NPDES PERMIT RENEWAL APPLICATION

CITY OF PORTSMOUTH, NEW HAMPSHIRE

PEASE WASTEWATER TREATEMENT FACILITY
135 CORPORATE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

NPDES PERMIT NO. NH0090000

Underwood Engineers, Inc.
Portsmouth, New Hampshire
Project No. 2402

CITY OF PORTSMOUTH

City Hall, One Junkins Avenue
Portsmouth, New Hampshire 03801
jpb@cityofportsmouth.com
(603) 610-7201

John P. Bohenko
City Manager

June 21, 2019

VIA MAIL AND EMAIL
US EPA: Attn: Shelly Puleo
Office of Ecosystem Protection
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: ***NPDES Permit No. NH0090000 – Reapplication***
City of Portsmouth, Pease Wastewater Treatment Facility
Portsmouth, New Hampshire

Dear Ms. Puleo:

The City of Portsmouth has prepared and is submitting the enclosed reapplication form for the Pease Wastewater Treatment Facility (WWTF) National Pollution Discharge Elimination System (NPDES) Permit No. NH0090000. We request that the permit be modified to allow for an increase in the permitted flow of the WWTF from 1.2 Million Gallons per Day (MGD) to 1.77 MGD. The increase in flow is necessary to allow for planned growth at the Pease International Tradeport.

The Pease WWTF current design capacity is rated at 1.2 MGD. The attached flow and load report identify critical timelines when the plant reaches capacity and exceeds capacity. Following regulatory approval to increase discharge flow, the City of Portsmouth (City) plans to upgrade the WWTF to provide treatment at the modified design flow, loads and effluent limitations.

This application includes the following components:

- EPA Form 2A
- EPA Form 2S
- Supporting information – Attachments A through F
- A Coastal Zone Management consistency letter (NOT INCLUDED) will be provided upon request
- Flow and Load Memorandum (**Attachment A**)

Please call my office at 603-766-7201 or Terry Desmarais, City Engineer at 603-766-1421 if you have any questions.

Very truly yours,

John P. Bohenko
City Manager

encl.

cc: Tracy Wood, P.E., NHDES w/ encl.
David Mullen, Pease Development Authority Director w/ encl.
Terry Desmarais, P.E., City Engineer w/ encl.
Steve Clifton, P.E., Underwood Engineers, Inc. w/ encl.

Table of Contents

FORM 2A

FACILITY NAME AND PERMIT NUMBER:
Pease Wastewater Treatment Facility, NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

FORM 2A NPDES

NPDES FORM 2A APPLICATION OVERVIEW

APPLICATION OVERVIEW

Form 2A has been developed in a modular format and consists of a "Basic Application Information" packet and a "Supplemental Application Information" packet. The Basic Application Information packet is divided into two parts. All applicants must complete Parts A and C. Applicants with a design flow greater than or equal to 0.1 mgd must also complete Part B. Some applicants must also complete the Supplemental Application Information packet. The following items explain which parts of Form 2A you must complete.

BASIC APPLICATION INFORMATION:

A. Basic Application Information for all Applicants. All applicants must complete questions A.1 through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9 through A.12.

B. Additional Application Information for Applicants with a Design Flow ≥ 0.1 mgd. All treatment works that have design flows greater than or equal to 0.1 million gallons per day must complete questions B.1 through B.6.

C. Certification. All applicants must complete Part C (Certification).

SUPPLEMENTAL APPLICATION INFORMATION:

D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface waters of the United States and meets one or more of the following criteria must complete Part D (Expanded Effluent Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to provide the information.

E. Toxicity Testing Data. A treatment works that meets one or more of the following criteria must complete Part E (Toxicity Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to submit results of toxicity testing.

F. Industrial User Discharges and RCRA/CERCLA Wastes. A treatment works that accepts process wastewater from any significant industrial users (SIUs) or receives RCRA or CERCLA wastes must complete Part F (Industrial User Discharges and RCRA/CERCLA Wastes). SIUs are defined as:

1. All industrial users subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations (CFR) 403.6 and 40 CFR Chapter I, Subchapter N (see instructions); and
2. Any other industrial user that:
   a. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions); or
   b. Contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
   c. Is designated as an SIU by the control authority.

G. Combined Sewer Systems. A treatment works that has a combined sewer system must complete Part G (Combined Sewer Systems).

ALL APPLICANTS MUST COMPLETE PART C (CERTIFICATION)

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART A. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS:

All treatment works must complete questions A.1 through A.8 of this Basic Application Information packet.

A.1. Facility Information.

Facility name: Pease Wastewater Treatment Facility

Mailing Address: 135 Corporate Drive
Portsmouth NH

Contact person: Terry Desmarais, P.E.

Title: City Engineer Water and Sewer Division

Telephone number: (603) 766-1421

Facility Address (not P.O. Box): 135 Corporate Drive
Portsmouth NH

A.2. Applicant Information. If the applicant is different from the above, provide the following:

Applicant name: City of Portsmouth

Mailing Address: 680 Peverly Hill Road
Portsmouth, NH 03801

Contact person: Terry Desmarais, P.E.

Title: City Engineer Water and Sewer Division

Telephone number: (603) 766-1421

Is the applicant the owner or operator (or both) of the treatment works?

✔ owner ✔ operator

Indicate whether correspondence regarding this permit should be directed to the facility or the applicant.

facility ✔ applicant

A.2. (continued) Permit application was prepared by Underwood Engineers, Inc. for the City.

A.3. Existing Environmental Permits. Provide the permit number of any existing environmental permits that have been issued to the treatment works (include state-issued permits).

NPDES	NH0090000	PSD	
UIC		Other	
RCRA		Other	

A.4. Collection System Information. Provide information on municipalities and areas served by the facility. Provide the name and population of each entity and, if known, provide information on the type of collection system (combined vs. separate) and its ownership (municipal, private, etc.).

Name	Population Served	Type of Collection System	Ownership
Pease Development Auth.	9,000 (Approx.)	Sanitary Sewer	City of Portsmouth
Total population served	9,000 (Approx.)		

A.5. Indian Country.

a. Is the treatment works located in Indian Country?

_____ Yes ✔ No

b. Does the treatment works discharge to a receiving water that is either in Indian Country or that is upstream from (and eventually flows through) Indian Country?

_____ Yes ✔ No

A.6. Flow. Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

a. Design flow rate 1.20 * mgd

	Two Years Ago	Last Year	This Year	
b. Annual average daily flow rate	0.51	0.59	0.65	mgd
c. Maximum daily flow rate	0.89	1.32	1.22	mgd

A.6.a The City requests a flow increase to 1.77 MGD. See Attachment A for flow and load projections.

A.7. Collection System. Indicate the type(s) of collection system(s) used by the treatment plant. Check all that apply. Also estimate the percent contribution (by miles) of each.

✔	Separate sanitary sewer	100 %
_____	Combined storm and sanitary sewer	_____ %

A.8. Discharges and Other Disposal Methods.

a. Does the treatment works discharge effluent to waters of the U.S.? ✔ Yes _____ No

If yes, list how many of each of the following types of discharge points the treatment works uses:

i. Discharges of treated effluent 1

ii. Discharges of untreated or partially treated effluent _____

iii. Combined sewer overflow points _____

iv. Constructed emergency overflows (prior to the headworks) _____

v. Other _____ _____

b. Does the treatment works discharge effluent to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the U.S.? _____ Yes ✔ No

If yes, provide the following for each surface impoundment:

Location: _____

Annual average daily volume discharged to surface impoundment(s) _____ mgd

Is discharge _____ continuous or _____ intermittent?

c. Does the treatment works land-apply treated wastewater? _____ Yes ✔ No

If yes, provide the following for each land application site:

Location: _____

Number of acres: _____

Annual average daily volume applied to site: _____ Mgd

Is land application _____ continuous or _____ intermittent?

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works? _____ Yes ✔ No

If yes, describe the mean(s) by which the wastewater from the treatment works is discharged or transported to the other treatment works (e.g., tank truck, pipe).

_____

If transport is by a party other than the applicant, provide:

Transporter name: _____

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

For each treatment works that receives this discharge, provide the following:

Name: _____

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

If known, provide the NPDES permit number of the treatment works that receives this discharge. _____

Provide the average daily flow rate from the treatment works into the receiving facility. _____ mgd

e. Does the treatment works discharge or dispose of its wastewater in a manner not included in A.8.a through A.8.d above (e.g., underground percolation, well injection)? _____ Yes ✔ No

If yes, provide the following for each disposal method:

Description of method (including location and size of site(s) if applicable):

_____

Annual daily volume disposed of by this method: _____

Is disposal through this method _____ continuous or _____ intermittent?

WASTEWATER DISCHARGES:

If you answered "yes" to question A.8.a, complete questions A.9 through A.12 **once for each outfall** (including bypass points) through which effluent is discharged. Do not include information on combined sewer overflows in this section. **If you answered "no" to question A.8.a**, go to Part B, "Additional Application Information for Applicants with a Design Flow Greater than or Equal to 0.1 mgd."

A.9. Description of Outfall.

a. Outfall number: 005

b. Location:
Portsmouth (City or town, if applicable) — 08301 (Zip Code)
Rockingham (County) — New Hampshire (State)
43* 06' 10.8" (Latitude) — 70* 47' 25.8" (Longitude)

c. Distance from shore (if applicable): 300.00 ft.

d. Depth below surface (if applicable): Varies. 15' to 30' below mean water level ft.

e. Average daily flow rate: 1.2 mgd

f. Does this outfall have either an intermittent or a periodic discharge? ____ Yes ✔ No (go to A.9.g.)

If yes, provide the following information:

Number of times per year discharge occurs: ____

Average duration of each discharge: ____

Average flow per discharge: ____ mgd

Months in which discharge occurs: ____

g. Is outfall equipped with a diffuser? ✔ Yes ____ No

A.10. Description of Receiving Waters.

a. Name of receiving water: Piscataqua River

b. Name of watershed (if known): ____

United States Soil Conservation Service 14-digit watershed code (if known): ____

c. Name of State Management/River Basin (if known): Piscataqua-Salmon Falls

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): 01060003

d. Critical low flow of receiving stream (if applicable):
acute NA cfs chronic ____ cfs

e. Total hardness of receiving stream at critical low flow (if applicable): ____ mg/l of $CaCO_3$

A.10.d. (continued) Not applicable because the receiving water is a tidal water body. The existing diffuser provides greater than 100:1 dilution at the diffuser design flow (ADF = 1.2 MGD).

FACILITY NAME AND PERMIT NUMBER:
Pease Wastewater Treatment Facility, NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

✔ Primary ✔ Secondary

____ Advanced ____ Other. Describe: Sequencing Batch Reactor

b. Indicate the following removal rates (as applicable):

Design BOD_5 removal or Design $CBOD_5$ removal	90.00	%
Design SS removal	90.00	%
Design P removal		%
Design N removal		%
Other _____		%

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

Chlorination (hypochlorite)

If disinfection is by chlorination, is dechlorination used for this outfall? ✔ Yes ____ No

d. Does the treatment plant have post aeration? ____ Yes ✔ No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: 005

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	6.70	s.u.			
pH (Maximum)	7.82	s.u.			
Flow Rate	1.32	MGD	0.58	MGD	1,180.00
Temperature (Winter)	21.90	deg C	16.00	deg C	610.00
Temperature (Summer)	28.40	deg C	23.60	deg C	523.00

* For pH please report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
		Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.								
BIOCHEMICAL OXYGEN	BOD-5	51.00	mg/L	8.50	mg/L	330.00	SM 5210B	N/A
DEMAND (Report one)	CBOD-5							
FECAL COLIFORM		62.70		1.97		1,144.00	SM 92222 D	N/A
TOTAL SUSPENDED SOLIDS (TSS)		76.70	mg/L	8.00	mg/L	322.00	SM 2540	

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

BASIC APPLICATION INFORMATION

PART B. ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREATER THAN OR EQUAL TO 0.1 MGD (100,000 gallons per day).

All applicants with a design flow rate ≥ 0.1 mgd must answer questions B.1 through B.6. All others go to Part C (Certification).

B.1. Inflow and Infiltration. Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration.

50,000.00 gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

The City intends to study the infiltration and inflow in the sewer collection system as funding becomes available.

B.2. Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. (You may submit more than one map if one map does not show the entire area.)

a. The area surrounding the treatment plant, including all unit processes.

b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.

c. Each well where wastewater from the treatment plant is injected underground.

d. Wells, springs, other surface water bodies, and drinking water wells that are: 1) within 1/4 mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.

e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.

f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, and/or disposed.

B.2. Maps and process flow schematics are provided in Attachment B.

B.3. Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system. Also provide a water balance showing all treatment units, including disinfection (e.g, chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units. Include a brief narrative description of the diagram.

B.2. Maps and process flow schematics are provided in Attachment B.

B.4. Operation/Maintenance Performed by Contractor(s).

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor? ____Yes ✔No

If yes, list the name, address, telephone number, and status of each contractor and describe the contractor's responsibilities (attach additional pages if necessary).

Name: _____

Mailing Address: _____

_____

Telephone Number: _____

Responsibilities of Contractor: _____

B.5. Scheduled Improvements and Schedules of Implementation. Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses to question B.5 for each. (If none, go to question B.6.)

a. List the outfall number (assigned in question A.9) for each outfall that is covered by this implementation schedule.

005

b. Indicate whether the planned improvements or implementation schedule are required by local, State, or Federal agencies.

✔Yes ____No

c If the answer to B.5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).
City is constructing a new headworks and is planning for upgrades to meet the proposed increase in flow and load for the 2045 projection.

d. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

Implementation Stage *	Schedule MM / DD / YYYY	Actual Completion MM / DD / YYYY
– Begin construction	___/ ___/ _____	___/ ___/ _____
– End construction	___/ ___/ _____	___/ ___/ _____
– Begin discharge	___/ ___/ _____	___/ ___/ _____
– Attain operational level	___/ ___/ _____	___/ ___/ _____

* TO BE DETERMINED

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? ____Yes ____No

Describe briefly: _____

B.6. EFFLUENT TESTING DATA (GREATER THAN O.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number: 005

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)	8.20	mg/L	3.70	mg/L	112.00	SM 4500-NH3	0.1/0.1
CHLORINE (TOTAL RESIDUAL, TRC)	1.47	mg/L	0.01	mg/L	1,065.00	SM 4500-CL D	0.02
DISSOLVED OXYGEN	5.07	mg/L	3.82	mg/L	4.00	SM 4500-O	0.1
TOTAL KJELDAHL NITROGEN (TKN)	26.00	mg/L	8.60	mg/L	112.00	SM 4500-NH3 G	0.1/0.1
NITRATE PLUS NITRITE NITROGEN	12.00	mg/L	3.60	mg/L	111.00	SM 4500-NO3 F	0.05/0.008
OIL and GREASE	ND	mg/L	ND	mg/L	4.00	EPA 1664 A	10
PHOSPHORUS (Total)	52.00	mg/L	41.00	mg/L	4.00	SM 4500-P E	0.02/0.008
TOTAL DISSOLVED SOLIDS (TDS)	2,100.00	mg/L	1,850.00	mg/L	4.00	SM 2540 C	10/0.4
OTHER							

END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

BASIC APPLICATION INFORMATION

PART C. CERTIFICATION

All applicants must complete the Certification Section. Refer to instructions to determine who is an officer for the purposes of this certification. All applicants must complete all applicable sections of Form 2A, as explained in the Application Overview. Indicate below which parts of Form 2A you have completed and are submitting. By signing this certification statement, applicants confirm that they have reviewed Form 2A and have completed all sections that apply to the facility for which this application is submitted.

Indicate which parts of Form 2A you have completed and are submitting:

✔ Basic Application Information packet

Supplemental Application Information packet:

✔ Part D (Expanded Effluent Testing Data)

✔ Part E (Toxicity Testing: Biomonitoring Data)

✔ Part F (Industrial User Discharges and RCRA/CERCLA Wastes)

____ Part G (Combined Sewer Systems)

ALL APPLICANTS MUST COMPLETE 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, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title: John P. Bohenko, City Manager

Signature: John P. B

Telephone number: 603-610-7201

Date signed: 6-21-19

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

SUPPLEMENTAL APPLICATION INFORMATION

PART D. EXPANDED EFFLUENT TESTING DATA

Refer to the directions on the cover page to determine whether this section applies to the treatment works.

Effluent Testing: 1.0 mgd and Pretreatment Treatment Works. If the treatment works has a design flow greater than or equal to 1.0 mgd or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information and any other information required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analyses conducted using 40 CFR Part 136 methods. In addition, these data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall number: 005 See Attachment C (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS, AND HARDNESS.											
ANTIMONY	0.315	ug/L	0.00169	lb/d	0.23	ug/L	0.0014	lb/d	4	EPA 200.8	0.2/0.009
ARSENIC	4.63	ug/L	0.03672	lb/d	4.63	ug/L	0.0256	lb/d	4	EPA 200.8	0.3/0.1
BERYLLIUM	0.004	ug/L	0.00003	lb/d	0.004	ug/L	0.00003	lb/d	4	EPA 200.8	0.06/0.004
CADMIUM	0.118	ug/L	0.00094	lb/d	0.07	ug/L	0.00047	lb/d	4	EPA 200.8	0.02/0.008
CHROMIUM	0.730	ug/L	0.0047	lb/d	0.57	ug/L	0.0036	lb/d	4	EPA 200.8	0.1/0.02
COPPER	19.8	ug/L	0.139	lb/d	14.47	ug/L	0.0927	lb/d	4	EPA 200.8	0.1/0.02
LEAD	1.03	ug/L	0.0046	lb/d	0.44	ug/L	0.00247	lb/d	4	EPA 200.8	0.04/0.005
MERCURY	6.49	ug/L	0.0514	lb/d	4.24	ug/L	0.0295	lb/d	4	EPA 1631 E	0.5/0.08
NICKEL	8.31	ug/L	0.0372	lb/d	5.04	ug/L	0.0298	lb/d	4	EPA 200.8	0.1/0.04
SELENIUM	2.23	ug/L	0.0177	lb/d	1.62	ug/L	0.0107	lb/d	4	EPA 200.8	0.6/0.44
SILVER	0.030	ug/L	0.00024	lb/d	0.020	ug/L	0.00015	lb/d	4	EPA 200.8	0.02/0.002
THALLIUM	ND	ug/L	0.00005	lb/d	ND	ug/L	0.00004	lb/d	4	EPA 200.8	0.02/0.006
ZINC	117	ng/L	0.00093	lb/d	92.43	ng/L	0.0006	lb/d	4	EPA 200.8	0.5/0.16
CYANIDE	0.012	mg/L	0.056	lb/d	0.0083	mg/L	0.051	lb/d	4	SM 4500-CN E	0.02/0.007
TOTAL PHENOLIC COMPOUNDS	ND	Mg/L	ND	LB/D	ND	Mg/L	ND	LB/D	4	EPA 420.1	0.05
HARDNESS (AS $CaCO_3$)											
Use this space (or a separate sheet) to provide information on other metals requested by the permit writer.											

FACILITY NAME AND PERMIT NUMBER:
Pease Wastewater Treatment Facility, NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
VOLATILE ORGANIC COMPOUNDS.											
ACROLEIN	<10	ug/L	<0.0793	lb/d	<10	ug/L	<0.0642	lb/d	4	SW 846 8270/EPA 680 modified	10
ACRYLONITRILE	<10	ug/L	<0.0793	lb/d	<10	ug/L	<0.0642	lb/d	4	SW 846 8270/EPA 680 modified	10
BENZENE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
BROMOFORM	2.2	ug/L	0.0108	lb/d	2.05	ug/L	0.0103	lb/d	4	SW 846 8270/EPA 680 modified	2
CARBON TETRACHLORIDE	<2	ug/L	<0.0108	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
CLOROBENZENE	<2	ug/L	<0.0108	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
CHLORODIBROMO-METHANE	24	ug/L	0.107	lb/d	14.65	ug/L	0.102	lb/d	4	SW 846 8270/EPA 680 modified	2
CHLOROETHANE	<2	ug/L	<0.0107	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
2-CHLORO-ETHYLVINYL ETHER	<4	ug/L	<0.0317	lb/d	<4	ug/L	<0.0257	lb/d	4	SW 846 8270/EPA 680 modified	4
CHLOROFORM	92	ug/L	0.495	lb/d	64.3	ug/L	0.395	lb/d	4	SW 846 8270/EPA 680 modified	2
DICHLOROBROMO-METHANE	24	ug/L	0.107	lb/d	14.7	ug/L	0.102	lb/d	4	SW 846 8270/EPA 680 modified	2
1,1-DICHLOROETHANE	<2	ug/L	<0.0158	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
1,2-DICHLOROETHANE	<2	ug/L	<0.0158	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
TRANS-1,2-DICHLORO-ETHYLENE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
1,1-DICHLOROETHYLENE		ug/L		lb/d		ug/L		lb/d		Not analyzed	
1,2-DICHLOROPROPANE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
1,3-DICHLORO-PROPYLENE		ug/L		lb/d		ug/L		lb/d		Not analyzed	
ETHYLBENZENE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
METHYL BROMIDE		ug/L		lb/d		ug/L		lb/d		Not analyzed	
METHYL CHLORIDE		ug/L		lb/d		ug/L		lb/d		Not analyzed	
METHYLENE CHLORIDE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
1,1,2,2-TETRACHLORO-ETHANE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
TETRACHLORO-ETHYLENE		ug/L		lb/d		ug/L		lb/d		Not analyzed	
TOLUENE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2

FACILITY NAME AND PERMIT NUMBER:
Pease Wastewater Treatment Facility, NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
1,1,1-TRICHLOROETHANE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
1,1,2-TRICHLOROETHANE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
TRICHLORETHYLENE		ug/L		lb/d		ug/L		lb/d		Not Analyzed	
VINYL CHLORIDE	<2	ug/L	<0.0159	lb/d	<2	ug/L	<0.0129	lb/d	4	SW 846 8270/EPA 680 modified	2
Use this space (or a separate sheet) to provide information on other volatile organic compounds requested by the permit writer.											
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL		ug/L		lb/d		ug/L		lb/d		Not Analyzed	
2-CHLOROPHENOL	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
2,4-DICHLOROPHENOL	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
2,4-DIMETHYLPHENOL	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
4,6-DINITRO-O-CRESOL		ug/L		lb/d		ug/L		lb/d		Not Analyzed	
2,4-DINITROPHENOL	<5	ug/L	<0.0397	lb/d	<5	ug/L	<0.0321	lb/d	4	SW 846 8270/EPA 680 modified	5
2-NITROPHENOL	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
4-NITROPHENOL	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
PENTACHLOROPHENOL	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
PHENOL	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
2,4,6-TRICHLOROPHENOL	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
Use this space (or a separate sheet) to provide information on other acid-extractable compounds requested by the permit writer.											
BASE-NEUTRAL COMPOUNDS.											
ACENAPHTHENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
ACENAPHTHYLENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
ANTHRACENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BENZIDINE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BENZO(A)ANTHRACENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BENZO(A)PYRENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3

FACILITY NAME AND PERMIT NUMBER:
Pease Wastewater Treatment Facility, NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
3,4 BENZO-FLUORANTHENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BENZO(GHI)PERYLENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BENZO(K)FLUORANTHENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BIS (2-CHLOROETHOXY) METHANE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BIS (2-CHLOROETHYL)-ETHER	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BIS (2-CHLOROISO-PROPYL) ETHER	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BIS (2-ETHYLHEXYL) PHTHALATE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
4-BROMOPHENYL PHENYL ETHER	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
BUTYL BENZYL PHTHALATE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
2-CHLORONAPHTHALENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
4-CHLORPHENYL PHENYL ETHER	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
CHRYSENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
DI-N-BUTYL PHTHALATE	21	ug/L	0.166	lb/d	14.7	ug/L	0.113	lb/d	4	SW 846 8270/EPA 680 modified	3
DI-N-OCTYL PHTHALATE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
DIBENZO(A,H) ANTHRACENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
1,2-DICHLOROBENZENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
1,3-DICHLOROBENZENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
1,4-DICHLOROBENZENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
3,3-DICHLOROBENZIDINE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
DIETHYL PHTHALATE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
DIMETHYL PHTHALATE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
2,4-DINITROTOLUENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
2,6-DINITROTOLUENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
1,2-DIPHENYLHYDRAZINE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3

FACILITY NAME AND PERMIT NUMBER:
Pease Wastewater Treatment Facility, NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
FLUORANTHENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
FLUORENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
HEXACHLOROBENZENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
HEXACHLOROBUTADIENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
HEXACHLOROCYCLO-PENTADIENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
HEXACHLOROETHANE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
INDENO(1,2,3-CD)PYRENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
ISOPHORONE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
NAPHTHALENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
NITROBENZENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4		3
N-NITROSODI-N-PROPYLAMINE	4.4	ug/L	<0.0238	lb/d	3.35	ug/L	0.0208	lb/d	4	SW 846 8270/EPA 680 modified	3
N-NITROSODI- METHYLAMINE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
N-NITROSODI-PHENYLAMINE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
PHENANTHRENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
PYRENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3
1,2,4-TRICHLOROBENZENE	<3	ug/L	<0.0238	lb/d	<3	ug/L	<0.0198	lb/d	4	SW 846 8270/EPA 680 modified	3

Use this space (or a separate sheet) to provide information on other base-neutral compounds requested by the permit writer.

Use this space (or a separate sheet) to provide information on other pollutants (e.g., pesticides) requested by the permit writer.

END OF PART D.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART E. TOXICITY TESTING DATA

POTWs meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points: 1) POTWs with a design flow rate greater than or equal to 1.0 mgd; 2) POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or 3) POTWs required by the permitting authority to submit data for these parameters.

- At a minimum, these results must include quarterly testing for a 12-month period within the past 1 year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute and/or chronic toxicity, depending on the range of receiving water dilution. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
- In addition, submit the results of any other whole effluent toxicity tests from the past four and one-half years. If a whole effluent toxicity test conducted during the past four and one-half years revealed toxicity, provide any information on the cause of the toxicity or any results of a toxicity reduction evaluation, if one was conducted.
- If you have already submitted any of the information requested in Part E, you need not submit it again. Rather, provide the information requested in question E.4 for previously submitted information. If EPA methods were not used, report the reasons for using alternate methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E.

