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**AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Clean Water Act as amended, (33U.S.C. §§1251 et seq.; the “CWA”, and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

**Northeast Gateway Energy Bridge, LLC
1330 Lake Robbins Drive, Suite 270
The Woodlands, TX 77380**

are authorized to discharge from a facility located at

**Northeast Gateway Energy Bridge
Massachusetts Bay**

to receiving waters named

Massachusetts Bay

In accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective (see***below)

This permit and the authorization to discharge shall expire at midnight five (5) years from the last day of the month preceding the effective date.

This permit shall be effective only during time periods when a National Oceanic and Atmospheric Administration Incidental Take Statement, that exempts the U.S. Environmental Protection Agency from the take prohibitions of the Endangered Species Act, is in effect for the Northeast Gateway Energy Bridge Project.

This permit consists of 7 pages in Part I including effluent limitations, monitoring requirements, etc., 25 pages in Part II including General Conditions and Definitions, and 9 pages (plus introductory pages) in Attachment A, *Operational Monitoring Program for the Northeast Gateway Port Massachusetts Bay Offshore Gloucester, MA, August 2007*.

Signed this day of

Stephen S. Perkins, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

***This permit will become effective on the date of signature if no comments are received during public notice. If comments are received during public notice, this permit will become 40 days after signature.

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Any Energy Bridge™ Regasification Vessel (EBRV) while moored at the deepwater port must comply with this permit, and this permit applies only when the EBRV is moored at the deepwater port.
2. During the period beginning on the effective date of the permit and lasting through expiration, the permittee is authorized to discharge through **outfall serial numbers 01A and 01B: Main Condenser Cooling Water**. Discharge shall be limited and monitored by the permittee as specified below:

OUTFALL 01A- Buoy A
Latitude 42° 23' 38.46" Longitude 70° 35' 31.02"

OUTFALL 01B- Buoy B
Latitude 42° 23' 56.40" Longitude 70° 37' 0.36"

Effluent Characteristic (units)	Discharge Limitations			Monitoring Requirements	
	Annual Total	Monthly Average	Maximum Daily	Measurement Frequency	Sample Type
Total Discharge Time (hours) ¹	520	----	----	Continuous	Meter
Flow rate (MGD) ²	----	----	7.82	Continuous	Estimate ³
Temperature Rise, ΔT (°C) ⁴	----	Report	2.6	Hourly	Calculation

¹ Total Discharge Time equals the sum of the discharge time from outfalls 01A and 01B. Annual total will be based on the calendar year. Report year-to-date totals for each outfall on monthly discharge monitoring reports. Total discharge time limit is based on a maximum flow rate of 32,700 gallons per minute.

² Flow rate is the flow from each outfall (01A and 01B).

³ The daily flow rate shall be calculated based upon the pump curve values and the hours of operation for the pump(s) during the reporting period and shall be reported in the units of millions of gallons per day (MGD). The permittee shall also report the total number of days during the reporting period in which there was a discharge from the outfall(s) (to be noted on Discharge Monitoring Report under the "event total" parameter).

⁴ Temperature Rise (ΔT) is the difference between the discharge temperature and the intake temperature. The intake and discharge temperatures shall be continuously measured and recorded by instruments or computers (thermistors) which record a minimum of 12 times per hour. The intake temperature shall be monitored at the intake structure of each unit that is operating. The temperature rise shall be calculated as an hourly average, based on the hourly average intake temperature and the hourly average discharge temperature measured during the same hour.

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3. During the period beginning on the effective date of the permit and lasting through expiration, the permittee is authorized to discharge through **outfall serial numbers 02A and 02B: Auxiliary Seawater Service Cooling**. Discharge shall be limited and monitored by the permittee as specified below:

OUTFALL 02A- Buoy A
Latitude 42° 23' 38.46" Longitude 70° 35' 31.02"

OUTFALL 02B- Buoy B
Latitude 42° 23' 56.40" Longitude 70° 37' 0.36"

Effluent Characteristic (units)	Discharge Limitations			Monitoring Requirements	
	Annual Total	Monthly Average	Maximum Daily	Measurement Frequency	Sample Type
Discharge Time (hours) ¹	520	----	----	Continuous	Meter
Flow rate (MGD) ²	----	----	0.99	Continuous	Estimate ³
Temperature Rise, ΔT , (°C) ⁴	----	Report	5.5	Hourly	Calculation

¹ Total Discharge Time equals the sum of the discharge time from outfalls 02A and 02B. Annual total will be based on the calendar year. Report year-to-date totals for each outfall on monthly discharge monitoring reports. Total discharge time limit is based on a maximum flow rate of 4,200 gallons per minute.

² Flow rate is the flow from each outfall (02A and 02B).

³ The daily flow rate shall be calculated based upon the pump curve values and the hours of operation for the pump(s) during the reporting period and shall be reported in the units of millions of gallons per day (MGD). The permittee shall also report the total number of days during the reporting period in which there was a discharge from the outfall(s) (to be noted on Discharge Monitoring Report under the "event total" parameter).

⁴ Temperature Rise (ΔT), is the difference between the discharge temperature and the intake temperature. The intake and discharge temperatures shall be continuously measured and recorded by instruments or computers (thermistors) which record a minimum of 12 times per hour. The intake temperature shall be monitored at the intake structure of each unit that is operating. The temperature rise shall be calculated as an hourly average, based on the hourly average intake temperature and the hourly average discharge temperature measured during the same hour.

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4. During the period beginning on the effective date of the permit and lasting through expiration, the permittee is authorized to discharge through **outfall serial numbers 03A and 03B: Water Curtain**. Discharge shall be limited and monitored by the permittee as specified below:

OUTFALL 03A- Buoy A
Latitude 42° 23' 38.46" Longitude 70° 35' 31.02"

OUTFALL 03B- Buoy B
Latitude 42° 23' 56.40" Longitude 70° 37' 0.36"

Effluent Characteristic (units)	Discharge Limitations		Monitoring Requirements	
	Annual Total	Maximum Daily	Measurement Frequency	Sample Type
Total Discharge Time (hours) ¹	9,640	----	Continuous	Meter
Flow rate (MGD) ²	----	0.6	Continuous	Estimate ³

¹ Total Discharge Time equals the sum of the discharge time from outfalls 03A and 03B. Annual total will be based on the calendar year. Report year-to-date totals for each outfall on monthly discharge monitoring reports. Total discharge time limit is based on a maximum flow rate of 400 gallons per minute.

² The daily flow rate shall be calculated based upon the pump curve values and the hours of operation for the pump(s) during the reporting period and shall be reported in the units of millions of gallons per day (MGD). The permittee shall also report the total number of days during the reporting period in which there was a discharge from the outfall(s) (to be noted on Discharge Monitoring Report under the “event total” parameter).

³ The daily flow rate shall be calculated based upon the pump curve values and the hours of operation for the pump(s) during the reporting period and shall be reported in the units of millions of gallons per day (MGD). The permittee shall also report the total number of days during the reporting period in which there was a discharge from the outfall(s) (to be noted on Discharge Monitoring Report under the “event total” parameter).

Part I.A (continued)

5. In addition to any other grounds specified herein, this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment.
6. The discharge shall not cause objectionable discoloration of the receiving waters.
7. The effluent shall not contain visible oil sheen, foam, or floating solids at any time.
8. The discharge shall not contain materials in concentrations or combinations which are hazardous or toxic to human health, aquatic life of the receiving waters.
9. Pollutants which are not limited by this permit, but which have been specifically disclosed in the permit application, may be discharged up to the frequency and level disclosed in the application, provided that such discharge does not violate Section 307 or 311 of the Clean Water Act (CWA).
10. The permittee shall identify potential sources of pollution that may reasonably be expected to affect the quality of the curtain water discharges, and ensure implementation of best management practices (BMPs) which will be used to eliminate or minimize any exposure of the curtain water to pollutants. BMPs must include good housekeeping measures, preventative maintenance programs, spill prevention and response procedures, and runoff management practices. All BMPs shall be properly maintained and be in effective operating condition.
11. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
 - a. That any activity has occurred or will occur which would result in the discharge, on a routine basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - i One hundred micrograms per liter (100 µg/l);
 - ii Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - iii Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7); or
 - iv Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(f)
 - b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - i Five hundred micrograms per liter (500 µg/L);
 - ii One milligram per liter (1 mg/L) for antimony;
 - iii Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. §122.21(g)(7).

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- iv Any other notification level established by the Director in accordance with 40C.F.R. §122.44(f).
- c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

B. COOLING WATER INTAKE AND THERMAL DISCHARGE MONITORING REQUIREMENTS

1. Energy Bridge Regasification Vessels (EBRVs) shall be constructed, maintained and operated to ensure the following cooling water intake structure (CWIS) location, design, construction and capacity criteria:
 - a. CWISs are located at least 23 feet below the water surface,
 - b. cooling water intake systems (including the structure and associated intake pumps) maintain a controlled intake velocity no greater than 0.5 feet per second, except during the 4-hour start-up and shut-down periods when intake velocity may not exceed 0.82 feet per second,
 - c. CWISs maintain screen openings no greater than 0.83 inches, and
 - d. the EBRVs only use closed loop shell-and-tube vaporization technology to regasify LNG.
2. Written notification and approval by EPA shall be required, should the permittee propose changes to existing or new EBRVs which would result in a violation of the criteria specified in paragraph I.B.1 above.
3. The permittee is required to monitor the potential impact of the thermal discharge and ongoing water withdrawal. This monitoring should be done in accordance with requirements in the monitoring program in Attachment A to this permit. The permittee shall submit an annual report detailing the results of this monitoring effort no later than March 1 of the following year. Copies of this report shall be submitted to:

Phil Colarusso
Ocean & Coastal Unit
U.S. Environmental Protection Agency
One Congress Street (COP)
Boston, MA 02114-2023

Chris Boelke
National Marine Fisheries Service
1 Blackburn Drive
Gloucester, MA 01930

Leila Hatch
Stellwagen Bank National Marine Sanctuary Office
175 Edward Foster Road
Scituate, MA 02066

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C. MONITORING AND REPORTING

1. The permittee shall notify the EPA, 48 hours prior to Energy Bridge Regasification Vessel (EBRV) arrival at the port by calling George Harding, EPA (617-918-1870). The permittee shall provide transportation for inspectors by appointment, as requested by EPA, from a coastal port location to, and from, the EBRV.
2. Monitoring results obtained during the previous month shall be summarized for each month and reported on separate discharge monitoring report (DMR) forms postmarked no later than the 15th day of the month following the effective date of the permit.
3. Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, MA 02114

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(January, 2007)

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

- a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.
- b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both.
- c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

Note: See 40 CFR §122.41(a)(2) for complete “Duty to Comply” regulations.

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

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4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including “sludge-only facilities”), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

- a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words “confidential business information” on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).
- b. Claims of confidentiality for the following information will be denied:
 - (1) The name and address of any permit applicant or permittee;
 - (2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).
- c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

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8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

- (1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

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- (2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can be reasonably expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
- (3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. Upset

- a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

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administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
 - (4) The permittee complied with any remedial measures required under B.3. above.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.
- c. Records of monitoring information shall include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.
- d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.
- e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by

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imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The permittee shall allow the Regional Administrator or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

- a. **Planned Changes.** The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:
 - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
 - (2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
 - (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. **Anticipated noncompliance.** The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- c. **Transfers.** This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

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incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 122.61; in some cases, modification or revocation and reissuance is mandatory.)

- d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
 - (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
 - (2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
 - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. Twenty-four hour reporting.
 - (1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
 - (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
 - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
 - (b) Any upset which exceeds any effluent limitation in the permit.
 - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)
 - (3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

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- f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
- g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.
- h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.

2. Signatory Requirement

- a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)
- b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and Federal standards and limitations to which a “discharge”, a “sewage sludge use or disposal practice”, or a related activity is subject to, including “effluent limitations”, water quality standards, standards of performance, toxic effluent standards or prohibitions, “best management practices”, pretreatment standards, and “standards for sewage sludge use and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

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Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in “approved States”, including any approved modifications or revisions.

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

Average monthly discharge limitation means the highest allowable average of “daily discharges” over a calendar month calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

Average weekly discharge limitation means the highest allowable average of “daily discharges” measured during the calendar week divided by the number of “daily discharges” measured during the week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States.” BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

- (a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.
- (b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.
- (c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

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- (d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.
- (e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a “discharge” which occurs without interruption throughout the operating hours of the facility except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

Daily Discharge means the discharge of a pollutant measured during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by “approved States” as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA’s.

Discharge of a pollutant means:

- (a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source”, or
- (b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation (See “Point Source” definition).

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead

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to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

This term does not include an addition of pollutants by any “indirect discharger.”

Effluent limitation means any restriction imposed by the Regional Administrator on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States”, the waters of the “contiguous zone”, or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under Section 304(b) of CWA to adopt or revise “effluent limitations”.

EPA means the United States “Environmental Protection Agency”.

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- (a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (b) Therefore is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act (CWA), the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

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populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable “daily discharge” concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as “maximum concentration” or “Instantaneous Maximum Concentration” during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean “a value that shall not be exceeded” during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of “Maximum Daily Discharge” and “Average Daily Discharge” concentrations are specifically limited to the daily (24-hour duration) values.

Municipality means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management agency under Section 208 of the CWA.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an “approved program”.

New Discharger means any building, structure, facility, or installation:

- (a) From which there is or may be a “discharge of pollutants”;
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source”; and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site”.

This definition includes an “indirect discharger” which commences discharging into “waters of the United States” after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a “site” for which it does not have a permit; and any offshore rig or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a “site” under EPA’s permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Regional Administrator in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

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An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a “new discharger” only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a “discharge of pollutants”, the construction of which commenced:

- (a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or
- (b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means “National Pollutant Discharge Elimination System”.

Owner or operator means the owner or operator of any “facility or activity” subject to regulation under the NPDES programs.

Pass through means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation).

Permit means an authorization, license, or equivalent control document issued by EPA or an “approved” State.

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

- (a) Sewage from vessels; or
- (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

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Primary industry category means any industry category listed in the NRDC settlement agreement (Natural Resources Defense Council et al. v. Train, 8 E.R.C. 2120 (D.D.C. 1976), modified 12 E.R.C. 1833 (D. D.C. 1979)); also listed in Appendix A of 40 CFR Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (b) not a “POTW”.

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW) means any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a “State” or “municipality”.

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary Industry Category means any industry which is not a “primary industry category”.

