

RESPONSE TO PUBLIC COMMENT

From August 4, 2006 to September 2, 2006, the United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) solicited Public Comments on a draft NPDES permit. The draft permit was developed pursuant to an application from Inima USA Corporation for issuance of the Taunton Desalination Facility NPDES permit to discharge wastewater to the Taunton River. After a review of the comments received, EPA has made a final decision to issue the permit authorizing the discharge. The following response to comment describes the changes and briefly describes and responds to the comments on the draft permit. A copy of the final permit may be obtained by writing or calling Betsy Davis, United States Environmental Protection Agency, 1 Congress Street, Suite 1100 (CMA), Boston, Massachusetts 02114-2023; Telephone (617) 918-1576.

Comments submitted by Robert Davis, Technical Advisor, Taunton River Watershed Alliance, on September 1, 2006.

Comment #1: It appears that the Permit limitations do not fully consider that the Taunton Municipal Light Plant (TMLP), NPDES Permit No.MA0002241 is just up river from the TRDP water withdrawal intake and discharge. In light of the fact that the Taunton River is subject to two significant water withdrawals and discharges in such close proximity, the TRWA respectfully suggests that the instant Permit needs to fully consider the total maximum daily loads (TMDL) for the Taunton River. By so doing, the Commonwealth will ensure that this Permit is most protective of river fauna and flora.

The Federal Clean Water Act, as amended, 33 U.S.C. §§ 1251 et seq., requires that the permit consider cumulative impact. Such considerations should include impacts outside of the immediate area being permitted. Cumulative impact analysis must be more than perfunctory. It must provide a useful analysis of the cumulative impacts of past, present, and future projects. Finally, cumulative impact analysis must be timely. It is not appropriate to defer consideration of cumulative impacts to a future date when meaningful consideration can be given now.

Response: We believe that we have adequately assessed the cumulative impact of discharges to this river segment, chiefly through a consideration of the background water quality sampling provided by Inima. A formal TMDL is not required before a permit for a new discharge can be issued, unless the receiving water is impaired for a pollutant to be discharged by the new discharger.

Water quality problems noted in the Inima water quality sampling were dissolved oxygen and copper, which are addressed in the Inima permit. By restricting the discharge of these pollutants to water quality criteria, the permit ensures that this discharge will not cause or contribute to violations of water quality standards. In preparing this response we reviewed the record for other possible water quality problems and noted that this segment of the River is listed on the Massachusetts Integrated Lists of Waters (State's 303(d) list) as well as the draft Integrated Lists of Waters as impaired for pathogens. Neither Inima or Taunton Municipal Light discharges contain pathogens, except to the extent that they are in the intake water. We do not expect the concentration of bacteria in Inima's reject water to

be higher than levels in the River. Once the raw water passes through the ultrafiltration membranes it is chlorinated thus inactivating bacteria and/or pathogens in the water. Prior to the treated water entering the reverse osmosis system it is dechlorinated and this should minimize any chlorine residual in the brine concentrate. Bacteria levels in the blended brine are expected to be lower than instream levels at the point of discharge.

We would also like to clarify that the Taunton Municipal Light Facility does not cause an appreciable net change in receiving water flow quantity. The majority of flow withdrawn from the River is for once- through cooling water which is returned to the River at the same rate it is withdrawn.

The permit requirement to gather further receiving water data is to verify the expected water quality impacts. We do not expect that water quality conditions in this segment of the River will worsen as a result of this discharge but, we are prepared to reopen and modify the permit if new information shows that the discharge is causing or contributing to a violation of water quality standards.

Comment #2: We are concerned that ambient dissolved oxygen (DO) levels may be depressed given the high volume of heated water discharged upstream from the TMLP compared to Creek flow and even main stem flow in the Taunton River in the summer. Data submitted with the TRDP permit application show the DO level in the Taunton River at the point of discharge on occasion is less than 5.0 mg/l. The draft permit stipulates that the DO level in the final effluent will be equivalent to or greater than the DO level in the river. Consequently consideration should be given to implementing measures (e.g. aeration) to ensure that the DO level in the final affluent is greater than or equal to 5.0 mg/l.

Response: As discussed in the fact sheet and pointed out by the commenter, baseline dissolved oxygen data submitted by the permittee showed that at times the DO level in this segment of the River is below the water quality criteria of 5.0 mg/l. It is not believed that the Taunton Municipal Light discharge causes or contributes to this exceedance; the recently issued permit for this facility does not include water quality based limits for dissolved oxygen. In order to ensure that the discharge does not cause or contribute to this violation, the permit requires that the discharge DO exceed 5 mg/l unless the background concentration is less. Under those conditions the discharge concentration must meet or exceed the background concentration. The condition therefore ensures that the discharge will not cause or contribute to a violation of standard.

