

**RECOMMENDED OUTLINE FOR REQUESTS FOR  
ALTERNATIVE MIXING AREAS  
WHERE ACUTE AQUATIC LIFE CRITERIA MAY BE  
EXCEEDED**

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**Delaware River Basin Commission**

DELAWARE • NEW JERSEY  
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[WWW.DRBC.NET](http://WWW.DRBC.NET)

**DELAWARE RIVER BASIN COMMISSION  
WEST TRENTON, NEW JERSEY**

**April 2007**

## **1. Executive Summary**

This section explains why an alternative mixing area is needed (e.g., to improve mixing over current conditions, to accommodate projected changes in discharge mass loading, etc.). This section should also explain what steps were taken to avoid the need for an alternative mixing zone.

## **2. Description of Existing Discharge Structure and Mixing Zone Information**

This section provides a description of the existing discharge, the size of the mixing zone under various operating conditions (discharge flow, production levels [industry only] temperature, and density), dilution factors at the dimensions specified in Section 4.20.5A.1.a. of the Commission's Water Quality Regulations, and the degree to which the discharge plume hugs the shore and/or bottom.

## **3. Description of Aquatic Resources in the Vicinity of the Discharge**

This section should provide a brief summary of the aquatic resources at risk that may interact with the existing and proposed discharge. The summary should include:

- Resident and migratory fish populations
- Species that inhabit benthic habitats in the vicinity of the discharge including infauna and epibenthic species.
- Resident and transient phytoplankton and zooplankton species that may interact on a regular or intermittent basis.
- Federally listed endangered species
- Species whose populations are recovering (e.g., striped bass, Atlantic Sturgeon).
- A description of the life stages of the listed species that may interact on a regular or intermittent basis.

## **4. Description of Proposed Discharge Structure and Resulting Mixing Zone**

This section provides a detailed description of the proposed modifications to the discharge structure (if any), the size of the mixing zone under various operating conditions (discharge flow, production levels [industry only] temperature, and density), and the projected impact on the proposed zone on free-swimming, benthic and drifting life stages of resident and migratory species described in Section 3.

This section shall also contain a detailed schedule for the construction of or modification to the discharge structure. In case of any structural changes are involved, review and approval of the changes may be required under Section 3.8 of the Delaware River Basin

Compact and Article 3 of the Commission's Rules of Practice and Procedure (<http://www.nj.gov/drbc/about/regulations>).

## **5. Rationale and Supporting Documentation for Requested Alternative Mixing Area**

This section shall provide the rationale for the requested alternative mixing area and describe the scientific data and analysis that support the request. A description of the model (and version) used and the associated input parameters shall be provided along with detailed dilution isopleths for the requested mixing zone under various operating conditions and tidal stages. A graphical depiction of plan and side views of plume profile must be provided. Residence time within the requested mixing zone shall also be provided under various operating conditions and tidal stages. The rationale must address the minimum one (1) hour, average dilution that is expected to occur during the tidal cycle.

Model input and output files for each of the operating conditions and tidal stages shall be provided as an appendix and in electronic file format.

## **6. Proposed Monitoring Program**

An alternative mixing zone carries the added burden of verifying that the discharge is not adversely impacting water quality. This is done through site-specific monitoring. As such, this section shall describe the proposed monitoring program that will be used to document that the discharge complies with the proposed alternative mixing zone. The monitoring program must allow for and include the various operating conditions (e.g., discharge flow, temperature or other discharge characteristics) and tidal conditions that will influence the size of the mixing zone.

The proposed monitoring program shall be subject to the approval of the Commission's Executive Director and will be incorporated into the respective docket for the facility.

## **7. References**

(If Any)

## **8. Appendices**