Section 313 water priority chemical means a chemical or chemical category which:

- (1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);
- (2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
- (3) satisfies at least one of the following criteria:
 - (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
 - (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
 - (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

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Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets, raw materials used in food processing or production, hazardous substance designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to EPCRA Section 313, fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 302.4).

Sludge-only facility means any “treatment works treating domestic sewage” whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to Section 405(d) of the CWA, and is required to obtain a permit under 40 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants means any pollutant listed as toxic under Section 307 (a)(1) or, in the case of “sludge use or disposal practices” any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, “domestic sewage” includes waste and wastewater from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR Part 503 as a “treatment works treating domestic sewage”, where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 CFR Part 503.

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Waste Pile means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;
- (b) All interstate waters, including interstate “wetlands”;
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

Active sewage sludge unit is a sewage sludge unit that has not closed.

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Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2,

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classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

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Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Industrial wastewater is wastewater generated in a commercial or industrial process.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

Municipality means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

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Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is an individual, association, partnership, corporation, municipality, State or Federal Agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to: domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

NPDES PART II STANDARD CONDITIONS (January, 2007)

Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl ₂	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M ³ /day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH ₃ -N	Ammonia nitrogen as nitrogen
NO ₃ -N	Nitrate as nitrogen
NO ₂ -N	Nitrite as nitrogen
NO ₃ -NO ₂	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

NPDES PART II STANDARD CONDITIONS
(January, 2007)

Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
ug/l	Microgram(s) per liter
WET	“Whole effluent toxicity” is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	“Chronic (Long-term Exposure Test) – No Observed Effect Concentration”. The highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.
A-NOEC	“Acute (Short-term Exposure Test) – No Observed Effect Concentration” (see C-NOEC definition).
LC ₅₀	LC ₅₀ is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC ₅₀ = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

ATTACHMENT A

Operational Monitoring Program for the Northeast Gateway Port Massachusetts Bay Offshore Gloucester, MA

**OPERATIONAL MONITORING PROGRAM
FOR THE
NORTHEAST GATEWAY PORT
MASSACHUSETTS BAY
OFFSHORE GLOUCESTER, MA**

AUGUST 2007

**OPERATIONAL MONITORING PROGRAM
FOR THE
NORTHEAST GATEWAY PORT
MASSACHUSETTS BAY
OFFSHORE GLOUCESTER, MA**

Prepared for
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133 Federal Street, 6th Floor
Boston, MA 02110**

and

**EXCELERATE ENERGY, LLC
1330 Lake Robbins Dr., Suite 270
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R-20152.008

August 2007

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1.0 INTRODUCTION

Excelerate Energy LLC (“Excelerate”) has been licensed by the Department of Transportation Maritime Administration (“MARAD”) and the U.S. Coast Guard (“USCG”) under the Deepwater Port Act of 1973 (“DWP”) as amended in 2002 to construct and operate an offshore deepwater port in Massachusetts Bay for the delivery through regasification and offloading via pipeline of liquefied natural gas (“LNG”) from specially equipped vessels (Energy Bridge Regasification Vessels or EBRVs). Resource agencies have identified water use (uptake and discharge) during operation as the primary concern related to the port. Withdrawal of seawater for daily operations and ballast will result in the entrainment of ichthyoplankton. Discharge has the potential to affect the quality of the receiving water (Massachusetts Bay). Both of these potential impacts were thoroughly addressed in the Deep Water Port application and the EIS using available data and modeling. This document describes a five-year operational monitoring program designed to confirm the results of the previous impact assessment.

1.1 PROJECT DESCRIPTION

Northeast Gateway Energy Bridge, L.L.C. (Northeast Gateway) has received a license to construct, own, and operate the Northeast Gateway Deepwater Port (Northeast Port or Port), located approximately 13 miles southeast of Gloucester, MA (Figure 1). The Port, which will be located in Massachusetts Bay, will consist of a submerged buoy system to dock specifically designed Liquefied Natural Gas (LNG) carriers approximately 13 mi (21 km) offshore of Massachusetts in federal waters approximately 270 to 290 ft (82 to 88 m) in depth. This facility will deliver regasified LNG to onshore markets via new and existing pipeline facilities owned and operated by Algonquin Gas Transmission, LLC (Algonquin). Algonquin will build and operate a new, 16.06-mile (25.8 km) long, 24-in (61-cm) diameter natural gas pipeline (called the Northeast Gateway Pipeline Lateral or Pipeline Lateral) to connect the Port to Algonquin’s existing offshore natural gas pipeline system in Massachusetts Bay, called the HubLine.

Northeast Gateway’s fleet of purpose built Energy Bridge Regasification Vessels (EBRVs) are conventional LNG transport vessels fitted with patented regasification equipment on board, and will transport LNG to the Port. Once at the Port, the EBRVs will begin regasification of the LNG back into gaseous natural gas and deliver the natural gas into a submerged pipeline system connected to existing pipeline infrastructure delivering in to the New England energy market. Excelerate has committed to using a closed loop system for regasification, thereby limiting the amount of sea water required for this process.

Water requirements will vary over the time that the ship is at port. During start-up and shut-down, each taking approximately four hours, the ship will withdraw 8.82 million gallons for engine condenser cooling and main seawater cooling. During routine operations (including the start-up and shut-down periods), the ship will withdraw 2.77 MGD for ballast, water curtain and freshwater generation. Water will be brought into the ship via both the upper and lower sea chests. The depth of the intakes on the ship ranges from 23-38 feet.

Water from several sources will be discharged from a depth of 17-28 feet (5-8 meters) below the surface into Massachusetts Bay while the EBRVs are moored. The discharge volume will vary according to the types of operations, similar to the seawater intake. On the first and last days that an

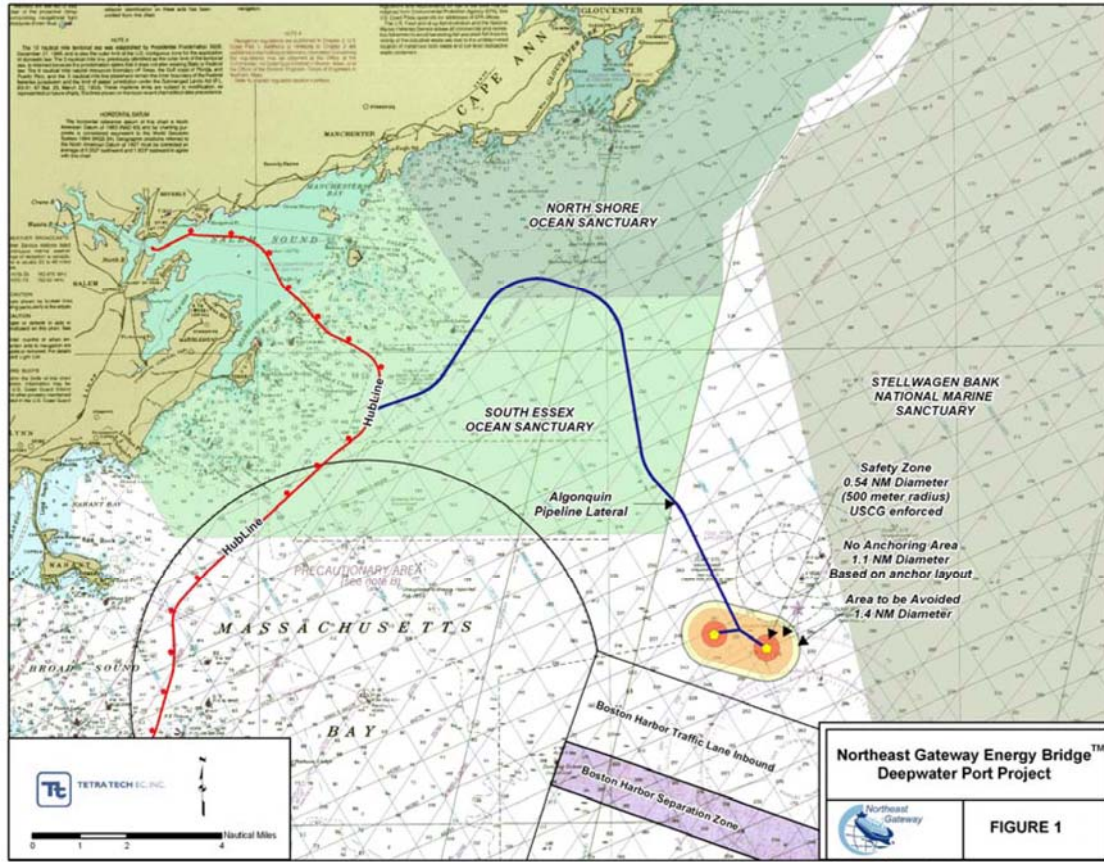


Figure 1. Northeast Gateway Deepwater Port and Pipeline Lateral Location.

EBRV is at port, the discharge volume will be approximately 9.69 MGD. During the remaining period, the discharge volume will be approximately 0.88 MGD. It is estimated that the discharge of treated wastewater will not exceed 0.005 MGD and will be compliant with MARPLO and EPA regulations. No bilge water will be discharged. The majority of the seawater withdrawn will be used for the main condenser cooling (7.82 MGD) and auxiliary seawater service cooling (0.99 MGD) during start-up and shut-down. No chemicals will be added to the water used for these purposes, but contact with the evaporation system will increase the water temperature. A small component of the discharge (0.27 MGD) will come from the freshwater generator and have slightly elevated salinity.

1.2 POTENTIAL FISHERIES IMPACTS

Entrainment of ichthyoplankton through water intake for various ship operations is a potential fisheries impact of concern to resource managers and regulators related to operation of Northeast Gateway. Comments related to fisheries issues from National Marine Fisheries Service on the DWP application centered on the suitability of available ichthyoplankton data for estimating impacts due to entrainment in the general shipboard water uptake system. Impact analysis during the licensing process used a variety of data sources, including general (non-quantitative) information for Massachusetts Bay, quantitative data from waters offshore of Hampton, NH (hydrologically linked, but somewhat distant from the project area), and quantitative data from NMFS's MARMAP and EcoMon programs.

MARMAP and EcoMon are broad scale programs that include stations in the vicinity of the proposed Northeast Gateway. MARMAP ended in the mid-1980s during a period when fisheries resources in New England waters were starting to undergo substantial declines. Ichthyoplankton data from the period prior to the decline, therefore, are unlikely to be representative of current conditions. The EcoMon program was initiated shortly after MARMAP ended, although ichthyoplankton data for the project area are available only for the period from 2000 through 2004. Data from these programs were used to quantify anticipated impacts to ichthyoplankton and adult populations caused by entrainment.

The purpose of the proposed sampling plan is to provide project-specific data to aid in quantifying the impacts related to entrainment of ichthyoplankton. Survey techniques are designed to sample the portion of the water column that will be affected by the EBRV intakes, a portion of that sampled during the MARMAP and EcoMon programs. Thus, sampling has been conducted prior construction to provide a recent baseline against which to compare operational data.

Entrainment losses of ichthyoplankton can appear to be very high in terms of absolute numbers, but the extremely high natural mortality rate for ichthyoplankton means that very few of these organisms would survive to maturity. These losses can be put into perspective through Equivalent Adult (EA) calculations that use natural mortality rates of individual species during their developmental stages to estimate the number of equivalent adults that are represented by the losses of eggs and larvae. Preliminary calculations for EA for several species were included in the Northeast Gateway EIS based on MARMAP and EcoMon data. These predictions will be evaluated based on the results of the preconstruction sampling and annually based on the operational period data.

1.3 POTENTIAL WATER QUALITY IMPACTS

Discharge plume modeling has been performed on the Project to estimate the extent of the thermal discharge plume from the EBRVs into Massachusetts Bay. Modeling was conducted on the EBRV Main Condenser and Auxiliary Seawater Cooling System two 4-hour discharge event estimates of 8.81 million gallons using the CORMIX Model. CORMIX is an analytical tool recommended by the EPA in several key guidance documents on the permitting of industrial, municipal, thermal, and other point source discharges to receiving waters. CORMIX was used to develop predictions related to the thermal plume behavior of the EBRV discharge quantity including the initial mixing, transport, and dilution in the nearfield plus 1,640 feet (500 meters).

Under various scenarios, the modeled plumes showed rapid transport of 33 feet (10 meters) or less to the surface within 65 to 130 feet (20 to 40 meters) horizontally downdrift of the discharge points. During this time, the plumes remained as a more or less coherent jet of warm water. With some spreading and diluting occurring as ambient water is entrained into the jet. Once at the surface, the buoyant plumes spread out rapidly and further mixed with the ambient surface water. The resulting surface plume was also transported downdrift of the vessel with the ambient current. The maximum surface temperature elevation estimated by CORMIX was 0.61°C (1.1°F) during summer conditions. The estimated surface temperature elevation at a distance of 1,640 feet (500 meters) downdrift from the discharge point was 0.10°C (0.18°F).

About 90% of the water processed through the freshwater generator will be discharged with a salinity about 10% higher than ambient conditions. This brinewater (0.27 MGD) will be mixed with other

sources prior to being discharged (0.88 to 9.69 MGD total) so that the salinity of the resulting discharge will be only negligibly higher than ambient.

2.0 ICHTHYOPLANKTON MONITORING STUDY DESIGN

2.1 STUDY PARAMETERS

The study is designed to collect site-specific data in the immediate port area over a pre-operational period of one year and an operational period of five years on ichthyoplankton diversity and abundance per volume of water at depths typically withdrawn by EBRVs. During operational period monitoring, additional collections will be made over the entire water column to ensure that impacts to species that exhibit diurnal vertical migrations are fully accounted for. These data will be analyzed in terms of likely impact to Massachusetts Bay fish populations in two ways—by comparing the population per volume withdrawn with the overall Massachusetts Bay volumes at equivalent depths, and by estimating the EA mortality implied by the entrainment.

Study parameters therefore include time of year and abundance by species of all identifiable finfish and lobster eggs and larvae. Densities of ichthyoplankton in the Port (no./1000 m³) will be multiplied by estimated volume of water withdrawn (m³) to estimate the number of ichthyoplankton entrained at the EBRVs.

Mortality rates for early life stages were generally available for the species of interest in the literature. Larval length data obtained during this monitoring program will be examined to evaluate whether they can be used to refine the mortality rates used in the Equivalent Adult modeling conducted for the Environmental Impact Statement for Northeast Gateway.

