



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 1

**5 Post Office Square, Suite 100
BOSTON, MA 02109-3912**

CERTIFIED MAIL RETURN RECEIPT REQUESTED

JUN 23 2014

William Cloutier
Facilities Engineer
P.O. Box 284
Woods Hole, MA 02543

Re: Authorization to discharge under the Remediation General Permit (RGP) –
MAG910000. Vessel Maintenance Facility site located at 14 Main Street, Fairhaven,
Massachusetts 02719 Bristol County; Authorization # MAG910625

Dear Mr. Cloutier:

Based on the review of a Notice of Intent (NOI) submitted by Joseph E. Longo, Principal at Horsley Witten Group, Inc., on behalf of Woods Hole, Martha's Vineyard, and Nantucket Steamship Authority, Woods Hole, Massachusetts, for the site referenced above, the U.S. Environmental Protection Agency (EPA) hereby authorizes you, as the named Owner and Operator to discharge in accordance with the provisions of the RGP at that site. Your authorization number is listed above.

The checklist enclosed with this RGP authorization indicates the pollutants which you are required to monitor. Also indicated on the checklist are the effluent limits, test methods and minimum levels (MLs) for each pollutant. Please note that the checklist does not represent the complete requirements of the RGP. Operators must comply with all of the applicable requirements of this permit, including influent and effluent monitoring, narrative water quality standards, record keeping, and reporting requirements, found in Parts I and II, and Appendices I – VIII of the RGP. See EPA's website for the complete RGP and other information at: <http://www.epa.gov/region1/npdes/mass.html#dgp>.

Please note the enclosed checklist includes parameters which your marked "Believed Present".

Also, please note that the metals included on the checklist are dilution dependent pollutants and subject to limitations based on selected dilution ranges and technology-based ceiling limitations. With the absence of dilution of freshwater into tidal water, EPA determined that the Dilution Factor Range (DFR) for each parameter for this site is in the one and five (1-5) range. (See the RGP Appendix IV for Massachusetts facilities).

Therefore, the limits for copper of 3.7 ug/L, lead of 8.5 ug/L, selenium of 5 ug/L, zinc of 85.6 ug/L and iron of 1,000 ug/L, are required to achieve permit compliance at your site.

This general permit and authorization to discharge will expire on September 9, 2015. You have reported that this project will terminate on 10/01/2014. You are required to submit a Notice of Termination (NOT) to the attention of the contact person indicated below within 30 days of project completion.

Thank you in advance for your cooperation in this matter. Please contact Victor Alvarez at 617-918-1572 or Alvarez.Victor@epa.gov, if you have any questions.

Sincerely,



Thelma Murphy, Chief
Storm Water and Construction
Permits Section

Enclosure

cc: Robert Kubit, MassDEP
Vincent D. Furtado Fairhaven, MADPW
Joseph E. Longo, Horsley Witten Group, Inc.

**2010 Remediation General Permit
Summary of Monitoring Parameters^[1]**

NPDES Authorization Number:		MAG910625
Authorization Issued:	June, 2014	
Facility/Site Name:	Fairhaven Vessel Maintenance Facility	
Facility/Site Address:	14 Main Street, Fairhaven, MA 02719, Bristol County	
	Email address of owner: bcloutier@steamshipauthority.com	
Legal Name of Operator:	Frank Corp., Inc.	
Operator contact name, title, and Address:	Field Operations provided by Kirk Franklin located at 615 Tarklin Hill Road, New Bedford, MA 02745	
	Email: kfranklin@frankcorp.com	
Estimated date of The Project Completion:	10/01/2014	
Category and Sub-Category:	Category. Contaminated Construction Dewatering. Subcategory B. Known Contaminated Sites	
RGP Termination Date:	September 9, 2015	
Receiving Water:	New Bedford Harbor	

Monitoring & Limits are applicable if checked. All samples are to be collected as grab samples

	<u>Parameter</u>	<u>Effluent Limit/Method# /ML</u> (All Effluent Limits are shown as Daily Maximum Limit, unless denoted by a **, in that case it will be a Monthly Average Limit)
✓	1. Total Suspended Solids (TSS)	30 milligrams/liter (mg/L) **, 50 mg/L for hydrostatic testing ** Me#160.2/ML5ug/L
	2. Total Residual Chlorine (TRC) ¹	Freshwater = 11 ug/L ** Saltwater = 7.5 ug/L **/ Me#330.5/ML 20ug/L
	3. Total Petroleum Hydrocarbons (TPH)	5.0 mg/L/ Me# 1664A/ML 5.0mg/L
	4. Cyanide (CN) ^{2, 3}	Freshwater = 5.2 ug/l ** Saltwater = 1.0 ug/L **/ Me#335.4/ML 10ug/L
	5. Benzene (B)	5ug/L /50.0 ug/L for hydrostatic testing only/ Me#8260C/ML 2 ug/L
	6. Toluene (T)	(limited as ug/L total BTEX)/ Me#8260C/ ML 2ug/L
	7. Ethylbenzene (E)	(limited as ug/L total BTEX) Me#8260C/ ML 2ug/L
	8. (m,p,o) Xylenes (X)	(limited as ug/L total BTEX) Me#8260C/ ML 2ug/L
	9. Total Benzene, Toluene, Ethyl Benzene, and Xylenes (BTEX) ⁴	100 ug/L/ Me#8260C/ ML 2ug/L

	<u>Parameter</u>	<u>Effluent Limit/Method#/ML</u> (All Effluent Limits are shown as Daily Maximum Limit, unless denoted by a **, in that case it will be a Monthly Average Limit)
	10. Ethylene Dibromide (EDB) (1,2- Dibromoethane)	0.05 ug/l/ Me#8260C/ ML 10ug/L
	11. Methyl-tert-Butyl Ether (MtBE)	70.0 ug/l/Me#8260C/ML 10ug/L
	12.tert-Butyl Alcohol (TBA) (TertiaryButanol)	Monitor Only(ug/L)/Me#8260C/ML 10ug/L
	13. tert-Amyl Methyl Ether (TAME)	Monitor Only(ug/L)/Me#8260C/ML 10ug/L
	14. Naphthalene ⁵	20 ug/L /Me#8260C/ML 2ug/L
	15. Carbon Tetrachloride	4.4 ug/L /Me#8260C/ ML 5ug/L
	16. 1,2 Dichlorobenzene (o-DCB)	600 ug/L /Me#8260C/ ML 5ug/L
	17. 1,3 Dichlorobenzene (m-DCB)	320 ug/L /Me#8260C/ ML 5ug/L
	18. 1,4 Dichlorobenzene (p-DCB)	5.0 ug/L /Me#8260C/ ML 5ug/L
	18a. Total dichlorobenzene	763 ug/L - NH only /Me#8260C/ ML 5ug/L
	19. 1,1 Dichloroethane (DCA)	70 ug/L /Me#8260C/ ML 5ug/L
	20. 1,2 Dichloroethane (DCA)	5.0 ug/L /Me#8260C/ ML 5ug/L
	21. 1,1 Dichloroethene (DCE)	3.2 ug/L/Me#8260C/ ML 5ug/L
	22. cis-1,2 Dichloroethene (DCE)	70 ug/L/Me#8260C/ ML 5ug/L
	23. Methylene Chloride	4.6 ug/L/Me#8260C/ ML 5ug/L
	24. Tetrachloroethene (PCE)	5.0 ug/L/Me#8260C/ ML 5ug/L
	25. 1,1,1 Trichloro-ethane (TCA)	200 ug/L/Me#8260C/ ML 5ug/L
	26. 1,1,2 Trichloro-ethane (TCA)	5.0 ug/L /Me#8260C/ ML 5ug/L
	27. Trichloroethene (TCE)	5.0 ug/L /Me#8260C/ ML 5ug/L
	28. Vinyl Chloride (Chloroethene)	2.0 ug/L /Me#8260C/ ML 5ug/L
	29. Acetone	Monitor Only(ug/L)/Me#8260C/ML 50ug/L
	30. 1,4 Dioxane	Monitor Only /Me#1624C/ML 50ug/L
	31. Total Phenols	300 ug/L Me#420.1&420.2/ML 2 ug/L/ Me# 420.4 /ML 50ug/L
	32. Pentachlorophenol (PCP)	1.0 ug/L /Me#8270D/ML 5ug/L,Me#604 &625/ML 10ug/L
	33. Total Phthalates (Phthalate esters) ⁶	3.0 ug/L ** /Me#8270D/ML 5ug/L, Me#606/ML 10ug/L& Me#625/ML 5ug/L
	34. Bis (2-Ethylhexyl) Phthalate [Di- (ethylhexyl) Phthalate]	6.0 ug/L /Me#8270D/ML 5ug/L,Me#606/ML 10ug/L & Me#625/ML 5ug/L
	35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)	10.0 ug/L
	a. Benzo(a) Anthracene ⁷	0.0038 ug/L /Me#8270D/ ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L

	<u>Parameter</u>	<u>Effluent Limit/Method#/ML</u> (All Effluent Limits are shown as Daily Maximum Limit, unless denoted by a **, in that case it will be a Monthly Average Limit)
	b. Benzo(a) Pyrene ⁷	0.0038 ug/L /Me#8270D/ ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	c. Benzo(b)Fluoranthene ⁷	0.0038 ug/L /Me#8270D/ ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	d. Benzo(k)Fluoranthene ⁷	0.0038 ug/L /Me#8270D/ ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	e. Chrysene ⁷	0.0038 ug/L /Me#8270D/ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	f. Dibenzo(a,h)anthracene ⁷	0.0038 ug/L /Me#8270D/ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	g. Indeno(1,2,3-cd) Pyrene ⁷	0.0038 ug/L /Me#8270D/ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)	100 ug/L
	h. Acenaphthene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	i. Acenaphthylene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	j. Anthracene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	k. Benzo(ghi) Perylene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	l. Fluoranthene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	m. Fluorene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	n. Naphthalene ⁵	20 ug/L / Me#8270/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	o. Phenanthrene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	p. Pyrene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	37. Total Polychlorinated Biphenyls (PCBs) ^{8,9}	0.000064 ug/L/Me# 608/ ML 0.5 ug/L
✓	38. Chloride	Monitor only/Me# 300.0/ ML 100 ug/L

	<u>Metal parameter</u>	<u>Total Recoverable Metal Limit @ H ¹⁰ = 50 mg/l CaCO₃ for discharges in Massachusetts (ug/l) ^{11/12}</u>	<u>Minimum level=ML</u>
		<u>Freshwater</u>	
	39. Antimony	5.6/ML 10	ML 10
	40. Arsenic **	10/ML 20	ML 20

	Metal parameter	Total Recoverable Metal Limit @ H¹⁰ = 50 mg/l CaCO₃ for discharges in Massachusetts (ug/l)^{11/12}		Minimum level=ML	
		Freshwater			
	41. Cadmium **	0.2/ML10			10
	42. Chromium III (trivalent) **	48.8/ML15			15
	43. Chromium VI (hexavalent) **	11.4		ML	10
✓	44. Copper **	5.2		ML	15
✓	45. Lead **	1.3		ML	20
	46. Mercury **	0.9		ML	0.2
	47. Nickel **	29		ML	20
✓	48. Selenium **	5		ML	20
	49. Silver	1.2		ML	10
✓	50. Zinc **	66.6		ML	15
✓	51. Iron	1,000		ML	20

	Other Parameters	Limit
✓	52. Instantaneous Flow	Site specific in CFS
✓	53. Total Flow	Site specific in CFS
✓	54. pH Range for Class A & Class B Waters in MA	6.5-8.3; 1/Month/Grab ¹³
	55. pH Range for Class SA & Class SB Waters in MA	6.5-8.3; 1/Month/Grab ¹³
	56. pH Range for Class B Waters in NH	6.5-8; 1/Month/Grab ¹³
	57. Daily maximum temperature - Warm water fisheries	83°F; 1/Month/Grab ¹⁴
	58. Daily maximum temperature - Cold water fisheries	68°F; 1/Month/Grab ¹⁴
	59. Maximum Change in Temperature in MA - Any Class A water body	1.5°F; 1/Month/Grab ¹⁴
	60. Maximum Change in Temperature in MA - Any Class B water body- Warm Water	5°F; 1/Month/Grab ¹⁴
	61. Maximum Change in Temperature in MA - Any Class B water body - Cold water and Lakes/Ponds	3°F; 1/Month/Grab ¹⁴
	62. Maximum Change in Temperature in MA - Any Class SA water body - Coastal	1.5°F; 1/Month/Grab ¹⁴
	63. Maximum Change in Temperature in MA - Any Class SB water body - July to September	1.5°F; 1/Month/Grab ¹⁴
	64. Maximum Change in Temperature in MA -Any Class SB water body - October to June	4°F; 1/Month/Grab ¹⁴

Footnotes:

¹ Although the maximum values for TRC are 11ug/l and 7.5 ug/l for freshwater, and saltwater respectively, the compliance limits are equal to the minimum level (ML) of the test method used as listed in Appendix VI (i.e., Method 330.5, 20 ug/l).

