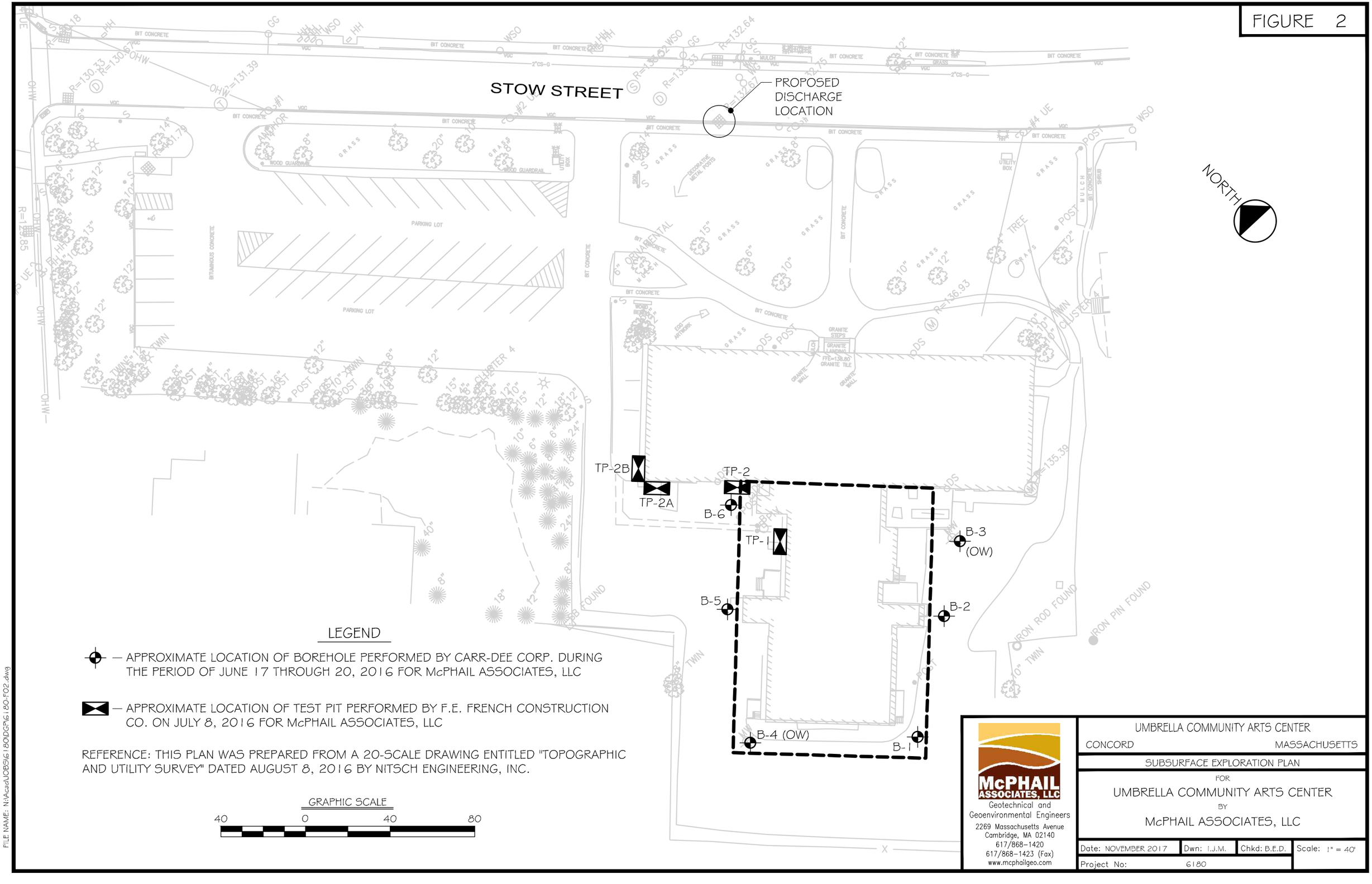
SCALE 1:25,000

PROJECT LOCATION PLAN

UMBRELLA COMMUNITY ARTS CENTER

CONCORD MASSACHUSETTS

FIGURE 2



LEGEND

— APPROXIMATE LOCATION OF BOREHOLE PERFORMED BY CARR-DEE CORP. DURING THE PERIOD OF JUNE 17 THROUGH 20, 2016 FOR McPHAIL ASSOCIATES, LLC

— APPROXIMATE LOCATION OF TEST PIT PERFORMED BY F.E. FRENCH CONSTRUCTION CO. ON JULY 8, 2016 FOR McPHAIL ASSOCIATES, LLC

REFERENCE: THIS PLAN WAS PREPARED FROM A 20-SCALE DRAWING ENTITLED "TOPOGRAPHIC AND UTILITY SURVEY" DATED AUGUST 8, 2016 BY NITSCH ENGINEERING, INC.