If no biomonitoring data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

E.1. Required Tests.

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years.

____chronic 10 acute E.1. (continued) See Attachment D for test summaries

E.2. Individual Test Data. Complete the following chart for each whole effluent toxicity test conducted in the last four and one-half years. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

	Test number:_____	Test number:_____	Test number:_____
a. Test information.			
Test species & test method number			
Age at initiation of test			
Outfall number			
Dates sample collected			
Date test started			
Duration			
b. Give toxicity test methods followed.			
Manual title			
Edition number and year of publication			
Page number(s)			
c. Give the sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used.			
24-Hour composite			
Grab			
d. Indicate where the sample was taken in relation to disinfection. (Check all that apply for each)			
Before disinfection			
After disinfection			
After dechlorination			

	Test number:_____	Test number:_____	Test number:_____
e. Describe the point in the treatment process at which the sample was collected.			
Sample was collected:			
f. For each test, include whether the test was intended to assess chronic toxicity, acute toxicity, or both.			
Chronic toxicity			
Acute toxicity			
g. Provide the type of test performed.			
Static			
Static-renewal			
Flow-through			
h. Source of dilution water. If laboratory water, specify type; if receiving water, specify source.			
Laboratory water			
Receiving water			
i. Type of dilution water. It salt water, specify "natural" or type of artificial sea salts or brine used.			
Fresh water			
Salt water			
j. Give the percentage effluent used for all concentrations in the test series.			
k. Parameters measured during the test. (State whether parameter meets test method specifications)			
pH			
Salinity			
Temperature			
Ammonia			
Dissolved oxygen			
l. Test Results.			
Acute:			
Percent survival in 100% effluent	%	%	%
LC_{50}			
95% C.I.	%	%	%
Control percent survival	%	%	%
Other (describe)			

Chronic:			
NOEC	%	%	%
IC_{25}	%	%	%
Control percent survival	%	%	%
Other (describe)			
m. Quality Control/Quality Assurance.			
Is reference toxicant data available?			
Was reference toxicant test within acceptable bounds?			
What date was reference toxicant test run (MM/DD/YYYY)?			
Other (describe)			

E.3. Toxicity Reduction Evaluation. Is the treatment works involved in a Toxicity Reduction Evaluation?

____Yes ✔ No If yes, describe: _____

E.4. Summary of Submitted Biomonitoring Test Information. If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date submitted: 2 tests per year (MM/DD/YYYY)

Summary of results: (see instructions)
See Attachment D for test summaries

END OF PART E.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes ✔ No

While the City does not have an EPA required program, the City implements a formal permitting program for all industrial users.

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 6.00

b. Number of CIUs. 0.00

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: See Attachment E for Significant Industrial User Information

Mailing Address: _____

_____

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

_____

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): _____

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____continuous or _____intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____continuous or _____intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ____Yes ____No

b. Categorical pretreatment standards ____Yes ____No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes____No If yes, describe each episode.

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ✔No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ✔No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART G. COMBINED SEWER SYSTEMS

If the treatment works has a combined sewer system, complete Part G.

G.1. System Map. Provide a map indicating the following: (may be included with Basic Application Information)

a. All CSO discharge points.

b. Sensitive use areas potentially affected by CSOs (e.g., beaches, drinking water supplies, shellfish beds, sensitive aquatic ecosystems, and outstanding natural resource waters).

c. Waters that support threatened and endangered species potentially affected by CSOs.

G.2. System Diagram. Provide a diagram, either in the map provided in G.1. or on a separate drawing, of the combined sewer collection system that includes the following information:

a. Locations of major sewer trunk lines, both combined and separate sanitary.

b. Locations of points where separate sanitary sewers feed into the combined sewer system.

c. Locations of in-line and off-line storage structures.

d. Locations of flow-regulating devices.

e. Locations of pump stations.

CSO OUTFALLS:

Complete questions G.3 through G.6 once for each CSO discharge point.

G.3. Description of Outfall.

a. Outfall number _____

b. Location _____ _____
(City or town, if applicable) (Zip Code)

_____ _____
(County) (State)

_____ _____
(Latitude) (Longitude)

c. Distance from shore (if applicable) _____ ft.

d. Depth below surface (if applicable) _____ ft.

e. Which of the following were monitored during the last year for this CSO?

____Rainfall ____CSO pollutant concentrations ____CSO frequency

____CSO flow volume ____Receiving water quality

f. How many storm events were monitored during the last year? _____

G.4. CSO Events.

a. Give the number of CSO events in the last year.

_____ events (___ actual or ___ approx.)

b. Give the average duration per CSO event.

_____ hours (____ actual or ____ approx.)

c. Give the average volume per CSO event.

_____ million gallons (_____ actual or _____ approx.)

d. Give the minimum rainfall that caused a CSO event in the last year.

_____ inches of rainfall

G.5. Description of Receiving Waters.

a. Name of receiving water: _____

b. Name of watershed/river/stream system: _____

United States Soil Conservation Service 14-digit watershed code (if known): _____

c. Name of State Management/River Basin: _____

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): _____

G.6. CSO Operations.

Describe any known water quality impacts on the receiving water caused by this CSO (e.g., permanent or intermittent beach closings, permanent or intermittent shell fish bed closings, fish kills, fish advisories, other recreational loss, or violation of any applicable State water quality standard).

_____

_____

END OF PART G.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

Additional information, if provided, will appear on the following pages.

FORM 2S

FACILITY NAME AND PERMIT NUMBER:

Pease WWTF NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

FORM 2S NPDES

NPDES FORM 2S APPLICATION OVERVIEW

PRELIMINARY INFORMATION

This page is designed to indicate whether the applicant is to complete Part 1 or Part 2. Review each category, and then complete Part 1 or Part 2, as indicated. For purposes of this form, the term "you" refers to the applicant. "This facility" and "your facility" refer to the facility for which application information is submitted.

FACILITIES INCLUDED IN ANY OF THE FOLLOWING CATEGORIES MUST COMPLETE PART 2 (PERMIT APPLICATION INFORMATION).

1. Facilities with a currently effective NPDES permit.

2. Facilities which have been directed by the permitting authority to submit a full permit application at this time.

ALL OTHER FACILITIES MUST COMPLETE PART 1 (LIMITED BACKGROUND INFORMATION).

PART 1: LIMITED BACKGROUND INFORMATION

This part should be completed only by "sludge-only" facilities - that is, facilities that do not currently have, and are not applying for, an NPDES permit for a direct discharge to a surface body of water.

For purposes of this form, the term "you" refers to the applicant. "This facility" and "your facility" refer to the facility for which application information is submitted.

1. Facility Information.

a. Facility name _____

b. Mailing Address _____

_____

c. Contact person _____

Title _____

Telephone number _____

d. Facility Address (not P.O. B ox) _____

_____

e. Indicate the type of facility

_____ Publicly owned treatment works (POTW) _____ Privately owned treatment works

_____ Federally owned treatment works _____ Blending or treatment operation

_____ Surface disposal site _____ Sewage sludge incinerator

_____ Other (describe) _____

2. Applicant Information.

a. Applicant name _____

b. Mailing Address _____

_____

c. Contact person _____

Title _____

Telephone number _____

d. Is the applicant the owner or operator (or both) of this facility?

_____ owner _____ operator

e. Should correspondence regarding this permit be directed to the facility or the applicant?

_____ facility _____ applicant

3. Sewage Sludge Amount. Provide the total dry metric tons per latest 365 day period of sewage sludge handled under the following practices:

a. Amount generated at the facility _____ dry metric tons
b. Amount received from off site _____ dry metric tons
c. Amount treated or blended on site _____ dry metric tons
d. Amount sold or given away in a bag or other container for application to the land _____ dry metric tons
e. Amount of bulk sewage sludge shipped off site for treatment or blending _____ dry metric tons
f. Amount applied to the land in bulk form _____ dry metric tons
g. Amount placed on a surface disposal site _____ dry metric tons
h. Amount fired in a sewage sludge incinerator _____ dry metric tons
i. Amount sent to a municipal solid waste landfill _____ dry metric tons
j. Amount used or disposed by another practice _____ dry metric tons
Describe _____

4. Pollutant Concentrations. Using the table below or a separate attachment, provide existing sewage sludge monitoring data for the pollutants for which limits in sewage sludge have been established in 40 CFR part 503 for this facility's expected use or disposal practices. If available, base data on three or more samples taken at least one month apart and no more than four and one-half years old.

POLLUTANT	CONCENTRATION (mg/kg dry weight)	ANALYTICAL METHOD	DETECTION LEVEL FOR ANALYSIS
ARSENIC			
CADMIUM			
CHROMIUM			
COPPER			
LEAD			
MERCURY			
MOLYBDENUM			
NICKEL			
SELENIUM			
ZINC			

5. Treatment Provided At Your Facility.

a. Which class of pathogen reduction does the sewage sludge meet at your facility?

_____ Class A _____ Class B _____ Neither or unknown

b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge:

_____

_____

_____

_____

_____

c. Which vector attraction reduction option is met for the sewage sludge at your facility?

_____ Option 1 (Minimum 38 percent reduction in volatile solids)
_____ Option 2 (Anaerobic process, with bench-scale demonstration)
_____ Option 3 (Aerobic process, with bench-scale demonstration)
_____ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
_____ Option 5 (Aerobic processes plus raised temperature)
_____ Option 6 (Raise pH to 12 and retain at 11.5)
_____ Option 7 (75 percent solids with no unstabilized solids)
_____ Option 8 (90 percent solids with unstabilized solids)
_____ Option 9 (Injection below land surface)
_____ Option 10 (Incorporation into soil within 6 hours)
_____ Option 11 (Covering active sewage sludge unit daily)
_____ None or unknown

d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge:

_____
_____

6. Sewage Sludge Sent to Other Facilities. Does the sewage sludge from your facility meet the Table 1 ceiling concentrations, the Table 3 pollutant concentrations, Class A pathogen requirements, and one of the vector attraction options 1-8?
_____ Yes _____ No

If yes, go to question 8 (Certification).

If no, is sewage sludge from your facility provided to another facility for treatment, distribution, use, or disposal?
_____ Yes _____ No

If no, go to question 7 (Use and Disposal Sites).

If yes, provide the following information for the facility receiving the sewage sludge:

a. Facility name _____

b. Mailing address _____
_____

c. Contact person _____

Title _____

Telephone number _____

d. Which activities does the receiving facility provide? (Check all that apply)

_____ Treatment or blending
_____ Land application
_____ Incineration
_____ Sale or give-away in bag or other container
_____ Surface disposal
_____ Other (describe):

_____
_____

7. Use and Disposal Sites. Provide the following information for each site on which sewage sludge from this facility is used or disposed:

a. Site name or number _____

b. Contact person _____

Title _____

Telephone _____

c. Site location (Complete 1 or 2)

1. Street or Route # _____

County _____

City or Town _____ State _____ Zip _____

2. Latitude _____ Longitude_____

d. Site type (Check all that apply)

____ Agricultural ____ Lawn or home garden ____ Forest
____ Surface disposal ____ Public Contact ____ Incineration
____ Reclamation ____ Municipal Solid Waste Landfill ____ Other (describe): _____

8. Certification. Sign the certification statement below. (Refer to instructions to determine who is an officer for purposes of this certification.)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with the 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, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title _____

Signature _____

Telephone number _____

Date signed _____

SEND COMPLETED FORMS TO:

PART 2: PERMIT APPLICATION INFORMATION

Complete this part if you have an effective NPDES permit or have been directed by the permitting authority to submit a full permit application at this time. In other words, complete this part if your facility has, or is applying for, an NPDES permit.

For purposes of this form, the term "you" refers to the applicant. "This facility" and "your facility" refer to the facility for which application information is submitted.

APPLICATION OVERVIEW — SEWAGE SLUDGE USE OR DISPOSAL INFORMATION

Part 2 is divided into five sections (A-E). Section A pertains to all applicants. The applicability of Sections B, C, D, and E depends on your facility's sewage sludge use or disposal practices. The information provided on this page indicates which sections of Part 2 to fill out.

1. SECTION A: GENERAL INFORMATION.

Section A must be completed by all applicants

2. SECTION B: GENERATION OF SEWAGE SLUDGE OR PREPARATION OF A MATERIAL DERIVED FROM SEWAGE SLUDGE.

Section B must be completed by applicants who either:

1) Generate sewage sludge, or

2) Derive a material from sewage sludge.

3. SECTION C: LAND APPLICATION OF BULK SEWAGE SLUDGE.

Section C must be completed by applicants who either:

1) Apply sewage to the land, or

2) Generate sewage sludge which is applied to the land by others.

NOTE: Applicants who meet either or both of the two above criteria are exempted from this requirement if all sewage sludge from their facility falls into one of the following three categories:

1) The sewage sludge from this facility meets the ceiling and pollutant concentrations, Class A pathogen reduction requirements, and one of vector attraction reduction options 1-8, as identified in the instructions, or
2) The sewage sludge from this facility is placed in a bag or other container for sale or give-away for application to the land, or
3) The sewage sludge from this facility is sent to another facility for treatment or blending.

4. SECTION D: SURFACE DISPOSAL

Section D must be completed by applicants who own or operate a surface disposal site.

5. SECTION E: INCINERATION

Section E must be completed by applicants who own or operate a sewage sludge incinerator.

FACILITY NAME AND PERMIT NUMBER:
Pease WWTF NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

A. GENERAL INFORMATION

All applicants must complete this section.

A.1. Facility Information.

a. Facility name: Pease Wastewater Treatment Facility

b. Mailing Address: 135 Corporate Drive
Porsmouth, NH

c. Contact person: Terry Desmarais, P.E.

Title: City Engineer Water and Sewer Division

Telephone number: (603) 766-1421

d. Facility Address (not P.O. Box): 135 Corporate Drive
Portsmouth, NH

e. Is this facility a Class I sludge management facility? _____ Yes ✔ No

f. Facility design flow rate: 1.20 mgd

g. Total population served: 9,000.00

h. Indicate the type of facility:

✔ Publicly owned treatment works (POTW)
_____ Privately owned treatment works
_____ Federally owned treatment works
_____ Blending or treatment operation
_____ Surface disposal site
_____ Sewage sludge incinerator
_____ Other (describe)

A.2. Applicant Information. If the applicant is different from the above, provide the following:

a. Applicant name: City of Portsmouth

b. Mailing Address: 680 Peverly Hill Road
Portsmouth, NH 03801

c. Contact person: Terry Desmarais, P.E.

Title: City Engineer Water and Sewer Division

Telephone number: (603) 766-1421

2.A. (continued) The application was prepared by Underwood Engineers for the City.

d. Is the applicant the owner or operator (or both) of this facility?

✔ owner ✔ operator

e. Should correspondence regarding this permit should be directed to the facility or the applicant.

_____ facility ✔ applicant

A.3. Permit Information.

a. Facility's NPDES permit number (if applicable): NH0090000

b. List, on this form or an attachment, all other Federal, State, and local permits or construction approvals received or applied for that regulate this facility's sewage sludge management practices:

Permit Number	Type of Permit

A.4. Indian Country. Does any generation, treatment, storage, application to land, or disposal of sewage sludge from this facility occur in Indian Country?

_____Yes ___✔___No If yes, describe: _____

A.5. Topographic Map. Provide a topographic map or maps (or other appropriate map(s) if a topographic map is unavailable) that show the following information. Map(s) should include the area one mile beyond all property boundaries of the facility:

a. Location of all sewage sludge management facilities, including locations where sewage sludge is stored, treated, or disposed.

b. Location of all wells, springs, and other surface water bodies, listed in public records or otherwise known to the applicant within 1/4 mile of the facility property boundaries.

WWTF Maps and Process Flow Schematics are provided in Attachment B.

A.6. Line Drawing. Provide a line drawing and/or a narrative description that identifies all sewage sludge processes that will be employed during the term of the permit, including all processes used for collecting, dewatering, storing, or treating sewage sludge, the destination(s) of all liquids and solids leaving each unit, and all methods used for pathogen reduction and vector attraction reduction.

WWTF Maps and Process Flow Schematics are provided in Attachment B.

A.7. Contractor Information.

Are any operational or maintenance aspects of this facility related to sewage sludge generation, treatment, use or disposal the responsibility of a contractor? _____Yes ___✔___No

If yes, provide the following for each contractor (attach additional pages if necessary):

a. Name _____

b. Mailing Address _____

_____

c. Telephone Number _____

d. Responsibilities of contractor _____

_____

FACILITY NAME AND PERMIT NUMBER:
Pease WWTF NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

A.8. Pollution Concentrations: Using the table below or a separate attachment, provide sewage sludge monitoring data for the pollutants for which limits in sewage sludge have been established in 40 CFR Part 503 for this facility's expected use or disposal practices. All data must be based on three or more samples taken at least one month apart and must be no more than four and one-half years old.

POLLUTANT	CONCENTRATION (mg/kg dry weight)	ANALYTICAL METHOD	DETECTION LEVEL FOR ANALYSIS
ARSENIC	ND	6020	0.5
CADMIUM	ND	6020	0.1
CHROMIUM	ND	6020	0.1
COPPER	Not Analyzed		
LEAD	ND	6020	0.5
MERCURY	ND	6020	0.01
MOLYBDENUM	Not Analyzed		
NICKEL	Not Analyzed		
SELENIUM	ND	6020	0.1
ZINC	Not Analyzed		

A.9. Certification. Read and submit the following certification statement with this application. Refer to the instructions to determine who is an officer for purposes of this certification. Indicate which parts of Form 2S you have completed and are submitting:

_____ Part 1 Limited Background Information packet

Part 2 Permit Application Information packet:

✔ Section A (General Information)

✔ Section B (Generation of Sewage Sludge or Preparation of a Material Derived from Sewage Sludge)

_____ Section C (Land Application of Bulk Sewage Sludge)

_____ Section D (Surface Disposal)

_____ Section E (Incineration)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with the 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, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title John P. Bohenko, City Manager

Signature _____ Date signed 6-21-19

Telephone number 603-610-7201

Upon request of the permitting authority, you must submit any other information necessary to assess sewage sludge use or disposal practices at your facility or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

FACILITY NAME AND PERMIT NUMBER:
Pease WWTF NH0090000

Form Approved 1/14/99
OMB Number 2040-0086

B. GENERATION OF SEWAGE SLUDGE OR PREPARATION OF A MATERIAL DERIVED FROM SEWAGE SLUDGE

Complete this section if your facility generates sewage sludge or derives a material from sewage sludge.

B.1. Amount Generated On Site.

Total dry metric tons per 365-day period generated at your facility: 172.00 dry metric tons

B.1. (continued) From 2015 sludge hauling records

B.2. Amount Received from Off Site. If your facility receives sewage sludge from another facility for treatment, use, or disposal, provide the following information for each facility from which sewage sludge is received. If you receive sewage sludge from more than one facility, attach additional pages as necessary.

a. Facility name _____

b. Mailing Address _____

_____

c. Contact person _____

Title _____

Telephone number _____

d. Facility Address (not P.O. Box) _____

_____

e. Total dry metric tons per 365-day period received from this facility: _____ dry metric tons

f. Describe, on this form or on another sheet of paper, any treatment processes known to occur at the off-site facility, including blending activities and treatment to reduce pathogens or vector attraction characteristics.

_____

_____

B.3. Treatment Provided At Your Facility.

a. Which class of pathogen reduction is achieved for the sewage sludge at your facility?

_____ Class A _____ Class B ✔ Neither or unknown

b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge:

_____

_____

c. Which vector attraction reduction option is met for the sewage sludge at your facility?

_____ Option 1 (Minimum 38 percent reduction in volatile solids)
_____ Option 2 (Anaerobic process, with bench-scale demonstration)
_____ Option 3 (Aerobic process, with bench-scale demonstration)
_____ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
_____ Option 5 (Aerobic processes plus raised temperature)
_____ Option 6 (Raise pH to 12 and retain at 11.5)
_____ Option 7 (75 percent solids with no unstabilized solids)
_____ Option 8 (90 percent solids with unstabilized solids)
_____ None or unknown

B.3. Treatment Provided At Your Facility. (con't)

d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge:

_____

_____

e. Describe, on this form or another sheet of paper, any other sewage sludge treatment or blending activities not identified in (a) - (d) above:

_____

_____

Complete Section B.4 if sewage sludge from your facility meets the ceiling concentrations in Table 1 of 40 CFR 503.13, the pollutant concentrations in Table 3 of §503.13, the Class A pathogen reduction requirements in §503.32(a), and one of the vector attraction reduction requirements in § 503.33(b)(1)-(8) and is land applied. Skip this section if sewage sludge from your facility does not meet all of these criteria.

B.4. Preparation of Sewage Sludge Meeting Ceiling and Pollutant Concentrations, Class A Pathogen Requirements, and One of Vector Attraction Reduction Options 1-8.

a. Total dry metric tons per 365-day period of sewage sludge subject to this section that is applied to the land: _____ dry metric tons

b. Is sewage sludge subject to this section placed in bags or other containers for sale or give-away for application to the land?

_____Yes _____No

Complete Section B.5. if you place sewage sludge in a bag or other container for sale or give-away for land application. Skip this section if the sewage sludge is covered in Section B.4.

B.5. Sale or Give-Away in a Bag or Other Container for Application to the Land.

a. Total dry metric tons per 365-day period of sewage sludge placed in a bag or other container at your facility for sale or give-away for application to the land: _____ dry metric tons

b. Attach, with this application, a copy of all labels or notices that accompany the sewage sludge being sold or given away in a bag or other container for application to the land.

Complete Section B.6 if sewage sludge from your facility is provided to another facility that provides treatment or blending. This section does not apply to sewage sludge sent directly to a land application or surface disposal site. Skip this section if the sewage sludge is covered in Sections B.4 or B.5. If you provide sewage sludge to more than one facility, attach additional pages as necessary.

B.6. Shipment Off Site for Treatment or Blending.

a. Receiving facility name _____

b. Mailing address _____

_____

c. Contact person _____

Title _____

Telephone number _____

d. Total dry metric tons per 365-day period of sewage sludge provided to receiving facility: _____

B.6. Shipment Off Site for Treatment or Blending. (con't)

e. Does the receiving facility provide additional treatment to reduce pathogens in sewage sludge from your facility?____ Yes ____ No

Which class of pathogen reduction is achieved for the sewage sludge at the receiving facility?

_____ Class A _____ Class B _____ Neither or unknown

Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce pathogens in sewage sludge:

_____
_____

f. Does the receiving facility provide additional treatment to reduce vector attraction characteristics of the sewage sludge?
_____Yes _____No

Which vector attraction reduction option is met for the sewage sludge at the receiving facility?

_____ Option 1 (Minimum 38 percent reduction in volatile solids)
_____ Option 2 (Anaerobic process, with bench-scale demonstration)
_____ Option 3 (Aerobic process, with bench-scale demonstration)
_____ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
_____ Option 5 (Aerobic processes plus raised temperature)
_____ Option 6 (Raise pH to 12 and retain at 11.5)
_____ Option 7 (75 percent solids with no unstabilized solids)
_____ Option 8 (90 percent solids with unstabilized solids)
_____ None

Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge.

_____
_____

g. Does the receiving facility provide any additional treatment or blending activities not identified in (c) or (d) above? ____ Yes ____ No

If yes, describe, on this form or another sheet of paper, the treatment or blending activities not identified in (c) or (d) above:

_____
_____

h. If you answered yes to (e), (f), or (g), attach a copy of any information you provide the receiving facility to comply with the "notice and necessary information" requirement of 40 CFR 503.12(g).

i. Does the receiving facility place sewage sludge from your facility in a bag or other container for sale or give-away for application to the land? _____ Yes _____ No

If yes, provide a copy of all labels or notices that accompany the product being sold or given away.

Complete Section B.7 if sewage sludge from your facility is applied to the land, <u>unless</u> the sewage sludge is covered in:

- **Section B.4 (it meets Table 1 ceiling concentrations, Table 3 pollutant concentrations, Class A pathogen requirements, and one of vector attraction reduction options 1-8); <u>or</u>**
- **Section B.5 (you place it in a bag or other container for sale or give-away for application to the land); <u>or</u>**
- **Section B.6 (you send it to another facility for treatment or blending).**

B.7. Land Application of Bulk Sewage Sludge.

a. Total dry metric tons per 365-day period of sewage sludge applied to all land application sites: _____ dry metric tons

B.7. Land Application of Bulk Sewage Sludge. (con't)

b. Do you identify all land application sites in Section C of this application? _____ Yes _____ No

If no, submit a copy of the land application plan with application (see instructions).

c. Are any land application sites located in States other than the State where you generate sewage sludge or derive a material from sewage sludge? _____ Yes _____ No

If yes, describe, on this form or another sheet of paper, how you notify the permitting authority for the States where the land application sites are located. Provide a copy of the notification.

_____

_____

Complete Section B.8 if sewage sludge from your facility is placed on a surface disposal site.

B.8. Surface Disposal.

a. Total dry metric tons of sewage sludge from your facility placed on all surface disposal sites per 365-day period: _____ dry metric tons

b. Do you own or operate all surface disposal sites to which you send sewage sludge for disposal?

_____ Yes _____ No

If no, answer B.8.c through B.8.f for each surface disposal site that you do not own or operate. If you send sewage sludge to more than one such surface disposal site, attach additional pages as necessary.

c. Site name or number _____

d. Contact person _____

Title _____

Telephone number _____

Contact is _____Site owner _____Site operator

e. Mailing address _____

_____

f. Total dry metric tons of sewage sludge from your facility placed on this surface disposal site per 365-day period: _____ dry metric tons

Complete Section B.9 if sewage sludge from your facility is fired in a sewage sludge Incinerator.

