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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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.

NPDES PERMIT NO.: MA0103390

PUBLIC NOTICE DATE: August 17, 2007 – September 20, 2007

NAME AND ADDRESS OF APPLICANT:

Swansea Water District
700 Wilbur Avenue
Swansea, Massachusetts 02777

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Swansea Water Treatment Plant
294 Vinnicum Road
Swansea, Massachusetts 02777

RECEIVING WATER: **Palmer River**
Narragansett Bay Watershed

CLASSIFICATION: **Class SA**

I. Proposed Action, Type of Facility and Discharge Location

The Swansea Water District (SWD) has applied to the U.S Environmental Protection Agency for a National Pollutant Discharge Elimination System (NPDES) permit to discharge wastewater into the Palmer River. The proposed water treatment facility will be located in the Town of Swansea at the Vinnicum Wellfield property. The proposed facility is designed to supply approximately 2.18 million gallons per day (MGD) of potable water to residents and businesses in the Town and will discharge approximately 2.71 MGD of wastewater into the Palmer River.

The applicant filed a complete application for a new discharge permit required by 40 Code of Federal Regulations (CFR) §122.6. The facility location is shown on Attachment A of this fact sheet. The draft permit will be written to reflect conditions at the new facility.

II. Limitations and Conditions

The effluent limitations and monitoring requirements may be found in the draft NPDES permit.

III. Permit Basis and Explanation of Effluent Limitation Derivation

The SWD plans to construct and operate a facility that uses ultrafiltration/microfiltration and reverse osmosis to treat brackish water from the Palmer River and groundwater from three existing wells. The project consists of the design and construction of a water treatment plant, a river intake and pumping station, a disposal diffuser in the Palmer River, and associated pipelines and storage tanks. The discharge

is located 2.4 miles from the mouth of the Palmer River and 1,800 feet from the Massachusetts-Rhode Island state line. The intake structure will be approximately 4 miles downstream of Shad Factory Dam, the upstream extent of tidal influence.

Physical Treatment Process
Raw water from the Palmer River and Vinnicum Wellfield groundwater wells will be treated separately and the finished water combined for distribution.

Wellfield water will be aerated and then filtered by microfiltration (MF). Chemicals will be added prior to microfiltration to coagulate and remove organics, and to oxidize iron and manganese.

River water will be filtered by MF with chemical addition. Backwash from the first stage MF will pass through a second stage MF. The second stage MF will increase the total amount of finished water and reduce the volume of backwash sent to treatment. The permeate from each MF stage will be treated by reverse osmosis filtration (RO) to remove salt. The RO permeate will be disinfected, mixed with the MF permeate from the wellfield water treatment system, treated with corrosion control chemicals, fluoridated, and put into the water distribution system.

See Figure 2 in Section III of this fact sheet for a treatment and flow balance diagram.

The chemicals used for the MF systems will be sulfuric acid for pH adjustment, an aluminum/ferric chloride blend as a coagulant for organics removal, and potassium permanganate to oxidize iron and manganese in the raw water. The chemicals used for the RO system may include sulfuric acid for pH adjustment, antiscalants, and chlorine.

Membrane-specific cleaning chemicals, such as caustic, acid, and hypochlorite will be used as necessary for each specific membrane system. The draft permit requires cleaning fluids other than hypochlorite to be discharged to a tank for off-site disposal.

Process Waste Streams
The WTP will produce liquid waste streams including RO brine concentrate and reject (backwash) from the three MF systems. Other waste products include strainer flushings, and cleaning solutions for the membranes. The MF backwash will be discharged to sludge drying beds. RO brine, and the clarified liquid from the drying beds, will be combined in a concentrate equalization tank and discharged back to the Palmer River through a diffuser during a 6 hour period beginning 3 hours before high tide. The draft permit requires that solutions used to clean the membranes or flush pipes in the treatment plant will not be discharged to the River but transferred off site for disposal. See Part I.A.1.e. of the draft permit

The diffuser is designed for a discharge flow rate of 3,700 gpm and will be sited in the south scour hole at a depth of 13 feet, 50 feet downstream of the Old Providence River Bridge.