GRAPHIC SCALE

40 0 40 80

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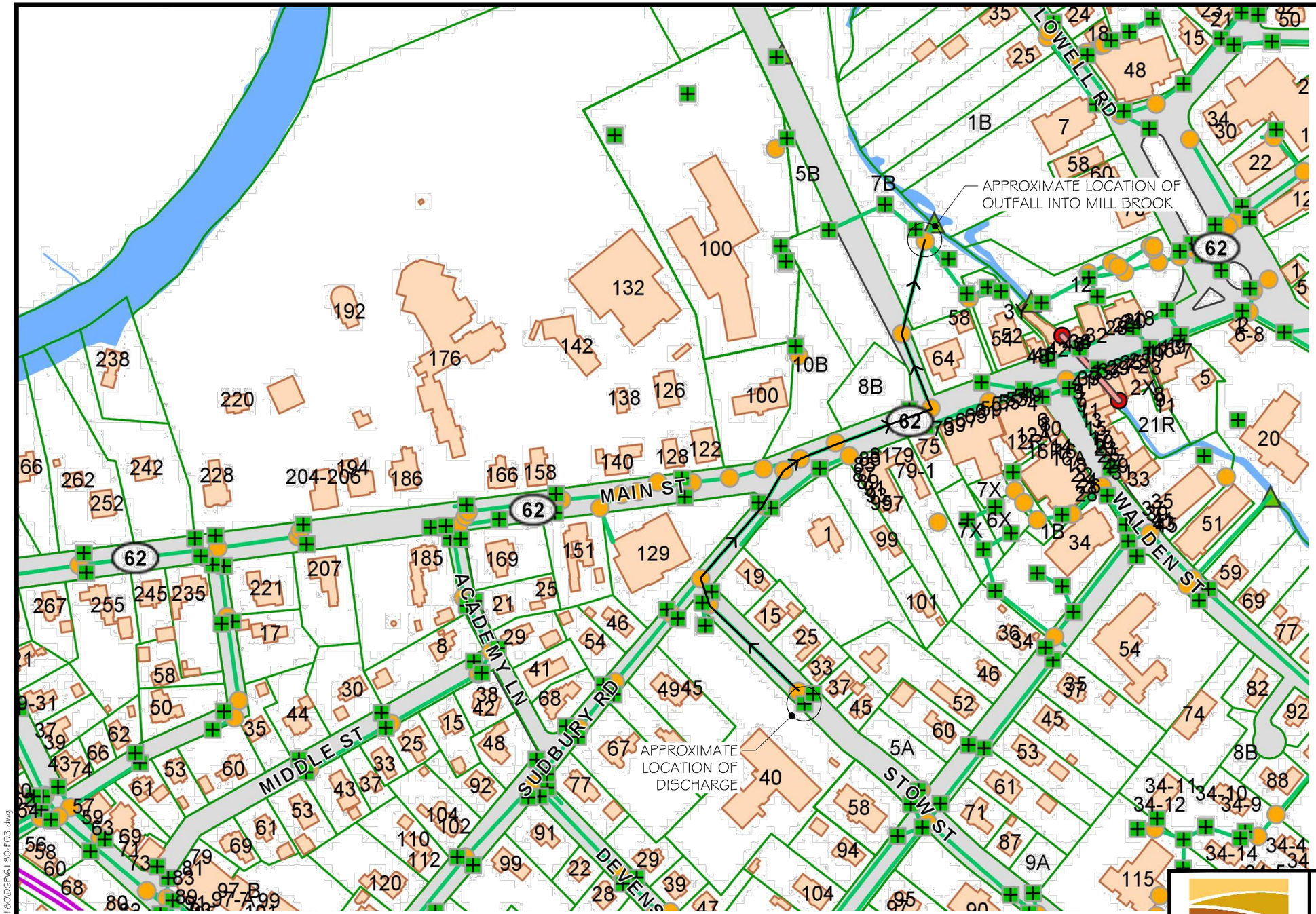
UMBRELLA COMMUNITY ARTS CENTER
CONCORD MASSACHUSETTS
SUBSURFACE EXPLORATION PLAN
FOR
UMBRELLA COMMUNITY ARTS CENTER
BY
McPHAIL ASSOCIATES, LLC

Date: NOVEMBER 2017	Dwn: I.J.M.	Chkd: B.E.D.	Scale: 1" = 40'
Project No: 6180			

FILE NAME: N:\Acad\JOBS\6180\DGN\6180-F02.dwg

FIGURE 3



REFERENCE: THIS PLAN WAS PREPARED FROM A 400-SCALE GIS MAP PROVIDED ON SEPTEMBER 8, 2017 BY THE CITY OF CONCORD, MASSACHUSETTS

GRAPHIC SCALE

300 0 300 600

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UMBRELLA COMMUNITY ARTS CENTER

CONCORD MASSACHUSETTS

DISCHARGE LOCATION PLAN

FOR

UMBRELLA COMMUNITY ARTS CENTER

BY

McPHAIL ASSOCIATES, LLC

Date: NOVEMBER 2017	Dwn: M.B.S.	Chkd: B.E.D.	Scale: 1" = 300'
Project No: 6180			

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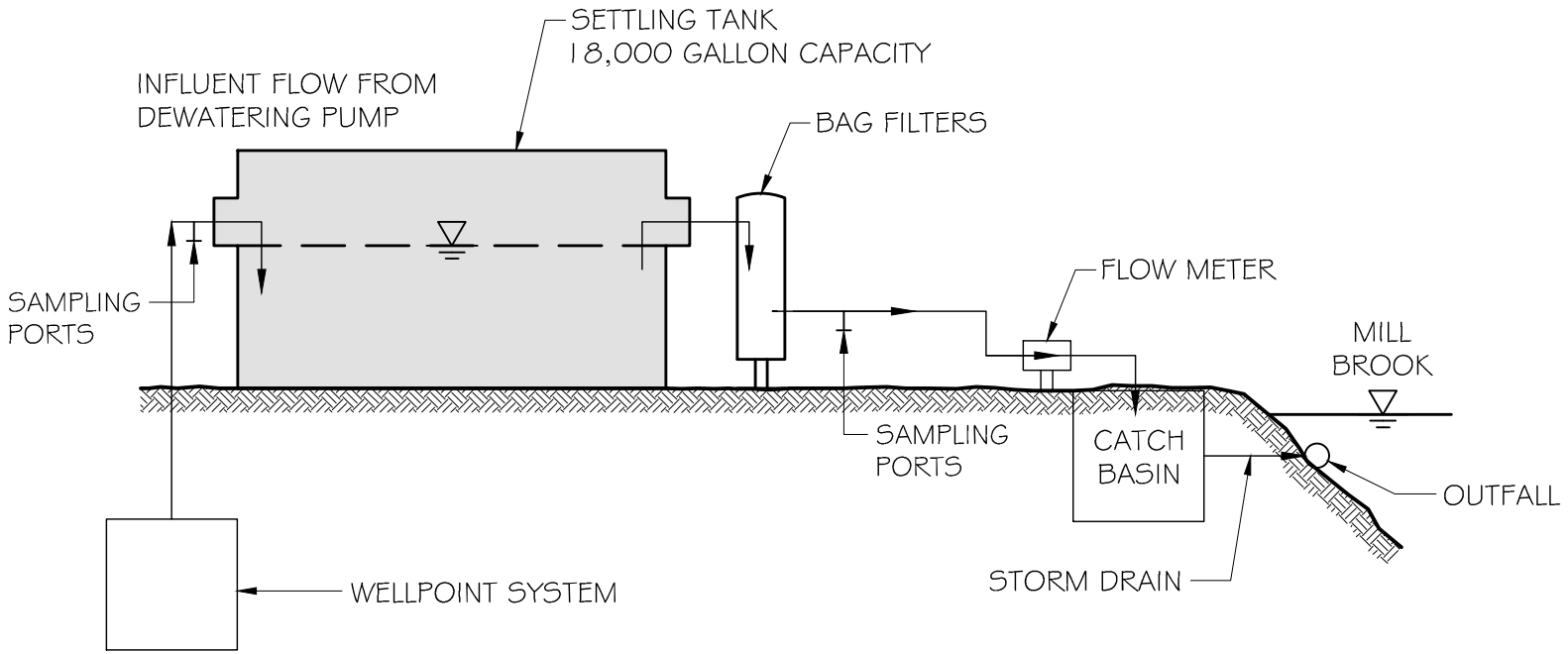
FIGURE 4



