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December 14, 2016

J.O. 155120
SH-EPA-121416-01

Ms. Suzanne Warner
U.S. Environmental Protection Agency
Dewatering General Permit NOI Processing
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Subject: **Notice of Intent – NPDES Dewatering General Permit
MassDOT I-90 Tunnel Remediation, Project No. 607873
MassDOT Contract 64318 – Task 7
Location: 244-284 A Street, South Boston**

Dear Ms. Warner:

On behalf of our client the Massachusetts Department of Transportation (MassDOT), CB&I Environmental & Infrastructure, Inc. (CB&I) is submitting this Notice of Intent (NOI) for coverage under the National Pollution Discharge Elimination System (NPDES) Dewatering General Permit (DGP), Massachusetts General Permit (MAG070000). The NOI and applicable documentation is for the temporary excavation and site dewatering in the Gillette Company parking lot located at 244-284 A Street in South Boston, to support the planned repairs to the I-90 tunnel roof. The completed NOI form is provided in **Attachment A**. The project and permit application supporting information are discussed below.

Site Location and Project Information

The location of the proposed project area is shown on **Figure 1** included in **Attachment A** and includes the eastern portion of Gillette's Parking Lot in South Boston. MassDOT Highway Division proposes to conduct remediation activities to address the continued water infiltration (leakage) into the section of the I-90 connector tunnel located beneath this area. The Fort Point Channel is located to the west, other parking areas and industrial developments and Necco, A and Binford Streets surround the property to the north, east, and south, respectively.

The observed leakage appears to be along the eastern joint of a temporary dam/bulkhead installed during construction of this section of the I-90 tunnel. Concrete dams were placed between the north and south exterior walls of this bulkhead and the casting basin slurry walls. To conduct repair activities, the 255-foot length of the north-south trending, eastern roof joint located approximately 10 feet below surface grade (bsg) will be exposed as shown on the site plan (**Figure 2**) in **Attachment A**. In addition to the top of the roof joint, the north and south sides of the joint will also be exposed to a maximum depth of 25 feet below surface grade to allow for repair activities. These side areas will include excavating a 12 foot by 12 foot area along the north side (north area) of the roof joint and a 5 foot by 12 foot area along the south side (south area) of the roof joint and will require removal of part of the existing concrete dams. Based on pre-

design test pit excavations at the site in 2014, it appears that the primary source of construction water was due to stormwater run-in and/or extreme high tides from Fort Point Channel.

Environmental and Property Conditions

Exploratory soil borings were completed in the project area in August 2014 as part of a Preliminary Investigation conducted by MassDOT. Based on the soil boring logs included in **Attachment C**, the fill material that was placed in the project area during the construction of the I-90 tunnel is comprised of coarse to fine sand and some fine gravel. To further assess current environmental conditions of the project area, the Massachusetts Department of Environmental Protection's (MassDEP) on-line resources were utilized. A Massachusetts Geographic Information System Phase I Site Assessment Map is included in **Attachment C**. As shown, the Project Site is not located within the boundaries of or contain the following: drinking water resource areas, protected open space, area of critical environmental concern or wetlands. However, the project area is within the 100-year flood zone as depicted on the most recent FEMA flood map included in **Attachment C**. Therefore, a Notice of Intent (NOI) was filed with the Boston Conservation Commission (BCC) and project activities will be conducted in accordance with BCC Order of Conditions dated October 13, 2016. The Fort Point Channel, which is located approximately 400 feet west of the project area, is classified as a Class SB (CSO) water body under 314 CMR 4.00.

The MassDEP on-line waste site/reportable releases look-up database was queried to evaluate 21E disposal sites within the proximity of the project. Several nearby properties located upgradient (east) of the project site were identified that had reportable releases. Based on review of the available data, these sites have been closed under the MassDEP regulations. The nearest sites (Release Tracking Numbers: 3-18148, 3-17724 and 3-18241), which have been permanently closed, were due to impacted fill material placed in the area during the Central Artery/Tunnel project. The soils were removed as part of the closure process. Based on the distance of the other noted releases from the project site and due to the presence of the slurry wall directly east of the project area, these releases are unlikely to have any impact on the soil and/or groundwater in the project area. Copies of the MassDEP site list maps are included in **Attachment C**.

U.S. Fish and Wildlife Service information was also reviewed and an "Information for Planning and Conservation" (IPaC) Trust Resource Report was generated for the Project Site. A copy of the report is included in **Attachment C**. Based on this report and follow-up conversation with Ms. Susi von Oettingen of the New England Field Office (personal communication, September 1, 2016) there are no endangered wildlife species at or in the vicinity of the project site and proposed discharge outfall.

The project area includes an existing paved parking lot located over the I-90 tunnel. The property is not listed as a National Historic Place. Though the area abuts the Fort Point Channel Landmark District as shown in **Attachment C**, site activities will have no impact on the historic district area, as the site will be restored to its pre-existing paved condition upon completion of the repair activities. The project area is also outside the City of Boston "Groundwater Overlay District" and is in an area designated as a "No Harm Overlay Area" as shown on the Groundwater Conservation Overlay District map included in **Attachment C**.

Temporary Dewatering and Receiving Surface Water Information

Groundwater in the project area is estimated to be approximately 6 to 8 feet below surface grade, therefore dewatering will be conducted as necessary to provide and maintain a dry hole in which joint repair activities will be conducted. The intent of the project is to pump recovered groundwater to a fractionation tank to allow for settling, then through a silt filter and directly discharge the effluent groundwater via Gillette's on-site closed stormwater drainage system to the Boston Water and Sewer Commission (BWSC) stormwater outfall located in Fort Point Channel as shown on **Figure 3**. A copy of the BWSC Dewatering Discharge Permit Application is included in **Attachment A**.

To minimize disruption to the parking lot, the proposed excavation/repair activities will be conducted in four phases so only a portion of the roof joint will be exposed at one time over the approximately 7 month project. Each phase will last approximately 1.5 months. The total excavation area is shown on the site plan included as **Figure 2**. Dewatering rates have been conceptually estimated for the purpose of this NOI application. A maximum dewatering rate of 3.7 gallons per minute (gpm) has been estimated for the third phase of the project which would generate approximately 5,300 gallons per day (gpd) during that 1.5 month time frame. A conservative average dewatering rate over the course of the project is estimated to be 2.75 gpm, which would result in an average rate of 4,000 gpd.

The proposed influent was evaluated by collecting a groundwater sample from the proposed excavation area. On September 7, 2016, groundwater was sampled from a 20-foot deep monitoring well B2 (OW) that is located adjacent to the joint to be repaired as shown on **Figure 2**. The groundwater sample was submitted to SGS-Accutest Laboratories in Marlborough, Massachusetts and analyzed for the parameters required under the NPDES DGP Appendix VIII. A copy of the laboratory report is included as **Attachment C**. The laboratory results are also summarized on **Table 1** in **Attachment A**. As shown, the only metals detected were arsenic (7 micrograms per liter (ug/L)) and iron (247 ug/L). However, these concentrations are below EPA's recommended ambient water quality criteria for saltwater bodies as shown on **Table 1**. The pH value of 7.5 is within the permissible range of 6.5 to 8.5 for discharge into the SB surface water body. The chloride concentration (2,250 milligrams per kilogram) detected in the sample indicates brackish groundwater as expected in the project area.

Coverage under NPDES Dewatering General Permit

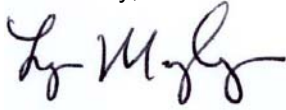
Based on the information provided in this application, CB&I on behalf of MassDOT is requesting that the proposed temporary dewatering project be eligible for coverage under the Massachusetts NPDES DGP. The project plan is to conduct dewatering activities from April to November 2017, and discharge treated effluent to the Fort Point Channel via a BWSC stormwater Outfall.

As the applicant, MassDOT will have operational control over the dewatering activities and plans, including the ability to make modifications to the plans as deemed necessary. Prior to execution of the project plans, the selected Contractor will apply for coverage under the NPDES DGP for this project and will be responsible for the day-to-day operations and activities that are necessary to ensure compliance with the NDPEs DGP, including operation, inspection, monitoring and reporting.

Since Fort Point Channel is classified as an SB (CSO) waterbody, fee payment to the Commonwealth of Massachusetts is not required.

If you have any questions regarding this NOI filing, please do not hesitate to call me at 617.589.6166.

Sincerely,

A handwritten signature in black ink, appearing to read "Lynn Maybury". The signature is fluid and cursive, with the first name "Lynn" and last name "Maybury" clearly distinguishable.

Lynn Maybury, PG
Project Scientist

Enclosures

Attachment A –Table and Figures

Attachment B – Notice of Intent Form and BWSC Discharge Permit Application

Attachment C – Environmental Information Backup

Attachment D – Laboratory Data

cc: Steven McLaughlin, MassDOT, 10 Park Plaza, Boston, MA 02116
Rick McCullough, MassDOT, 185 Kneeland Street, 9th Floor, Boston, MA 02111
James A. Britt, The Gillette Company, One Gillette Park, Boston, MA 02127-1096
MassDEP, Division of Watershed Management, 8 New Bond Street, Worcester, MA 01606
Matthew Tuttle, Boston Water and Sewer Commission, 980 Harrison Avenue, Boston, MA 02119
Kenneth Belovarac, CB&I Project Manager, 150 Royall Street, Canton, MA 02021
File

ATTACHMENT A

TABLE AND FIGURES

TABLE 1
GROUNDWATER ANALYTICAL RESULTS

244-284 A-STREET
SOUTH BOSTON, MA

	Well ID:	B2-OW	AWQC CCC (Chronic)
	Date Sampled:	9/7/2016	
	Units		
Metals (Total)			
Antimony	ug/L	<1.0	
Arsenic	ug/L	7	36
Cadmium	ug/L	<1.0	7.9
Chromium (Total)	ug/L	<2.0	CrIII 74 (FW)
Chromium, Hexavalent	mg/L	<0.010	0.05
Copper	ug/L	<2.0	3.1
Iron	ug/L	247	1,000 (FW)
Lead	ug/L	<1.0	8.1
Mercury	ug/L	<0.20	0.94
Nickel	ug/L	<4.0	8.2
Selenium	ug/L	<2.0	71
Silver	ug/L	<1.0	1.9*
Zinc	ug/L	<8.0	81
General Chemistry			
Chloride	mg/L	2250	
Hardness, Total as CaCO3	mg/L	502	
pH	su	7.5 a	

Notes:

ug/L denotes micrograms per liter

mg/L denotes milligrams per liter

su denotes standard units

NA denotes not applicable

AWQC denotes EPA's National Recommended Water Quality Criteria (chronic) (saltwater unless otherwise stated); CCC: Criterion Continuous Concentration.