The salinity in the final effluent is limited to less than or equal to 32 ppt. EPA and MassDEP have determined that this condition is protective of water quality and have established it as an effluent limitation in the draft permit.

General Requirements
The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with various statutory and regulatory requirements

established pursuant to the CWA and any applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136.

Technology-based Requirements
Technology-based requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (See 40 CFR §125 Subpart A). For existing sources, technology-based requirements according to best practicable control technology (BPT) currently available are applied for conventional, non-conventional, and toxic pollutants. There are no applicable technology-based effluent guidelines for this industry. In the absence of published guidelines, the permit writer is authorized under Section 402(a)(1) of the CWA to establish effluent limitations on a case-by-case basis using Best Professional Judgment (BPJ) (See 40 CFR §§125.3 (c)(2) and (c)(3)).

The factors to be considered in developing BPJ limits are set forth at 40 CFR §§ 125.3(c)(2)(i) and (ii) and 125.3(d)(3)(i) - (vi) and include, among other things, the age of the existing facility, engineering issues, process changes, non-water quality-related environmental impacts, and the costs of achieving required effluent pollutant reductions. A review of two reports written by the American Water Works Association on the management of brine from reverse osmosis systems, the Environmental Impact Report and Notice of Project Change Reports for this facility were reviewed by both Agencies to address these issues and are available for review as part of the NPDES Administrative record for this facility.

Water Quality-Based Requirements
Under Section 301(b)(1)(C) of the CWA and EPA regulations NPDES permits must contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal water quality standards.

Water quality standards consist of three parts: (1) beneficial designated uses for a water-body or a segment of a water-body; (2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards, found at 314 CMR 4.00, include these elements. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to an excursion above any water quality standard (see 40 CFR §122.44(d)). An excursion occurs if the projected or actual in-stream concentration exceeds an applicable water quality criterion. In determining "reasonable potential", EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from the permit's reissuance application, monthly discharge monitoring reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the indicator species used in toxicity testing; (4) known water quality impacts of processes on wastewaters; and (5) where appropriate, dilution of the effluent in the receiving water.

EPA and MassDEP researched disposal methods at water treatment plants using reverse osmosis in other States and found surface water discharge of brine concentrate to be common. An article in the December 2004 issue of the Journal of American Water Works Association confirms that surface water discharge is the most common disposal practice for brine concentrate. The concentrate contains naturally occurring constituents that are in the RO feed water are well suited for surface water discharge. The primary

ecological concern is the salinity change in the receiving water and its effect on the native habitat as a result of the concentrated brine discharge.

Water Quality Standards and Designated Uses

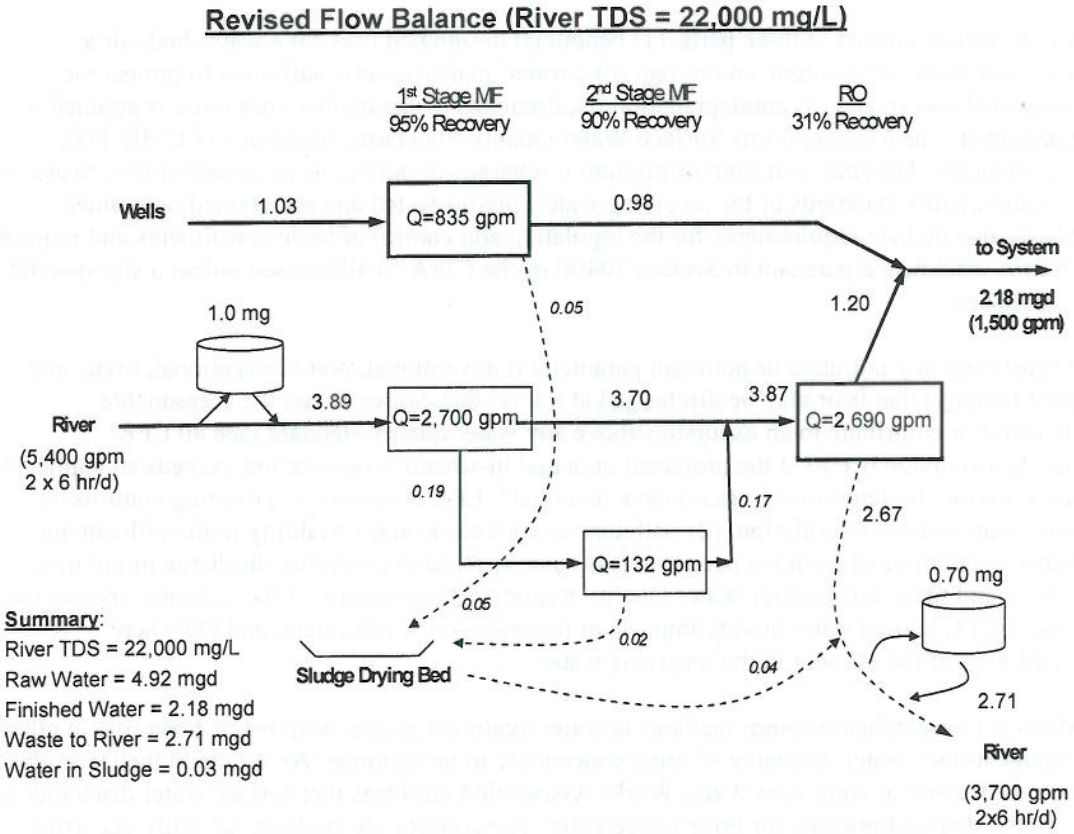
The Palmer River, at the point of discharge, is classified as a Class SA waterbody by the Massachusetts Department of Environmental Protection (MassDEP). Class SA waters are designated as an excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. In approved areas, Class SA waters shall be suitable for shellfishing without depuration. These waters shall have excellent aesthetic value.