2.2 STUDY LOCATIONS

One general survey area was used to represent the two buoy sites during preconstruction sampling and the same area will be used during operational monitoring as well. The laboratory methods are designed to ensure that appropriate data are available to develop life stage-specific mortality rates for numerically or ecologically important species. Long-term monitoring of ichthyoplankton for power plants with open water intakes, such as Seabrook Nuclear Power Station located in coastal New Hampshire, has demonstrated that spatial differences in the ichthyoplankton populations in the source water body can not be readily detected even with a Before-After Control-Impact (BACI) sampling design because stations well outside the zone of influence of the intake are hydrologically linked to the intake area. Given the circulation patterns in outer Massachusetts Bay, therefore, additional survey areas would provide no greater resolution of the potential impacts of the Northeast Gateway system.

The sampling location was defined as a polygon encompassing the three alternative buoy locations analyzed during the licensing process. The polygon extends 0.5 nmi east and south of Buoy A and 0.5 nmi north and west of buoy C. The relationship of the sampling polygon to the buoys is depicted on Figure 2. Coordinates for the corners of the polygon are:

Corner	Longitude	Latitude
1 NW	70.6453°	42.4154°
2 SW	70.6457°	42.3872°
3 SE	70.5823°	42.3867°
4 NE	70.5819°	42.4149°

2.3 FIELD METHODS

Sampling will be conducted twice monthly and focus on two depth regimes: the depth zone (approximately 20-40 feet) where the intakes are located, and, hence, that is most vulnerable to withdrawal; and the full water column (within about 15 feet of the bottom, consistent with ECOMON protocols). The collection gear will be towed in an oblique manner through the depth zone. Three pseudo-replicate (sequential) samples will be taken in each depth zone (i.e., intake and full water column), each with a target volume of 300 m³. Sampling will be conducted during daylight hours as well as at night. Night is defined as the period from 2+ hours after sunset to 2+ hours before sunrise. Daylight is defined as 2+ hours after sunrise to 2+ hours before sunset. Additional samples will be collected during the crepuscular period (i.e., the period from 1 hour before to 1 hour after sunrise and sunset), but will only be analyzed if results from the day and night collections are statistically different (e.g., through numerical classification), suggesting a period of significant vertical migration. The total number of samples collected annually is shown in Table 1.

Table 1. Planned Sampling Effort (number of samples) for Northeast Gateway Ichthyoplankton Monitoring Program

Diel Period	May 2006 – May 2007	Operational Period Years 1 - 5
Day	72	144
Night	72	144
Crepuscular	72**	144**
TOTAL	144**	288**

** totals exclude samples collected during crepuscular period that are to be archived and processed only if necessary.

Collection gear will be a 1.0 m² Tucker trawl, or a similar plankton net that can be opened or closed at depth, equipped with a 0.330 mm mesh net and a calibrated flowmeter. The net will be lowered to the target depth in a closed position and then opened with a messenger activating a double trip release mechanism (DTRM). At the end of the approximate 10- minute tow a second messenger will be sent down the wire to close the net. Pre- and post-deployment flowmeter readings will be recorded. The nets will be washed down using filtered seawater and the contents preserved in 5 to 10 percent buffered formalin. Preserved samples will be transported to the Biological Laboratory for analysis.

A detailed field log will be maintained by the Chief Scientist during each survey. All station

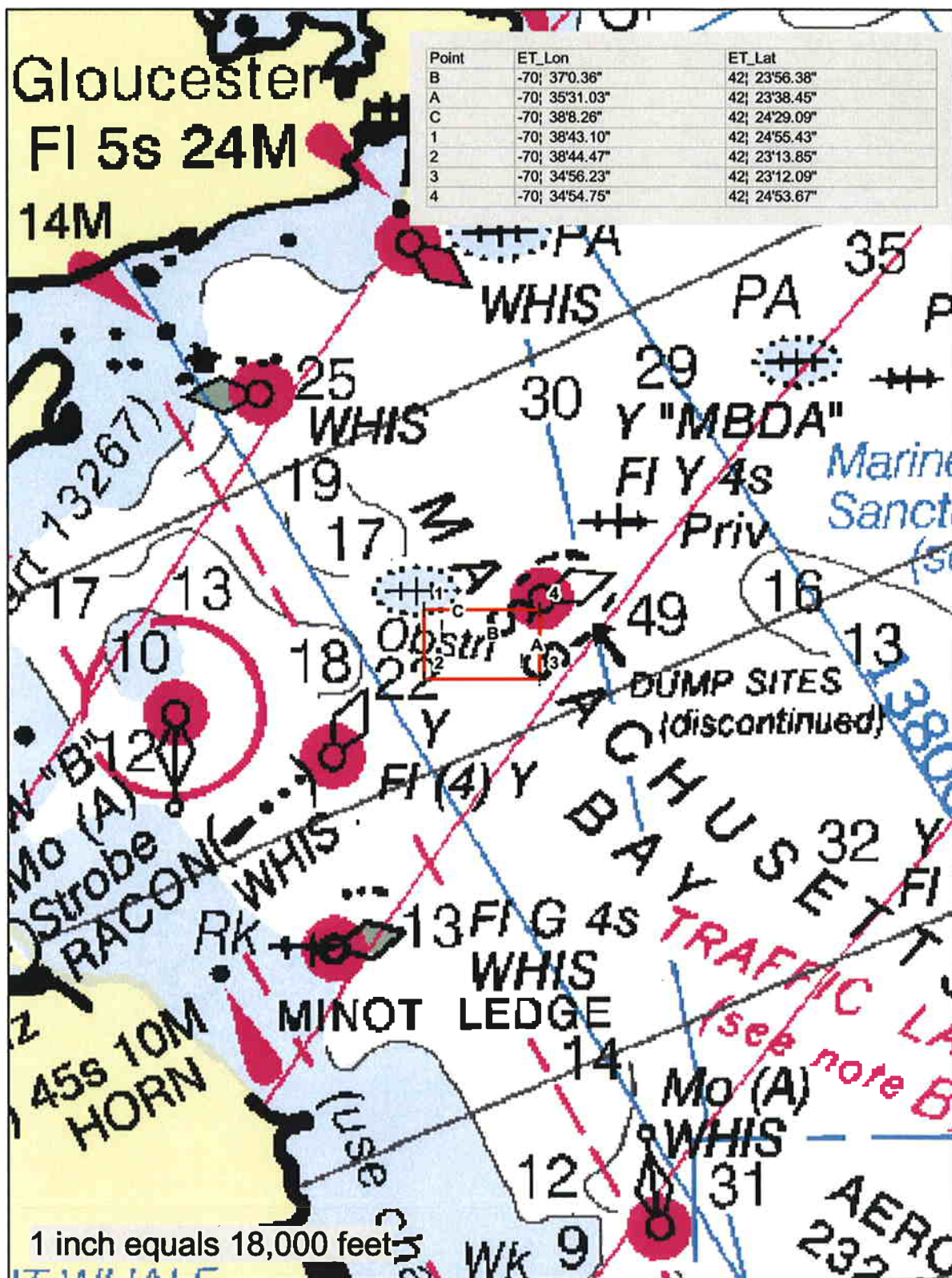


Figure 2. Ichthyoplankton Sampling Area (scale incorrect).

locations (starting point of tow) will be recorded using GPS. Water depth, bottom depth for full water column tows, and tidal stage will be recorded. Samples will be logged on Normandeau's standard chain-of-custody forms that will accompany the samples to the laboratory.

2.4 LABORATORY METHODS

All samples collected during daytime and nighttime periods will be processed in the laboratory. Samples collected during the crepuscular periods will be archived until the data analyst determines whether it would be necessary to analyze them. In the laboratory, all eggs and larvae will be identified to the lowest practical taxon. Subsampling will be allowed following Normandeau's standard laboratory procedures so that a minimum of 200 eggs and 100 larvae are identified. For eggs it may be necessary to group some taxa such as Labridae/yellowtail flounder, and hake/fourbeard rockling due to similarities in morphology and spawning season. Larvae are typically identified to the species level. For species that have clearly defined larval life stages (e.g., yolk sac, post-yolk sac, etc.), individuals will be assigned to the appropriate life stage. During the permitting process, 12 species of commercial or ecological importance (Table 2) were identified for impact assessment using Equivalent Adult Loss modeling techniques. Laboratory analysis will include length measurement to the nearest 0.5 mm will be made for these species, and any other abundant species, because length is a necessary parameter for estimating mortality rates for larvae. In addition, if lobster larvae are present in the samples, they will be enumerated by life stage.

Table 2. Fish species for which the Port area has been designated Essential Fish Habitat for larvae.

Common Name	Scientific Name
Atlantic cod	<i>Gadus morhua</i>
Atlantic herring	<i>Clupea harengus</i>
Atlantic mackerel	<i>Scomer scombrus</i>
Butterfish	<i>Peprilus triacanthus</i>
Cunner	<i>Tautogolabrus adspersus</i>
Haddock	<i>Melanogrammus aeglefinus</i>
Hake	<i>Urophycis</i> spp.
Pollock	<i>Pollachius virens</i>
Sand lance	<i>Ammodytes</i> spp.
Silver hake	<i>Merluccius bilinearis</i>
Winter flounder	<i>Pseudopleuronectes americanus</i>
Yellowtail flounder	<i>Limanda ferruginea</i>

Laboratory personnel will participate in Normandeau's standard Quality Control program in which 10% of each sorter's samples (randomly selected out of batches of 10 samples) are reexamined by a qualified supervisor to ensure a minimum of 95% of the ichthyoplankton individuals have been removed. Sorting efficiency (%) will be calculated as:

$$\frac{\text{QC count} - \text{original count}}{\text{QC count}} \times 100$$

Taxonomists also participate in the Quality Control program, with a randomly selected 10% of each taxonomist's samples being reanalyzed by a senior taxonomist to ensure a minimum taxonomic efficiency of 95%. Accuracy is calculated by species and lifestage as:

$$\frac{\text{QC count} - \text{original count}}{\text{QC count}} \times 100$$

Data will be recorded on laboratory data sheets and submitted to Normandeau's Data Processing Department. Normandeau typically includes several steps in the initial data processing to ensure quality of the data file. These steps include double keying of the original data, development of numerous range checks, and QC of the data entry by a taxonomist familiar with the data.

2.5 DATA ANALYSIS

2.5.1 Community Structure

Density of eggs and larvae will be presented as twice-monthly mean abundances (no./1000 m³). Seasonal patterns will be described using numerical classification techniques. Life history of common species will be discussed in reference to Port construction and operation.

2.5.2 Entrainment Impacts

Twice-monthly mean abundances will be used to calculate the number of individuals (by species, life stage, and size class) that are vulnerable to entrainment by multiplying abundance by intake volume. To place these numbers in perspective, however, it is important to account for the naturally high mortality rates experienced by early life stages of marine organisms. With knowledge of life stage-specific mortality rates for individual species, entrainment losses can be converted to Equivalent Adult losses. The term Equivalent Adults reflects the number of fish that would survive to adulthood (at a defined age) assuming natural mortality rates.

Length measurements obtained during sample analysis will be used to develop regressions of density versus length with the slope of this line representing the mortality rate. If the site-specific samples do not provide sufficient data to estimate mortality rates for each species, values will be derived from the literature.

Ichthyoplankton abundance data will be used to estimate the reduction in reproductive age fish populations caused by entrainment of fish eggs and larvae by Northeast Gateway. It will be assumed that 100% of the organisms entrained in the vessel will be killed.

3.0 DISCHARGE WATER QUALITY MONITORING STUDY DESIGN

Discharge of heated water into Massachusetts Bay is the primary impact to water quality caused by operation of the Northeast Gateway Deepwater Port. Modeling of the discharge occurring on the first and last days at port has indicated that changes to water quality will be limited in space. Sampling will be conducted to confirm the model predictions, to demonstrate that a persistent discharge plume is not discernable at a great distance from the vessel, and to document plume characteristics during

winter mixed water column conditions, spring and fall transitional conditions, and summer stratified conditions.

Modifications to this study design may be made as a result of requirements outlined in the NPDES permit.

3.1 STUDY PARAMETERS

Water quality monitoring will be conducted on a quarterly basis for a period of five years with the primary purpose of documenting the extent of the thermal plume. Additional parameters that will be measured are salinity, dissolved oxygen, and current direction.

3.2 FIELD METHODS

At a distance of up to 3000 feet (1000 meters) from an EBRV in the first or last day of operation (highest discharge volume), average current direction of the uppermost 30 feet (10 meters) of the water column will be measured using an Acoustic Doppler Current Profiler (ADCP). This information will be used to determine the orientation of the sampling transect. The sampling vessel will maneuver as close to the EBRV's discharge as possible. Operating along a downcurrent transect, the field crew will collect temperature, salinity, and dissolved oxygen profiles at 300 foot (100 meter) intervals. The length of the transect will be a minimum of 1,640 feet (500 meters) and extend until two adjacent sampling points have surface temperatures within 0.5°C of each other. At each sampling location, measurements will be made at 3-foot (1-meter) intervals using appropriate probes along a vertical profile through the uppermost 30 feet (10 meters) of the water column.

3.3 DATA ANALYSIS

Geo-referenced data from the quarterly water column sampling will be plotted to document the two-dimensional behavior of the discharge plume. Results will be compared to the predictions of the CORMIX model.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023**

FACT SHEET

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO
THE CLEAN WATER ACT (CWA)**

NPDES PERMIT NUMBER: MA0040266

PUBLIC COMMENT PERIOD: August 24, 2007 – September 25, 2007

NAME AND MAILING ADDRESS OF APPLICANTS:

Northeast Gateway Energy Bridge, LLC
1330 Lake Robbins Drive, Suite 270
The Woodlands, TX 77380

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Northeast Gateway Energy Bridge Deepwater Port
Massachusetts Bay

RECEIVING WATER(S):

Massachusetts Bay

SIC CODE: 4491

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Attachment A - Summary of Essential Fish Habitat Designation

1.0 Proposed Action, Type of Facility, and Discharge Location

1.1 Brief Summary of Proposed Action

The above-named applicant has applied to the U.S. Environmental Protection Agency (EPA) for a NPDES permit to authorize it to withdraw seawater (for cooling) from, and discharge pollutants to, Massachusetts Bay from its proposed new deepwater port. The new port is proposed for the regasification of liquefied natural gas (LNG) and the transmission of the gas into a network of undersea natural gas transmission pipelines. The LNG will be delivered to the port by specially equipped LNG tanker vessels. The LNG tankers will connect to, and become integrated within, the deepwater port by coupling with one of the facilities two “submerged turret loading buoys.” These buoys are, in turn, connected to the existing undersea transmission pipeline network by flexible risers, subsea flowlines and pipeline laterals. Once integrated within the deepwater port, the LNG tankers will regasify their cargo of LNG using their specially designed onboard regasification equipment. Following regasification, the natural gas will be odorized and metered out, through the flexible risers and subsea flowlines, to the pipeline laterals and the undersea pipeline transmission network. Thus, the deepwater port will be the functional equivalent of a land-based or marine platform-based LNG regasification and import terminal, although the regasification and transmission of the gas will occur on the tanker vessels.