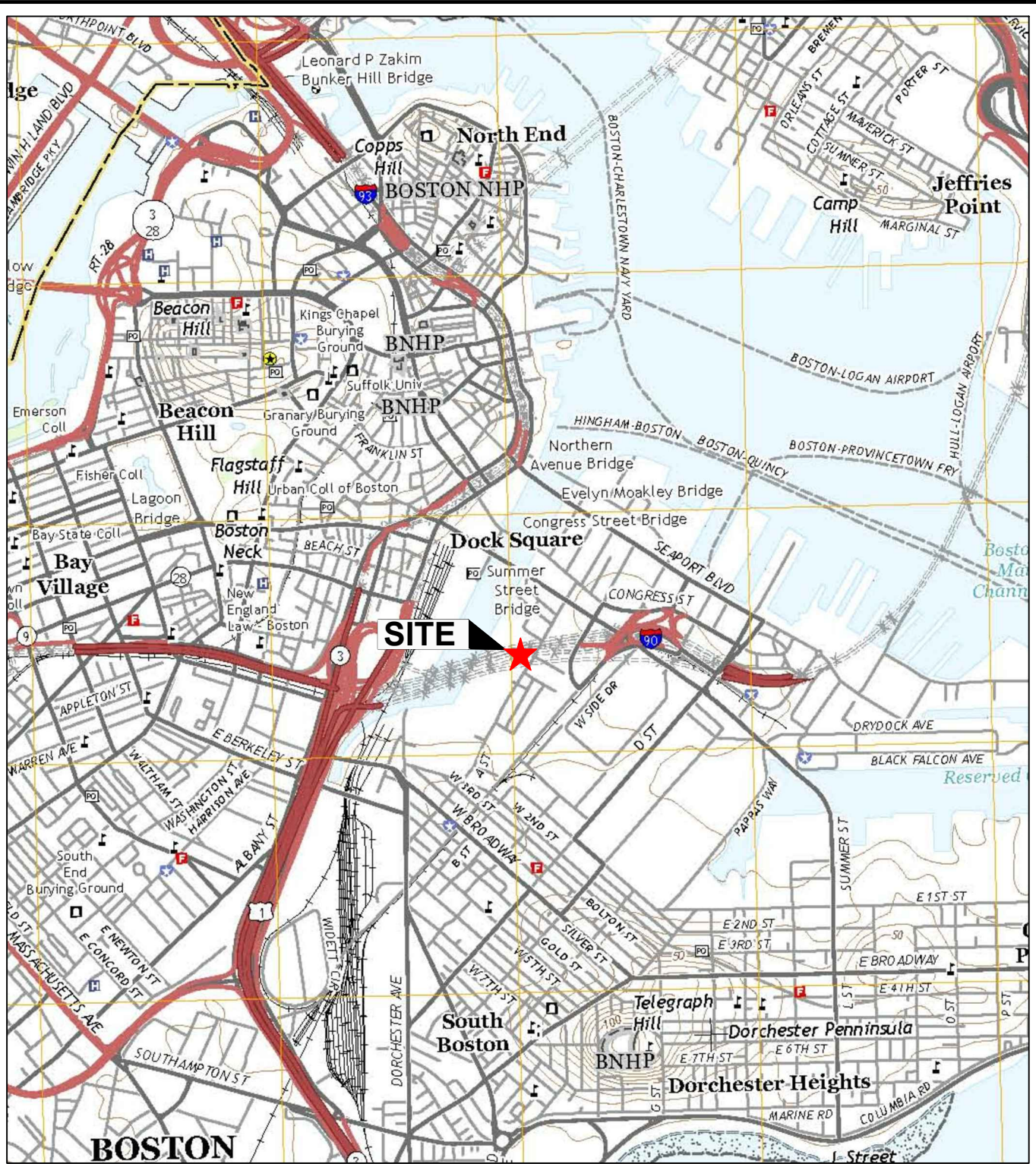
FW denotes freshwater

*AWQC (acute)

^a Analysis performed past the required 15 minutes of collection time/holding time.


XREF Files: IMAGE Files: Boston_South_MA TOPO.jpg
 File: T:\MISC\MassDOT\155120\South Boston, MA\155120-01SITELOC.dwg
 Plot Date/Time: Aug 11, 2016 - 4:59pm
 Plotted By: chris.desiata

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
CANTON, MA	CD	LM	--	155120-01SITELOC
	08/05/16	08/05/16		



MASSACHUSETTS

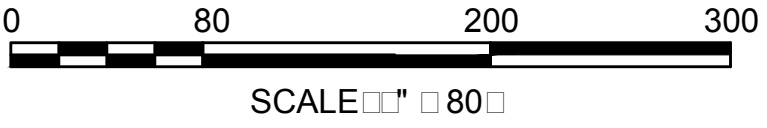
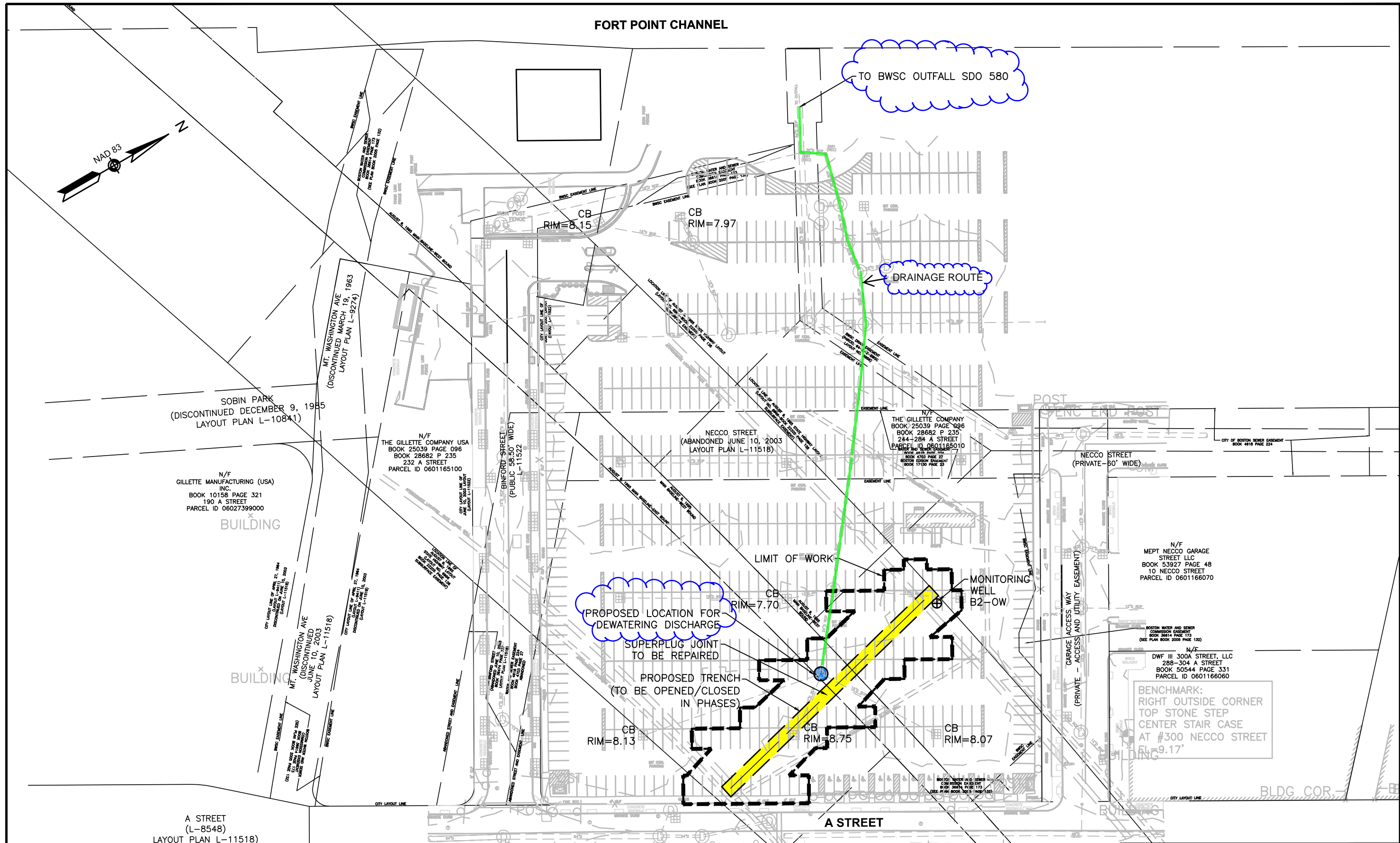
SOURCE:
 USGS 7.5 MIN. SERIES TARGET QUAD BOSTON SOUTH MA, 2015
 SCALE: 1:24,000

CB&I ENVIRONMENTAL
 & INFRASTRUCTURE, INC.
 150 ROYALL STREET
 CANTON, MASSACHUSETTS
 (617) 589-5111

FIGURE 1
 SITE LOCATION PLAN
 MassDOT
 I-90 TUNNEL REMEDIATION
 244-284 A STREET
 SOUTH BOSTON, MASSACHUSETTS

FORT POINT CHANNEL



LEGEND
 ⊕ SOIL BORING AND MONITORING WELL (GEI,2014)