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UMBRELLA COMMUNITY ARTS CENTER

CONCORD MASSACHUSETTS

SCHEMATIC OF TREATMENT SYSTEM

FOR

UMBRELLA COMMUNITY ARTS CENTER

BY

McPHAIL ASSOCIATES, LLC

CONSULTING GEOTECHNICAL ENGINEERS

Date: NOVEMBER 2017	Dwn: M.B.S.	Chkd: B.E.D.	Scale: N.T.S.
Project No: 6180			

TABLE 1
LABORATORY ANALYTICAL RESULTS - GROUNDWATER

Umbrella Community Arts Center
Concord, Massachusetts
Project No. 6180

LOCATION	EPA Effluent Limits	B-4 (OW)	B-4(OW)
SAMPLING DATE		5/17/2017	9/12/2017
LAB SAMPLE ID		L1716141-01	L1732190-01
General Chemistry			
pH	6.5-8.3	7.0	-
Solids, Total Suspended (mg/l)	30	ND(5)	-
TPH, SGT-HEM (mg/l)	5	ND(4.4)	-
Chloride (mg/l)		188	-
Cyanide, Total (ug/l)	5.2	6	ND(5)
Chlorine, Total Residual (ug/l)	11	ND(20)	-
Total Metals (ug/l)			
Antimony, Total	640	0.53	-
Arsenic, Total	10	0.17	-
Cadmium, Total	0.25	0.15	-
Chromium, Total	74	0.7	-
Chromium, Hexavalent	11	ND(10)	-
Copper, Total	9	0.99	-
Iron, Total	1000	13	-
Lead, Total	2.5	ND(0.5)	-
Mercury, Total	0.77	ND(0.2)	-
Nickel, Total	52	1.27	-
Selenium, Total	5	ND(5)	-
Silver, Total	3.2	ND(1)	-
Zinc, Total	120	ND(10)	-

ND - Not detected in excess of the reporting limit
(#) - Detection limit

McPhail Associates, LLC

APPENDIX A:

LIMITATIONS

LIMITATIONS

The purpose of this report is to present a summary of environmental conditions, including the results of testing of groundwater samples obtained from a groundwater monitoring well on the property located at 40 Stow Street in Concord, Massachusetts in support of an application for approval of temporary construction dewatering discharge of groundwater into surface waters of the Commonwealth of Massachusetts under EPA's Massachusetts Dewatering General Permit MAG070000.

The observations were made under the conditions stated in this report. The conclusions presented above were based on these observations. If variations in the nature and extent of subsurface conditions between the spaced subsurface explorations become evident in the future, it will be necessary to re-evaluate the conclusions presented herein after performing on-site observations and noting the characteristics of any variations.

The conclusions submitted in this report are based in part upon laboratory test data obtained from analysis of groundwater samples, and are contingent upon their validity. The data have been reviewed, and interpretations have been made in the text. It should also be noted that fluctuations in the types and levels of contaminants and variations in their flow paths may occur due to changes in seasonal water table, past practices used in disposal and other factors.

Laboratory analyses have been performed for specific constituents during the course of this assessment, as described in the text. However, it should be noted that additional constituents not searched for during the current study may be present in soil and/or groundwater at the site.

This report and application have been prepared on behalf of and for the exclusive use of the Umbrella Community Arts Center. This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, other than submission to relevant governmental agencies, nor used in whole or in part by any other party without the prior written consent of McPhail Associates, LLC.

APPENDIX B:

NOTICE OF INTENT TRANSMITTAL FORMS

NPDES DEWATERING GENERAL PERMIT

II. Suggested Notice of Intent (NOI) Format

1. General facility information. Please provide the following information about the facility.

a) Name of facility: 40 Stow Street	**Mailing Address for the Facility:** Umbrella Community Arts Center 40 Stow Street Concord, MA 01742	
b) Location Address of the Facility (if different from mailing address):	**Facility Location** **longitude:** -71.352676 **latitude:** 42.457371	**Type of Business:** Construction Site **Facility SIC codes:**

c) Name of facility owner: Umbrella Community Arts Center **Owner's email:** jerry@theumbrellaarts.org

Owner's Tel #: (978) 371-0820 **Owner's Fax #:** _____

Address of owner (if different from facility address)

Same as mailing address

Owner is (check one): 1. Federal____2. State _____ 3. Private__✓__ 4. Other _____(Describe)_____

Legal name of Operator, if not owner: C.E. Floyd Company, Inc.

