# TOWN OF AMHERST
# PUBLIC WORKS DEPARTMENT
## TRANSMITTAL SHEET

From The Desk Of:

Robert Pariseau
Director of Water Resources
Amherst Department of Public Works
586 So. Pleasant St
Amherst, MA 01002
e-mail: pariseaur@amherstma.gov

PHONE: 413) 259-3115
FAX (413) 259-2414

TO: USEPA, Region 1
PWTF-GP Processing

DATE: December 29, 2009

☼ Information Requested

X For Appropriate Action

☼ Comments Requested

☼ For Signature

☼ For Your Information

☼ For Your File

☼ For Review

☼ Note and Return

☼ Please Reply

☼ Respond ASAP

The Town of Amherst is submitting this "Notice of Intent" and feels that this discharge meets all the applicable requirements of the general permit and the applicant is requesting coverage under this general permit.

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

**Request for General Permit Authorization to Discharge Wastewater**
**(Notice of Intent to be covered by the General Permit (NOI))**

**Potable Water Treatment Facility (PWTF)**
**NPDES General Permit No. MAG640000 and NHG640000**

## A. Facility Information

1. Facility Owner:
   Name Town of Amherst- Department of Public Works e-mail pariseaur@amherstma.gov
   Street/PO Box 586 South Pleasant Street City Amherst
   State MA Zip Code 01002
   Contact Person Robert Pariseau Telephone Number 413-259-3115

2. Facility Operator (if different from above):
   Name _____ e-mail (optional) _____
   Street/PO Box _____ City _____
   State _____ Zip Code _____
   Contact Person _____ Telephone Number _____

3. Facility Data (attach topographic map or other map showing facility and discharge location(s)):
   Name Centennial Water Treatment Plant e-mail (optional) _____
   Street/PO Box Amherst Road City Pelham
   State MA Zip Code 01002
   Contact Person _____ Telephone Number 413-256-6193
   Facility Latitude 42 degrees 22' 50" Facility Longitude 72 degrees 27' 30"

4. Standard Industrial Classification (SIC Codes) and Descriptions of Processes:
   SIC Code(s) 1623
   Description(s) Surface water treatment plant

5. Current Permitting Status (please check yes or no):
   1. Has a prior NPDES permit been granted for the discharge? Yes ✓ (Permit Number: MAG640046 ) No ____
   2. Is the discharge a "new discharge" as defined by 40 CFR Section 122.22? Yes ____ No ✓
   3. Is the facility covered by an individual NPDES permit? Yes ✓ (Permit Number Above ) No ____
   4. Is there a pending application on file with EPA for this discharge? Yes ____(Date of submittal: _____) No ✓

## B. Discharge Information

1. Name of Receiving Waterbody Amethyst Brook

2. Type of Receiving Waterbody (e.g. stream, lake, reservoir, estuary etc) Stream

3. State Water Quality Classification: A Freshwater: XXX Marine Water: _____

4. Describe the discharge activities for which the owner/applicant is seeking coverage, including process discharges not specifically authorized in the PWTF GP which need to be authorized for discharge (and which attain the

effluent limits and other conditions of the general permit). This description should include all treatment methods used on the wastewater prior to discharge including lagoons, baffles, filter presses etc. If lagoons are used at the facility, please include the number and size of lagoons; the size and elevation of the entry pipe; the time of travel from the entry point of the discharge into the lagoon to the entry point to the receiving water; and the length of backwash cycle for any combination of number of filters. (attach extra sheets if necessary):

See attached sheet

5. Please provide a diagram depicting the treatment methods, outfalls, and receiving water.

6. Number of outfalls: 1 Latitude and Longitude for each outfall (attach additional pages if necessary)
   OUTFALL # 1 Latitude 42° 22' 52" N Longitude 72° 27' 35" W
   OUTFALL # Latitude _____ Longitude _____

For each outfall:

7. What is the proposed sampling location(s) and proposed consistent times of the month for collecting samples:

See attached sheet

## C. Effluent Characteristics

1. List here and attach information on any water additives used at the facility (Including chemicals for pH adjustment, dechlorination, control of biological growth, and control of corrosion and scale in water pipes): NaOH for corrosion control, fluoride, cationic polymer for coagulation, chlorine

2. Please report here any known remediation activities or water-quality issues in the vicinity of the discharge.
   None

3. Are aluminum-containing coagulants used at this facility? Yes____ No ✓

4. Does the discharge contain residual chlorine? Yes ✓ No____

5. Does the facility provide treatment to remove arsenic from the raw water source? Yes____ No ✓

6. Are phosphorus-containing chemicals added to the treated water at this facility? Yes____ No ✓

7. All applicants must attach a separate sheet listing all laboratory results (minimum of five) for total recoverable aluminum (in micrograms per liter) taken within the last six months. Do not include dilution when recording your results. See Section 4.4.5 of General Permit for more information.

★ 8. Please include the following effluent data for each outfall:

| Characteristic (report if measured) | Average Monthly | Maximum Daily |
|---|---|---|
| Discharge Flow (gpd) | 60,500 | 77,570 |
| TSS (mg/l) | 3 | 15 |
| pH (s.u.) | (min) 5.4 | (max) 6.6 |
| Total Recoverable Aluminum (ug/l) | 172 | 217 |
| Total Residual Chlorine (~~ug/l~~ mg/l) | 0.00 | 0.00 |

samples collected at lagoon discharge to outfall channel

→ samples collected about 150' prior to discharge to Amethyst Brook

(continued on next page)



★ See attached sheet

8. Continued

Characteristic (report if measured)

Whole Effluent Toxicity (%) LC50 100% and/or C-NOEC 100%

Laboratory reports for aluminum and whole effluent toxicity are attached.