B.9. Incineration.

a. Total dry metric tons of sewage sludge from your facility fired in all sewage sludge incinerators per 365-day period: _____ dry metric tons

b. Do you own or operate all sewage sludge incinerators in which sewage sludge from your facility is fired? _____ Yes _____ No

If no, complete B.9.c through B.9.f for each sewage sludge incinerator that you do not own or operate. If you send sewage sludge to more than one such sewage sludge incinerator, attach additional pages as necessary.

c. Incinerator name or number: _____

d. Contact person: _____

Title: _____

Telephone number: _____

Contact is: _____ Incinerator owner _____ Incinerator operator

B.9. Incineration. (con't)

e. Mailing address: _____

_____

f. Total dry metric tons of sewage sludge from your facility fired in this sewage sludge incinerator per 365-day period: _____ dry metric tons

Complete Section B.10 if sewage sludge from this facility is placed on a municipal solid waste landfill.

B.10. Disposal in a Municipal Solid Waste Landfill. Provide the following information for each municipal solid waste landfill on which sewage sludge from your facility is placed. If sewage sludge is placed on more than one municipal solid waste landfill, attach additional pages as necessary.

a. Name of landfill: Turnkey Landfill

b. Contact person: Robert Mangusson, P.E.

Title: Sr. District Manager

Telephone number: (603) 330-2164

Contact is: ✔ Landfill owner _____ Landfill operator

c. Mailing address: 90 Rochester Neck Road
Rochester, NH 03839

d. Location of municipal solid waste landfill:

Street or Route #: 90 Rochester Neck Rd.

County: Strafford County

City or Town: Rochester State: NH 03839

Ground Water Release Protection: GWP-198706010-R-002
NPDES Storm Water General Permit: NHR05A243
Site Specific: WPR-4179
Solid Waste Management Facility Standard Permit: DES-SW-SP-95001
Solid Waste Management Permit: DES-SW-SP-95001
Solid Waste Management Permit: DES-SW-SP-95001
Wetlands Board Permit: 93-750

e. Total dry metric tons of sewage sludge from your facility placed in this m

190.00 dry metric tons

f. List, on this form or an attachment, the numbers of all other Federal, State, and local permits that regulate the operation of this municipal solid waste landfill.

Permit Number	Type of Permit
WPR-4179	Site Specific
DES-SW-SP-95001	Solid Waste Management
93-750	Wetlands Board Permit

Permit Number	Type of Permit
GWP-198706010-4-002	Ground Water
NHR05A243	Storm Water
General	

g. Submit, with this application, information to determine whether the sewage sludge meets applicable requirements for disposal of sewage sludge in a municipal solid waste landfill (e.g., results of paint filter liquids test and TCLP test)

h. Does the municipal solid waste landfill comply with applicable criteria set forth in 40 CFR Part 258?

✔ Yes _____ No

C. LAND APPLICATION OF BULK SEWAGE SLUDGE

Complete Section C for sewage sludge that is applied to the land, unless any of the following conditions apply:

- **The sewage sludge meets the Table 1 ceiling concentrations, the Table 3 pollutant concentrations, Class A pathogen requirements, and one of vector attraction reduction options 1-8 (fill out B.4 Instead); or**
- **The sewage sludge is sold or given away in a bag or other container for application to the land (fill out B.5 Instead); or**
- **You provide the sewage sludge to another facility for treatment or blending (fill out B.6 instead).**

Complete Section C for every site on which the sewage sludge that you reported in Section B.7 is applied.

C.1. Identification of Land Application Site.

a. Site name or number _____

b. Site location (Complete 1 and 2).

1. Street or Route # _____

   County _____

   City or Town _____ State _____ Zip _____

2. Latitude _____ Longitude _____

   Method of latitude/longitude determination

   _____ USGS map _____ Field survey _____ Other

c. Topographic map. Provide a topographic map (or other appropriate map if a topographic map is unavailable) that shows the site location.

C.2. Owner Information.

a. Are you the owner of this land application site? _____ Yes _____ No

b. If no, provide the following information about the owner:

Name _____

Telephone number _____

Mailing Address _____

_____

C.3. Applier Information.

a. Are you the person who applies, or who is responsible for application of, sewage sludge to this land application site?
_____ Yes _____ No

b. If no, provide the following information for the person who applies:

Name _____

Telephone number _____

Mailing Address _____

_____

C.4. Site Type: Identify the type of land application site from among the following.

_____ Agricultural land _____ Forest _____ Public contact site

_____ Reclamation site _____ Other. Describe: _____

C.5. Crop or Other Vegetation Grown on Site.

a. What type of crop or other vegetation is grown on this site?

_____

b. What is the nitrogen requirement for this crop or vegetation?

_____

C.6. Vector Attraction Reduction.

Are any vector attraction reduction requirements met when sewage sludge is applied to the land application site?
_____ Yes _____ No

If yes, answer C.6.a and C.6.b;

a. Indicate which vector attraction reduction option is met:

_____ Option 9 (Injection below land surface)

_____ Option 10 (Incorporation into soil within 6 hours)

b. Describe, on this form or another sheet of paper, any treatment processes used at the land application site to reduce vector attraction properties of sewage sludge:

_____

_____

Complete Question C.7 only if the sewage sludge applied to this site since July 20, 1993, is subject to the cumulative pollutant loading rates (CPLRs) in 40 CFR 503.13(b)(2).

C.7. Cumulative Loadings and Remaining Allotments.

a. Have you contacted the permitting authority in the State where the bulk sewage sludge subject to CPLRs will be applied, to ascertain whether bulk sewage sludge subject to CPLRs has been applied to this site on or since July 20, 1993? _____ Yes _____ No

If no, sewage sludge subject to CPLRs may not be applied to this site.

If yes, provide the following information:

Permitting authority _____

Contact Person _____

Telephone number _____

b. Based upon this inquiry, has bulk sewage sludge subject to CPLRs been applied to this site since July 20, 1993?
_____ Yes _____ No

If no, skip C.7.c.

c. Provide the following information for every facility other than yours that is sending, or has sent, bulk sewage sludge to CPLRs to this site since July 20, 1993. If more than one such facility sends sewage sludge to this site, attach additional pages as necessary.

Facility name _____

Mailing Address _____

_____

Contact person _____

Title _____

Telephone number _____

D. SURFACE DISPOSAL

Complete this section if you own or operate a surface disposal site.

Complete Sections D.1 - D.5 for each active sewage sludge unit.

D.1. Information on Active Sewage Sludge Units.

a. Unit name or number: _____

b. Unit location (Complete 1 and 2).

1. Street or Route # _____

County _____

City or Town _____ State _____ Zip _____

2. Latitude_____ Longitude_____

Method of latitude/longitude determination: _____ USGS map _____ Field survey _____ Other

c. Topographic map. Provide a topographic map (or other appropriate map if a topographic map is unavailable) that shows the site location.

d. Total dry metric tons of sewage sludge placed on the active sewage sludge unit per 365-day period: _____ dry metric tons

e. Total dry metric tons of sewage sludge placed on the active sewage sludge unit over the life of the unit: _____ dry metric tons

f. Does the active sewage sludge unit have a liner with a maximum hydraulic conductivity of 1×10^{-7} cm/sec? _____ Yes _____ No

If yes, describe the liner (or attach a description):

_____

_____

g. Does the active sewage sludge unit have a leachate collection system? _____ Yes _____ No

If yes, describe the leachate collection system (or attach a description). Also describe the method used for leachate disposal and provide the numbers of any Federal, State, or local permit(s) for leachate disposal:

_____

_____

h. If you answered no to either D.1.f. or D.1.g., answer the following question:

Is the boundary of the active sewage sludge unit less than 150 meters from the property line of the surface disposal site?
_____ Yes _____ No

If yes, provide the actual distance in meters: _____

Provide the following information:

Remaining capacity of active sewage sludge unit, in dry metric tons: _____ dry metric tons

Anticipated closure date for active sewage sludge unit, if known: _____ (MM/DD/YYYY)

Provide, with this application, a copy of any closure plan that has been developed for this active sewage sludge unit.

D.2. Sewage Sludge from Other Facilities. Is sewage sent to this active sewage sludge unit from any facilities other than your facility?

_____ Yes _____ No

If yes, provide the following information for each such facility. If sewage sludge is sent to this active sewage sludge unit from more than one such facility, attach additional pages as necessary.

a. Facility name _____

b. Mailing Address _____

_____

c. Contact person _____

Title _____

Telephone number _____

d. Which class of pathogen reduction is achieved before sewage sludge leaves the other facility?

_____ Class A _____ Class B _____ None or unknown

e. Describe, on this form or another sheet of paper, any treatment processes used at the other facility to reduce pathogens in sewage sludge:

_____

_____

f. Which vector attraction reduction option is met for the sewage sludge at the receiving facility?

_____ Option 1 (Minimum 38 percent reduction in volatile solids)
_____ Option 2 (Anaerobic process, with bench-scale demonstration)
_____ Option 3 (Aerobic process, with bench-scale demonstration)
_____ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
_____ Option 5 (Aerobic processes plus raised temperature)
_____ Option 6 (Raise pH to 12 and retain at 11.5)
_____ Option 7 (75 percent solids with no unstabilized solids)
_____ Option 8 (90 percent solids with unstabilized solids)
_____ None or unknown

g. Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge

_____

_____

h. Describe, on this form or another sheet of paper, any other sewage sludge treatment activities performed by the other facility that are not identified in (d) - (g) above:

_____

_____

D.3. Vector Attraction Reduction

a. Which vector attraction option, if any, is met when sewage sludge is placed on this active sewage sludge unit?

_____ Option 9 (Injection below and surface)
_____ Option 10 (Incorporation into soil within 6 hours)
_____ Option 11 (Covering active sewage sludge unit daily)

D.3. Vector Attraction Reduction. (con't)

b. Describe, on this form or another sheet of paper, any treatment processes used at the active sewage sludge unit to reduce vector attraction properties of sewage sludge:

_____

_____

D.4. Ground-Water Monitoring.

a. Is ground-water monitoring currently conducted at this active sewage sludge unit, or are ground-water monitoring data otherwise available for this active sewage sludge unit?
_____ Yes _____ No

If yes, provide a copy of available ground-water monitoring data. Also, provide a written description of the well locations, the approximate depth to ground-water, and the ground-water monitoring procedures used to obtain these data.

_____

_____

b. Has a ground-water monitoring program been prepared for this active sewage sludge unit? _____ Yes _____ No

If yes, submit a copy of the ground-water monitoring program with this permit application.

c. Have you obtained a certification from a qualified ground-water scientist that the aquifer below the active sewage sludge unit has not been contaminated? _____ Yes _____ No

If yes, submit a copy of the certification with this permit application.

D.5. Site-Specific Limits. Are you seeking site-specific pollutant limits for the sewage sludge placed on the active sewage sludge unit?
_____ Yes _____ No

If yes, submit information to support the request for site-specific pollutant limits with this application.

E. INCINERATION

Complete this section if you fire sewage sludge in a sewage sludge incinerator.

Complete this section once for each incinerator in which you fire sewage sludge. If you fire sewage sludge in more than one sewage sludge incinerator, attach additional copies of this section s necessary.

E.1. Incinerator Information.

a. Incinerator name or number: _____

b. Incinerator location (Complete 1 and 2).

1. Street or Route # _____

County _____

City or Town _____ State _____ Zip _____

2. Latitude_____ Longitude_____

Method of latitude/longitude determination: _____ USGS map _____ Field survey _____ Other

E.2. Amount Fired. Dry metric tons per 365-day period of sewage sludge fired in the sewage sludge incinerator: _____ dry metric tons

E.3. Beryllium NESHAP.

a. Is the sewage sludge fired in this incinerator "beryllium-containing waste," as defined in 40 CFR Part 61.31? _____ Yes _____ No

Submit, with this application, information, test data, and description of measures taken that demonstrate whether the sewage sludge incinerated is beryllium-containing waste, and will continue to remain as such.

b. If the answer to (a) is yes, **submit with this application** a complete report of the latest beryllium emission rate testing and documentation of ongoing incinerator operating parameters indicating that the NESHAP emission rate limit for beryllium has been and will continue to be met.

E.4. Mercury NESHAP.

a. How is compliance with the mercury NESHAP being demonstrated?

_____ Stack testing (if checked, complete E.4.b)

_____ Sewage sludge sampling (if checked, complete E.4.c)

b. If stack testing is conducted, submit the following information with this application:

A complete report of stack testing and documentation of ongoing incinerator operating parameters indicating that the incinerator has met, and will continue to meet, the mercury NESHAP emission rate limit.

Copies of mercury emission rate tests for the two most recent years in which testing was conducted.

c. If sewage sludge sampling is used to demonstrate compliance, submit a complete report of sewage sludge sampling and documentation of ongoing incinerator operating parameters indicating that the incinerator has met, and will continue to meet the mercury NESHAP emission rate limit.

E.5. Dispersion Factor.

a. Dispersion factor, in micrograms/cubic meter per gram/second: _____

b. Name and type of dispersion model: _____

c. Submit a copy of the modeling results and supporting documentation with this application.

E.6. Control Efficiency.

a. Control efficiency, in hundredths, for the following pollutants:

Arsenic: _____ Chromium: _____ Nickel: _____

Cadmium: _____ Lead: _____

b. Submit a copy of the results or performance testing and supporting documentation (including testing dates) with this application.

E.7. Risk Specific Concentration for Chromium.

a. Risk specific concentration (RSC) used for chromium, in micrograms per cubic meter: _____

b. Which basis was used to determine the RSC?

____Table 2 in 40 CFR 503.43

____Equation 6 in 40 CFR 503,43 (site-specific determination)

c. If Table 2 was used, identify the type of incinerator used as the basis:

____Fluidized bed with wet scrubber

____Fluidized bed with wet scrubber and wet electrostatic precipitator

____Other types with wet scrubber

____Other types with wet scrubber and wet electrostatic precipitator

d. If Equation 6 was used, provide the following:

Decimal fraction of hexavalent chromium concentration to total chromium concentration in stack exit gas: _____

Submit results of incinerator stack tests for hexavalent and total chromium concentrations, including date(s) of test, with this application.

E.8. Incinerator Parameters

a. Do you monitor Total Hydrocarbons (THC) in the sewage sludge incinerator's exit gas? _____ Yes _____ No

Do you monitor Carbon Monoxide (CO) in the sewage sludge incinerator's exit gas? _____ Yes _____ No

b. Incinerator type: _____

c. Incinerator stack height, in meters: _____

Indicate whether value submitted is: _____ Actual stack height _____ Creditable stack height

E.9. Performance Test Operating Parameters

a. Maximum Performance Test Combustion Temperature: _____

b. Performance test sewage sludge feed rate, in dry metric tons/day: _____

indicate whether value submitted is:

_____ Average use _____ Maximum design

Submit, with this application, supporting documents describing how the feed rate was calculated.

c. Submit, with this application, information documenting the performance test operating parameters for the air pollution control device(s) used for this sewage sludge incinerator.

E.10. **Monitoring Equipment.** List the equipment in place to monitor the following parameters:

a. Total hydrocarbons or carbon monoxide: _____

b. Percent oxygen: _____

c. Moisture content: _____

d. Combustion temperature: _____

e. Other: _____

E.11. **Air Pollution Control Equipment.** Submit, with this application, a list of all air pollution control equipment used with this sewage sludge incinerator.

_____
_____
_____
_____

Additional Information, if provided, will appear on the following pages.

ATTACHMENT A

FLOW AND LOAD TECHNICAL MEMORANDUM

UNDERWOOD engineers

25 Vaughan Mall
Portsmouth, NH, 03801-4012
Tel: 603-436-6192 Fax: 603-431-4733

Technical Memorandum - **Final**

To:	Terry Desmarais, P.E., City of Portsmouth
From:	W. Steven Clifton, P.E., Thaddeus Webb, E.I.T., Underwood Engineers, Inc.
Date:	June 7, 2019
Subject:	Pease International Tradeport Wastewater Flow Projection
cc:	Maria Stowell, P.E., Engineering Manager, Pease Development Authority

Introduction

The purpose of this Technical Memorandum is to develop the buildout sewer flow projections for the City of Portsmouth's Pease International Tradeport (Tradeport). The Tradeport has approximately 3,000-acres of land area that can be developed. Land use and development within the Tradeport is controlled by the Pease Development Authority (PDA).

The Tradeport land use generally consists of commercial office space, businesses, schools, restaurants, industries, an airport, a golf course, and military facilities. According to the Pease Development Authority Zoning Ordinance, land use within the Tradeport is zoned as follows:

- Airport Zone: 792 acres
- Airport Industrial Zone: 448 acres
- Industrial Zone: 333 acres
- Airport Business and Commercial Zone: 503.5 acres
- Natural Resource Protection Zone: 781 acres

The wastewater flow from the Tradeport is discharged to the City of Portsmouth sewer collection system and is conveyed to the Pease Wastewater Treatment Facility (WWTF) for treatment and disposal.

The City's WWTF is licensed to discharge wastewater in accordance with their National Pollutant Discharge Elimination System (NPDES) permit NH 0090000. Planning for future growth will require the NPDES permit to be modified to allow an increase in flow to the WWTF.

The increase in flow is needed, in part, because Lonza Biologics (Lonza), a large industrial user, has proposed an increase in wastewater flow which would increase the total flow to the WWTF above the original design capacity. Lonza currently discharges approximately 45% of the total flow to the treatment plant. The increase in flow from Lonza is projected to occur over a 26-year period (2045)

Methodology

The Pease Development Authority keeps track of the existing building square footage at the Tradeport and estimates the future buildout of building square footage based on buildable area within each zoning district. Real estate professionals estimate the total square footage that can be built on each lot based on zoning and buildable area. This is considered more accurate for estimating buildout than the traditional methodology which applies a gallon per day rate per acre of developable land. This estimate was provided to Underwood Engineers by the PDA in order to project existing and future water consumption and sewer discharges to the sewer system.

Existing building square footage and water meter readings were used to estimate the existing gallons per day per square foot. Three years of billing data from 2015 to 2017 were collected, and this database was used in the analysis. The average annual metered usage was calculated by zoning district and use of the current tenant which is tracked by the PDA. This existing usage metric was then applied to unoccupied building area and future building area. One hundred percent (100%) of the water usage was assumed to be the wastewater flow.

The two largest industrial dischargers meter their wastewater discharge to the sewer system. Three years of wastewater records were used to establish their existing wastewater flows. Future wastewater flows from Craft Brew Alliance (Redhook Brewery) were assumed to be based on their current permit of 160,000 gallons per day. Future flows from Lonza were based on estimated criteria provided by Lonza through the City of Portsmouth.

Existing Water Demand and Sewer Flows

Lonza Biologics

Sewer discharge by Lonza is regulated by an Industrial User Permit (IUP). The City is not required to administer a POTW Pretreatment Program, but it regulates the discharge of certain industries with IUPs. Industrial User Permits are subject to review and approval by the New Hampshire Department of Environmental Services.

The available flow records for Lonza include process wastewater discharges to the sewer reported under the IUP monthly operating reports and water billing records (**Table 1**). The total water demand for the facility is greater than the process wastewater flow. The difference between billed water consumption and measured wastewater Average Daily Flow (ADF) is assumed to be sanitary wastewater flow from employees. Sanitary wastewater flow may be lower if there are losses in the process water that were not accounted for. Lonza does not track information on water consumed in the production process.

Table 1 - Lonza Water and Sewer Use (2015-2017)

Parameter	Value, GPD
Water Demand, GPD	**278,860**
101B Process Wastewater ADF, GPD	**237,488**
Difference (sanitary wastewater), GPD	**41,372**

Note: The 101C process stream was not in production during the evaluation period but is included in the future flows from Lonza.

Craft Brew Alliance (Redhook Brewery)

Craft Brew Alliance is also regulated by an Industrial User Permit. This industry is served by two water meters and one wastewater meter. One water meter provides water to the restaurant and the other water meter provides flow to the industrial section of the business. The water meter to the restaurant is also billed as sewer.

Water and sewer use are summarized in **Table 2** below. Billed water consumption is approximately 12,296 GPD more than billed sewer use. This difference is assumed to be the water incorporated into the products shipped offsite and minor consumption from employees and customers. Craft Brew Alliance has confirmed this assumption.

Table 2 – Craft Brew Alliance Water and Sewer Use (2015-2017)

Parameter	Value, GPD
Water Demand to Brewery Account 7100270000-0, GPD	**69,278**
Water Demand to Restaurant Account 7100280000-0, GPD	**6,267**
Total Water Demand	**75,545**
Industrial Wastewater Meter Account 7100290000-0, GPD	**56,982**
Water Demand from the Restaurant Account 100280000-0, GPD	**6,267**
Total Wastewater Average Daily Flow (Restaurant plus Industrial Wastewater), GPD	**63,249**
Difference, GPD	**12,296**

The industrial wastewater flow from Craft Brew Alliance is also reported to the City under the IUP pretreatment program in the form of monthly operating reports (MORs). These values should match the industrial wastewater meter from account 7100290000-0.

The comparison of these summaries is shown in **Table 3**.

Table 3 – Craft Brew Alliance Process Wastewater Flow (2015-2017)

Parameter	Value, GPD
Industrial Wastewater Meter Account 7100290000-0, GPD	**56,982**
MOR Process Wastewater ADF, GPD	**55,211**
Difference, GPD	**1,771**

Commercial Water and Sewer Estimates

For all the other businesses at the Tradeport, the water billing records from 2015 to 2017 were reviewed to estimate water demand. It was assumed that 100% of the water demand was discharged to the sewer.

For this evaluation, UE compiled a database of existing billing records with existing and future building square footage, zoning district, type of use, and type of use (**Attachment "A"**). Irrigation meters were excluded from the database. The list includes all the commercial and light industrial buildings, Lonza, Craft Brew Alliance (Redhook), New Hampshire Air National Guard (NHANG), and municipal users. The flow for the largest industrial users, Lonza and Craft Brew Alliance, are separated into process flow and domestic wastewater for the purpose of the flow evaluation. All water consumption was assumed to go to the sewer as sanitary wastewater.

The existing sanitary flow for the Pease International Tradeport is summarized in **Table 4** based on the compiled databases. Two scenarios are provided, existing sanitary flow and existing sanitary flow plus allocated industrial use. The difference between these scenarios is that the existing flow is based on the recent historical record of measured flows, whereas the existing and allocated industrial flow also includes flow capacity reserved for industrial users which is based on the permitted values specified in each users IUP. This estimate does not include sewer **infiltration and inflow**.

Table 4 - Existing Average Annual Sewer Flow (2015-2017) from Water Meter Data

Zoning Designation or Use	**Existing Flow, GPD**	**Existing and Allocated Industrial Flow, GPD**
Commercial/Light Industrial		
Commercial/Light Industrial	115,708	115,708
Lonza Domestic (calculated)	41,372	41,372
Craft Brew Alliance Domestic (billed)	6,267	6,267
Air National Guard	8,765	8,765
Municipal	4,923	4,923
Sub-total	**177,036**	**177,036**
Industrial Flows		
Lonza Biologics Process	237,488	350,000
Craft Brew Alliance Process	55,211	160,000
Total:	**469,735***	**687,036***

*** Does not include infiltration and inflow**

The historical flow and load to the facility for the study period (2015-2017) was established in the recent ***SBR Capacity Evaluation*** (12/21/2018) by UE. **Table 5** is an excerpt from the capacity evaluation report which identifies existing flow and load received at the WWTF.

Table 5 – Historical WWTF Flow and Load on a Percentile Basis[1] (2015 to 2017)

WWTF Parameter	Influent Flow, MGD	Influent BOD_5, lb/d	Influent TSS, lb/d	Influent TKN, lb/d
Average (50th Percentile)	0.527	1,887	2,640	283
Max Month (92nd Percentile)	0.708	2,750	4,406	
Max Week (98th Percentile)	0.892	3,696	6,943	
Max Day (99.7 Percentile)	1.48	5,870	9,945	

Notes:
1. The flows and loads for 2015-2017 are summarized in the table above. Maximum month, maximum week, and maximum day values were determined statistically by finding the 92nd, 98th percentiles, and 99.7th percentiles of daily flows or loads, respectively.

Flows and loads from Lonza and Craft Brew Alliance were also established in the SBR capacity evaluation (UE 2018). **Table 6** is also an excerpt from that report which identifies their flows and loads.

Table 6 – Historical Flow and Load from Lonza and Craft Brew Alliance (2015 to 2017)

Lonza	Flow, MGD	BOD_5, lb/d	TSS, lb/d	TKN, lb/d	COD, lb/d
Average	0.237	658	146	64	1,135
Max Month	0.312	1,406	260	133	2,360
Max Week	0.335	1,823	405	224	3,243
Max Day	0.336	2,825	557	393	3,818
Craft Brew Alliance	**Flow, MGD**	**BOD_5, lb/d**	**TSS, lb/d**	**TKN, lb/d**	**COD, lb/d**
Average	0.055	197	317	25	779
Max Month	0.082	367	523	47	1,358
Max Week	0.091	462	651	58	1,827
Max Day	0.108	602	997	66	2,407

[Notes:
1. The flows and loads for 2015-2017 are summarized in the table above. Maximum month, maximum week, and maximum day values were determined statistically by finding the 92nd, 98th percentiles, and 99.7th percentiles of daily flows or loads, respectively.

The existing sanitary flow is compared to the historical WWTF influent flow in **Table 7**. The WWTF influent flow is higher than the water demand by the amount of infiltration and inflow (I/I) and septage to the WWTF. The infiltration estimate is in the range of 400 to 500 gpd/idm (gallons per day per inch diameter-mile).

Table 7 - Comparison of Sanitary Flow and WWTF Influent Flow

Parameter	Average
WWTF Influent ADF, GPD	527,393
Existing Sanitary ADF, GPD	469,735
Difference (I/I and septage)	57,658

Buildout Wastewater Flow

Existing and future building area statistics are maintained by the Pease Development Authority. UE developed an estimate of sanitary wastewater flow for each existing unoccupied building area and building area for each undeveloped lot in the Tradeport. Wastewater flow for potential development was estimated based on an average gallons per day per square foot of future building area. Real estate professionals review the undeveloped lots in order to estimate the building square footage based on zoning requirements and buildable land. All building area is a sum of the total square feet of each story of occupied space for each lot using the information provided by the PDA.