Operator Contact Name: Chris Merrick

Operator Tel Number: (781) 271-9006 **Fax Number:** (781) 271-9045

Operator's email: cmerrick@cefloyd.com

Operator Address (if different from owner)

135 South Road; Bedford, MA 01730

d) Attach a topographic map indicating the location of the facility and the outfall(s) to the receiving water. Map attached? __✓__

e) Check Yes or No for the following:

1. **Has a prior NPDES permit been granted for the discharge? Yes ____ No__✓__ If Yes, Permit Number: _____**
2. **Is the discharge a "new discharger" as defined by 40 CFR Section 122.2? Yes_____ No__✓__**
3. **Is the facility covered by an individual NPDES permit? Yes_____ No__✓__ If Yes, Permit Number ____**
4. **Is there a pending application on file with EPA for this discharge? Yes_____ No __✓__ If Yes, date of submittal:**

2. Discharge information. Please provide information about the discharge, (attaching additional sheets as needed)

a) Name of receiving water into which discharge will occur: Mill Brook

State Water Quality Classification: Class B **Freshwater:** Yes **Marine Water:** No

b) Describe the discharge activities for which the owner/applicant is seeking coverage:

✓ **1. Construction dewatering of groundwater intrusion and/or storm water accumulation.**

2. Short-term or long-term dewatering of foundation sumps.

3. Other.

c) Number of outfalls 1

For each outfall:

d) Estimate the maximum daily and average monthly flow of the discharge (in gallons per day – GPD). Max Daily Flow 288,000 **GPD**

Average Monthly Flow 144,000 **GPD**

e.) What is the maximum and minimum monthly pH of the discharge (in s.u.)? Max pH 8.3 **Min pH** 6.5

f.) Identify the source of the discharge (i.e. potable water, surface water, or groundwater). If groundwater, the facility shall submit effluent test results, as required in Section 4.4.5 of the General Permit. Groundwater (see attached report)

g.) What treatment does the wastewater receive prior to discharge? Settling tank and bag filters to remove sediment

h.) Is the discharge continuous? Yes ✓ **No** _____ **If no, is the discharge periodic (P) (occurs regularly, i.e., monthly or seasonally, but is not continuous all year) or intermittent (I) (occurs sometimes but not regularly) or both (B)** _____

If (P), number of days or months per year of the discharge _____ **and the specific months of discharge** _____;

If (I), number of days/year there is a discharge _____

Is the discharge temporary? Yes ✓ **No** _____

If yes, approximate start date of dewatering January 2018 **approximate end date of dewatering** May 2018

i.) Latitude and longitude of each discharge within 100 feet (See http://www.epa.gov/tri/report/siting_tool): Outfall 1: long. -71.351173 **lat.** 42.460734**; Outfall 2: long.**_____ **lat.**_____**; Outfall 3: long.**_____ **lat.**_____**.**

j.) If the source of the discharge is potable water, please provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water and attach any calculation sheets used to support stream flow and dilution calculations_____ **cfs**

(See Appendix VIII for equations and additional information)

MASSACHUSETTS FACILITIES: See Section 3.4 and Appendix 1 of the General Permit for more information on Areas of Critical Environmental Concern (ACEC):

k.) Does the discharge occur in an ACEC? Yes _____ No __✓__
If yes, provide the name of the ACEC: _____

3. Contaminant Information

a) Are any pH neutralization and/or dechlorination chemicals used in the discharge? If so, include the chemical name and manufacturer; maximum and average daily quantity used as well as the maximum and average daily expected concentrations (mg/l) in the discharge, and the vendor's reported aquatic toxicity (NOAEL and/or LC_{50} in percent for aquatic organism(s)). No.

b) Please report any known remediation activities or water-quality issues in the vicinity of the discharge.

4. Determination of Endangered Species Act Eligibility: Provide documentation of ESA eligibility as required at Part 3.4 and Appendix IV. In addition, respond to the following questions.

a) Which of the three eligibility criteria listed in Appendix IV, Criterion (A, B, or C) have you met? C

b) Please attach documentation with your NOI supporting your response. Please see Appendix IV for acceptable documentation

5. Documentation of National Historic Preservation Act requirements: Please respond to the following questions:

a) See Screening Process in Appendix III and respond to questions regarding your site and any historic properties listed or eligible for listing on the National Register of Historic Places. Question 1: Yes _____ No __✓__ ; Question 2: No __✓__ Yes _____ See attached report.

b) Have any State or Tribal historic preservation officers been consulted in this determination? Yes __✓__ or No _____ If yes, attach the results of the consultation(s).

c) Which of the three National Historic Preservation Act eligibility criterion listed in Appendix III, Criterion (A, B, or C) have you met? B

d) Is the project located on property of religious or cultural significance to an Indian Tribe? Yes _____ or No __✓__ If yes, provide that name of the Indian Tribe associated with the property. _____

6. Supplemental Information: Please provide any supplemental information. Attach any analytical data used to support the application. Attach any certification(s) required by the general permit

7. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22 (see below) including the following certification:

I certify under penalty of law that (1) no biocides or other chemical additives except for those used for pH adjustment and/or dechlorination are used in the dewatering system; (2) the discharge consists solely of dewatering and authorized pH adjustment and/or dechlorination chemicals; (3) the discharge does not come in contact with any raw materials, intermediate product, water product or finished product; (4) if the discharge of dewatering subsequently mixes with other permitted wastewater (i.e. stormwater) prior to discharging to the receiving water, any monitoring provided under this permit will be only for dewatering discharge; (5) where applicable, the facility has complied with the requirements of this permit specific to the Endangered Species Act and National Historic Preservation Act; and (6) this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Facility Name: 40 Stow Street; Concord, MA

Operator signature: Chris Metrick

Print Full Name and Title: CHRIS METRICK, SR. PROJECT MANAGER

Date: 11-27-17

Federal regulations require this application to be signed as follows:

1. For a corporation, by a principal executive officer of at least the level of vice president;
2. For partnership or sole proprietorship, by a general partner or the proprietor, respectively, or,
3. For a municipality, State, Federal or other public facility, by either a principal executive officer or ranking elected official.