Comment #3: We understand that the only wastewater discharged authorized by the permit is the discharge of brine from the RO system, that the salinity of the discharge be within +/-2ppt of the average ambient salinity levels during each discharge cycle, and that salinity levels in this section of the Taunton River fluctuate between 1 ppt and 9 ppt. Since the TRDP will operate in the reverse osmosis (RO) mode only during July – November when the salinity of the intake water exceeds drinking water standards to remove salt molecules from the intake water we are concerned about the sensitivity of the two indicator species test species used in the toxicity testing, the inland silverside (*Menidia beryllina*) and the sea urchin (*Aracacia punctulata*) to represent actual habitat conditions for aquatic organisms. Given that the Taunton River is brackish at times only during July-

November the test fish species proposed (i.e. inland silverside) is appropriate rather than using the Atlantic silverside (*Menidia menidia*) that is found in higher salinity environments. Given that the Taunton River is brackish with significantly lower salinities compared to typical saltwater environments we question the use of the sea urchin as the second indicator species. Are the salinity levels in the toxicity tests for both species going to be adjusted in the toxicity laboratory to match the ambient salinity levels in the actual water to be tested and/or are the test organisms going to be acclimated to the ambient salinity levels of the actual toxicity test samples collected? Consequently consideration should be given to the selection of a second test indicator species that is more representative of this reach of the Taunton River rather than using a marine species such as the sea urchin.

Response: EPA's Whole Effluent Toxicity (WET) test protocol requires that the salinity level in the sample be adjusted so that salinity is not a source of toxicity.

The indicator species in the draft permit, *Menidia beryllina* (inland silverside) and the *Arbacia punctulata* (sea urchin, *Arbacia punctulata*) can be used in the required toxicity tests because the salinity levels in the sample will be adjusted to levels that are appropriate for each species. We believe the salinity requirements in the permit are protective of the aquatic community in this segment of the River and are not relying on the results from the WET tests as a measure of toxicity due to salinity.

Comments submitted by Cindy Delpapa, Stream Ecologist, Massachusetts Riverways Program, on September 1, 2006.

Comment #4 The proposed discharge of brine produced during the desalination process into the Taunton River at the head of tide represents not only a new point discharge but a new type of industrial effluent for this state. The Inima facility will be the first in Massachusetts to generate potable water for sale using brackish water. We appreciate the care and research efforts exerted while preparing this draft permit and the thoroughness of the packet materials. The information provided and most of the permit requirements and limitations reflect the uniqueness of this situation and the concern for the receiving water. Still, there are many unknowns associated with this groundbreaking endeavor, and we would like to advocate for an abbreviated renewal schedule for this permit- perhaps the first permit expiring after two or three years instead of the customary five years. Under this accelerated review schedule, the performance of the plant and the accuracy of the predictions derived from modeling concerning the dispersion, water quality of the effluent and receiving water impacts will be available for assessment by regulators and interested parties. Since this is both a new discharge and what may prove to be the first of additional desalination facilities, the performance and impacts to the receiving waters deserve increased review and scrutiny to assure the limitations, monitoring and requirements of the permit are the most appropriate possible. We are especially concerned with the possible impacts of scour, sediment movement and unintended disruptions to aquatic organisms, (passage, physiology, feeding, forage materials, etc).

Response: The permittee has worked closely with local, state and, federal agencies to meet the regulatory requirements needed to operate this facility. The regulatory

review process has been thorough and taken several years to issue the final permit. Rather than reducing the duration of the permit, the Agencies chose to include a reopener clause that can be used at anytime during the five year the permit is in effect. See Part 1.C. Permit Reopener, page 7 of the final permit

The reopener clause is defined in Part II. Section A of the General Requirements. It gives the Regional Administrator the right to make revisions to the permit to establish appropriate effluent limitations, schedule of compliance, or other provisions which may be authorized under the CWA.

As mentioned in your comment, other Towns in the State are considering marine water as a viable source of drinking water. Because Inima is the first facility to use this technology in Massachusetts, the Agencies will continue to conduct a rigorous and comprehensive review of data generated on the concentrated and blended brine effluent to determine its impact on the receiving water.

The MassDEP and EPA have researched the impact of concentrated brine on surface water from desalination facilities that are currently operating in other areas of the country. We found that the parameter of concern was typically salinity. We believe the effluent levels for salinity in the final permit are protective of the aquatic community. Data provided from a pilot study was used to predict the quality of the discharge and the results indicate that the blended brine discharge will meet water quality criteria.

Comment #5: The schematic for the plant's operation indicates the blended brine discharge will be 5 mgd, (3.33 mgd of dilution water mixed with 1.66 mgd of brine). The draft permit allows for 5.4 mgd monthly average discharge- not 5.0 mgd. Since this is a blended discharge that requires a careful balance of brine with lower salinity dilution water we feel the permit limit should reflect the design flows indicated by the permittee and reviewed during the MEPA review and State and local permitting process. The Fact Sheet does not provide insight into why a 5.4 mgd average flow is in the draft permit when the facility is designed for only 5.0 mgd. We hope the significantly larger permitted volume will be reconsidered.