9. If the discharge contains aluminum and/or residual chlorine, please provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water, the dilution factor, and attach any calculations used to support stream flow and dilution calculations (See Appendix VII for dilution calculations and additional information):

7Q10 0.8 cfs Dilution Factor 9.3

## D. Endangered Species Act Eligibility

1. Using the instructions in Appendix I of the PWTF GP, under which criterion listed in Part II are you eligible for coverage under this general permit?

A ✓ B ___ C ___ D ___ E ___ F ___

2. If you selected criteria D or F, has consultation with the federal services been completed? Yes___ No___

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

4. Attach documentation of ESA eligibility as described below and required at Part 3.4.1 and Appendix I, Part III, Step 4, of the General Permit.

*Criterion A -* *No federally-listed threatened or endangered species or federally-designated critical habitat are present*: A copy of the most current county species list pages for the county(ies) where your site or facility and discharges are located. You must also include a statement on how you determined that no listed species or critical habitat are in proximity to your site or facility or discharge locations.

See attached

*Criterion B –* *Section 7 consultation completed with the Service(s) on a prior project*: A copy of the USFWS's and/or NMFS's, as appropriate, biological opinion or concurrence on a finding of "unlikely to adversely effect" regarding the ESA Section 7 consultation.

*Criterion C –* *Activities are covered by a Section 10 Permit*: A copy of the USFWS's and/or the NMFS's, as appropriate, letter transmitting the ESA Section 10 authorization.

*Criterion D -* *Concurrence from the Service(s) that the discharge is "not likely to adversely affect" federally-listed species or federally-designated critical habitat (not including the four species of concern identified in Section I of Appendix I):* A copy of the USFWS's and/or the NMFS's, as appropriate, letter or memorandum concluding that the discharge is consistent with the general permit's "not likely to adversely affect" determination.

*Criterion E –* *Activities are covered by certification of eligibility*: A copy of the documents originally used by the other operator of your site or facility (or area including your site) to satisfy the documentation requirement of Criteria A, B, C or D.

*Criterion F -* *Concurrence from the Service(s) that the discharge is "not likely to adversely affect" species of concern, as identified in Section I of Appendix I:* A copy of the USFWS and/or the NMFS, as appropriate, concurrence with the applicant's determination that the discharge is "not likely to adversely affect" listed species.

## E. National Historic Properties Act Eligibility

1. Using the instructions in Appendix III of the PWTF GP, under which criterion listed in Part III are you eligible for coverage under this general permit?
   1 ✓ 2 ___ 3 ___

2. Have any State or Tribal historic preservation officers been consulted in this determination? Yes___ No___
   If yes, attach the results of the consultation(s).

