Appendix A

NYSDEC SPDES Modification Forms

Appendix A.1 – NYSDEC Form NY-2C

State Pollutant Discharge Elimination System (SPDES)

INDUSTRIAL APPLICATION FORM NY-2C

For New Permits and Permit Modifications to Discharge Industrial Wastewater and Storm Water

Section I - Permittee and Facility Information

Please type or print the requested information.

1. Current Permit Information (leave blank if for new discharge)

SPDES Number:	DEC Number:
NY0201235	2630100191

2. Permit Action Requested: (Check applicable box)

	A **NEW** proposed discharge		An **EBPS INFORMATION REQUEST** response		A **RENEWAL** of an existing SPDES permit
X	A **MODIFICATION** of the existing permit		An **EXISTING** discharge currently without permit		

Does this request include an increase in the quantity of water discharged from your facility to the waters of the State?

X	**YES** - Describe the increase:	Astoria Gas Turbine Power, LLC is seeking to modify its SPDES Permit. See the attached report for an explanation of facility modifications and impacts to discharge through Outfall 001. In addition, a SPDES renewal is being submitted as Appendix B to the attached report.
	NO - Go to Item 3. below.	

3. Permittee Name and Address

Name		Attention
Astoria Gas Turbine Power		Elizabeth Vaccaro
Street Address		
31-01 20th Avenue		
City or Village	**State**	**ZIP Code**
Astoria	NY	11105

4. Facility Name, Address and Location

Name			
Astoria Gas Turbine Power Facility			
Street Address		P.O. Box	
31-01 20th Avenue			
City or Village	**State**	**ZIP Code**	
Astoria	NY	11105	
Town	**County**		
	Queens		
Telephone	**FAX**	**NYTM - E**	**NYTM - N**
718-274-8204		5-92552	45-15781
Tax Map Info (New York City, Nassau County and Suffolk County only)			
Section	**Block**	**Subblock**	**Lot**
	850		200

5. Facility Contact Person

Name		Title	
Elizabeth Vaccaro		EHS Specialist	
Street Address			P.O. Box
31-01 20th Avenue			
City or Village		**State**	**ZIP Code**
Astoria		NY	11105
Telephone	**FAX**	**E-Mail or Internet**	
718-489-0022 347-502-1279		Elizabeth.Vaccaro@nrg.com	

6. Discharge Monitoring Report (DMR) Mailing Address

Mailing Name			
Astoria Gas Turbine Power, LLC			
Street Address			P.O. Box
31-01 20th Avenue			
City or Village		**State**	**ZIP Code**
Astoria		NY	11105
Telephone	**FAX**	**E-Mail or Internet**	
718-274-8843		Andrew.Scano@nrg.com	
Name and Title of person responsible for signing DMRs		**Signature**	
Andrew Scano, Plant Manager		Andrew Scano	

INDUSTRIAL APPLICATION FORM NY-2C
Section I - Permittee and Facility Information

Facility Name:	SPDES Number:
Astoria Gas Turbine Power	NY201235

7. Summarize the outfalls present at the facility:

Outfall Number	Receiving Water	Type of discharge
001	East River	Nonprocess Discharge & Stormwater Runoff

8. Map of Facility and Discharge Locations:

Provide a detailed map showing the location of the facility, all buildings or structures present, wastewater discharge systems, outfall locations into receiving waters, nearby surface water bodies, water supply wells, and groundwater monitoring wells, and attach it to this application. Also submit proof, either by indication on the map or other documentation, that a right of way for the discharges exists from the facility property to a public right of way. **SEE ATTACHMENTS NY-2C-1 & NY-2C-2: Existing conditions map and future conditions plan.**

9. Water Flow Diagram:

SEE ATTACHMENT NY-2C-3

INDUSTRIAL APPLICATION FORM NY-2C
Section I - Permittee and Facility Information

Facility Name:	SPDES Number:
Astoria Gas Turbine Power	NY201235

10. Nature of business: (Describe the activities at the facility and the date(s) that operation(s) at the facility commenced)

Electricity generation from a dual-fuel combustion turbine generator will commence in mid-2023 to replace existing power generation units installed in 1970. This new generation system will operate an evaporative cooler unit utilizing city water as an influent. Blowdown from this unit will discharge to Outfall 001.

11. List the 4-digit SIC codes which describe your facility in order of priority:

Priority 1	Description:	Priority 3	Description:
4911	Electric Generation		
Priority 2	Description:	Priority 4	Description:

12. Is your facility a primary industry as listed in Table 1 of the instructions?

[ ] **YES -** Complete the following table.

[X] **NO** - Go to Item 13. below.

Industrial Category	40 CFR		Industrial Category	40 CFR	
	Part	Subpart		Part	Subpart

13. Does this facility manufacture, handle, or discharge recombinant-DNA, pathogens, or other potentially infectious or dangerous organisms?

[ ] **YES** - Attach a detailed explanation to this application.

[X] **NO** - Go to Item 14 below.

14. Is storm runoff or leachate from a material storage area discharged by your facility?

[ ] **YES -** Complete the following table, and show the location of the stockpile(s) and discharge point(s) on the diagram in Item 9.

[X] **NO** - Go to Item 15 on the following page.

Size of area	Type(s) of material stored	Quantity of material stored	Runoff control devices

INDUSTRIAL APPLICATION FORM NY-2C
Section I - Permittee and Facility Information

Facility Name:	SPDES Number:
Astoria Gas Turbine Power	NY201235

15. Facility Ownership: (Place an "X" in the appropriate box)

Corporate [X] Sole Proprietorship [ ] Partnership [ ] Municipal [ ] State [ ] Federal [ ] Other [ ]

Are any of the discharges applied for in this application on Indian lands? Yes [ ] No [X]

16. List information on any other environmental permits for this facility:

Issuing Agency	Permit Type	Permit Number	Permit Status		
			Active	Applied for	Inactive
NYSDEC	Air Title V	2-6301-00191/00003	X		
NYSDEC	RCRA	NYR000073585	X		
NYSDEC	MOSF	02-2500	X		

17. Laboratory Certification:

Were any of the analyses reported in Section III of this application performed by a contract laboratory or a consulting firm?

[X] **YES -** Complete the following table.

[ ] **NO** - Go to Item 18 below.

Name of laboratory or consulting firm	Address	Telephone (area code and number)	Pollutants analyzed
York Analytical Laboratories, Inc.	120 Research Drive Stratford, CT 06615	203-325-1371	Oil & Grease, Benzene, Toluene, Ethylbenzene, Xylenes

18. 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 submitted 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 (type or print)		Date signed
Andrew Scano, Plant Manager		04/24/2020
Signature	Telephone number	FAX number
Andrew Scano	718-724-8843	

INDUSTRIAL APPLICATION FORM NY-2C
Section I - Permittee and Facility Information

Facility Name:	SPDES Number:
Astoria Gas Turbine Power	NY201235

19. Industrial Chemical Survey (ICS)

Complete all information for those substances your facility has used, produced, stored, distributed, or otherwise disposed of in the past five (5) years at or above the threshold values listed in the instructions. Include substances manufactured at your facility, as well as any substances that you have reason to know or believe present in materials used or manufactured at your facility. Do not include chemicals used only in analytical laboratory work, or small quantities of routine household cleaning chemicals. Enter the name and CAS number for each of the chemicals listed in Tables 6-10 of the instructions, and the table number which lists the chemical. You may use ranges (e.g. 10-100 lbs., 100-1000 lbs., 1000-10000 lbs., etc.) to describe the quantities used on an annual basis as well as for the amount presently on hand. For those chemicals listed in Tables 6, 7, or 8 which are indicated as being potentially present in the discharge from one or more outfalls at the facility, indicate which outfalls may be affected in the appropriate column below, and include sampling results in Section III of this application for each of the potentially affected outfalls. Make additional copies of this sheet if necessary.

Name of Substance	Table	CAS Number	Average Annual Usage	Amount Now On Hand	Units (gallons, lbs, etc)	Purpose of Use (see codes in Table 2 of instructions)	Present in Discharge? (Outfall(s)?)
Ultra-Low Sulfur Kerosene			120,385	2,401,240	Gallons	OTH- Burned as fuel	No
Natural Gas			481.833	-	Million Cu. Ft.	OTH- Burned as fuel	No
Sulfur Hexafluoride			0	3,000	Pounds	COT- Insulator	No
Dielectric Oil			0	50,000	Gallons	COT- Insulator	No

This completes Section I of the SPDES Industrial Application Form NY-2C. Section II, which requires specific information for each of the outfalls at your facility, and Section III, which requires sampling information for each of the outfalls at your facility, must also be completed and submitted with this application.