The water demand rate per square foot was established from the historical rate of the existing PDA tenants for 2015 to 2017. As shown in **Table 8**, the total domestic water demand was divided by occupied building area to obtain a water use rate of **0.042 GPD/SF**. Process flows from Lonza and Craft Brew Alliance are not included in the domestic water demand because the industrial flow buildout is calculated separately.

UNDERWOOD engineers

Table 8 - Water Demand Rate of Existing PDA Tenants (2015 to 2017)

Zone	Use	Number of Accounts	Building Area, SF	Average Demand, GPD	Demand Rate, GPD/SF
Airport	Air Traffic Control Tower	1	1,500	119	0.079
	Office	1	1,200	46	0.039
	Terminal	1	52,000	977	0.019
Airport/ Industrial	Hangar	5	124,680	340	0.003
	Manufacturing	1	6,000	10	0.002
	Office/Warehouse	1	45,000	206	0.005
	Office	1	17,000	87	0.005
	Off/Hangar	2	107,500	1,585	0.015
Business/ Commercial	Biotech	1	656,000	41,372	0.063
	Brewery	1	129,124	6,273	0.047
	Daycare	2	34,898	2,786	0.080
	Education	1	5,730	530	0.093
	Education/Food	1	137,000	5,050	0.037
	Equipment (no occupancy)	1	5,111	1	0.000
	Food/Other	1	17,186	3,053	0.178
	Hotel	1	65,786	8,565	0.130
	Medical	3	77,066	7,722	0.100
	Manufacturing	1	51,000	1,180	0.023
	Office/Dental	1	24,354	1,807	0.074
	Office/Medical	1	36,881	363	0.010
	Office/Manufacturing	1	102,400	4,864	0.048
	Office	26	1,216,401	28,607	0.024
	Ret/Off/Med/Food	1	40,437	1,747	0.043
Industrial	Equipment	1	8,658	11	0.001
	Equipment (no occupancy)	1	1,642	54	0.033
	Hangar	1	65,212	746	0.011
	Manufacturing	1	81,710	3,613	0.044
	Office/Cafeteria	1	131,598	16	0.000
	Office/Garage	1	27,873	156	0.006
	Office/Manufacturing	4	383,418	14,091	0.037
	Office	6	395,411	12,457	0.032
	Unknown	2	116,904	4,001	0.034
	Maintenance Garage	1	30,502	8,102	0.266
Natural Resource Protection	Golf Club House	1	**N/A**	2,816	
NHANG		28	**N/A**	8,765	
Municipal		5	**N/A**	4,923	
	Total		**4,197,182**	**177,036**	**0.042**

The overall demand rate per square foot was calculated for each year for 2015 to 2017 (**Table 9**), and it varies by less than 5% percent on an annual basis.

Table 9 - Water Demand Rate of Existing PDA Tenants

Year	Building Area, SF[1]	Average Demand, GPD	Demand Rate, GPD/SF
2015	4,197,182	181,967	0.043
2016	4,197,182	169,994	0.041
2017	4,197,182	179,057	0.043
	4,197,182	**177,036**	**0.042**

Notes:

1. The Pease Development Authority does not keep historical records of building area. Building area was assumed to be constant at current levels during the study period (2015 to 2017).
2. Historical water use records for certain properties such as the PDA maintenance garage at 7 Lee Street and the Air National Guard properties were not available for the entire 2015 to 2017 period. Water demand for these properties was held at 2017 levels for each year for these properties for the calculation shown in Table 9.

We then estimated wastewater flow from potential tenants by applying the water demand rate to the square footage of proposed development. An allowance for New Hampshire Air National Guard (NHANG) was calculated separately assuming 3% growth per year because the PDA does not track building area for the NHANG. Future wastewater flow rates for Lonza are based on a projection of water and sewer requirements provided by Lonza through the City to UE (4/4/2018). **Table 10** summarizes building area and wastewater flow for existing and proposed development using the water demand rate.

Table 10 - Existing and Future Buildout Wastewater Scenarios

Scenario	Parameter	Commercial/ Light Industrial[2]	Lonza Biologics Process Flow	Craft Brew Alliance Process Flow	Total Sanitary Wastewater Flow[6]
Existing Occupied	Building Area	4,197,182 SF	N/A[5]	N/A	
	Unit Rate	0.042 GPD/SF[3]	N/A	N/A	
	Wastewater Flow	177,036 GPD	237,488 GPD	55,211 GPD	**469,735 GPD**
Existing Occupied and Existing Allocated IUPs	Building Area	4,197,182 SF	N/A	N/A	
	Unit Rate	0.042 GPD/SF	N/A	N/A	
	Wastewater Flow	177,036 GPD	350,000 GPD	160,000 GPD	**687,036 GPD**
2045 Buildout and Proposed Lonza Increase[1]	Building Area	7,932,485 SF	N/A	N/A	
	Unit Rate	0.042 GPD/SF	N/A	N/A	
	Wastewater Flow	340,230 GPD[4]	1,169,300 GPD	160,000 GPD	**1,669,530 GPD**

1. Includes occupation of all proposed buildings and flow projections provided by Lonza Biologics (4/4/2018).
2. Includes New Hampshire Air National Guard (NHANG)
3. Wastewater unit flow rate calculated from water demand of 0.042 GPD/SF of building area.
4. Allowances for buildout growth include $Q_{C/LI}$ = 7,932,485 SF x 0.042 GPD/SF = 333,164 GPD for commercial/light industrial flow and Q_{NHANG} = [8,765 GPD x $(1.03)^{20}$] – 8,765 GPD = 7,066 GPD for NHANG.
5. N/A – not applicable
6. Does not include I/I and septage

Commercial light/industrial flow is assumed to increase by 8,150 GPD per year for 20-years, to achieve buildout commercial/light industrial flow of 340,000 GPD as developed in **Table 10**. After 20-years, the PDA is assumed to be fully developed.

The projected flow and load to the WWTF is presented in **Table 11** for existing conditions, existing conditions plus allocated industrial flow, and buildout conditions for 5-years, 10-years, 15-year, and 26-years (2045).

The loading assumptions presented in **Table 11** are consistent with the December 21, 2018 SBR Capacity Evaluation.

The Pease WWTF flow increases are shown by year graphically in **Figure 1**. Both the Pease WWTF Design Flow and the Outfall Diffuser design flow are shown for reference. The outfall diffuser (Eight 4" Tide Flex Valves) reaches its average daily flow design capacity by the Year 2028. The outfall diffuser receives treated effluent flow from the Pease WWTF and Newington WWTF prior to discharge into the Piscataqua River.

Table 11
Pease International Tradeport
Wastewater Buildout Projections

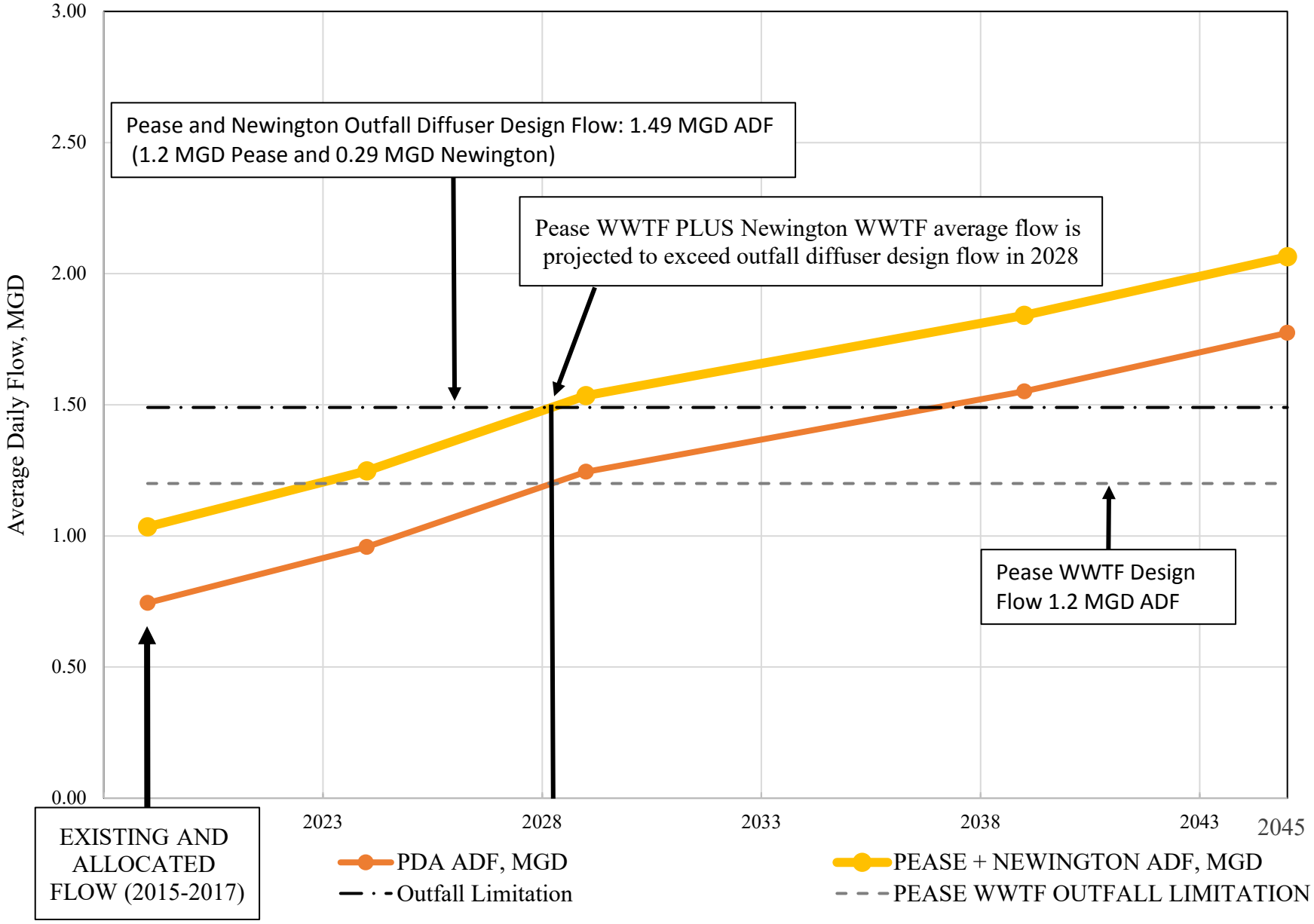
Calc. by: TWW
Reviewed by: WSC

	WWTF DESIGN		WWTF RERATED DESIGN		Existing 2015-2017				Max Month Peaking Factors	Max Day Peaking Factors	Peak Hour Peaking Factors	Existing (2015-2017) Plus Existing Allocated Industial				Allocated Plus Lonza Proposed Increase 5-year Buildout (2023)			Allocated Plus Lonza Proposed Increase 10-year Buildout (2028)			Allocated Plus Lonza Proposed Increase 20-year Buildout (2038)			Allocated Plus Lonza Proposed Increase 26-year Buildout (2045)		
	ADF	MDF	ADF	MDF	ADF	MMF	MDF	PHF				ADF	MMF	MDF	PHF	ADF	MDF	PHF	ADF	MDF	PHF	ADF	MDF	PHF	ADF	MDF	PHF
TOTAL INFLUENT FLOW, MGD	1.2000	3.345	1.2000	3.378	**0.5274**	**0.8590**	**1.5400**	**2.7635**	1.63	2.92	5.24	0.7447	0.9740	1.7503	3.5176	0.9580	1.9200	4.0457	1.2447	2.3684	4.8322	1.5512	2.9423	5.8219	1.7742	3.2103	6.3170
Commercial/Light Industrial					0.1770	0.2279	0.6579	1.0649	1.29	3.72	6.02	0.1770	0.2279	0.6579	1.0649	0.2178	0.8093	1.3101	0.2585	0.9608	1.5552	0.3400	1.2636	2.0454	0.3400	1.2636	2.0454
Heavy Industrial					0.2927	0.3950	0.5297	0.6466	1.34	1.81	2.26	0.5100	0.5100	0.7400	1.1162	0.6353	0.7583	1.3991	0.8813	1.0553	1.9405	1.1063	1.3263	2.4400	1.3293	1.5943	2.9350
RedHook (Large IUP)					**0.0552**	**0.0800**	**0.1531**	**0.1170**	1.45	2.77	2.12	**0.1600**	**0.1600**	**0.1800**	0.3392	**0.1600**	**0.1800**	**0.3392**	**0.1600**	**0.1800**	**0.3392**	**0.1600**	**0.1800**	**0.3392**	**0.1600**	**0.1800**	**0.3392**
Lonza Biologics (Large IUP)					**0.2375**	**0.3150**	**0.3766**	**0.5296**	1.33	1.59	2.23	**0.3500**	**0.3500**	**0.5600**	0.7770	**0.4753**	**0.5783**	**1.0599**	**0.7213**	**0.8753**	**1.6013**	**0.9463**	**1.1463**	**2.1008**	**1.1693**	**1.4143**	**2.5958**
Other (Small IUPs)					**Included in Commercial Light Industrial**				1.00	1.95	6.00	**Included in Commercial Light Industrial**				**Included in Commercial Light Industrial**			**Included in Commercial Light Industrial**			**Included in Commercial Light Industrial**			**Included in Commercial Light Industrial**		
Septage					**0.0049**	**0.0086**	**0.0365**	**0.0365**	1.75	7.45	7.45	**0.0049**	**0.0086**	**0.0365**	0.0365	**0.0049**	**0.0365**	**0.0365**	**0.0049**	**0.0365**	**0.0365**	**0.0049**	**0.0365**	**0.0365**	**0.0049**	**0.0365**	**0.0365**
Infiltration/Inflow					**0.0528**	**0.2275**	**0.3159**	**1.0155**	2.90	5.00	13.00	**0.0528**	**0.2275**	**0.3159**	1.3000	**0.1000**	**0.3159**	**1.3000**	**0.1000**	**0.3159**	**1.3000**	**0.1000**	**0.3159**	**1.3000**	**0.1000**	**0.3159**	**1.3000**
ORGANIC LOAD, BOD5																											
AVERAGE DAILY BOD5, mg/l	290	546	446	632	406	775	1,800					703	568	572		572	546		505	517		506	513		503	528	
Commercial/Light Industrial					597	525	321					597	525	321		**597**	321		**597**	321		**597**	321		**597**	321	
Heavy Industrial					338	531	776					776	776	746		623	728		513	643		506	653		502	660	
RedHook (Large IUP)					386	586	882					900	900	800		900	800		**900**	800		**900**	800		**900**	800	
Lonza Biologics (Large IUP)					325	517	1,700					719	719	728		530	705		427	611		440	630		447	642	
Other (Small IUPs)					**400**	**400**	**400**					400	400	400		**400**	**400**		**400**	**400**		**400**	**400**		**400**	**400**	
Septage					4,454	4,398	**6,500**					4,454	4,398	6,500		**4,454**	**6,500**		**4,454**	**6,500**		**4,454**	**6,500**		**4,454**	**6,500**	
AVERAGE DAILY BOD5, lb/day	2,907	5467	4,460	6324	**1,888**	**3,062**	**5,870**					4,365	4,613	8,344		4,568	8,750		5,241	10,216		6,547	12,588		7,437	14,138	
Commercial/Light Industrial					882	998	1,764					882	998	1,764		1,085	**2,170**		1,288	**2,576**		1,694	**3,388**		1,694	**3,388**	
Heavy Industrial					824	1,750	3,427					3,301	3,301	4,601		3,301	4,601		3,771	5,661		4,671	7,221		5,561	8,771	
RedHook (Large IUP)					**201**	**390**	**602**					1,201	1,201	1,201		1,201	**1,201**		1,201	**1,201**		1,201	**1,201**		1,201	**1,201**	
Lonza Biologics (Large IUP)					623	1,360	**2,825**					2,100	2,100	3,400		**2,100**	**3,400**		**2,570**	**4,460**		**3,470**	**6,020**		**4,360**	**7,570**	
Other (Small IUPs)												0	0	0			0		0	0			0			0	
Septage					182	314	1,979					182	314	1,979		182	1,979		182	1,979		182	1,979		182	1,979	
NITROGEN LOAD, TN																											
NITROGEN LOAD, TN, mg/l	36	30			64	64	69					85	76	63		70	59		62	56		61	54		59	56	
Commercial/Light Industrial					110	120	31					110	120	31		110	31		110	31		110	31		110	31	
Heavy Industrial					35	52	103					77	77	79		62	77		50	68		48	68		47	68	
RedHook (Large IUP)					50	68	100					112	112	99		112	99		112	99		112	99		112	99	
Lonza Biologics (Large IUP)					31	41	330					62	62	73		45	70		37	61		38	63		38	64	
Other (Small IUPs)					**40**	**40**	**40**					**40**	**40**	**30**		**40**	**30**		**40**	**30**		**40**	**30**		**40**	**30**	
Septage					832	832	832					832	832	832		832	832		832	832		832	832		832	832	
NITROGEN LOAD, TN, lb/day	364	829			**283**	459	881					525	617	913		563	952		640	1,097		792	1,331		868	1,486	
Commercial/Light Industrial					162	228	170					162	228	170		199	209		237	249		311	327		311	327	
Heavy Industrial					86	172	457					329	329	489		329	489		370	595		447	751		523	906	
RedHook (Large IUP)					**25**	**45**	**64**					149	149	149		149	149		149	149		149	149		149	149	
Lonza Biologics (Large IUP)					**61**	**127**	**393**					**180**	**180**	**340**		**180**	**340**		**220**	**446**		**297**	**602**		**374**	**757**	
Other (Small IUPs)																											
Septage					34	59	253					34	59	253		34	253		34	253		34	253		34	253	
SOLIDS LOAD, TSS																											
SOLIDS LOAD, TSS, mg/l	290	196			575	1,108	2,116					634	661	589		546	589		472	531		460	509		416	478	
Commercial/Light Industrial					1,245	1,559	974					**1,245**	**1,559**	974		**1,245**	974		**1,245**	974		**1,245**	974		**1,245**	974	
Heavy Industrial					190	245	352					398	398	303		319	296		245	236		218	216		200	203	
RedHook (Large IUP)					**621**	**822**	**1,270**					**900**	**900**	**800**		**900**	**800**		**900**	**800**		**900**	**800**		**900**	**800**	
Lonza Biologics (Large IUP)					**71**	**130**	**220**					**169**	**169**	**144**		**124**	**139**		**100**	**120**		**103**	**124**		**105**	**127**	
Other (Small IUPs)					**225**	**225**	**225**					**225**	**225**	**225**		**225**	**225**		**225**	**225**		**225**	**225**		**225**	**225**	
Septage					**10,000**	**10,000**	**10,000**					**10,000**	**10,000**	**10,000**		**10,000**	**10,000**		**10,000**	**10,000**		**10,000**	**10,000**		**10,000**	**10,000**	
SOLIDS LOAD, TSS, lb/day	2,907	5467			**2,632**	**4,484**	**9,945**					3,939	5,369	8,591		4,362	9,438		4,895	10,493		5,952	12,493		6,161	12,798	
Commercial/Light Industrial					1,838	2,963	5,347					1,838	2,963	**3,676**		2,261	**4,522**		2,684	**5,368**		3,530	**7,061**		3,530	**7,061**	
Heavy Industrial					464	807	1,554					1,692	1,692	1,871		1,692	1,871		1,802	2,080		2,013	2,388		2,222	2,694	
RedHook (Large IUP)					318	547	997					1,200	1,200	1,201		1,200	1,201		1,200	1,201		1,200	1,201		1,200	1,201	
Lonza Biologics (Large IUP)					146	260	557					492	492	670		492	670		602	879		813	1,187		1,022	1,493	
Other (Small IUPs)																											
Septage					330	714	3,044					409	714	3,044		409	3,044		409	3,044		409	3,044		409	3,044	

Notes:

1. Pease WWTF and Lonza Peak Hour peaking factors calculated based on 18 month 1_2017 to 6_2018 flow data. Redhook Peak Hour peaking factors calculated based on 2016 flow data
2. Commercial/light industrial flow assumes buildout of 148,000 GPD linear flow increase over 20-years
3. Commercial/Light industrial BOD/TSS/TKN loadings are higher than typical values (BOD = 300 mg/L, TSS = 225 mg/L). Refer to UE 9/2018 Technical Memorandum for additional information
4. Lonza flow and BOD load projection based on information provided by Lonza to the City in draft form (4/4/2018)
5. Lonza TN and TSS load projection assumed to scale equal to BOD load projection provided by Lonza. Information previously provided by Lonza indicates a future max day TN load of 340 lb/d
6. Redhook load projection based on existing IUP values
7. Infiltration/Inflow is assumed to have pollutant concentrations of 0 mg/L
8. Other/Small IUP flow values are included in Commercial/Light industrial. Small IUP load estimates assume high strength commercial waste
9. Septage pollutant concentration estimate based on COD sampling by the City (Summer 2018)
10. Max day loads do not balance because max day values taken from observed data for each process on different days
11. Assumes water:sewer ratio equals 1.00

FIGURE 1 - PEASE WWTF
FLOW PROJECTIONS



APPENDIX A

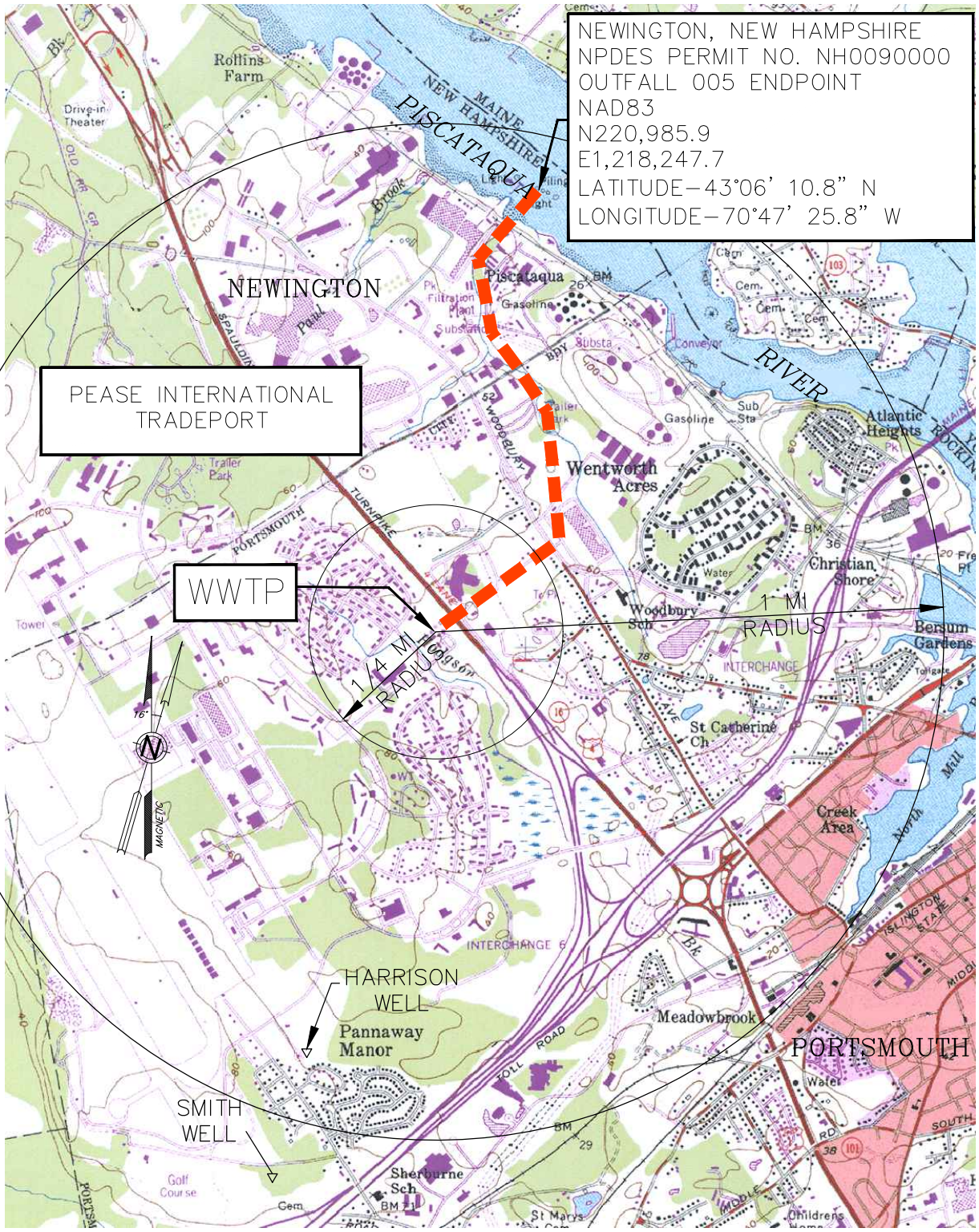
Existing Occupied Buildings with Water Billing Consumption and Building Square Footage