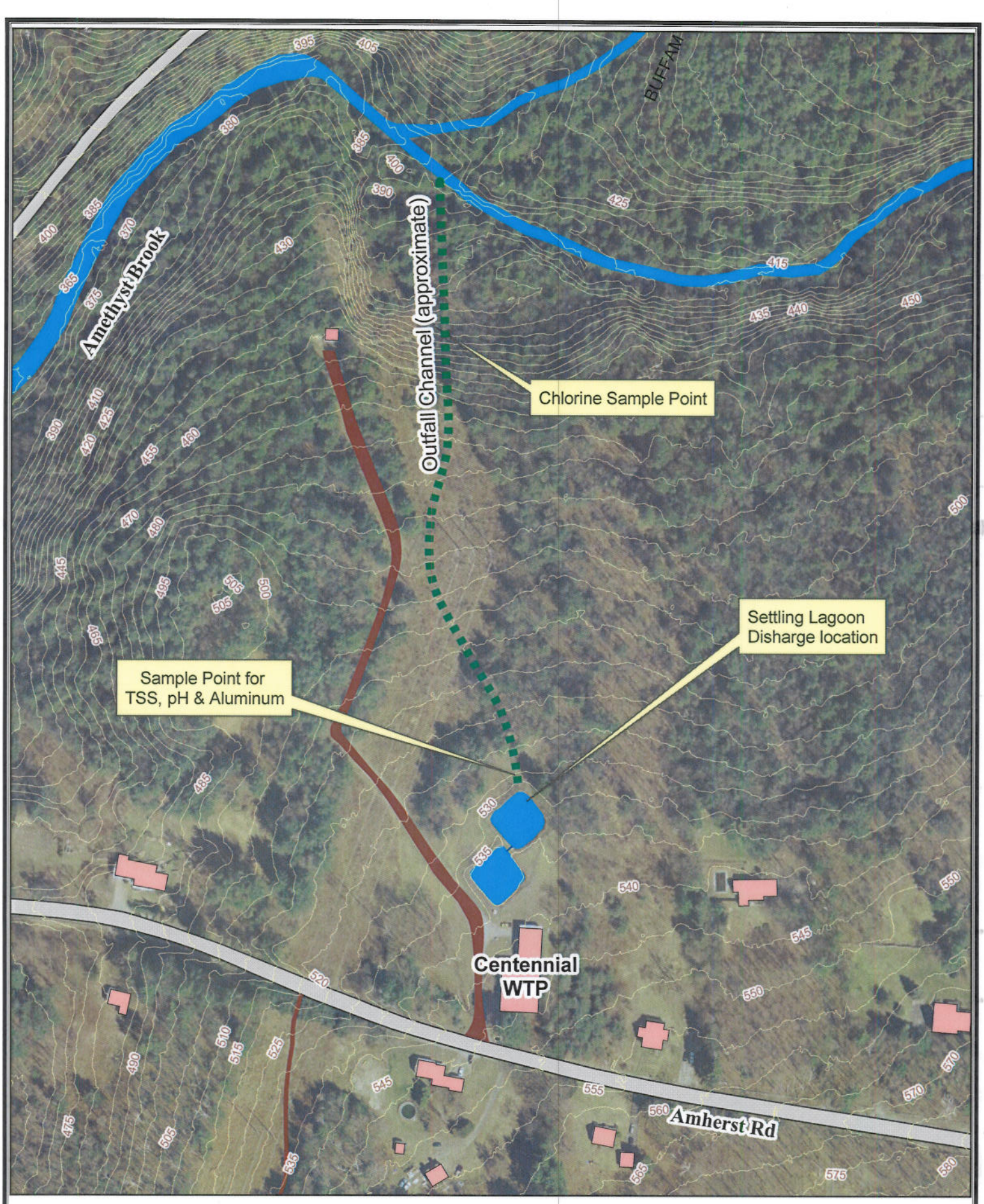
## F. Certification

I certify that the discharge for which I am seeking coverage under the general permit consists solely of a surface water discharge from a potable water treatment facility. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature Robert E Bareau Date 12/28/09
Printed Name and Title ROBERT E. DARISEAU
DIRECTOR OF WATER RESOURCES

Federal regulations require this application to be signed as follows:
1. For a corporation, by a principal executive officer of at least the level of vice president;
2. For partnership or sole proprietorship, by a general partner or the proprietor, respectively, or,
3. For a municipality, State, Federal or other public facility, by either a principal executive officer or ranking elected official.

Note: Permits No. MAG640000 and NHG640000 may be found at www.epa.gov/region1/npdes/pwtfgp.html




Flow measurements are estimated based upon the amount of water discharged into the lagoons.

# Centennial Water Treatment Plant
## Pelham, MA

*Amherst DPW, December 2009*

1 inch = 200 feet

0 50 100 200 300 400 Feet

**ATTACHMENT TO APPENDIX IV**

**NOTICE OF INTENT**

**TOWN OF AMHERST, MASSACHUSETTS**

**B. Discharge Information**

4. The discharge to Amethyst Brook is treated filter backwash water from a conventional water treatment plant. A schematic of the plant processes and a map of the plant vicinity are included with this permit application. A cationic polymer is used in the coagulation process. No aluminum or aluminum-containing compounds are used in the coagulation process.

All wastewaters flow into two lagoons which are piped in series. Each lagoon is about 70 square feet and the sidewalls are approximately four to five feet deep; the lagoons each contain approximately 100,000 gallons of water. In the lagoons, the solids are effectively removed from the discharge that leaves the lagoons and flows in an outfall channel overland approximately 900 feet to the Amethyst Brook. Water enters the first lagoon at an elevation of approximately 536 feet above mean sea level (msl) and exits to the second lagoon at about the same level. Effluent exits the second lagoon at an elevation of approximately 534.5 feet above msl. The backwashes of the three sand filters are scheduled at 8:00 am, 1:00 pm, and midnight to improve the efficiency of solids removal at the lagoons. Each backwash lasts about 15 minutes. At a flow rate of three gallons per second, the estimated time to reach the receiving water would be about five minutes. We estimate that about 90 to 100% of the discharge from the plant never reaches the Amethyst Brook due to infiltration into the lagoons and into soil during overland flow.

7. The sampling point for total suspended solids (TSS), pH, and aluminum is the lagoon effluent after it leaves the second lagoon. Chlorine samples are collected at a location approximately 750 feet downstream of the lagoons. These sampling locations are shown on the attached map. At that point there is a path which provides access to collect that sample. The selection of this sample point is discussed further in Section C, Number 8. Amethyst Brook is about ~~250~~ 200 feet further downstream of this location but would require crossing very steep terrain to collect a sample. Samples are collected on Mondays, and composite samples are collected by combining four grab samples (of equivalent volumes) between 8:00 am and noon.

**C. Effluent Characteristics**

8. As described in Section B, Number 7, samples for TSS, pH, and aluminum are collected where the second lagoon discharges into the outfall channel and samples for chlorine residual are collected at a location approximately ~~250~~ 200 feet prior to discharge of the outfall channel to Amethyst Brook. TSS, pH,

and aluminum samples are collected near the second lagoon because this location is easily accessible, and the data for these parameters are representative of the effluent.

Residual chlorine samples are collected at a location further downstream because this location provides data that are more representative of the discharge to Amethyst Brook. These samples were collected near the second lagoon prior to November 23, 2009, but since then, samples have been collected at the location shown on the map. Residual chlorine data are summarized in the attached table. As indicated, chlorine was detected in the samples collected near the lagoons, but it has not been detected since the sampling location was changed on November 23rd. This is likely due to both the longer detention time and interactions between chlorine and organic matter as the effluent flows along the outfall channel.

We also note that approximately 90 to 100% of the discharge from the plant never reaches the Amethyst Brook due to infiltration into the lagoons and into soil during overland flow. The terrain slopes steeply downward towards Amethyst Brook north of the chlorine sampling location. Visual observations indicate most of the flow infiltrates into the ground north of this point.