State Pollutant Discharge Elimination System (SPDES)

INDUSTRIAL APPLICATION FORM NY-2C

For New Permits and Permit Modifications to Discharge Industrial Wastewater and Storm Water

Section II - Outfall Information

Please type or print the requested information.

Facility Name:	SPDES Number:
Astoria Gas Turbine Power	NY201235

1. Outfall Number and Location

Outfall No.:		
001		
Latitude	Longitude	Receiving Water
40° 47' 10"	73° 54' 00"	East River

2. Type of Discharge and Discharge Rate (List all information applicable to this outfall)

	Volume/Flow	Units: MGD	Units: GPM	Units: Other (specify)		Volume/Flow	Units: MGD	Units: GPM	Units: Other (specify)
a. Process Wastewater					f. Noncontact Cooling Water	6		X	
b. Process Wastewater					g. Remediation System Discharge				
c. Process Wastewater					h. Boiler Blowdown				
d. Process Wastewater					i. Storm Water	15 (max capacity)			CFS
e. Contact Cooling Water					j. Sanitary Wastewater				
k. Other discharge (specify):									
l. Other discharge (specify):									

3. List process information for the Process Wastewater streams identified in 2.a-d above:

a. Name of the process contributing to the discharge			Process SIC code: | | |
Describe the contributing process	Category / Subcategory	Quantity per day	Units of measure
b. Name of the process contributing to the discharge			Process SIC code: | | |
Describe the contributing process	Category / Subcategory	Quantity per day	Units of measure
c. Name of the process contributing to the discharge			Process SIC code: | | |
Describe the contributing process	Category / Subcategory	Quantity per day	Units of measure
d. Name of the process contributing to the discharge			Process SIC code: | | |
Describe the contributing process	Category / Subcategory	Quantity per day	Units of measure

4. Expected or Proposed Discharge Flow Rates for this outfall:

a. Total Annual Discharge	b. Daily Minimum Flow	c. Daily Average Flow	d. Daily Maximum Flow	e. Maximum Design flow rate
3* MG	0 MGD	0.00432* MGD	0.648** MGD	9.69*** MGD

*Total annual discharge & average daily flow rates from non-stormwater sources ONLY.

**Daily maximum flow incorporates OWS units treating contained stormwater at max capacity after rain event.

***15 CFS capacity of pipe to operate during rain events.

INDUSTRIAL APPLICATION FORM NY-2C
Section II - Outfall Information

Outfall No.:	001

Facility Name:	Astoria Gas Turbine Power	SPDES Number:	NY201235

5. Is this a seasonal discharge?

[ ] **YES -** Complete the following table.

[X] **NO** - Go to Item 6 below.

Operations contributing flow (list)	Discharge frequency		Flow				
	Batches per year	Duration per batch	Flow rate per day LTA	Flow rate per day Daily Max	Total volume per discharge	Units	Duration (Days)

6. Water Supply Source (indicate all that apply)

	Name or owner of water supply source	Volume or flow rate	Units (check one)		
Municipal Supply	New York City	581 (max)	MGD	GPD	[X] GPM
Private Surface Water Source			MGD	GPD	GPM
Private Supply Well			MGD	GPD	GPM
Other (specify)			MGD	GPD	GPM

7. Outfall configuration: (Surface water discharges only)

A. Where is the discharge point located with respect to the receiving water?

In the streambank: [ ]

In the stream: [ ]

Within a lake or ponded water: [ ]

Within an estuary: [X] Attach Supplement C, MIXING ZONE REQUIREMENTS FOR DISCHARGES TO ESTUARIES.

Discharge is equipped with diffuser: [ ] Attach description, including configuration and plan drawing of diffuser, if used.

B. If located in a stream, approximately what percentage of stream width from shore is the discharge point located?

10% [ ] **25%** [ ] **50%** [ ] **Other:** [ ]

C. If located in a stream, describe the stream geometry in the general vicinity of the discharge point, under low flow conditions:

Stream width	Stream depth	Stream velocity
Feet	**Feet**	**Feet/Sec**

Are the results of a mixing/diffusion study attached? [ ] **YES** [ ] **NO**

Section II - Outfall Information

Facility Name:	Outfall No.: 001
Astoria Gas Turbine Power	SPDES Number: NY201235

8. Thermal Discharge Criteria

Is your facility one of the applicable types of facilities listed in the instructions, and does the temperature of this discharge exceed the receiving water temperature by greater than three (3) degrees Fahrenheit?

[ ] **YES -** Complete the following table.

[X] **NO** - Go to Item 9. below.

[X] **Information on the intake and discharge configuration of this outfall is attached**.

Discharge Temperature, deg. F			Duration of maximum discharge temperature		Dates of maximum discharge temperature		Maximum flow rate	Discharge configuration (e.g. subsurface, surface, effluent diffuser, diffusion well, etc.)
Average change in temperature (delta T)	Maximum change in temperature (delta T)	Maximum temperature	hours per day	days per year	From	To	MGD	

9. Are any water treament chemicals or additives that are used by your facility subsequently discharged through this outfall?

[ ] **YES -** Complete the following table and complete pages 1 of 3 and 2 of 3 of Form WTCFX for each water treatment chemical listed.

[X] **NO** - Go to Item 10. below.

Manufacturer	WTC trade name	Manufacturer	WTC trade name

10. Has any biological test for acute or chronic toxicity been performed on this outfall or on the receiving water in relation to this outfall in the past three (3) years?

[ ] **YES -** Complete the following table.

[X] **NO** - Go to Item 11. on the following page.

Water tested	Purpose of test	Type of test	Chronic or Acute?	Subject species	Testing date(s)		Submitted? (Date)
					Start	Finish	

INDUSTRIAL APPLICATION FORM NY-2C
Section II - Outfall Information

	Outfall No.: 001
Facility Name: Astoria Gas Turbine Power	SPDES Number: NY201235

11. Is the discharge from this outfall treated to remove process wastes, water treatment additives, or other pollutants?

[X] **YES -** Complete the following table. Treatment codes are listed in Table 4.

[ ] **NO** - Go to Item 12 below.

Treatment process	Treatment Code(s)	Treatment used for the removal of:	Design Flow Rate (include units)
Existing Oil-Water Separator Unit	1-U 1-H	Oil & grease collecting in the containment areas & unloading area for the ULSD/ULSK Storage Tanks.	200 GPM
New Oil-Water Separator Unit	1-U 1-H	Oil & grease collecting in various containment areas across the power generation area.	250 GPM

12. Does this facility have either a compliance agreement with a regulating agency, or have planned changes in production, which will materially alter the quantity and/or quality of the discharge from this outfall?

[ ] **YES -** Complete the following table.

[X] **NO** - Go to Section III on the following page.

Description of project	Subject to Condition or Agreement in existing permit or consent order? (List)	Change due to production increase?	Completion Date(s)	
			Required	Projected

This completes Section II of the SPDES Industrial Application Form NY-2C. Section I, which requires general information regarding your facility, and Section III, which requires sampling information for each of the outfalls at your facility, must also be completed and submitted with this application.

INDUSTRIAL APPLICATION FORM NY-2C
Section III - Sampling Information

Facility Name:	SPDES No.:	Outfall No.:
Astoria Gas Turbine Power	NY201235	001

1. Sampling Information - Conventional Parameters

Provide the analytical results of at least one analysis for every pollutant in this table. If this outfall is subject to a waiver as listed in Table 5 of the instructions for one or more of the parameters listed below, provide the results for those parameters which are required for this type of outfall.

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (using the same format) instead of completing this page.