Northeast Gateway Energy Bridge, LLC’s (Northeast Gateway) NPDES permit application was deemed complete by EPA. The Northeast Gateway Energy Bridge deepwater port will be located in federal waters of Massachusetts Bay approximately 13 miles south-southeast of Gloucester, Massachusetts, as shown in Figure 1. This permit addresses cooling water withdrawals and pollutant discharges associated with operation of the deepwater port. Discharges associated with construction of the port were addressed in NPDES Permit MA0040240.

1.2 Type of Facility

Northeast Gateway will construct, own and operate the Northeast Gateway Deepwater Port (Port) to import LNG into the New England Region. The Port will support the delivery of LNG, the regasification of LNG, and the delivery of natural gas to onshore markets via the following major components.

- **Energy Bridge™ Regasification Vessels (EBRVs)** - EBRVs are purpose-built LNG carriers that incorporate onboard equipment for the vaporization of LNG and delivery of high pressure natural gas. The major components of the specialized onboard equipment include:
 - High Pressure Pumps and Vaporizers. High pressure pumps take LNG from the EBRV’s cargo tanks and bring it up to pipeline pressure in its liquid state. The LNG is then passed through closed-loop, shell-and-tube vaporizers to convert it back to vaporous natural gas, which is then odorized and metered out to the undersea pipeline network.
 - Boilers. EBRVs are equipped with oversized boilers capable of burning either natural gas or fuel oil to provide the steam and power necessary to sustain vessel operations and the shipboard regasification process.

- STL Buoy Compartment. The hull of an EBRV includes a specialized compartment to accommodate the STL Buoy system (see below).
 - Reinforced LNG Containment System. The LNG containment on the EBRV is reinforced to withstand the sloshing loads encountered while at sea.
- **Two Submerged Turret Loading™ (STL) Buoy Systems** – Each STL buoy will consist of a flexible riser, pipeline end manifold, and flowline. The buoys will serve both as a single-point mooring system for the EBRVs and the delivery conduit for natural gas. Figure 2 illustrates the Port’s STL buoy system.
- **Pipeline Lateral** – The Pipeline Lateral will connect the STL buoy flowlines to the existing offshore pipeline system (Hubline) and enable the transfer of natural gas from the Port to onshore markets. The Pipeline Lateral will be owned and operated by Algonquin Gas Transmission, LLC (Algonquin). Figure 1 shows the Pipeline Lateral route.

1.3 Discharge Locations

The intake of seawater and discharge of cooling and curtain water will be from the Port’s EBRVs which will be connected with the two STL buoys. Therefore, the intake and discharge location will be in the Port location, approximately 13 miles south-southeast of the city of Gloucester, Massachusetts, in federal waters. The Port is also located in Minerals Management Service (MMS) Lease Blocks NK 19-04 6625 and 6675. This section of the Massachusetts Bay is commonly referred to as Block 125. Water depth in the Port area is 270 to 290 feet.

The two STL buoys will be separated by approximately one nautical mile (1,850 meters) which would allow two vessels to “weathervane” (i.e., move around their anchoring points with the currents) without interference when moored simultaneously and also provide sufficient room for maneuvering.

The Port is located outside of, but in the vicinity of, federal and state designated marine sanctuaries and the Boston Harbor traffic lanes.

1.4 Port Operation

EBRVs are expected to take approximately eight days to regasify and “send out” each cargo of LNG delivered to the Port. On the first day of regasification, the regasification process will be initiated and a steady state natural gas transmission of approximately 150 million cubic feet per day (MMcfd) will be achieved. On days two through seven, when the Port is operating in steady state, the regasification process will be a closed loop system with no intake of seawater for cooling (or warming) and no discharge of heated water (or chilled water). On days one and eight, seawater intake for cooling and related thermal discharges will be required for four hours on each day.

In addition to those associated with regasification, seawater intake and effluent discharges will be required for the day-to-day functions of the EBRV, including maintaining the vessel’s main cooling systems, ballast water, a safety water curtain, the generation of fresh water, graywater and blackwater, and emergency needs as described in the following text.

To accommodate continuous delivery of natural gas, deliveries of LNG will be scheduled consecutively. As delivery into one of the two buoys is finishing, a second vessel will arrive and

attach to the other buoy to commence discharge of its cargo. The port has been designed to allow for the simultaneous operation of two EBRVs. However, for the majority of all operations at Port (90 percent of total annual operations) only one EBRV is expected to be servicing the Port at any given time. Overlap between vessels is only anticipated to occur during 10 percent of all annual operations at Port.

2.0 Description of Intakes

EBRVs are expected to take approximately eight days to regasify each cargo of LNG delivered to the Port. Water use during these eight days is dependent upon the phase of regasification. Table 1 illustrates the water use for each vessel while in port.

Table 1 – Summary of Maximum Water Intake for One EBRV in Port (Flows in MGD)

Day of operation	Main Condenser Cooling	Auxiliary Seawater Cooling	Ballast Water	Safety Water Curtain	Freshwater Generator	Daily Total
1	7.82	0.99	1.87	0.6	0.3	11.58
2	0	0	1.87	0.6	0.3	2.77
3	0	0	1.87	0.6	0.3	2.77
4	0	0	1.87	0.6	0.3	2.77
5	0	0	1.87	0.6	0.3	2.77
6	0	0	1.87	0.6	0.3	2.77
7	0	0	1.87	0.6	0.3	2.77
8	7.82	0.99	1.87	0.6	0.3	11.58

All water used in support of EBRV ship operations will be drawn through a total of four sea chests (cavities in the hull of a vessel which are exposed to the ocean; water is drawn into the vessel through the cavity): starboard high, starboard low, port high, and port low (see Figure 4). Each sea chest will draw water through a series of grids (see Table 2).

Table 2 - Summary of Sea Chest Grid Numbers and Open Areas

Sea Chest	Grids	Open Area per Grid (square feet)	Total Open Area (square feet)
Starboard High	4	8.2	32.8
Starboard Low	6	6.9	41.4
Port High	8	8.2	65.6
Port Low	8	6.9	55.2

Each sea chest grid will have metal gratings with 21 mm (0.83 inch) slots between the grating bars. The high sea chests will be located on the rounded portion of the hull near the bilge, approximately 23 feet below the surface of the water. The low sea chests will be located further down on the flat portion of the hull, with the centerline approximately 38 feet below the surface

of the water. Seawater will be drawn horizontally through the high sea chests and vertically through the low sea chests.

3.0 Description of Discharges

Each EBRV will discharge from five different outfalls during the eight day regasification process. Table 3 summarizes all the flows from the EBRVs. More detailed descriptions of the source and characteristics of the discharge from each outfall are provided in section 6.0.

Table 3 – Summary of Maximum Water Discharge for One EBRV in Port (Flows in MGD)

Day of operation	Main Condenser Cooling	Auxiliary Seawater Cooling	Safety Water Curtain	Freshwater Generator	Hotelling & Sanitary Treatment	Daily Total
1	7.82	0.99	0.6	0.27	0.005	9.685
2	0	0	0.6	0.27	0.005	0.875
3	0	0	0.6	0.27	0.005	0.875
4	0	0	0.6	0.27	0.005	0.875
5	0	0	0.6	0.27	0.005	0.875
6	0	0	0.6	0.27	0.005	0.875
7	0	0	0.6	0.27	0.005	0.875
8	7.82	0.99	0.6	0.27	0.005	9.685

4.0 Environmental Review under the National Environmental Policy Act

Section 511(c)(1) of the Clean Water Act (CWA), 33 U.S.C. § 1371(c)(1), expressly provides that EPA issuance of an NPDES permit under CWA § 402, 33 U.S.C. § 1341, to a facility that is a “new source” under CWA § 306, 33 U.S.C. § 1316, is one of only two types of EPA actions under the CWA that are subject to review under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321, *et seq.* Where such an action is determined to be a major federal action significantly affecting the quality of the human environment, NEPA requires that the federal agency or agencies proposing, major federal actions significantly affecting the quality of the human environment to first complete an “environmental impact statement” (EIS) evaluating the proposed action, reasonable alternatives to it and the environmental effects of the proposed and alternative actions. *See* 40 C.F.R. Part 1502. EPA regulations at 40 C.F.R. Part 6, Subparts A, B, D, and F also address the preparation of EISs in conjunction with EPA proposals to issue NPDES permits to new sources.

Several criteria must be satisfied before a facility will be deemed a new source under CWA Section 306. One of these criteria is that the facility must fall within an industrial category for which new source performance standards have been developed. *See* 33 U.S.C. § 1316(a)(2). *See also* 40 C.F.R. §§ 122.2 (definition of “new source”) and 122.29(b)(2). EPA has not, however, promulgated new source performance standards for deepwater ports generally or for LNG import terminals in particular, whether based on the land or the water. Therefore, the LNG deepwater port in question here would not generally be considered a new source under CWA Section 306,

and preparation of an EIS would not be required in connection with the proposed issuance of an NPDES permit for its discharges. Nevertheless, the Deepwater Port Act (DPA), 33 U.S.C. §§ 1501 *et seq.*, specifies that deepwater ports shall be considered “new sources” under the CWA. See 33 U.S.C. § 1502(9)(D). As a result, by operation of the DPA, NEPA applies to EPA’s proposal to issue an NPDES permit to the NEG deepwater port. At the same time, the DPA also specifies that:

[f]or all [Deepwater Port Act license] applications, the Secretary [of Transportation], in cooperation with other involved Federal Agencies and departments, shall comply with the National Environmental Policy Act of 1969 (42 U.S.C. 4332). Such compliance shall fulfill the requirement of all Federal agencies in carrying out their responsibilities under the National Environmental Policy Act pursuant to this Act.

33 U.S.C. § 1504(f). Consistent with this provision of the DPA, the United States Coast Guard (USCG) and the United States Maritime Administration (MARAD) served as lead agencies preparing an EIS to satisfy NEPA, and EPA (and other agencies) cooperated with the USCG and MARAD in the preparation of the EIS. See USCG’s Draft and Final EISs for the Northeast Gateway Energy Bridge LLC Liquefied Natural Gas Deepwater Port License Application. Also consistent with the DPA, this EIS satisfies EPA’s NEPA obligations with respect to issuance of this NPDES permit.

The EIS includes detailed discussion of the proposed project and alternatives considered to it. Many aspects of the project are discussed in the EIS, including pollutant discharges and cooling water withdrawals. This fact sheet provides additional discussion focused specifically on aspects of the proposed facility that are subject to regulation under the NPDES permit.

5.0 Limitations and Conditions

The limits on pollutant discharges and cooling water withdrawals, as well as the monitoring requirements, proposed by EPA for the Port may be found in the draft NPDES permit. The basis for these requirements is discussed below.

6.0 Permit Basis: Statutory and Regulatory Authority

6.1 Permit Requirements, Generally

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without authorization by a National Pollutant Discharge Elimination System (NPDES) permit, unless the discharge is otherwise authorized by the CWA. Technology and water quality-based effluent limitations and other requirements, including monitoring and reporting, are typically implemented by including them in NPDES permits issued to specific facilities. See 33 U.S.C. §§ 1311(a) and (b), 1313, 1318(a), 1326(b), 1341, 1342, 1343. The draft NPDES permit here was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136. For this permit, EPA considered technology-based and water quality-based requirements under the CWA, including the CWA’s Ocean Discharge Criteria. In addition, EPA considered any requirements that might arise out of any applicable

statutes in addition to the CWA.

6.2 Technology-Based Requirements for Pollutant Discharges

Technology-based effluent limits represent the minimum level of pollutant discharge control that dischargers must achieve under the CWA. The CWA requires that different types of pollutant discharges be controlled to levels that reflect the capability of certain technological measures. These technology standards vary depending on the type of pollutant and facility in question. See 33 U.S.C. §§ 1311(b), 1314, 1316; 40 C.F.R. § 125.3. Sections 301(b) and 306 of the CWA (see 40 CFR §125 Subpart A) require that pollutant discharges be reduced to a level equivalent to using the best practicable control technology currently available (BPT), best conventional control technology (BCT) for conventional pollutants, the best available technology economically available (BAT) for toxics and non-conventional pollutants, and the best available demonstrated control technology (BADCT) for discharges from “new sources,” as defined under the CWA. See 33 U.S.C. §§ 1316(a); 40 C.F.R. §§ 122.2, 122.29. BAT limits are also supposed to “result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants.” 33 U.S.C. § 1311(b)(2)(A). These technology-based requirements are then to be reflected in NPDES permits issued to specific facilities. See 33 U.S.C. §§ 1311, 1316, 1342(a); 40 C.F.R. §§ 122.29, 125.3. In general, technology-based effluent guidelines for non-POTW facilities must have been complied with as expeditiously as practicable. See 40 CFR §125.3(a)(2). Any applicable new source performance standards must be complied with when the new source commences operations. See 40 C.F.R. § 122.29(d)(4) and (5). Compliance schedules and deadlines not in accordance with the statutory deadlines of the CWA cannot be authorized by a NPDES permit.

EPA regulations found at 40 C.F.R. Part 125, Subpart A, set forth procedures, standards and criteria for the development and imposition of technology-based requirements in NPDES permits under Section 301(b) of the CWA, including the application of EPA-promulgated National Effluent Guidelines (NEGs) (i.e., technology-based effluent limitations developed for entire industrial categories which are then applied to specific facilities through NPDES permits) and, when no relevant NEGs are in effect, the development of case-by-case, Best Professional Judgment (BPJ) determinations of technology-based discharge limits under Section 402(a)(1) of the CWA. See 40 C.F.R. § 125.3.

EPA has not promulgated technology-based NEGs for pollutant discharges from LNG deepwater ports or any other type of deepwater port. In addition, EPA has not promulgated any new source performance standards for deepwater ports. Therefore, all technology-based effluent limits for the Port’s NPDES permit have been developed on a case-by-case, BPJ basis, as discussed further below.

6.3 Ocean Discharge Criteria under CWA § 403

Point source pollutant discharges to marine waters are subject to the federal Ocean Discharge Criteria (ODC) under Section 403 of the Clean Water Act (CWA). 33 U.S.C. § 1343. The ODC apply to NPDES permits for pollutant discharges into the territorial seas, the contiguous zone and the ocean. EPA has promulgated guidelines for regulating discharges to satisfy CWA section 403 and give effect to the ODC. See 40 C.F.R. Part 125, Subpart M.