² Limits for cyanide are based on EPA's water quality criteria expressed as micrograms per liter. There is currently no EPA approved test method for free cyanide. Therefore, total cyanide must be reported.

³ Although the maximum values for cyanide are 5.2 ug/l and 1.0 ug/l for freshwater and saltwater, respectively, the compliance limits are equal to the minimum level (ML) of the Method 335.4 as listed in Appendix VI (i.e., 10 ug/l).

⁴ BTEX = sum of Benzene, Toluene, Ethylbenzene, and total Xylenes.

⁵ Naphthalene can be reported as both a purgeable (VOC) and extractable (SVOC) organic compound. If both VOC and SVOC are analyzed, the highest value must be used unless the QC criteria for one of the analyses is not met. In such cases, the value from the analysis meeting the QC criteria must be used.

⁶ The sum of individual phthalate compounds(not including the #34, Bis (2-Ethylhexyl) Phthalate . The compliance limits are equal to the minimum level (ML) of the test method used as listed in Appendix VI.

Total values calculated for reporting on NOIs and discharge monitoring reports shall be calculated by adding the measured concentration of each constituent. If the measurement of a constituent is less than the ML, the permittee shall use a value of zero for that constituent. For each test, the permittee shall also attach the raw data for each constituent to the discharge monitoring report, including the minimum level and minimum detection level for the analysis.

⁷ Although the maximum value for the individual PAH compounds is 0.0038 ug/l, the compliance limits are equal to the minimum level (ML) of the test method used as listed in Appendix VI.

⁸ In the November 2002 WQC, EPA has revised the definition of Total PCBs for aquatic life as total PCBs is the sum of all homologue, all isomer, all congener, or all "Oroclor analyses."Total values calculated for reporting on NOIs and discharge monitoring reports shall be calculated by adding the measured concentration of each constituent. If the measure of a constituent is less than the ML, the permittee shall use a value of zero for that constituent. For each test, the permittee shall also attach the raw data for each constituent to the discharge monitoring report, including the minimum level and minimum detection level for the analysis.

⁹Although the maximum value for total PCBs is 0.000064 ug/l, the compliance limit is equal to the minimum level (ML) of the test method used as listed in Appendix VI (i.e., 0.5 ug/l for Method 608 or 0.00005 ug/l when Method 1668a is approved).

¹⁰ Hardness. Cadmium, Chromium III, Copper, Lead, Nickel, Silver, and Zinc are Hardness Dependent.

¹¹ For a Dilution Factor (DF) from 1 to 5, metals limits are calculated using DF times the base limit for the metal. See Appendix IV. For example, iron limits are calculated using DF x 1,000ug/L (the iron base limit). Therefore DF is 1.5, the iron limit will be 1,500 ug/L; DF 2, then iron limit =1,000 x 2 =2,000 ug/L., etc. not to exceed the DF=5.

¹² Minimum Level (ML) is the lowest level at which the analytical system gives a recognizable signal and acceptable calibration point for the analyte. The ML represents the lowest concentration at which an analyte can be measured with a known level of confidence. The ML is calculated by multiplying the laboratory-determined method detection limit by 3.18 (see 40 CFR Part 136, Appendix B).

¹³ pH sampling for compliance with permit limits may be performed using field methods as provided for in EPA test Method 150.1.

¹⁴ Temperature sampling per Method 170.1

Horsley Witten Group

Sustainable Environmental Solutions

90 Route 6A • Sandwich, MA • 02563
Tel: 508-833-6600 • Fax: 508-833-3150 • www.horsleywitten.com



June 6, 2014

Mr. Victor Alvarez
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

VIA EMAIL

Re: Remediation General Permit NOI Processing
Fairhaven Vessel Maintenance Facility

Dear Mr. Alvarez;

Horsley Witten Group, Inc. (HW) has prepared the attached Notice of Intent (NOI) for coverage under the Remediation General Permit (RGP) on behalf of the Woods Hole, Martha's Vineyard, and Nantucket Steamship Authority (Steamship Authority), Woods Hole, Massachusetts. The Steamship Authority seeks coverage under the RGP to discharge treated groundwater to New Bedford Inner Harbor, a Class SB surfacewater, from the Fairhaven vessel maintenance facility located at 14 Main Street, Fairhaven, Massachusetts (the Site).

Dewatering will be necessary for a two day period during the completion of a test pit on the property to locate a Town owned sewer line, and for several weeks during Site excavation for utility installation and building foundation construction. Groundwater at the Site is tidally influenced and brackish, as the Site is located on the New Bedford Harbor waterfront. Average depth to groundwater is less than five feet below ground surface (bgs).

In accordance with Massachusetts Department of Environmental Protection (DEP) Division of Watershed Management policy, submittal of the RGP NOI to DEP is not required, and no permit application fee is applicable, as the Site is regulated under 310 CMR 40.0000, the Massachusetts Contingency Plan (MCP).

To evaluate potential contaminants in groundwater and meet the requirements of the RGP NOI, a groundwater sample was collected from monitoring well HW-5 on May 20, 2014. HW-5 is located close to the proposed sewer line test pit. Laboratory analysis of the groundwater sample indicated the presence of several metals, total suspended solids (TSS), and chloride at concentrations above laboratory detection limits. No polychlorinated biphenyls (pcbs), petroleum related compounds, polycyclic aromatic hydrocarbons (pahs), volatile organic compounds (vocs), or semi-volatile organic compounds (svocs) were detected above laboratory detection limits. A treatment system incorporating a bag filter, oil water separator (O/WS), and granular activated carbon (GAC) treatment system is proposed to remove any solids, petroleum-related contaminants, or metals that might be present in the dewatering discharge. Correspondence with Shelly Puleo of the EPA Region 1 office indicates that,

Mr. Victor Alvarez

June 6, 2014

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because the facility discharges to a salt water waterbody, the dilution calculations required in Part I.A.3.c (Step 2) of the NOI instructions are not necessary.

During the completion of the sewer line test pit, Frank Corp. Environmental Services, Inc. (Frank Corp.), of New Bedford, Massachusetts, will be coordinating the discharge monitoring and treatment system installation and operation. The second phase of the project, which will include utility line installation and building foundation construction, will likely occur several weeks after the completion of the sewer line test pit. The Steamship Authority may elect to have a different contractor conduct the dewatering and discharge treatment during the latter excavations.

On behalf of the Steamship Authority, HW prepared and submitted a Project Notification Form (PNF) dated May 15, 2014, to the Massachusetts Historical Commission (MHC). A copy of the PNF is included with the RGP NOI. At the time of this filing, MHC has not commented on the PNF. Consultation with the United States Fish and Wildlife Service (USFWS) (tracking number: 05E1NE00-2014-SLI-0271) determined that "no federally-listed or proposed, threatened or endangered species or critical habitat...are known to occur in the project area(s)". A copy of the USFWS consultation report is also included with the RGP NOI.

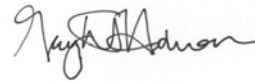
HW is pleased to submit this NOI on behalf of the Steamship Authority, and looks forward to your review. Please contact the undersigned with any questions or concerns.

Sincerely,

HORSLEY WITTEN GROUP, INC.



Joseph E. Longo
Principal



Gary W.T. Hedman
Project Scientist

Attachments

Cc:

Mr. William Cloutier, Woods Hole, Martha's Vineyard and Nantucket Steamship Authority

Ms. Linda Schick, Superintendent, Town of Fairhaven Sewer and Wastewater Department

Mr. Robert Kubit (cover letter only), Massachusetts Department of Environmental Protection

B. Suggested Form for Notice of Intent (NOI) for the Remediation General Permit

1. General facility/site information. Please provide the following information about the site:

a) Name of facility/site: Vessel Maintenance Facility		Facility/site mailing address:	
Location of facility/site:	Facility SIC code(s):	Street:	
longitude: 70.905408	4499	14 Main Street	
latitude: 41.633400			
b) Name of facility/site owner:		Town: Fairhaven	
Woods Hole, Martha's Vineyard & Nantucket Steamship Authority			
Email address of facility/site owner:	State:	Zip:	County:
bcloutier@steamshipauthority.com	Massachusetts	02719	Bristol
Telephone no. of facility/site owner: 508-548-5011			
Fax no. of facility/site owner: 508-995-0002		Owner is (check one): 1. Federal ☐ 2. State/Tribal ☒	
Address of owner (if different from site):		3. Private ☐ 4. Other ☐ if so, describe:	
		State Instrumentality	
Street: PO Box 284			
Town: Woods Hole	State: MA	Zip: 02543	County: Barnstable
c) Legal name of operator:		Operator telephone no: 508-995-9997	
Frank Corp., Inc.		Operator fax no.: 508-995-0002	Operator email: kfranklin@frankcorp.com
Operator contact name and title: Kirk Franklin			
Address of operator (if different from owner):		Street:	
		615 Tarkiln Hill Road	
Town: New Bedford	State: MA	Zip: 02745	County: Bristol

d) Check Y for "yes" or N for "no" for the following:

1. Has a prior NPDES permit exclusion been granted for the discharge? Y ☐ N ☒, if Y, number:

2. Has a prior NPDES application (Form 1 & 2C) ever been filed for the discharge?
Y ☐ N ☒, if Y, date and tracking #:

3. Is the discharge a "new discharge" as defined by 40 CFR 122.2? Y ☒ N ☐

4. For sites in Massachusetts, is the discharge covered under the Massachusetts Contingency Plan (MCP) and exempt from state permitting? Y ☒ N ☐

e) Is site/facility subject to any State permitting, license, or other action which is causing the generation of discharge? Y ☐ N ☒ If Y, please list: 1. site identification # assigned by the state of NH or MA: 2. permit or license # assigned: 3. state agency contact information: name, location, and telephone number:	f) Is the site/facility covered by any other EPA permit, including: 1. Multi-Sector General Permit? Y ☒ N ☐, if Y, number: 2. Final Dewatering General Permit? Y ☐ N ☒, if Y, number: 3. EPA Construction General Permit? Y ☐ N ☒, if Y, number: 4. Individual NPDES permit? Y ☐ N ☒, if Y, number: 5. any other water quality related individual or general permit? Y ☐ N ☒, if Y, number:
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g) Is the site/facility located within or does it discharge to an Area of Critical Environmental Concern (ACEC)? Y ☐ N ☒

h) Based on the facility/site information and any historical sampling data, identify the sub-category into which the potential discharge falls.

<u>Activity Category</u>	<u>Activity Sub-Category</u>
I - Petroleum Related Site Remediation	A. Gasoline Only Sites ☐ B. Fuel Oils and Other Oil Sites (including Residential Non-Business Remediation Discharges) ☐ C. Petroleum Sites with Additional Contamination ☐
II - Non Petroleum Site Remediation	A. Volatile Organic Compound (VOC) Only Sites ☐ B. VOC Sites with Additional Contamination ☐ C. Primarily Heavy Metal Sites ☐
III - Contaminated Construction Dewatering	A. General Urban Fill Sites ☐ B. Known Contaminated Sites ☒

IV - Miscellaneous Related Discharges	A. Aquifer Pump Testing to Evaluate Formerly Contaminated Sites ☐ B. Well Development/Rehabilitation at Contaminated/Formerly Contaminated Sites ☐ C. Hydrostatic Testing of Pipelines and Tanks ☐ D. Long-Term Remediation of Contaminated Sumps and Dikes ☐ E. Short-term Contaminated Dredging Drain Back Waters (if not covered by 401/404 permit) ☐
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2. Discharge information. Please provide information about the discharge, (attaching additional sheets as necessary) including:

a) Describe the discharge activities for which the owner/applicant is seeking coverage:			
Intermittent excavation dewatering associated with improvements to the facility.			
b) Provide the following information about each discharge:			
1) Number of discharge points:	2) What is the maximum and average flow rate of discharge (in cubic feet per second, ft ³ /s)?		
1	Max. flow 0.11	Is maximum flow a design value ? Y ☐ N ☒	
	Average flow (include units) 0.05	Is average flow a design value or estimate? Estimate	
3) Latitude and longitude of each discharge within 100 feet:			
pt.1: lat	41.633361	long	-70.905419
pt.2: lat		long	
pt.3: lat		long	
pt.4: lat		long	
pt.5: lat		long	
pt.6: lat		long	
pt.7: lat		long	
pt.8: lat		long	
; etc.			
4) If hydrostatic testing, total volume of the discharge (gals):	5) Is the discharge intermittent ☒ or seasonal ☐ ?		
	Is discharge ongoing? Y ☐ N ☒		
c) Expected dates of discharge (mm/dd/yy): start 6/20/2014 end 10/01/2014			
d) Please attach a line drawing or flow schematic showing water flow through the facility including:			
1. sources of intake water. 2. contributing flow from the operation. 3. treatment units. and 4. discharge points and receiving waters(s).			
Attached			

3. Contaminant information.

a) Based on the sub-category selected (see Appendix III), indicate whether each listed chemical is **believed present** or **believed absent** in the potential discharge. Attach additional sheets as needed.