Pollutant	Effluent data							Units		Intake data (optional)		
	a. Maximum daily value		b. Maximum 30 day value		c. Long term average		d. Number of analyses	a. Concentration	b. Mass	a. Long term average value		b. Number of analyses
	1. Concentration	2. Mass	1. Concentration	2. Mass	1. Concentration	2. Mass				1. Concentration	2. Mass	
a. Biochemical Oxygen Demand, 5 day (BOD)	9.3	22.78					0*	mg/L	kg			
b. Chemical Oxygen Demand (COD)	57	139.61					0*	mg/L	kg			
c. Total Suspended Solids (TSS)	69	169.01					0*	mg/L	kg			
d. Total Dissolved Solids (TDS)	360	11.76					0*	mg/L	kg			
e. Oil & Grease	2.4	5.88					0*	mg/L	kg			
f. Chlorine, Total Residual (TRC)	3	97.98					0*	mg/L	g			
g. Total Organic Nitrogen (TON)	1.75	4.29					0*	mg/L	kg			
h. Ammonia (as N)	0.2	489.89					0*	mg/L	g			
i. Flow	Value 456		Value		Value		0*	gpm		Value		
j. Temperature, winter	Value 35.7		Value		Value		0*			Value		
k. Temperature, summer	Value 75.6		Value		Value		0*			Value		
l. pH	Minimum 7.0	Maximum 10.8	Minimum	Maximum			0*			Minimum	Maximum	

2. Sampling Information - Priority Pollutants, Toxic Pollutants, and Hazardous Substances

a. Primary Industries:

i. Does the discharge from this outfall contain process wastewater?

	Yes - Go to Item **ii.** below.
X	**No** - Go to Item **b.** below.

ii. Indicate which GC/MS fractions have been tested for: Volatiles: [ ] Acid: [ ] Base/Neutral: [ ] Pesticide: [ ]

b. All applicants:

i. Do you know or have reason to believe that any of the pollutants listed in Tables 6, 7, or 8 of the instructions are present in the discharge from this outfall?

X	**Yes** - Concentration and mass data attached.
	No - Go to Item **ii.** below.

ii. Do you know or have reason to believe that any of the pollutants listed in Table 9 or Table 10 of the instructions, or any other toxic, harmful, or injurious chemical substances not listed in Tables 6-10, are present in the discharge from this outfall?

X	**Yes** - Source or reason for presence in discharge attached *****SEE REPORT FOR REASON FOR PRESENCE*****
X	**Yes** - Quantitative or qualitative data attached
	No

*Discharge proposed under this permit is new, and values provided are estimations of effluent quality. Values provided are not based on sampling. See report for details on discharge quality estimation. **SEE ATTACHMENT NY-2C-4 FOR SUPPORTING CALCULATIONS.**

INDUSTRIAL APPLICATION FORM NY-2C
Section III - Sampling Information

Facility Name:	SPDES No.:	Outfall No.:
Astoria Gas Turbine Power	NY201235	001

3. Projected Effluent Quality - Priority Pollutants, Toxic Pollutants, and Hazardous Substances

Provide analytical results of at least one analysis for each pollutant that you know or have reason to believe is present in this discharge, as well as for any GC/MS fractions and metals required to be sampled from Section III Forms, Item 2.a on the preceding page.

List the name and CAS number for each pollutant that you know or have reason to believe is present in the discharge from this outfall. For each pollutant listed from Tables 6, 7, or 8, provide the results of at least one analysis for that pollutant, and determine the mass discharge based on the flow rate reported in Item 1.i. For each pollutant listed from Table 9, or any other toxic pollutant not listed in Tables 6-10, you must provide concentration and mass data (if available) and/or an explanation for their presence in the discharge. Make as many copies of this table as necessary for each outfall.

Page 1 of 2

Pollutant and CAS Number	Effluent data							Units		Intake data (optional)			Believed present, no sampling results available
	a. Maximum daily value		b. Maximum 30 day value *(if available)*		c. Long term average value *(if available)*		d. Number of analyses	a. Concentration	b. Mass	a. Long term average value		d. Number of analyses	
	(1)Concentration	(2) Mass	(1)Concentration	(2) Mass	(1)Concentration	(2) Mass				(1)Concentration	(2) Mass		
Alkalinity CAS Number:	105	3.43					0*	mg/L CaCO3	kg CaCO3				
Aluminum CAS Number: 07439-90-05	105	3.43					0*	ug/L	g				
Barium CAS Number: 07440-39-3	0.1	3.27					0*	mg/L	g				
Bromide CAS Number: 24959-67-9	102	3.33					0*	ug/L	g				
Calcium CAS Number: 07440-70-2	38	1.24					0*	mg/L	kg				
Chloride CAS Number:	100	3.27					0*	mg/L	kg				
Chloropicrin CAS Number: 76-06-2	0.5	16.33					0*	ug/L	mg				
Chromium VI CAS Number: 07440-47-3	0.2	6.53					0*	ug/L	mg				
Copper CAS Number: 07440-50-8	0.04	1.31					0*	mg/L	g				
Fluoride CAS Number: 16984-48-8	3.5	114.31					0*	mg/L	g				
Iron CAS Number: 07439-89-6	160	5.23					0*	ug/L	g				
Magnesium CAS Number: 07439-95-4	9.5	310.26					0*	mg/L	g				
Manganese CAS Number: 07439-96-5	85	2.78					0*	ug/L	g				

*Discharge proposed under this permit is new, and values provided are estimations of effluent quality. Values provided are not based on sampling. See report for details on discharge quality estimation. **SEE ATTACHMENT NY-2C-4 FOR SUPPORTING CALCULATIONS.**

INDUSTRIAL APPLICATION FORM NY-2C
Section III - Sampling Information

Facility Name:	SPDES No.:	Outfall No.:
Astoria Gas Turbine Power	NY201235	001

3. Projected Effluent Quality - Priority Pollutants, Toxic Pollutants, and Hazardous Substances

Provide analytical results of at least one analysis for each pollutant that you know or have reason to believe is present in this discharge, as well as for any GC/MS fractions and metals required to be sampled from Section III Forms, Item 2.a on the preceding page.

List the name and CAS number for each pollutant that you know or have reason to believe is present in the discharge from this outfall. For each pollutant listed from Tables 6, 7, or 8, provide the results of at least one analysis for that pollutant, and determine the mass discharge based on the flow rate reported in Item 1.i. For each pollutant listed from Table 9, or any other toxic pollutant not listed in Tables 6-10, you must provide concentration and mass data (if available) and/or an explanation for their presence in the discharge. Make as many copies of this table as necessary for each outfall.

Page 2 of 2

Pollutant and CAS Number	Effluent data							Units		Intake data (optional)			Believed present, no sampling results available
	a. Maximum daily value		b. Maximum 30 day value *(if available)*		c. Long term average value *(if available)*		d. Number of analyses	a. Concentration	b. Mass	a. Long term average value		d. Number of analyses	
	(1)Concentration	(2) Mass	(1)Concentration	(2) Mass	(1)Concentration	(2) Mass				(1)Concentration	(2) Mass		
Nitrate CAS Number:	0.65	21.23					0*	mg/L N	g N				
Orthophosphate CAS Number:	10.5	342.92					0*	mg/L	g				
Potassium CAS Number: 07440-09-7	3.5	114.31					0*	mg/L	g				
Silica (silicon oxide) CAS Number: 07631-86-9	12.5	408.24					0*	mg/L	g				
Sodium CAS Number: 07440-23-5	65	2.12					0*	mg/L	kg				
Strontium CAS Number: 07440-24-6	130	4.25					0*	ug/L	g				
Sulfate CAS Number: 14808-79-8	26	849.14					0*	mg/L	g				
CAS Number:													
CAS Number:													
CAS Number:													
CAS Number:													
CAS Number:													
CAS Number:													

*Discharge proposed under this permit is new, and values provided are estimations of effluent quality. Values provided are not based on sampling. See report for details on discharge quality estimation. **SEE ATTACHMENT NY-2C-4 FOR SUPPORTING CALCULATIONS.**

INDUSTRIAL APPLICATION FORM NY-2C
Section III - Sampling Information

Facility Name:	SPDES No.:	Outfall No.:
Astoria Gas Turbine Power	NY201235	001

4. Existing Effluent Quality - Priority Pollutants, Toxic Pollutants, and Hazardous Substances

Provide analytical results for the last three (3) years for each pollutant that you know or have reason to believe present in this discharge from this outfall, as well as for any GC/MS fractions and metals required to be sampled from Section III Forms, Item 2.a for this discharge.