Flow

The flow limit in this draft permit is 2.71MGD. The permit limits the salinity concentration of the discharge. The effluent will be batch discharged for up to six hours during each high tidal cycle when the receiving water salinity is highest.

A flow balance for the WTP, under peak summer design conditions, is shown below. As can be seen, the WTP is designed to produce 2.18 mgd of finished water that will go to the distribution system. The 4.92 mgd of water entering the treatment plant,comes from the Vinnicum Wellfield and the Palmer River. The difference, 2.71 mgd, represents the concentrate waste stream to be returned to the Palmer River per discharge.

Figure 2.



Salinity
Depending on the river flow and tidal stage, the salinity in this section of the Palmer River varies from 0 ppt to 32 ppt . This range has been observed under high tide conditions, with the lowest values observed in late winter and early spring when fresh water flows in the river are highest. The highest salinities were observed during low flow or 7Q10 conditions when the fresh water flow in the river is lowest.

In the Supplemental Environmental Impact Report (SFEIR) , the Swansea Water District agreed to limit maximum salinity discharge concentration to 32 parts per thousand (ppt). This limit has been included in the draft permit as an effluent limitation.

Available Dilution
The Massachusetts State Water Quality Standards define mixing zones and the criteria which must be met in 314 CMR 4.03(2).

> 4.03(2) Mixing Zones: In applying these standards the Department may recognize a limited area or volume of waterbody as a mixing zone for the initial dilution of a discharge. Waters within a mixing zone may fail to meet specific water quality criteria provided the following conditions are met:
>
> (a) Mixing zones shall be limited to an area or volume as small as feasible. The location, design and operation of the discharge shall minimize impacts on aquatic life and other beneficial uses.
>
> (b) Mixing zones shall not interfere with the migration or free movement of fish or other aquatic life. There shall be safe and adequate passage for swimming and drifting organisms with no deleterious effects on their populations.
>
> (c) Mixing zones shall not create nuisances conditions, accumulate pollutants in sediments or biota in toxic amounts or otherwise diminish the existing or designated uses of the segment disproportionately.

Based on EPA mixing zone guidance (Technical Support Document for Water Quality Based Toxics Control, 1991) the permittee proposed a mixing zone extending approximately 9.7 meters (about 32 feet) from the outfall ports.

Modeling the effects of the discharge on the hydrography of the Palmer River was accomplished in two steps. A Far Field model was developed to characterize ambient flow velocities in the vicinity of the discharge throughout the tidal cycle. This was accomplished by Applied Science Associates (ASA), using its boundary fitted hydrodynamic model, a component of the Water Quality Mapping and Analysis Package. The model was applied to the Palmer River and calibrated to data from the field program. Velocities from the far field model were then applied to the PLUMES model to characterize the discharge plume.