	STREET ADRESS	Service #	Sum of GALLONS 2015	2016	2017	2015-2017 TOTAL	3 YR Total*	Avg. Annual Total, gallons/yr	Avg. GPD 3 Yr average*	Address	Address Street	City	Zone	Bldg Sq Ft	Use	Leasee	GPD/SF	Notes
3	**Commercial/Light Industrial**																	
4	1 INTERNATIONAL DR	241	3,303,916	3,287,460	2,795,276	9,386,652	9,386,652	3,128,884	8,565	1	International Drive	Portsmouth	Business/Commercial	65,786	Hotel	Resport LLC (Marriott)	0.130	See 3.6.2019 dataset
5	1 INTERNATIONAL DR BY PASS MET	241		0	748	748	748	249	1				Business/Commercial	0	Hotel	Same as 1 International Dr.	*	Not calculated
6	MGMT CO	241			17,952	17,952	17,952	5,984	16	100	Arboretum Drive	Newington	Industrial	131,598	Off/Caf	Farley White Pease, LLC		Not calculated, Data for Dec. 2017 only
7	105 CORPORATE DR	241	2,254,472	2,013,616	1,801,184	6,069,272	6,069,272	2,023,091	5,538	105	Corporate Drive	Portsmouth	Business/Commercial	45,824	Medical	Pease Rehab, LLC	0.121	
8	108 CORPORATE DR	241	10,472	5,984	2,992	19,448	19,448	6,483	18	108	Corporate Drive	Portsmouth	Business/Commercial	17,385	Office	Pioneer NH, LLC	0.001	
9	11 MANCHESTER SQ	241			748	748	748	249	1	11	Manchester Square	Portsmouth	Business/Commercial	5,111	Equpmt (no occupancy)	75 New Hampshire LLC		Not calculated. Six of seven months have 0 flow
10	119 INTERNATIONAL DR	241	183,260	135,388	261,800	580,448	580,448	193,483	530	119	International Drive	Portsmouth	Business/Commercial	5,730	Educa	119 International Drive, LLC	0.092	
11	120 AVIATION AVE	241	28,424	38,148	28,424	94,996	94,996	31,665	87	120	Aviation Avenue	Portsmouth	Airport/Industrial	17,000	Office		0.005	
12	130 INTERNATIONAL DR	241	473,484	116,688	289,476	879,648	879,648	293,216	803	130	International Drive	Portsmouth	Industrial	50,000	Off/Mfg	130 International Drive, LLC	0.016	
13	139 FLIGHT LINE AVE	241	60,588	80,784	84,524	225,896	225,896	75,299	206	139	Flightline Road	Portsmouth	Airport/Industrial	45,000	Off/Whse		0.005	
14	14 AIRLINE AVE	241	50,116	47,872	32,164	130,152	130,152	43,384	119	14	Airline Avenue	Newington	Airport	1,500	ATCT	Air Traffic Control Tower	0.079	
15	15 RYE ST	241	439,076	398,684	231,880	1,069,640	1,069,640	356,547	976	15	Rye Street	Portsmouth	Business/Commercial	54,000	Office	119 International Drive, LLC	0.012	
16	Same lot as 15 Rye St.	241							-	19	Rye Street	Portsmouth	Business/Commercial	29,718	Office	119 International Drive, LLC		Included in above
17	16 PEASE BLVD	241	1,232,704	2,992	6,732	1,242,428	1,242,428	414,143	1,134	16	Pease Boulevard	Newington	Industrial	1,206	Office	Next Level Now		1,232,704 from December 2015 of 1,242,428 gallons total
18	161 CORPORATE DR	241	546,040	816,068	517,616	1,879,724	1,879,724	626,575	1,715	161	Corporate Drive	Portsmouth	Business/Commercial	18,942	Medical	Pemobscot Bay Medical Assoc	0.091	
19	162 CORPORATE DR	241	2,302,344	1,783,980	1,244,672	5,330,996	5,330,996	1,776,999	4,864	162	Corporate Drive	Portsmouth	Business/Commercial	102,400	Off/Mfg	162 Corporate Dr, LLC	0.048	
20	164 CORPORATE DR	241	1,877,480	1,355,376	1,021,768	4,254,624	4,254,624	1,418,208	3,882	164	Corporate Drive	Portsmouth	Business/Commercial	102,400	Office	166 Corperate Dr., LLC	0.019	
21	Same Lot as 164 Corporate Dr.?	241							-	166	Corporate Drive	Portsmouth	Business/Commercial	102,400	Office	166 Corperate Dr., LLC	-	Included in above
22	183 INTERNATIONAL DRIVE	241	785,400	754,732	453,288	1,993,420	1,993,420	664,473	1,819	183	International Drive	Portsmouth	Business/Commercial	35,400	Office	Tower Hill Development (Hi Liner)	0.020	
23	Same Lot as 183 International Dr?	241							-	185	International Drive	Portsmouth	Business/Commercial	57,720	Office	Tower Hill Development (Sprague)	-	Included in above
24	195 NEW HAMPSHIRE AVE	241	1,276,088	1,572,296	1,095,820	3,944,204	3,944,204	1,314,735	3,599	195	New Hampshire Avenue	Portsmouth	Industrial	82,741	Office	222 Internioal, LP	0.043	
25	2 INTERNATIONAL DR	241	724,812	700,876	574,464	2,000,152	2,000,152	666,717	1,825	2	International Drive	Newington/Portsn	Business/Commercial	85,219	Office	Two International Group, LLC	0.021	
26	20 DURHAM ST	241	1,877,480	1,353,880	728,552	3,959,912	3,959,912	1,319,971	3,613	20	Durham Street	Portsmouth	Industrial	81,710	Mfg	Westinghouse	0.044	
27	20 INTERNATIONAL DR	241	302,192	250,580	169,048	721,820	721,820	240,607	659	20	International Drive	Portsmouth	Business/Commercial	11,211	Office	30 International Drive, LLC	0.059	
28	200 INTERNATIONAL DR	241	868,428	314,160	386,716	1,569,304	1,569,304	523,101	1,432	200	International Drive	Portsmouth	Industrial	81,851	Office	200 International, LP	0.017	
29	222 INTERNATIONAL DR	241	1,103,300	552,772	973,148	2,629,220	2,629,220	876,407	2,399	222	International Drive	Portsmouth	Industrial	62,545	Office	22 International, LP	0.038	
30	23 HAMPTON ST	241	38,148	45,628	32,912	116,688	116,688	38,896	106	23	Hampton Street	Portsmouth	Airport/Industrial	28,400	Hangar	Thermo Fisher Scientific	0.004	
31	249 CORPORATE DR	241	94,248	797,368	467,500	1,359,116	1,359,116	453,039	1,240	249	Corporate Drive	Portsmouth	Business/Commercial	37,000	Office	249 Corporate Drive, LLC	0.034	High peak flows in summer
32	25 NEW HAMPSHIRE AVENUE	241	68,068	151,844	178,024	397,936	397,936	132,645	363	25	New Hampshire Avenue	Newington	Business/Commercial	36,881	Off/Med	25,29 Retail, LLC	0.010	
33	27 INTERNATIONAL DR	241	977,636	1,145,188	1,223,728	3,346,552	3,346,552	1,115,517	3,053	27	International Drive	Portsmouth	Business/Commercial	17,186	Food/Other	Barnport, LLC	0.178	
34	273 CORPORATE DR	241	2,078,692	1,917,872	1,317,976	5,314,540	5,314,540	1,771,513	4,849	273	Corporate Drive	Portsmouth	Business/Commercial	100,650	Office	273 Corporate Drive, LLC	0.048	
35	282 CORPORATE DR	241	233,376	412,896	296,208	942,480	942,480	314,160	860	282	Corporate Drive	Portsmouth	Business/Commercial	13,222	Office	Shanes & McEachern Co	0.065	
36	30 INTERNATIONAL DR	241	23,188	89,012	59,092	171,292	171,292	57,097	156	30	International Drive	Portsmouth	Business/Commercial	14,714	Office	30 International Drive, LLC	0.011	
37	10 MANCHESTER SQ	241	13,464	13,464	11,220	38,148	38,148	12,716	35				Business/Commercial		Office	SAME AS 30 INTERNATIONAL		
38	30 NEW HAMPSHIRE AVE	241	504,152	384,472	404,668	1,293,292	1,293,292	431,097	1,180	30	New Hampshire Avenue	Portsmouth	Business/Commercial	51,000	Mfg	Spyglass Development LLC	0.023	
39	30 RYE ST	241	454,784	510,136	362,780	1,327,700	1,327,700	442,567	1,211	30	Rye Street	Portsmouth	Business/Commercial	10,580	Daycare	Discovery Child Enrichment Cener, Inc.	0.115	
40	31 ROCHESTER AVE	241	760,716	891,616	1,139,952	2,792,284	2,792,284	930,761	2,548	31	Rochester Avenue	Portsmouth	Industrial	46,951		US Dept of State National Passport Center	0.054	
41	CENTER	241	575,212	566,984	450,296	1,592,492	1,592,492	530,831	1,453	32	Rochester Avenue	Portsmouth	Industrial	69,953		US Dept of State National Visa Center	0.021	
42	320 CORPORATE DR	241	822,800	919,292	3,792,360	5,534,452	5,534,452	1,844,817	5,050	320	Corporate Drive	Portsmouth	Business/Commercial	137,000	Educa/Food	GBCC	0.037	
43	325 CORPORATE DR	241	774,180	346,324	239,360	1,359,864	1,359,864	453,288	1,241	325	Corporate Drive	Portsmouth	Business/Commercial	100,000	Office	325 Corporate Dr. II, LLC	0.012	
44	359 CORPORATE DR	241	65,076	53,856	52,360	171,292	171,292	57,097	156	359	Corporate Drive	Portsmouth	Industrial	27,873	Off/Gar	Freedom Ring Communications, LLC	0.006	
45	36 Airline Avenue		18,700	17,204	14,960	50,864	50,864	16,955	46	36	Airline Avenue	Portsmouth	Airport	1,200	Office	PDA Airport Operations	0.039	NOT BILLED
46	37 RYE ST	241	873,664	884,884	757,724	2,516,272	2,516,272	838,757	2,296	110	Corporate Drive	Portsmouth	Business/Commercial	34,060	Office	Pioneer NH, LLC	0.067	
47	38 RYE ST (included above)	241							-	112	Corporate Drive	Portsmouth	Business/Commercial	19,277	Office	Pioneer NH, LLC	-	
48	39 RYE ST (included above)	241							-	114	Corporate Drive	Portsmouth	Business/Commercial	4,879	Office	Pioneer NH, LLC	-	
49	47 DURHAM ST	241	748	0	10,472	11,220	11,220	3,740	10	47	Durham Street	Portsmouth	Airport/Industrial	6,000	Mfg	KOALD Design, LLC	0.002	
50	5 AVIATION AVE	241	10,472	2,244	46,376	59,092	59,092	19,697	54	5	Aviation Avenue	Portsmouth	Industrial	1,642	Equpmt (no occupancy)	NE Tel (Consolidated Comm)	0.033	reported by City
51	51 INTERNATIONAL DR	241	50,864	56,848	56,848	164,560	164,560	54,853	150	51	International Drive	Portsmouth	Business/Commercial	14,234	Office	Granite State College	0.011	
52	Same Building as 51 International	241							-	55	International Drive	Portsmouth	Business/Commercial		Office	PDA		
53	58 DURHAM ST	241		23,188	17,952	41,140	41,140	13,713	38	58	Durham Street	Portsmouth	Airport/Industrial	28,680	Hangar	PCA	0.001	
54	62 DURHAM ST	241	36,652	71,808	56,848	165,308	165,308	55,103	151	62	Durham Street	Portsmouth	Airport/Industrial	29,000	Hangar	PCA	0.005	
55	68 NEW HAMPSHIRE AVE	241	50,116	60,588	49,368	160,072	160,072	53,357	146	68	New Hampshire Avenue	Portsmouth	Business/Commercial	22,000	Office	Cinthesys Real Estate	0.007	
56	72 PEASE BLVD ARBORETUM DR PO # 135225	241	356,796	3,659,216	3,108,688	7,124,700	7,124,700	2,374,900	6,501	72	Pease Boulevard	Newington	Industrial	206,338	Off/Mfg	Sig Sauer Real Estate	0.032	
57	73 CORPORATE DR	241	0	181,016	333,608	514,624	514,624	171,541	470	73	Corporate Drive	Portsmouth	Business/Commercial	12,300	Medical	Wentworth Douglas Hospital	0.038	294,712 gal from Aug/Sep/Oct 2017 of 514,624 3-year total
58	77 AVIATION AVE	241	5,236	3,740	2,992	11,968	11,968	3,989	11	77	Aviation Avenue	Portsmouth	Industrial	8,658	Equpmt	First Light Fiber	0.001	
59	SHERBURNE RD(PEASE CLUB HOUSE)	241	1,289,552	1,269,356	527,340	3,086,248	3,086,248	1,028,749	2,816	200	Grafton Drive	Portsmouth	Natural Resource Prot	0	Golf Club House	Clubhouse to Pierce Island		Not calculated, no building SF
60	1 NEW HAMPSHIRE AVE	321	1,273,844	1,084,600	970,156	3,328,600	3,328,600	1,109,533	3,037	1	New Hampshire Avenue	Newington	Business/Commercial	110,000	Office	One NH Avenue, LLC	0.028	
61	100 INTERNATIONAL DR	321	1,620,168	967,912	876,656	3,464,736	3,464,736	1,154,912	3,161	100	International Drive	Portsmouth	Industrial	110,853	Office	100 International, LLC	0.029	
62	104 Grafton Drive		149,600	145,860	141,372	436,832	436,832	145,611	399	104	Grafton Drive	Portsmouth	Airport/Industrial	27,500	Off/Hngr	PCA	0.014	
63	110 AVIATION AVE 710115	321	4,488	3,740	2,244	10,472	10,472	3,491	10	110	Aviation Avenue	Portsmouth	Airport/Industrial	10,200	Hangar	Carlisle Capital	0.001	
64	111 NEW HAMPSHIRE AVE	321	1,450,372	1,813,152	1,572,296	4,835,820	4,835,820	1,611,940	4,412	111	New Hampshire Avenue	Portsmouth	Industrial	70,422	Off/Mfg	Seacoast Newspapers, Inc	0.063	
65	14 MANCHESTER SQ	321	951,456	468,248	495,176	1,914,880	1,914,880	638,293	1,747	14	Manchester Square	Portsmouth	Business/Commercial	40,437	Ret/Off/Med/Food	NH Ave Retail Ctr., LLC	0.043	
66	115 Flightline Road		442,068	469,744	388,960	1,300,772	1,300,772	433,591	1,187	115	Flightline Road	Portsmouth	Airport/Industrial	80,000	Off/Hngr	Planesense	0.015	
67	125 Aviation Avenue		277,508	376,244	163,812	817,564	817,564	272,521	746	125	Aviation Avenue	Portsmouth	Industrial	65,212	Hangar	Pioneer Aviation, LLC	0.011	
68	177 CORPORATE DR 710190	321	75,548	64,328	65,076	204,952	204,952	68,317	187	177	Corporate Drive	Portsmouth	Business/Commercial	11,456	Office	177 Pease, LLC	0.016	
69	180 INTERNATIONAL DR 710061	321	1,181,092	782,408	639,540	2,603,040	2,603,040	867,680	2,375	180	International Drive	Portsmouth	Industrial	56,658	Off/Mfg	200 International, LP	0.042	
70	207 INTERNATIONAL DR	321	1,372,580	1,505,724	1,526,668	4,404,972	4,404,972	1,468,324	4,019	207	International Drive	Portsmouth	Business/Commercial	100,000	Office	Pioneer Intl Development, LLC	0.040	
71	230 CORPORATE DR	321	635,052	355,300	338,844	1,329,196	1,329,196	443,065	1,213	230	Corporate Drive	Portsmouth	Business/Commercial	29,952	Office	230 Corporate Dr., LLC	0.040	
72	231 CORPORATE DRIVE LLC	321	815,320	691,900	473,484	1,980,704	1,980,704	660,235	1,807	231	Corporate Drive	Portsmouth	Business/Commercial	24,354	Off/Dent	231 Corporate Dr,. LLC	0.074	
73	42 Airline Avenue		296,956	354,552	418,880	1,070,388	1,070,388	356,796	977	42	Airline Avenue	Portsmouth	Airport	52,000	Terminal	Airline Terminal	0.019	
74	44 DURHAM ST	321	8,228	12,716	17,952	38,896	38,896	12,965	35	44	Durham Street	Portsmouth	Airport/Industrial	28,400	Hangar	PCA	0.001	
75	7 Lee Street		**2018 Tot.:**		2,959,836	2,959,836		2,959,836	8,102	7	Lee Street	Portsmouth	Industrial	30,502	Mtnc Gar	PDA	0.266	NOT BILLED, Calculated from 2018 data
76	75 Rochester Avenue		255,068	249,832	297,704	802,604	802,604	267,535	732	75	Rochester Avenue	Portsmouth	Industrial	56,215	Office	IAPP	0.013	
77	81 NEW HAMPSHIRE AVE 720140	321	673,948	457,776	593,912	1,725,636	1,725,636	575,212	1,574	81	New Hampshire Avenue	Portsmouth	Business/Commercial	24,318	Daycare	Horne 101 LLC & Levere Properites LLC	0.012	
78	Same lot as 81 New Hampshire Ave	321								75	New Hampshire Avenue	Portsmouth	Business/Commercial	81,004	Office	75 New Hampshire LLC	-	Included in 81 New Hampshire Ave above
79	Same lot as 81 New Hampshire Ave	321								85	New Hampshire Avenue	Portsmouth	Business/Commercial	28,500	Office	75 New Hampshire LLC	-	Included in 81 New Hampshire Ave above
80		Total	**41,359,912**	**39,862,416**	**39,673,172**			**Total**	**115,708**					**3,412,058**				
81																		
82																		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1			Sum of GALLONS															
2	**STREET ADRESS**	**Service #**	**2015**	**2016**	**2017**	**2015-2017 TOTAL**	**3 YR Total***	**Avg. Annual Total, gallons/yr**	**Avg. GPD 3 Yr average***	**Address**	**Address Street**	**City**	**Zone**	**Bldg Sq Ft**	**Use**	**Leasee**	**GPD/SF**	**Notes**
83																		
84																		
85	**AIR NATIONAL GUARD**																	
86	ST	241		6,732	65,076	71,808		71,808	197				ANG		ANG	ANG		Calculated from 2017 data only
87	251 NASHUA AVE	241		0	0	0		-	-				ANG		ANG	ANG		Calculated from 2017 data only
88	252 NASHUA AVE	241		0	0	0		-	-				ANG		ANG	ANG		Calculated from 2017 data only
89	254 NEWMARKET ST (ANG) BY-PASS	241	0	0	0	0		-	-				ANG		ANG	ANG		Calculated from 2017 data only
90	255 NEWINGTON RD (BLDG 255)	241		9,724	67,320	77,044		77,044	211				ANG		ANG	ANG		Calculated from 2017 data only
91	302 NEWMARKET STREET # 161	241			1,496	1,496		1,496	4				ANG		ANG	ANG		Calculated from 2017 data only
92	ST	241		1,496	15,708	17,204		17,204	47				ANG		ANG	ANG		Calculated from 2017 data only
93	DINING HALL #145 145 NEWMARKET ST	241		20,944	266,288	287,232		287,232	786				ANG		ANG	ANG		Calculated from 2017 data only
94	NEWMARKET ST	241		0	17,204	17,204		17,204	47				ANG		ANG	ANG		Calculated from 2017 data only
95	RD	241		5,236	57,596	62,832		62,832	172				ANG		ANG	ANG		Calculated from 2017 data only
96	MAINTENANCE #252 252 NASHUA AVE	241		4,488	62,832	67,320		67,320	184				ANG		ANG	ANG		Calculated from 2017 data only
97	MAINTENANCE #254 B 254 NEWMARKET ST	241	343,332	443,564	384,472	1,171,368		1,171,368	3,206				ANG		ANG	ANG		Calculated from 2017 data only
98	ST	241		2,992	54,604	57,596		57,596	158				ANG		ANG	ANG		Calculated from 2017 data only
99	MOTOR VEHICLE #157 157 NEWMARKET ST	241		5,236	74,800	80,036		80,036	219				ANG		ANG	ANG		Calculated from 2017 data only
100	PEASE ANG #245 245 NEWINGTON RD	241		0	4,488	4,488		4,488	12				ANG		ANG	ANG		Calculated from 2017 data only
101	PEASE ANG #249 249 NEWINGTON RD	241		5,984	33,660	39,644		39,644	109				ANG		ANG	ANG		Calculated from 2017 data only
102	PEASE ANG #251 251 NASHUA AVE	241		3,740	27,676	31,416		31,416	86				ANG		ANG	ANG		Calculated from 2017 data only
103	PEASE ANG #264 264 NEWMARKET ST	241	161,568	163,812	178,772	504,152		504,152	1,380				ANG		ANG	ANG		Calculated from 2017 data only
104	PEASE ANG 146 RANGE RD	241		0	4,488	4,488		4,488	12				ANG		ANG	ANG		Calculated from 2017 data only
105	SECURITY #244 244 FRANKLIN ST	241		8,976	50,864	59,840		59,840	164				ANG		ANG	ANG		Calculated from 2017 data only
106	WAREHOUSE/ANG #262 262 NASHUA AVE	241		5,236	45,628	50,864		50,864	139				ANG		ANG	ANG		Calculated from 2017 data only
107	156 NEWMARKET ST	321		1,496	34,408	35,904		35,904	98				ANG		ANG	ANG		Calculated from 2017 data only
108	302 NEWMARKET ST	321		11,968	106,216	118,184		118,184	323				ANG		ANG	ANG		Calculated from 2017 data only
109	ANG BLDG 160 NEWMARKET ST	321		0	748	748		748	2				ANG		ANG	ANG		Calculated from 2017 data only
110	ARBORETUM DR GUARD (BLDG 164)	321	748	20,944	4,488	26,180		26,180	72				ANG		ANG	ANG		Calculated from 2017 data only
111	BLDG # 158	321		22,440	14,212	36,652		36,652	100				ANG		ANG	ANG		Calculated from 2017 data only
112	FUEL STORAGE #165 165 ARBORETUM DR	321		0	74,800	74,800		74,800	205				ANG		ANG	ANG		Calculated from 2017 data only
113	NEWINGTON RD BLDG 243 FIRE STA	321		27,676	276,012	303,688		303,688	831				ANG		ANG	ANG		Calculated from 2017 data only
114							**Total**		**8,765**									
115	**VACANT/OTHER**																	
116	ARBORETUM DR	241	8,976	8,228	9,724	26,928	26,928	8,976	25							Seasonal Irrigation Meter		
117	14 AVIATION AVE	241		0	0	0	-	-	-	14	Aviation Avenue	Portsmouth	Airport/Industrial	VACANT	Hangar	Available		
118	12 Aviation Avenue								-	12	Aviation Avenue	Portsmouth	Airport	VACANT	Hangar	Available		
119	19 DURHAM ST	241	0	0	32,164	32,164	32,164	10,721	29	19	Durham Street	Portsmouth	Industrial	VACANT	VACANT	Available		
120	165 Arboretum Drive								-	165	Arboretum Drive	Newington	Airport/Industrial	VACANT	VACANT			
121	360 Corporate Drive								0	360	Corporate Drive	Portsmouth	Business/Commercial	VACANT	VACANT	Option (GBCC)		
122	40 Oak Street								0	40	Oak Street	Portsmouth	Business/Commercial	VACANT	VACANT	GSA		
123	3 MANCHESTER SQ/50 INTERNATIONAL DR	241	148,852	145,860	145,112	439,824	439,824	146,608	401	50	International Drive	Portsmouth	Business/Commercial		PROPOSED/NOT YET APPROVED	75 New Hampshire LLC		
124	254 Corporate Drive									254	Corporate Drive	Portsmouth	Business/Commercial		PROPOSED/NOT YET APPROVED	PROPOSED/NOT YET APPROVED		
125	255 Corporate Drive									255	Corporate Drive	Portsmouth	Business/Commercial		PROPOSED/NOT YET APPROVED	PROPOSED/NOT YET APPROVED		
126	163 International Drive									163	International Drive	Portsmouth	Business/Commercial	0	Cell Twr	GMR Holdings of NH		No Water Service
127	200 Flightline Road									200	Flightline Road	Portsmouth	Airport/Industrial		Hangar			No Water Service
128	201 Flightline Road									201	Flightline Road	Portsmouth	Airport/Industrial	53,864	Hangar	No water/sewer		No Water Service
129	203 Flightline Road									203	Flightline Road	Portsmouth	Airport/Industrial		Hangar	No water/sewer		No Water Service
130	205 Flightline Road									205	Flightline Road	Portsmouth	Airport/Industrial		Hangar	No water/sewer		No Water Service
131														53,864				
132	**HEAVY INDUSTRIAL**																	
133	101 INTERNATIONAL DR	241		2,864,092	37,717,152	40,581,244	40,581,244	13,527,081	37,027	101	International Drive	Portsmouth	Business/Commercial	656,000	Biotech	Lonza Biologics, Inc.		Lonza Biologics
134	101 INTERNATIONAL DR	321	90,378,596	98,321,608	76,340,132	265,040,336	265,040,336	88,346,779	241,827	101	International Drive	Portsmouth	Business/Commercial		Biotech	Lonza Biologics, Inc.		Lonza Biologics, same lot as above
135	101 INTERNATIONAL DR(4BYPASS)	321	3,740	2,992	2,244	8,976	8,976	2,992	8									
136	1 RED HOOK WAY	321	27,765,760	27,119,488	21,042,736	75,927,984	75,927,984	25,309,328	69,278	35	Corporate Drive	Portsmouth	Business/Commercial	129,124	Brewery	Craft Brew Alliance, LLC		Redhook
137									-					785,124				
138	**MUNICIPAL**								-									
139	135 CORPORATE DR-PEASE WWTP	201	1,098,812	2,146,012	2,098,140	5,342,964	5,342,964	1,780,988	4,875	135	Corporate Drive	Portsmouth	Business/Commercial		WWTP	City of Portsmouth		
140	Fire Station								-	127	International Drive	Portsmouth	Business/Commercial		Fire Sta	city of Portsmouth		
141	175 International Drive								-	175	International Drive	Portsmouth	Business/Commercial	0	Wtr Tank	City of Portsmouth		Pease Water Tank
142	ARBORETUM DR (20 SHORT ST)	241		30,668	21,692	52,360	52,360	17,453	48	20	Short Street	Newington	Airport/Industrial		GWTP			
143	215 CORPORATE DR LIFT STATION	201	0	748	0	748	748	249	1						WW P.S.			
144		Total	**1,098,812**	**2,177,428**	**2,119,832**		**Total**		**4,923**									
145																		
146	**Average Existing Water Demand**								129,397									
147																		
148	**SEWER ACCOUNTS**																	
149	1 RED HOOK WAY (Restaurant)	818	1,977,712	2,393,600	2,497,572	6,868,884	6,868,884	2,289,628	6,267									
150	1 RED HOOK WAY (Brewery)	849	23,263,548	21,641,884	17,546,584	62,452,016	62,452,016	20,817,339	56,982									