Make as many copies of this table as necessary for each outfall. You can list the results from 24 sampling dates on each copy of this page.	Parameter name: Oil & Grease	Parameter name: Benzene	Parameter name: Toluene	Parameter name: Ethylbenzene	Parameter name: Xylenes	Parameter name:	Parameter name:
Page 1 Of 2	CAS Number:	CAS Number: 00071-43-2	CAS Number: 00108-88-3	CAS Number: 00100-41-4	CAS Number:	CAS Number:	CAS Number:
Date	Flow rate	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration
	Units: GPD	Units: mg/L	Units: mg/L	Units: mg/L	Units: mg/L	Units: mg/L	Units:	Units:
Jan 2017	11200	ND						
Feb 2017	73600	ND						
Mar 2017	25000	ND	ND	ND	ND	ND		
Apr 2017	106000	ND						
May 2017	55800	ND						
Jun 2017	10800	ND	ND	ND	ND	ND		
Jul 2017	10400	ND						
Aug 2017	4000	ND						
Sep 2017	1200	ND	ND	ND	ND	ND		
Oct 2017	8000	ND						
Nov 2017	14000	ND						
Dec 2017	1000	ND	ND	ND	ND	ND		
Jan 2018	1000	ND						
Feb 2018	20200	ND						
Mar 2018	26000	ND	ND	ND	ND	ND		
Apr 2018	16400	ND						
May 2018	12000	ND						
Jun 2018	1200	ND	ND	ND	ND	ND		
Jul 2018	25000	ND						
Aug 2018	31600	2						
Sep 2018	22000	2.4	ND	ND	ND	ND		
Oct 2018	14000	2.4						
Nov 2018	76000	ND						
Dec 2018	42600	ND	ND	ND	ND	ND		

ND = Non-Detect

INDUSTRIAL APPLICATION FORM NY-2C
Section III - Sampling Information

Facility Name:	SPDES No.:	Outfall No.:
Astoria Gas Turbine Power	NY201235	001

4. Existing Effluent Quality - Priority Pollutants, Toxic Pollutants, and Hazardous Substances

Provide analytical results for the last three (3) years for each pollutant that you know or have reason to believe present in this discharge from this outfall, as well as for any GC/MS fractions and metals required to be sampled from Section III Forms, Item 2.a for this discharge.

Make as many copies of this table as necessary for each outfall. You can list the results from 24 sampling dates on each copy of this page.	Parameter name: Oil & Grease	Parameter name: Benzene	Parameter name: Toluene	Parameter name: Ethylbenzene	Parameter name: Xylenes	Parameter name:	Parameter name:
Page 2 Of 2	CAS Number:	CAS Number: 00071-43-2	CAS Number: 00108-88-3	CAS Number: 00100-41-4	CAS Number:	CAS Number:	CAS Number:

Date	Flow rate	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration
	Units: GPD	Units: mg/L	Units: mg/L	Units: mg/L	Units: mg/L	Units: mg/L	Units:	Units:
Jan 2019	35800	2						
Feb 2019	29000	2						
Mar 2019	17400	0.6	ND	ND	ND	ND		
Apr 2019	6000	ND						
May 2019	28200	1.1						
Jun 2019	12200	ND	ND	ND	ND	ND		
Jul 2019	22200	0.6						
Aug 2019	6400	0.6						
Sep 2019	600	ND	ND	ND	ND	ND		
Oct 2019	15600	ND						
Nov 2019	8600	ND						
Dec 2019	42600	ND	ND	ND	ND	ND		

ND = Non-Detect

**No drinking water supply wells are known to be located within 10 miles of the Astoria Gas Turbine Power Facility.

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Locus Map

Legend

- Groundwater Monitoring Wells
- Property Line

Drainage System

- Abandoned
- Active

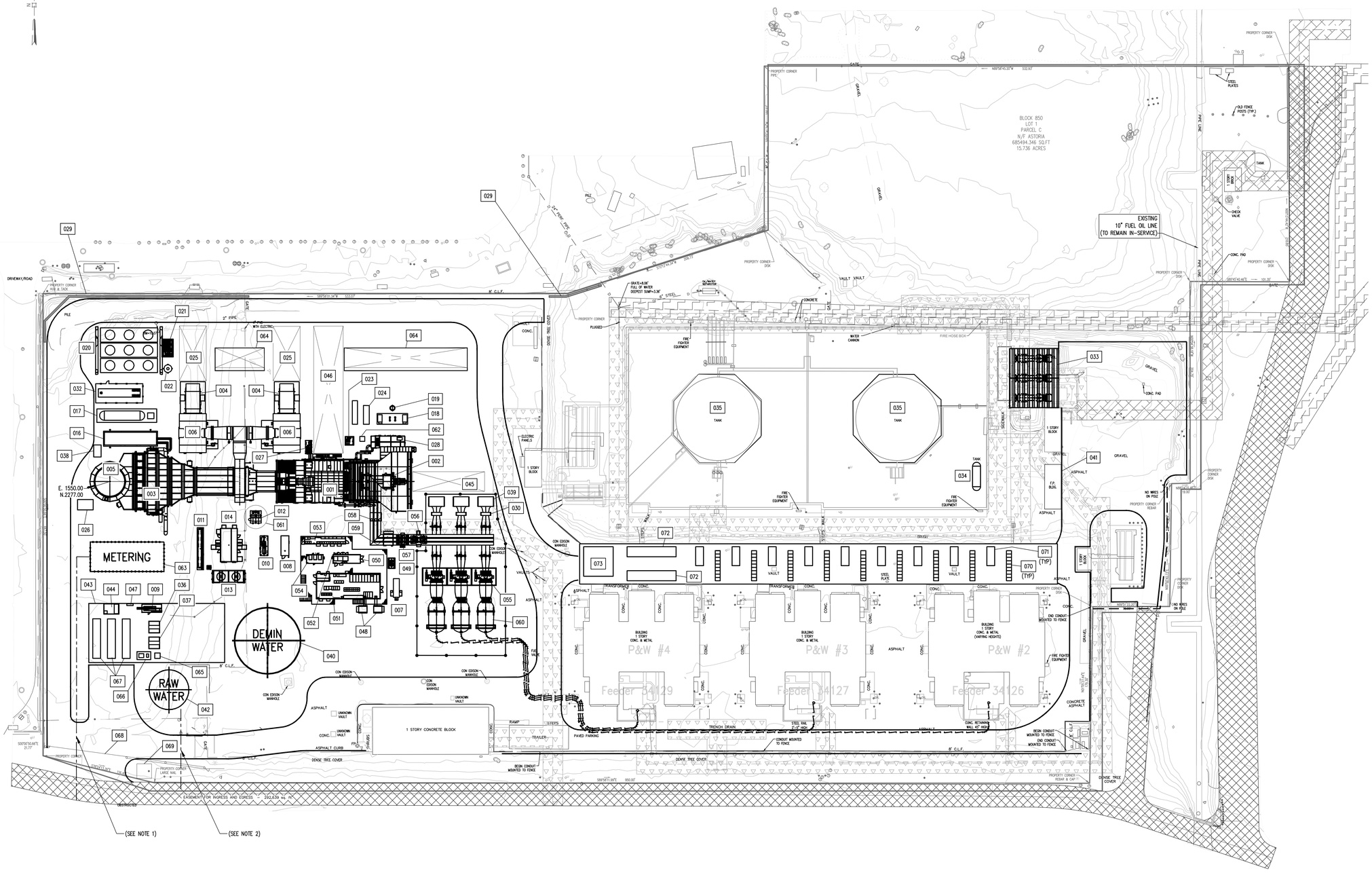
N

Scale 0 250 500 1,000 Feet

SPDES Permit Modification
Attachment NY-2C-1
Map of Facility and Discharge Locations
April 2020

nrg

SK-31380-16-004A



LEGEND NEW EQUIPMENT:

001	COMBUSTION TURBINE (CT)
002	COMBUSTION TURBINE GENERATOR (CTG) (BELOW AIR FILTER)
003	SCR/CO CATALYST
004	TEMPERING/PURGE FAN DRIVE MOTOR
005	STACK (28.5' DIAMETER)
006	TEMPERING/PURGE FAN INLET/OUTLET COMPARTMENT
007	EMERGENCY DIESEL GENERATOR
008	WATER MIST (FIRE PROTECTION) SKID
009	WATER INJECTION PUMP SKID
010	LIQUID FUEL PUMP SKID
011	OIL WATER SEPARATOR
012	ABSOLUTE FUEL GAS FILTER SEPARATOR SKID
013	GAS COMPRESSOR FIN-FAN COOLER
014	GAS COMPRESSOR
015	(NOT USED)
016	AMMONIA VAPORIZATION SKID
017	AMMONIA STORAGE TANK
018	COMPRESSED AIR SKID
019	DRY AIR RECEIVER
020	COOLING FAN MODULE
021	CLOSED COOLING WATER PUMP
022	CLOSED COOLING WATER EXPANSION TANK
023	WATER WASH SKID
024	FALSE START/ WASH WATER DRAIN
025	TEMPERING FAN MAINTENANCE/ACCESS CORRIDOR
026	CEMS
027	LIQUID FUEL FILTRATION SKID
028	LUBE OIL MODULE & CONTAINMENT
029	RETAINING WALL
030	CAPACITOR CIRCUIT BREAKER
031	CO2 STORAGE AREA (NOT SHOWN)
032	HYDROGEN STORAGE TRAILERS
033	ULSD UNLOADING AREA
034	ULSK HORIZONTAL TANK (7,500 GALLONS)
035	REFURBISHED ULSD TANKS (2 MILLION GALLONS EA.)
036	DEMINERALIZED WATER PUMP SKID
037	RAW WATER PUMP SKID
038	SAFETY SHOWER/EYE WASH
039	CAPACITOR RACK
040	DEMINERALIZED WATER TANK (1 MILLION GALLONS)
041	FIRE PROTECTION BUILDING
042	RAW WATER TANK
043	WATER TREATMENT ENCLOSURE
044	DEMINERALIZED WATER SUMP AND PUMPS
045	GTG ROTOR REMOVAL PATH
046	GT MAINTENANCE/ACCESS CORRIDOR
047	DEMINERALIZED WATER SAMPLE PANEL
048	STATION SERVICE TRANSFORMERS
049	EXCITATION TRANSFORMER
050	LCI COMPARTMENT
051	PDC
052	LEC HEAT EXCHANGER
053	PEECC
054	BATTERY COMPARTMENT
055	GSU TRANSFORMER
056	AUXILLIARY TRANSFORMER
057	ISOLATION TRANSFORMER
058	VT COMPARTMENT
059	GENERATOR CIRCUIT BREAKER
060	TRANSMISSION LINES
061	NFPA HAZARDOUS AREA ZONE
062	EVAPORATIVE COOLER CALCITE FILTER
063	NATURAL GAS METERING STATION
064	STORM WATER FILTRATION AREA
065	CARTRIDGE FILTER
066	AMMONIA CHEMICAL FEED
067	DEMINERALIZED TRAILERS (BY OWNER)
068	80' SLIDING GATE
069	GUARD SHACK
070	BATTERY BANK
071	PCS SKID
072	HARMONIC FILTER
073	AREA RESERVED FOR ADDITIONAL EQUIPMENT

GENERAL NOTES:

1) UNDERGROUND NATURAL GAS PIPE.
2) UNDERGROUND RAW WATER PIPE.

SPDES APPLICATION
ATTACHMENT NY-2C-2
PROPOSED CONDITIONS LAYOUT PLAN

Graphic Scale
40 0 20 40 60
(In Feet)
1 inch = 40' ft.

REVISION APPROVAL RECORD						REV 0
DISCIPLINE	BY	DATE	DISCIPLINE	BY	DATE	
ARCH.			MECHANICAL			
BUILDING SERVICES			PIPING			
CIVIL			PROCESS			
ELECTRICAL			QA / QC			
ENVIRON.			STRUCTURAL			
GEN. ARRANG.						
I & C						

REV NO	DATE	REVISIONS	BY	CHKR
0	4/13/20	ISSUED FOR PERMITTING	TJH	BL

DRAWING STATUS	REV	DATE	SDE	PEM
ISSUED				
PRELIMINARY				
APPROVED FOR CONSTRUCTION				

NOT APPROVED FOR CONSTRUCTION UNLESS SIGNED AND DATED. DESTROY ALL PRINTS BEARING EARLIER DATE AND/OR REV.NO.

PROJECT NO.:	31380-F026
DRAWN: TJH	DATE: 11/11/19
CHECKED: BL	DATE: 4/13/20
SCALE:	1" = 40'

ASTORIA REPLACEMENT PROJECT
ASTORIA 1 X 7HA.03 DUAL FUEL PEAKER

AECOM ENERGY & CONSTRUCTION Inc.
510 Carnegie Center
Princeton, NJ 08540
(609) 720-2000
AECOM

GENERAL ARRANGEMENT
SITE PLAN - OPTION E-W
7HA.03 DUAL FUEL PEAKER

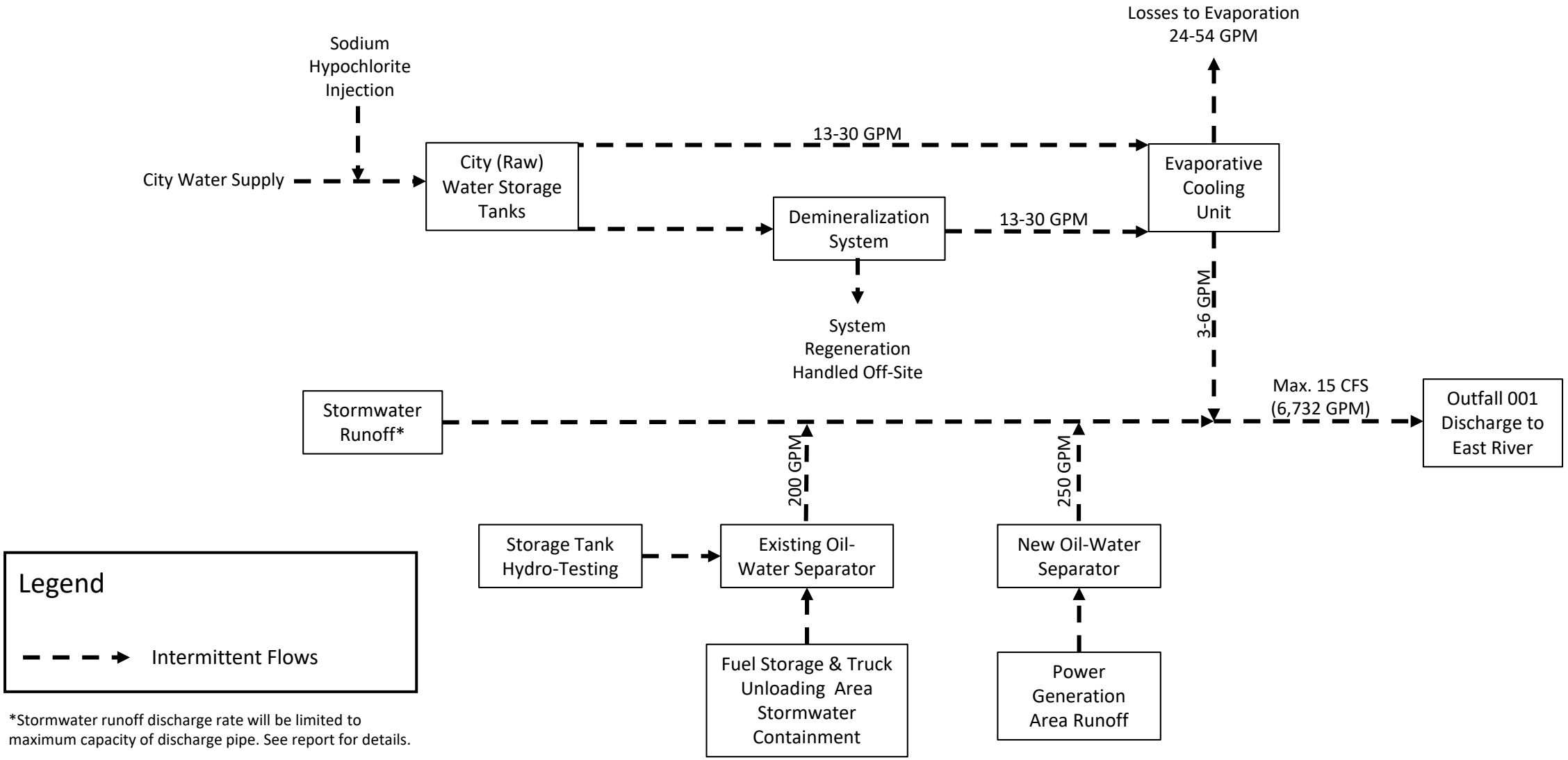
DWG. NO. SK-31380-16-004A | REV 0

INCHES 1 2 CENTIMETERS 1 2 3 4 5 6

8 7 6 5 4 3 2 1

H G F E D C B A

Attachment NY-2C-3
Outfall 001 Discharge Flow Diagram
Astoria Gas Turbine Power Facility
Astoria, New York City
SPDES Permit Modification
April 2020



*Stormwater runoff discharge rate will be limited to maximum capacity of discharge pipe. See report for details.