EPA may not issue an NPDES permit to authorize any pollutant discharge that the Agency

determines will cause “unreasonable degradation of the marine environment.” 40 C.F.R. 125.123(b). EPA conducts an Ocean Discharge Criteria Evaluation (ODCE) using the guidelines in 40 C.F.R. Part 125, Subpart M to determine whether and the extent that the discharge will cause degradation of the marine environment. 40 C.F.R. 125.122(a). These guidelines define “unreasonable degradation of the marine environment” to mean:

- Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;
- Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or
- Loss of aesthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge.

See 40 C.F.R. 125.121(e). CWA Section 403(c) guidelines require that a number of factors be considered in the determination of degradation. These factors include the amount and nature of the pollutants, the potential transport of the pollutants, the character and uses of the receiving water and its biological communities, the existence of special aquatic sites (including parks, refuges, etc.), any applicable requirements of an approved Coastal Zone Management plan, marine water quality criteria developed by EPA pursuant to CWA Section 304(a)(1), and potential impacts on water quality, ecological health and human health.¹ EPA may include limits in NPDES permits in order to ensure that discharges will not result in unreasonable degradation of the marine environment and, as stated above, discharges that would cause such unreasonable degradation may not be permitted. 40 C.F.R. §§ 125.123(a) and (b). If EPA has insufficient information to determine prior to permit issuance that there will be no unreasonable degradation of the marine environment, the Agency may not issue the permit unless, among other requirements, it finds that such discharge will not cause irreparable harm. 40 C.F.R. 125.123(c).

6.4 Section 316(b) of the Clean Water Act

CWA Section 316(b), 33 U.S.C. § 1326(b), imposes a technology standard for cooling water intake structures (CWISs) at facilities with pollutant discharges subject to NPDES permitting, where the CWIS will withdraw cooling water from the waters of the United States. CWA Section 316(b) requires “that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact” (BTA). 33 U.S.C. § 1326(b). As with technology standards for effluent discharges, EPA imposes conditions in NPDES permits to ensure that the technology standard for CWISs is met at individual facilities.

In December 2001, EPA promulgated a regulation to implement a first phase of performance standards under CWA Section 316(b). See 40 C.F.R. Part 125, Subpart I; 66 Fed. Reg. 65338 (Dec. 18, 2001) (Final Phase I Rule). The Phase I Rule set national performance standards for

¹ The EPA National Recommended Water Quality Criteria, 2006, contain applicable water quality criteria for marine discharges.

CWISs at “new facilities,” as defined in the regulations, that are subject to the Rule. An April 22, 2004, memorandum from EPA’s Office of Water to EPA Regions and the National Oceanic and Atmospheric Administration (NOAA), confirms that CWISs offshore LNG terminals with NPDES permits would be subject to CWA Section 316(b)’s BTA standard, but also directs that such limits should be developed on a case-by-case, BPJ basis, rather than the Phase I regulations.

The memorandum explains that EPA’s Phase I regulations for new facilities with cooling water intake structures did not contemplate, and were not intended to be applied to, offshore facilities of this type. While the memorandum also noted that it was possible that EPA’s then as yet-to-be-developed Phase III Rule under CWA Section 316(b) might provide national categorical standards applicable to offshore LNG import terminals, EPA later issued the Phase III Rule and decided not to promulgate national standards for this type of facility and to leave permit limit development under Section 316(b) for these facilities to the case-by-case, BPJ process. *See* 40 C.F.R. §§ 125.131(d), 125.133; 71 Fed. Reg. 35008 (June 16, 2006) (Final Phase III Rule). *See also* 40 C.F.R. §§ 401.14.

The operation of CWISs can cause or contribute to a variety of adverse environmental effects, such as killing or injuring fish larvae and eggs by entraining them in the water withdrawn from a water body and sent through the facility’s cooling system, or by killing or injuring fish and other organisms by impinging them against the intake structure’s screens, racks, or other structures. CWA Section 316(b) applies to this permit due to the presence and operation of CWISs on the EBRVs, specifically, the sea chests when the EBRVs are interconnected with the STL buoys and integrated within the Port.

6.5 Special Considerations Regarding the EBRVs and NPDES Permitting

As explained above, the EBRVs are ocean-going LNG tanker vessels that are specially equipped so that they can interconnect with the STL buoys and be integrated into the deepwater port and conduct the LNG regasification and send out operation onboard. Once connected to the STL buoy and integrated into the Port, the EBRVs are essentially anchored to the seafloor and stationary in the water (of course, they will be able to “weathervane” around their anchor points), and they will be connected to the undersea natural gas pipeline network via the flexible riser and flowlines. Thus, the Port, including the EBRVs, is functionally equivalent to both land-based and marine platform-based LNG import terminals.

CWA Section 502(14) states that “[t]he term ‘point source’ means . . . [, among other things, a] vessel or other floating craft, from which pollutants are or may be discharged.” CWA Section 502(12)(B) defines “discharge of a pollutant” to mean any addition of any pollutant to waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.

Thus, pollutant discharges to federal waters from vessels or other floating craft generally would *not* be considered to constitute a “discharges of pollutants” subject to NPDES permitting requirements under the CWA. Longstanding EPA regulations, however, have interpreted the reference in CWA Section 502(12)(B) to “vessels or other floating craft” as inapposite to discharges when the vessel is operating in a capacity other than as a means of transportation. *See* 40 C.F.R. § 122.3. NPDES permits have been required for discharges associated with various types of vessel-based or otherwise floating industrial facilities (e.g., seafood processing vessels, offshore oil and gas extraction facilities). *See* Technical Development Document for the Final Section 316(b) Phase III Rule, p. 1-2 (EPA-821-R-06-003) (EPA, 2006).

For these reasons, EPA does not assert NPDES jurisdiction over discharges of pollutants (or cooling water withdrawals) from the EBRVs when they are in transit and, therefore, are operating primarily as a means of transportation. When the EBRVs are interconnected to the STL buoys and integrated into the Port, however, NPDES permitting requirements do apply to the associated discharges (and CWISs). Therefore, the draft permit's pollutant discharge and cooling water intake requirements discussed below all apply to discharges from/intakes into the EBRVs when they are interconnected with the STL buoys and integrated within the Port.

7.0 Explanation of the Permit's Effluent Discharge Limits

The operation of the Port will entail the operation of two LNG regasification and transmission units, each consisting of an EBRV interconnected with one of the two in-place STL Buoy systems (referred to here as Buoy A and Buoy B). Up to ten percent of the total annual port operations will involve having separate EBRVs interconnected with Buoys A and B simultaneously. Outfalls marked "A" represent the outfalls of an EBRV connected with Buoy A and outfalls marked "B" represent the outfalls of an EBRV connected with Buoy B.

7.1 Outfall 01A and 01B – Main Condenser Cooling

The EBRVs utilize steam (from the onboard boilers) to drive the main propulsion turbine and turbo generators that provide power for the vessel's propulsion, auxiliaries, and electric power generation. As part of the steam vessel's normal propulsion systems, seawater is used to cool exhaust steam in the main condenser. While at port, the EBRVs' main condenser cooling system will operate under normal capacity water intake and discharge conditions during two 4-hour periods at the beginning and end of the regasification sequence. During each of these 4-hour periods of normal capacity water use, this system will require the intake and discharge of approximately 7.82 million gallons of seawater for cooling for each EBRV, with discharge temperatures 2.6°C (5°F) greater than the ambient seawater.

Seawater to support this system will enter into the EBRV via both high and low starboard and port sea chests. When interconnected to Buoys A and B and integrated into the Port, EPA considers these sea chests to constitute CWISs for the purposes of CWA Section 316(b). Water will circulate through the engine condenser cooling system at a flow rate of approximately 7,400 m³/hr, and then be discharged through a 55-inch diameter pipe 17 to 24 feet below the sea surface. No chemicals will be added to the seawater as it circulated through the system, but the water will have been warmed prior to discharge. Thus, heat is the primary pollutant being discharged and this discharge of heat is a point source discharge of pollutants subject to regulation under CWA Section 301.

When the EBRV is regasifying under steady-state discharge conditions equal to or greater than 150 MMcf/d of natural gas, the EBRV will be operating in the closed-loop recovery and exchange mode. When operating in this mode, no seawater will be required for vessel condensing cooling and no water will be discharged through outfalls 01A and 01B.

7.1.1 Flow

In accordance with NPDES regulations in 40 C.F.R. § 122.45(d), continuous industrial discharge flows must be limited as maximum daily and average monthly maximums, unless specific

facility operations make this approach impracticable. Since the use of the deepwater port, and the resulting frequency of discharge, will be dependent on both seasonal demand and market conditions for LNG in the New England region and elsewhere, EPA has found the use of a monthly average flow limit to be impracticable. In order to provide for maximum seasonal and market flexibility in port operation, NEG requested that instead of using a monthly average, the discharge flow be limited by total number of hours of discharge per calendar year for the port, rather than an average monthly maximum flow. EPA agrees with this approach and finds that a limit on the total hours of discharge per year, in combination with the maximum daily flow limit at each buoy, will ensure that the flows do not cause unreasonable degradation of the marine environment and are consistent with the flows evaluated in the FEIS.

Each regasification visit will result in four hours discharge from outfalls 01A and 01B only on the first and last days of regasification, or a total of 8 hours of flow per visit. NEG anticipates no more than 65 visits per year to the port. Therefore, the draft permit provides for a maximum of 520 hours of discharge per year at a maximum rate of 32,700 gallons per minute (gpm). EPA proposes to include a limitation on flow consistent with NEG's proposed port operation and to ensure compliance with the permit's proposed thermal discharge and cooling water intake limits.

7.1.2 Temperature

Heat is a non-conventional pollutant subject to the BAT standard under the CWA.² Because there are neither ELGs nor new source performance standards for thermal discharge from deepwater LNG regasification port facilities, EPA determines the BAT technology-based standards for pollutant discharges from such facilities on a case-by-case, BPJ basis.³ When imposing BAT limits using BPJ, a permit writer applies the statutory BAT factors, 33 U.S.C. § 1314(b)(2)(B), and the factors specified in 40 C.F.R. § 125.3(d)(3), and considers both the “appropriate technology for the category of point sources of which the applicant is a member, based on all available information,” and “any unique factors relating to the applicant.”⁴ The factors considered under 40 C.F.R. 125.3(d)(3) are the age of the equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process change, the cost of achieving effluent reduction, and non-water quality environmental impact (including energy requirements).⁵

EPA developed the thermal discharge limits in the Draft permit based on the discharge volumes and temperature change (or “delta-T”) values specified above in order to satisfy the BAT standard on a BPJ basis. As stated above, BAT limits should “result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants.” Alternative LNG regasification technologies were evaluated in the FEIS for the NEG deepwater port. In addition to the closed loop shell and tube vaporization technology (STV) proposed by the

² See 33 U.S.C. §§ 1311(b)(2), 1314(a)(4), 1362(6); 40 C.F.R. §§ 125.3(a)(2)(v).

³ See 33 U.S.C. §§ 1342(a)(1)(B) and 1316; 40 C.F.R. § 125.3. See also April 3, 2006, Memorandum from Benjamin H. Grumbles, EPA Assistant Administrator for Water, to EPA Regional Administrators, “Subject: Deepwater Liquefied Natural Gas Terminals and Clean Water Act Technology-Based Limitations and Conditions.”

⁴ See also 40 C.F.R. § 125.3(c)(2).

⁵ See also 33 U.S.C. § 1314(b)(2)(B).

applicant, the FEIS considered open rack vaporizers, submerged combustion vaporizers, and intermediate fluid vaporizers. These alternatives were evaluated based on the BAT factors listed above, including consideration of the engineering feasibility of installing them on existing NEG LNG vessels, the environmental effects of the technologies (including temperature impact on the marine environment) and whether the technologies being considered were proven. The closed loop STV system was identified as the alternative resulting in the least thermal discharge and smallest thermal impact on the Massachusetts Bay marine environment.⁶ Therefore, EPA concludes that the closed loop STV system represents the BAT for the NEG Port and that the effluent limits in the draft permit, which are based on the operation of that system, represent reasonable further progress toward the national goal of eliminating the discharge of all pollutants. EPA also concludes, based on the information discussed in the EIS and NEG's NPDES permit application, that the effluent temperature limits in the draft permit are technologically and economically feasible for NEG and that any potentially negative non-water environmental or energy effects that might result from taking these steps would be inconsequential and should not stand in the way of imposing these limits.

As discussed above, EPA has also applied the Ocean Discharge Criteria (ODC) under CWA Section 403 in setting the permit's thermal discharge limits. Under 40 C.F.R. 125.122(a), EPA may not issue an NPDES permit if it determines the effects of a discharge to the ocean will cause "unreasonable degradation" to the marine environment as defined in 40 CFR 125.121(e).

If EPA determines that "unreasonable degradation" will not occur, then it may issue a discharge permit. The permit may be conditioned as necessary to assure that the discharge will not cause unreasonable degradation of the marine environment (40 C.F.R. 125.123(a)). Based on our consideration of the above factors, EPA concludes that, if the Port's thermal discharges comply with the thermal limit in the Draft NPDES permit, the discharge will not cause unreasonable degradation of the marine environment. The small thermal discharge authorized by the permit will ensure that neither water quality nor local biological communities nor any other aspect of the marine environment will suffer any significant adverse impacts from the facility's thermal discharges. These water quality and other environmental effects are also assessed and discussed in the above-referenced FEIS for the NEG Port.

In determining whether a discharge may cause unreasonable degradation of the marine environment, any applicable EPA marine water quality criteria are among the factors to be considered. EPA issued guidelines for assuring protection of marine aquatic life from the thermal discharges in the Quality Criteria for Water 1986, otherwise known as the "Gold Book" (EPA, 1986). The Water Quality Criteria state that:

In order to assure protection of the characteristic indigenous marine community of a water body segment from adverse thermal effects:

- a. the maximum acceptable increase in the weekly average temperature resulting from artificial sources is 1°C (1.8 F) during all seasons of the year, providing the summer maxima are not exceeded; and
- b. daily temperature cycles characteristic of the water body segment should

⁶ US Coast Guard, *Northeast Gateway Deepwater Port Final Environmental Impact Statement Final Environmental Impact Report, Volume I: Impact Analysis*, pp 2-38 – 2-41, October 2006.

not be altered in either amplitude or frequency.

Summer thermal maxima, which define the upper thermal limits for the communities of the discharge area, should be established on a site specific basis.