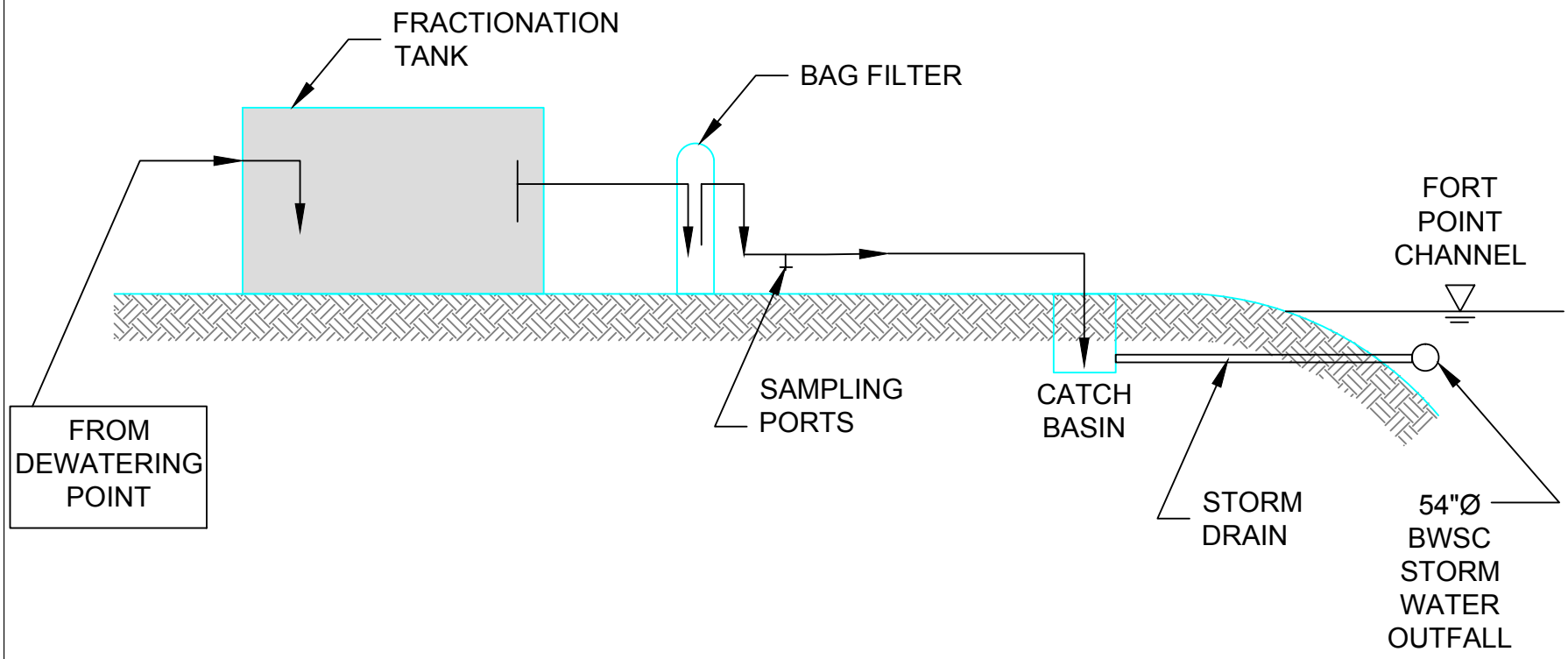
THE EXISTING CONDITIONS SHOWN ON THIS BASE MAP ARE THE RESULT OF AN ON THE GROUND INSTRUMENT SURVEY PERFORMED BETWEEN JANUARY 20, 2016 AND FEBRUARY 17, 2016 BY GREEN INTERNATIONAL AFFILIATES, INC.



DATE: AUG. 29, 2016

FIGURE 2
 SITE PLAN
 MassDOT
 I-90 TUNNEL REMEDIATION
 244-284 A STREET
 SOUTH BOSTON, MASSACHUSETTS

FIGURE 3



FLOW DIAGRAM FOR DEWATERING
TREATMENT AND DISCHARGE

MASSDOT I-90 TUNNEL REMEDIATION
244-284 A STREET
SOUTH BOSTON, MA

ATTACHMENT B

**NOI FORM
AND
BWSC DISCHARGE PERMIT APPLICATION**

II. Suggested Notice of Intent (NOD) Format

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

a) Name of facility: Gillette's A Street Parking Lot		Mailing Address for the Facility: c/o MassDOT, 185 Kneeland St., 9th Floor, Boston, MA 02111	
b) Location Address of the Facility (if different from mailing address): 284 A Street, South Boston, 02210	Facility Location longitude: <u>-71.051028</u> latitude: <u>42.347928</u>		Type of Business: Private Parking Lot
	Facility SIC codes:		
c) Name of facility owner: <u>The Gillette Company (Attn: Jim Britt, Op. manager)</u> Owner's email: <u>britt.ja.1@pg.com</u> Owner's Tel #: <u>(617) 463-2358</u> Owner's Fax #: _____ Address of owner (if different from facility address) <u>One Gillette Park</u> <u>Boston, MA 02127</u>			
Owner is (check one): 1. Federal _____ 2. State _____ 3. Private <input checked="" type="checkbox"/> 4. Other _____ (Describe) _____			
Legal name of Operator, if not owner: <u>MASSDOT</u> Operator Contact Name: <u>Rick McCullough</u> Operator Tel Number: <u>(857) 368-6171</u> Fax Number: <u>(857) 368-0110</u> Operator's email: <u>Rick.McCullough@dot.state.ma.us</u> Operator Address (if different from owner) <u>185 Kneeland St, 9th Floor, Boston, MA 02111</u>			
d) Attach a topographic map indicating the location of the facility and the outfall(s) to the receiving water. Map attached? <input checked="" type="checkbox"/>			
e) Check Yes or No for the following: 1. Has a prior NPDES permit been granted for the discharge? Yes _____ No <input checked="" type="checkbox"/> If Yes, Permit Number: _____ 2. Is the discharge a "new discharger" as defined by 40 CFR Section 122.2? Yes <input checked="" type="checkbox"/> No _____ 3. Is the facility covered by an individual NPDES permit? Yes _____ No <input checked="" type="checkbox"/> If Yes, Permit Number _____ 4. Is there a pending application on file with EPA for this discharge? Yes _____ No <input checked="" type="checkbox"/> 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: FORT POINT CHANNEL
State Water Quality Classification: SB (CSO) Freshwater: _____ Marine Water: X

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 5300 GPD
Average Monthly Flow 4000 GPD

e.) What is the maximum and minimum monthly pH of the discharge (in s.u.)? Max pH 8.5 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 sample data attached.

g.) What treatment does the wastewater receive prior to discharge? settling tank and silt filter (if necessary), in series

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) P (AS NEEDED)
If (P), number of days or months per year of the discharge 7 months and the specific months of discharge APRIL-NOVEMBER (PROPOSED PROJECT DATES) ;
If (I), number of days/year there is a discharge _____
Is the discharge temporary? Yes ✓ No _____
If yes, approximate start date of dewatering APRIL 2017 approximate end date of dewatering NOVEMBER 2017

i.) Latitude and longitude of each discharge within 100 feet (See http://www.epa.gov/tri/report/siting_tool): Outfall 1: long. -71.052853 lat. 42.348533 ; 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 NA cfs
(See Appendix VII for equations and additional information)

<p>MASSACHUSETTS FACILITIES: See Section 3.4 and Appendix 1 of the General Permit for more information on Areas of Critical Environmental Concern (ACEC):</p> <p>k.) Does the discharge occur in an ACEC? Yes _____ No <input checked="" type="checkbox"/></p> <p>If yes, provide the name of the ACEC: _____</p>

3. Contaminant Information

<p>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 LC₅₀ in percent for aquatic organism(s)).</p> <p>b) Please report any known remediation activities or water-quality issues in the vicinity of the discharge.</p>
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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.

<p>a) Which of the three eligibility criteria listed in Appendix IV, Criterion (A, B, or C) have you met? A _____</p> <p>b) Please attach documentation with your NOI supporting your response. Please see Appendix IV for acceptable documentation</p>

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

<p>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 <input checked="" type="checkbox"/> ; Question 2: No <input checked="" type="checkbox"/> Yes _____</p> <p>b) Have any State or Tribal historic preservation officers been consulted in this determination? Yes _____ or No <input checked="" type="checkbox"/> If yes, attach the results of the consultation(s).</p> <p>c) Which of the three National Historic Preservation Act eligibility criterion listed in Appendix III, Criterion (A, B, or C) have you met? B _____</p> <p>d) Is the project located on property of religious or cultural significance to an Indian Tribe? Yes _____ or No <input checked="" type="checkbox"/> If yes, provide that name of the Indian Tribe associated with the property. _____</p>

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

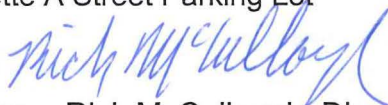
7. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22 (see below) including the following certification:

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: Gillette A Street Parking Lot

Operator signature:



Print Full Name and Title: Rick McCullough, Director of Environmental Engineering, District 6

Date:

12-12-2016

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.



Boston Water and Sewer Commission
 980 Harrison Avenue
 Boston, MA 02119-2540

DEWATERING DISCHARGE PERMIT APPLICATION

OWNER / AUTHORIZED APPLICANT PROVIDE INFORMATION HERE:

Company Name: MassDOT Address: 185 Kneeland St, 9th Floor, Boston, MA 02111
 Phone Number: 857-368-6171 Fax number: 857-368-0110
 Contact person name: Rick McCullough Title: Director of Environmental Engineering, Dist 6
 Cell number: 508-450-6783 Email address: Rick.McCullough@dot.state.ma.us
 Permit Request (check one): New Application Permit Extension Other (Specify): _____

Owner's Information (if different from above):

Owner of property being dewatered: The Gillette Company (Attn: Jim Britt, Operations Mgr)
 Owner's mailing address: One Gillette Park, Boston, MA 02127 Phone number: 617-463-2358

Location of Discharge & Proposed Treatment System(s):

Street number and name: 244-284 A Street Neighborhood South Boston
 Discharge is to a: Sanitary Sewer Combined Sewer Storm Drain Other (specify): _____
 Describe Proposed Pre-Treatment System(s): Fractionation Settling Tank and bag filter (in series)
 BWSC Outfall No. SDO 580 Receiving Waters Fort Point Channel

Temporary Discharges (Provide Anticipated Dates of Discharge): From April 2017 To October 2017
 Groundwater Remediation Tank Removal/Installation Foundation Excavation
 Utility/Manhole Pumping Test Pipe Trench Excavation
 Accumulated Surface Water Hydrogeologic Testing Other: Excavation for I-90 Tunnel Roof Repair

Permanent Discharges
 Foundation Drainage Crawl Space/Footing Drain
 Accumulated Surface Water Non-contact/Uncontaminated Cooling
 Non-contact/Uncontaminated Process Other: _____

1. Attach a Site Plan showing the source of the discharge and the location of the point of discharge (i.e. the sewer pipe or catch basin). Include meter type, meter number, size, make and start reading. Note. All discharges to the Commission's sewer system will be assessed current sewer charges.
2. If discharging to a sanitary or combined sewer, attach a copy of MWRA's Sewer Use Discharge permit or application.
3. If discharging to a separate storm drain, attach a copy of EPA's NPDES Permit or NOI application, or NPDES Permit exclusion letter for the discharge, as well as other relevant information.
4. Dewatering Drainage Permit will be denied or revoked if applicant fails to obtain the necessary permits from MWRA or EPA.