APPENDIX C:

MASSACHUSETTS PHASE I SITE ASSESSMENT GIS MAP, IPAC TRUST RESOURCE REPORT, AND MACRIS REPORT

MassDEP - Bureau of Waste Site Cleanup

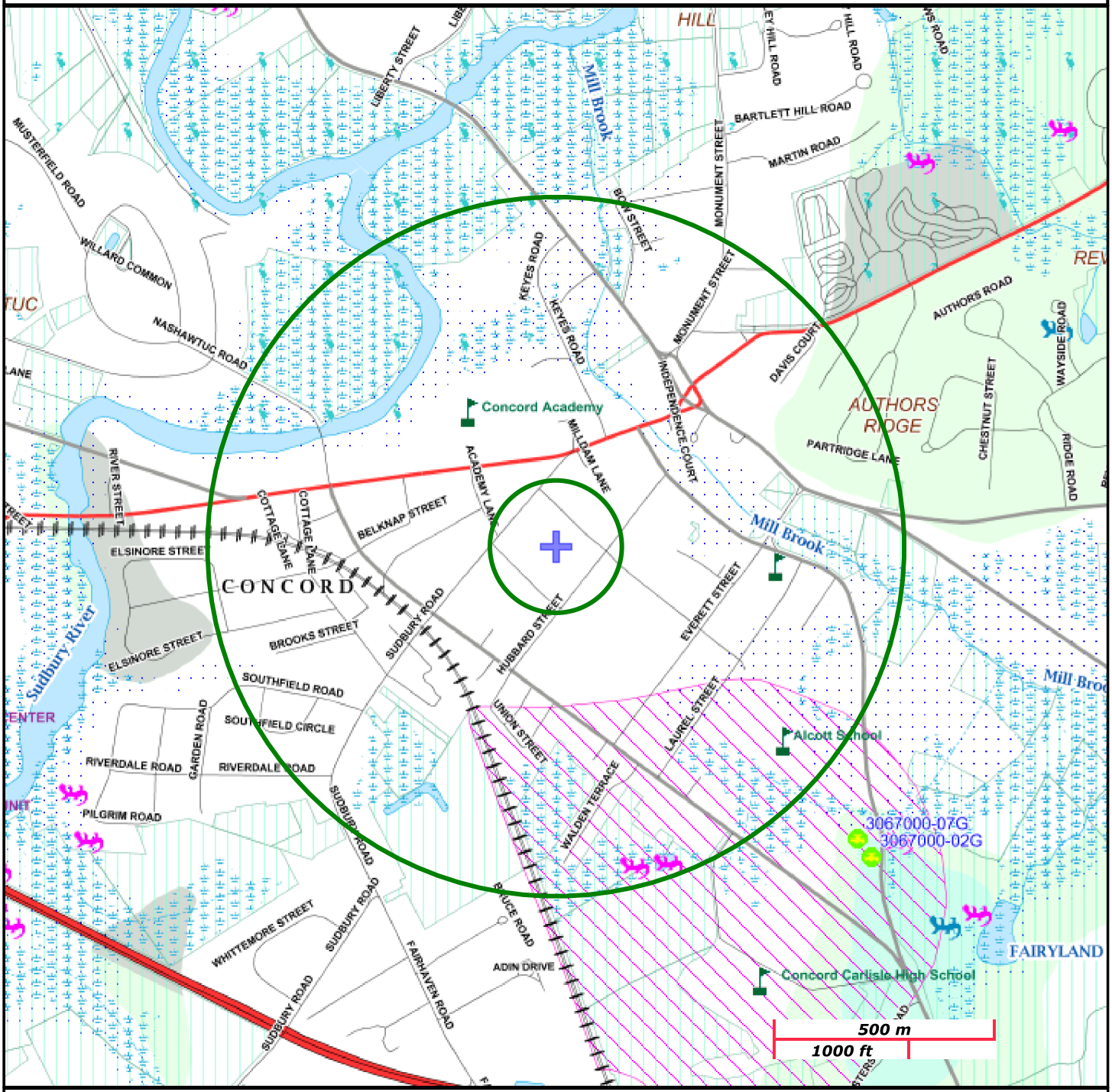
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
UMBRELLA CENTER
40 STOW STREET CONCORD, MA

NAD83 UTM Meters:
4703245mN , 306556mE (Zone: 19)
September 8, 2017

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: http://www.mass.gov/mgis/.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: October 26, 2017
Consultation Code: 05E1NE00-2018-SLI-0241
Event Code: 05E1NE00-2018-E-00578
Project Name: 40 Stow Street

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-0241

Event Code: 05E1NE00-2018-E-00578

Project Name: 40 Stow Street

Project Type: DEVELOPMENT

Project Description: <1 Acre

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.4573579662394N71.35284323702119W

Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

Massachusetts Cultural Resource Information System

MACRIS

MHC Home | MACRIS Home

Results

Get Results in Report Format
PDF Spreadsheet

Below are the results of your search, using the following search criteria:
Town(s): Concord
Street No: 40
Street Name: Stow
Resource Type(s): Area, Building, Burial Ground, Object, Structure

For more information about this page and how to use it, click here

Inv. No.	Property Name	Street	Town	Year	SR			
CON.366	Concord High School	40 Stow St	Concord	1929			INV	

1 Properties Found

New Search | New Search – Same Town(s) | Previous

MHC Home | MACRIS Home

Historic Function:	Commerce/Trade, Domestic
Historic Sub-function:	Business, Secondary Structure, Single Dwelling, Specialty Store
Current Function:	Commerce/Trade, Domestic
Current Sub-function:	Business, Secondary Structure, Single Dwelling, Specialty Store

Community Memorial Hospital (added 2004 - - #04000423)
15 Winthrop Ave. , Ayer

Historic Significance:	Event, Architecture/Engineering
Architect, builder, or engineer:	Haynes & Mason
Architectural Style:	Colonial Revival
Area of Significance:	Health/Medicine, Social History, Architecture
Period of Significance:	1950-1974, 1925-1949
Owner:	**Private**
Historic Function:	Health Care
Historic Sub-function:	Hospital
Current Function:	Vacant/Not In Use

Company F State Armory (added 1989 - - #89001571)
Curtis and Sharon Sts. , Waltham

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Hartwell,Richardson & Driver
Architectural Style:	No Style Listed
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**State**
Historic Function:	Defense
Historic Sub-function:	Military Facility
Current Function:	Defense
Current Sub-function:	Military Facility

Concord Armory (added 2007 - - #07000945)
Also known as **Concord Veterans Building**
51 Walden St. , Concord

Historic Significance:	Event, Architecture/Engineering
Architect, builder, or engineer:	Chapman, John; Blackwell, Clarence, Little, Harry
Architectural Style:	Queen Anne
Area of Significance:	Architecture, Community Planning And Development, Military, Performing Arts
Period of Significance:	1950-1974, 1925-1949, 1900-1924, 1875-1899
Owner:	**Local**
Historic Function:	Defense, Recreation And Culture
Historic Sub-function:	Arms Storage, Arms Storage
Current Function:	Recreation And Culture
Current Sub-function:	Theater