ATTACHMENT B

WWTP MAPS AND PROCESS FLOW SCHEMATIC

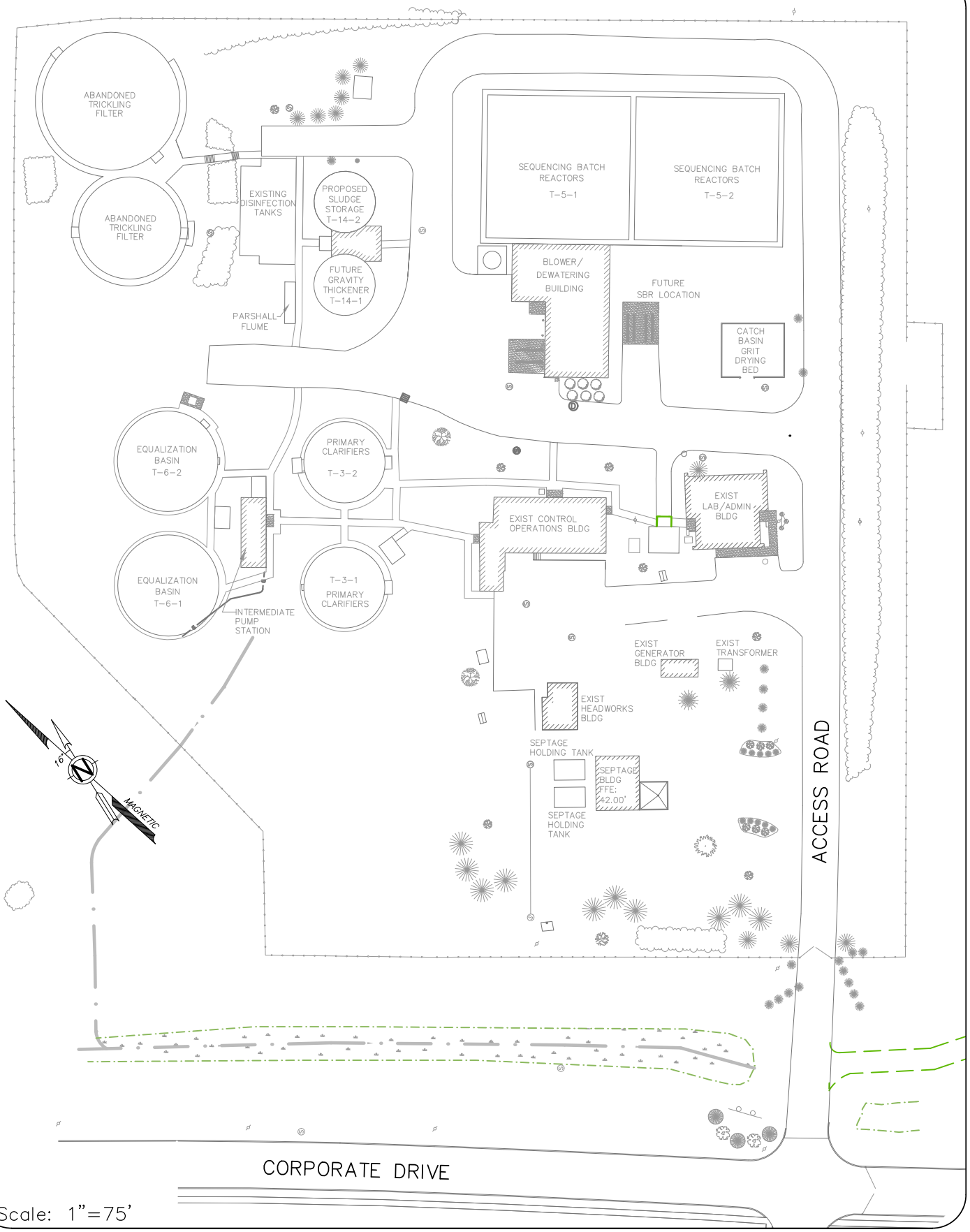


NOT TO SCALE

DATE		FIG.
4/17/19	SITE LOCATION MAP SHOWING WWTP OUTFALL IN PISCATAQUA RIVER NEWINGTON, NEW HAMPSHIRE	1
PROJECT 2402		

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603–436–6192 Fax. 603–431–4733

H:\Real Numbers\Portsmouth\2402 Pease NPDES Permit\2402 loc map.dwg, LOCATION MAP, 6/10/2019 9:10:29 AM, dbp

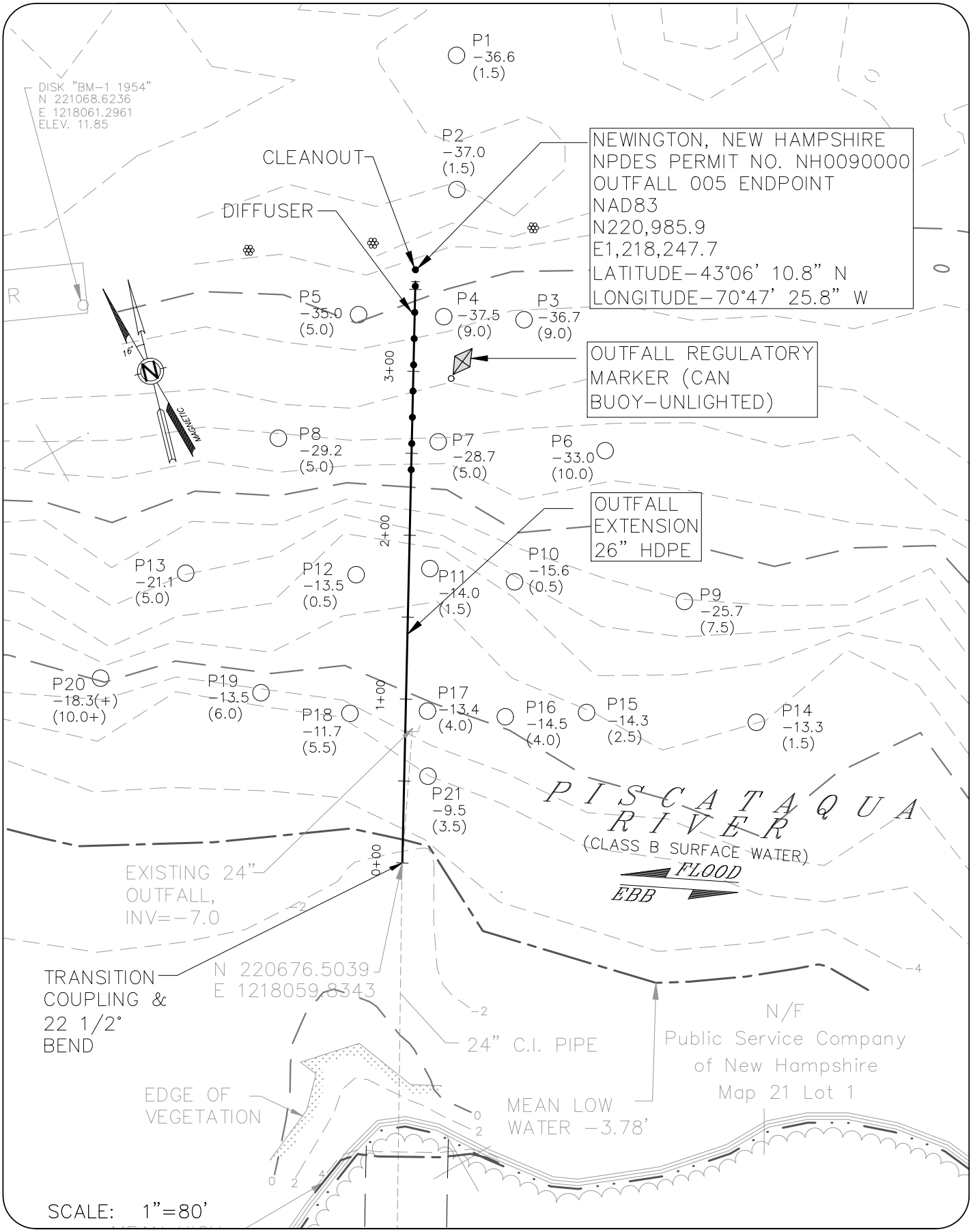


Scale: 1"=75'

DATE		FIG.
4/17/19	PEASE WWTP SITE PLAN PEASE DEVELOPMENT AUTHORITY PORTMSOUTH, NEW HAMPSHIRE	2
PROJECT 2402		

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

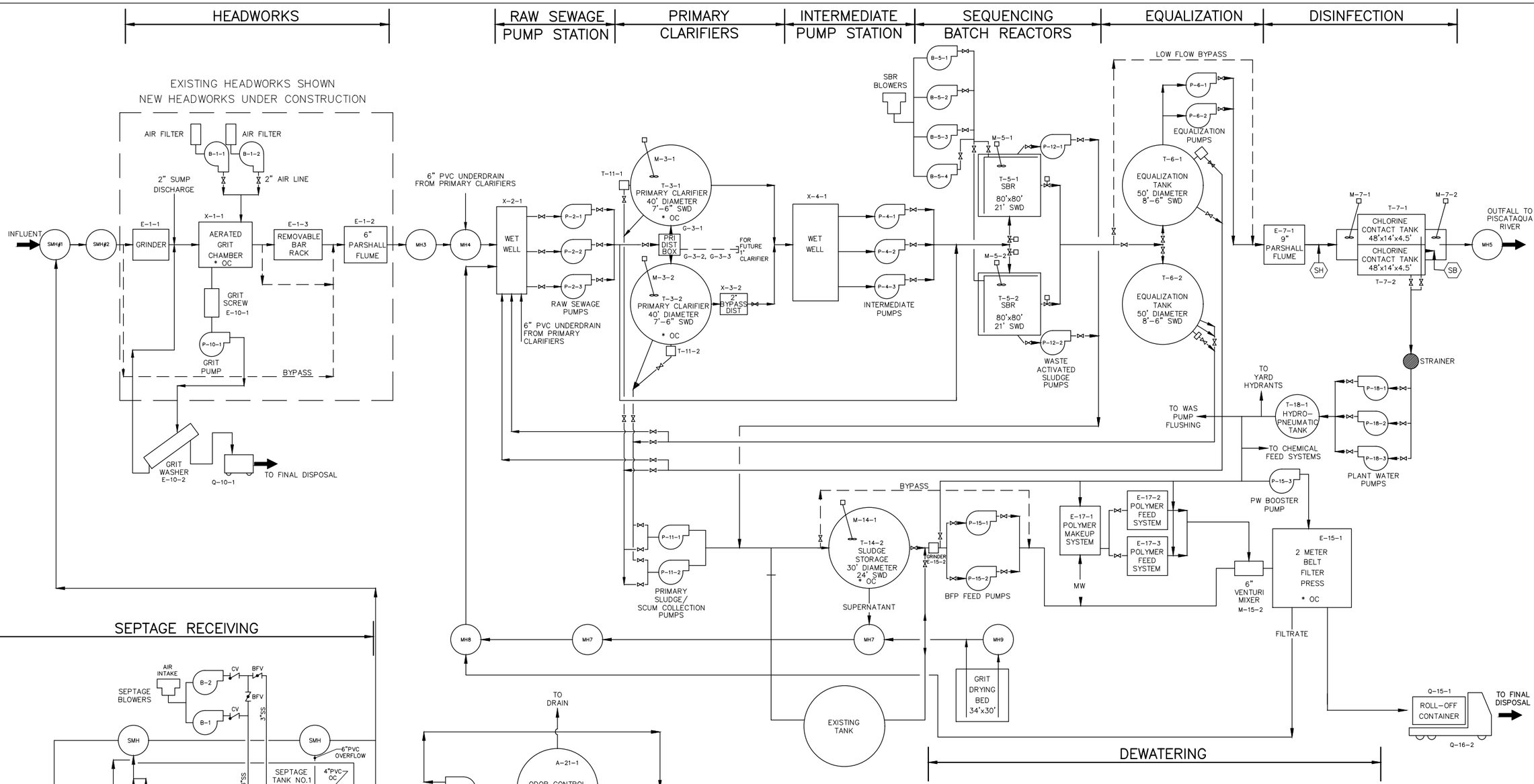
H:\Real Numbers\Portsmouth\2402 Pease NPDES Permit\2402 site plan.dwg, Layout1, 6/10/2019 9:10:35 AM, dbp



DATE		FIG.
4/17/19	SITE PLAN SHOWING WWTP OUTFALL IN PISCATAQUA RIVER NEWINGTON, NEW HAMPSHIRE	3
PROJECT 2402		

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603−436−6192 Fax. 603−431−4733

H:\Real Numbers\Portsmouth\2402 Pease NPDES Permit\2402 wwtp outfall.dwg, SITE PLAN, 6/10/2019 8:51:24 AM, dbp



CHEMICAL FEED LEGEND

(SH) SODIUM HYPOCHLORITE
CHLORINE MIX TANK
PLANT WATER SYSTEM
ODOR CONTROL

(CS) CAUSTIC SODA (SODIUM HYDROXIDE)
ODOR CONTROL

(SB) SODIUM BISULFITE
POST CHLORINE CONTACT TANK

NOTES

1. VALVE SYMBOL (⋈) IS GENERIC.
2. PROCESS PIPING LINES ARE SCHEMATIC ONLY AND ARE NOT INTENDED TO ACCURATLY REPRESENT PHYSICAL LOCATION OR RELATIVE LOCATION OF PROCESS UNITS, EQUIPMENT, OR PIPES.
3. FOR CLARITY, SLIDE GATES IN DISTRIBUTION BOXES AND TANK CHANNELS ARE ENUMERATED BUT NOT SHOWN.
4. CHEMICAL FEED SYSTEMS ARE NOT SHOWN (REFER TO P&I DIAGRAMS) EXCEPT FOR POLYMER SYSTEM. FEED POINTS ARE SHOWN SCHEMATICALLY ((SH)) AND IDENTIFIED IN THE CHEMICAL FEED LEGEND.

DATE 4/17/19

PROJECT 2402

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

PEASE WWTP
EXISTING PROCESS FLOW DIAGRAM
PEASE DEVELOPMENT AUTHORITY
PORTMSOUTH, NEW HAMPSHIRE

FIG. 4

H:\Real Numbers\Portsmouth\2402 Pease NPDES Permit\2402 flow diag.dwg, FLOW DIAGRAM, 6/10/2019 8:51:18 AM, dbp

ATTACHMENT C

PEASE WWTF PRIORITY POLLUTANT SCANS

Table 4: Water Quality Sampling Results for Conventional Pollutants, Bacteria and Field Samples

		Round 1 - Sept. 16-17, 2018			Round 2 - Oct. 17-18, 2018			Round 3 - Nov. 14-15, 2018			Round 4 - Dec. 11-12, 2018		
Parameter	**Units**	**Newington**	**Pease**	**River**	**Newington**	**Pease**	**River**	**Newington**	**Pease**	**River**	**Newington**	**Pease**	**River**
Nutrients / Solids / other													
Ammonia-N	mg/L as N	ND	3.6	ND	ND	2.1	ND	ND	3.4	ND	0.65	3.2	ND
Nitrate plus nitrite-N	mg/L as N	0.34	0.8	ND	1.4	3.68	0.06	0.6	3.2	0.09	0.54	2.42	0.14
Total Kjeldahl Nitrogen	mg/L as N	1.2	6	0.16	1	2.85	ND	1.72	5.35	0.345	1.7	4.6	0.15
Total Nitrogen	mg/L as N	1.5	6.8	ND	2.4	6.53	0.06	2.32	8.55	0.435	2.24	7.02	0.29
Total phosphorus	mg/L	1.2	52	0.033	0.25	51	1.4	0.61	30	0.084	0.77	31	0.047
Total suspended solids	mg/L	1.7	17	20	4.6	6.1	3.9	12	15	29	27	19	15
Total dissolved solids	mg/L	710	2,100	31,000	740	1,800	26,000	630	1,600	12,000	1,200	1,900	21,000
Turbidity	NTU	1.23	8.33	0.62	2.04	3.64	0.87	7.38	2.43	1.07	2.2	2	2.3
Oil and grease	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Biochemical Oxygen Demand	mg/L	ND	13	ND	ND	ND	ND	31	6.2	ND	ND	7.8	ND
Total Phenolic Compounds	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Residual Chlorine	mg/L	0.00	0.00	-	-	0.02	-	0.01	0.01	-	3.2	0	-
Total Cyanide	mg/L	ND	0.012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bacteria													
Fecal Coliform	CFU/100mL	5	3	2	1	1	1	5	ND	107	ND	1	20
Enterococcus	CFU/100mL	7	40	ND	ND	ND	1	ND	2	143	69	40	13
Field Parameters													
Conductivity	mS/cm	1318	336	44.3	1185	3.57	39.79	1174	12.88	21.6	1.287	2.62	28.242
Dissolved oxygen	mg/L	0.2	4.04	7.5	8.48	2.44	8.15	8.88	5.07	10.9	9.69	3.74	9.87
pH		6.63	7.42	7.95	7.59	7.19	-	7.04	7.18	7.71	7.19	7.23	7.78
Temperature	deg C	22.8	26.7	20.1	17.0	19.1	12	14.3	15.5	5.6	10.3	16.2	14.3

Note: Each WWTF has additional testing and routine testing performed as part of the NPDES permit. This table does not include this data.

Table 5: Water Quality Sampling Results for Total Metals and Dissolved Metals

		Round 1 - Sept. 16-17, 2018			Round 2 - Oct. 17-18, 2018			Round 3 - Nov. 14-15, 2018			Round 4 - Dec. 11-12, 2018		
Parameter	**Units**	**Newington**	**Pease**	**River**	**Newington**	**Pease**	**River**	**Newington**	**Pease**	**River**	**Newington**	**Pease**	**River**
Total Metals													
Mercury	µg/L	0.99	3.17	-	1.45	2.16	-	12.6	5.15	-	6.82	6.49	-
Antimony	µg/L	0.118	0.23	0.356	0.16	0.315	0.624	0.114	0.197	0.154	0.125	0.158	ND
Arsenic	µg/L	1.28	3.64	-	0.87	4.57	-	1	4.63	-	0.7	3.15	-
Beryllium	µg/L	0.005	0.004	ND	0.007	ND	ND	ND	ND	ND	0.004	ND	ND
Cadmium	µg/L	0.014	ND	-	0.015	0.095	-	0.05	0.118	-	0.053	0.052	-
Chromium	µg/L	0.39	0.73	0.38	0.42	0.48	0.43	0.29	0.59	0.71	0.26	0.49	0.93
Copper	µg/L	2.16	10.8	-	2.4	19.8	-	6.03	17.5	-	5.94	9.76	-
Iron	µg/L	63	802	142	57	254	189	142	271	304	159	215	145
Lead	µg/L	0.4	1.03	-	2	0.224	-	1.3	0.304	-	0.82	0.211	-
Nickel	µg/L	2.22	8.31	-	2.31	4.61	-	2.37	3.65	-	2.72	3.58	-
Selenium	µg/L	1.09	1.45	-	1.11	1.35	-	1.59	2.23	-	1.2	1.44	-
Silver	µg/L	0.217	0.027	-	0.267	0.016	-	0.953	0.03	-	2.75	0.019	-
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	ng/L	85.4	96.4	-	93.2	84.9	-	85.5	117	-	80.5	71.4	-
Dissolved Metals													
Dissolved Mercury	ng/L	-	-	0.35	-	-	1.38	-	-	1.23	-	-	0.59
Dissolved Arsenic	µg/L	-	-	0.97	-	-	0.88	-	-	0.76	-	-	0.85
Dissolved Cadmium	µg/L	-	-	0.135	-	-	0.038	-	-	0.05	-	-	0.04
Dissolved Copper	µg/L	-	-	0.71	-	-	0.53	-	-	0.60	-	-	0.44
Dissolved Lead	µg/L	-	-	0.021	-	-	0.024	-	-	0.11	-	-	0.03
Dissolved Nickel	µg/L	-	-	0.48	-	-	0.41	-	-	0.68	-	-	0.54
Dissolved Selenium	µg/L	-	-	ND	-	-	ND	-	-	ND	-	-	ND
Dissolved Silver	µg/L	-	-	0.09	-	-	0.02	-	-	0.02	-	-	0.03
Dissolved Zinc	µg/L	-	-	0.57	-	-	0.91	-	-	2.39	-	-	1.80

Table 6: Water Quality Sampling Results for Volatile Organic Compounds

Parameter	Units	Round 1 - Sept. 16-17, 2018			Round 2 - Oct. 17-18, 2018			Round 3 - Nov. 14-15, 2018			Round 4 - Dec. 11-12, 2018		
		Newington	Pease	River	Newington	Pease	River	Newington	Pease	River	Newington	Pease	River
Volatile Organic Compounds													
1,1,1,2-tetrachloroethane	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,1,1-trichloroethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,1,2,2-tetrachloroethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,1,2-trichloroethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,1-dichloroethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,1-dichloroethene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,1-dichloropropene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,2,3-trichlorobenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,2,3-trichloropropane	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,2,4-trichlorobenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,2,4-trimethylbenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,2-dibromo-3-chloropropane	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,2-dibromoethane	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,2-dichlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,2-dichloroethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,2-dichloropropane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,3,5-trimethylbenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
1,3-dichlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,3-dichloropropane	ug/L	-	-	-	U	U	U	-	-	-	U	U	U
1,4-dichlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,2-dichloropropane	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
2-Butanone (MEK)	ug/L	U	U	U	-	-	-	U	U	U	U	U	U
2-chloroethylvinylether	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2-chlorotoluene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
2-Hexanone	ug/L	U	U	U	-	-	-	U	U	U	U	U	U
2-methoxy-2-methylbutane	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
4-bromofluorobenzene	%	98	97	92	104	104	108	106	104	97	100	98	98
4-chlorotoluene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
4-isopropyltoluene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
4-Methyl-2-pentanone	ug/L	U	U	U	-	-	-	U	U	U	U	U	U
Acetone	ug/L	U	17	U	-	-	-	U	U	U	U	U	U
acrolein	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
acrylonitrile	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U

Parameter	Units	Round 1 - Sept. 16-17, 2018			Round 2 - Oct. 17-18, 2018			Round 3 - Nov. 14-15, 2018			Round 4 - Dec. 11-12, 2018		
		Newington	Pease	River	Newington	Pease	River	Newington	Pease	River	Newington	Pease	River
Volatile Organic Compounds (continued)													
bromobenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
bromochloromethane	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
bromodichloromethane	ug/L	71	53	U	140	40	U	30	28	U	22	14	U
bromoform	ug/L	6.7	2.2	U	7	U	U	1.6	U	U	2.3	U	U
bromomethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
Carbon disulfide	ug/L	U	U	U	-	-	-	U	U	U	U	U	U
carbon tetrachloride	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
chlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
chloroethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
chloroform	ug/L	40	66	U	220	92	U	53	74	U	18	25	U
chloromethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,2-dichloroethene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
cis-1,3-dichloropropene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
dibromochloromethane	ug/L	54	24	U	79	18	U	17	10	U	12	6.6	U
dibromofluoromethane	%	-	-	-	108	104	100	-	-	-	88	86	88
dibromomethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
dichlorodifluoromethane	ug/L	-	-	-	U	U	U	-	-	-	U	U	U
diethylether	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
diisopropyl ether	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
ethylbenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
ethyl-t-butyl ether	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
Fluorobenzene	%	94	99	95	-	-	-	108	108	96	-	-	-
hexachlorobutadiene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
iodomethane	ug/L	-	-	-	-	-	-	-	-	-	3.1	U	U
isopropylbenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
m- and p-xylene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
methylene chloride	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
methyl-t-butyl ether	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
naphthalene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
n-butylbenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
n-propylbenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
o-xylene	ug/L	U	U	U	-	-	-	U	U	U	U	U	U
p/m-Xylene	ug/L	U	U	U	-	-	-	U	U	U	-	-	-
Pentafluorobenzene	%	96	98	104	-	-	-	120	120	98	-	-	-

Parameter	Units	Round 1 - Sept. 16-17, 2018			Round 2 - Oct. 17-18, 2018			Round 3 - Nov. 14-15, 2018			Round 4 - Dec. 11-12, 2018		
		Newington	Pease	River	Newington	Pease	River	Newington	Pease	River	Newington	Pease	River
Volatile Organic Compounds (continued)													
sec-butylbenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
Styrene	ug/L	U	U	U	-	-	-	U	U	U	U	U	U
tert-butanol	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
tert-butylbenzene	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
tetrachloroethene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
tetrahydrofuran	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
toluene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
toluene-d8	%	-	-	-	102	100	102	-	-	-	94	96	96
trans-1,2-dichloroethene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,3-dichloropropene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
trans-1,4-dichloro-2-bute	ug/L	-	-	-	-	-	-	-	-	-	U	U	U
trichloroethene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
trichlorofluoromethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
Vinyl acetate	ug/L	U	U	U	-	-	-	U	U	U	U	U	U
vinyl chloride	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
Xylenes, Total	ug/L	U	U	U	-	-	-	U	U	U	-	-	-

Table 7: Water Quality Sampling Results for Acid and Base Neutral Compounds (Semi-volatile Organic Compounds)

		Round 1 - Sept. 16-17, 2018			Round 2 - Oct. 17-18, 2018			Round 3 - Nov. 14-15, 2018			Round 4 - Dec. 11-12, 2018		
Parameter	Units	Newington	Pease	River	Newington	Pease	River	Newington	Pease	River	Newington	Pease	River
Acid-Base-Neutral Compounds (Semivolatile Organics)													
1,2,4-trichlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,2-dichlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,2-diphenylhydrazine (azobenze	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,3-dichlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
1,4-dichlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,4,5-trichlorophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,4,6-tribromophenol	%	-	95.29	75.05	114.825	109.05	89.745	63.68	64.5	59.865	81.775	59.63	62.355
2,4,6-trichlorophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,4-dichlorophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,4-dimethylphenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,4-dinitrophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,4-dinitrotoluene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,6-dichlorophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2,6-dinitrotoluene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2-chloronaphthalene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2-chlorophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2-fluorobiphenyl	%	-	32.57	47.42	62.57	61.9	62.98	56.98	47.38	60.36	41.18	32.63	41.52
2-fluorophenol	%	-	39.77	49.245	55.545	55.63	57.265	35.255	37.645	44.65	23.115	22.19	33.675
2-methylnaphthalene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2-methylphenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2-nitroaniline	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
2-nitrophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
3,3'-dichlorobenzidine	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
3-nitroaniline	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
4,6-dinitro-2-methylphenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
4-bromophenyl-phenylether	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
4-chloro-3-methylphenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
4-chloroaniline	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
4-chlorophenyl-phenylether	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
4-methylphenol (p-cresol)	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
4-nitroaniline	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
4-nitrophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
acenaphthene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
acenaphthylene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U

Parameter	Units	Round 1 - Sept. 16-17, 2018			Round 2 - Oct. 17-18, 2018			Round 3 - Nov. 14-15, 2018			Round 4 - Dec. 11-12, 2018		
		Newington	Pease	River	Newington	Pease	River	Newington	Pease	River	Newington	Pease	River
Acid-Base-Neutral Compounds (Semivolatile Organics) (continued)													
aniline	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
anthracene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzidine	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzo(a)anthracene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzo(a)pyrene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzo(b)fluoranthene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzo(g,h,i)perylene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzo(k)fluoranthene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzoic acid	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
benzyl alcohol	ug/L	U	54	U	U	U	U	U	U	U	U	U	U
bis(2-chloroethoxy)methane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
bis(2-chloroethyl)ether	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
bis(2-chloroisopropyl)ether	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
bis(2-ethylhexyl)phthalate	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
butylbenzylphthalate	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
carbazole	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
chrysene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
dibenzo(a,h)anthracene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
dibenzofuran	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
diethylphthalate	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
dimethylphthalate	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
di-n-butylphthalate	ug/L	U	U	U	U, B	U, B	26	12	20	29	19	21	25
di-n-octylphthalate	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
fluoranthene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
fluorene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
hexachloro-1,3-butadiene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
hexachlorobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
hexachlorocyclopentadiene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
hexachloroethane	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
indeno(1,2,3-cd)pyrene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
isophorone	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
naphthalene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
nitrobenzene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
nitrobenzene-d5	%	-	39.21	55.34	66.5	67.28	70.71	57.84	50.91	60.11	43.43	35.62	44.32

Parameter	Units	Round 1 - Sept. 16-17, 2018			Round 2 - Oct. 17-18, 2018			Round 3 - Nov. 14-15, 2018			Round 4 - Dec. 11-12, 2018		
		Newington	Pease	River	Newington	Pease	River	Newington	Pease	River	Newington	Pease	River
Acid-Base-Neutral Compounds (Semivolatile Organics) (continued)													
N-nitrosodimethylamine	ug/L	-	U	U	U	U	U	U	U	U	U	U	U
N-nitroso-di-n-propylamine	ug/L	U	4.4	U	U	U	U	U	U	U	U	U	U
N-nitrosodiphenylamine	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
pentachlorophenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
phenanthrene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
phenol	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
phenol-d5	%	-	24.86	36.36	45.98	46	62.86	31.545	33.48	48.345	21.73	19.515	41.41
pyrene	ug/L	U	U	U	U	U	U	U	U	U	U	U	U
pyridine	ug/L	-	U	U	U	U	U	U	U	U	U	U	U
terphenyl-d14	%	-	41.48	34.48	85.48	86	66.69	67.31	64.32	60.34	75.18	59.11	64.26

Table 8: Method detection limit (MDL) and method reporting limit (MRL) for all target parameters in this project.