Response: In a letter dated July 28, 2004, the permittee explained that the brine discharge will fluctuate based on drinking water production with the maximum plant production of drinking water at 5 million gallons per day with 2.7 MG brine production per intake/discharge cycle. The discharge cycles coincide with the tide cycles and each complete intake/discharge cycle is expected to require 13 hours.

Under worse case conditions of maximum production each day, and raw water blending each day, the average daily blended brine discharge may be slightly greater than 5 mgd. This situation will only occur when the maximum finished water production is continuously maintained. Therefore the flow limit in the final permit was adjusted to meet the maximum plant production.

Comment #6: Several of the permit parameters require composite sampling. The draft permit provides guidance on how to collect flow proportional composite samples in footnote # 4. The protocol requires a sample be taken every hour. Since the discharge will be intermittent and lasting only 100 minutes a composite sample

would consist of a single sample per discharge event. We would advocate for flow proportional composite sampling be adjusted for this facility to require sampling every 30 minutes. We would also advocate for not compositing the effluent salinity samples but instead take a sample every 15 to 30 minutes during the discharge or at least reporting the salinity of the individual aliquots in addition to the composite sample. Both of these recommendations are made with the untested nature of this discharge in mind. This additional information, at least initially, will provide a more thorough understanding of the variability of the effluent and the accuracy of the predictive modeling.

Response: The Agencies believe one sample per discharge event is sufficient given that the effluent will be essentially be the same quality as the River water prior to withdrawal. The data from the pilot tests does not indicate there will be tremendous flow variability. If data from the monitoring plan or the monthly discharge monitoring reports indicate a need for additional monitoring the Agencies will reopen the permit.

The salinity level of the effluent will be measured continuously during each discharge cycle as stated in the draft permit. Footnote 7 of the final permit requires that the permittee report the average ambient salinity and effluent salinity concentrations on its discharge monitoring report, and record the number of times the effluent limit is in exceedance of the permit limit.

The permittee is required to attach a summary of the average ambient salinity levels for each discharge cycle and the effluent salinity data collected during the month to the discharge monitoring report form.

Comment #7: The reasoning mentioned above supports an additional request that consideration be given to expanding the reporting requirements related to flow. We would like to have the maximum velocity of the discharge reported as well as the length of time the discharge lasts during each intermittent discharge event. This information will allow a better understanding of the flows and the potential to impact the receiving waters and provide background information pertinent to understanding the effluent water quality data collected.

Response: The discharge velocity is calculated at 0.19 ft/sec at the mouth of the intake structure as noted in attachment 4 of the fact sheet. It is based on the cross-sectional area of the channel (143 sf) and the blended brine discharge flow (55.9 cfs) when the salinity is approximately the same as the ambient river water.

The design of the original discharge location was changed at the request of the Division of Marine Fisheries from the side wall of the each side of the intake channel to the head of the intake channel. The change was made to minimize impinged organisms on the river side of the intake channel. This change has the added benefit of dissipating the velocity of the discharge because of the large cross-sectional area of the intake channel.

Since there appears to be very little benefit to measuring the maximum velocity and the time the effluent is discharged, these requirements have not been included in the final permit.

Comment #8: One of our biggest concerns regarding this discharge is the potential for physical disruption to the receiving water associated with the strong velocity of the discharge, 2.7 MG discharge in only 1.5 hours, coupled with significant intake of receiving waters pre and post discharge events. There are oyster beds in the vicinity of the facility, significant fishery resources, and valuable benthic habitat in the Taunton river. The Fact Sheet and mixing zone analysis did not provide a great deal of information about depth of water during the discharge event, the mixing zone's approximate spatial area, if there might be physical velocity barriers to migration, erosional impacts to the benthos or banks of the river, and disruption in the availability and transport of food sources/organic matter. While the salinity changes are important considerations associated with this discharge, we feel the impacts possible from the significant intake and discharge of water is also a grave concern for the health of the receiving water and its ecosystem.

Response: The facility was designed so that the water withdrawal and the wastewater discharge will occur at the intake structure. However, the intake and discharge operations will occur independently of each other. Water withdrawals and the blended brine discharge are based on salinity levels of the tidal cycle.

The velocity of the discharge (0.19 ft/sec) and the impact to aquatic life and benthic habitat was a primary concern of the regulatory agencies. To address these concerns, the permittee changed the original design of the discharge location from the mouth of the intake where the effluent would run parallel to the edge of the shoreline to the headwall of the intake channel.

Regarding shell fish beds, the Division of Marine Fisheries (DMF) conducted a physical survey in the River adjacent to the proposed intake of the facility on August 26, 2005 to determine the presence of shellfish resources in the River and to evaluate the nature of the substrate. The survey coincided with low slack tide. The DMF found no shellfish or any sign of shellfish such as shell shack in any sample or in the vicinity of the survey.

DMF sent a letter to the Dighton Conservation Commission dated October 27, 2005 stating that, "while the site is listed as part of a larger State Designated Growing Area for the purpose of sanitary classification of the water related to shellfish safety, it does not mean that the shellfish are part of the growing area." A copy of the letter is in the NPDES permit file.