Evaporative Cooler Discharge Constituents

Raw City water is combined with pure demineralized water in a 50/50 ratio. System is then run through 10 cycles of concentration, resulting in effluent with concentrations 10x that of the influent. Discharge from evaporative cooler will be at ambient temperature.

Max Flow Discharged: 6 GPM
8640 GPD
32659.2 L/D

Constituents	Units	Source	City Water Concentration	Evaporative Cooler Influent Concentration	Evaporative Cooler Effluent Concentration	Evaporative Cooler Daily Mass Discharge	Units
Alkalinity	mg/L CaCO3	City Water	21	10.5	105	3429.22	g CaCO3
Aluminum	ug/L	City Water	21	10.5	105	3429.22	mg
Barium	mg/L	City Water	0.02	0.01	0.1	3.27	g
Bromide	ug/L	City Water	20.4	10.2	102	3331.24	mg
Calcium	mg/L	City Water	7.6	3.8	38	1241.05	g
Chloride	mg/L	City Water	20	10	100	3265.92	g
Free Residual Chlorine	mg/L	City Water	0.6	0.3	3	97.98	g
Chromium VI	ug/L	City Water	0.04	0.02	0.2	6.53	mg
Copper	mg/L	City Water	0.008	0.004	0.04	1.31	g
Fluoride	mg/L	City Water	0.7	0.35	3.5	114.31	g
Iron	ug/L	City Water	32	16	160	5225.47	mg
Magnesium	mg/L	City Water	1.9	0.95	9.5	310.26	g
Manganese	ug/L	City Water	17	8.5	85	2776.03	mg
Nitrate	mg/L N	City Water	0.13	0.065	0.65	21.23	g N
Orthophosphate	mg/L	City Water	2.1	1.05	10.5	342.92	g
Potassium	mg/L	City Water	0.7	0.35	3.5	114.31	g
Silica (silicon oxide)	mg/L	City Water	2.5	1.25	12.5	408.24	g
Sodium	mg/L	City Water	13	6.5	65	2122.85	g
Sulfate	mg/L	City Water	5.2	2.6	26	849.14	g
Strontium	ug/L	City Water	26	13	130	4245.70	mg
TDS	mg/L	City Water	72	36	360	11757.31	g
Chloropicrin	ug/L	City Water	0.1	0.05	0.5	16.33	mg
pH	SU	City Water	Range: 7.0-10.8				
Temperature (winter)	F	NOAA	35.7				
Temperature (summer)	F	NOAA	75.6				

See Appendix D of the SPDES Application Report for New York City Water 2018 Water Quality Report.
Temperature data based on average temperature during winter and summer months during 2019. Data accessed from:
https://www.weather.gov/media/okx/Climate/CentralPark/monthlyannualtemp.pdf

Oil-Water Separator Discharge Constituents

Stormwater collected in continment areas is drained through OWS units. Concentrations of Oil & grease and BTEX used in these calcs represent maximum observed values over the past three years of discharge monitoring under the current SPDES Permit (see NY-2C Section 3, Table 4 orsite DMR submittals to NYSDEC). Concentrations of typical stormwater parameters required to be reported under NY-2C Section 3, Table 1 are based on typical stormwater concentrations for similar sites. Sources listed in calculations. 450 GPM flow rate = 200 GPM of existing unit + 250 GPM of proposed unit.

Max Flow Discharged: 450 GPM
648000 GPD
2449440 L/D

Constituents	Units	Source	Max Observed Concentrations	OWS Max Daily Mass Discharge	Units
Oil & Grease	mg/L	DMR Data	2.4	5878.66	g
Toluene	mg/L	DMR Data	ND	-	-
Benzene	mg/L	DMR Data	ND	-	-
Ethylbenzene	mg/L	DMR Data	ND	-	-
Xylene	mg/L	DMR Data	ND	-	-

Constituents	Units	Source	Typical Stormwater Concentrations	OWS Max Daily Mass Discharge	Units
BOD	mg/L	USEPA, 1999	9.3	22.78	kg
COD	mg/L	USEPA, 1999	57	139.62	kg
TSS	mg/L	USEPA, 1999	69	169.01	kg
TON (=TKN + Nitrate + Nitrite)	mg/L	USEPA, 1999	1.751	4.29	kg
Ammonia	mg/L	Taylor, 2005	0.2	489.89	g

Sources for Stormwater Parameters:

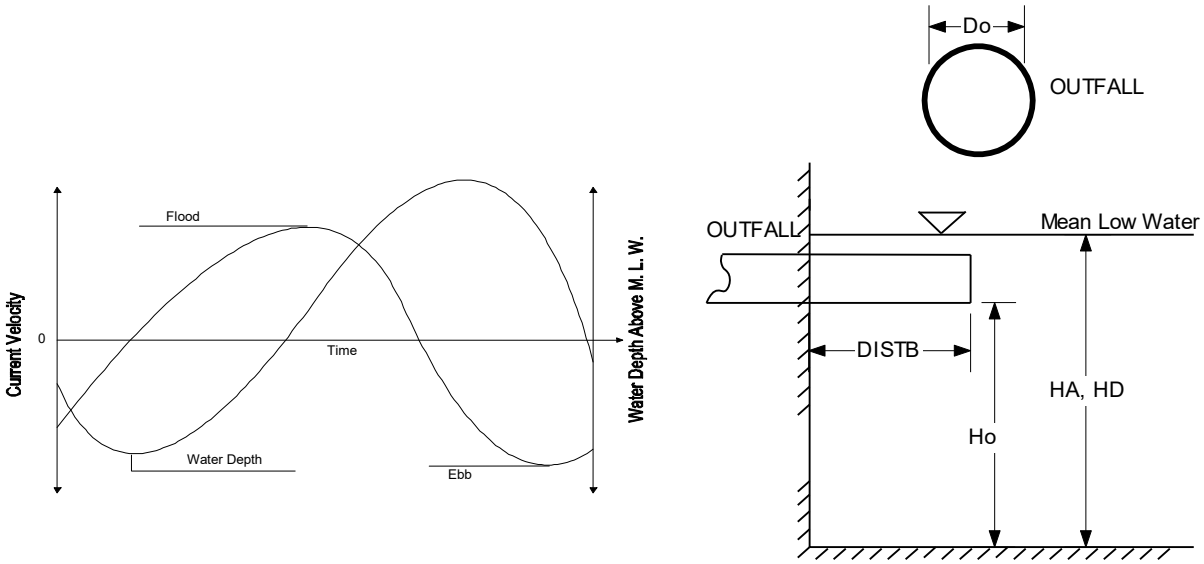
United States Environmental Protection Agency, 1999. *Preliminary Data Summary of Urban Storm Water Best Management Practices.* Washington, DC. August

Taylor, G., Fletcher, T., Wong, T., Breen, P., Duncan, H., 2005. Nitrogen composition in urban runoff—implications for stormwater management. J. Water Research 39 (2005), 1982-1989.

Appendix A.2 – NYSDEC Form NY-2C Supplement C

Mixing Zone Analysis for Estuarine Marine Waters
Data Requirements - Pipe Discharge (8/2013)

Facility: Astoria Gas Turbine Power
SPDES#: NY0201235
Date: April 2020



1.	Discharge outfall height	= Ho	Ft: -0.103
2.	Average Water Depth	= HA	Ft: -0.140
3.	Actual Water Depth at outfall	= HD	Ft: -0.177
4.	Distance to the Bank	= DISTB	Ft: 0
5.	Outfall/Port Diameter	= Do	Ft: 2
6.	Design Discharge Flow	= Qo_1	CFS: 15 (max stormwater discharge)
7.	Actual Average Flow[1]	= Qo_2	CFS: 0.008 (evap. cooler only)
8.	Average Peak Flow[1, 2]	= Qo_3	CFS: 1.2 (evap cooler & OWS units)
9.	Discharge Velocity at Avg. Peak Flow	= Uo	FPS: 0.382
10.	Discharge Density	= RHOo	Kg/m^3: 1000
	OR		
10a.	Temperature: _____ ^OC and Sp. Conductivity: _____ micromhos/cm		
11.	Surface Density[3]- Tidal Waters	= RHOAS	Kg/m^3 _____
	Bottom Density[3]- Tidal Waters	= RHOAD	Kg/m^3 _____
	OR		
11a.	Surface[3]: Temperature: 7.417 ^OC and Salinity: 24.65 ppt		
	Bottom[3]: Temperature: 6.914 ^OC and Salinity: 25.26 ppt		

SEE ATTACHMENT SUPP-C-1 FOR LIST OF DATA SOURCES.