Laboratory Parameter	Analytical Method	MDL	MRL	Units
Biochemical Oxygen Demand (BOD_5)	SM 5210 B		5	mg/L
Enterococci & Fecal Coliform	SM 92222 D		1	CFU/100mL
Total Suspended Solids (TSS)	SM 2540 D	0.4	10	mg/L
Total Dissolved Solids (TDS)	SM 2540 C	0.4	10	mg/L
Ammonia as N (NH_3-N)	SM 4500-NH3 G	0.1	0.1	mg/L
Chlorine (Total Residual)	SM 4500-Cl D		0.02	mg/L
Total Kjeldahl Nitrogen (TKN)	SM 4500-NH3 G	0.1	0.1	mg/L
Nitrate + Nitrite as Nitrogen (NO_3 + NO_2 as N)	SM 4500-NO3 F	0.008	0.05	mg/L
Oil and Grease	EPA 1664 A		10	mg/L
Total Phosphorus (TP)	SM 4500-P E	0.008	0.02	mg/L
Turbidity	SM 2130 B			NTU
Total Phenols	EPA 420.1		0.05	mg/L
Volatile Organic Compounds (VOC)	EPA 624		5	µg/L
Acid-Base-Neutral Extractable Compounds (ABNs)	EPA 625 / 8270		5	µg/L
Total Recoverable Metals - Fresh Water (CWA Trace Metals)				
Antimony (Sb)	EPA 200.8	0.009	0.02	µg/L
Arsenic (As)	EPA 200.8	0.1	0.3	µg/L
Beryllium (Be)	EPA 200.8	0.004	0.06	µg/L
Cadmium (Cd)	EPA 200.8	0.008	0.02	µg/L
Total Chromium	EPA 200.8	0.02	0.1	µg/L
Copper (Cu)	EPA 200.8	0.02	0.1	µg/L
Iron (Fe)	EPA 200.8	1.1	10	µg/L
Lead (Pb)	EPA 200.8	0.005	0.04	µg/L
Nickel (Ni)	EPA 200.8	0.04	0.1	µg/L
Selenium (Se)	EPA 200.8	0.44	0.6	µg/L
Silver (Ag)	EPA 200.8	0.002	0.02	µg/L
Thallium (Tl)	EPA 200.8	0.006	0.02	µg/L
Zinc (Zn)	EPA 200.8	0.16	0.5	µg/L
Total Mercury (Hg)	EPA 1631 E	0.0834	0.5	ng/L
Total Cyanide (CN)	SM 4500-CN E	0.007	0.02	mg/L
Total Recoverable Metals - Seawater (CWA Trace Metals)				
Antimony (Sb)	EPA 200.8	0.09	0.2	µg/L

Beryllium (Be)	EPA 200.8	0.04	0.6	µg/L
Total Chromium	EPA 200.8	0.2	1.0	µg/L
Iron (Fe)	EPA 200.8	11	100	µg/L
Thallium (Tl)	EPA 200.8	0.06	0.2	µg/L
Total Cyanide (CN)	SM 4500-CN E	0.007	0.02	mg/L
Dissolved Metals in Seawater				
Arsenic (As)	EPA 1640 RP	0.0395	0.375	µg/L
Cadmium (Cd)	EPA 1640 RP	0.0203	0.1	µg/L
Copper (Cu)	EPA 1640 RP	0.078	0.25	µg/L
Lead (Pb)	EPA 1640 RP	0.02	0.1	µg/L
Nickel (Ni)	EPA 1640 RP	0.0751	0.25	µg/L
Selenium (Se)	EPA 1640 RP	0.156	1.5	µg/L
Silver (Ag)	EPA 1640 RP	0.01	0.1	µg/L
Zinc (Zn)	EPA 1640 RP	0.139	0.5	µg/L
Dissolved Hg	EPA 1631 E	0.0834	0.5	ng/L

ATTACHMENT D

WHOLE EFFLUENT TOXICITY TESTING RESULTS

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH0090000

Job Number: 05.0044856.00

Test Numbers: 18-1127a (*Mysidopsis bahia)*
18-1127b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
NEB Sample ID. No. C38-2999

Sample Dates: 8/1-2/18

Test Dates: 8/2-4/18

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*):
Mb18(7-28)
Source: New England Bioassay Cultures **Age:** 5 days old

Inland silverside (*Menidia beryllina*):
Ss18AI(7-31)
Source: Aquatic Indicators, Inc. **Age:** 11 days old

Dilution Water: Piscataqua River
NEB Sample ID. No. C38-3000

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	**48 h**	**>100%**	**100%**	**50%**	**Yes**	**Yes**
Inland silverside: *Menidia beryllina*	**48 h**	**>100%**	**50%**	**50%**	**Yes**	**Yes**

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/2/18
NPDES Permit Number: NH0090000 Pipe Number: DSN 005

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	X Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other_____

Effluent sampling date (s): 8/1-2/18

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ± 1 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/8/18

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	97.5%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/2/18
NPDES Permit Number: NH0090000 Pipe Number: DSN 005

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	X Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)
_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name:)
_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;
_ or artificial sea salts mixed with deionized water;
_ deionized water and hypersaline brine; or
_ other

Effluent sampling date (s): 8/1-2/18

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ± 1 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 7/3/18

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	97.5%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH0090000

Job Number: 05.0044856.00

Test Numbers: 18-628a (*Mysidopsis bahia)*
18-628b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
NEB Sample ID. No. C38-2073

Sample Dates: 5/2-3/18

Test Dates: 5/3-5/18

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*):
Mb18(4-28)
Source: New England Bioassay Cultures **Age:** 5 days old

Inland silverside (*Menidia beryllina*):
Ss18AI(5-1)A
Source: Aquatic Indicators, Inc. **Age:** 11 days old

Dilution Water: Piscataqua River
NEB Sample ID. No. C38-2074

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	**48 h**	**>100%**	**100%**	**50%**	**Yes**	**Yes**
Inland silverside: *Menidia beryllina*	**48 h**	**>100%**	**50%**	**50%**	**Yes**	**Yes**

Facility Name: Pease WWTP Test Start Date: 5/3/18
NPDES Permit Number: NH0090000 Pipe Number: DSN 005

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	X Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name:)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other

Effluent sampling date (s): 5/2-3/18

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 5/1/18

Test Acceptability Criteria

Mean Control Survival:	97.5%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 5/3/18
NPDES Permit Number: NH0090000 Pipe Number: DSN 005

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	X Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)
_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name:)
_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;
_ or artificial sea salts mixed with deionized water;
_ deionized water and hypersaline brine; or
_ other

Effluent sampling date (s): 5/2-3/18

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 5/9/18

Test Acceptability Criteria

Mean Control Survival:	97.5%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	97.5%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH0090000

Job Number: 05.0044856.00

Test Numbers: 17-1184a (*Mysidopsis bahia)*
17-1184b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
(NEB Sample ID. No. C37-2057)

Sample Dates: 8/2-3/17

Test Dates: 8/4-6/17

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*): Mb17(7-30)

Source: New England Bioassay Cultures **Age:** 5 days old

Inland silverside (*Menidia beryllina*): Ss17AI(8-1)

Source: Aquatic Indicators, Inc. **Age:** 12 days old

Dilution Water: Piscataqua River
(NEB Sample ID. No. C37-2058)

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	**48 h**	**>100%**	**100%**	**50%**	**Yes**	**Yes**
Inland silverside: *Menidia beryllina*	**48 h**	**>100%**	**100%**	**50%**	**Yes**	**Yes**

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/4/17
NPDES Permit Number: NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
XAcute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	XDechlorinated	XComposite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	XMysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other _____

Effluent sampling date (s): 8/2-3/17

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 50%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/1/17

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/4/17
NPDES Permit Number: NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
XAcute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	XDechlorinated	XComposite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	XMenidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other _____

Effluent sampling date (s): 8/2-3/17

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 50%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/16/17

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH0090000

Job Number: 05.0044856.00

Test Numbers: 17-638a (*Mysidopsis bahia)*
17-638b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
(NEB Sample ID. No. C37-2057)

Sample Dates: 5/3-4/17

Test Dates: 5/4-6/17

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*): Mb17(4-30)

Source: New England Bioassay Cultures **Age:** 5 days old

Inland silverside (*Menidia beryllina*): Ss17AI(5-4)

Source: Aquatic Indicators, Inc. **Age:** 9 days old

Dilution Water: Piscataqua River
(NEB Sample ID. No. C37-2058)

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	**48 h**	**>100%**	**50%**	**50%**	**Yes**	**Yes**
Inland silverside: *Menidia beryllina*	**48 h**	**>100%**	**50%**	**50%**	**Yes**	**Yes**

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 5/4/17
NPDES Permit Number: NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
XAcute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	XDechlorinated	XComposite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	XMysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other _____

Effluent sampling date (s): 5/3-4/17

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 5/10/17

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 5/4/17
NPDES Permit Number: NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
XAcute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	XDechlorinated	XComposite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
	_ Sheepshead	_ Unchlorinated	
_ 24hr screening	XMenidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other _____

Effluent sampling date (s): 5/3-4/17

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 5/30/17

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	97.5%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH 0090000

Job Number: 05.0044856.00

Test Numbers: 16-1158a (*Mysidopsis bahia)*
16-1158b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
NEB Sample ID. No.C36-2892

Sample Dates: 8/10-11/16

Test Dates: 8/12-14/16

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*):

Source: New England Bioassay Cultures **Age:** 5 days old

Inland silverside (*Menidia beryllina*):

Source: Aquatic Indicators, Inc. **Age:** 12 days old

Dilution Water: Piscataqua River
(NEB Sample ID. No. C36-2893)

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	**48 h**	**>100%**	**100%**	**50%**	**Yes**	**Yes**
Inland silverside: *Menidia beryllina*	**48 h**	**94.0%**	**50%**	**50%**	**Yes**	**Yes**

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/12/16
NPDES Permit Number: NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	X Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other _____

Effluent sampling date (s): 8/10-11/16

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/1/16

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/12/16
NPDES Permit Number: NH NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	X Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other _____

Effluent sampling date (s): 8/10-11/16

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/3/16

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	97.5%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	50%	LC50	94.0%
		Upper Value	118.3%
		Lower Value	74.8%
		Data Analysis Method Used	Spearman
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH 0090000

Job Number: 05.0044856.00

Test Numbers: 16-627a (*Mysidopsis bahia)*
16-627b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
NEB Sample ID. No.C36-1965

Sample Dates: 5/4-5/16

Test Dates: 5/5-7/16

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*):

Source: New England Bioassay Cultures **Age:** 4 days old

Inland silverside (*Menidia beryllina*):

Source: Aquatic Indicators, Inc. **Age:** 9 days old

Dilution Water: Piscataqua River
(NEB Sample ID. No. C36-1965)

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	**48 h**	**>100%**	**100%**	**100%**	**Yes**	**Yes**
Inland silverside: *Menidia beryllina*	**48 h**	**>100%**	**50%**	**100%**	**Yes**	**Yes**

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 5/5/16
NPDES Permit Number: NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	X Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other _____

Effluent sampling date (s): 5/4-5/16

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 5/2/16

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 5/5/16
NPDES Permit Number: NH NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	X Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other _____

Effluent sampling date (s): 5/4-5/16

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No
Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 5/5/16

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

August 19, 2015

Paula Anania
Chief Plant Operator
City of Portsmouth Wastewater
680 Peverly Hill Road
Portsmouth, NH 03801

New England Bioassay
a Division of GZA GeoEnvironmental, Inc.

77 Batson Drive
Manchester, CT
06042
860-643-9560
FAX 860-646-7169

Dear Ms. Anania:

ACUTE TOXICITY TEST REPORT
FOR PEASE WWTP – DSN-005
(COLLECTION DATES: 5-6 AUGUST 2015)

Enclosed, please find four (4) copies of New England Bioassay's August 2015 Acute Toxicity Test Report for the Pease wastewater treatment plant (WWTP) in Portsmouth, NH - Discharge DSN-005. Static-acute definitive LC_{50} tests using saltwater mysids (*Mysidopsis bahia*; aka *Americamysis*) and inland silversides (*Menidia beryllina*) were conducted with a composite effluent sample collected from the Pease WWTP DSN-005 discharge during 5-6 August 2015 (0830 h - 0830 h). Test duration was 48 h for both *M. bahia* and *M. beryllina* (test dates: 6-8 August 2015). Results are summarized below.

Test Species	LC_{50} (% effluent)	A-NOEC (% effluent)	% Survival in 100% effluent
M. bahia	48 h: > 100%	100%	82.5% at 48 h
M. beryllina	48 h: > 100%	100%	85% at 48 h

If you have any questions, please call (860-858-3153) or email (kimberly.wills@gza.com).

Sincerely,

Kimberly Wills
Laboratory Manager

Whole Effluent Toxicity Testing Report Instruction Form

Client Name/Project: Pease WWTP Test Date: 8/6/15

Sample ID: DSN 005

Your results were as follows:

☒ Pass

☐ Fail – Please proceed according to the instructions in your permit.

☐ Invalid – **Retesting is still required. Retest report will be sent at a later date under separate cover.**

☐ Original Test Invalid – **Valid retest performed. Both test and retest results are attached.**

☐ Retesting will be or has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.

☐ This is your _____ case of dilution water toxicity. Please proceed according to the Case 2 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water. The alternate dilution water you select for future tests for this species should be described as follows: "synthetic laboratory water made up according to EPA's toxicity test protocols, by adding specified amounts of salts into deionized water in order to match the hardness of our receiving water." Writing this letter should help you to avoid retests in the future.

☐ Available information is insufficient to determine whether this test passed or failed. Please compare results to your permit limits. Please submit a current copy of your permit to the GZA Lab so that we can determine the status of future tests results and help ensure your compliance with permit requirements.

Please complete the items on this list before reporting these results according to the instructions in the "Monitoring and Reporting" Section of your permit.

- Please complete, sign and date the upper portion of the "Whole Effluent Toxicity Test Report Certification" page which is the page directly following this page.
- Fill in the Sample Type and Sample Method (upper right) and the Permit Limits (lower left) on the GeoEnvironmental, Inc.-EPA Toxicity Test Summary Sheet(s) if they are incomplete.
- Fill in any missing information on the GZA Chain-of-Custody documents. This includes ensuring that the following information is recorded: Sampler's name and title, Facility name and address, Sample collection methods, Sample collection start and end dates and times, Types of sample, Chlorination status of samples upon shipment to GZA, Site description and Sample collection procedures.
- Monitoring results should be summarized on your monthly Discharge Monitoring Report Form.
- Signed and dated originals of this report must be submitted to the State (and Federal) Agencies specified in the "Monitoring and Reporting" section of your permit.

Questions? Please contact the Lab Manager, Kim Wills, at (860) 858-3153 or kimberly.wills@gza.com.

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/6/15
NPDES Permit Number: NH0090000 Pipe Number: DSN 005

Test Type	Test Species	Sample Type	Sample Method
XAcute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	XDechlorinated	XComposite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	XMysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		
	_Other		

Dilution Water

Xreceiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name:)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other

Effluent sampling date (s): 8/5-6/15

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes
If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No

Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/3/15

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/6/15
NPDES Permit Number: NH0090000 Pipe Number: DSN 005

Test Type	Test Species	Sample Type	Sample Method
XAcute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	XDechlorinated	XComposite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	XMenidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		
	_Other		

Dilution Water

Xreceiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name:)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other

Effluent sampling date (s): 8/5-6/15

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes
If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No

Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/6/15

Test Acceptability Criteria

Mean Control Survival: 100%
Mean Diluent Survival: 100%
Mean Control Weight: N/A
Mean Diluent Weight: N/A

Mean Control Reproduction: N/A
Mean Diluent Reproduction: N/A
Mean Control Cell Count: N/A
Mean Diluent Cell Count: N/A

	Limits		Results
LC50	100%	LC50	100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH 0090000

Job Number: 05.0044856.00

Test Numbers: 15-593a (*Mysidopsis bahia*)
15-593b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
NEB Sample ID. No. C35-1996

Sample Dates: 5/6-7/15

Test Dates: 5/7-9/15

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*): Mb15(5-3)

Source: New England Bioassay Cultures **Age:** 4 days old

Inland silverside (*Menidia beryllina*): SS15AI(5-5)

Source: Aquatic Indicators, Inc. **Age:** 12 days old

Dilution Water: Piscataqua River
(NEB Sample ID. No. C35-1997)

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	48 h	>100%	50%	100%	Yes	Yes
Inland silverside: *Menidia beryllina*	48 h	100%	50%	100%	Yes	Yes

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 5/7/15
NPDES Permit Number: NH0090000 Pipe Number: DSN 005

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	X Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		
	_Other		

Dilution Water

Xreceiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name:)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other

Effluent sampling date (s): 5/6-7/15

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes
If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No

Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 5/1/15

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	±∞
		Lower Value	50%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 5/7/15
NPDES Permit Number: NH0090000 Pipe Number: DSN 005

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	X Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		
	_ Other		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name:)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other

Effluent sampling date (s): 5/6-7/15

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes
If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No

Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 5/6/15

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	100%	LC50	100%
		Upper Value	±∞
		Lower Value	50%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH 0090000

Job Number: 05.0044856.00

Test Numbers: 14-1185a (*Mysidopsis bahia)*
14-1185b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
NEB Sample ID. No. C34-2910

Sample Dates: 8/4-5/14

Test Dates: 8/6/14 – 8/8/14

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*):Mb14(8-2)

Source: New England Bioassay Cultures **Age:** 4 days old

Inland silverside (*Menidia beryllina*):SS14AI(8-5)

Source: Aquatic Indicators, Inc. **Age:** 11 days old

Dilution Water: Piscataqua River
(NEB Sample ID. No. C34-2911)

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	**48 h**	**>100%**	**100%**	**100%**	**Yes**	**Yes**
Inland silverside: *Menidia beryllina*	**48 h**	**>100%**	**50%**	**100%**	**Yes**	**Yes**

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/6/14
NPDES Permit Number: NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	X Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		
	_ Other_____		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other_____

Effluent sampling date (s): 8/4-5/14

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes
If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No

Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/1/14

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	100%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 8/6/14
NPDES Permit Number: NH0090000 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	X Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		
	_ Other_____		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other_____

Effluent sampling date (s): 8/4-5/14

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes
If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No

Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 8/1/14

Test Acceptability Criteria

Mean Control Survival: 100%
Mean Diluent Survival: 100%
Mean Control Weight: N/A
Mean Diluent Weight: N/A

Mean Control Reproduction: N/A
Mean Diluent Reproduction: N/A
Mean Control Cell Count: N/A
Mean Diluent Cell Count: N/A

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	50%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

SUMMARY

Client: Pease Wastewater Treatment Plant

NPDES Number: NH0100234

Job Number: 05.0044856.00

Test Numbers: 14-418a (*Mysidopsis bahia)*
14-418b (*Menidia beryllina*)

Test Material: DSN 005 Effluent
NEB Sample ID. No.c34-1699

Sample Dates: 4/1-2/14

Test Dates: 4/2-4/14

Test Duration: 48-h Static Acute

Test Methods: U.S. Environmental Protection Agency (EPA) Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (1993, (EPA 600/4-90/027F; 2002, EPA-821-R-02-012) and
EPA Region 1 (New England) Modified Methods.

Test Species: Mysid (*Mysidopsis bahia*; aka *Americamysis*): Mb14(3-30)

Source: New England Bioassay Cultures **Age:** 3 days old

Inland silverside (*Menidia beryllina*): SS14AI(4-1)

Source: Aquatic Indicators, Inc. **Age:** 11 days old

Dilution Water: Piscataqua River
(NEB Sample ID. No. c34-1700)

Receiving Water: Piscataqua River

Results:

Test Species	Test Exposure Duration	LC_{50} (% effluent)	A-NOEC (% effluent)	Permit Limit (LC_{50}) (% effluent)	Meets Permit Limits? (Yes/No)	Tests Meet Protocol Limit? (Yes/No)
Mysid: *Mysidopsis bahia*	**48 h**	**>100%**	**100%**	**100%**	**Yes**	**Yes**
Inland silverside: *Menidia beryllina*	**48 h**	**>100%**	**100%**	**100%**	**Yes**	**Yes**

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 4/2/14
NPDES Permit Number: NH0100234 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	X Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	_ Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		
	_ Other_____		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other_____

Effluent sampling date (s): 4/1-2/14

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes
If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No

Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 4/1/14

Test Acceptability Criteria

Mean Control Survival:	100%	Mean Control Reproduction:	N/A
Mean Diluent Survival:	97.5%	Mean Diluent Reproduction:	N/A
Mean Control Weight:	N/A	Mean Control Cell Count:	N/A
Mean Diluent Weight:	N/A	Mean Diluent Cell Count:	N/A

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	± ∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

New England Bioassay a division of GZA GeoEnvironmental – EPA Summary Sheet

Facility Name: Pease WWTP Test Start Date: 4/2/14
NPDES Permit Number: NH0100234 Pipe Number: _____

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	_ Grab
_ Chronic	_ Ceriodaphnia	X Dechlorinated	X Composite
_ Modified (chronic reporting acute values)	_ Daphnia Pulex	_ Chlorine Spiked in Lab	_ Flowthru
	_ Mysid Shrimp	_ Chlorinated on site	_ Other
_ 24hr screening	_ Sheepshead	_ Unchlorinated	
	X Menidia		
	_ Sea Urchin		
	_ Champia		
	_ Selenastrum		
	_ Other_____		

Dilution Water

X receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination; (Receiving water name: Piscataqua River)

_ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water; (Surface water name: _____)

_ synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;

_ or artificial sea salts mixed with deionized water;

_ deionized water and hypersaline brine; or

_ other_____

Effluent sampling date (s): 4/1-2/14

Effluent concentrations tested (in%): 0 6.25 12.5 25 50 100
* Permit limit concentration: 100%

Was effluent salinity adjusted? Yes
If yes, to what value? 25 ppt
With sea salts? Yes Hypersaline brine solution? No

Actual effluent concentrations tested after salinity adjustment (%): 0 6.25 12.5 25 50 100

Reference Toxicant test date: 4/2/14

Test Acceptability Criteria

Mean Control Survival: 97.5%
Mean Diluent Survival: 100%
Mean Control Weight: N/A
Mean Diluent Weight: N/A

Mean Control Reproduction: N/A
Mean Diluent Reproduction: N/A
Mean Control Cell Count: N/A
Mean Diluent Cell Count: N/A

	Limits		Results
LC50	100%	LC50	>100%
		Upper Value	± ∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC		A-NOEC	100%
C-NOEC	N/A	C-NOEC	-------
		LOEC	-------
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

ATTACHMENT E

SIGNIFICANT INDUSTRIAL USER INFORMATION

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes ✔ No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 6.00

b. Number of CIUs. 0.00

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: Lonza Biologics, Inc.