9. 7Q10 and dilution factor calculations:

**7Q10:** The 7Q10 value for Amethyst Brook was calculated using information from StreamStats, a Web-based Geographic Information System (GIS) available from the USGS. StreamStats allows a user to estimate stream flows based on flows measured at nearby gauging stations. StreamStats provided gauging data for the Fort River in Amherst, MA (gauging station 01171300). Information provided by StreamStats for the Fort River station is attached. According to StreamStats, the 7Q10 of the Fort River is 5.3 cubic feet per second (cfs). This value was then adjusted to account for the difference in watershed areas between the Fort River gauging station and the discharge point at Amethyst Brook as follows:

Drainage area of at Fort River gauging station = 41.5 miles$^2$ (from StreamStats report)

Drainage area of Amethyst Brook at outfall channel discharge location = 6.4 miles$^2$ (calculated on the Town of Amherst GIS)

7Q10 of Fort River = 5.3 cfs (from StreamStats report)

7Q10 of Amethyst Brook = (7Q10 Fort River/Fort River Drainage Area) * Amethyst Brook Drainage Area

= 5.3 cfs/41.5 miles$^2$ = 0.128 cfs/ mile$^2$ *6.4 miles$^2$ = **0.8 cfs = 0.5 MGD**

**Dilution Factor:** The dilution factor was calculated using the following equation:

$$\frac{PlantFlow + 7Q10}{PlantFlow}$$

Average plant flow = 60,500 GPD = 0.06 MGD

7Q10 = 0.5 MGD

$$\frac{0.06 + 0.5}{0.06} = \mathbf{9.3}$$

**D. Endangered Species Act Eligibility**

Criterion A- *No federally-listed threatened or endangered species or federally-designated critical habitat are present.* A copy of the current county species list for Hampshire County and the list from Section I of Appendix is attached. The lists do not indicate the presence of threatened or endangered species in the Amethyst Brook (the receiving water). Therefore, this discharge is eligible for coverage under Criterion A.

## WATER SOURCE, TREATMENT AND DISTRIBUTION

The Pelham Supply includes three impoundment reservoirs intercepting a total of 6.2 square miles. The impoundments involve a 2 million gallon Intake Reservoir located on Amethyst Brook, the 14 million gallon Hawley Reservoir and 30 million gallon Hills Reservoir.

From the Intake Reservoir, the water is conveyed through a transmission main to the intake pumping station, consisting of three pumps each rated at 550 GPM. The raw water is pumped up to the plant for treatment.

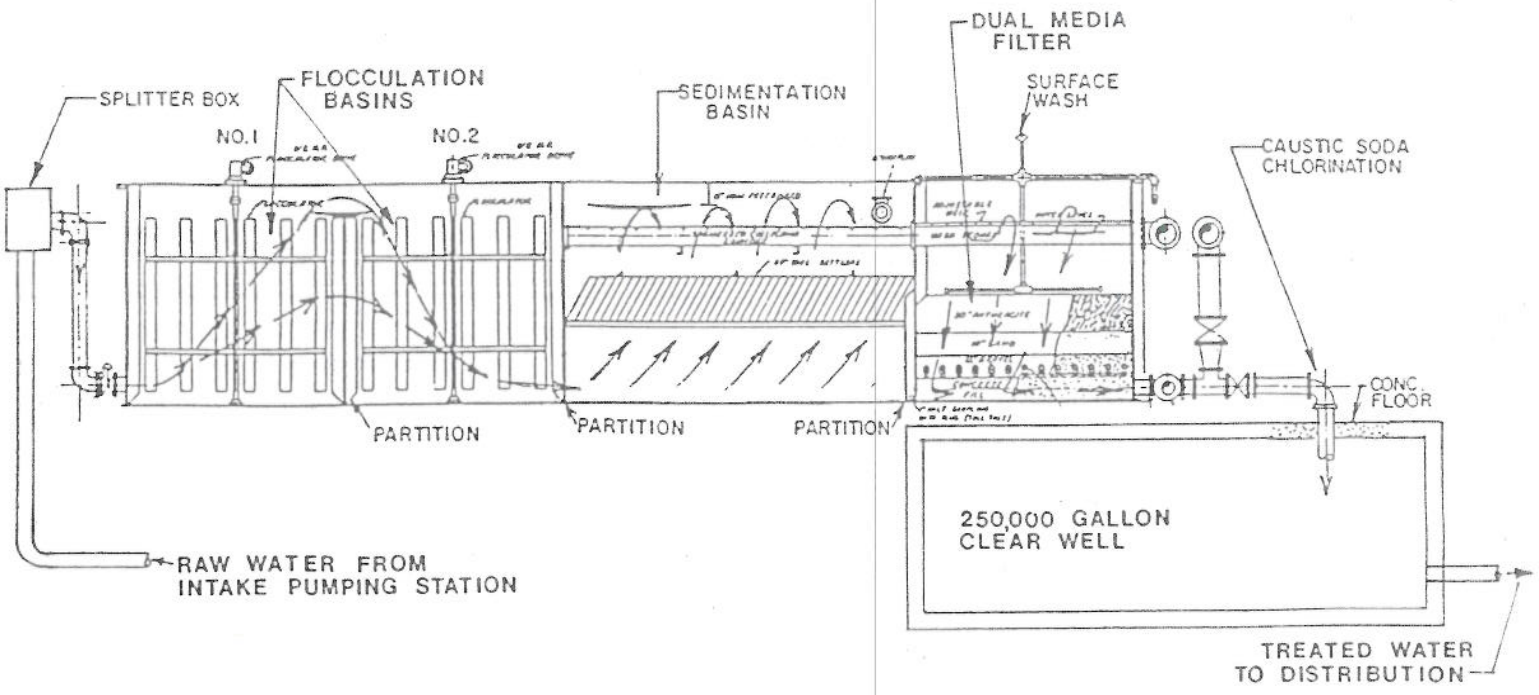
The Centennial Water Treatment Plant is equipped to introduce a variety of process chemicals; these involve coagulants to induce agglomeration of finely dispersed colloidal particles, a disinfectant to render the product water bacteriologically safe and alkaline materials to adjust pH for optimum treatment efficiency and for corrosion control.