A PLUMES model was used to predict the salinity in the mixing zone for 10 different cases, which incorporate varying effluent salinities, receiving water flows, and tide conditions. The model showed that in all cases salinity in the discharge will be reduced in the mixing zone, and in all cases a differential salinity (the difference between the plume salinity and receiving water salinity) equal to or less than 1.4 practical salinity unit (psu) will be achieved less than 2.4 meters (about 8 feet) from the diffuser ports (a psu is equal to a part per thousand). Attachment B is figure showing the plume model results for Case 2, mean summer season at mid tide. Results from the model conducted by the permittee are part of the administrative record and available for review.

EPA believes that the increase in salinity due to the discharge should not be expected to adversely affect aquatic organisms, including Essential Fish Habitat (EFH) species.

The estimates of dilution used in the salinity study can also be used to predict the dilution of other pollutants in the discharge. The worst case for dilution was Case 10, which predicts a dilution factor of 1.3 at the end of the plume, located 2.4 meters (8 feet) from the discharge port. This dilution factor will be used evaluate the reasonable potential of other pollutants to cause or contribute to excursion of water quality criteria.

The draft permit includes a requirement that the permittee develop an ambient monitoring plan to verify the dilution provided by the diffuser, to confirm the size of the mixing zone, and to confirm that water quality standards are achieved at the edge of the mixing zone. The monitoring plan shall be developed and submitted to MassDEP and EPA within six months of the effective date of the permit and shall be implemented within 30 days of initiating the discharge.

Conventional Pollutants

Total Suspended Solids (TSS)

In accordance with Section 402(a)(1) of the CWA and 40 CFR 125.3, technology-based limitations based on Best Professional Judgment (BPJ) are included in the draft permit. These limits include an average monthly limit of 20 mg/l and an average weekly limit of 30 mg/l. These BPJ limits are consistent with BPJ limits for similar facilities in Region I (see the Region I general permit for Reject Water From Reverse Osmosis Units) and are also consistent with an article in the Journal of American Water Works Association, that identifies <30 mg/l + raw water TSS as a representative limitation for TSS of a surface water discharge. See AWWA Residual Management Research Committee Subcommittee report on Residuals Management for Low-pressure Membranes, Journal of American Water Works Association, June 2004.

These limits are also protective of water quality. Based on data from the pilot tests, the total suspended solids concentrations in the intake (raw) water from the Palmer River averaged 20 mg/l, with a maximum concentration of 30 mg/l. The predicted TSS in the concentrate discharge was an average of 25 mg/l and a maximum of 40 mg/l, showing that the discharge concentration will be only slightly above background. Given that almost all TSS should be removed in the MF process, improvements to TSS control can be made, if necessary, by improving the efficiency of the sludge drying beds.

pH

The pH limits in the draft permit are based on Massachusetts Surface Water Quality Standards. The pH of the final effluent shall be in the range of 6.5 to 8.5 standard units. There shall be no change from background conditions that would impair any use assigned to this class.

Dissolved Oxygen (DO)

State water quality standards require that the DO in SA waters be 6.0 mg/l or greater unless natural background conditions are lower. Data submitted with the permit application show the dissolved oxygen concentration in the Palmer River at the point of discharge has, on occasion, been as low as 5.7 mg/l, slightly less than the criteria. Therefore, the draft permit requires the DO in the final effluent to be equal or greater than 6.0 mg/l.

Nonconventional Pollutants

Nonconventional pollutants typically associated with reverse osmosis systems were identified by reviewing data from the pilot studies and from facilities currently in operation that use reverse osmosis. The draft permit requires monthly monitoring of these pollutants, including total dissolved solids, nitrite/nitrate, total Kjeldahl nitrogen, ammonia-nitrogen, lead and arsenic.

Metals

Certain metals in waters can be toxic to aquatic life. There is a need to limit toxic metal concentrations where the discharge has the reasonable potential to cause or contribute to an exceedance of water quality standards. The limitations for toxic metals are based on the EPA National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047), as adopted in the Massachusetts Water Quality Standards 314 CMR 4.05(5)(e).