In its NPDES permit application, NEG has requested permission to discharge non-contact cooling water from outfalls 01A and 01B at temperatures which are 2.6°C (5°F) greater than the ambient seawater. NEG then used a commonly utilized hydrodynamic model developed at Cornell University, the CORMIX model, to make projections of the thermal plume's behavior including the initial mixing transport and dilution in the near-field plus 500 meters. The near-field was defined as the region in which the plume rises to the ocean surface under the influence of buoyancy. The CORMIX model estimated that although the discharge would not meet the water quality criteria at the discharge port, the change in temperature at the water surface would meet the criteria of less than 1°C. Table 4 summarizes the CORMIX model results.

Based on our review of the results of the thermal modeling and the more complete analysis contained in the permit application, EPA is requiring quarterly monitoring of the thermal discharge plume to ensure that the predictions of the computer model are accurate, but otherwise determines that the discharge will not cause unreasonable degradation of the marine environment.

Table 4 – CORMIX Estimated Temperature Difference at the Surface⁷

Discharge	Summer		Winter	
	Max Surface Temperature Elevation (ΔT°)	Surface Temperature Elevation 500 m Downdrift (ΔT°)	Max Surface Temperature Elevation (ΔT°)	Surface Temperature Elevation 500 m Downdrift (ΔT°)
Outfall 01A, 01B	0.61	0.10	0.12	<0.01
Outfall 02A, 02B	0.46	0.04	0.12	<0.01

7.2 Outfalls 02A and 02B – Auxiliary Seawater Service Cooling

As described in section 7.1, the EBRVs must operate under normal capacity water use and discharge to support the start-up and shut-down of the regasification operations – it takes approximately 4 hours from the initiation of the closed-loop regasification mode for the process to achieve steady state and allow for the system to begin operation in the heat recovery and exchange mode.

During each of these 4-hour start-up and shut-down periods, the EBRVs moored at the Port will require the use of approximately 0.99 million gallons of seawater, which will be discharged at temperatures which are 5.5°C (10°F) greater than the ambient seawater. Water will circulate through the evaporation system at approximately 4,100 gallons per minute (gpm) and then be discharged through a 16-inch diameter pipe 21 to 28 feet below the sea surface. No chemicals

⁷ Batelle, *Northeast Gateway Deepwater Port Project – Assessment of Thermal Plume of Cooling Water Discharge During Energy Bridge Regasification Vessel Operations* (provided at Appendix A to the Northeast Gateway Deepwater Port NPDES Permit Application), December 22, 2005.

will be added to the water as it circulates through the system.

7.2.1 Flow

As described in section 7.1.1, flow limits in the draft permit will limit the maximum daily flow and total annual hour of discharge from each outfall. Each regasification visit will result in four hours discharge from outfalls 02A and 02B only on the first and last days of regasification, or a total of 8 hours of flow per visit. NEG anticipates no more than 65 visits per year to the port. So, the draft permit provides for a maximum of 520 hours of discharge per year at a maximum rate of 4,200 gpm. EPA proposes to include a limitation on flow consistent with NEG's proposed port operation and to ensure compliance with the permit's proposed thermal discharge and cooling water intake limits.

7.2.2 Temperature

EPA has determined that the thermal discharge limits in the Draft permit, which are based on the discharge volumes and temperature change (or "delta-T") values specified above, satisfy the BAT standard as applied on a BPJ basis to the NEG Port. The basis for this is essentially identical to the BAT analysis presented in section 7.1.2, above, for thermal discharges from Outfalls 01A and 01B.

NEG used the Cornell hydrodynamic model, CORMIX, to make projections of the thermal plume behavior including the initial mixing transport, and dilution in the near-field plus 500 meters. The near-field was defined as the region in which the plume rises to the ocean surface under the influence of buoyancy. (Battelle, 2007). The CORMIX model estimated that although the discharge would not meet the water quality criteria at the discharge port, the change in temperature at the water surface would meet the criteria of less than 1°C. The results of the CORMIX model are summarized in Table 4 above.

EPA also determines that the thermal discharge from these outfalls will not cause unreasonable degradation of the marine environment. The intermittent thermal discharge volume requested by NEG for outfalls 02A and 02B, and proposed to be authorized by EPA, adds only a small fraction by volume (approximately 13 percent on an annual basis) to the discharge allowed for outfalls 01A and 01B. EPA concludes that the thermal discharges from Outfalls 02A and 02B will not, individually or in combination with thermal discharges from outfalls 01A and 01B, cause unreasonable degradation of the marine environment based on evaluation of the ODC. EPA is requiring quarterly monitoring of the thermal discharge plume to ensure that the predictions of the computer model are accurate.

7.3 Outfalls 03A and 03B – Water Curtain

For safety purposes the EBRVs will maintain a constant flow of water, referred to as a "water curtain", over the deck and hull of the vessel during the regasification process. In the event of a leak of LNG during regasification, the presence of the water curtain will help protect the metal hull from any potential cracking or stress. The seawater used to support this system will enter into the vessel via both high and low starboard and port sea chests. Water will then be pumped onto the deck of the EBRV at a flow rate of 0.6 MGD and discharged over the sides of the vessel.

The water used for the water curtain will undergo no temperature change and no chemicals will be added to the water as it circulates through the system. Whether operating at full water use capacity or under the closed-loop heat recovery and exchange system, the quantity of water required for this regasification safety measure will remain the same. In addition, no alternative safety system to the water curtain has been identified. Once regasification is complete and EBRV cargo has been completely unloaded, the water curtain will be shut off prior to the vessel leaving the Port.

Because the water for the water curtain is not being withdrawn for cooling, these withdrawals are not subject to any CWIS requirements under CWA Section 316(b). However, EPA finds that, similar to stormwater flowing over an industrial facility, the curtain water could carry pollutant spills, if any, into the marine environment. To prevent that from occurring, the draft permit includes requirements that the permittee identify potential sources of pollution that may reasonably be expected to affect the quality of the curtain water discharges, and ensure implementation of best management practices (BMPs) which will be used to eliminate or minimize any exposure of the curtain water to pollutants. EPA finds that, with the implementation of the BMPs, the water curtain will not cause any unreasonable degradation of the marine environment under 40 C.F.R. Part 125, Subpart M, so that the ODC will be satisfied.

7.3.1 Flow

As described in section 7.1.1, flow limits in the draft permit will limit the maximum daily flow and total annual hour of discharge from each outfall. The water curtain will be activated for the entire time that the vessel is regasifying, including the initialization and departure periods (4 hours each). NEG estimates that there will be 65 cargoes per year delivered to the port and that, while regasification may take up to 8 days, there will only be one vessel in the port at a time, except for 10 percent of the time. Therefore, the draft permits allows maximum total of 9,640 hours of discharge per year from both buoys at a maximum flow rate of 400 gpm at each buoy. EPA proposes to include a limitation on flow consistent with NEG's proposed port operation.

8.0 316(b) Cooling Water Intake Requirements

Section 316(b) of the CWA addresses the adverse environmental impact of CWISs at facilities requiring NPDES permits. EPA has assessed the four factors set forth in Section 316(b), i.e., location, design, construction, and capacity of the CWIS at this facility which may contribute to adverse impacts. Information used in this assessment includes, but is not limited to, the following: the application for re-issuance of the permit; the NEG EIS; EPA's Technical Development Document for the Phase III CWA Section 316(b) Rule; and supplemental information submitted by the permittee.

Location: The location of the CWIS on the vessel is judged to be a factor that affects the potential for impingement and entrainment at the facility. The high sea chests will be located on the rounded portion of the hull near the bilge, approximately 23 feet below the surface of the water. The low sea chests will be located further down on the flat portion of the hull, with the centerline approximately 38 feet below the surface of the water. Seawater will be drawn horizontally through the high sea chests and vertically through the low sea chests.

EPA finds that the sea chest locations, below the water surface, are a BTA factor which minimizes harm due to entrainment and impingement by avoiding withdrawing seawater close to

the ocean surface where the planktonic life stage of many aquatic organisms are more numerous.

Capacity: The “capacity” of the CWIS refers to the volume of cooling water that it withdraws. (“Capacity” has also been used at times to refer to the CWIS’s water intake velocity, but in this document intake velocity is discussed as a function of CWIS design further below.) Because the NEG regasification system will operate on a closed-loop system, seawater will not be directly used to warm and vaporize the LNG. Heated freshwater will be used to warm and vaporize the LNG, and the chilled water will then be re-heated in the closed loop system, and used for regasification of additional LNG. Although seawater intake will be necessary to provide cooling water for the engines powering the regasification process, NEG has minimized its cooling water withdrawals needs by selecting open loop STV technology that minimizes the need for seawater withdrawal.⁸ Moreover, as discussed above, cooling water use will be intermittent at each buoy, with entirely closed-loop operations prevailing during the vast majority of each 8-day regasification operation. In addition, NEG’s operations will alternate between the two buoys the large majority of the time. As indicated in the permittee’s application, the maximum cooling water withdrawal at each buoy will be 8.81 MGD.

EPA has determined that the use of the closed-loop heat recovery and exchange regasification system is a significant BTA factor which minimizes harm due to entrainment by minimizing the volume of seawater withdrawn for cooling because the proportion of eggs, larvae and juvenile fish entrained from a population is roughly directly proportional to the volume of water withdrawn from the habitat and pumped through the cooling system. The use of this intermittent, closed loop system will also minimize impingement because of the limited flow and intake duration during events with the potential to cause impingement. Because NEG will use existing EBRVs, it should be clear that shifting to the closed-loop STV system will involve retrofitting or reconfiguring existing facilities and/or altering existing operational protocols. EPA is unaware of any practicable method of further reducing cooling water withdrawals from these existing EBRVs.

Design and Construction: Water used for cooling, ballast and other needs will be withdrawn from Massachusetts Bay through the EBRV’s CWISs. Design measures for minimizing adverse impacts from the impingement and/or entrainment of marine life through these CWISs may involve, for example, installing screens and reducing intake velocity so that fewer organisms will be drawn into the CWIS.⁹ Physical exclusion occurs when the mesh size of the screen is smaller than the organisms susceptible to entrainment. The EBRVs are expected to use screens with openings of 0.83 inches on their sea chests and should be capable of physically excluding most adult and juvenile fish.

In addition, EPA’s research supporting its Phase I, Phase II and Phase III regulations has indicated that CWIS intake velocities of 0.5 feet/second or less should enable most motile marine organisms, including fish, to swim away from the CWIS and avoid being impinged. While the Phase III Rule is not applicable to the Port, it is nevertheless noteworthy that the Phase III Rule

⁸ US Coast Guard, *Northeast Gateway Deepwater Port Final Environmental Impact Statement Final Environmental Impact Report, Volume I: Impact Analysis*, pp 2-38 – 2-41, October 2006.

⁹ EPA, *Technical Development Document for the Proposed Section 315(b) Phase III Rule*, Document Number EPA-821-R-04-015, 2004; and *Technical Development Document for the Final Section 315(b) Phase III Rule*, Document Number EPA-821-R-06-003, 2006.

requires new offshore oil and gas extraction facilities to have CWISs designed to ensure a maximum through-screen design intake velocity not to exceed 0.5 feet/second. Additionally, as noted in the TDD, other applicants for offshore LNG import terminals seeking Deepwater Port Act licenses have proposed cooling water intakes to ensure a maximum through-screen design intake velocity not to exceed 0.5 feet/second. Given the similarity of location, design, construction and capacity of these other cooling water intake structures (e.g. both industrial sectors use sea chests for cooling water withdrawals above 2 MGD), EPA proposes to require that a maximum through-screen design intake velocity not to exceed 0.5 feet/second, which represents an appropriate component of the BTA for minimizing adverse environmental impacts from impingement.

NEG certified in the NPDES permit application that when operating in the closed-loop heat recovery and exchange mode, the intake velocity will be below 0.5 ft/second. During the 4 hour initialization period, intake velocity will slow from 0.82 ft/second to less than 0.5 ft/second. During the 4 hour departure period, intake velocity will rise from less than 0.5 ft/second to the normal intake velocity of 0.82 ft/second. Because port visits will range in length from four to eight days, intake velocity will exceed the maximum 0.5 ft/sec four to eight percent of the time.

Components of BTA for the CWIS: In making this determination, EPA considered the adverse environmental effects from operation of the facility's CWIS and technology options for minimizing these adverse effects by altering the CWIS location, design, construction, and capacity. This site-specific, BPJ determination of BTA for NEG is based on the following considerations:

1. The location of the CWIS well below the water surface is a component of BTA which minimizes adverse effects, due to the less likely habitat for eggs, larvae, and juvenile fish at that elevation.
2. The design and construction of the CWIS is a component of BTA which minimizes impingement of fish by using small screen openings and the controlled intake velocity.
3. The capacity of the CWIS is also a component of BTA which minimizes entrainment and impingement of adult fish because of relatively low and intermittent intake flows.

To minimize adverse impact of cooling water intake associated with the operation of the NEG deepwater port, the draft permit requires that the EBRVs be constructed, maintained and operated to ensure that:

- CWISs are located at least 23 feet below the surface of the water,
- cooling water intake systems (including the structure and associated intake pumps) maintain a controlled intake velocity no greater than 0.5 feet per second during the regasification process, except during the 4 hour start-up and shut-down periods when the intake velocity may not exceed 0.82 feet per second.
- CWISs maintain screen openings no greater than 0.83 inches, and
- the EBRVs use the proposed closed-loop heat STV system to regasify LNG.

9.0 Thermal Discharge and Cooling Water Intake Monitoring Requirements

EPA reviewed the projected impacts in the EIS resulting from impingement of fish, entrainment

of eggs and larvae and the impact of the discharge of water with elevated temperature. An estimate of entrainment losses can be generated by sampling ichthyoplankton density in near proximity to the buoys and tracking water usage, and the permit requires implementation of this type of an entrainment assessment. While EPA has concluded that Northeast Gateway has minimized cooling water intake flow to the extent that is practicable, the vessels will still require large volumes of seawater. This facility represents a new source of mortality for fish eggs and larvae in this area and thus EPA believes it warrants close scrutiny. Therefore, EPA proposes to require entrainment monitoring as described in the monitoring plan attached to the draft permit (Attachment A).

The FEIS predicts that impingement losses should be minimal. This is largely due to the fact that pelagic species tend to be less susceptible to impingement than demersal ones, because they are stronger swimmers, because intake volumes are low, and because intake velocities are not high. Logistically, there is no readily available access point to sample the intake screens. Thus, due to the limited environmental impact and the great logistical challenge, EPA is not proposing to require impingement monitoring at this time.