12. Provide **Stage VS. Time** data over a tidal cycle **SEE ATTACHMENT SUPP-C-2.**
13. Provide **Tidal Velocity VS. Time** data over a tidal cycle **SEE ATTACHMENT SUPP-C-3.**
14. Provide a **cross-section of the receiving waterbody** at the discharge site. The cross-section shall be extended 100 feet beyond the terminus point of the outfall/diffuser for large estuaries or ocean.
15. Provide **plan and elevation (section) views of the outfall pipe/diffuser**.
16. Provide a **plan view of the outfall pipe and surrounding areas** at mean low water conditions.

SEE ATTACHMENT SUPP-C-4 FOR CROSS-SECTION AND PLAN VIEWS OF OUTFALL 001.

Note: [1]Two year period shall be used.
[2]Yearly average of monthly hourly maximum effluent flow.
[3]Upstream or downstream of the discharge site for an existing discharge or in the vicinity of the discharge site for a new discharge.

Attachment Supp-C-1. Mixing Zone Analysis Form Sources

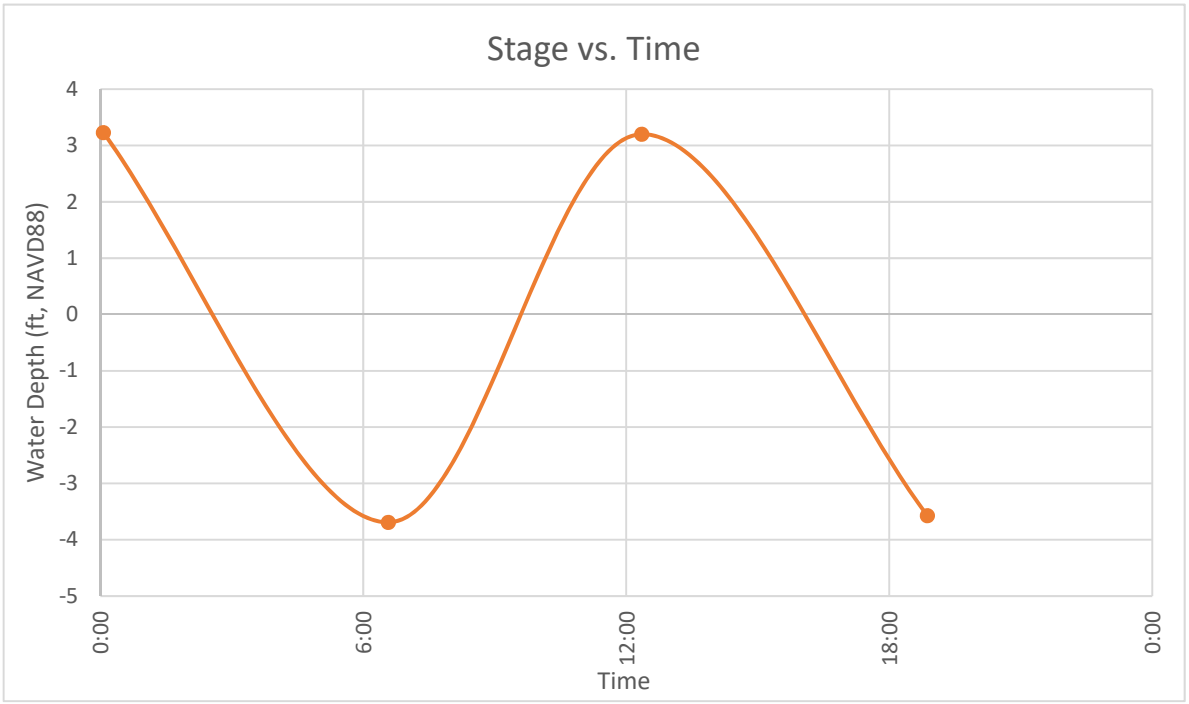
Parameter	Source	Source Link
Surface & Bottom Temp & Salinity	Uconn LISICOS Data: Execution Rocks Station	http://lisicos.uconn.edu/stn_exrx.php?id=exrx_wq_panel
Average water depth, Stage vs. Time data over a tidal cycle	NOAA Station 8518639, Port Morris	https://tidesandcurrents.noaa.gov/datums.html?datum=NAVD88&units=0&epoch=0&id=8518639&name=Port+Morris&state=NY
Tidal Velocity vs. Time data over a tidal cycle	New York Current Predictions: Off Winthrop Ave, Astoria, East River	https://tides.mobilegeographics.com/locations/5568.html
Topographic Data	The City of New York	https://gis.ny.gov/elevation/NYC-topobathymetric-DEM.htm
Bathymetry Data	NOAA Navigational Chart 12339	https://www.charts.noaa.gov/OnLineViewer/12339.shtml

Attachment Supp-C-2. Stage vs. Time over Tidal Cycle

Date	Time	DateTime	Pred (MLLW)	Pred (NAVD88)
3/23/2020	12:04:00 AM	3/23/2020 0:04	6.75	3.23
3/23/2020	6:34:00 AM	3/23/2020 6:34	-0.17	-3.69
3/23/2020	12:21:00 PM	3/23/2020 12:21	6.72	3.2
3/23/2020	6:52:00 PM	3/23/2020 18:52	-0.05	-3.57

Conversion MLWW to NAVD88: -3.52

Source: https://tidesandcurrents.noaa.gov/datums.html?datum=NAVD88&units=0&epoch=0&id=8518639&name=Port+Morris&state=NY

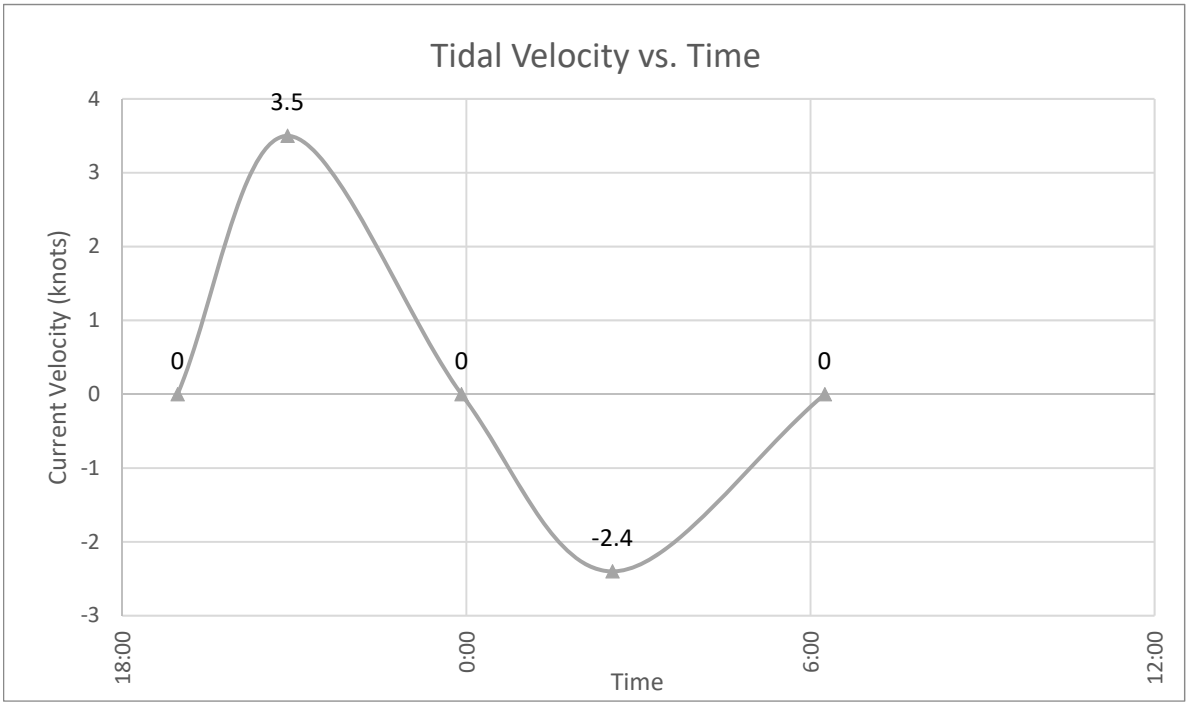


Attachment Supp-C-3. Tidal Velocity vs. Time over Tidal Cycle

Date	Time	DateTime	Velocity (knots)
3/25/2020	6:58:00 PM	3/25/2020 18:58	0
3/25/2020	8:53:00 PM	3/25/2020 20:53	3.5
3/25/2020	11:55:00 PM	3/25/2020 23:55	0
3/26/2020	2:33:00 AM	3/26/2020 2:33	-2.4
3/26/2020	6:15:00 AM	3/26/2020 6:15	0