The concentration of copper from samples analyzed during the pilot tests in 2005 and 2006 showed an unusually high concentration of copper in the River. The Agencies involved in issuing the draft permit were prevented from doing so until the source of the copper was identified. There are no known sources of copper in the area of the discharge that would cause the high copper concentrations reported in the pilot tests.

The Agencies suspected the method or technique used to analyze the samples was producing erroneous results. To resolve this suspicion, samples from the River were collected again in the summer of 2007 and analyzed by the EPA at the EPA National Health and Environmental Effects Research Laboratory in Narragansett, RI and by the permittee at the Alpha Woods Hole Laboratory in Mansfield, MA. Both labs have expertise in analyzing marine water. The highest concentration of copper in the samples analyzed at the Narragansett Lab was 1.83 ug/l. The highest concentration of copper in the samples analyzed by Alpha Woods Hole was 2.5 ug/l. It was determined that the method used to analyze the pilot test samples, inductively coupled plasma-mass spectrometer (ICP-MS) was subject to interference during the procedure, which resulted in the reported high concentrations.

The chronic and acute water quality criteria for copper in marine water are 3.1 ug/l and 4.8 ug/l respectively. The anticipated concentration factor for copper, as shown in the pilot plant data is about 1.44, meaning that the discharge concentration will be about 1.44 times higher than the intake concentration (see memorandum from Steve Barrett, Blue Wave Strategies, to Betsy Davis, EPA, also see Table 4.2-2 in NPDES permit application, which includes pilot plant data showing a concentration factor of 1.25). As discussed above, the lowest dilution factor for the discharge, as calculated in the ASA model, is about 1.3. It appears that for copper, the concentration factor and the dilution factor essentially cancel each other, meaning that the net effect will be that the instream concentration of copper will not be increased outside of the mixing zone (see calculation below, using the highest measured copper concentration in the 2007 data).

Instream concentration = (Intake concentration x concentration factor)/ dilution factor

Instream concentration = (2.5 ug/l x 1.44)/ 1.3

Instream concentration = 2.8 ug/l

The draft permit establishes a monitoring requirement once per month for total copper based on the analysis conducted in the summer of 2007. This data will be reviewed to confirm the actual effluent concentrations do not exceed the effluent concentrations used in these calculations.

Total Residual Chlorine (TRC)

Periodically, liquid chlorine may be used as a cleaning solution for the membranes of the RO system. Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. Liquid chlorine or cleaning solutions that have liquid chlorine as an ingredient will be neutralized and dechlorinated prior to final discharge. The concentration of residual chlorine in the final effluent is expected to be minimal.

The draft permit includes limits for total residual chlorine based on the acute criteria for chlorine in marine water. The draft permit limits the maximum daily concentration of total residual chlorine to 13 ug/l.

Whole Effluent Toxicity

Under Section 301(b)(1) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards [314 CMR 4.05(5)(e)], include the following narrative statements and require that EPA criteria established pursuant to Section 304(a)(l) of the CWA be used as guidance for interpretation of the following narrative criteria:

> *"All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife. Where the State determines that a specific pollutant not otherwise listed in 314 CMR 4.00 could reasonably be expected to adversely affect existing or designated uses, the State shall use the recommended limit published by EPA pursuant to 33 U.S.C. 1251 §304(a) as the allowable receiving water concentrations for the affected waters unless a site-specific limit is established. Site specific limits, human health risk levels and permit limits will be established in accordance with 314 CMR 4.05(5)(e)(1)(2)(3)(4)."*

Based on the potential for toxicity resulting from the wastewater, and in accordance with EPA regulations and policy, the draft permit includes chronic and acute toxicity limitations and monitoring requirements. (See, e.g. Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 50FR30784 (July 25, 1985); see also EPA Technical Support Document for Water Quality-Based Toxics Control," (EPA/505/2-90-001, September 1991).

The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analysis; (2) bioavailability of pollutants after discharge is measured by toxicity testing including any synergistic effect of pollutants; The draft permit requires that the permittee conduct chronic and modified acute WET testing on Outfall 001 effluent four times per year. Each test must include the sea urchin *Arbacia punctulata*, and inland silverside *Menidia beryllina* in accordance with EPA Region I protocol to be found in permit Attachment A. Marine Acute Toxicity Test Procedure and Protocol.