The plant is equipped with three, packaged filtration modules each rated for 350 GPM (0.5 MGD). The modules were furnished by Roberts Filter Manufacturing Company of Darby, Pennsylvania and contain two, separate, flocculator compartments providing 30 minutes detention time at design flow, one sedimentation basin equipped with 60° tube settlers allowing a 2 GPM/sq. ft. hydraulic loading rate and a 100 square foot dual media filter with a loading of 3.5 GPM/sq. ft.

As the raw water enters the plant, alum is added for coagulation of the finely dispersed colloidal material (turbidity), lime for pH adjustment and polymer for improved floc formation, coagulation and color removal. The water is agitated slowly in two flocculators operated in series for floc formation; thence, the water flows into the sedimentation basin which is equipped with 60° inclined plate settlers to facilitate better solids removal. The clarified water then flows into the gravity, dual media filters. The filters are comprised of a 20" anthracite top layer, a 10" sand layer and a variety of support gravel layers around and above the collection laterals.

The filtered water enters a 250,000 gallon clear well where chlorine is added for disinfection purposes and sodium hydroxide is introduced to raise the pH of the product water to non-corrosive levels.

The treated water leaves the clear well through a 12" transmission main which runs down Amherst Road in Pelham towards Amherst. A number of high level services are supplied off this main before the water pressure is reduced by a flow control station at South Valley Road. The water enters the distribution system and generally serves the eastern and north central portion of the Town.




WATER TREATMENT MODULE PROFILE

# CENTENNIAL WATER TREATMENT PLANT NPDES PERMIT DATA

| | 11/13/2009 | 11/18/2009 | 11/25/2009 | 12/2/2009 | 12/14/2009 | MINIMUM | MAXIMUM | AVERAGE |
|---|---|---|---|---|---|---|---|---|
| Aluminum (mg/l) | 0.178 | 0.146 | 0.211 | 0.217 | 0.109 | 0.109 | 0.217 | 0.172 |

# CENTENNIAL WATER TREATMENT PLANT CHLORINE DATA- 2009

| | 1/5/2009 | 1/12/2009 | 1/20/2009 | 1/26/2009 | 2/2/2009 | 2/9/2009 | 2/16/2009 | 2/23/2009 | 3/1/2009 | 3/9/2009 | 3/16/2009 | 3/23/2009 | 3/30/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL CHLORINE (mg/l) | 0.01 | 0.07 | 0.34 | 0.31 | 0.53 | 1.02 | 1.29 | 0.99 | 0.87 | 0.78 | 0.30 | 0.55 | 0.76 |

| | 4/6/2009 | 4/13/2009 | 4/20/2009 | 4/27/2009 | 5/4/2009 | 5/11/2009 | 5/18/2009 | 5/25/2009 | 6/1/2009 | 6/9/2009 | 6/15/2009 | 6/22/2009 | 6/29/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL CHLORINE (mg/l) | 0.39 | 0.47 | 0.47 | 0.22 | 0.34 | 0.21 | 0.14 | 0.01 | 0.07 | 0.03 | 0.00 | 0.00 | 0.00 |

| | 7/6/2009 | 7/13/2009 | 7/20/2009 | 7/27/2009 | 8/3/2009 | 8/10/2009 | 8/17/2009 | 8/25/2009 | 10/5/2009 | 10/12/2009 | 10/19/2009 | 10/26/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL CHLORINE (mg/l) | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.07 | 0.26 |

| | 11/2/2009 | 11/9/2009 | 11/16/2009 | 11/23/2009 | 11/30/2009 | 12/7/2009 | 12/14/2009 |
|---|---|---|---|---|---|---|---|
| TOTAL CHLORINE (mg/l) | 0.10 | 0.19 | 0.33 | 0.00 | 0.00 | 0.00 | 0.00 |

**Notes:**

1. Shading indicates samples which were collected from the effluent after leaving the second lagoon. Beginning on 11/23/09 (non-shaded cells), the samples were collected from the intersection of the path and the outfall channel (approximately 800 feet downstream of the lagoons).
2. The treatment plant was off during the month of September; therefore no chlorine data are available for this month.