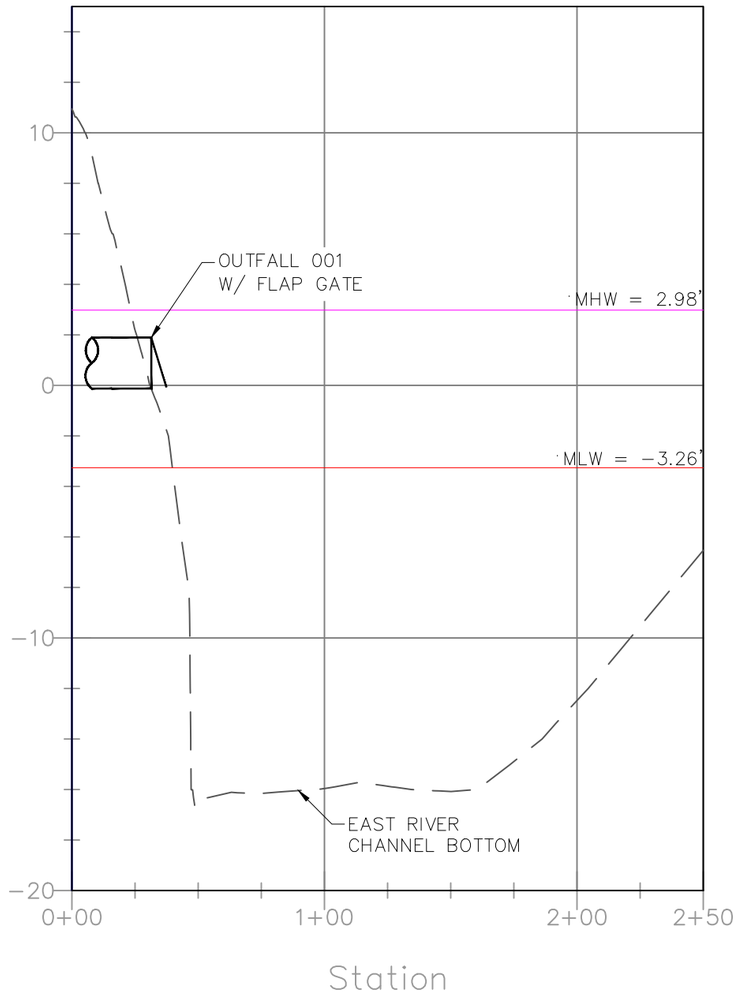
Conversion MLWW to NAVD88: -3.52

Source: https://tides.mobilegeographics.com/locations/5568.html

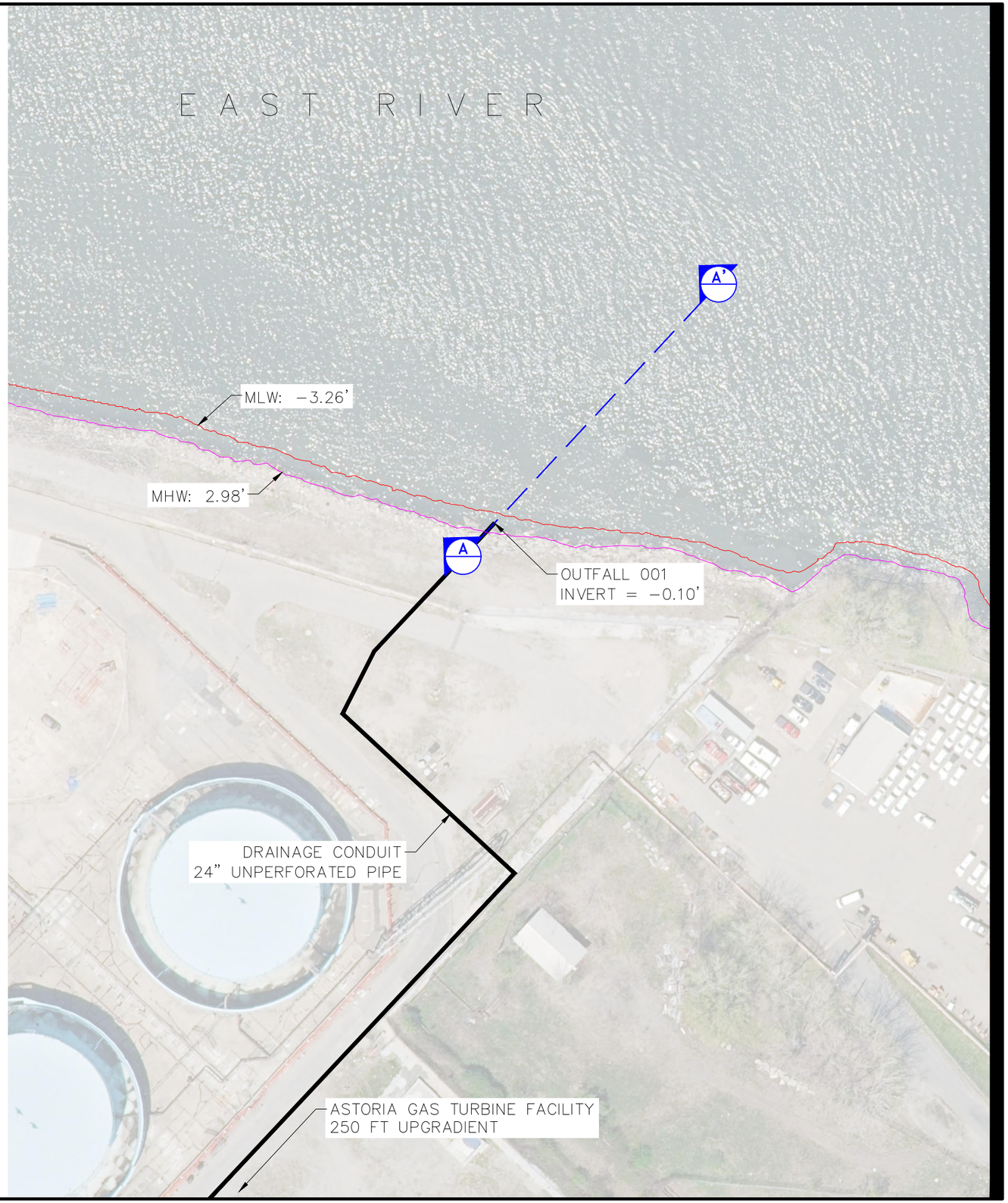


ANSI D 22" x 34"

CROSS–SECTION A–A'



NOTES
1. ALL ELEVATIONS SHOWN ARE IN NAVD88.
2. OUTFALL ALIGNMENT SHOWN BASED ON 1999 STORMWATER SURVEY PERFORMED BY MALCOLM PIRNIE, INC.
3. TOPOGRAPHY PROVIDED BY THE CITY OF NEW YORK. ACCESSED FROM: GIS.NY.GOV/ELEVATION/NYC–TOPOBATHYMETRIC–DEM.HTM
4. TIDAL ELEVATIONS REFERENCED FROM NOAA TIDAL STATION 8518639, PORT MORRIS, NY.
5. EAST RIVER BATHYMETRY COLLECTED FROM NOAA NAVIGATIONAL CHART 12339.



AECOM

PROJECT

Astoria Gas Turbine Power Facility
31-01 20th Avenue
Astoria, NY 11105

CLIENT

Astoria Gas Turbine Power, LLC
31-01 20th Avenue
Astoria, NY 11105

CONSULTANT

AECOM
250 Apollo Drive
Chelmsford, MA 01824
978.905.2100 tel 978.905.2101 fax
www.aecom.com

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	2020-04-08	ISSUE FOR PERMITTING

PROJECT NUMBER

60609400

SHEET TITLE

SPDES PERMIT APPLICATION
SUPPLEMENT C ATTACHMENT
OUTFALL 001 CONFIGURATION

SHEET NUMBER

SUPP-C-4