Concord Monument Square-Lexington Road Historic District (added 1977 - - #77000172)
Also known as **See Also:Emerson,Ralph Waldo,House;Wright's Tavern**
MA 2A , Concord

Historic Significance:	Person, Event, Architecture/Engineering
Architect, builder, or engineer:	Multiple
Architectural Style:	Mid 19th Century Revival, Georgian, Federal
Historic Person:	Thoreau,Henry David,et al.
Significant Year:	1635
Area of Significance:	Politics/Government, Art, Exploration/Settlement, Literature, Military
Period of Significance:	1900-1924, 1875-1899, 1850-1874, 1825-1849, 1800-1824, 1750-1799, 1700-1749, 1650-1699, 1600-1649
Owner:	**Private** , **Local**
Historic Function:	Commerce/Trade, Domestic
Historic Sub-function:	Business, Single Dwelling
Current Function:	Commerce/Trade, Domestic
Current Sub-function:	Business, Single Dwelling

Concord Square Historic District (added 1983 - - #83000794)
Park, Concord, and Kendall Sts., and Union Ave. , Framingham

Historic Significance:	Architecture/Engineering, Event
Architect, builder, or engineer:	Multiple, Esty,Alexander
Architectural Style:	Classical Revival
Area of Significance:	Architecture, Commerce, Industry
Period of Significance:	1925-1949, 1900-1924, 1875-1899, 1850-1874
Owner:	**Private** , **Local**
Historic Function:	Commerce/Trade, Domestic, Government, Industry/Processing/Extraction
Historic Sub-function:	Business, Financial Institution, Hotel, Manufacturing Facility
Current Function:	Commerce/Trade, Government, Landscape, Religion
Current Sub-function:	Park

Conventual Church of St. Mary and St. John (added 1982 - - #82001933)
980 Memorial Dr. , Cambridge

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Cram,Ralph Adams, Cram & Ferguson
Architectural Style:	Romanesque, Other
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Religion
Historic Sub-function:	Religious Structure
Current Function:	Religion
Current Sub-function:	Religious Structure

Converse Memorial Building (added 1985 - - #85002014)
Also known as **Malden Public Library;Converse Memorial Library**
36 Salem St. , Malden

Historic Significance:	Person, Architecture/Engineering
Architect, builder, or engineer:	Shepley, Rutan & Coolidge, Richardson,H.H.
Architectural Style:	Other, Romanesque
Historic Person:	Converse,Elisha S.,et al.

APPENDIX D:

LABORATORY ANALYTICAL DATA

ANALYTICAL REPORT

Lab Number:	L1716141
Client:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140
ATTN:	Ambrose Donovan
Phone:	(617) 868-1420
Project Name:	UMBRELLA CENTER
Project Number:	6180.9.00
Report Date:	05/23/17

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

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1716141-01	B-4 (OW)	WATER	CONCORD, MA	05/17/17 10:45	05/17/17

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

Case Narrative

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

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

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

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

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

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

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00
Lab Number: L1716141
Report Date: 05/23/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

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

Authorized Signature: Amita Naik

Title: Technical Director/Representative Date: 05/23/17

METALS

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00
Lab Number: L1716141
Report Date: 05/23/17

SAMPLE RESULTS

Lab ID: L1716141-01
Client ID: B-4 (OW)
Sample Location: CONCORD, MA
Matrix: Water
Date Collected: 05/17/17 10:45
Date Received: 05/17/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	0.00053	J	mg/l	0.00400	0.00042	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Arsenic, Total	0.00017	J	mg/l	0.00100	0.00016	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Cadmium, Total	0.00015	J	mg/l	0.00100	0.00005	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Chromium, Total	0.00070	J	mg/l	0.00100	0.00017	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Copper, Total	0.00099	J	mg/l	0.00100	0.00038	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Iron, Total	0.013	J	mg/l	0.050	0.009	1	05/18/17 11:17	05/19/17 17:08	EPA 3005A	19,200.7	MC
Lead, Total	ND		mg/l	0.00050	0.00034	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/18/17 14:35	05/19/17 18:21	EPA 245.1	3,245.1	EA
Nickel, Total	0.00127	J	mg/l	0.00200	0.00055	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00100	0.00026	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/18/17 11:17	05/19/17 09:34	EPA 3005A	3,200.8	AM

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00
Lab Number: L1716141
Report Date: 05/23/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1004741-1										
Iron, Total	ND		mg/l	0.050	0.009	1	05/18/17 11:17	05/19/17 10:46	19,200.7	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1004743-1										
Antimony, Total	0.00054	J	mg/l	0.00400	0.00042	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	0.00016	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00100	0.00005	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Lead, Total	ND		mg/l	0.00050	0.00034	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Silver, Total	ND		mg/l	0.00100	0.00026	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/18/17 11:17	05/19/17 08:55	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1004829-1										
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/18/17 14:35	05/19/17 18:16	3,245.1	EA