## CENTENNIAL WATER TREATMENT PLANT NPDES PERMIT DATA- 2009

Total Suspended Solids and pH

| | 1/5/2009 | 1/12/2009 | 1/20/2009 | 1/26/2009 | 2/2/2009 | 2/9/2009 | 2/16/2009 | 2/23/2009 | 3/1/2009 | 3/9/2009 | 3/16/2009 | 3/23/2009 | 3/30/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Suspended Solids (mg/l) | 9.5 | 9.8 | 6.5 | 7.0 | 9.0 | 5.6 | 5.0 | 4.4 | 3.3 | 4.2 | 3.8 | 3.0 | 1.6 |
| pH | 6.3 | 6.5 | 6.6 | 5.8 | 6.4 | 6.0 | 6.1 | 6.0 | 5.8 | 6.1 | 5.6 | 6.0 | 5.8 |

| | 4/6/2009 | 4/13/2009 | 4/20/2009 | 4/27/2009 | 5/4/2009 | 5/11/2009 | 5/18/2009 | 5/25/2009 | 6/1/2009 | 6/9/2009 | 6/15/2009 | 6/22/2009 | 6/29/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Suspended Solids (mg/l) | 2.6 | 1.1 | 1.0 | 2.3 | 2.4 | 2.9 | 2.6 | 1.9 | 2.0 | 15 | 0.6 | 0.6 | 1.3 |
| pH | 5.9 | 5.7 | 5.6 | 5.4 | 5.8 | 5.8 | 6.1 | 6.5 | 6.3 | 6.3 | 6.3 | 6.3 | 6.2 |

| | 7/6/2009 | 7/13/2009 | 7/20/2009 | 7/27/2009 | 8/3/2009 | 8/10/2009 | 8/17/2009 | 8/25/2009 | 10/5/2009 | 10/12/2009 | 10/19/2009 | 10/26/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Suspended Solids (mg/l) | 1.3 | 1.5 | 1.0 | 1.1 | 0.7 | 1.8 | 1.1 | 1.6 | 2.1 | 1.9 | 3.5 | 4.0 |
| pH | 6.1 | 6.1 | 6.2 | 6.3 | 6.3 | 6.3 | 6.4 | 6.4 | 6.4 | 6.1 | 6.5 | 5.6 |

| | 11/2/2009 | 11/9/2009 | 11/16/2009 | 11/23/2009 | 11/30/2009 | 12/7/2009 | 12/14/2009 | Average Monthly | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Suspended Solids (mg/l) | 4.0 | 3.0 | 4.0 | 1.0 | 0.4 | 0.4 | 0.6 | 3.1 | 0.4 | 15 |
| pH | 6.0 | 6.3 | 6.0 | 5.7 | 5.9 | 6.3 | 5.8 | 6.1 | 5.4 | 6.6 |

**Notes:**

1. The treatment plant was off during the month of September; therefore TSS and pH data are not available for this month.

## SUMMARY

**Client:** Town of Amherst

**Project:** Centennial Water Treatment Plant

**Job Number:** 201-015

**Test Numbers:** 21-1964

**Test Material:** Backwash Lagoon
(NEB ID Nos. C21-1745, C21-1747, & C21-1749)

**Sample Dates:** 25-26, 27-28, and 29-30 June 2001

**Test Dates:** 26 June-3 July 2001 (Ceriodaphnia dubia)

**Test Duration:** 7-Day Daily Static-Renewal (C. dubia)

**Test Methods:** U.S. Environmental Protection Agency (EPA) Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA 600/4-91/002) and EPA Region 1 Modified Methods.

**Test Species:** Daphnids (Ceriodaphnia dubia):
**Lot No.:** CD-01-MHO73 A
**Age:** < 24 h old

**Dilution Water:** Receiving water (Amethyst Brook)

**Results:** **Daphnids**

| Acute Effects | | Chronic Effects | |
|---|---|---|---|
| 48-h $LC_{50}$: | > 100% Sample | 7-day $LC_{50}$: | > 100% Sample |
| A-NOEC: | 100% Sample | Survival C-NOEC: | 100% Sample |
| | | Survival C-LOEC: | > 100% Sample |
| | | Reproductive C-NOEC: | 50% Sample |
| | | Reproductive C-LOEC: | 100% Sample |

# CHRONIC TOXICITY TEST REPORT

to

Town of Amherst
Department of Public Works
586 South Pleasant Drive
Amherst, MA 01002

(Centennial Water Treatment Plant-Backwash Lagoon)

13 July 2001

## INTRODUCTION

This report contains results of one 7-day chronic toxicity test using 24-h composite samples collected during 25-30 June 2001 from the Centennial Water Treament Plant - Backwash Lagoon. Daphnids, Ceriodaphnia dubia, were exposed to the samples for a period of 7 days. The test control and dilution water for the chronic toxicity test performed in June 2001 was receiving water collected from Amethyst Brook. All toxicity test work reported here was performed at New England Bioassay (NEB) in Manchester, CT for Town of Amherst Department of Public Works.

## METHODS

A general summary of the methods used for chronic toxicity testing, physical and chemical measurements during testing, and statistical analysis of test results is provided in Appendix A.

### Sample Collection and Handling

Three 24-h composite samples were collected from the Centennial Water Treatment Plant during 25-26, 27-28, and 29-30 June 2001 by Town of Amherst personnel. Samples collected from the water treatment plant and Amethyst Brook were delivered to NEB on 26, 28, and 30 June 2001 via NEB couriers (Appendix B).

Standard wet chemistry analyses [pH, dissolved oxygen, specific conductivity, total residual chlorine (TRC), hardness, and alkalinity] were performed on each new water treatment plant and receiving water sample upon receipt at NEB. Wet chemistry results for the water treatment plant are provided in Table 1. Because TRC values of each of the samples were < 0.10 mg/L upon receipt at NEB, samples were not dechlorinated before use in testing. Values for dissolved oxygen, temperature, pH, and specific conductivity measured during the C. dubia chronic test are provided on the raw data sheets in Appendix C.