Submit Completed Application to: Boston Water and Sewer Commission
 Engineering Customer Services
 980 Harrison Avenue, Boston, MA 02119
 Attn: Matthew Tuttle, Engineering Customer Service
 E-mail: tuttlemp@bwsc.org
 Phone: 617-989-7204 Fax: 617-989-7716

Signature of Authorized Representative for Property Owner: *Rick McCullough* Date: 12-12-2016

ATTACHMENT C

ENVIRONMENTAL INFORMATION

BORING INFORMATION		BORING B1 PAGE 1 of 2
LOCATION: In parking lot, next to A Street	DATE START/END: 8/15/2014 - 8/15/2014	
GROUND SURFACE EL. (ft): ~110	DRILLING COMPANY: Carr-Dee Corporation	
VERTICAL DATUM: CA/T Datum	DRILLER NAME: Joe DeSimone	
TOTAL DEPTH (ft): 50.8	RIG TYPE: Truck Mounted B61 Mobile	
LOGGED BY: M. Farren		

DRILLING INFORMATION		
HAMMER TYPE: Safety Hammer - spooling winch	CASING I.D./O.D.: 4 inch/ 4.5 inch	CORE BARREL TYPE: NA
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D.: NA / NA
DRILLING METHOD: Rotary Drilling with Casing		
WATER LEVEL DEPTHS (ft): Not measured		


ABBREVIATIONS: Pen. = Penetration Length
 Rec. = Recovery Length
 RQD = Rock Quality Designation
 = Length of Sound Cores > 4 in / Pen., %
 WOR = Weight of Rods
 WOH = Weight of Hammer

S = Split Spoon Sample
 C = Core Sample
 U = Undisturbed Sample
 SC = Sonic Core
 DP = Direct Push Sample
 HSA = Hollow-Stem Auger

Qp = Pocket Penetrometer Strength
 Sv = Pocket Torvane Shear Strength
 LL = Liquid Limit
 PI = Plasticity Index
 PID = Photoionization Detector
 I.D./O.D. = Inside Diameter/Outside Diameter

NA, NM = Not Applicable, Not Measured
 Blows per 6 in.: 140-lb hammer falling
 30 inches to drive a 2-inch-O.D.
 split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0.5 to 2.5	24/13	4-6-58-27	Asphalt Sand & Gravel Flowable Fill	Carr Dee used a hollow stem auger to penetrate 4 inches of asphalt. S1 (0'-7"): Dry, medium dense, brown, FINE TO COARSE SAND, some fine gravel up to 1/8", some inorganic silt. S1 (7"-13"): Dry, very dense, gray, INORGANIC SILT, trace fine gravel up to 1/8", trace fine sand, possible flow fill.	
	5	S2	5 to 7	24/0	2-1-1/12"	The driller noted that he penetrated through the dense material (possible flow fill) at a depth of 2.5' while driving the casing to 5'. Casing blows were 2 blow per foot from 5'-10'.	S2: No Recovery S2 (Redrive): Moist, very loose, brown, FINE TO COARSE SAND, trace fine gravel up to 1/8", trace inorganic silt, wood fragments, 1" recovery on redrive.	
	10	S3	10 to 12	24/4	8-4-7-11	While rollerbitting to a depth of 10' (with the casing at 10'), the driller had to remove the casing because it was resting on such loose material that the roller bit was spinning the casing. Upon resetting the casing, it stopped spinning. S3 was sampled with casing at a depth of 10ft	S3: Moist, medium dense, brown, FINE TO COARSE SAND, some fine to coarse gravel up to 3/4", trace inorganic silt.	
	15	S4	15 to 17	24/14	5-5-1-1/24"	Casing blows were 2 blows per foot from 13.5'-15' S4 was sampled open hole. The casing had to be removed because it was spinning with the roller bit.	S4: Wet, loose, brown, FINE TO COARSE SAND, some fine to coarse gravel, trace inorganic silt.	
	20					No sample taken from 20'-22' because the material was very loose and the roller bit would spin the casing off. Casing blows 20'-21': 5 Casing blows 21'-22': 2 Casing blows 22'-23': 1		

NOTES: A piece of casing spun off and remained in the hole at 15'. While removing this casing, 3/4" crushed stone was stuck inside and was removed with it. John Felteau (JF White) indicated this crushed stone may be from the dewatering pad of the test pit.	PROJECT NAME: CA/T Tunnel Leak Investigation CITY/STATE: Boston, Massachusetts GEI PROJECT NUMBER: 10355-1	
--	---	---

GEI WOBURN STD 1-LOCATION-LAYER NAME 10355-1.GPJ GEI DATA TEMPLATE 2013.GDT 9/12/14

BORING

B1

PAGE 2 of 2

LOCATION: In parking lot, next to A Street

GROUND SURFACE EL. (ft): ~110

DATE START/END: 8/15/2014 - 8/15/2014

VERTICAL DATUM: CA/T Datum

DRILLING COMPANY: Carr-Dee Corporation

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
	25	S5	25 to 27	24/3	5-5-8-5	Casing blows 23'-25': 1 Casing blows 25'-26': 11 Casing blows 26'-27': 7 Casing blows 27'-28': 9 Casing blows 28'-29': 7 Casing blows 29'-30': 7	Sand & Gravel Fill	S5: Wet, medium dense, brown, FINE TO COARSE SAND and FINE TO COARSE GRAVEL up to 1", trace inorganic silt.
	30	S6	30 to 32	24/0	10-6-3-2	S6: No Recovery S6 (Redrive): Wet, loose, brown, FINE TO COARSE SAND, some fine to coarse gravel up to 1/2", trace inorganic silt.		
	35	S7	35 to 37	24/11	7-4-3-4	S7: Wet, loose, brown, FINE TO COARSE GRAVEL, some fine to coarse sand, trace inorganic silt.		
						Casing advanced at ~1 blow per foot from 37'-39'		
						Pieces of clear plastic membrane came up in the drill wash at a depth of 38'		
	40	S8	40 to 42	24/4	15-3-1-2	S8: Wet, very loose, brown, FINE TO COARSE GRAVEL up to 3/4", some fine to coarse sand, trace inorganic silt.		
	45	S9	45 to 47	24/1	1/60"	S9: Similar to S8. While sampling S9, the first blow pushed the spoon 5' until the hammer hitting the casing stopped it. We pushed another spoon from 47'-49' (WOH) and got no recovery.		
	50	S10	50 to 50.6	7/7	5-120/1"	S10: Wet, very dense, dark brown, FINE TO COARSE GRAVEL up to 3/4", some fine to coarse sand, some inorganic silt, petroleum-like odor, wood fragments in tip of sampler. Boring backfilled with cuttings and pea gravel upon completion. While rollerbitting from 50.6' to 50.8' steel fragments appeared in the drill wash, we met rollerbit refusal at 50.8'		
						Mud Mat		
	55							

NOTES:

A piece of casing spun off and remained in the hole at 15'. While removing this casing, 3/4" crushed stone was stuck inside and was removed with it. John Felteau (JF White) indicated this crushed stone may be from the dewatering pad of the test pit.

PROJECT NAME: CA/T Tunnel Leak Investigation

CITY/STATE: Boston, Massachusetts

GEI PROJECT NUMBER: 10355-1



GEI WOBURN STD 1-LOCATION-LAYER NAME 10355-1.GPJ GEI DATA TEMPLATE 2013.GDT 9/12/14

BORING INFORMATION

LOCATION: In parking lot, away from A street
 GROUND SURFACE EL. (ft): ~109 DATE START/END: 8/14/2014 - 8/14/2014
 VERTICAL DATUM: CA/T Datum DRILLING COMPANY: Carr-Dee Corporation
 TOTAL DEPTH (ft): 50.3 DRILLER NAME: Joe DeSimone
 LOGGED BY: M. Farren RIG TYPE: Truck Mounted B61 Mobile

BORING

B2(OW)

PAGE 1 of 2

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer - spooling winch CASING I.D./O.D.: 4 inch/ 4.5 inch CORE BARREL TYPE: NA
 AUGER I.D./O.D.: NA / NA DRILL ROD O.D.: NM CORE BARREL I.D./O.D.: NA / NA
 DRILLING METHOD: Rotary Drilling with Casing
 WATER LEVEL DEPTHS (ft): 6.0 8/14/2014 6.1 8/15/2014

ABBREVIATIONS: Pen. = Penetration Length S = Split Spoon Sample Qp = Pocket Penetrometer Strength NA, NM = Not Applicable, Not Measured
 Rec. = Recovery Length C = Core Sample Sv = Pocket Torvane Shear Strength Blows per 6 in.: 140-lb hammer falling
 RQD = Rock Quality Designation U = Undisturbed Sample LL = Liquid Limit 30 inches to drive a 2-inch-O.D.
 = Length of Sound Cores > 4 in / Pen., % SC = Sonic Core PI = Plasticity Index split spoon sampler.
 WOR = Weight of Rods DP = Direct Push Sample PID = Photoionization Detector
 WOH = Weight of Hammer HSA = Hollow-Stem Auger I.D./O.D. = Inside Diameter/Outside Diameter

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
		S1	0.5 to 2.5	24/13	12-16-15-8	Asphalt	Carr Dee used a hollow stem auger to penetrate 5 inches of asphalt. S1: Dry, dense, brown, FINE TO COARSE SAND, trace fine gravel, trace inorganic silt.	
	5	S2	5 to 7	24/6	9-6-4-5	Sand Fill	S2: Moist, medium dense, brown, FINE TO COARSE SAND, some fine to coarse gravel up to 1", trace inorganic silt.	
	10	S3	10 to 12	24/4	29-12-9-6		S3: Moist, medium dense, brown, FINE TO COARSE SAND, some fine to coarse gravel up to 1", trace inorganic silt.	
	15	S4	15 to 17	24/7	7-4-6-4		S4: Wet, medium dense, brown, FINE TO COARSE SAND, trace gravel up to 1/4", trace inorganic silt.	
	20	S5	20 to 22	24/7	5-3-2-1		S5: Wet, loose, brown, FINE TO COARSE SAND, trace fine gravel up to 1/4", trace inorganic silt.	

NOTES:

PROJECT NAME: CA/T Tunnel Leak Investigation

CITY/STATE: Boston, Massachusetts

GEI PROJECT NUMBER: 10355-1



LOCATION: In parking lot, away from A street

GROUND SURFACE EL. (ft): ~109

VERTICAL DATUM: CA/T Datum

DATE START/END: 8/14/2014 - 8/14/2014

DRILLING COMPANY: Carr-Dee Corporation

**BORING
B2(OW)**

PAGE 2 of 2

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
25		S6	25 to 27	24/7	2-1-4-4	Sand Fill	S6: Wet, loose, brown, FINE TO COARSE SAND, trace fine gravel up to 1/4", trace inorganic silt.	
30		S7	30 to 32	24/14	5-3-4-5		S7: Wet, loose, brown, FINE TO COARSE SAND, trace fine gravel up to 1/8", trace inorganic silt.	
35		S8	35 to 37	24/12	6-4-2-4		S8: Wet, loose, brown, FINE TO COARSE SAND, trace fine gravel up to 1/4", trace inorganic silt.	
40		S9	40 to 42	24/8	3-1-2-5		S9: Wet, very loose, brown, FINE TO COARSE SAND, trace fine gravel up to 3/8", trace inorganic silt.	
45		S10	47 to 49	24/12	5-9-9-10		S10 (0-4"): Similar to S9, except medium dense. S10 (4"-7"): Wet, medium dense, brown, FINE TO MEDIUM GRAVEL up to 1/2", trace fine to coarse sand, trace inorganic silt. S10 (7"-12"): Similar to S9, except medium dense.	
50		S11	49 to 49.4	5/4	120/5"	Debris	S11: Wet, very dense, gray, NONPLASTIC INORGANIC SILT, some fine sand, some fine gravel up to 1/8", possible flow fill.	
50		S12	50 to 50.1	1/0	120/1"		S12: No Recovery, piece of metal debris. Observation well installed upon completion.	
55						Mud Mat		

Flowable Fill

Driving the casing from 47'-49' took more than 50 blows per foot with a 300lb hammer, and cleaning out the hole at 49' produced much gravel in the wash.