Prep Information

Digestion Method: EPA 245.1

Lab Control Sample Analysis

Batch Quality Control

Project Name: UMBRELLA CENTER

Project Number: 6180.9.00

Lab Number: L1716141

Report Date: 05/23/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1004741-2								
Iron, Total	109		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1004743-2								
Antimony, Total	96		-		85-115	-		
Arsenic, Total	105		-		85-115	-		
Cadmium, Total	108		-		85-115	-		
Chromium, Total	97		-		85-115	-		
Copper, Total	97		-		85-115	-		
Lead, Total	101		-		85-115	-		
Nickel, Total	98		-		85-115	-		
Selenium, Total	112		-		85-115	-		
Silver, Total	99		-		85-115	-		
Zinc, Total	101		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1004829-2								
Mercury, Total	106		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1004741-3 QC Sample: L1716160-01 Client ID: MS Sample												
Iron, Total	6.34	1	7.23	89		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1004741-7 QC Sample: L1716044-01 Client ID: MS Sample												
Iron, Total	0.024J	1	1.15	115		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1004743-3 QC Sample: L1716160-01 Client ID: MS Sample												
Antimony, Total	0.0008J	0.5	0.5387	108		-	-		70-130	-		20
Arsenic, Total	0.00075J	0.12	0.1237	103		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05449	107		-	-		70-130	-		20
Chromium, Total	0.00037J	0.2	0.2022	101		-	-		70-130	-		20
Copper, Total	0.00376	0.25	0.2526	100		-	-		70-130	-		20
Lead, Total	0.00078	0.51	0.5178	101		-	-		70-130	-		20
Nickel, Total	0.00145J	0.5	0.4958	99		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1349	112		-	-		70-130	-		20
Silver, Total	ND	0.05	0.04913	98		-	-		70-130	-		20
Zinc, Total	0.02764	0.5	0.5309	101		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1004829-3 QC Sample: L1716141-01 Client ID: B-4 (OW)												
Mercury, Total	ND	0.005	0.00499	100		-	-		70-130	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1004741-4 QC Sample: L1716160-01 Client ID: DUP Sample						
Iron, Total	6.34	6.49	mg/l	2		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1004741-8 QC Sample: L1716044-01 Client ID: DUP Sample						
Iron, Total	0.024J	0.030J	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1004743-4 QC Sample: L1716160-01 Client ID: DUP Sample						
Arsenic, Total	0.00075J	0.00086J	mg/l	NC		20
Chromium, Total	0.00037J	0.00056J	mg/l	NC		20
Copper, Total	0.00376	0.00391	mg/l	4		20
Lead, Total	0.00078	0.00081	mg/l	4		20
Nickel, Total	0.00145J	0.00135J	mg/l	NC		20
Zinc, Total	0.02764	0.02701	mg/l	2		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1004829-4 QC Sample: L1716141-01 Client ID: B-4 (OW)						
Mercury, Total	ND	ND	mg/l	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

SAMPLE RESULTS

Lab ID: L1716141-01
Client ID: B-4 (OW)
Sample Location: CONCORD, MA
Matrix: Water

Date Collected: 05/17/17 10:45
Date Received: 05/17/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	05/19/17 02:35	121,2540D	VB
Cyanide, Total	0.006		mg/l	0.005	0.001	1	05/19/17 16:55	05/22/17 17:18	121,4500CN-CE	LK
Chlorine, Total Residual	ND		mg/l	0.02	0.01	1	-	05/17/17 22:54	121,4500CL-D	AS
TPH, SGT-HEM	ND		mg/l	4.40	1.36	1.1	05/18/17 19:00	05/18/17 21:30	74,1664A	ML
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	05/18/17 01:58	05/18/17 02:29	1,7196A	VB
Anions by Ion Chromatography - Westborough Lab										
Chloride	188.		mg/l	12.5	2.10	25	-	05/18/17 00:18	44,300.0	AU

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00
Lab Number: L1716141
Report Date: 05/23/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1004536-1										
Chlorine, Total Residual	ND		mg/l	0.02	0.01	1	-	05/17/17 22:54	121,4500CL-D	AS
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1004579-1										
Chloride	ND		mg/l	0.500	0.083	1	-	05/17/17 18:30	44,300.0	AU
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1004594-1										
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	05/18/17 01:58	05/18/17 02:27	1,7196A	VB
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1004930-1										
TPH, SGT-HEM	ND		mg/l	4.00	1.24	1	05/18/17 19:00	05/18/17 21:30	74,1664A	ML
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1004990-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	05/19/17 02:35	121,2540D	VB
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1005315-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	05/19/17 16:55	05/22/17 12:15	121,4500CN-CE	LK

Lab Control Sample Analysis

Batch Quality Control

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1004536-2								
Chlorine, Total Residual	101		-		90-110	-		
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1004579-2								
Chloride	103		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1004594-2								
Chromium, Hexavalent	96		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1004930-2								
TPH	92		-		64-132	-		34
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1005315-2								
Cyanide, Total	95		-		90-110	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004536-4 QC Sample: L1716141-01 Client ID: B-4 (OW)												
Chlorine, Total Residual	ND	0.248	0.26	105		-	-		80-120	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004579-3 QC Sample: L1716044-01 Client ID: MS Sample												
Chloride	24.3	4	27.7	**85**	Q	-	-		90-110	-		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004594-4 QC Sample: L1716141-01 Client ID: B-4 (OW)												
Chromium, Hexavalent	ND	0.1	0.100	100		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004930-4 QC Sample: L1716066-05 Client ID: MS Sample												
TPH	ND	20	14.8	74		-	-		64-132	-		34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1005315-4 QC Sample: L1716141-01 Client ID: B-4 (OW)												
Cyanide, Total	0.006	0.2	0.202	98		-	-		90-110	-		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004536-3 QC Sample: L1716141-01 Client ID: B-4 (OW)						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004579-4 QC Sample: L1716044-01 Client ID: DUP Sample						
Chloride	24.3	24.3	mg/l	0		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004594-3 QC Sample: L1716141-01 Client ID: B-4 (OW)						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004930-3 QC Sample: L1716066-05 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004990-2 QC Sample: L1715938-01 Client ID: DUP Sample						
Solids, Total Suspended	160	160	mg/l	0		29
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1005315-3 QC Sample: L1716141-01 Client ID: B-4 (OW)						
Cyanide, Total	0.006	0.005	mg/l	13		30

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1716141
Report Date: 05/23/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1716141-01A	Plastic 250ml NaOH preserved	A	>12	4.4	Y	Absent	TCN-4500(14)
L1716141-01B	Plastic 250ml HNO3 preserved	A	<2	4.4	Y	Absent	CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L1716141-01C	Plastic 950ml unpreserved	A	7	4.4	Y	Absent	CL-300(28),HEXCR-7196(1),TRC-4500(1)
L1716141-01D	Plastic 950ml unpreserved	A	7	4.4	Y	Absent	TSS-2540(7)
L1716141-01E	Amber 1000ml HCl preserved	A	N/A	4.4	Y	Absent	TPH-1664(28)
L1716141-01F	Amber 1000ml HCl preserved	A	N/A	4.4	Y	Absent	TPH-1664(28)

*Values in parentheses indicate holding time in days

Project Name:	UMBRELLA CENTER	**Lab Number:**	L1716141
Project Number:	6180.9.00	**Report Date:**	05/23/17

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the

Report Format: DU Report with 'J' Qualifiers

Project Name:	UMBRELLA CENTER	**Lab Number:**	L1716141
Project Number:	6180.9.00	**Report Date:**	05/23/17

Data Qualifiers

reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

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

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

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

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

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

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

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

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

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

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

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	UMBRELLA CENTER	**Lab Number:**	L1716141
Project Number:	6180.9.00	**Report Date:**	05/23/17

REFERENCES

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

3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.