**TABLE 1. INITIAL WET CHEMISTRY FOR TOWN OF AMHERST CENTENNIAL WATER TREATMENT PLANT SAMPLES**

| Analysis Performed | Centennial Water Treatment 1 | 2 | 3 |
|---|---|---|---|
| **SAMPLE COLLECTION DATES: 25-30 JUNE 2001** | | | |
| Dissolved oxygen (mg/L) | 10.1 | 9.3 | 9.0 |
| pH (SU) | 6.4 | 6.7 | 6.8 |
| Sp. Conductivity ($\mu$mhos/cm) | 54 | 54 | 54 |
| TRC (mg/L) | 0.03 | 0.02 | 0.03 |
| Hardness (mg/L as $CaCO_3$) | 7 | 10 | 8 |
| Alkalinity (mg/L as $CaCO_3$) | 5 | 5 | 5 |

USGS
science for a changing world

# StreamStats Data-Collection Station Report

**USGS Station Number** 01171300
**Station Name** FORT RIVER NEAR AMHERST, MA

Click here to link to available data on NWIS-Web for this site.

## Descriptive Information

| | |
|---|---|
| Station Type | Gaging Station, continuous record |
| Regulated? | False |
| Period of Record | 1967-81 |
| Remarks | Diversions for municipal supply of Amherst. Water-quality records 1971,1973. |
| Latitude (degrees NAD83) | 42.3584236 |
| Longitude (degrees NAD83) | -72.50592028 |
| Hydrologic unit code | 01080201 |
| Local Basin | 6-Connecticut |
| County | 015-Hampshire |
| MCD | 01325-Amherst town |
| Directions to station | 400 feet downstream from Southeast Street |

## Physical Characteristics

| Characteristic Name | Value | Units | Citation Number |
|---|---|---|---|
| Drainage_Area | 41.5 | square miles | 30 |

## Streamflow Statistics

| Statistic Name | Value | Units | Citation Number |
|---|---|---|---|
| ***Low-Flow Statistics*** | | | |
| 7_Day_10_Year_Low_Flow | 5.3 | cubic feet per second | 20 |
| 7_Day_2_Year_Low_Flow | 8.9 | cubic feet per second | 20 |
| ***Flow-Duration Statistics*** | | | |

# FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

| COUNTY | SPECIES | FEDERAL STATUS | GENERAL LOCATION/HABITAT | TOWNS |
|---|---|---|---|---|
| Barnstable | Piping Plover | Threatened | Coastal Beaches | All Towns |
| | Roseate Tern | Endangered | Coastal beaches and the Atlantic Ocean | All Towns |
| | Northeastern beach tiger beetle | Threatened | Coastal Beaches | Chatham |
| | Sandplain gerardia | Endangered | Open areas with sandy soils. | Sandwich and Falmouth. |
| | Northern Red-bellied Cooter | Endangered | Inland Ponds and Rivers | Bourne (north of the Cape Cod Canal) |
| Berkshire | Bog Turtle | Threatened | Wetlands | Egremont and Sheffield |
| Bristol | Piping Plover | Threatened | Coastal Beaches | Fairhaven, Dartmouth, Westport |
| | Roseate Tern | Endangered | Coastal beaches and the Atlantic Ocean | Fairhaven, New Bedford, Dartmouth, Westport |
| | Northern Red-bellied Cooter | Endangered | Inland Ponds and Rivers | Taunton |
| Dukes | Roseate Tern | Endangered | Coastal beaches and the Atlantic Ocean | All Towns |
| | Piping Plover | Threatened | Coastal Beaches | All Towns |
| | Northeastern beach tiger beetle | Threatened | Coastal Beaches | Aquinnah and Chilmark |
| | Sandplain gerardia | Endangered | Open areas with sandy soils. | West Tisbury |
| Essex | Small whorled Pogonia | Threatened | Forests with somewhat poorly drained soils and/or a seasonally high water table | Gloucester, Essex and Manchester |
| | Piping Plover | Threatened | Coastal Beaches | Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury |
| Franklin | Northeastern bulrush | Endangered | Wetlands | Montague |
| | Dwarf wedgemussel | Endangered | Mill River | Whately |
| Hampshire | Small whorled Pogonia | Threatened | Forests with somewhat poorly drained soils and/or a seasonally high water table | Hadley |
| | Puritan tiger beetle | Threatened | Sandy beaches along the Connecticut River | Northampton and Hadley |
| | Dwarf wedgemussel | Endangered | Rivers and Streams. | Hadley, Hatfield, Amherst and Northampton |
| Hampden | Small whorled Pogonia | Threatened | Forests with somewhat poorly drained soils and/or a seasonally high water table | Southwick |
| Middlesex | Small whorled Pogonia | Threatened | Forests with somewhat poorly drained soils and/or a seasonally high water table | Groton |
| Nantucket | Piping Plover | Threatened | Coastal Beaches | Nantucket |
| | Roseate Tern | Endangered | Coastal beaches and the Atlantic Ocean | Nantucket |
| | American burying beetle | Endangered | Upland grassy meadows | Nantucket |
| Plymouth | Piping Plover | Threatened | Coastal Beaches | Scituate, Marshfield, Duxbury, Plymouth, Wareham and Mattapoisett |
| | Northern Red-bellied Cooter | Endangered | Inland Ponds and Rivers | Kingston, Middleborough, Carver, Plymouth, Bourne, Wareham, Halifax, and Pembroke |
| | Roseate Tern | Endangered | Coastal beaches and the Atlantic Ocean | Plymouth, Marion, Wareham, and Mattapoisett. |
| Suffolk | Piping Plover | Threatened | Coastal Beaches | Winthrop |
| Worcester | Small whorled Pogonia | Threatened | Forests with somewhat poorly drained soils and/or a seasonally high water table | Leominster |