As a condition of this permit, the testing requirements for the number of species in the toxicity test may be reduced by a certified letter from the EPA. This permit provision anticipates that the permittee may wish to request a reduction in the number of species used in WET testing. After 4 consecutive WET tests that demonstrate compliance with the permit limits for whole effluent toxicity the permittee may submit a written request to the EPA seeking a review of the toxicity test results. The EPA will review the test results and pertinent information to make a determination if a reduction in the number of species used in the tests should be reduced. The permittee is required to continue testing as specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions.

IV. Antidegradation

The State of Massachusetts, following its antidegradation review, has made a tentative determination that the effluent will not cause a significant lowering of water quality. The State has determined that all existing water uses will be fully protected and, the water quality necessary to protect the existing uses will be maintained and protected in the receiving water.

V. Essential Fish Habitat (EFH)

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act [16 U.S.C.§ 1801 et seq. (1998)], EPA is required to consult with National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat" [16 U.S.C.§ 1855(b)]. The Amendments broadly define "essential fish habitat" 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 or 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. Id.
Essential fish habitat is only designated for fish species for which Federal Fisheries Management Plans exist [16 U.S.C.§ 1855(b)(1)(A)]. A NOAA Fisheries website (See http://www.nero.noaa.gov/hcd/webintro.html) includes maps of designated EFH. In some cases, a narrative identifies rivers and other waterways that should be considered EFH due to present or historic use by federally managed species. The U.S. Department of Commerce approved EFH designations for New England on March 3, 1999.

Description of Proposed Action

The proposed project will withdraw approximately 4.92 million gallons per day (mgd) of raw water from the Palmer River to supply an average of 2.18 mgd of potable water to local communities.

Analysis of Effects

This permit regulates the discharge of pollutants associated with the plant's operation. Several pollutants may be present in the effluent and could adversely affect aquatic organisms if discharged at elevated concentrations. The salt waste that results from the reverse osmosis (RO) filtration process could form a high salinity plume relative to ambient conditions if discharged at high concentrations. This could possibly impede the movement of fish species and other aquatic organisms, or otherwise create intolerable habitat conditions. In addition to salt, other pollutants contained in the raw river water may remain in the brine concentrate, and represent potential sources of toxicity to aquatic organisms. Finally, chlorination of the potable water system would be routinely performed and could result in the discharge of chlorine compounds which can be toxic to aquatic organisms.

Salinity

Water will be withdrawn during tidal stages when the salinity is comparatively low. Conversely, the brine concentrate will be discharged during tidal stages of higher salinity. This permit requires that the salinity of the effluent be no greater than 32 ppt. This difference is within the normal range of salinity change in this section of the river and is not expected to adversely affect aquatic organisms, including EFH species.

Nonnconventional Pollutants

The permit requires that the effluent be monitored for the presence and concentration of certain pollutants that could cause toxicity to aquatic organisms. These include copper, lead, arsenic, and ammonia, among others. If effluent monitoring detects these pollutants at concentrations which reasonably could be expected to cause or contribute to a violation of state water quality standards, then EPA can modify this permit to include numeric limits for those pollutants.

Chlorination

There is a potential for this facility to discharge chlorine at levels that exceed state water quality criteria. Therefore, a chlorine numeric limit based on water quality criteria for marine water has been included in this permit.

In addition to the required monitoring of these specific pollutant parameters of concern, testing for chronic and acute whole effluent toxicity (WET) will be required quarterly to ensure the aggregate of known or unknown pollutants in the effluent are not toxic to aquatic organisms. EPA-Region 1 requires WET testing for facilities that discharge to surface waters. The test species include one invertebrate, the purple sea urchin (*Arbacia punctulata*) and one fish species, the inland silverside *(Menidia beryllina*).