Mailing Address: 101 International Drive
Portsmouth, NH 03801

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

Biopharmaceutical manufacture using Mammalian Cell Culture

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): Biopharmaceutical proteins

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

350,000 gpd (X continuous or _____ intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

29,700 gpd (X continuous or _____ intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ✔ Yes ____ No

b. Categorical pretreatment standards ____ Yes ✔ No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes _X_No If yes, describe each episode.

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes ✔ No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 6.00

b. Number of CIUs. 0.00

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: Craft Brew Alliance (Redhook)

Mailing Address: 35 Corporate Dr.
Portsmouth, NH 03801

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

Beer brewing

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): Beer

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

160,000 gpd (X continuous or _____ intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____ continuous or _____ intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ✔ Yes ____ No

b. Categorical pretreatment standards ____ Yes ✔ No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes __X__No If yes, describe each episode.

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes ✔ No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 6.00

b. Number of CIUs. 0.00

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: Seacoast Media Group

Mailing Address: 111 New Hampshire Avenue
Portsmouth, NH 03801

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

Printing

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): Printed media

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

3,500 gpd (X continuous or _____ intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____ continuous or _____ intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ✔ Yes ____ No

b. Categorical pretreatment standards ____ Yes ✔ No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes _X_ No If yes, describe each episode.

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes ✔ No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 6.00

b. Number of CIUs. 0.00

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: Ionbond

Mailing Address: 195 New Hampshire Ave Suite 190
Portsmouth, NH 03801

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

Metal finishing

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): Metal coatings

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

500 gpd (_____continuous or _____intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

400 gpd (_____continuous or _____intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ✔ Yes ____No

b. Categorical pretreatment standards ____Yes ✔ No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes __X__No If yes, describe each episode.

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes ✔ No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 6.00

b. Number of CIUs. 0.00

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: NH Biotechnology Education and Treaining Center at NHCTC

Mailing Address: 320 Corporate Drive
Portsmouth, NH 03801

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

Education

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): Education

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

6,500 liters/year ~~gpd~~ (____continuous or X intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (____continuous or _____intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ✔ Yes ____No

b. Categorical pretreatment standards ____Yes ✔ No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes _X_ No If yes, describe each episode.

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes ✔ No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 6.00

b. Number of CIUs. 0.00

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: New Hampshire Air National Guard

Mailing Address: 302 Newmarket Street
Pease ANGB, NH 03803

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

Photography development

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): Developed photographs

Raw material(s): Photo developer, developing penetrant/emulsifier

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

105 gal/month ~~gpd~~ (____continuous or _____intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (____continuous or _____intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ✔ Yes ____No

b. Categorical pretreatment standards ____Yes ✔ No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes _X_ No If yes, describe each episode.

_____

_____

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

_____

_____

_____

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

_____

_____

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

_____

_____

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

_____

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

ATTACHMENT F

SEWAGE SLUDGE TEST RESULTS

Eastern Analytical, Inc.

professional laboratory and drilling services

Paula Anania
City of Portsmouth Wastewater
680 Peverly Hill Road
Portsmouth , NH 03801

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 165228
Client Identification: Pierce Island & Pease Dewatered WW Sludge | Q1 2017
Date Received: 1/31/2017

Dear Ms. Anania :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director — 2.14.17 Date — 6 # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **165228**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2017**

Temperature upon receipt (°C): 2.7 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
165228.01	Pease	1/31/17	1/30/17	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.
Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.
All results contained in this report relate only to the above listed samples.
References include:

1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater,20th Edition, 1998 and 22nd Edition, 2012
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 2nd edition, 1992

LABORATORY REPORT

EAI ID#: **165228**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2017**

Sample ID:	Pease
Lab Sample ID:	165228.01
Analytical Type:	Sample
Matrix:	aqueous
Date Sampled:	1/30/17
Date Received:	1/31/17
Date Extracted:	

	Result	Dilution Factor	Analytical Matrix	Units	Date Analyzed	Method	Analyst	TCLP Reg Limits (Leachate Conc.)	
Vinyl chloride	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	200	ug/l
1,1-Dichloroethene	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	700	ug/l
2-Butanone(MEK)	< 200	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	200000	ug/l
Chloroform	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	6000	ug/l
Carbon tetrachloride	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	500	ug/l
Benzene	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	500	ug/l
1,2-Dichloroethane	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	500	ug/l
Trichloroethene	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	500	ug/l
Tetrachloroethene	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	700	ug/l
Chlorobenzene	< 40	20	TCLPsolid	ug/L	2/2/17	1311/8260B	BAM	100000	ug/l
4-Bromofluorobenzene (surr)	**101 %R**		TCLPsolid	%	2/2/17	1311/8260B	BAM		
1,2-Dichlorobenzene-d4 (surr)	**102 %R**		TCLPsolid	%	2/2/17	1311/8260B	BAM		
Toluene-d8 (surr)	**95 %R**		TCLPsolid	%	2/2/17	1311/8260B	BAM		

LABORATORY REPORT

EAI ID#: **165228**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2017**

Sample ID:	Pease
Lab Sample ID:	165228.01
Analytical Type:	Sample
Matrix:	aqueous
Date Sampled:	1/30/17
Date Received:	1/31/17
Date Extracted:	2/3/17

	Result	Dilution Factor	Analytical Matrix	Units	Date Analyzed	Method	Analyst	TCLP Reg Limits (Leachate Conc.)	
2,4,5-Trichlorophenol	< 10	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	400000	ug/l
2,4,6-Trichlorophenol	< 10	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	2000	ug/l
Pentachlorophenol	< 50	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	100000	ug/l
2-Methylphenol	< 10	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	200000	ug/l
3/4-Methylphenol	**540**	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	200000	ug/l
1,4-Dichlorobenzene	< 10	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	7500	ug/l
Hexachloroethane	< 10	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	3000	ug/l
Hexachlorobutadiene	< 10	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	500	ug/l
Hexachlorobenzene	< 10	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	130	ug/l
Nitrobenzene	< 10	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	2000	ug/l
2,4-Dinitrotoluene	< 50	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	130	ug/l
Pyridine	< 50	10	TCLPsolid	ug/L	2/6/17	8270D	JMR	5000	ug/l
2-Fluorophenol (surr)	**32 %R**		TCLPsolid	%	2/6/17	8270D	JMR		
Phenol-d6 (surr)	**24 %R**		TCLPsolid	%	2/6/17	8270D	JMR		
2,4,6-Tribromophenol (surr)	**87 %R**		TCLPsolid	%	2/6/17	8270D	JMR		
Nitrobenzene-D5 (surr)	**61 %R**		TCLPsolid	%	2/6/17	8270D	JMR		
2-Fluorobiphenyl (surr)	**61 %R**		TCLPsolid	%	2/6/17	8270D	JMR		
p-Terphenyl-D14 (surr)	**84 %R**		TCLPsolid	%	2/6/17	8270D	JMR		

LABORATORY REPORT

EAI ID#: **165228**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2017**

Sample ID: Pease

Lab Sample ID: 165228.01

Matrix: aqueous

Date Sampled: 1/30/17

Date Received: 1/31/17

		Analysis			
	Units	**Date**	**Time**	**Method**	**Analyst**
Paint Filter (Free Liquid) **Absent**	None	2/01/17	9:40	9095	ATA

LABORATORY REPORT

EAI ID#: **165228**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2017**

Sample ID:	Pease
Lab Sample ID:	165228.01
Analytical Type:	Sample
Matrix:	aqueous
Date Sampled:	1/30/17
Date Received:	1/31/17
Date Extracted:	

	Result	Dilution Factor	Analytical Matrix	Units	Date Analyzed	Method	Analyst	TCLP Reg Limits (Leachate Conc.)	
Arsenic	< 0.5	100	TCLPsolid	mg/L	2/2/17	6020	DS	5	mg/l
Barium	< 0.5	100	TCLPsolid	mg/L	2/2/17	6020	DS	100	mg/l
Cadmium	< 0.1	100	TCLPsolid	mg/L	2/2/17	6020	DS	1	mg/l
Chromium	< 0.1	100	TCLPsolid	mg/L	2/2/17	6020	DS	5	mg/l
Lead	< 0.5	100	TCLPsolid	mg/L	2/2/17	6020	DS	5	mg/l
Mercury	< 0.01	100	TCLPsolid	mg/L	2/2/17	6020	DS	0.2	mg/l
Selenium	< 0.1	100	TCLPsolid	mg/L	2/2/17	6020	DS	1	mg/l
Silver	< 0.1	100	TCLPsolid	mg/L	2/2/17	6020	DS	5	mg/l

CHAIN-OF-CUSTODY RECORD

165228 6

COPW

Sample IDs	Date/Time *Composites need start and stop dates/times*	Matrix	Parameters and Sample Notes	# of containers
Pease	1/30/17 1015 (ed)	aqueous Grab or Comp	SolAsRec/PtFltr TCLPsolid/ICPMets.As.Ba.Cd.Cr.Pb.Se.Ag.Hg/VOC/ABN 8270 ~~SolTotDry/ABNAVNH8260BFullList~~ (ed) See attached sheet. (ed)	

☐ **Sampler confirms ID and parameters are accurate** *Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE Dissolved Sample Field Filtered ☐

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAI Project ID 1724

Project Name Pierce Island & Pease Dewatered WW Sludge | Q1 2017

State NH

Client (Pro Mgr) Paula Anania

Customer City of Portsmouth Wastewater

Address 680 Peverly Hill Road

City Portsmouth NH 03801

Phone 427-1553 **Fax**

Email: panania@cityofportsmouth.com

Direct 427-1553

Results Needed by: Preferred date _____

Notes:

QC deliverables

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ PC

ReportingOptions

☒ HC ☐ NO FAX

☒ EDD PDF ☐ Partial FAX

☒ EDD email ☐ PDF Invoice

☒ PDF prelim, NO FAX ☐ EQUIS

☐ e-mail Login Confirmation

PO# 0700018

Quote#: 1010625

Temp 2.7 °C

Ice Y ☒ N ☐

Samples Collected by: _____

Relinquished by	Date/Time	Received by
Chris Wright	1/31/17 9:07	Lisa Burton
Lisa Burton	1-31-17 15:00	

Relinquished by Date/Time Received by

Eastern Analytical, Inc.

professional laboratory and drilling services

Paula Anania
City of Portsmouth Wastewater
680 Peverly Hill Road
Portsmouth , NH 03801

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 178301
Client Identification: Pierce Island & Pease Dewatered WW Sludge | Q1 2018
Date Received: 1/30/2018

Dear Ms. Anania :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director | 2.14.18 Date | 6 # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **178301**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2018**

Temperature upon receipt (°C): 2.7 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
178301.01	Pease	1/30/18	1/29/18	solid	18.5	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.
Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.
All results contained in this report relate only to the above listed samples.
References include:
1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater,20th Edition, 1998 and 22nd Edition, 2012
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 2nd edition, 1992

LABORATORY REPORT

EAI ID#: **178301**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2018**

Sample ID:	Pease
Lab Sample ID:	178301.01
Analytical Type:	Sample
Matrix:	solid
Date Sampled:	1/29/18
Date Received:	1/30/18
Date Extracted:	

	Result	Dilution Factor	Analytical Matrix	Units	Date Analyzed	Method	Analyst	TCLP Reg Limits (Leachate Conc.)	
Vinyl chloride	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	200	ug/l
1,1-Dichloroethene	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	700	ug/l
2-Butanone(MEK)	< 200	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	200000	ug/l
Chloroform	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	6000	ug/l
Carbon tetrachloride	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	500	ug/l
Benzene	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	500	ug/l
1,2-Dichloroethane	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	500	ug/l
Trichloroethene	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	500	ug/l
Tetrachloroethene	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	700	ug/l
Chlorobenzene	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	100000	ug/l
1,4-Dichlorobenzene	< 40	20	TCLPsolid	ug/L	2/6/18	1311/8260C	BML	7500	ug/l
4-Bromofluorobenzene (surr)	**103 %R**		TCLPsolid	%	2/6/18	1311/8260C	BML		
1,2-Dichlorobenzene-d4 (surr)	**99 %R**		TCLPsolid	%	2/6/18	1311/8260C	BML		
Toluene-d8 (surr)	**98 %R**		TCLPsolid	%	2/6/18	1311/8260C	BML		

LABORATORY REPORT

EAI ID#: **178301**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2018**

Sample ID:	Pease
Lab Sample ID:	178301.01
Analytical Type:	Sample
Matrix:	solid
Date Sampled:	1/29/18
Date Received:	1/30/18
Date Extracted:	2/9/18

	Result	Dilution Factor	Analytical Matrix	Units	Date Analyzed	Method	Analyst	TCLP Reg Limits (Leachate Conc.)	
2,4,5-Trichlorophenol	< 10	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	400000	ug/l
2,4,6-Trichlorophenol	< 10	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	2000	ug/l
Pentachlorophenol	< 50	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	100000	ug/l
2-Methylphenol	< 10	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	200000	ug/l
3/4-Methylphenol	**560**	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	200000	ug/l
1,4-Dichlorobenzene	< 10	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	7500	ug/l
Hexachloroethane	< 10	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	3000	ug/l
Hexachlorobutadiene	< 10	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	500	ug/l
Hexachlorobenzene	< 10	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	130	ug/l
Nitrobenzene	< 10	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	2000	ug/l
2,4-Dinitrotoluene	< 50	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	130	ug/l
Pyridine	< 50	10	TCLPsolid	ug/L	2/9/18	8270D	JMR	5000	ug/l
2-Fluorophenol (surr)	**37 %R**		TCLPsolid	%	2/9/18	8270D	JMR		
Phenol-d6 (surr)	**27 %R**		TCLPsolid	%	2/9/18	8270D	JMR		
2,4,6-Tribromophenol (surr)	**80 %R**		TCLPsolid	%	2/9/18	8270D	JMR		
Nitrobenzene-D5 (surr)	**69 %R**		TCLPsolid	%	2/9/18	8270D	JMR		
2-Fluorobiphenyl (surr)	**78 %R**		TCLPsolid	%	2/9/18	8270D	JMR		
p-Terphenyl-D14 (surr)	**78 %R**		TCLPsolid	%	2/9/18	8270D	JMR		

LABORATORY REPORT

EAI ID#: **178301**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2018**

Sample ID: Pease

		Analysis			
Lab Sample ID:	178301.01				
Matrix:	solid				
Date Sampled:	1/29/18				
Date Received:	1/30/18	**Units**	**Date**	**Time**	**Method**	**Analyst**
Paint Filter (Free Liquid)	**Absent**	None	1/31/18	11:50	9095	ATA
Solids Total	**18.5**	Percent	2/12/18	15:00	2540G-91	ATA

LABORATORY REPORT

EAI ID#: **178301**

Client: **City of Portsmouth Wastewater**

Client Designation: **Pierce Island & Pease Dewatered WW Sludge | Q1 2018**

Sample ID: Pease

Lab Sample ID: 178301.01
Matrix: solid
Date Sampled: 1/29/18
Date Received: 1/30/18

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Arsenic	< 0.5	TCLPsolid	mg/L	2/6/18	6020	DS
Barium	< 0.5	TCLPsolid	mg/L	2/6/18	6020	DS
Cadmium	< 0.1	TCLPsolid	mg/L	2/6/18	6020	DS
Chromium	< 0.1	TCLPsolid	mg/L	2/6/18	6020	DS
Lead	< 0.5	TCLPsolid	mg/L	2/6/18	6020	DS
Mercury	< 0.01	TCLPsolid	mg/L	2/6/18	6020	DS
Selenium	< 0.1	TCLPsolid	mg/L	2/6/18	6020	DS
Silver	< 0.1	TCLPsolid	mg/L	2/6/18	6020	DS

CHAIN-OF-CUSTODY RECORD

178301

Sample IDs	Date/Time *Composites need start and stop dates/times*	Matrix	Parameters and Sample Notes	# of containers
Pease	1/29/18 10:19 AM	~~Solid aqueous~~ Grab or Comp	SolAsRec/PtFltr/Total Solids TCLPsolid/ICPMets.As.Ba.Cd.Cr.Pb.Se.Ag.Hg/TCLPABN/TCLPVOCZHE	3

☑ Sampler confirms ID and parameters are accurate

Circle preservative/s: HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE

Dissolved Sample Field Filtered ☐

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAI Project ID 1724

Project Name Pierce Island & Pease Dewatered WW Sludge | Q1 2018

State NH

Client (Pro Mgr) Paula Anania

Customer City of Portsmouth Wastewater

Address 680 Peverly Hill Road

City Portsmouth NH 03801

Phone 427-1553 **Fax**

Email: panania@cityofportsmouth.com

Direct 427-1553

Results Needed by: Preferred date _____

Notes:

$ per Paula Anania JW 2/14/18

QC deliverables for 1/31/18

☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ PC

ReportingOptions

☒ HC ☐ NO FAX

☒ EDD PDF ☐ Partial FAX

☒ EDD email ☐ PDF Invoice

☒ PDF prelim, NO FAX ☐ EQUIS

☐ e-mail Login Confirmation

176e045e

PO# ~~0700018~~

Quote#: 1010625

Temp 2.7°C

Ice Y ☐ N ☐

Samples Collected by: Ariel Wright

Ariel Wright	1/30/18 940	
Relinquished by	**Date/Time**	**Received by**
	1/30/18 13:00	1/30/18
Relinquished by	**Date/Time**	**Received by**

Eastern Analytical, Inc.

professional laboratory and drilling services

2018 EPA Annual Biosolids Report

Paula Anania
City of Portsmouth Wastewater
680 Peverly Hill Road
Portsmouth , NH 03801

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 191551
Client Identification: Peirce Island & Pease Dewatered WW Sludge | Q1 2019
Date Received: 1/25/2019

Dear Ms. Anania :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director _____ Date 4 # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **191551**

Client: **City of Portsmouth Wastewater**

Client Designation: **Peirce Island & Pease Dewatered WW Sludge | Q1 2019**

Temperature upon receipt (°C): 1.3 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
191551.01	Pierce Island	1/25/19	1/24/19	sludge	33.0	Adheres to Sample Acceptance Policy
191551.02	Pease	1/25/19	1/24/19	sludge	16.4	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.
Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.
All results contained in this report relate only to the above listed samples.
References include:
1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 4th edition, 1992

LABORATORY REPORT

EAI ID#: **191551**

Client: **City of Portsmouth Wastewater**

Client Designation: **Peirce Island & Pease Dewatered WW Sludge | Q1 2019**

Sample ID:	Pierce Island	Pease					
Lab Sample ID:	191551.01	191551.02					
Matrix:	sludge	sludge					
Date Sampled:	1/24/19	1/24/19					
Date Received:	1/25/19	1/25/19	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Arsenic	< 0.5	< 0.5	TCLPsolid	mg/L	1/29/19	6020	DS
Barium	< 0.5	< 0.5	TCLPsolid	mg/L	1/29/19	6020	DS
Cadmium	< 0.1	< 0.1	TCLPsolid	mg/L	1/29/19	6020	DS
Chromium	< 0.1	< 0.1	TCLPsolid	mg/L	1/29/19	6020	DS
Lead	< 0.5	< 0.5	TCLPsolid	mg/L	1/29/19	6020	DS
Mercury	< 0.01	< 0.01	TCLPsolid	mg/L	1/29/19	6020	DS
Selenium	< 0.1	< 0.1	TCLPsolid	mg/L	1/29/19	6020	DS
Silver	< 0.1	< 0.1	TCLPsolid	mg/L	1/29/19	6020	DS

LABORATORY REPORT

EAI ID#: **191551**

Client: **City of Portsmouth Wastewater**

Client Designation: **Peirce Island & Pease Dewatered WW Sludge | Q1 2019**

Sample ID:	Pierce Island	Pease
Lab Sample ID:	191551.01	191551.02
Matrix:	sludge	sludge
Date Sampled:	1/24/19	1/24/19
Date Received:	1/25/19	1/25/19

			Analysis			
	Units	**Date**	**Time**	**Method**	**Analyst**
Solids Total	**33.0**	**16.4**	Percent	1/29/19	14:25	2540G-91	SR
Paint Filter (Free Liquid)	**Absent**	**Absent**	None	1/28/19	11:55	9095	ATA

Eastern Analytical, Inc. CHAIN-OF-CUSTODY RECORD **191551**

COPW

Sample IDs	Date/Time *Composites need start and stop dates/times*	Matrix	Parameters and Sample Notes	# of containers
Pierce Island	1-24-19 12:58 (c)	solid Grab or Comp	SolAsRec/PtFltr/TS TCLPsolid/ICPMets.As.Ba.Cd.Cr.Pb.Se.Ag.Hg	3
☐ Sampler confirms ID and parameters are accurate			*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE	Dissolved Sample Field Filtered ☐
Pease	1/24/19 8:29 8:32 8:34	solid (Grab) or Comp	SolAsRec/PtFltr/TS TCLPsolid/ICPMets.As.Ba.Cd.Cr.Pb.Se.Ag.Hg	3
☑ Sampler confirms ID and parameters are accurate			*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE	Dissolved Sample Field Filtered ☐

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAI Project ID 1724
Project Name Peirce Island & Pease Dewatered WW Sludge | Q1 2019
State NH
Client (Pro Mgr) Paula Anania
Customer City of Portsmouth Wastewater
Address 680 Peverly Hill Road
City Portsmouth NH 03801
Phone 427-1553 **Fax**
Email: panania@cityofportsmouth.com
Direct 427-1553

Results Needed by: Preferred date _____
Notes:

Samples to be taken by 02/15 - results due 03/01

QC deliverables
☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

ReportingOptions
☒ HC ☐ NO FAX
☒ EDD PDF ☐ Partial FAX
☒ EDD email ☐ PDF Invoice
☒ PDF prelim, NO FAX ☐ EQUIS
☐ e-mail Login Confirmation

PO# 0700018
Quote#: 1010625
Temp 1.3 °C
Ice Y ☒ N ☐

Samples Collected by: DE

Relinquished by	Date/Time	Received by
Eric Wright	1/25/19 8:30	Eric Halvorson
Eric Halvorson	1-25-19 12:35	
Relinquished by	Date/Time	Received by

Eastern Analytical, Inc.

professional laboratory and drilling services

Paula Anania
City of Portsmouth Wastewater
680 Peverly Hill Road
Portsmouth , NH 03801

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 191639
Client Identification: Peirce Island & Pease Dewatered WW Sludge | Q1 2019
Date Received: 1/30/2019

Dear Ms. Anania :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director — 2.5.19 Date — 3 # of pages (excluding cover letter)

LABORATORY REPORT

EAI ID#: **191639**

Client: **City of Portsmouth Wastewater**

Client Designation: **Peirce Island & Pease Dewatered WW Sludge | Q1 2019**

Sample ID:	Pierce Island	Pease
Lab Sample ID:	191639.01	191639.02
Matrix:	solid	solid
Date Sampled:	1/29/19	1/29/19
Date Received:	1/30/19	1/30/19
Fecal Coliform	**≥ 144109**	**≥ 248849**

		Analysis			
	Units	**Date**	**Time**	**Method**	**Analyst**
Fecal Coliform	MPN/GDW	1/30/19	14:00	9221E-06	KD

SAMPLE CONDITIONS PAGE

EAI ID#: **191639**

Client: **City of Portsmouth Wastewater**

Client Designation: **Peirce Island & Pease Dewatered WW Sludge | Q1 2019**

Temperature upon receipt (°C): 2.7 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
191639.01	Pierce Island	1/30/19	1/29/19	solid	35.7	Adheres to Sample Acceptance Policy
191639.02	Pease	1/30/19	1/29/19	solid	17.1	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.
Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.
All results contained in this report relate only to the above listed samples.
References include:
1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 4th edition, 1992

Eastern Analytical, Inc. www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

LABORATORY REPORT

EAI ID#: **191639**

Client: **City of Portsmouth Wastewater**

Client Designation: **Peirce Island & Pease Dewatered WW Sludge | Q1 2019**

Sample ID:	Pierce Island	Pease
Lab Sample ID:	191639.01	191639.02
Matrix:	solid	solid
Date Sampled:	1/29/19	1/29/19
Date Received:	1/30/19	1/30/19

			Analysis			
			Units	**Date**	**Time**	**Method**	**Analyst**
Fecal Coliform	**≥ 144109**	**≥ 248849**	MPN/GDW	1/30/19	14:00	9221E-06	KD

Eastern Analytical, Inc. CHAIN-OF-CUSTODY RECORD **191639**

Sample IDs	Date/Time *Composites need start and stop dates/times*	Matrix	Parameters and Sample Notes	# of containers
~~Pierce~~ Peirce Island	1-29-19 8:24 AM	solid (Grab or Comp)	SolTotDry/FColi	1
☑ Sampler confirms ID and parameters are accurate			*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE	Dissolved Sample Field Filtered ☐
Pease	1/29/19 9:08 AM	solid (Grab or Comp)	SolTotDry/FColi	1
☑ Sampler confirms ID and parameters are accurate			*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE	Dissolved Sample Field Filtered ☐

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAI Project ID 1724
Project Name Peirce Island & Pease Dewatered WW Sludge | Q1 2019
State NH
Client (Pro Mgr) Paula Anania
Customer City of Portsmouth Wastewater
Address 680 Peverly Hill Road
City Portsmouth NH 03801
Phone 427-1553 **Fax**
Email: panania@cityofportsmouth.com
Direct 427-1553

Results Needed by: Preferred date _____
Notes:

QC deliverables
☒ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

ReportingOptions
☒ HC ☐ NO FAX
☒ EDD PDF ☐ Partial FAX
☒ EDD email ☐ PDF Invoice
☒ PDF prelim, NO FAX ☐ EQUIS
☐ e-mail Login Confirmation

PO# 0700018
Quote#: 1010625
Temp 2.7 °C
Ice Y ☒ N ☐

Samples Collected by: _____

Relinquished by	Date/Time	Received by
Kathy Peirce	1-28-19 / 10:21	Ami Wight
Ami Wight	1/30/19 / 10:14	Eric Halvorsen
Eric Halvorsen	1-30-19 / 12:34	Chris Johnson