<u>Parameter *</u>	<u>CAS Number</u>	<u>Believed Absent</u>	<u>Believed Present</u>	<u># of Samples</u>	<u>Sample Type (e.g., grab)</u>	<u>Analytical Method Used (method #)</u>	<u>Minimum Level (ML) of Test Method</u>	<u>Maximum daily value</u>		<u>Average daily value</u>	
								<u>concentration (ug/l)</u>	<u>mass (kg)</u>	<u>concentration (ug/l)</u>	<u>mass (kg)</u>
1. Total Suspended Solids (TSS)		☐	☒	1	grab	2540D	5,000.0	47			
2. Total Residual Chlorine (TRC)		☒	☐	1	grab	4500-CIE	10.0	ND			
3. Total Petroleum Hydrocarbons (TPH)		☒	☐	1	grab	1664A	5,000.0	ND			
4. Cyanide (CN)	57125	☒	☐	1	grab	4500 CN CE	5.0	ND			
5. Benzene (B)	71432	☒	☐	1	grab	8260B	1.0	ND			
6. Toluene (T)	108883	☒	☐	1	grab	8260B	1.0	ND			
7. Ethylbenzene (E)	100414	☒	☐	1	grab	8260B	1.0	ND			
8. (m,p,o) Xylenes (X)	108883; 106423; 95476; 1330207	☒	☐	1	grab	8260B	2.0	ND			
9. Total BTEX ²	n/a	☒	☐	1	grab	8260B	1.0	ND			
10. Ethylene Dibromide (EDB) (1,2-Dibromoethane) ³	106934	☒	☐	1	grab	8270D	0.2	ND			
11. Methyl-tert-Butyl Ether (MtBE)	1634044	☒	☐	1	grab	8260B	1.0	ND			
12. tert-Butyl Alcohol (TBA) (Tertiary-Butanol)	75650	☒	☐	1	grab	8260B	25.0	ND			

* Numbering system is provided to allow cross-referencing to Effluent Limits and Monitoring Requirements by Sub-Category included in Appendix III, as well as the Test Methods and Minimum Levels associated with each parameter provided in Appendix VI.

² BTEX = Sum of Benzene, Toluene, Ethylbenzene, total Xylenes.

³ EDB is a groundwater contaminant at fuel spill and pesticide application sites in New England.

<u>Parameter *</u>	<u>CAS Number</u>	<u>Believed Absent</u>	<u>Believed Present</u>	<u># of Samples</u>	<u>Sample Type (e.g., grab)</u>	<u>Analytical Method Used (method #)</u>	<u>Minimum Level (ML) of Test Method</u>	<u>Maximum daily value</u>		<u>Average daily value</u>	
								<u>concentration (ug/l)</u>	<u>mass (kg)</u>	<u>concentration (ug/l)</u>	<u>mass (kg)</u>
13. tert-Amyl Methyl Ether (TAME)	9940508	☒	☐	1	grab	8260B	1.0	ND			
14. Naphthalene	91203	☒	☐	1	grab	8260B	1.0	ND			
15. Carbon Tetrachloride	56235	☒	☐	1	grab	8260B	1.0	ND			
16. 1,2 Dichlorobenzene (o-DCB)	95501	☒	☐	1	grab	8260B	1.0	ND			
17. 1,3 Dichlorobenzene (m-DCB)	541731	☒	☐	1	grab	8206B	1.0	ND			
18. 1,4 Dichlorobenzene (p-DCB)	106467	☒	☐	1	grab	8260B	1.0	ND			
18a. Total dichlorobenzene		☒	☐	1	grab	8260B	1.0	ND			
19. 1,1 Dichloroethane (DCA)	75343	☒	☐	1	grab	8260B	1.0	ND			
20. 1,2 Dichloroethane (DCA)	107062	☒	☐	1	grab	8260B	1.0	ND			
21. 1,1 Dichloroethene (DCE)	75354	☒	☐	1	grab	8260B	1.0	ND			
22. cis-1,2 Dichloroethene (DCE)	156592	☒	☐	1	grab	8260B	1.0	ND			
23. Methylene Chloride	75092	☒	☐	1	grab	8260B	2.0	ND			
24. Tetrachloroethene (PCE)	127184	☒	☐	1	grab	8260B	1.0	ND			
25. 1,1,1 Trichloro-ethane (TCA)	71556	☒	☐	1	grab	8260B	1.0	ND			
26. 1,1,2 Trichloro-ethane (TCA)	79005	☒	☐	1	grab	8260B	1.0	ND			
27. Trichloroethene (TCE)	79016	☒	☐	1	grab	8260B	1.0	ND			

<u>Parameter *</u>	<u>CAS Number</u>	<u>Believed Absent</u>	<u>Believed Present</u>	<u># of Samples</u>	<u>Sample Type (e.g., grab)</u>	<u>Analytical Method Used (method #)</u>	<u>Minimum Level (ML) of Test Method</u>	<u>Maximum daily value</u>		<u>Average daily value</u>	
								<u>concentration (ug/l)</u>	<u>mass (kg)</u>	<u>concentration (ug/l)</u>	<u>mass (kg)</u>
28. Vinyl Chloride (Chloroethene)	75014	☒	☐	1	grab	8260B	1.0	ND			
29. Acetone	67641	☒	☐	1	grab	8260B	10	ND			
30. 1,4 Dioxane	123911	☒	☐	1	grab	8270D(sim)	0.2	ND			
31. Total Phenols	108952	☒	☐	1	grab	420.1	100	ND			
32. Pentachlorophenol (PCP)	87865	☒	☐	1	grab	8270C(sim)	0.84	ND			
33. Total Phthalates (Phthalate esters) ⁴		☐	☐								
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]	117817	☒	☐	1	grab	8270C(sim)	2.34	ND			
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)		☒	☐								
a. Benzo(a) Anthracene	56553	☒	☐	1	grab	8270C(sim)	0.05	ND			
b. Benzo(a) Pyrene	50328	☒	☐	1	grab	8270C(sim)	0.05	ND			
c. Benzo(b)Fluoranthene	205992	☒	☐	1	grab	8270C(sim)	0.05	ND			
d. Benzo(k)Fluoranthene	207089	☒	☐	1	grab	8270C(sim)	0.05	ND			
e. Chrysene	21801	☒	☐	1	grab	8270C(sim)	0.05	ND			
f. Dibenzo(a,h)anthracene	53703	☒	☐	1	grab	8270C(sim)	0.05	ND			
g. Indeno(1,2,3-cd) Pyrene	193395	☒	☐	1	grab	8270C(sim)	0.05	ND			
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)		☒	☐								

⁴ The sum of individual phthalate compounds.

<u>Parameter *</u>	<u>CAS Number</u>	<u>Believed Absent</u>	<u>Believed Present</u>	<u># of Samples</u>	<u>Sample Type (e.g., grab)</u>	<u>Analytical Method Used (method #)</u>	<u>Minimum Level (ML) of Test Method</u>	<u>Maximum daily value</u>		<u>Average daily value</u>	
								<u>concentration (ug/l)</u>	<u>mass (kg)</u>	<u>concentration (ug/l)</u>	<u>mass (kg)</u>
h. Acenaphthene	83329	☒	☐	1	grab	8270C(sim)	0.19	ND			
i. Acenaphthylene	208968	☒	☐	1	grab	8270C(sim)	0.19	ND			
j. Anthracene	120127	☒	☐	1	grab	8270C(sim)	0.19	ND			
k. Benzo(ghi) Perylene	191242	☒	☐	1	grab	8270C(sim)	0.19	ND			
l. Fluoranthene	206440	☒	☐	1	grab	8270C(sim)	0.19	ND			
m. Fluorene	86737	☒	☐	1	grab	8270C(sim)	0.19	ND			
n. Naphthalene	91203	☒	☐	1	grab	8270C(sim)	0.19	ND			
o. Phenanthrene	85018	☒	☐	1	grab	8270C(sim)	0.19	ND			
p. Pyrene	129000	☒	☐	1	grab	8270C(sim)	0.19	ND			
37. Total Polychlorinated Biphenyls (PCBs)	85687; 84742; 117840; 84662; 131113; 117817.	☒	☐	1	grab	8082A	0.09	ND			
38. Chloride	16887006	☐	☒	1	grab	300.0	2500000	13900000			
39. Antimony	7440360	☒	☐	1	grab	6020A	6	ND			
40. Arsenic	7440382	☒	☐	1	grab	7060A	2.5	ND			
41. Cadmium	7440439	☒	☐	1	grab	6020A	0.20	ND			
42. Chromium III (trivalent)	16065831	☒	☐	1	grab	6010B/Calc	10	ND			
43. Chromium VI (hexavalent)	18540299	☒	☐	1	grab	7196A	10	ND			
44. Copper	7440508	☐	☒	1	grab	6010B	10	67			
45. Lead	7439921	☐	☒	1	grab	6020A	1.0	29.8			
46. Mercury	7439976	☒	☐	1	grab	7470A	0.20	ND			
47. Nickel	7440020	☒	☐		grab	6020A	1.0	19.2			
48. Selenium	7782492	☐	☒		grab	7740A	5.0	ND			
49. Silver	7440224	☒	☐		grab	6020A	0.20	ND			
50. Zinc	7440666	☐	☒	1	grab	6010B	25	79			
51. Iron	7439896	☐	☒	1	grab	6010B	50	4,330			
Other (describe):		☐	☐		grab	6010B					

<u>Parameter *</u>	<u>CAS Number</u>	<u>Believed Absent</u>	<u>Believed Present</u>	<u># of Samples</u>	<u>Sample Type (e.g., grab)</u>	<u>Analytical Method Used (method #)</u>	<u>Minimum Level (ML) of Test Method</u>	<u>Maximum daily value</u>		<u>Average daily value</u>	
								<u>concentration (ug/l)</u>	<u>mass (kg)</u>	<u>concentration (ug/l)</u>	<u>mass (kg)</u>
		☐	☐								
		☐	☐								

b) For discharges where **metals** are believed present, please fill out the following (attach results of any calculations):

<i>Step 1:</i> Do any of the metals in the influent exceed the effluent limits in Appendix III (i.e., the limits set at zero dilution)? Y ☐ N ☒	If yes, which metals?
<i>Step 2:</i> For any metals which exceed the Appendix III limits, calculate the dilution factor (DF) using the formula in Part I.A.3.c (step 2) of the NOI instructions or as determined by the State prior to the submission of this NOI. What is the dilution factor for applicable metals? Metal: DF: Metal: DF: Metal: DF: Metal: DF: Etc.	Look up the limit calculated at the corresponding dilution factor in Appendix IV. Do any of the metals in the influent have the potential to exceed the corresponding effluent limits in Appendix IV (i.e., is the influent concentration above the limit set at the calculated dilution factor)? Y ☐ N ☐ If Y, list which metals:

4. Treatment system information. Please describe the treatment system using separate sheets as necessary, including:

a) A description of the treatment system, including a schematic of the proposed or existing treatment system:

The treatment system will include a primary oil/water separator, bag filter, and granular activated carbon filtration system. The treatment system will discharge to a drainage manhole located on-site. The drainage manhole is part of a municipally operated stormwater conveyance system that discharges to the inner New Bedford Harbor via an outfall located on the southern border of the Site.

b) Identify each applicable treatment unit (check all that apply):	Frac. tank ☐	Air stripper ☐	Oil/water separator ☒	Equalization tanks ☐	Bag filter ☒	GAC filter ☒
	Chlorination ☐	De-chlorination ☐	Other (please describe):			

c) Proposed **average** and **maximum flow rates** (gallons per minute) for the discharge and the **design flow rate(s)** (gallons per minute) of the treatment system:

Average flow rate of discharge gpm Maximum flow rate of treatment system gpm
Design flow rate of treatment system gpm

d) A description of chemical additives being used or planned to be used (attach MSDS sheets):

No chemical additives are planned for the discharge.

5. Receiving surface water(s). Please provide information about the receiving water(s), using separate sheets as necessary:

a) Identify the discharge pathway:

Direct to receiving water ☐

Within facility (sewer) ☐

Storm drain ☒

Wetlands ☐

Other (describe):

b) Provide a narrative description of the discharge pathway, including the name(s) of the receiving waters:

Post-treatment effluent will be discharge to a drainage manhole / stormwater outfall discharging to the Inner New Bedford Harbor.

c) Attach a detailed map(s) indicating the site location and location of the outfall to the receiving water:

1. For multiple discharges, number the discharges sequentially.

2. For indirect dischargers, indicate the location of the discharge to the indirect conveyance and the discharge to surface water

The map should also include the location and distance to the nearest sanitary sewer as well as the locus of nearby sensitive receptors (based on USGS topographical mapping), such as surface waters, drinking water supplies, and wetland areas.

d) Provide the state water quality classification of the receiving water

e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water cfs
Please attach any calculation sheets used to support stream flow and dilution calculations.

f) Is the receiving water a listed 303(d) water quality impaired or limited water? Y ☒ N ☐ If yes, for which pollutant(s)?
Pathogens

Is there a final TMDL? Y ☐ N ☒ If yes, for which pollutant(s)?

6. ESA and NHPA Eligibility.

Please provide the following information according to requirements of Permit Parts I.A.4 and I.A.5 Appendices II and VII.

a) Using the instructions in Appendix VII and information on Appendix II, under which criterion listed in Part I.C are you eligible for coverage under this general permit?