Conclusion

The EPA believes that the effluent limitations, conditions, and monitoring requirements contained in the proposed permit are protective of state water quality standards and minimize impacts to aquatic organisms including EFH species, as well as their habitat. In addition to EPA's discharge permit requirements, design and operational requirements for the facility's raw water intake structure will be established in a state-issued Water Management Act (WMA) permit. It is EPA's understanding that these requirements will be designed to minimize entrainment and impingement impacts on early life stages of aquatic organisms associated with water withdrawal. A requirement to complete a comprehensive 12-month study of fishery resources in this section of Palmer River is also expected to be included in the WMA permit.

Mitigation

This NPDES permit should sufficiently minimize impacts to EFH from the discharge of pollutants such that additional mitigation is not warranted. If adverse impacts to EFH species or their habitats do occur either as a result of non-compliance, or from unanticipated effects from this activity, the permit may be modified. Additionally, if such an incident occurs, or if new information becomes available that changes the basis for our determination, then consultation with NMFS will be reinitiated.

VI. Endangered Species Act (ESA)

Under Section 7 of the ESA, federal agencies are required to ensure that any action they conduct, authorize, or fund is not likely to jeopardize the continued existence of any federally-listed species, or result in the adverse modification of critical habitat. Based on EPA's review of available data, there are no federally-listed species known to inhabit this area of the Palmer River. EPA has initiated informal consultation with both NMFS and the U.S. Fish and Wildlife Service to confirm the accuracy of this review.

VII. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

VIII. Public Comment Period, Public Hearing, and Procedures for Final Decision

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 the U.S. EPA, Massachusetts Office of Ecosystem Protection (CMP), 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever, the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the

draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

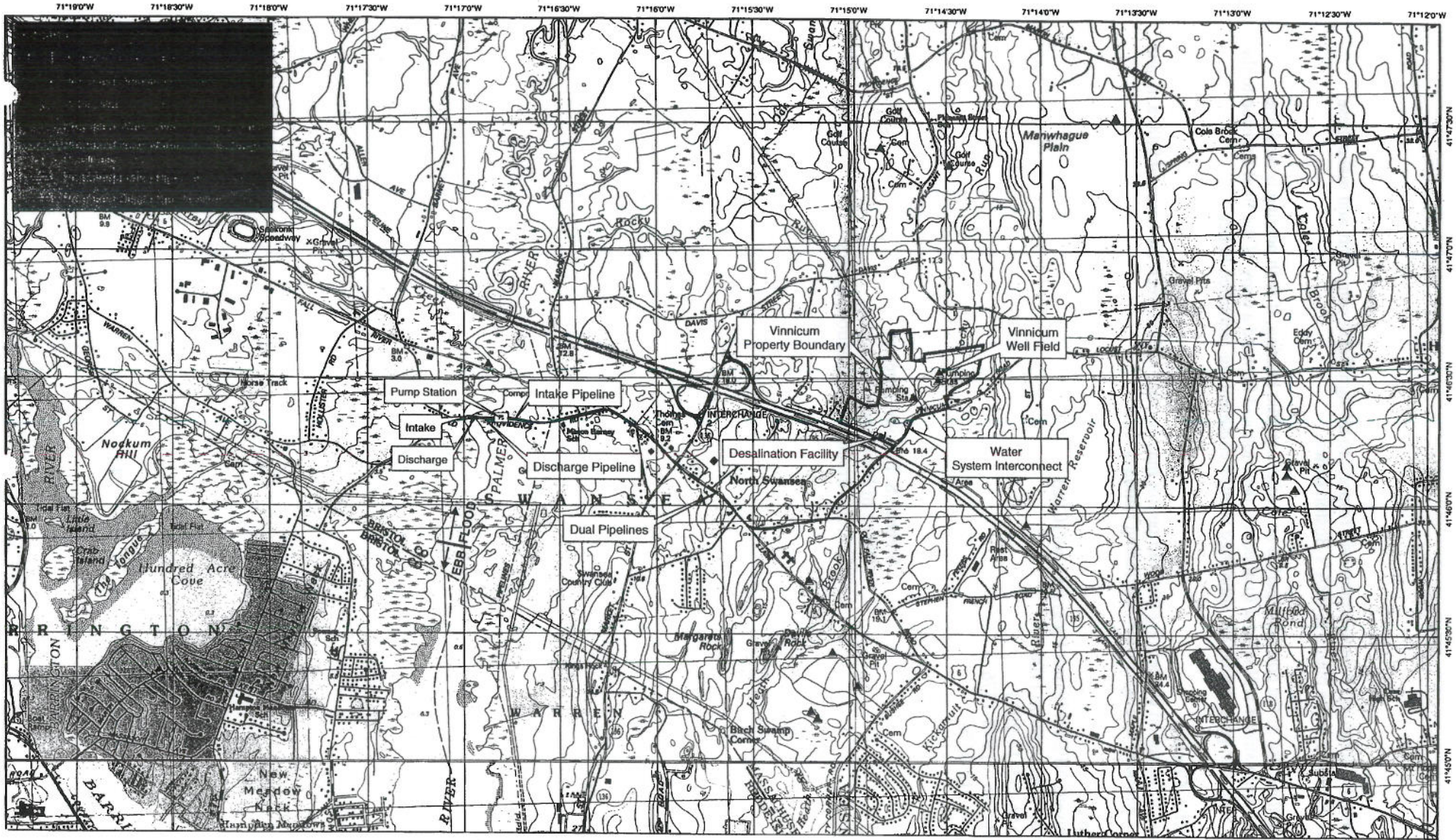
Following the close of the comment period and, after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