Finally, the EIS assessed the potential impact of the thermal plume. Computer modeling suggested that the area affected by elevated water temperature would be fairly small. Monitoring of water temperature around the buoys during operations is proposed in the permit to verify the conclusions of this modeling effort.

10.0 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), federal agencies are required to consult with the National Marine Fisheries Service (NMFS) if proposed actions that are funded, permitted, or undertaken “may adversely impact any essential fish habitat” (EFH) as: “waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity”, 16 U.S.C. § 1802(10). “Adverse impact” means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. §600.910(a). Adverse effects may include direct (e.g., contamination of physical disruption), indirect (e.g., loss of prey, reduction in species’ fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for fish species for which federal Fisheries Management Plans exist. EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. A listing of the essential fish habitat designation for the 10 minute by 10 minute square coordinates containing the discharge locations for Outfalls 01, 02 and 03 are provided in Attachment B.

During the EIS process for the proposed Port, NOAA conducted a formal EFH consultation with the federal agencies issuing licenses or permits for the Port, including EPA. The U.S. Coast Guard (USCG) was the lead federal agency in this consultation. NOAA issued conservation recommendations on November 27, 2006. USCG completed the consultation process on the DPA license with a response to NOAA dated February 6, 2007. The NPDES permit that EPA proposes today is consistent with the recommendations resulting from that the USCG consultation on the DPA license.

11.0 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (“listed species”) and habitat of such species that has been designated as critical (a “critical habitat”). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of the Interior or Commerce, as appropriate, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish & Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Oceanic and Atmospheric Administration (NOAA) administers Section 7 consultations for marine species and anadromous fish.

The following listed species are known to inhabit (seasonally) the Massachusetts Bay in the area of the proposed discharge: North Atlantic right whale, blue whale, humpback whale, fin whale, sei whale, Kemp’s ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, hawksbill sea turtle and green sea turtle.

EPA, the other permitting agencies, and NEG all consulted with the NMFS during the planning stages of this project to minimize impacts to marine and anadromous species. Specifically, the federal agencies issuing permits and licenses for this Deepwater Port Act project engaged in a formal consultation under Section 7 of the Endangered Species Act (ESA) with the National Oceanic and Atmospheric Administration (NOAA). The Maritime Administration (MARAD) served as the lead agency for this consultation on behalf of the other involved federal agencies, including EPA.

On February 5, 2007, NOAA issued a Biological Opinion under Section 7 of the ESA (the NOAA B.O) concluding that deepwater port project would neither likely jeopardize the continued existence of any listed species nor affect any designated critical habitat (NOAA B.O. at 118). NOAA also found, however, that the construction and operation of the deepwater port is likely to result in the take, in the form of acoustic harassment, of certain endangered whales (*Id.* at 118-119). On May 14, 2007, NOAA also issued an Incidental Take Statement (ITS) under Section 7 of the ESA, as an amendment to the B.O. previously issued to MARAD and the other federal agencies, including EPA. The ITS includes Reasonable and Prudent Measures (RPMs) and Term and Conditions to be implemented to “minimize the potential for and the impact of any incidental take that might otherwise result from the proposed action.”

NOAA’s ITS expressly exempts EPA for one year from the take prohibitions of Section 9 of the ESA. As a result, EPA has added a provision to the Final NPDES permit indicating that the permit will remain effective only as long as a NOAA ITS remains in effect for this project.

EPA’s permit for the Port conditions the Port’s operation in a manner consistent with the terms of the project reviewed and evaluated by NOAA in the ESA consultation. Further, EPA’s permit is consistent with the conservation recommendations in NOAA’s Biological Opinion. As a result, EPA’s permit action here complies with the ESA and no further consultation is required with NOAA at this time.

12.0 National Marine Sanctuaries Act

The Stellwagen Bank National Marine Sanctuary (SBNMS) was designated in 1992 and encompasses approximately 842 square miles in the Gulf of Maine and overlapping the eastern edge of Massachusetts Bay. The NEG Port is located 2 to 3 nautical miles from the western edge of the SBNMS. In light of this proximity, the Federal agencies issuing permits or licenses for the proposed NEG Port consulted with NOAA under Section 304(d) of the NMSA, 16 U.S.C. § 1434(d), regarding the potential effects of the Port on the resources of the SBNMS. This consultation was conducted in connection with the National Environmental Policy Act (NEPA) review of the federal actions necessary to authorize the proposed Port. As with the NEPA and Endangered Species Act (ESA) reviews, the United States Maritime Administration (MARAD) and the United States Coast Guard (USCG) were the lead agencies for the NMSA consultation.

As part of the consultation, NOAA's National Marine Sanctuaries Program (NMSP) recommended "reasonable and prudent alternatives" for the federal action agencies to pursue in order to protect sanctuary resources. One of the NOAA/NMSP recommendations relates to the EPA's draft permit for the Port. Specifically, NOAA/NMSP recommended that monitoring of the entrainment of marine organisms from seawater intake during facility operations be required.

As discussed above, EPA has considered CWIS entrainment effects in connection with its analyses under CWA Section 316(b), and in the context of the consultation under the ESA, NMSA and the Magnuson Act. EPA's proposed permit includes entrainment monitoring requirements consistent with NOAA's recommendations under the NMSA. Of course, the permit also contains cooling water withdrawal limits that should minimize any adverse effects from entrainment. The monitoring should, nevertheless, help to characterize the entrainment that results from Port operations.

13.0 Comment Period, Hearing Requests, and Procedures for Final

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to Ellen Weitzler, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch (CIP), 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023 or to the presiding officer at the scheduled public hearing. In reaching a final decision on the Draft Permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a Final Permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

14.0 EPA and MassDEP Contacts

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

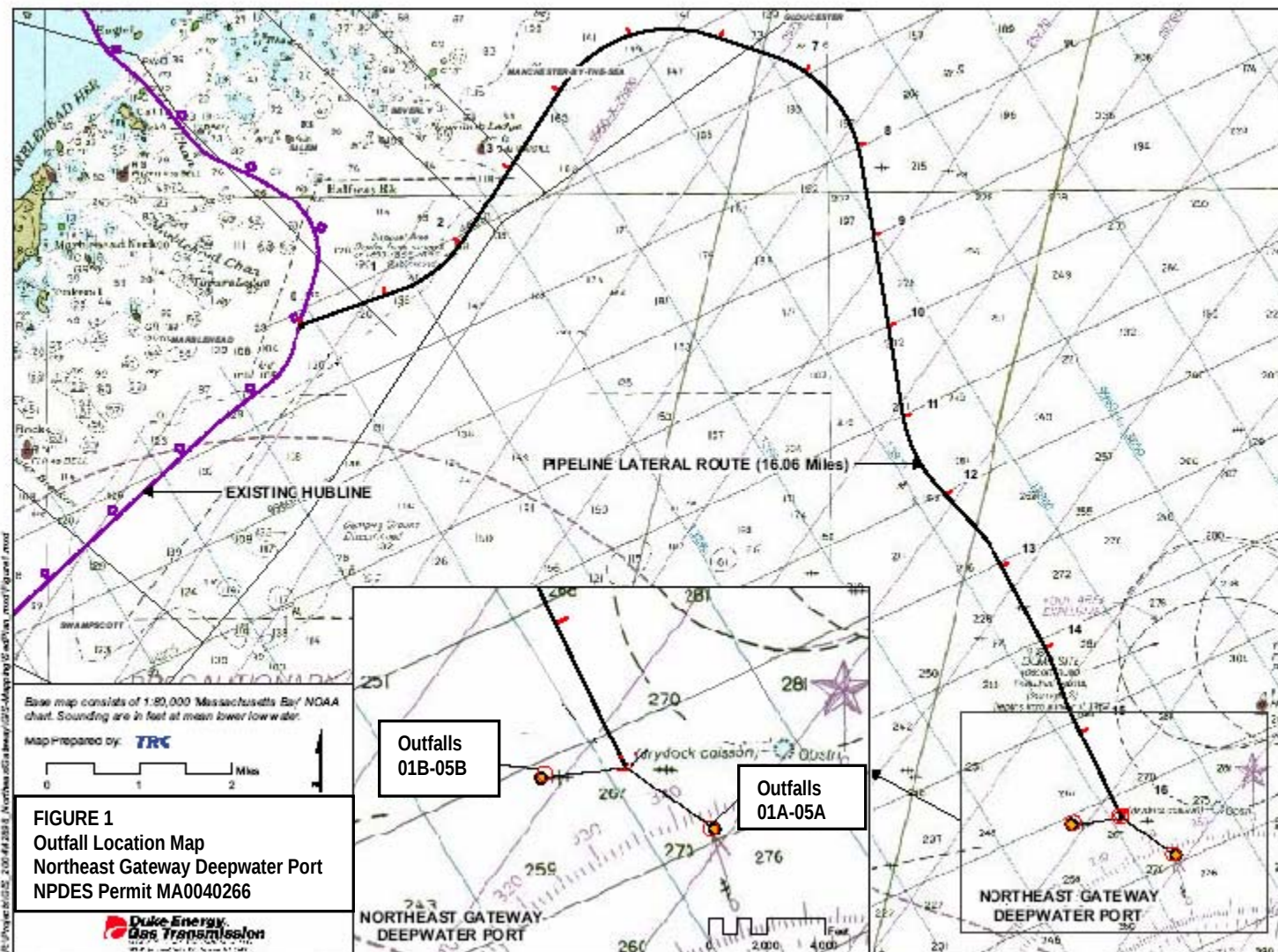
Ellen Weitzler

Industrial Permits Branch
U.S. Environmental Protection Agency
One Congress Street (CIP)
Boston, MA 02114-2023
Telephone: (617) 918-1582
Email: weitzler.ellen@epa.gov

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

REFERENCES

- Batelle, *Northeast Gateway Deepwater Port Project – Assessment of Thermal Plume of Cooling Water Discharge During Energy Bridge Regasification Vessel Operations*, (provided as Appendix A to the NPDES Northeast Gateway Deepwater Port Permit Application), December 22, 2005.
- EPA, *Allocated Impact Zones for Areas of Non-Compliance*, EPA 823-R-95-003, March 1995.
- EPA, *Quality Criteria for Water 1986*, EPA 440/5-86-001, Washington, D.C., May 1, 1986.
- EPA, *Technical Development Document for the Proposed Section 316(b) Phase III Rule*, EPA 821-R-04-015, Washington, D.C., November 2004.
- Ghiloni, Jennifer, Tetra Tech EC, *NEG Proposal for NPDES Permit Limits on Volume*, Boston, MA, July 2, 2007.
- US Coast Guard, *Northeast Gateway Deepwater Port Final Environmental Impact Statement Final Environmental Impact Report, Volume I: Impact Analysis*, pp 2-38 – 2-41, October 2006.



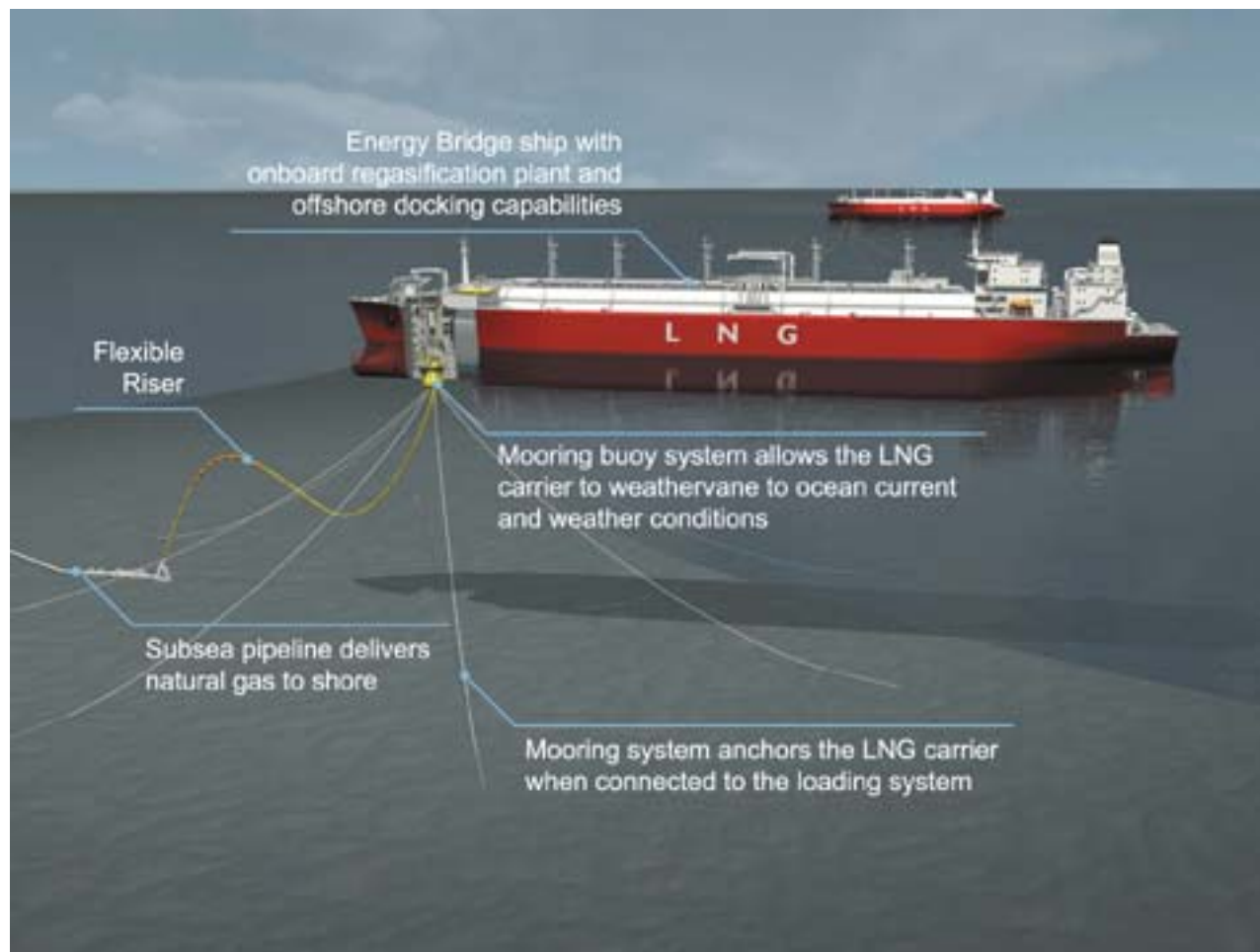


FIGURE 2
Submerged Turret Loading™ System
Northeast Gateway Deepwater Port
NPDES Permit MA0040266