A ☒ B ☐ C ☐ D ☐ E ☐ F ☐

b) If you selected Criterion D or F, has consultation with the federal services been completed? Y ☒ N ☐ Underway ☐

c) If consultation with U.S. Fish and Wildlife Service and/or NOAA Fisheries Service was completed, was a written concurrence finding that the discharge is "not likely to adversely affect" listed species or critical habitat received? Y ☒ N ☐

d) Attach documentation of ESA eligibility as described in the NOI instructions and required by Appendix VII, Part I.C, Step 4.

e) Using the instructions in Appendix VII, under which criterion listed in Part II.C are you eligible for coverage under this general permit?

1 ☐ 2 ☒ 3 ☐

f) If Criterion 3 was selected, attach all written correspondence with the State or Tribal historic preservation officers, including any terms and conditions that outline measures the applicant must follow to mitigate or prevent adverse effects due to activities regulated by the RGP.

7. 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.

8. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22, including the following certification:

I certify under penalty of law that 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/Site Name: Woods Hole, Martha's Vineyard, and Nantucket Steamship Authority - Fairhaven Vessel Maintenance Facility

Operator signature:



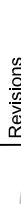
Printed Name & Title: William Cloutier, Facilities Engineer

Date: 6/3/2014

GRAPHIC SCALE

(in feet)

SELECT SCALE FACTOR

Figure:		1				
Project Number:		1140				
Survey & Preliminary Layout Provided By:		Horsley Witten Group 90 Route 6A Sandwich, MA 02563 Phone: (508) 833-6600 Fax: (508) 833-3150				
Prepared For:		Steamship Authority PO Box 284 Woods Hole, MA 02543 Phone: 508-548-5011 Fax: 508-595-0002				
Location:		FAIRHAVEN VESSEL MAINTENANCE FACILITY 14 MAIN STREET FAIRHAVEN, MASSACHUSETTS				
Plan Title:		RGP NOI DISCHARGE PLAN				
		Date: June 2014 Design By: GWTH Drawn By: GWTH Checked By: JEL 				
		Horsley Witten Group, Inc. Sustainable Environmental Solutions 90 Route 6A Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax				
		Revisions				
		Rev.	Date	By	Aspr.	Description



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 3301
PHONE: (603)223-2541 FAX: (603)223-0104
URL: www.fws.gov/newengland

Consultation Tracking Number: 05E1NE00-2014-SLI-0271

May 28, 2014

Project Name: Fairhaven Excavation Dewatering

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



United States Department of Interior
Fish and Wildlife Service

Project name: Fairhaven Excavation Dewatering

Official Species List

Provided by:

New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 3301
(603) 223-2541
<http://www.fws.gov/newengland>

Consultation Tracking Number: 05E1NE00-2014-SLI-0271

Project Type: ** Other **

Project Description: Proposed excavation dewatering under the Remediation General Permit, treated groundwater will be discharged to an existing stormwater outfall that discharges to New Bedford Inner Harbor. Treatment will consist of sand filter and granular activated carbon.



United States Department of Interior
Fish and Wildlife Service

Project name: Fairhaven Excavation Dewatering

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-70.9054672 41.6334258, -70.9048184 41.633189, -70.906417 41.6330848, -70.9057783 41.6333977, -70.9054672 41.6334258)))

Project Counties: Bristol, MA



United States Department of Interior
Fish and Wildlife Service

Project name: Fairhaven Excavation Dewatering

Endangered Species Act Species List

There are a total of 0 threatened, endangered, or candidate species on your 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. Critical habitats listed on the **Has Critical Habitat** lines may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

There are no listed species identified for the vicinity of your project.



United States Department of Interior
Fish and Wildlife Service

Project name: Fairhaven Excavation Dewatering

Critical habitats that lie within your project area

There are no critical habitats within your project area.

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A

MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Excavation Dewatering

Location / Address: 14 Main Street

City / Town: Fairhaven, Massachusetts, 02719

Project Proponent

Name: Woods Hole, Martha's Vineyard, & Nantucket Steamship Authority

Address: PO BOX 284

City/Town/Zip/Telephone: Woods Hole, MA 02543 / 508-548-5011

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name

Type of License or funding (specify)

Project Description (narrative):

Excavation dewatering during completion of an exploratory test pit, and excavation dewatering during foundation / utility installation.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

Not applicable.

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

Not applicable.

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

Not applicable.

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

MassGIS review indicates two MHC Inventory points on the property (see attached), but not in the expected area of excavation / dewatering .

What is the total acreage of the project area?

Woodland _____ acres
Wetland _____ acres
Floodplain _____ acres
Open space _____ acres
Developed 0.125 acres

Productive Resources:

Agriculture _____ acres
Forestry _____ acres
Mining/Extraction _____ acres
Total Project Acreage _____ acres

What is the acreage of the proposed new construction? NA acres

What is the present land use of the project area?

The site is currently used as a vessel maintenance facility for the Woods Hole, Martha's Vineyard, and Nantucket Steamship Authority.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: *W.J. Cloutier*

Date: 5/15/14

Name: W.J. CLOUTIER

Address: PO BOX 284

City/Town/Zip: Woods Hole, Massachusetts 02543

Telephone: 508-548-5011

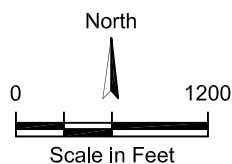
REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

last modified: 02/21/06 printed: 03/07/06 by ca X:\1140 Steamship Fairhaven\Phase V Stat Rpts\Rpt 7\FIG 1 locus.dwg

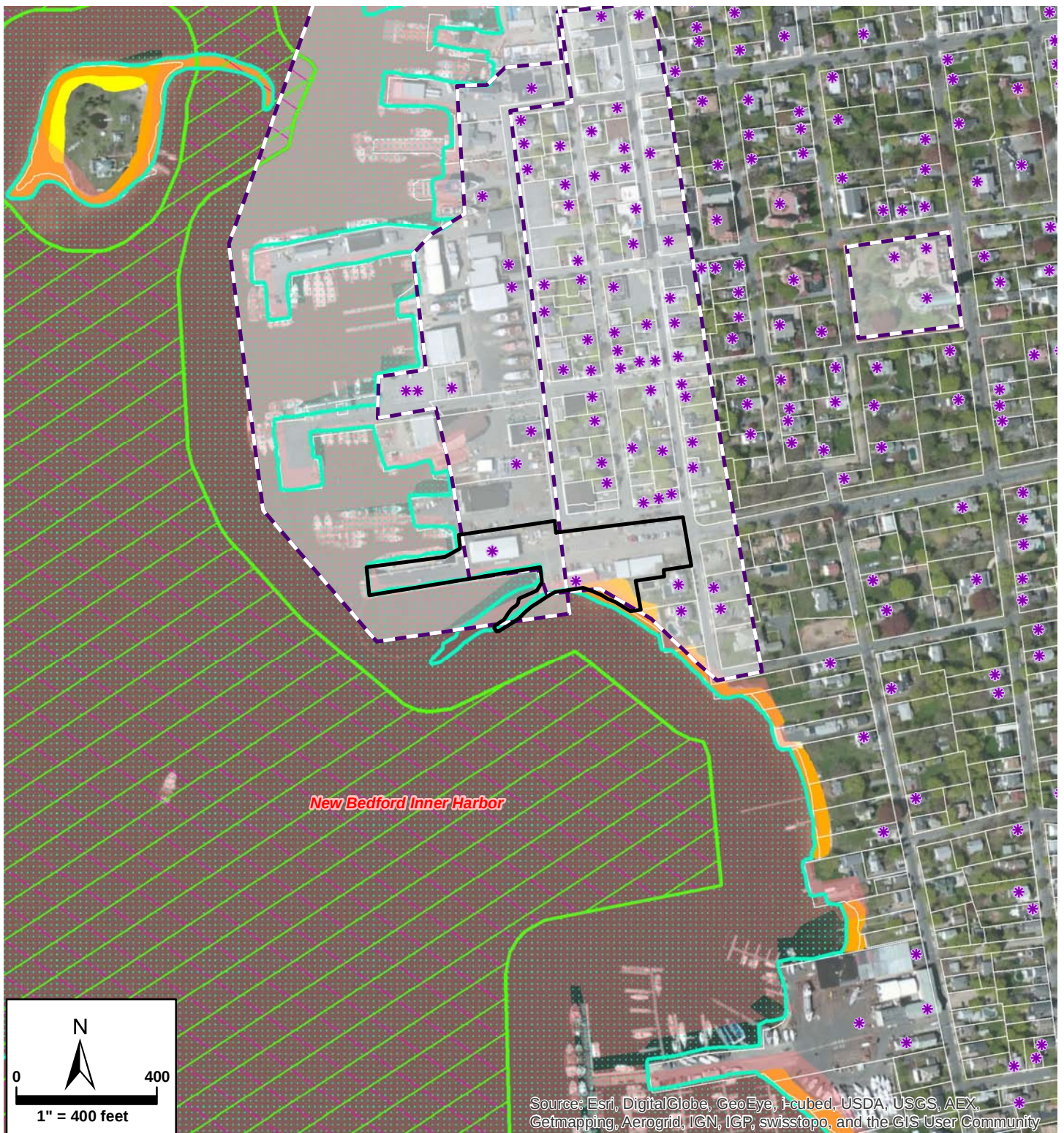


Legend



Horsley Witten Group, Inc.
phone: 508-833-6600
www.horsleywitten.com

Hathaway Braley Wharf
12-14 Main Street
Fairhaven, Massachusetts



Document Path: H:\Projects\Pre-2004\1140 Steamship Fairhaven\GIS\Existing_Constraints.mxd

Legend

Site Parcel

Parcels

NHESP Priority Habitats of Rare Species

NHESP Estimated Habitats of Rare Wildlife

Designated Shellfish Growing Areas

Prohibited

2012 Integrated List Data - 305(b)/303(d)

5 - Impaired - TMDL required

DEP Wetlands

Coastal Bank, Bluff or Sea Cliff

Coastal Beach

Coastal Dune

*GIS Data - MassGIS

MHC Historic Inventory

Inventory Areas

Inventory Points

Horsley Witten Group
Sustainable Environmental Solutions

90 Route 6A • Sandwich, MA • 02563
Tel: 508-833-6800 • Fax: 508-833-3150 • www.horsleywitten.com



Existing Constraints
14 Main Street
Fairhaven, MA

Date: 5/15/2014

DRAFT

PROTECT TW

Carbon Adsorber Canisters



Description

The PROTECT TW carbon adsorber canisters are economical water treatment units for short term usage applications. PROTECT TW canisters contain all of the operating elements required for utilization of granular activated carbon in water treatment, including a corrosion resistant underdrain for effective treated water collection. The PROTECT TW canisters are constructed of carbon steel with a corrosion resistant inner coating for use with granular activated carbon in water treatment.

The PROTECT TW carbon adsorber canisters are available in 3 convenient sizes that will contain 500, 1000, and 2000 pounds of granular activated carbon for treating water sources up to 90 gpm.

The PROTECT TW canisters can be provided with any of Calgon Carbon's wide variety of liquid phase granular activated carbon products that can be specifically selected for a specific water or liquid treatment application. Most commonly used are Filtrasorb grade virgin activated carbon for higher purity water or optimal carbon usage for low levels of organic contamination, or DSR series quality controlled reactivated grade carbon for a more economical carbon product or wastewater treatment.

Features

The PROTECT carbon adsorber canisters offer several important features that make it an effective value driven option for many water treatment applications:

- Sturdy carbon steel construction
- Capable of operating up to 75 psig as canisters are shop hydrotested at higher pressures after fabrication.
- Interior is coated with a corrosion resistant high solids epoxy coating
- Exterior painted with a durable urethane finish
- Operating temperature up to 140 degrees F
- Top 12X16 access port for activated carbon media fill and removal
- Lower PVC laterals with carbon retention slots for even water collection and maximum activated carbon utilization.
- Top inlet flow deflector to allow introduction of influent water above the carbon bed
- Top lifting lugs and bottom forklift guides for portability



Specifications

Canister	Sturdy carbon steel canister with flat bottom and dished top head
Pressure	Recommended 75 psig maximum operating pressure; shop hydrotested in excess of recommended pressure
Temperature	Recommended 140°F (max)
Internal Coating	High solids epoxy
External Coating	Direct-to-Metal polyurethane
Inlet	2" FPT coupling (all sizes) shipped with plug
Inlet Distributor	PVC inlet flow deflector
Vent	3/4" FPT coupling with 3/4" brass ball valve
Outlet	2" FPT coupling (all sizes) shipped with plug
Outlet Collector	PVC pipe with slotted laterals
Drain	3/4" FPT coupling with 3/4" threaded plug
Access Port	12"x16" access port with EPDM gasket
Dimensions	Refer to Model Chart

PROTECT TW

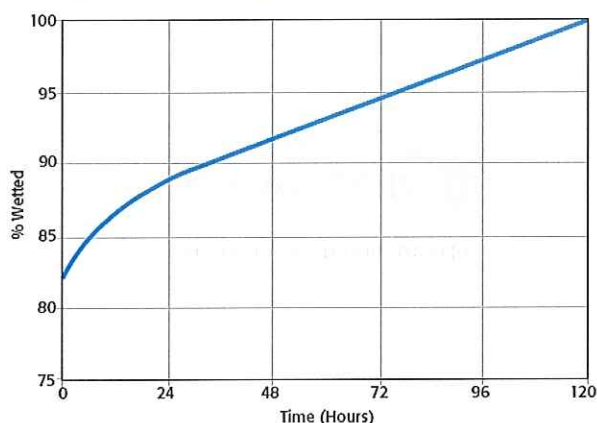
Carbon Adsorber Canisters

Installation

PROTECT TW canisters are shipped with dry activated carbon installed in the vessel; the carbon must be wetted and de-aerated prior to use. This procedure displaces air from the internal structure of the carbon granule, thus assuring that the liquid to be treated is in contact with the carbon surface.