While rollerbitting from 49.4'-50', pieces of foam board and membrane were in the wash among drill chatter, drill chatter increased at 49.8'.

Carr Dee rollerbit from 50.1' to 50.25' after S12. It was very hard drilling and the driller thought it was concrete. Ended the hole at 50.25' with rollerbit refusal.

NOTES:

PROJECT NAME: CA/T Tunnel Leak Investigation

CITY/STATE: Boston, Massachusetts

GEI PROJECT NUMBER: 10355-1



GEI WOBURN STD 1-LOCATION-LAYER NAME 10355-1.GPJ GEI DATA TEMPLATE 2013.GDT 9/12/14

MassDEP - Bureau of Waste Site Cleanup

Site Information:

MASSDOT I-90 TUNNEL REMEDIATION
 244-284 A STREET BOSTON, MA
 NAD83 UTM Meters:
 4690449mN, 331081mE (Zone: 19)
 August 26, 2016

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

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/>.



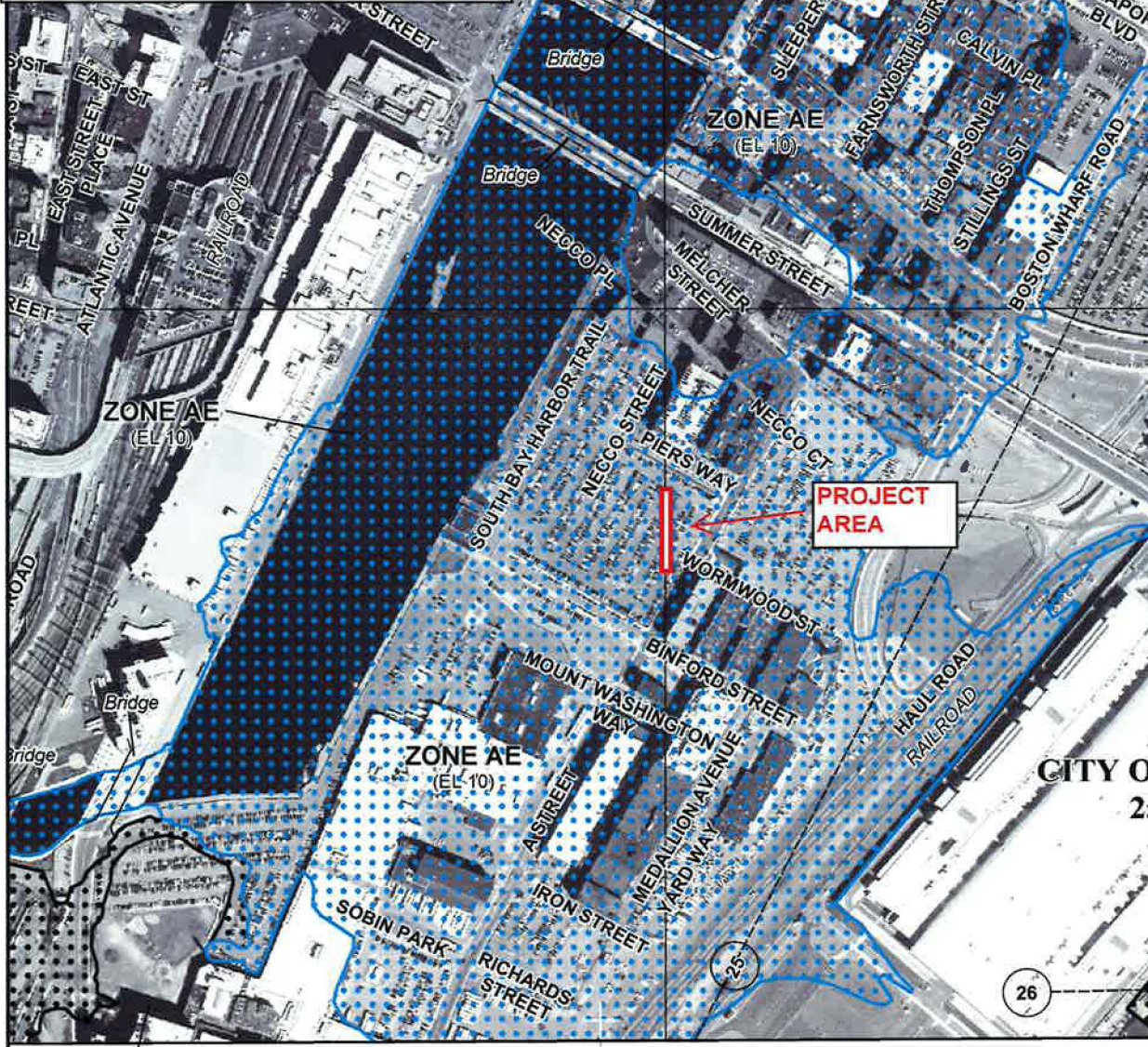
MassDEP

Commonwealth of Massachusetts
 Department of Environmental Protection

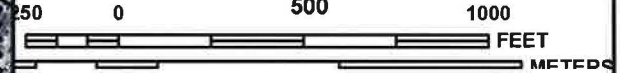


Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail	PWS Protection Areas: Zone II, IWPA, Zone A
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct	Hydrography: Open Water, PWS Reservoir, Tidal Flat
Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam	Wetlands: Freshwater, Saltwater, Cranberry Bog
Aquifers: Medium Yield, High Yield, EPA Sole Source	FEMA 100yr Floodplain; Protected Open Space; ACEC
Non Potential Drinking Water Source Area: Medium, High (Yield)	Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert, Potential
	Solid Waste Landfill; PWS: Com. GW, SVV, Emerg., Non-Com

**APPENDIX C: FEMA FIRM MAP
 MASSDOT
 I-90 TUNNEL REMEDIATION
 244-284 A STREET
 SOUTH BOSTON, MA**



MAP SCALE 1" = 500'



NFP

PANEL 0081J

FIRM

**FLOOD INSURANCE RATE MAP
 SUFFOLK COUNTY,
 MASSACHUSETTS
 (ALL JURISDICTIONS)**

PANEL 81 OF 176
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOSTON, CITY OF	250286	0081	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



**MAP NUMBER
 25025C0081J
 MAP REVISED
 MARCH 16, 2016**

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

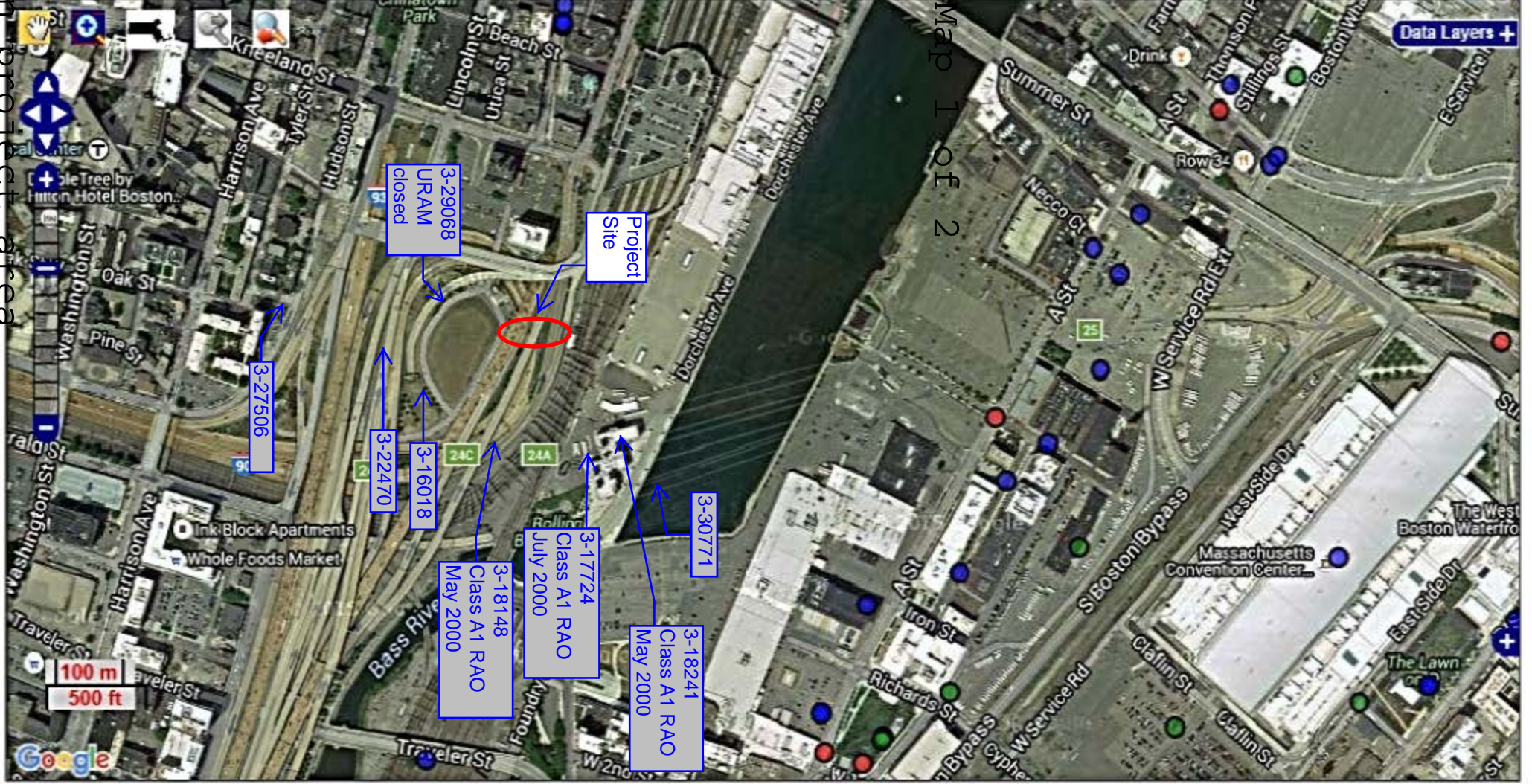
Reportable Release Lookup

Hide Map

Locations

Map Legend | Data Questions?

