UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

DEC 29 1992

Reply to
Attn of: WD-139

MEMORANDUM

SUBJECT: Recommendation for TMDL Approval

Duwamish Waterway and River - south of line bearing 254 True from the NW corner of Berth 3, Terminal 37 to River Mile (RM) 11.0 - Waterbody Segment No. WA-09-1010

Green River - RM 11.0 to RM 42.3 - Waterbody Segment No. WA-09-1020

TMDL Parameter: Ammonia-Nitrogen

FROM: Amber Wong, Standards to Permits Specialist
Water Quality Section

TO: File

- TMDL submitted March 9, 1992
- TMDL package completed December 1, 1992
  - EPA Approval Checklist
  - Document 1: Transmittal letter
  - Document 2: TMDL document
  - Document 3: Bernhardt, John C. 1981. "Effects of Renton Wastewater Treatment Plant Effluent on Water Quality of the Lower Green/Duwamish River", Part I of the Lower Green/ Duwamish River reports, DOE Report no. 81-2, Washington State Department of Ecology, Olympia, WA.

    Yake, William E. 1981. "The Impact of Effluent from the Renton Wastewater Treatment Plant on the Dissolved Oxygen Regimen of the Lower Green/Duwamish River", Part II of the Lower Green/ Duwamish River reports, DOE Report no. 81-2, Washington State Department of Ecology, Olympia, WA.

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- Documents 4a, 4b, 4c: Implementation documentation, for Municipality of Metropolitan Seattle, Renton Sewage Treatment Plant (Metro-Renton) NPDES permit:

  Document 4a: Public notice documentation for Metro-Renton NPDES permit

  Document 4b: NPDES Permit No. WA-002958-1, Municipality of Metropolitan Seattle, Renton Sewage Treatment Plant, issued June 12, 1987, expired June 10, 1992, revised June 29, 1990.

  Document 4c: Fact Sheet for Metro-Renton

- Document 5: Monitoring data from Green/Duwamish used in last §305(b) assessment for water quality limited determinations

Transmittal letter - Complete (see Document 1)

- states that TMDL has been established in accordance with Section 303(d)(1) of the Clean Water Act.

- **Review note: meets requirements**

Problem Assessment - Complete (see Document 3)

- In 1981, Metro-Renton was the major point source discharger to the Green River, upstream of the Duwamish River. During the critical late summer and fall periods, the treatment plant flow accounted for a substantial portion of the flow in the river.

- Documented stream impacts in the Green/Duwamish system from the Metro-Renton discharge included: increased temperature (which, while not in violation of the temperature water quality standards, contributed to the toxicity of the ammonia by increasing the unionized fraction); low dissolved oxygen (water quality standards violations for both concentration and saturation); toxic levels of total residual chlorine; and increased nutrients (primarily with regard to ammonia toxicity, although nutrient enrichment was also documented).

- **Review notes: Problem assessment accurately gives background information, identifies exceedence of water quality standard for dissolved oxygen and highlights concerns over ammonia toxicity.**

TMDL document - Complete (see Document 2)

- To protect water quality, the decision was made to remove the point source (Metro-Renton) from the Green River, and pump the effluent to Puget Sound. On March 15, 1982, Metro-Renton was issued an NPDES permit that required diverting its effluent to Puget Sound by July 1, 1986. A subsequent order changed this completion date to January 2, 1987.

- States that although the load capacity for the TMDL parameter has not yet been quantified, the action taken to protect water quality, removal of the point source, has resulted in a wasteload allocation of zero (for routine discharge) for the Metro-Renton plant. This represents an approximate reduction of 4804 lb/day of ammonia-nitrogen to the Green/Duwamish River system.

  This reduction is based on the allowable effluent limits for the Metro-Renton plant in case of emergency or maintenance, when discharge to the Green River would be authorized. Authorized discharges for maintenance are restricted to high flow periods, and are intended to last only a few hours.

- **Review note: Clearly identifies the wasteload allocation for Metro-Renton to be zero, except during emergencies and planned short-term maintenance. Although load capacity has not been identified, the removal of Metro-Renton's discharge from the river is expected to significantly improve water quality. Available data show that both segments now meet water quality standards for ammonia. References the supporting technical document. References the follow-up monitoring plan, which is to be implemented by the Municipality of Metropolitan Seattle Ambient Monitoring Program.**

<u>Supporting Studies</u> - Complete (see Document 3)

- Intensive water quality surveys were used in conjunction with water quality modeling to implicate the Metro-Renton treatment plant as a significant contributor to water quality problems in the Green/Duwamish system. The system is complicated by tidal influence on the effluent transport. Low dissolved oxygen levels were linked to the Metro-Renton discharge. The modeling results suggested that, with projected growth trends, further degradation of the lower Green/Duwamish River would occur if the treatment plant effluent remained in the river.