Prior to operation, each canister must be filled with clean water; the water should be introduced into the bottom effluent connection. The canister should sit for approximately 48 hours to allow most of the carbon's internal surface to become wetted as shown on the wetting curve.

Wetting Curve for GAC (77°F/25°C)



After wetting, the carbon bed can be de-aerated by draining the canister from the effluent line and then refilling the canister upflow with clean water. This procedure will eliminate any air pockets which may have formed between the carbon granules. The PROTECT TW canister is now ready for operation.

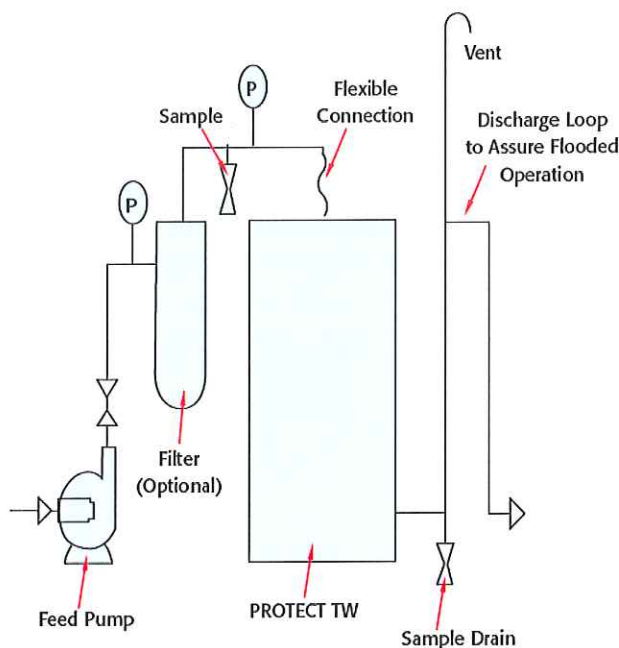
The PROTECT TW canister should be set on a flat level surface and piped as recommended in the installation illustration. The influent pipe should be attached to the unit by using a flexible connection to allow minor deflection in the piping to vessel connection or the vessel top head.

The PROTECT TW canister discharge piping should include an elevated piping loop to ensure that the canister remains flooded with water at all times. In addition to the piping loop, a drain connection is recommended on the discharge piping to allow for drainage of the canister prior to disconnection or during a temporary shutdown.

A filter should be installed prior to the canister if the liquid to be treated contains substantial amounts of suspended solids. A simple cartridge of screen filter helps prevent pressure buildup in the carbon bed.

A pressure relief device should be installed in a line open to the canister if the system can potentially be subject to pressures beyond the design point. Consult plant and/or local OSHA codes for guidance.

Typical Installation



Operation

PROTECT TW canisters should be full of clean water before treatment begins. Flow rate to the unit should be determined based on required contact time between the liquid and the carbon media. In groundwater treatment applications, the recommended contact time, calculated on an "empty bed basis", is typically 8-10 minutes. Consult your Calgon Carbon Corporation Technical sales Representative for advice about proper contact time for you application.

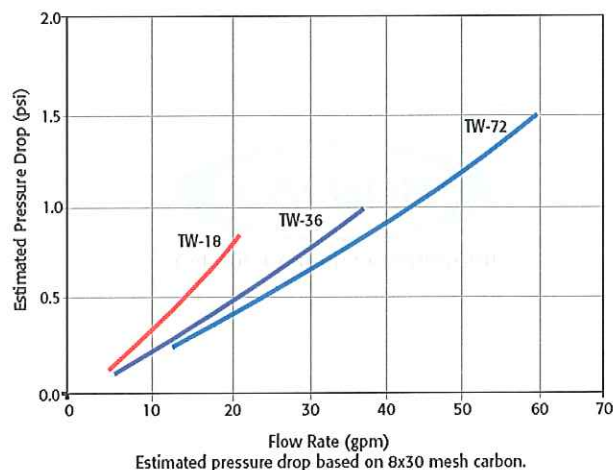
PROTECT TW canisters can be manifolded in parallel operation for higher flow rates. For series operation, two PROTECT TW canisters can be piped together sequentially, as normal pressure drop will not exceed the recommended operating pressure.

The PROTECT TW canisters have adequate space for bed expansion and can be backflushed by introducing clean water or process liquid at approximately 8-10 gpm/sf to the effluent connection and taking backflush water from either the influent connection, and directing this water to a drain suitable for receiving contaminated water with suspended solids and carbon particles.

Pressure Drop

Pressure drop through a PROTECT TW canister is a function of the water or process liquid flow as shown in the graph. If higher flows or lower pressure drop is needed, multiple units can be installed in parallel operation. The maximum pressure in the canister should not exceed 75 psig, regardless of the pressure drop across the unit.

Pressure Drop Curve



Carbon Exchange or Replacement

When the treated water exceeds the desired contaminant concentration, the granular activated carbon in the PROTECT TW canister should be replaced with fresh activated carbon. The PROTECT TW canister is to be isolated from the process by either closing and locking the inlet and outlet valves, or physically disconnecting the canister from the inlet and outlet pipe or hose.

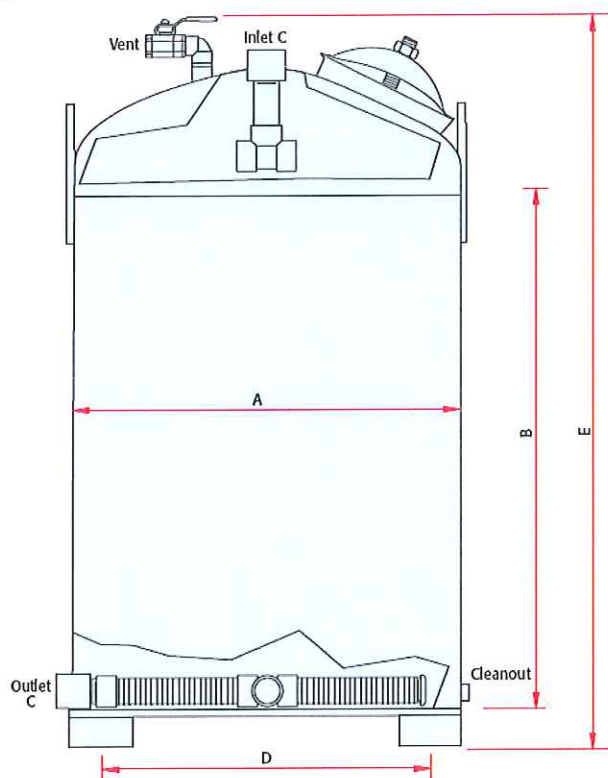
The spent granular activated carbon can be removed by using a vacuum media removal procedure through the top access port. All of the spent carbon must be completely removed from the canister prior to refilling the unit with fresh carbon to assure effluent water quality after the unit is started back up again.

Fresh granular activated carbon can be filled using bags or "supersacks" by loading into the canister through the top access port. In order to prevent damage to the PVC underdrain system, a "water cushion" is to be added to the canister such that the water covers the underdrain system by approximately 1-2 feet. Once the fresh carbon is installed, the access port securely closed, and the inlet and outlet connections are reestablished, follow the startup procedures under the Installation section to wet the carbon.

Contact Calgon Carbon for resupply of the carbon products for effective water treatment. Calgon Carbon can also provide complete turnkey services, including removal and management of the spent carbon and refilling the unit with the fresh carbon.

Calgon Carbon Water Treatment Systems

The PROTECT TW canisters are designed for a variety of higher pressure water or process liquid applications at low to moderate flowrates. Calgon Carbon Corporation offers a wide range of carbon adsorption systems and services for a range of water or liquid flow rates and carbon usages to meet specific applications.



Model Information

Model Number	TW 18	TW 36	TW 72
GAC or media volume (cu ft)	18	36	72
GAC amount (pounds)	500	1,000	2,000
Recommended max flow rate (gpm)	20	40	80
Weight, empty (pounds)	500	750	1,050
Approximate operating weight (pounds)	2,000	3,500	4,800
Diameter (A) in.	30	42	48
Can length (B) in.	48	48	72
Inlet /Outlet (C) fpt	2	2	2
Forkguides (D) in.	25	37	43
Overall Height (E) in. (approx)	60	67	91
Overall width; in. (approx)	32	44	50

CALGON
CALGON CARBON CORPORATION

www.calgoncarbon.com



CERTIFICATE OF ANALYSIS

Gary Hedman
Horsley & Witten
90 Route 6A
Sandwich, MA 02563

RE: Fairhaven Sewerline RGP (1140B)
ESS Laboratory Work Order Number: 1405471

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 12:54 pm, Jun 02, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

SAMPLE RECEIPT

The following samples were received on May 21, 2014 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
1405471-01	HW-5	Surface Water	1664A, 2540D, 300.0, 420.1, 4500 CN CE, 4500-Cl E, 6010B, 6020A, 7060A, 7196A, 7470A, 7740, 8011, 8082A, 8260B, 8270C SIM, 8270D, Calc
1405471-02	Trip Blank	Aqueous	8260B



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

PROJECT NARRATIVE

8270C(SIM) Polynuclear Aromatic Hydrocarbons

1405471-01 Surrogate recovery(ies) above upper control limit (S+).

2,4,6-Tribromophenol (151% @ 15-110%)

CE42023-BSD1 Surrogate recovery(ies) above upper control limit (S+).

2,4,6-Tribromophenol (111% @ 15-110%)

CXE0314-CCV1 Continuing Calibration recovery is above upper control limit (C+).

Di-n-octylphthalate (127% @ 80-120%)

CXE0314-TUN1 Surrogate recovery(ies) above upper control limit (S+).

Classical Chemistry

1405471-01 The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.

Total Metals Aqueous

CE42108-BSD2 Relative percent difference for duplicate is outside of criteria (D+).

Selenium (27%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015D - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Fairhaven Sewerline RGP
Client Sample ID: HW-5
Date Sampled: 05/20/14 17:00
Percent Solids: N/A

ESS Laboratory Work Order: 1405471
ESS Laboratory Sample ID: 1405471-01
Sample Matrix: Surface Water
Units: ug/L

Extraction Method: 3005A

Total Metals Aqueous

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (2.5)		6020A		10	SVD	05/31/14 15:54	50	25	CE42144
Arsenic	ND (2.5)		7060A		1	SVD	05/29/14 20:11	50	25	CE42108
Cadmium	ND (0.2)		6020A		2	SVD	05/31/14 15:42	50	25	CE42144
Chromium	ND (10)		6010B		1	JP	05/28/14 2:57	50	25	CE42108
Chromium (III)	ND (10)		Calc		1	JLK	05/28/14 2:57	1	1	[CALC]
Copper	67 (10)		6010B		1	NAR	05/28/14 2:57	50	25	CE42108
Iron	4330 (50)		6010B		1	JP	05/28/14 2:57	50	25	CE42108
Lead	29.8 (1.0)		6020A		10	NAR	05/28/14 21:13	50	25	CE42144
Mercury	ND (0.20)		7470A		1	KJK	05/23/14 16:10	20	40	CE42331
Nickel	19.2 (1.0)		6020A		10	NAR	05/28/14 21:13	50	25	CE42144
Selenium	ND (5.0)		7740		1	SVD	05/29/14 22:41	50	25	CE42108
Silver	ND (0.2)		6020A		2	SVD	05/31/14 15:42	50	25	CE42144
Zinc	79 (25)		6010B		1	JP	05/28/14 2:57	50	25	CE42108



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Fairhaven Sewerline RGP
Client Sample ID: HW-5
Date Sampled: 05/20/14 17:00
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1405471
ESS Laboratory Sample ID: 1405471-01
Sample Matrix: Surface Water
Units: ug/L
Analyst: TAJ
Prepared: 5/21/14 12:37
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.09)		8082A		1	05/23/14 2:22		CE42344
Aroclor 1221	ND (0.09)		8082A		1	05/23/14 2:22		CE42344
Aroclor 1232	ND (0.09)		8082A		1	05/23/14 2:22		CE42344
Aroclor 1242	ND (0.09)		8082A		1	05/23/14 2:22		CE42344
Aroclor 1248	ND (0.09)		8082A		1	05/23/14 2:22		CE42344
Aroclor 1254	ND (0.09)		8082A		1	05/23/14 2:22		CE42344
Aroclor 1260	ND (0.09)		8082A		1	05/23/14 2:22		CE42344
Aroclor 1262	ND (0.09)		8082A		1	05/23/14 2:22		CE42344
Aroclor 1268	ND (0.09)		8082A		1	05/23/14 2:22		CE42344