-Eastern cougar and gray wolf are considered extirpated in Massachusetts.
-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.
-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

**Revised 06/22/2009**

## APPENDIX I
## ENDANGERED SPECIES ACT REQUIREMENTS

### I. Background

In order to meet its obligations under the Clean Water Act and the Endangered Species Act (ESA), and to promote the goals of those Acts, the Environmental Protection Agency (EPA) is seeking to ensure the activities regulated by this general permit do not adversely affect endangered and threatened species and critical habitat. Applicants applying for permit coverage must assess the impacts of their discharges and discharge-related activities on federally-listed endangered and threatened species ("listed species") and designated critical habitat ("critical habitat"), to ensure that those goals are met. Prior to obtaining general permit coverage, applicants must meet the ESA eligibility provisions of this permit. EPA strongly recommends that applicants follow the guidance in this Appendix at the earliest possible stage to ensure the notification requirements for general permit coverage are complete upon NOI submission. A facility that cannot meet any of the ESA eligibility criteria must apply for an individual permit.

Applicants also have an independent ESA obligation to ensure that their activities do not result in any prohibited "takes" of listed species[1]. Many of the measures to protect species required in this general permit and these instructions may also assist in ensuring that the facilities seeking coverage activities do not result in a prohibited taking of species in violation of section 9 of the ESA. If the applicant has plans or activities in areas where endangered and threatened species are located, they may wish to ensure that they are protected from potential takings liability under ESA section 9 by obtaining an ESA section 10 permit (Incidental Take Permit) or by requesting formal consultation under ESA section 7. Facilities seeking coverage that are unsure whether to pursue a section 10 Incidental Take Permit or a section 7 consultation for takings protection, should confer with the appropriate U.S. Fish and Wildlife Service (USFWS)[2] office or the National Marine Fisheries Service (NMFS), (collectively, "the Services").

There are four species of concern, found in the areas listed below, that should be noted by owners and operators of facilities seeking coverage under the general permit. These species of concern include the **shortnose sturgeon**, the **dwarf wedge mussel,** the **bog turtle**, and the **northern red-bellied cooter**. The **shortnose sturgeon** is listed under the jurisdiction of the National Marine Fisheries Service and the **dwarf wedgemussel,** the **bog turtle**, and the **northern redbelly cooter** are listed under the jurisdiction of the U.S. Fish and Wildlife Service.

The federally-listed endangered **dwarf wedgemussel** (*Alasmidonta heterodon*) is found in the following areas in Massachusetts and New Hampshire:

- Connecticut River from Northumberland to Dalton, NH (Coos County).
- Connecticut River from Haverhill to Lyme, NH (Grafton County)
- Connecticut River from Lebanon to North Walpole, NH (Grafton and Sullivan Counties).
- Connecticut River from Haverhill to Piermont, NH (Grafton County).
- Ashuelot River from the Surry Mountain Flood Control Project in Surry to Swanzey, NH (Cheshire County).
- South Branch of the Ashuelot River in East Swanzey, NH (Cheshire County).

- Mill River from Whately to Hatfield, MA (Hampshire County).
- Fort River in Amherst, MA (Hampshire County).
- Mill River south of State Route 10 in Northampton, MA (Hampshire County).

The federally-listed endangered **shortnose sturgeon** *(Acipenser brevirostrum)* is found in the following areas in Massachusetts:

- Merrimack River from the Essex Dam in Lawrence, MA to the Merrimack River's mouth (Essex County).
- Connecticut River from Turners Falls, MAs (Franklin, Hampshire, and Hampden Counties) to the Connecticut River's mouth, Connecticut (Hartford, Middlesex, and New London Counties).

The federally-listed threatened **bog turtle** (*Clemmys muhlenbergii*), is found in the following areas in Massachusetts:

- wetlands and waters in the Towns of Egremont and Sheffield (Berkshire County), MA.

The federally-listed endangered **northern red-bellied cooter** (*Pseudemys rubriventris*) is found in the following areas in Massachusetts:

- bodies of water occurring within the following boundaries: in the Towns of Kingston, Plymouth, Carver, Middleborough, Wareham, Lakeville, Bridgewater and Rochester (Plymouth County), MA.
- bodies of water in the Towns of Bourne and Sandwich (Barnstable County), MA.
- bodies of water in the Town of Raynham (Bristol County), MA.

Maps are available at: http://www.fws.gov/northeast/newenglandfieldoffice/EndangeredSpec-Consultation_Project_Review.htm

Applicants discharging to areas listed above must consult with the Service(s) and certify eligibility with Criteria F to obtain authorization to discharge under the PWTF GP. By terms of this permit, EPA has automatically designated operators as non-Federal representatives for the purpose of conducting informal consultations with NMFS and USFWS (See 50 CFR §402.08 and §402.13).

**II. The ESA Eligibility Criteria**

A facility seeking coverage by this general permit must demonstrate that it meets one or more of the following criteria:

Criterion A: No federally-listed threatened or endangered species or their designated critical habitat are likely to occur in the vicinity of the discharge.

Criterion B: In the course of a separate federal action involving the facility, formal or informal consultation with the Fish and Wildlife Service and/or the National Marine