IX. EPA Contact

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:

Betsy Davis
Massachusetts NPDES Permit Program Unit (CPE)
1 Congress Street - Suite 1100
Boston, MA 02114-2023
Telephone: (617) 918-1576
FAX: (617) 918-0576

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



Scale 1:25,000

1,000 0 1,000 2,000 3,000 Feet

Topographic Map

Swansea Desalination Project
Swansea, Massachusetts

Basemap : 1985/87 USGS Quadrangles, MassGIS

Epsilon Associates Inc.

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10/4/06

Attachment B

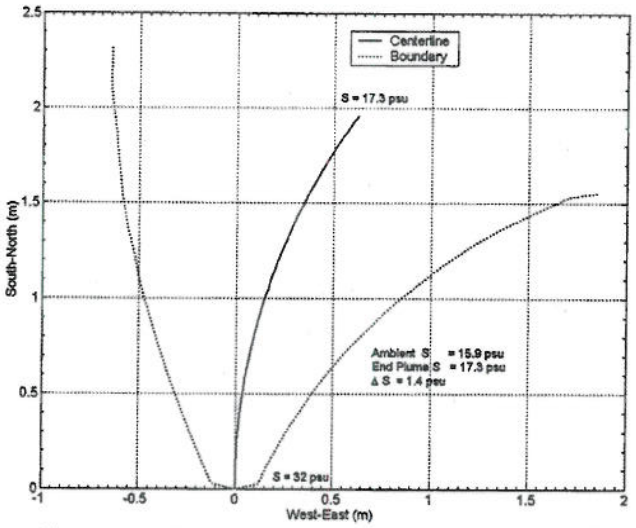

Figure 4.1-3 Plan View

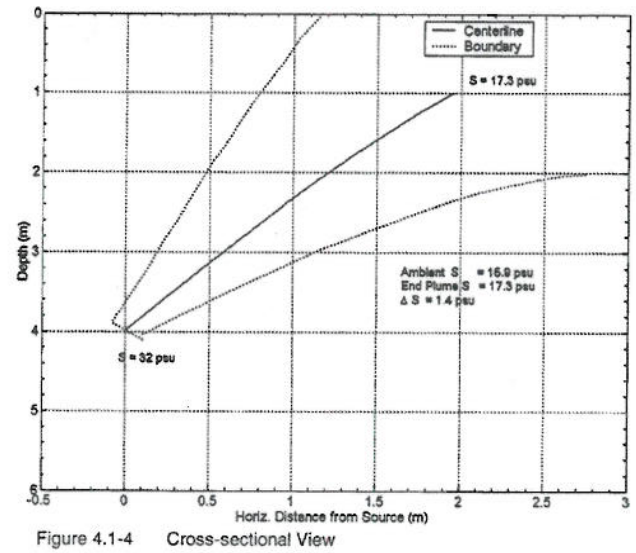

Figure 4.1-4 Cross-sectional View

Case 2 – Mean Summer
Swansea Desalination Project