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	86 %		30-150
Surrogate: Decachlorobiphenyl [2C]	86 %		30-150
Surrogate: Tetrachloro-m-xylene	83 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	89 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Fairhaven Sewerline RGP
Client Sample ID: HW-5
Date Sampled: 05/20/14 17:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1405471
ESS Laboratory Sample ID: 1405471-01
Sample Matrix: Surface Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1-Trichloroethane	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
1,1,2-Trichloroethane	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
1,1-Dichloroethane	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
1,1-Dichloroethene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
1,2-Dichlorobenzene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
1,2-Dichloroethane	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
1,3-Dichlorobenzene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
1,4-Dichlorobenzene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Acetone	ND (10.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Benzene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Carbon Tetrachloride	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
cis-1,2-Dichloroethene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Ethylbenzene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Methyl tert-Butyl Ether	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Methylene Chloride	ND (2.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Naphthalene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Tertiary-amyl methyl ether	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Tertiary-butyl Alcohol	ND (25.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Tetrachloroethene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Toluene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Trichloroethene	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Vinyl Chloride	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Xylene O	ND (1.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233
Xylene P,M	ND (2.0)		8260B		1	05/22/14 17:27	CXE0327	CE42233

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1,2-Dichloroethane-d4	78 %		70-130
Surrogate: 4-Bromofluorobenzene	98 %		70-130
Surrogate: Dibromofluoromethane	86 %		70-130
Surrogate: Toluene-d8	108 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Fairhaven Sewerline RGP
Client Sample ID: HW-5
Date Sampled: 05/20/14 17:00
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1405471
ESS Laboratory Sample ID: 1405471-01
Sample Matrix: Surface Water
Units: ug/L
Analyst: IBM
Prepared: 5/21/14 19:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	ND (0.2)		8270D		1	05/22/14 20:19	CXE0331	CE42140
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		68 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Fairhaven Sewerline RGP
Client Sample ID: HW-5
Date Sampled: 05/20/14 17:00
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1405471
ESS Laboratory Sample ID: 1405471-01
Sample Matrix: Surface Water
Units: ug/L
Analyst: IBM
Prepared: 5/21/14 12:37

8270C(SIM) Polynuclear Aromatic Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Acenaphthene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Acenaphthylene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Anthracene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Benzo(a)anthracene	ND (0.05)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Benzo(a)pyrene	ND (0.05)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Benzo(b)fluoranthene	ND (0.05)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Benzo(g,h,i)perylene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Benzo(k)fluoranthene	ND (0.05)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
bis(2-Ethylhexyl)phthalate	ND (2.34)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Butylbenzylphthalate	ND (2.34)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Chrysene	ND (0.05)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Dibenzo(a,h)Anthracene	ND (0.05)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Diethylphthalate	ND (2.34)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Dimethylphthalate	ND (2.34)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Di-n-butylphthalate	ND (2.34)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Di-n-octylphthalate	ND (2.34)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Fluoranthene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Fluorene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Indeno(1,2,3-cd)Pyrene	ND (0.05)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Naphthalene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Pentachlorophenol	ND (0.84)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Phenanthrene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023
Pyrene	ND (0.19)		8270C SIM		1	05/21/14 21:28	CXE0314	CE42023

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	68 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	151 %	S+	15-110
<i>Surrogate: 2-Fluorobiphenyl</i>	81 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	90 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	85 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Fairhaven Sewerline RGP
Client Sample ID: HW-5
Date Sampled: 05/20/14 17:00
Percent Solids: N/A

ESS Laboratory Work Order: 1405471
ESS Laboratory Sample ID: 1405471-01
Sample Matrix: Surface Water

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Chloride	13900 (2500)		300.0		5000	EEM	05/27/14 17:44	mg/L	CE42708
Hexavalent Chromium	ND (10)		7196A		1	JLK	05/21/14 14:54	ug/L	CE42134
Phenols	ND (100)		420.1		1	EEM	05/22/14 15:15	ug/L	CE42215
Total Cyanide (LL)	ND (0.0050)		4500 CN CE		1	JLK	05/23/14 11:28	mg/L	CE42321
Total Petroleum Hydrocarbon	ND (5)		1664A		1	CRR	05/27/14 0:00	mg/L	CE42342
Total Residual Chlorine	ND (10)		4500-Cl E		1	JLK	05/21/14 15:56	ug/L	CE42120
Total Suspended Solids	47 (5)		2540D		1	JLK	05/22/14 15:41	mg/L	CE42117



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Fairhaven Sewerline RGP
Client Sample ID: HW-5
Date Sampled: 05/20/14 17:00
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1405471
ESS Laboratory Sample ID: 1405471-01
Sample Matrix: Surface Water
Units: ug/L
Analyst: JXS
Prepared: 5/22/14 11:30

8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dibromoethane	ND (0.015)		8011		1	JXS	05/22/14 16:38		CE42227
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>					
<i>Surrogate: Pentachloroethane</i>		126 %		30-150					



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Fairhaven Sewerline RGP
Client Sample ID: Trip Blank
Date Sampled: 05/20/14 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1405471
ESS Laboratory Sample ID: 1405471-02
Sample Matrix: Aqueous
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1-Trichloroethane	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
1,1,2-Trichloroethane	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
1,1-Dichloroethane	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
1,1-Dichloroethene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
1,2-Dichlorobenzene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
1,2-Dichloroethane	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
1,3-Dichlorobenzene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
1,4-Dichlorobenzene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Acetone	ND (10.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Benzene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Carbon Tetrachloride	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
cis-1,2-Dichloroethene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Ethylbenzene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Methyl tert-Butyl Ether	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Methylene Chloride	ND (2.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Naphthalene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Tertiary-amyl methyl ether	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Tertiary-butyl Alcohol	ND (25.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Tetrachloroethene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Toluene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Trichloroethene	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Vinyl Chloride	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Xylene O	ND (1.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233
Xylene P,M	ND (2.0)		8260B		1	05/22/14 17:00	CXE0327	CE42233

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1,2-Dichloroethane-d4	94 %		70-130
Surrogate: 4-Bromofluorobenzene	94 %		70-130
Surrogate: Dibromofluoromethane	101 %		70-130
Surrogate: Toluene-d8	104 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals Aqueous

Batch CE42108 - 3005A

Blank

Arsenic	ND	2.5	ug/L
Chromium	ND	10	ug/L
Iron	ND	50	ug/L
Selenium	ND	5.0	ug/L
Zinc	ND	25	ug/L

LCS

Chromium	239	10	ug/L	250.0	96	80-120
Iron	1210	50	ug/L	1250	96	80-120
Zinc	239	25	ug/L	250.0	96	80-120

LCS

Arsenic	9.5	2.5	ug/L	10.00	95	80-120
Selenium	21.6	5.0	ug/L	20.00	108	80-120

LCS Dup

Chromium	236	10	ug/L	250.0	95	80-120	1	20
Iron	1190	50	ug/L	1250	95	80-120	2	20
Zinc	235	25	ug/L	250.0	94	80-120	2	20

LCS Dup

Arsenic	9.0	2.5	ug/L	10.00	90	80-120	6	20	
Selenium	16.4	5.0	ug/L	20.00	82	80-120	27	20	D+

Batch CE42144 - 3005A

Blank

Antimony	ND	0.5	ug/L
Arsenic	ND	1.0	ug/L
Cadmium	ND	0.2	ug/L
Copper	ND	0.5	ug/L
Lead	ND	0.2	ug/L
Nickel	ND	0.2	ug/L
Selenium	ND	2.0	ug/L
Silver	ND	0.2	ug/L

Blank

Antimony	ND	0.2	ug/L
Arsenic	ND	0.5	ug/L
Cadmium	ND	0.1	ug/L
Copper	ND	0.2	ug/L
Lead	ND	0.1	ug/L
Nickel	ND	0.1	ug/L
Selenium	ND	1.0	ug/L
Silver	ND	0.1	ug/L

LCS

Antimony	26.0	2.5	ug/L	25.00	104	80-120
Arsenic	22.5	5.0	ug/L	25.00	90	80-120
Cadmium	23.9	1.0	ug/L	25.00	96	80-120



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals Aqueous

Batch CE42144 - 3005A

Copper	23.3	2.5	ug/L	25.00		93	80-120			
Lead	26.8	1.0	ug/L	25.00		107	80-120			
Nickel	22.5	1.0	ug/L	25.00		90	80-120			
Selenium	23.8	10.0	ug/L	25.00		95	80-120			
Silver	25.4	1.0	ug/L	25.00		102	80-120			

LCS Dup

Antimony	28.2	2.5	ug/L	25.00		113	80-120	8	20	
Arsenic	23.9	5.0	ug/L	25.00		96	80-120	6	20	
Cadmium	25.4	1.0	ug/L	25.00		101	80-120	6	20	
Copper	24.8	2.5	ug/L	25.00		99	80-120	6	20	
Lead	25.6	1.0	ug/L	25.00		102	80-120	5	20	
Nickel	23.9	1.0	ug/L	25.00		96	80-120	6	20	
Selenium	24.5	10.0	ug/L	25.00		98	80-120	3	20	
Silver	26.8	1.0	ug/L	25.00		107	80-120	5	20	

Batch CE42331 - 245.1/7470A

Blank

Mercury	ND	0.20	ug/L							
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LCS

Mercury	5.65	0.20	ug/L	6.000		94	80-120			
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LCS Dup

Mercury	5.61	0.20	ug/L	6.000		94	80-120	0.7	20	
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8082A Polychlorinated Biphenyls (PCB)

Batch CE42344 - 3510C

Blank

Aroclor 1016	ND	0.10	ug/L							
Aroclor 1016 (1)	ND	0.10	ug/L							
Aroclor 1016 (1) [2C]	ND	0.10	ug/L							
Aroclor 1016 (2)	ND	0.10	ug/L							
Aroclor 1016 (2) [2C]	ND	0.10	ug/L							
Aroclor 1016 (3)	ND	0.10	ug/L							
Aroclor 1016 (3) [2C]	ND	0.10	ug/L							
Aroclor 1016 (4)	ND	0.10	ug/L							
Aroclor 1016 (4) [2C]	ND	0.10	ug/L							
Aroclor 1016 (5)	ND	0.10	ug/L							
Aroclor 1016 (5) [2C]	ND	0.10	ug/L							
Aroclor 1221	ND	0.10	ug/L							
Aroclor 1221 (1)	ND	0.10	ug/L							
Aroclor 1221 (1) [2C]	ND	0.10	ug/L							
Aroclor 1221 (2)	ND	0.10	ug/L							
Aroclor 1221 (2) [2C]	ND	0.10	ug/L							
Aroclor 1221 (3)	ND	0.10	ug/L							
Aroclor 1221 (3) [2C]	ND	0.10	ug/L							
Aroclor 1221 (4)	ND	0.10	ug/L							



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CE42344 - 3510C

Aroclor 1221 (4) [2C]	ND	0.10	ug/L
Aroclor 1221 (5)	ND	0.10	ug/L
Aroclor 1221 (5) [2C]	ND	0.10	ug/L
Aroclor 1232	ND	0.10	ug/L
Aroclor 1232 (1)	ND	0.10	ug/L
Aroclor 1232 (1) [2C]	ND	0.10	ug/L
Aroclor 1232 (2)	ND	0.10	ug/L
Aroclor 1232 (2) [2C]	ND	0.10	ug/L
Aroclor 1232 (3)	ND	0.10	ug/L
Aroclor 1232 (3) [2C]	ND	0.10	ug/L
Aroclor 1232 (4)	ND	0.10	ug/L
Aroclor 1232 (4) [2C]	ND	0.10	ug/L
Aroclor 1232 (5)	ND	0.10	ug/L
Aroclor 1232 (5) [2C]	ND	0.10	ug/L
Aroclor 1242	ND	0.10	ug/L
Aroclor 1242 (1)	ND	0.10	ug/L
Aroclor 1242 (1) [2C]	ND	0.10	ug/L
Aroclor 1242 (2)	ND	0.10	ug/L
Aroclor 1242 (2) [2C]	ND	0.10	ug/L
Aroclor 1242 (3)	ND	0.10	ug/L
Aroclor 1242 (3) [2C]	ND	0.10	ug/L
Aroclor 1242 (4)	ND	0.10	ug/L
Aroclor 1242 (4) [2C]	ND	0.10	ug/L
Aroclor 1242 (5)	ND	0.10	ug/L
Aroclor 1242 (5) [2C]	ND	0.10	ug/L
Aroclor 1248	ND	0.10	ug/L
Aroclor 1248 (1)	ND	0.10	ug/L
Aroclor 1248 (1) [2C]	ND	0.10	ug/L
Aroclor 1248 (2)	ND	0.10	ug/L
Aroclor 1248 (2) [2C]	ND	0.10	ug/L
Aroclor 1248 (3)	ND	0.10	ug/L
Aroclor 1248 (3) [2C]	ND	0.10	ug/L
Aroclor 1248 (4)	ND	0.10	ug/L
Aroclor 1248 (4) [2C]	ND	0.10	ug/L
Aroclor 1248 (5)	ND	0.10	ug/L
Aroclor 1248 (5) [2C]	ND	0.10	ug/L
Aroclor 1254	ND	0.10	ug/L
Aroclor 1254 (1)	ND	0.10	ug/L
Aroclor 1254 (1) [2C]	ND	0.10	ug/L
Aroclor 1254 (2)	ND	0.10	ug/L
Aroclor 1254 (2) [2C]	ND	0.10	ug/L
Aroclor 1254 (3)	ND	0.10	ug/L
Aroclor 1254 (3) [2C]	ND	0.10	ug/L
Aroclor 1254 (4)	ND	0.10	ug/L
Aroclor 1254 (4) [2C]	ND	0.10	ug/L