- **Review notes: The referenced studies document water quality problems with dissolved oxygen, ammonia**

toxicity, nutrients, and chlorine resulting from the Metro-Renton discharge to the Green River. Although the option of removing the effluent from the river is not explicitly discussed, there is no question that this action improves water quality in this reach.

Public participation - Complete (see Documents 2 and 4a)

- Public notice of the Metro-Renton NPDES permit
- Public meetings associated with removing the discharge from the Green/Duwamish system - SEPA requirements
- **Review notes: Adequate public participation.**

Enforceability - Complete (see Document 4b)

- NPDES Permit No. WA-002958-1, Municipality of Metropolitan Seattle, Renton Sewage Treatment Plant
- **Review notes: Valid permit and supporting documentation recognizes that effluent is currently being discharged to Puget Sound. Discharge to Green River will occur only during emergencies or for short-term routine maintenance. Planned discharges associated with maintenance activities will be restricted to high flow periods.**

TMDL effectiveness plan - Complete (see Documents 2 and 4b)

- The Municipality of Metropolitan Seattle Ambient Monitoring Program conducts biweekly monitoring of dissolved oxygen and BOD (5-day) at three stations on the Duwamish River and Waterway. During the infrequent events when the Metro-Renton Plant discharges to the Green River, ambient monitoring is conducted for ammonia, total suspended solids, and heavy metals both upstream and 300 feet downstream of the diffuser.
- **Review notes: Adequate monitoring and followup to assess compliance with the TMDL.**

Additional Information - (see Document 5)

- Removal of the Metro-Renton plant has resulted in some water quality improvement. Recent data have indicated that the Green River segment meets water quality standards for ammonia-nitrogen, cadmium, copper, nickel, and zinc. Data for the Duwamish segment indicate that the Duwamish now meets ammonia standards. However, both segments are still water quality limited for fecal coliform, dissolved oxygen, lead, mercury,

and temperature (Appendix E of the state's 1992 §305(b) report).

- Other ongoing pollution control efforts in this area include Urban Bay Action Team activities, stormwater permitting, the Green/Duwamish Nonpoint Action Plan developed by King County, Metro, and Ecology (January 28, 1991), a Coastal America project, and Superfund activities on Harbor Island.

Recommendation, approve TMDL.

ALW, 12/29/92

TOTAL MAXIMUM DAILY LOAD

Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Developed pursuant to 40 CFR 130.7 and the Federal Clean Water Act

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WATERBODY SEGMENT: WA-09-1010

Duwamish Waterway and River

(south of line bearing 254 True from the NW corner of Berth 3, Terminal 37 to RM 11.0)

RECEIVING SYSTEM INFORMATION:

Basin: Duwamish-Green
County: King

TMDL PARAMETER:

Ammonia-N

APPLICABLE RULES:

WAC 173-201-047
WAC 173-201-080(36)

SOURCES COVERED BY THIS TMDL:

Allocation Type	Source Description
WLA	Renton WWTP
WLA	All Other Dischargers
LA	Local Drainage

TMDL:

No loading capacity for ammonia-N has been determined for the Duwamish Waterway and River. The WLA for ammonia-N from the Renton WWTP has been set at 4804 pounds per day, for emergency conditions and short-term maintenance. Otherwise, the Renton WWTP WLA is 0 pounds per day.

Technical Documents:

Brenhardt, J.C. and W.E. Yake. 1981. The Impact of Renton Wastewater Treatment Plant on Water Quality of the Lower Green/Duwamish River. Washington State Department of Ecology Report 81-2, Olympia WA.

Public Participation:

The relocation of the Renton WWTP discharge to the Puget Sound involved several public meetings to fulfil the SEPA requirements. The current NPDES permit and WLA of the Renton WWTP was subject to the public notice and comment period required of permit applications.

Implementation:

The Renton WWTP discharge has been removed from the Duwamish River due to observed violations of water quality standards. The current WLA allows for discharge only under emergency conditions or short-term maintenance.

Monitoring:

The Municipality of Metropolitan Seattle Ambient Monitoring Program conducts biweekly monitoring of ammonia-N at three stations on the Duwamish River and Waterway.