Data Layers +



● Open Sites ● Closed Sites ● Closed Sites with Use Limitation

Reportable Release Lookup

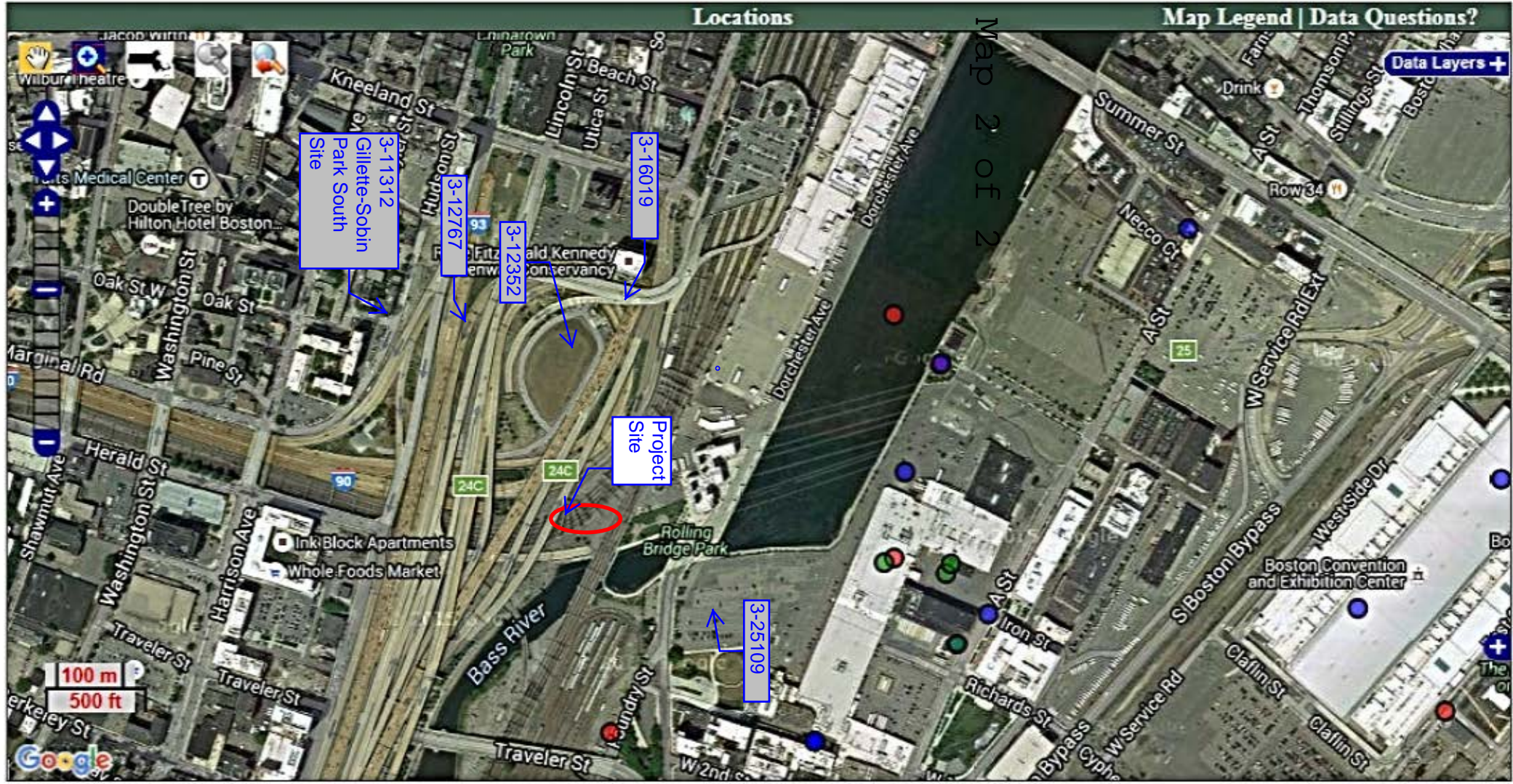
Hide Map

Locations

Map Legend | Data Questions?

Data Layers +

Map 2 of 2



- Open Sites
- Closed Sites
- Closed Sites with Use Limitation

The search returned 479 results | Search Keywords >> 'BOSTON-SOUTH BOSTON' | Data last updated: 04/29/2016

There is a maximum limit of 200 records that can be displayed. You have exceeded the limit. 200 records have been displayed.

MassDOT I-90 Tunnel Roof Remediation

IPaC Trust Resources Report

Generated September 01, 2016 07:51 AM MDT, IPaC v3.0.8

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.

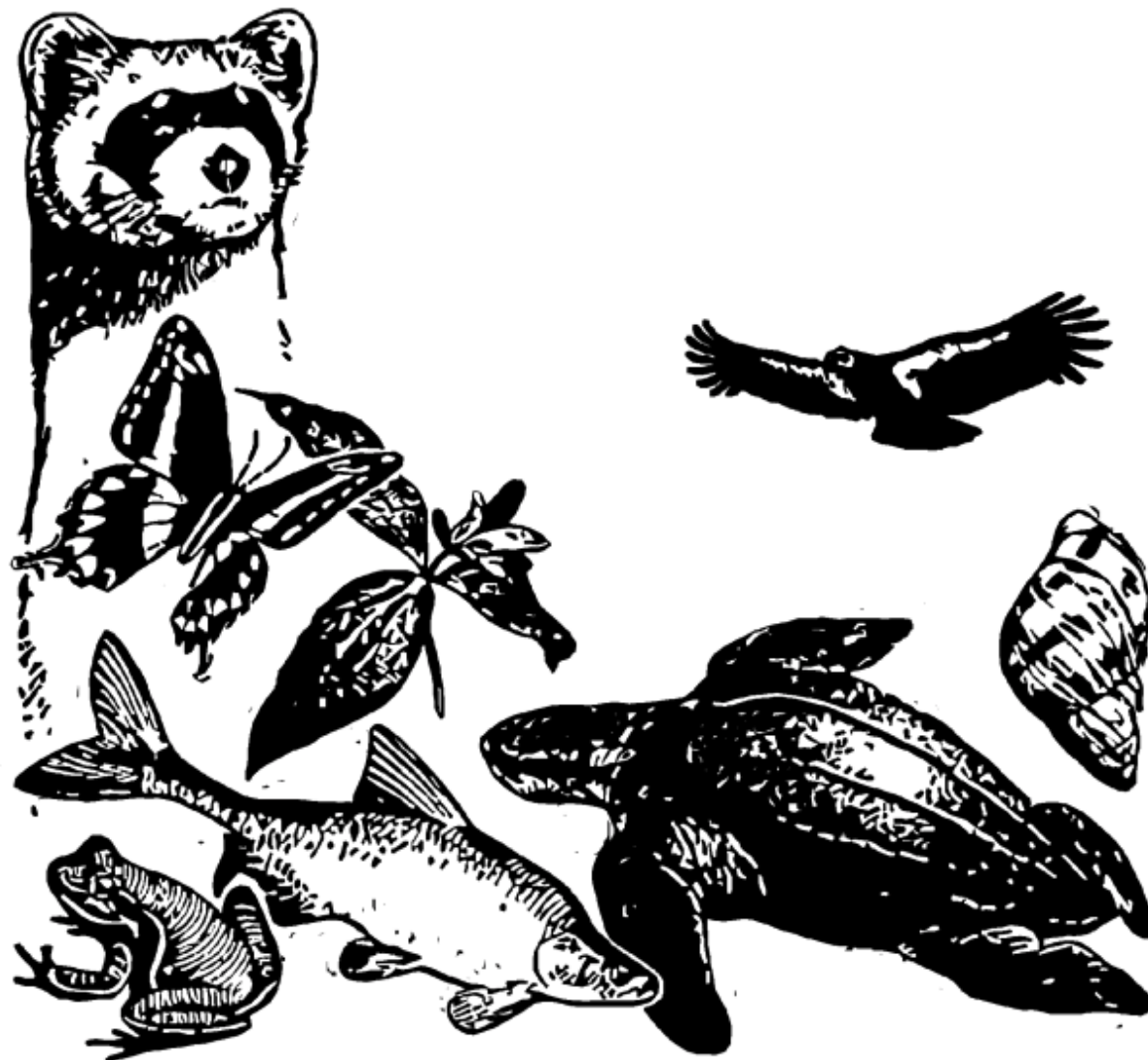


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Migratory Birds	3
Refuges & Hatcheries	5
Wetlands	6

U.S. Fish & Wildlife Service

IPaC Trust Resources Report



NAME

MassDOT I-90 Tunnel Roof
Remediation

LOCATION

Suffolk County, Massachusetts

DESCRIPTION

Gillette Parking Lot at 244-284 A
Street, South Boston, MA
Temporary Excavation of soils and
dewatering with treated discharge to
Fort Point Channel via on-site storm
drain system to BWSC Outfall
(April-November 2017).



IPAC LINK

[https://ecos.fws.gov/ipac/project/
NWOY5-D3DFB-E67J4-6LINN-PSTG4U](https://ecos.fws.gov/ipac/project/NWOY5-D3DFB-E67J4-6LINN-PSTG4U)

U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the [Endangered Species Program](#) of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

[Section 7](#) of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Birds

Red Knot *Calidris canutus rufa*

Threatened

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0DM

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.^[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data
<http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The following species of migratory birds could potentially be affected by activities in this location:

American Oystercatcher <i>Haematopus palliatus</i>	Bird of conservation concern
On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0G8	
Bald Eagle <i>Haliaeetus leucocephalus</i>	Bird of conservation concern
On Land Season: Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B008	
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i>	Bird of conservation concern
On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0HI	
Hudsonian Godwit <i>Limosa haemastica</i>	Bird of conservation concern
At Sea Season: Migrating	

Olive-sided Flycatcher <i>Contopus cooperi</i> On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0AN	Bird of conservation concern
Peregrine Falcon <i>Falco peregrinus</i> On Land Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0FU	Bird of conservation concern
Purple Sandpiper <i>Calidris maritima</i> On Land Season: Wintering	Bird of conservation concern
Short-eared Owl <i>Asio flammeus</i> On Land Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0HD	Bird of conservation concern
Willow Flycatcher <i>Empidonax traillii</i> On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0F6	Bird of conservation concern
Wood Thrush <i>Hylocichla mustelina</i> On Land Season: Breeding	Bird of conservation concern
Worm Eating Warbler <i>Helmitheros vermivorum</i> On Land Season: Breeding	Bird of conservation concern