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CE42344 - 3510C

Aroclor 1254 (5)	ND	0.10	ug/L							
Aroclor 1254 (5) [2C]	ND	0.10	ug/L							
Aroclor 1260	ND	0.10	ug/L							
Aroclor 1260 (1)	ND	0.10	ug/L							
Aroclor 1260 (1) [2C]	ND	0.10	ug/L							
Aroclor 1260 (2)	ND	0.10	ug/L							
Aroclor 1260 (2) [2C]	ND	0.10	ug/L							
Aroclor 1260 (3)	ND	0.10	ug/L							
Aroclor 1260 (3) [2C]	ND	0.10	ug/L							
Aroclor 1260 (4)	ND	0.10	ug/L							
Aroclor 1260 (4) [2C]	ND	0.10	ug/L							
Aroclor 1260 (5)	ND	0.10	ug/L							
Aroclor 1260 (5) [2C]	ND	0.10	ug/L							
Aroclor 1262	ND	0.10	ug/L							
Aroclor 1262 (1)	ND	0.10	ug/L							
Aroclor 1262 (1) [2C]	ND	0.10	ug/L							
Aroclor 1262 (2)	ND	0.10	ug/L							
Aroclor 1262 (2) [2C]	ND	0.10	ug/L							
Aroclor 1262 (3)	ND	0.10	ug/L							
Aroclor 1262 (3) [2C]	ND	0.10	ug/L							
Aroclor 1262 (4)	ND	0.10	ug/L							
Aroclor 1262 (4) [2C]	ND	0.10	ug/L							
Aroclor 1262 (5)	ND	0.10	ug/L							
Aroclor 1262 (5) [2C]	ND	0.10	ug/L							
Aroclor 1268	ND	0.10	ug/L							
Aroclor 1268 (1)	ND	0.10	ug/L							
Aroclor 1268 (1) [2C]	ND	0.10	ug/L							
Aroclor 1268 (2)	ND	0.10	ug/L							
Aroclor 1268 (2) [2C]	ND	0.10	ug/L							
Aroclor 1268 (3)	ND	0.10	ug/L							
Aroclor 1268 (3) [2C]	ND	0.10	ug/L							
Aroclor 1268 (4)	ND	0.10	ug/L							
Aroclor 1268 (4) [2C]	ND	0.10	ug/L							
Aroclor 1268 (5)	ND	0.10	ug/L							
Aroclor 1268 (5) [2C]	ND	0.10	ug/L							

Surrogate: Decachlorobiphenyl	0.0388		ug/L	0.05000		78	30-150
Surrogate: Decachlorobiphenyl [2C]	0.0404		ug/L	0.05000		81	30-150
Surrogate: Tetrachloro-m-xylene	0.0323		ug/L	0.05000		65	30-150
Surrogate: Tetrachloro-m-xylene [2C]	0.0348		ug/L	0.05000		70	30-150

LCS

Aroclor 1016	0.81	0.10	ug/L	1.000		81	40-140
Aroclor 1260	0.82	0.10	ug/L	1.000		82	40-140

Surrogate: Decachlorobiphenyl	0.0401		ug/L	0.05000		80	30-150
Surrogate: Decachlorobiphenyl [2C]	0.0410		ug/L	0.05000		82	30-150



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082A Polychlorinated Biphenyls (PCB)

Batch CE42344 - 3510C

Surrogate: Tetrachloro-m-xylene	0.0341		ug/L	0.05000		68	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0339		ug/L	0.05000		68	30-150			

LCS Dup

Aroclor 1016	0.94	0.10	ug/L	1.000		94	40-140	15	20	
Aroclor 1260	0.97	0.10	ug/L	1.000		97	40-140	16	20	

Surrogate: Decachlorobiphenyl	0.0456		ug/L	0.05000		91	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0462		ug/L	0.05000		92	30-150			
Surrogate: Tetrachloro-m-xylene	0.0381		ug/L	0.05000		76	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0379		ug/L	0.05000		76	30-150			

8260B Volatile Organic Compounds

Batch CE42233 - 5030B

Blank

1,1,1-Trichloroethane	ND	1.0	ug/L							
1,1,2-Trichloroethane	ND	1.0	ug/L							
1,1-Dichloroethane	ND	1.0	ug/L							
1,1-Dichloroethene	ND	1.0	ug/L							
1,2-Dichlorobenzene	ND	1.0	ug/L							
1,2-Dichloroethane	ND	1.0	ug/L							
1,3-Dichlorobenzene	ND	1.0	ug/L							
1,4-Dichlorobenzene	ND	1.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.0	ug/L							
Carbon Tetrachloride	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	1.0	ug/L							
Ethylbenzene	ND	1.0	ug/L							
Methyl tert-Butyl Ether	ND	1.0	ug/L							
Methylene Chloride	ND	2.0	ug/L							
Naphthalene	ND	1.0	ug/L							
Tertiary-amyl methyl ether	ND	1.0	ug/L							
Tertiary-butyl Alcohol	ND	25.0	ug/L							
Tetrachloroethene	ND	1.0	ug/L							
Toluene	ND	1.0	ug/L							
Trichloroethene	ND	1.0	ug/L							
Vinyl Chloride	ND	1.0	ug/L							
Xylene O	ND	1.0	ug/L							
Xylene P,M	ND	2.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	19.0		ug/L	25.00		76	70-130			
Surrogate: 4-Bromofluorobenzene	24.7		ug/L	25.00		99	70-130			
Surrogate: Dibromofluoromethane	21.0		ug/L	25.00		84	70-130			
Surrogate: Toluene-d8	26.9		ug/L	25.00		108	70-130			

LCS

1,1,1-Trichloroethane	9.6		ug/L	10.00		96	70-130			
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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch CE42233 - 5030B

1,1,2-Trichloroethane	10.4		ug/L	10.00		104	70-130			
1,1-Dichloroethane	10.0		ug/L	10.00		100	70-130			
1,1-Dichloroethene	9.6		ug/L	10.00		96	70-130			
1,2-Dichlorobenzene	10.3		ug/L	10.00		103	70-130			
1,2-Dichloroethane	9.2		ug/L	10.00		92	70-130			
1,3-Dichlorobenzene	10.2		ug/L	10.00		102	70-130			
1,4-Dichlorobenzene	10.1		ug/L	10.00		101	70-130			
Acetone	50.4		ug/L	50.00		101	70-130			
Benzene	10.1		ug/L	10.00		101	70-130			
Carbon Tetrachloride	10.0		ug/L	10.00		100	70-130			
cis-1,2-Dichloroethene	10.2		ug/L	10.00		102	70-130			
Ethylbenzene	9.8		ug/L	10.00		98	70-130			
Methyl tert-Butyl Ether	9.8		ug/L	10.00		98	70-130			
Methylene Chloride	10.5		ug/L	10.00		105	70-130			
Naphthalene	10.5		ug/L	10.00		105	70-130			
Tertiary-amyl methyl ether	9.6		ug/L	10.00		96	70-130			
Tertiary-butyl Alcohol	53.0		ug/L	50.00		106	70-130			
Tetrachloroethene	8.3		ug/L	10.00		83	70-130			
Toluene	10.4		ug/L	10.00		104	70-130			
Trichloroethene	10.2		ug/L	10.00		102	70-130			
Vinyl Chloride	9.5		ug/L	10.00		95	70-130			
Xylene O	10.4		ug/L	10.00		104	70-130			
Xylene P,M	20.0		ug/L	20.00		100	70-130			
Surrogate: 1,2-Dichloroethane-d4	24.5		ug/L	25.00		98	70-130			
Surrogate: 4-Bromofluorobenzene	24.1		ug/L	25.00		96	70-130			
Surrogate: Dibromofluoromethane	26.5		ug/L	25.00		106	70-130			
Surrogate: Toluene-d8	25.4		ug/L	25.00		102	70-130			

LCS Dup

1,1,1-Trichloroethane	9.0		ug/L	10.00		90	70-130	7	25	
1,1,2-Trichloroethane	10.0		ug/L	10.00		100	70-130	4	25	
1,1-Dichloroethane	9.0		ug/L	10.00		90	70-130	10	25	
1,1-Dichloroethene	9.1		ug/L	10.00		91	70-130	5	25	
1,2-Dichlorobenzene	10.0		ug/L	10.00		100	70-130	3	25	
1,2-Dichloroethane	9.3		ug/L	10.00		93	70-130	1	25	
1,3-Dichlorobenzene	10.3		ug/L	10.00		103	70-130	0.7	25	
1,4-Dichlorobenzene	9.9		ug/L	10.00		99	70-130	3	25	
Acetone	46.4		ug/L	50.00		93	70-130	8	25	
Benzene	9.8		ug/L	10.00		98	70-130	3	25	
Carbon Tetrachloride	9.4		ug/L	10.00		94	70-130	7	25	
cis-1,2-Dichloroethene	10.0		ug/L	10.00		100	70-130	2	25	
Ethylbenzene	8.9		ug/L	10.00		89	70-130	10	25	
Methyl tert-Butyl Ether	9.5		ug/L	10.00		95	70-130	3	25	
Methylene Chloride	9.8		ug/L	10.00		98	70-130	7	25	
Naphthalene	9.9		ug/L	10.00		99	70-130	6	25	
Tertiary-amyl methyl ether	9.2		ug/L	10.00		92	70-130	4	25	



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

Client Project ID: Fairhaven Sewerline RGP

ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch CE42233 - 5030B

Tertiary-butyl Alcohol	43.2		ug/L	50.00		86	70-130	20	25	
Tetrachloroethene	7.8		ug/L	10.00		78	70-130	6	25	
Toluene	9.8		ug/L	10.00		98	70-130	6	25	
Trichloroethene	9.4		ug/L	10.00		94	70-130	7	25	
Vinyl Chloride	9.2		ug/L	10.00		92	70-130	4	25	
Xylene O	9.5		ug/L	10.00		95	70-130	9	25	
Xylene P,M	18.5		ug/L	20.00		93	70-130	8	25	
Surrogate: 1,2-Dichloroethane-d4	23.7		ug/L	25.00		95	70-130			
Surrogate: 4-Bromofluorobenzene	24.4		ug/L	25.00		98	70-130			
Surrogate: Dibromofluoromethane	25.9		ug/L	25.00		104	70-130			
Surrogate: Toluene-d8	24.8		ug/L	25.00		99	70-130			

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Batch CE42140 - 3520C

Blank

1,4-Dioxane	ND	0.2	ug/L							
Surrogate: 1,4-Dioxane-d8	3.31		ug/L	5.000		66	15-115			

LCS

1,4-Dioxane	8.2	0.2	ug/L	10.00		82	40-140			
Surrogate: 1,4-Dioxane-d8	3.87		ug/L	5.000		77	15-115			

LCS Dup

1,4-Dioxane	8.7	0.2	ug/L	10.00		87	40-140	6	20	
Surrogate: 1,4-Dioxane-d8	3.94		ug/L	5.000		79	15-115			

8270C(SIM) Polynuclear Aromatic Hydrocarbons

Batch CE42023 - 3510C

Blank

Acenaphthene	ND	0.20	ug/L							
Acenaphthylene	ND	0.20	ug/L							
Anthracene	ND	0.20	ug/L							
Benzo(a)anthracene	ND	0.05	ug/L							
Benzo(a)pyrene	ND	0.05	ug/L							
Benzo(b)fluoranthene	ND	0.05	ug/L							
Benzo(g,h,i)perylene	ND	0.20	ug/L							
Benzo(k)fluoranthene	ND	0.05	ug/L							
bis(2-Ethylhexyl)phthalate	ND	2.50	ug/L							
Butylbenzylphthalate	ND	2.50	ug/L							
Chrysene	ND	0.05	ug/L							
Dibenzo(a,h)Anthracene	ND	0.05	ug/L							
Diethylphthalate	ND	2.50	ug/L							
Dimethylphthalate	ND	2.50	ug/L							
Di-n-butylphthalate	ND	2.50	ug/L							
Di-n-octylphthalate	ND	2.50	ug/L							
Fluoranthene	ND	0.20	ug/L							