44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.

74 Method 1664,Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.

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

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

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

Mansfield Facility:

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

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

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

Serial_No:05231716:40

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 5/17/17

ALPHA Job #: L1716141

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

Client Information

Client: McPhail Associates, LLC

Address: 2264 Massachusetts Avenue, Cambridge, MA 02140

Phone: 617-868-1420

Email: 617-868-1423 Fax
bdowning@mcphailgeo.com

Additional Project Information:

Project Information

Project Name: Umbrella Center

Project Location: Concord, MA

Project #: 6180.9.00

Project Manager: Ben Downing

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Report Information - Data Deliverables

☒ ADEx ☐ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

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

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2 | SVOC: ☐ ABN ☐ PAH | METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15 | METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13 | EPH: ☐ Ranges & Targets ☐ Ranges Only | VPH: ☐ Ranges & Targets ☐ Ranges Only | ☐ PCB ☐ PEST | TPH: ☒ Quant Only ☐ Fingerprint | Total: As, As, Sb, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, Fe | TSS, Hex Cr, TRC, Cl | TCN

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

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC	SVOC	METALS	METALS	EPH	VPH	PCB/PEST	TPH	Total metals		TSS, Hex Cr, TRC, Cl	TCN			Sample Comments	TOTAL # BOTTLES
16141.01	B-4 (OW)	5-17-17	10:45	GW	JRS							X	X		X	X					6
	Container Type											A	P		A	P					
	Preservative											B	C		A	E					

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5-17-17 / 11:40	[signature] AAL	5/17/17 1605
[signature]	5/17/17 1750	[signature]	5/17/17 17:50

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

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

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

ANALYTICAL REPORT

Lab Number:	L1732190
Client:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140
ATTN:	Ambrose Donovan
Phone:	(617) 868-1420
Project Name:	UMBRELLA CENTER
Project Number:	6180.9.00
Report Date:	09/15/17

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

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1732190
Report Date: 09/15/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1732190-01	B-4(OW)	WATER	CONCORD, MA	09/12/17 11:35	09/12/17

Project Name:	UMBRELLA CENTER	**Lab Number:**	L1732190
Project Number:	6180.9.00	**Report Date:**	09/15/17

Case Narrative

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

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

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

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

HOLD POLICY

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

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

Project Name: UMBRELLA CENTER **Lab Number:** L1732190
Project Number: 6180.9.00 **Report Date:** 09/15/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

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

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 09/15/17

INORGANICS
&
MISCELLANEOUS

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1732190
Report Date: 09/15/17

SAMPLE RESULTS

Lab ID: L1732190-01
Client ID: B-4(OW)
Sample Location: CONCORD, MA
Matrix: Water

Date Collected: 09/12/17 11:35
Date Received: 09/12/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	09/14/17 11:25	09/14/17 13:55	121,4500CN-CE	LH

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00
Lab Number: L1732190
Report Date: 09/15/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1041650-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	09/14/17 11:25	09/14/17 13:50	121,4500CN-CE	LH

Lab Control Sample Analysis

Batch Quality Control

Project Name: UMBRELLA CENTER

Project Number: 6180.9.00

Lab Number: L1732190

Report Date: 09/15/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1041650-2								
Cyanide, Total	98		-		90-110	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1732190
Report Date: 09/15/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1041650-4 QC Sample: L1732190-01 Client ID: B-4(OW)												
Cyanide, Total	ND	0.2	0.204	102		-	-		90-110	-		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1732190
Report Date: 09/15/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1041650-3 QC Sample: L1732153-02 Client ID: DUP Sample						
Cyanide, Total	0.028	0.027	mg/l	4		30

Project Name: UMBRELLA CENTER
Project Number: 6180.9.00

Lab Number: L1732190
Report Date: 09/15/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1732190-01A	Plastic 250ml NaOH preserved	A	>12	>12	5.1	Y	Absent		TCN-4500(14)

*Values in parentheses indicate holding time in days

Project Name:	UMBRELLA CENTER	**Lab Number:**	L1732190
Project Number:	6180.9.00	**Report Date:**	09/15/17

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

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

Report Format: DU Report with 'J' Qualifiers

Project Name:	UMBRELLA CENTER	**Lab Number:**	L1732190
Project Number:	6180.9.00	**Report Date:**	09/15/17

Data Qualifiers

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

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

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

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

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

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

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

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

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

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

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

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	UMBRELLA CENTER	**Lab Number:**	L1732190
Project Number:	6180.9.00	**Report Date:**	09/15/17

REFERENCES

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

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

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

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 12-9-2017

ALPHA Job #: L1732190

Project Information

Project Name: Umbrella Center

Project Location: Concord, MA

Project #: 6180.9.00

Project Manager: Ben Downing

ALPHA Quote #:

Client Information

Client: McPhail Associates, LLC

Address: 2269 Massachusetts Avenue

Cambridge, MA 02140

Phone: 6178681420

Fax: 6178681423

Email: bdowning@mcphailgeo.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☐ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
NPDES RGP	RGP

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☒ No Are MCP Analytical Methods Required?

☐ Yes ☒ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☒ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	NH3	TSS, Chloride, Residual Chlorine	RGP Metals	TCN	SVOCs (8270-D SIM)	TPH_1664	pH, Cl, TRC, Salinity, HexCr						Sample Specific Comments	TOTAL # BOTTLES
32190-1	B-4(OW)	9-12-17	11:35	GW	KEH	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐		1
Container Type						-	-	-	P	-	-	-	-	-	-	-	-		
Preservative						-	-	-	E	-	-	-	-	-	-	-	-		

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	9/12/17 12:20	[signature] AAC	9/12/17 12:36
AAC	9/12/17 1807	Danielle Matt	9/12/17 18:02

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I) (rev. 30-JUL-07)