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

There are no wetlands in this location

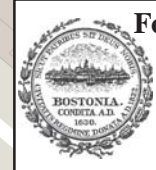


**Fort Point Channel
Landmark District**

Project Area

X

**"A" Street
Protection Area**

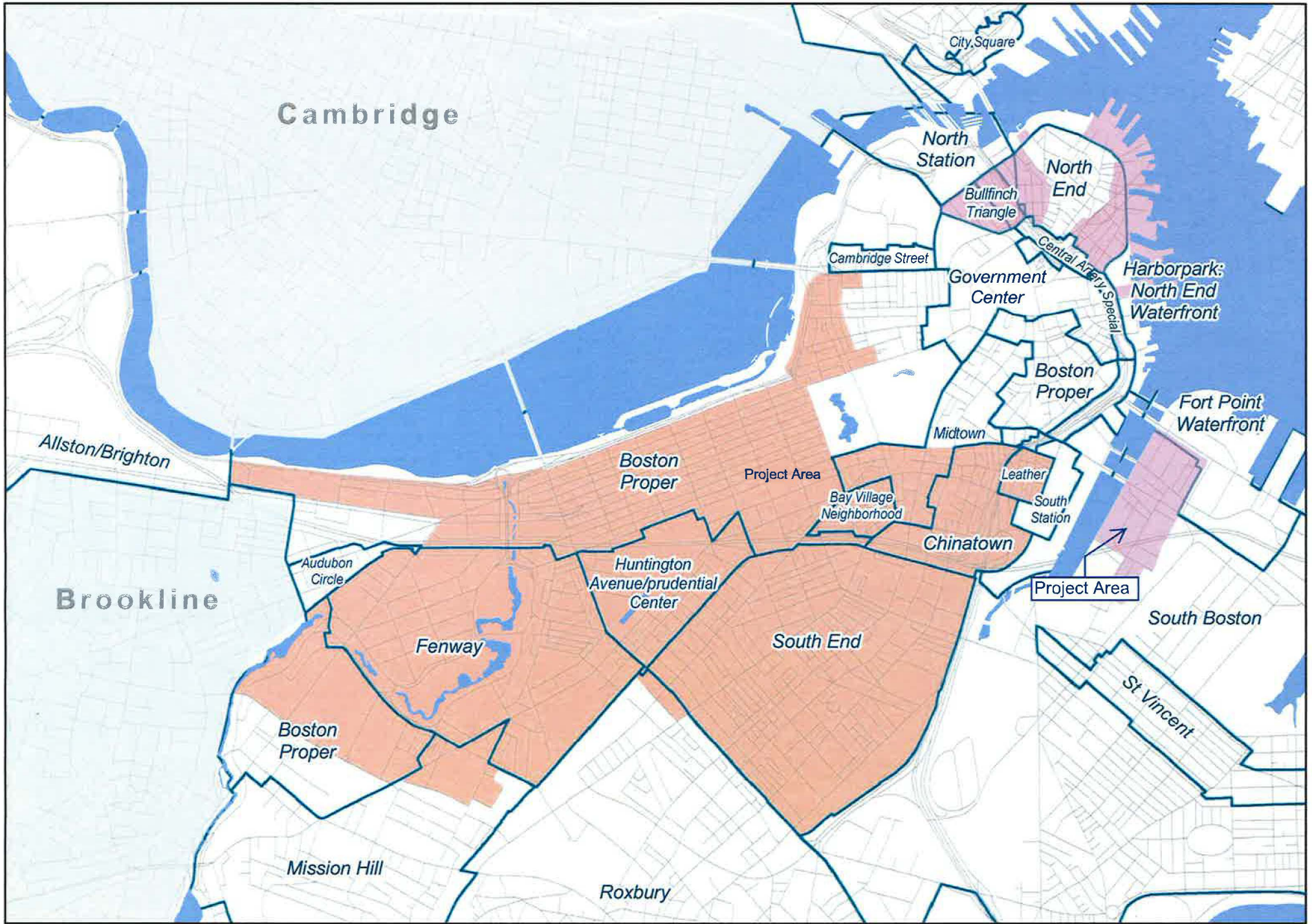


**Fort Point Channel Landmark District
And Protection Areas**

0 100 200 300 400 500 Feet



This map is intended for informational purposes only.



Groundwater Conservation Overlay District



- Overlay Area
- No Harm Overlay Area
- Zoning District Boundary



ATTACHMENT D

GROUNDWATER LABORATORY REPORT

SGS ACCUTEST IS PART OF SGS, THE WORLD'S LEADING INSPECTION,
VERIFICATION, TESTING AND CERTIFICATION COMPANY.



e-Hardcopy 2.0
Automated Report

Technical Report for

CB&I

Mass DOT Superplug, A Street, Boston, MA

155120

SGS Accutest Job Number: MC47668

Sampling Date: 09/07/16

Report to:

**CB&I Environmental Consulting & Eng.
150 Royall Street
Canton, MA 02021
lynn.maybury@CBI.com**

ATTN: Lynn Maybury

Total number of pages in report: 29



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

**H. (Brad) Madadian
Lab Director**

Client Service contact: Frank DAgostino 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO (MA00136) MN (11546AA) NC (653) IL (002337) WI (399080220) DoD ELAP (L-A-B L2235)

This report shall not be reproduced, except in its entirety, without the written approval of SGS Accutest.
Test results relate only to samples analyzed.



ACCUTEST

September 29 2016

Lynn Maybury
CB&I Environmental Consulting & Eng.
150 Royall Street
Canton, MA 02021

Accutest Job MC47668

Ms. Maybury:

The report of SGS-Accutest job number MC47668 is reissued to change the data reporting package from a Commercial B to a Commercial BN, and a case narrative was added to the report. This change has been incorporated into the revised report which is attached.

Sincerely,

Jennifer Dixon

Report Production

SGS-ACCUTEST LABORATORIES

**SGS ACCUTEST IS PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION,
TESTING AND CERTIFICATION COMPANY.**

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1

2

3

4

5

6

7



Sample Summary

CB&I

Job No: MC47668

Mass DOT Superplug, A Street, Boston, MA
Project No: 155120

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
MC47668-1	09/07/16	12:41 EV	09/07/16	AQ	Ground Water	B2-OW

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: CB&I

Job No: MC47668

Site: Mass DOT Superplug, A Street, Boston, MA

Report Date 9/29/2016 9:19:20 AM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 09/07/2016 and were received at SGS Accutest New England on 09/07/2016 properly preserved, at 2.3 Deg. C and intact. These Samples received a job number of MC47668. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6020A

Matrix: AQ

Batch ID: MP26741

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC47670-1MS, MC47670-1MSD, MC47670-1SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic, Cadmium, Lead, Selenium, Silver, Zinc are outside control limits for sample MP26741-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP26741-SD1 for Iron: Serial dilution indicates possible matrix interference.

Metals By Method SW846 7470A

Matrix: AQ

Batch ID: MP26751

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC47654-2MS, MC47654-2MSD were used as the QC samples for metals.

Wet Chemistry By Method SM 4500 CL C-11

Matrix: AQ

Batch ID: GN54805

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC47668-1MS, MC47668-1MSD were used as the QC samples for Chloride.

Wet Chemistry By Method SM21 4500HB/EPA150.1

Matrix: AQ

Batch ID: GN54785

- Sample(s) MC47668-1DUP were used as the QC samples for pH.
- MC47668-1 for pH: Analysis performed past the required 15 minutes of collection time/holding time.

Wet Chemistry By Method SM2340 C-11

Matrix: AQ

Batch ID: GN54816

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC47668-1DUP, MC47668-1MS were used as the QC samples for Hardness, Total as CaCO₃.

Thursday, September 29, 2016

Page 1 of 2

Wet Chemistry By Method SW846 7196A

Matrix: AQ

Batch ID: GN54782

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC47668-1DUP, MC47668-1MS were used as the QC samples for Chromium, Hexavalent.

SGS Accutest New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Laboratory Director for SGS Accutest New England or assignee as verified by the signature on the cover page has authorized the release of this report(MC47668).

Thursday, September 29, 2016

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Summary of Hits

Job Number: MC47668
Account: CB&I
Project: Mass DOT Superplug, A Street, Boston, MA
Collected: 09/07/16



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

MC47668-1 B2-OW

Arsenic		7.0	1.0		ug/l	SW846 6020A
Iron		247	50		ug/l	SW846 6020A
Chloride		2250	100		mg/l	SM 4500 CL C-11
Hardness, Total as CaCO3		502	20		mg/l	SM2340 C-11
pH ^a		7.5			su	SM21 4500HB/EPA150.1

(a) Analysis performed past the required 15 minutes of collection time/holding time.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: B2-OW		Date Sampled: 09/07/16
Lab Sample ID: MC47668-1		Date Received: 09/07/16
Matrix: AQ - Ground Water		Percent Solids: n/a
Project: Mass DOT Superplug, A Street, Boston, MA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Antimony	< 1.0	1.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Arsenic	7.0	1.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Cadmium	< 1.0	1.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Chromium	< 2.0	2.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Copper	< 2.0	2.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Iron	247	50	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Lead	< 1.0	1.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Mercury	< 0.20	0.20	ug/l	1	09/12/16	09/13/16	EAL SW846 7470A ²	SW846 7470A ⁴
Nickel	< 4.0	4.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Selenium	< 2.0	2.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Silver	< 1.0	1.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³
Zinc	< 8.0	8.0	ug/l	2	09/09/16	09/13/16	EAL SW846 6020A ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA19450
- (2) Instrument QC Batch: MA19452
- (3) Prep QC Batch: MP26741
- (4) Prep QC Batch: MP26751

RL = Reporting Limit

4.1
4

Report of Analysis

Client Sample ID: B2-OW		Date Sampled: 09/07/16
Lab Sample ID: MC47668-1		Date Received: 09/07/16
Matrix: AQ - Ground Water		Percent Solids: n/a
Project: Mass DOT Superplug, A Street, Boston, MA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	2250	100	mg/l	100	09/12/16	EL	SM 4500 CL C-11
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	09/08/16 09:28	EL	SW846 7196A
Hardness, Total as CaCO3	502	20	mg/l	5	09/13/16	MC	SM2340 C-11
pH ^a	7.5		su	1	09/08/16 13:21	EL	SM21 4500HB/EPA150.1

(a) Analysis performed past the required 15 minutes of collection time/holding time.

RL = Reporting Limit

4.1
4

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Parameter Certifications (MA)
- Chain of Custody

Parameter Certifications

Job Number: MC47668
Account: FDG CB&I
Project: Mass DOT Superplug, A Street, Boston, MA

The following parameters included in this report are certified by the state of MA.

Parameter	CAS#	Method	Mat	Certification Status
Chloride	16887-00-6	SM 4500 CL C-11	AQ	Accutest is certified for this parameter.
Hardness, Total as CaCO3		SM2340 C-11	AQ	Accutest is certified for this parameter.
pH		SM21 4500HB/EPA150.1	AQ	Accutest is certified for this parameter.