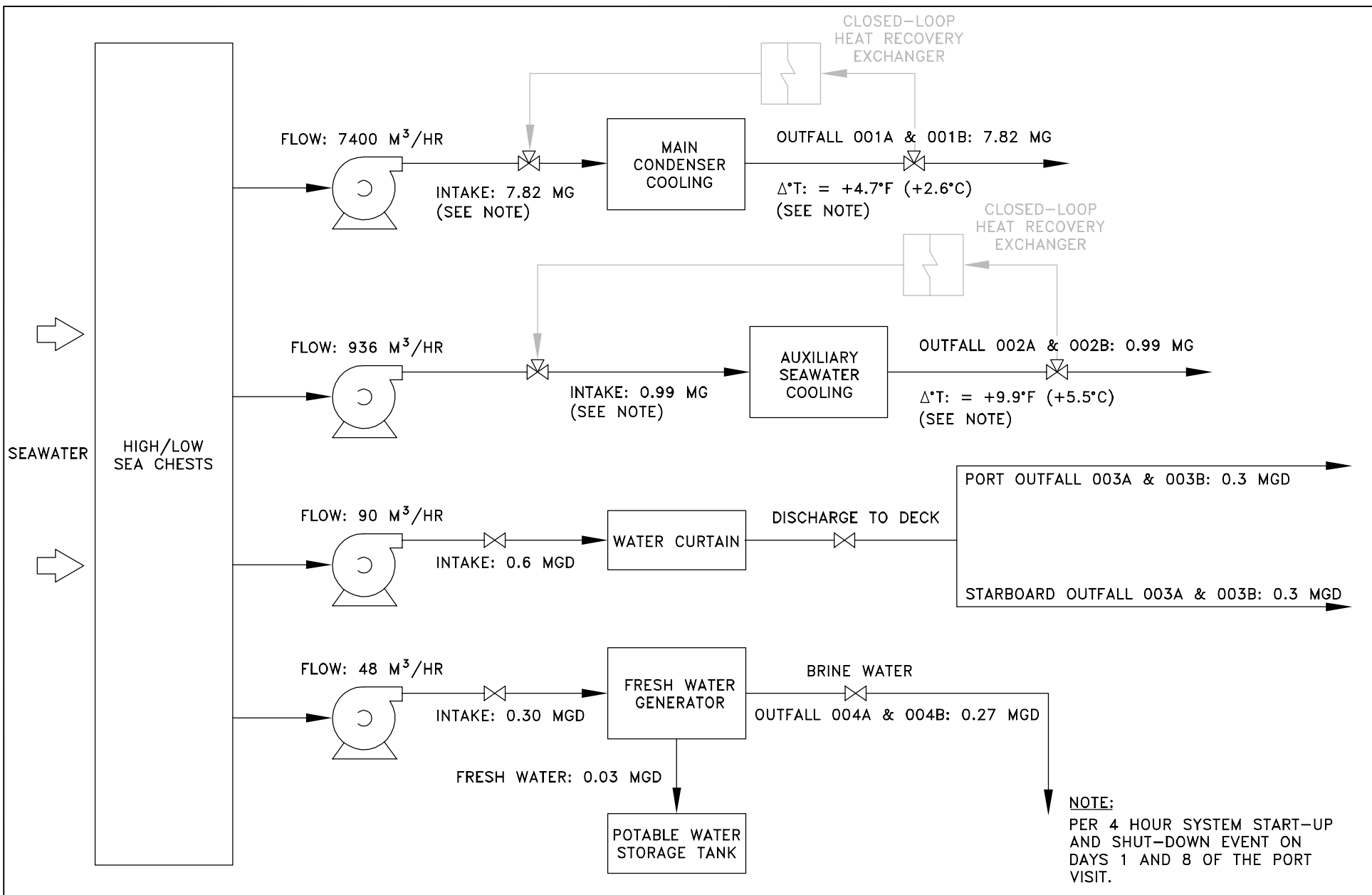


FIGURE 3
EBRV WATER BALANCE
REGASIFICATION START-UP AND SHUT-DOWN



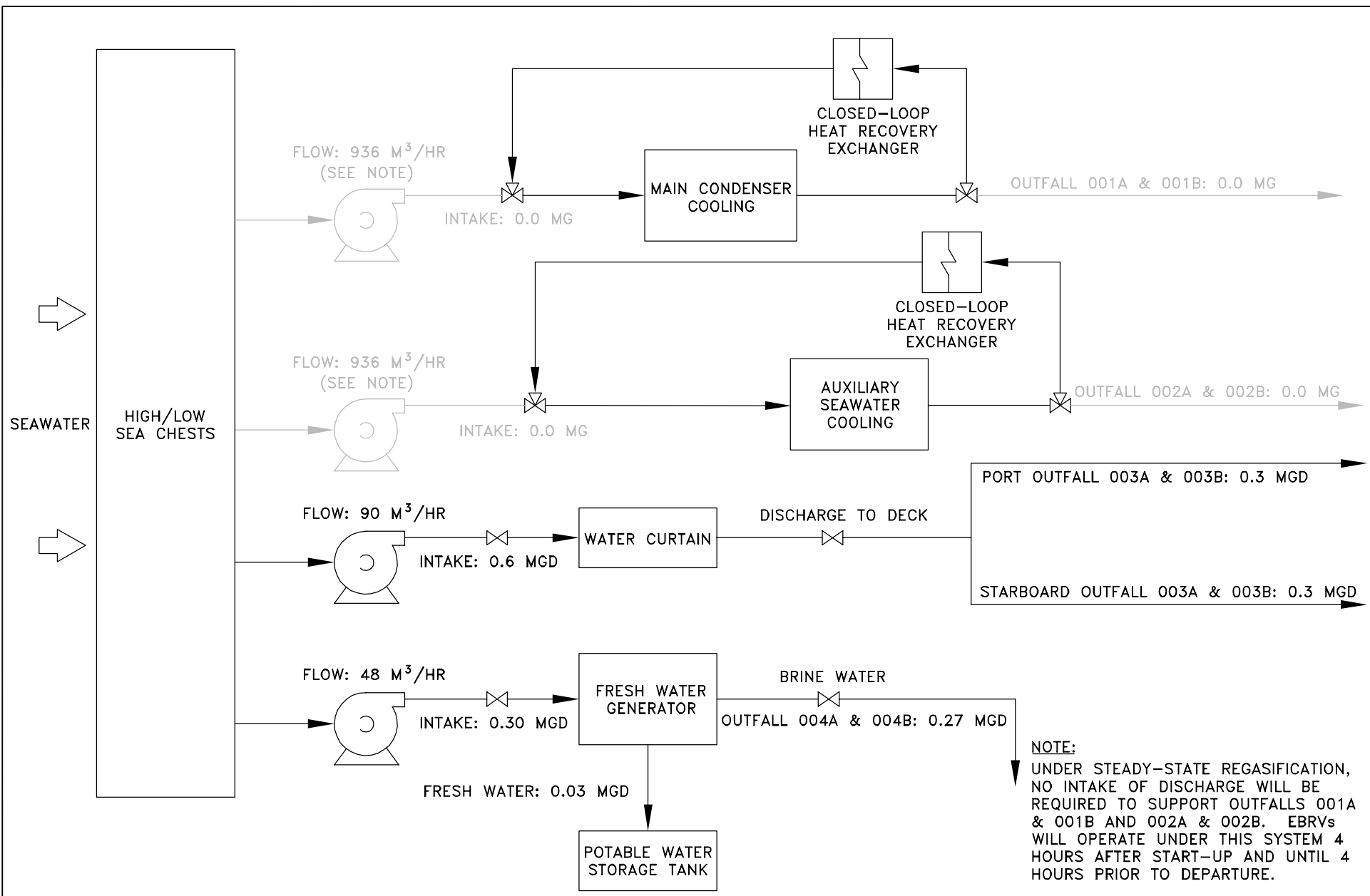


FIGURE 4
EBRV WATER BALANCE
STEADY-STATE REGASIFICATION



ATTACHMENT A

Summary of Essential Fish Habitat (EFH) Designation

NEG Deepwater Port - 10' x 10' Square Coordinates:

Boundary	North	East	South	West
Coordinate	42° 30.0' N	70° 30.0' W	42° 20.0' N	70° 40.0' W

Square Description (i.e. habitat, landmarks, coastline markers): Waters within the Atlantic Ocean within Massachusetts Bay within the square one square northeast of Scituate, MA. and Cohasset, MA., and three squares east of Boston, MA. There are three overlapping dump sites within this square, two of which are for dredged material, and one of which is a discontinued site that had industrial wastes dumped in it, all of which are approximately in the middle of the square. Also, on the southwest corner, part of the Boston Harbor Shipping Traffic Lane is affected.

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod (<i>Gadus morhua</i>)	X	X	X	X
haddock (<i>Melanogrammus aeglefinus</i>)	X		X	
pollock (<i>Pollachius virens</i>)				
whiting (<i>Merluccius bilinearis</i>)	X	X	X	X
offshore hake (<i>Merluccius albidus</i>)				
red hake (<i>Urophycis chuss</i>)	X	X	X	X
white hake (<i>Urophycis tenuis</i>)	X	X	X	X
redfish (<i>Sebastes fasciatus</i>)	n/a	X	X	X
witch flounder (<i>Glyptocephalus cynoglossus</i>)	X	X	X	X
winter flounder (<i>Pleuronectes americanus</i>)	X	X	X	X
yellowtail flounder (<i>Pleuronectes ferruginea</i>)	X	X	X	X
windowpane flounder (<i>Scopthalmus aquosus</i>)	X	X		
American plaice (<i>Hippoglossoides platessoides</i>)	X	X	X	X
ocean pout (<i>Macrozoarces americanus</i>)	X	X	X	X
Atlantic halibut (<i>Hippoglossus hippoglossus</i>)	X	X	X	X
Atlantic sea scallop (<i>Placopecten magellanicus</i>)	X	X	X	X
Atlantic sea herring (<i>Clupea harengus</i>)		X	X	X
monkfish (<i>Lophius americanus</i>)	X	X	X	X
bluefish (<i>Pomatomus saltatrix</i>)				
long finned squid (<i>Loligo pealei</i>)	n/a	n/a	X	X
short finned squid (<i>Illex illecebrosus</i>)	n/a	n/a	X	X
Atlantic butterfish (<i>Peprilus triacanthus</i>)	X	X	X	X
Atlantic mackerel (<i>Scomber scombrus</i>)	X	X	X	X
summer flounder (<i>Paralichthys dentatus</i>)				
scup (<i>Stenotomus chrysops</i>)	n/a	n/a		
black sea bass (<i>Centropristus striata</i>)	n/a			
surf clam (<i>Spisula solidissima</i>)	n/a	n/a		
ocean quahog (<i>Artica islandica</i>)	n/a	n/a		
spiny dogfish (<i>Squalus acanthias</i>)	n/a	n/a		
tilefish (<i>Lopholatilus chamaeleonticeps</i>)				
bluefin tuna (<i>Thunnus thynnus</i>)			X	B

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY
OFFICE OF ECOSYSTEM PROTECTION
REGION I
BOSTON, MASSACHUSETTS 02114

PUBLIC MEETING, PUBLIC HEARING, AND PUBLIC NOTICE OF A DRAFT NATIONAL
POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE
INTO THE WATERS OF THE UNITED STATES UNDER SECTION 301 AND 402 OF THE
CLEAN WATER ACT (THE "ACT"), AS AMENDED.

DATE OF NOTICE: August 24, 2007

PERMIT NUMBER: MA0040266

PUBLIC NOTICE NUMBER: MA-045-07

NAME AND MAILING ADDRESS OF APPLICANT:

Mr. Robert Bryngelson
Northeast Gateway Energy Bridge, LLC
1330 Lake Robbins Drive, Suite 270
The Woodlands, TX 77380

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Massachusetts Bay, Federal Waters

RECEIVING WATER: Massachusetts Bay

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency, (EPA) has developed a permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure that the provisions of the Clean Water Act will be met.

INFORMATION ABOUT THE DRAFT PERMIT:

The draft permit is in regards the discharge of non-contact cooling water, seawater, hotelling and sanitary wastewater from the Northeast Gateway deepwater liquefied natural gas port.

A fact sheet or a statement of basis (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) and the draft permit may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html or by writing or calling EPA's contact person named below:

Ellen Weitzler
US EPA
1 Congress Street, Suite 1100 (CIP)
Boston, MA 02114-2023
Telephone: (617) 918-1582

The administrative record containing all documents relating to this draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC MEETING:

The Regional Administrator has determined, pursuant to 40 CFR §124.12, that a significant degree of public interest exists in these proposed permits and that a public meeting should be held in Beverly, Massachusetts to consider this permit. Accordingly, a public meeting will be held on the following date and time:

DATE: Monday, September 24, 2007

TIME: 6:30 – 7:00 pm

LOCATION: Beverly Public Library
32 Essex Street
Beverly, MA 01915

The following is a summary of the procedures that will be followed at the public meeting:

- a. The Presiding Chairperson will have the authority to open and conclude the meeting and to maintain order.
- b. EPA will make short presentations describing the NPDES permit process and the draft permit conditions, and then accept questions from the audience.
- c. Formal oral comments concerning the draft permit will not be accepted at the public meeting. Formal oral comments will be accepted at the subsequent public hearing.

PUBLIC HEARING:

The Regional Administrator has determined, pursuant to 40 CFR §124.12, that a significant degree of public interest exists in these proposed permits and that a public hearing should be held in Beverly, Massachusetts to consider this permit. Accordingly, a public hearing will be held on the same date and following the close of the public meeting:

DATE: Monday, September 24, 2007

TIME: 7:00– 8:00 pm

LOCATION: Beverly Public Library
32 Essex Street
Beverly, MA 01915

The following is a summary of the procedures that will be followed at the public hearing:

- d. The Presiding Chairperson will have the authority to open and conclude the hearing and to maintain order.
- e. Any person appearing at such a hearing may submit oral or written statements and data concerning the draft permit.

PUBLIC COMMENT PERIOD:

All persons, including applicants, who believe any condition of this draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **Tuesday, September 25, 2007**, to the U.S. EPA, 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. In reaching a final decision on this draft permit the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION:

Following the close of the comment period, and after the public hearing, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

Stephen S. Perkins, Director
OFFICE OF ECOSYSTEM PROTECTION
ENVIRONMENTAL PROTECTION AGENCY