CERTIFICATE OF ANALYSIS

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8270C(SIM) Polynuclear Aromatic Hydrocarbons

Batch CE42023 - 3510C

Fluorene	ND	0.20	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	0.05	ug/L							
Naphthalene	ND	0.20	ug/L							
Pentachlorophenol	ND	0.90	ug/L							
Phenanthrene	ND	0.20	ug/L							
Pyrene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	1.33		ug/L	2.500		53	30-130			
Surrogate: 2,4,6-Tribromophenol	3.38		ug/L	3.750		90	15-110			
Surrogate: 2-Fluorobiphenyl	1.68		ug/L	2.500		67	30-130			
Surrogate: Nitrobenzene-d5	1.96		ug/L	2.500		78	30-130			
Surrogate: p-Terphenyl-d14	2.10		ug/L	2.500		84	30-130			

LCS

Acenaphthene	2.81	0.20	ug/L	4.000		70	40-140			
Acenaphthylene	2.84	0.20	ug/L	4.000		71	40-140			
Anthracene	3.17	0.20	ug/L	4.000		79	40-140			
Benzo(a)anthracene	3.09	0.05	ug/L	4.000		77	40-140			
Benzo(a)pyrene	2.94	0.05	ug/L	4.000		74	40-140			
Benzo(b)fluoranthene	3.12	0.05	ug/L	4.000		78	40-140			
Benzo(g,h,i)perylene	3.14	0.20	ug/L	4.000		78	40-140			
Benzo(k)fluoranthene	3.29	0.05	ug/L	4.000		82	40-140			
bis(2-Ethylhexyl)phthalate	4.09	2.50	ug/L	4.000		102	40-140			
Butylbenzylphthalate	3.67	2.50	ug/L	4.000		92	40-140			
Chrysene	3.20	0.05	ug/L	4.000		80	40-140			
Dibenzo(a,h)Anthracene	3.30	0.05	ug/L	4.000		82	40-140			
Diethylphthalate	3.40	2.50	ug/L	4.000		85	40-140			
Dimethylphthalate	3.32	2.50	ug/L	4.000		83	40-140			
Di-n-butylphthalate	3.28	2.50	ug/L	4.000		82	40-140			
Di-n-octylphthalate	3.96	2.50	ug/L	4.000		99	40-140			
Fluoranthene	3.29	0.20	ug/L	4.000		82	40-140			
Fluorene	3.17	0.20	ug/L	4.000		79	40-140			
Indeno(1,2,3-cd)Pyrene	3.25	0.05	ug/L	4.000		81	40-140			
Naphthalene	2.51	0.20	ug/L	4.000		63	40-140			
Pentachlorophenol	3.78	0.90	ug/L	4.000		95	30-130			
Phenanthrene	3.17	0.20	ug/L	4.000		79	40-140			
Pyrene	3.26	0.20	ug/L	4.000		82	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	1.52		ug/L	2.500		61	30-130			
Surrogate: 2,4,6-Tribromophenol	4.09		ug/L	3.750		109	15-110			
Surrogate: 2-Fluorobiphenyl	2.02		ug/L	2.500		81	30-130			
Surrogate: Nitrobenzene-d5	2.21		ug/L	2.500		88	30-130			
Surrogate: p-Terphenyl-d14	2.34		ug/L	2.500		94	30-130			

LCS Dup

Acenaphthene	2.63	0.20	ug/L	4.000		66	40-140	7	20	
Acenaphthylene	2.69	0.20	ug/L	4.000		67	40-140	5	20	
Anthracene	2.96	0.20	ug/L	4.000		74	40-140	7	20	
Benzo(a)anthracene	2.95	0.05	ug/L	4.000		74	40-140	5	20	



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

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ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270C(SIM) Polynuclear Aromatic Hydrocarbons

Batch CE42023 - 3510C

Benzo(a)pyrene	2.75	0.05	ug/L	4.000		69	40-140	7	20	
Benzo(b)fluoranthene	2.91	0.05	ug/L	4.000		73	40-140	7	20	
Benzo(g,h,i)perylene	2.93	0.20	ug/L	4.000		73	40-140	7	20	
Benzo(k)fluoranthene	3.04	0.05	ug/L	4.000		76	40-140	8	20	
bis(2-Ethylhexyl)phthalate	4.05	2.50	ug/L	4.000		101	40-140	0.9	20	
Butylbenzylphthalate	3.52	2.50	ug/L	4.000		88	40-140	4	20	
Chrysene	3.01	0.05	ug/L	4.000		75	40-140	6	20	
Dibenzo(a,h)Anthracene	3.10	0.05	ug/L	4.000		77	40-140	6	20	
Diethylphthalate	3.19	2.50	ug/L	4.000		80	40-140	7	20	
Dimethylphthalate	3.13	2.50	ug/L	4.000		78	40-140	6	20	
Di-n-butylphthalate	3.14	2.50	ug/L	4.000		78	40-140	5	20	
Di-n-octylphthalate	3.66	2.50	ug/L	4.000		91	40-140	8	20	
Fluoranthene	3.13	0.20	ug/L	4.000		78	40-140	5	20	
Fluorene	2.93	0.20	ug/L	4.000		73	40-140	8	20	
Indeno(1,2,3-cd)Pyrene	3.06	0.05	ug/L	4.000		76	40-140	6	20	
Naphthalene	2.42	0.20	ug/L	4.000		60	40-140	4	20	
Pentachlorophenol	4.02	0.90	ug/L	4.000		100	30-130	6	20	
Phenanthrene	2.93	0.20	ug/L	4.000		73	40-140	8	20	
Pyrene	3.10	0.20	ug/L	4.000		77	40-140	5	20	
Surrogate: 1,2-Dichlorobenzene-d4	1.34		ug/L	2.500		53	30-130			
Surrogate: 2,4,6-Tribromophenol	4.18		ug/L	3.750		111	15-110			S+
Surrogate: 2-Fluorobiphenyl	1.85		ug/L	2.500		74	30-130			
Surrogate: Nitrobenzene-d5	2.02		ug/L	2.500		81	30-130			
Surrogate: p-Terphenyl-d14	2.17		ug/L	2.500		87	30-130			

Classical Chemistry

Batch CE42117 - General Preparation

Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	64		mg/L	65.00		98	80-120			

Batch CE42120 - General Preparation

Blank										
Total Residual Chlorine	ND	10	ug/L							
LCS										
Total Residual Chlorine	2		mg/L	2.250		100	85-115			

Batch CE42134 - General Preparation

Blank										
Hexavalent Chromium	ND	10	ug/L							
LCS										
Hexavalent Chromium	0.5		mg/L	0.4998		97	90-110			
LCS Dup										
Hexavalent Chromium	0.5		mg/L	0.4998		99	90-110	2	20	



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 1405471

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Classical Chemistry

Batch CE42215 - General Preparation

Blank

Phenols	ND	100	ug/L							
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LCS

Phenols	108	100	ug/L	100.0		108	80-120			
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LCS

Phenols	1050	100	ug/L	1000		105	80-120			
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Batch CE42321 - TCN Prep

Blank

Total Cyanide (LL)	ND	0.0050	mg/L							
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LCS

Total Cyanide (LL)	0.0199	0.0050	mg/L	0.02006		99	90-110			
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LCS

Total Cyanide (LL)	0.153	0.0050	mg/L	0.1504		102	90-110			
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LCS Dup

Total Cyanide (LL)	0.152	0.0050	mg/L	0.1504		101	90-110	0.7	20	
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Batch CE42342 - General Preparation

Blank

Total Petroleum Hydrocarbon	ND	5	mg/L							
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LCS

Total Petroleum Hydrocarbon	13	5	mg/L	19.38		69	66-114			
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Batch CE42708 - General Preparation

Blank

Chloride	ND	0.5	mg/L							
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LCS

Chloride	2.4		mg/L	2.500		96	90-110			
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8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Batch CE42227 - 504/8011

Blank

1,2-Dibromoethane	ND	0.015	ug/L							
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Surrogate: Pentachloroethane

0.160		ug/L	0.2000		80	30-150			
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LCS

1,2-Dibromoethane	0.223	0.015	ug/L	0.2000		112	60-140			
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Surrogate: Pentachloroethane

0.269		ug/L	0.2000		134	30-150			
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LCS

1,2-Dibromoethane	0.110	0.015	ug/L	0.08000		138	60-140			
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Surrogate: Pentachloroethane

0.104		ug/L	0.08000		130	30-150			
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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten

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ESS Laboratory Work Order: 1405471

Notes and Definitions

U	Analyte included in the analysis, but not detected
S+	Surrogate recovery(ies) above upper control limit (S+).
HT	The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
D+	Relative percent difference for duplicate is outside of criteria (D+).
D	Diluted.
C+	Continuing Calibration recovery is above upper control limit (C+).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
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ESS Laboratory Work Order: 1405471

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01

<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: Horsley & Witten

Client Project ID: _____

Shipped/Delivered Via: ESS CourierESS Project ID: 14050471Date Project Due: 5/27/14 5/28/14Days For Project: 4 Day eo 5/23/14**Items to be checked upon receipt:**

1. Air Bill Manifest Present?

☒ No

Air No.: _____

2. Were Custody Seals Present?

☐ No

3. Were Custody Seals Intact?

☐ N/A

4. Is Radiation count < 100 CPM?

☐ Yes

5. Is a cooler present?

☐ YesCooler Temp: 3.9Iced With: Ice

6. Was COC included with samples?

☐ Yes

7. Was COC signed and dated by client?

☐ Yes

8. Does the COC match the sample

☐ Yes

9. Is COC complete and correct?

☐ Yes

10. Are the samples properly preserved?

☐ Yes

11. Proper sample containers used?

☐ Yes

12. Any air bubbles in the VOA vials?

☐ No

13. Holding times exceeded?

☐ No

14. Sufficient sample volumes?

☐ Yes

15. Any Subcontracting needed?

☐ No16. Are ESS labels on correct containers? ☒ Yes ☐ No17. Were samples received intact? ☒ Yes ☐ No

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

Hex cr split for Metals and preserved.

Who was called?: _____

By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	1 L Glass	2	H2SO4
1	Yes	1 L Glass	6	NP
1	Yes	1 L Plastic	1	NP
1	Yes	250 ml Plastic	1	HNO3
1	Yes	250 ml Plastic	1	NaOH pH 11
1	Yes	250 ml Plastic	1	NP
1	Yes	40 ml - VOA	6	HCL
1	Yes	500 ml Plastic	1	HNO3 pH < 2
2	Yes	40 ml - VOA	1	HCL at 5/21/14

Completed By: [Signature]Date/Time: 5/21/14 1215Reviewed By: [Signature]Date/Time: 5/21/14 1223

**GAZETTEER OF HYDROLOGIC CHARACTERISTICS OF
STREAMS IN MASSACHUSETTS--COASTAL RIVER BASINS
OF THE SOUTH SHORE AND BUZZARDS BAY**

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CONVERSION FACTORS

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI Units
<u>Length</u>		
inch (in)	25.4*	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
<u>Area</u>		
square mile (mi ²)	2.590	square kilometer (km ²)
<u>Flow</u>		
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second (m ³ /s)
cubic foot per second per square mile [(ft ³ /s)/mi ²]	0.01093	cubic meter per second per square kilometer [(m ³ /s)/km ²]
<u>Slope</u>		
foot per mile (ft/mi)	0.1894	meter per kilometer (m/km)
<u>Temperature</u>		

Temperature in degrees Fahrenheit (°F) can be converted to degrees Celsius (°C) as follows:

$$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32).$$

*Exact.

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2 and 3	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
COASTAL BASINS OF BUZZARDS BAY (Continued)							
47	01105920	Swift Brook at East Fairhaven, Mass.	U.S. Route 6	1965	0.78	—	—
48	01105921	Swift Brook near Mattapoisett, Mass.	0.1 mile above Mattapoisett Neck Road	1972-73	1.18	0.0	0.0
49	01105924	¹¹ Acushnet River at Leonard Street, near Acushnet, Mass.	Leonard Street	1972-74	7.52	.3	.1
50	01105926	¹¹ Acushnet River at Acushnet, Mass.	Hamlin Road	1972-74	16.4	.9	.3
51	01105928	Buttonwood Brook near South Dartmouth, Mass.	Russells Mills Road	1972-74	2.93	<.1	.0
52	01105933	¹⁰ Paskamanset River near South Dartmouth, Mass.	Russells Mills Road	1972-74	26.2	1.5	.7
53	01105935	Destruction Brook near South Dartmouth, Mass.	Slades Corner Road	1972-74	2.64	.3	.1

¹ Recording gage, refer to table 2.

² Flow affected by diversion.

³ Some regulation by ponds. Flow affected by diversion.

⁴ Some regulation by pond or ponds.

⁵ From Petersen, 1962.

⁶ Diversion from Little South Pond for Plymouth water supply.

⁷ Some regulation by operation of cranberry bogs.

⁸ Flow regulated by ponds.

⁹ Some unpublished daily records during 1959-60 and 1981-82 are on file in the Massachusetts Office.

¹⁰ Streamflow affected by withdrawal of ground water.

¹¹ Diversion from New Bedford Reservoir.