5.1
5



ACCUTEST

CHAIN OF CUSTODY

SGS Accutest of New England
50 D'Angelo Drive, Building One Marlborough, MA 01752
TEL: 508-481-5200 FAX: 508-481-7753
www.accutest.com

FED-EX Tracking #
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest Job # MC47668

Client / Reporting Information: CB+I
Project Information: MassDOT Super Plug
Requested Analysis: * 12 Metals (Total), Total Hexavalent Cr, Hardness, Chloride, pH, Mercury
Matrix Codes: DW - Drinking Water, GW - Ground Water, etc.
LAB USE ONLY: 13D, 5D

Deliverable Information: Turnaround Time (Business days)
Approved By (SGS Accutest PMI): / Date:
INITIAL ASSESSMENT: [Signature]
LABEL VERIFICATION: [Signature]
Comments / Special Instructions: * Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn, Fe
* Analysis + min Levels Per Attached NPDES DGP Appendix III

Sample Custody must be documented below each time samples change possession, including courier delivery.
Relinquished by Sampler: 1 Eric Vining
Received By: 1 will all
Relinquished by: 2 will all
Received By: 2 will all

5.2 5

MC47668: Chain of Custody

Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: MC47668

Client: CBI

Project: MASSDOT SUPERPLUG

Date / Time Received: 9/7/2016 4:45:00 PM

Delivery Method: SGS

Airbill #'s: _____

Cooler Temps (Initial/Adjusted): #1: (2.3/2.3):

Cooler Security

- | | <u>Y or N</u> | | | <u>Y or N</u> | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. SmpI Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

- | | <u>Y or N</u> | |
|----------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Thermometer ID: | <u>IRGUN1;</u> | |
| 3. Cooler media: | <u>Ice (Bag)</u> | |
| 4. No. Coolers: | <u>1</u> | |

Quality Control Preservation

- | | <u>Y or N</u> | | <u>N/A</u> |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

Sample Integrity - Documentation

- | | <u>Y or N</u> | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

- | | <u>Y or N</u> | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | <u>Intact</u> | |

Sample Integrity - Instructions

- | | <u>Y or N</u> | | <u>N/A</u> |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

5.2
5

MC47668: Chain of Custody

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Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC47668
Account: FDG - CB&I
Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26741
Matrix Type: AQUEOUS

Methods: SW846 6020A
Units: ug/l

Prep Date: 09/09/16

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.92	4.2		
Antimony	1.0	.13	.032	0.032	<1.0
Arsenic	1.0	.2	.62	0.21	<1.0
Barium	2.0	.017	.15		
Beryllium	1.0	.0076	.04		
Boron	10	.1	.38		
Cadmium	1.0	.01	.04	0.033	<1.0
Calcium	500	2	72		
Chromium	2.0	.13	.34	-0.59	<2.0
Cobalt	1.0	.0042	.019		
Copper	2.0	.044	.34	0.037	<2.0
Iron	50	1.1	15	14.1	<50
Lead	1.0	.007	.048	-0.026	<1.0
Magnesium	500	.32	1.7		
Manganese	4.0	.054	.36		
Molybdenum	2.0	.032	.088		
Nickel	4.0	.05	.22	-0.89	<4.0
Potassium	500	10	18		
Selenium	2.0	.28	.22	0.054	<2.0
Silver	1.0	.0028	.024	-0.0020	<1.0
Sodium	500	.96	15		
Strontium	10	.0072	.028		
Thallium	1.0	.19	.06		
Tin	10	.022	1.6		
Titanium	2.0	.22	.13		
Vanadium	8.0	.98	3		
Zinc	8.0	.52	1.5	0.60	<8.0

Associated samples MP26741: MC47668-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.1.1
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC47668
 Account: FDG - CB&I
 Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26741
 Matrix Type: AQUEOUS

Methods: SW846 6020A
 Units: ug/l

Prep Date: 09/09/16

Metal	MC47670-1 Original MS		SpikeLot MPICP7	% Rec	QC Limits
Aluminum					
Antimony	0.0	521	500	104.2	75-125
Arsenic	0.35	532	500	106.3	75-125
Barium					
Beryllium					
Boron					
Cadmium	0.053	498	500	99.6	75-125
Calcium					
Chromium	0.0	472	500	94.4	75-125
Cobalt					
Copper	0.43	499	500	99.7	75-125
Iron	158	10300	10000	101.4	75-125
Lead	0.11	888	1000	88.8	75-125
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	0.0	475	500	95.0	75-125
Potassium					
Selenium	0.32	552	500	110.3	75-125
Silver	0.0065	187	200	93.5	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium	anr				
Zinc	13.1	576	500	112.6	75-125

Associated samples MP26741: MC47668-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC47668
 Account: FDG - CB&I
 Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26741
 Matrix Type: AQUEOUS

Methods: SW846 6020A
 Units: ug/l

Prep Date: 09/09/16

Metal	MC47670-1 Original MSD		SpikeLot MPICP7	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	0.0	534	500	106.8	2.5	20
Arsenic	0.35	542	500	108.3	1.9	20
Barium						
Beryllium						
Boron						
Cadmium	0.053	506	500	101.2	1.6	20
Calcium						
Chromium	0.0	485	500	97.0	2.7	20
Cobalt						
Copper	0.43	510	500	101.9	2.2	20
Iron	158	10400	10000	102.4	1.0	20
Lead	0.11	899	1000	89.9	1.2	20
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	0.0	488	500	97.6	2.7	20
Potassium						
Selenium	0.32	564	500	112.7	2.2	20
Silver	0.0065	193	200	96.5	3.2	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium	anr					
Zinc	13.1	586	500	114.6	1.7	20

Associated samples MP26741: MC47668-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC47668
 Account: FDG - CB&I
 Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26741
 Matrix Type: AQUEOUS

Methods: SW846 6020A
 Units: ug/l

Prep Date: 09/09/16

Metal	BSP Result	Spikelot MPICP7	% Rec	QC Limits
Aluminum				
Antimony	525	500	105.0	80-120
Arsenic	530	500	106.0	80-120
Barium				
Beryllium				
Boron				
Cadmium	507	500	101.4	80-120
Calcium				
Chromium	473	500	94.6	80-120
Cobalt				
Copper	499	500	99.8	80-120
Iron	10100	10000	101.0	80-120
Lead	883	1000	88.3	80-120
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	481	500	96.2	80-120
Potassium				
Selenium	557	500	111.4	80-120
Silver	190	200	95.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium	anr			
Zinc	569	500	113.8	80-120

Associated samples MP26741: MC47668-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

6.1.3
6

SERIAL DILUTION RESULTS SUMMARY

Login Number: MC47668
 Account: FDG - CB&I
 Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26741
 Matrix Type: AQUEOUS

Methods: SW846 6020A
 Units: ug/l

Prep Date: 09/09/16

Metal	MC47670-1		QC	
	Original	SDL 2:10	%DIF	Limits
Aluminum				
Antimony	0.00	0.00	NC	0-10
Arsenic	0.355	0.00	100.0 (a)	0-10
Barium				
Beryllium				
Boron				
Cadmium	0.0534	0.00	100.0 (a)	0-10
Calcium				
Chromium	0.00	0.00	NC	0-10
Cobalt				
Copper	0.425	0.414	2.6	0-10
Iron	158	178	12.6 (b)	0-10
Lead	0.112	0.0725	35.4 (a)	0-10
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	0.00	0.770	NC	0-10
Potassium				
Selenium	0.318	0.00	100.0 (a)	0-10
Silver	0.00645	0.00	100.0 (a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium	anr			
Zinc	13.1	9.45	27.6 (a)	0-10

Associated samples MP26741: MC47668-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

(b) Serial dilution indicates possible matrix interference.

6.1.4

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: MC47668
Account: FDG - CB&I
Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26751
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 09/12/16

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.20	.038	.034	-0.038	<0.20

Associated samples MP26751: MC47668-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.2.1

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC47668
 Account: FDG - CB&I
 Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26751
 Matrix Type: AQUEOUS

Methods: SW846 7470A
 Units: ug/l

Prep Date: 09/12/16

Metal	MC47654-2 Original MS	SpikeLot HGRWS1	% Rec	QC Limits
-------	--------------------------	--------------------	-------	--------------

Mercury	0.0	3.3	3	110.0	75-125
---------	-----	-----	---	-------	--------

Associated samples MP26751: MC47668-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.2.2

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: MC47668
 Account: FDG - CB&I
 Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26751
 Matrix Type: AQUEOUS

Methods: SW846 7470A
 Units: ug/l

Prep Date: 09/12/16

Metal	MC47654-2 Original MSD		SpikeLot HGRWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	3.3	3	110.0	0.0	20

Associated samples MP26751: MC47668-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.2.2

6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: MC47668
 Account: FDG - CB&I
 Project: Mass DOT Superplug, A Street, Boston, MA

QC Batch ID: MP26751
 Matrix Type: AQUEOUS

Methods: SW846 7470A
 Units: ug/l

Prep Date: 09/12/16 09/12/16

Metal	BSP Result	Spikelot HGRWS1	% Rec	QC Limits	BSD Result	Spikelot HGRWS1	% Rec	BSD RPD	QC Limit
Mercury	3.0	3	100.0	80-120	3.0	3	100.0	0.0	20

Associated samples MP26751: MC47668-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

6.2.3

6

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC47668
Account: FDG - CB&I
Project: Mass DOT Superplug, A Street, Boston, MA

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GN54805	1.0	0.0	mg/l	10	10.0	100.0	80-120%
Chromium, Hexavalent	GN54782	0.010	0.0	mg/l	0.10	0.10	100.0	85-115%
Hardness, Total as CaCO3	GN54816	4.0	0.0	mg/l	40	40.0	100.0	80-120%

Associated Samples:

Batch GN54782: MC47668-1
Batch GN54805: MC47668-1
Batch GN54816: MC47668-1
(*) Outside of QC limits

7.1
7

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC47668
Account: FDG - CB&I
Project: Mass DOT Superplug, A Street, Boston, MA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GN54782	MC47668-1	mg/l	0.0	0.0	0.0	0-20%
Hardness, Total as CaCO3	GN54816	MC47668-1	mg/l	502	502	0.0	0-20%
pH	GN54785	MC47668-1	su	7.5	7.5	0.0	0-5%

Associated Samples:
Batch GN54782: MC47668-1
Batch GN54785: MC47668-1
Batch GN54816: MC47668-1
(*) Outside of QC limits

7.2
7

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC47668
Account: FDG - CB&I
Project: Mass DOT Superplug, A Street, Boston, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GN54805	MC47668-1	mg/l	2250	1000	3250	100.0	75-125%
Chromium, Hexavalent	GN54782	MC47668-1	mg/l	0.0	0.10	0.10	100.0	85-115%
Hardness, Total as CaCO3	GN54816	MC47668-1	mg/l	502	200	697	97.5	75-125%

Associated Samples:

Batch GN54782: MC47668-1

Batch GN54805: MC47668-1

Batch GN54816: MC47668-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

7.3

7

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC47668
Account: FDG - CB&I
Project: Mass DOT Superplug, A Street, Boston, MA

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GN54805	MC47668-1	mg/l	2250	1000	3250	0.0	

Associated Samples:

Batch GN54805: MC47668-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits