Metro Wastewater Management / Summary Draft Environmental Impact Statement

U.S. Environmental Protection Agency Region 10

SUMMARY DRAFT EIS FOR METRO WASTEWATER MANAGEMENT STUDY

The U.S. Environmental Protection Agency (EPA) has given the Municipality of Metropolitan Seattle (Metro) a grant to plan Wastewater Treatment improvements for a 620 square mile area of the Lake Washington/Green River Basin (see Figure 1).

The plan defines a preferred long-term Wastewater Management program for the area. Metro will apply to EPA for additional grants to construct the facilities.

Federal Law requires preparation of an Environmental Impact Statement (EIS) to inform the public about the potential impacts of the program.

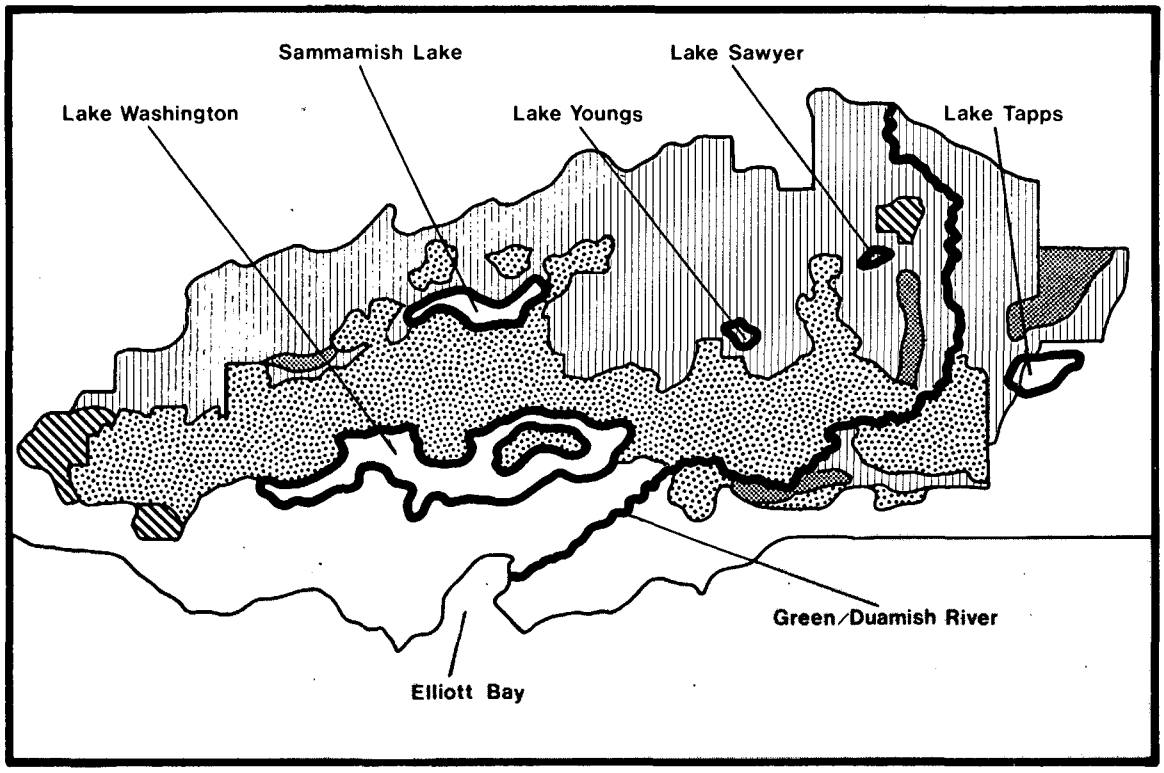
This document is a summary of the full 250 page EIS prepared for the Draft Wastewater Management Plan.

WHY THE NEED FOR A MANAGEMENT PLAN?

☐ The Renton Wastewater Treatment Plant has reached its capacity and cannot accommodate additional flow. Based on population forecasts by the Puget Sound Council of Governments (PSCOG), and service area enlargement, Metro will have to treat 101 million gallons per day (MGD) of wastewater by the year 2000, compared to present flows of 40 MGD.

☐ The Renton plant's current level of treatment must be improved to prevent increased future flows from degrading water quality in the Green/Duwamish River, or else the plant's effluent must be discharged

FIGURE 1. SERVICE AREAS



SEWER SERVICE AREA

SEWER SERVICE AREA (NON-METRO)

NON-SEWER AREA (LONG-TERM LAND USE CERTAIN)

NON-SEWER AREA (LONG-TERM LAND USE UNCERTAIN)

directly to Puget Sound.

☐ Currently, many of the homes in the study area use septic systems, which have the potential to adversely affect water quality. Much new development will continue to use septic systems.

WHAT ARE THE ALTERNATIVES?

Metro initially developed 15 long-term alternatives and selected four final alternatives for further consideration.

☐ ALTERNATIVE A-1—Centralized processing at Renton plant with nitrification (ammonia removal) and continued discharge to the Green/Duwamish River.

☐ ALTERNATIVE A-3—Centralized processing at the Renton plant with discharge of secondary effluent to Puget Sound off the Point Pulley area.

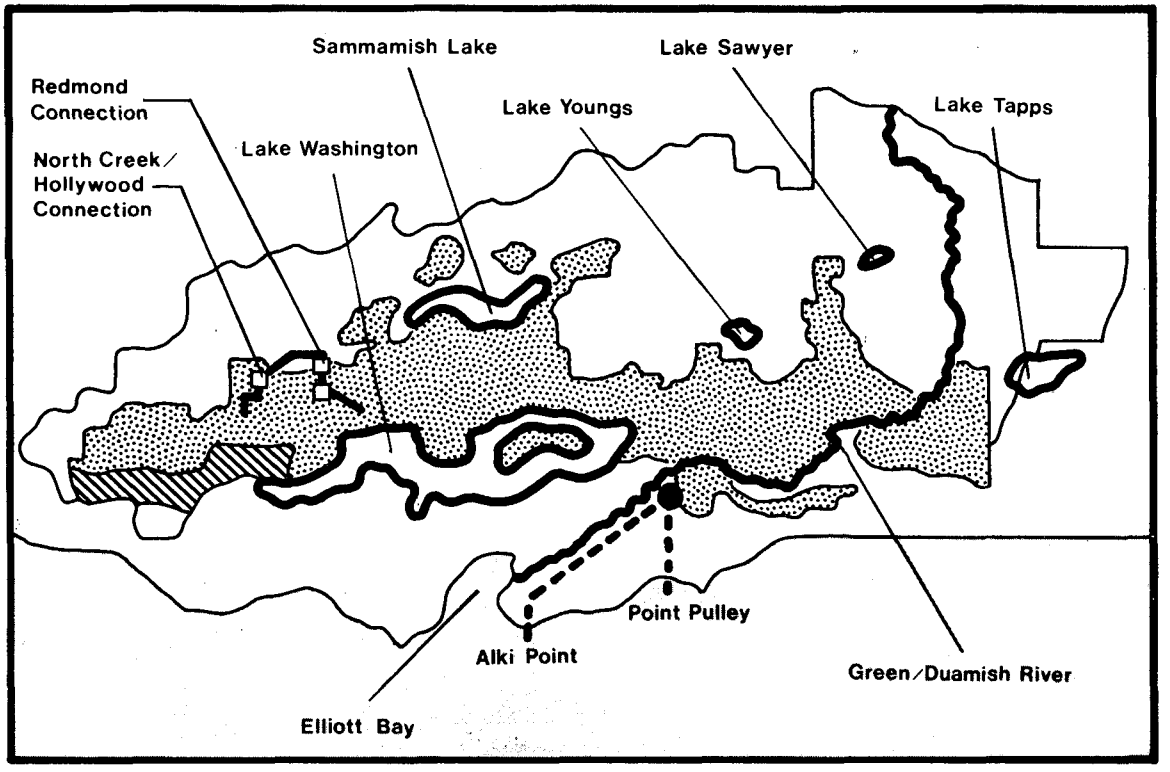
☐ ALTERNATIVE A-5—Centralized processing at the Renton plant with discharge of secondary effluent to Puget Sound off Alki Point.

☐ ALTERNATIVE B-1—Centralized processing at the Renton plant with nitrification and construction of a new secondary treatment plant in the Kenmore area which would discharge to Puget Sound at Richmond Beach.

Following further evaluation, Metro staff selected Alternative A-3 or A-5 as the preferred long-term wastewater management program (these alternatives differ only in the Puget Sound outfall location).

Components of the preferred program (See Figure 2) include: collection system changes (construction of the Redmond connection and North Creek/Hollywood connection to convey wastewater from the north part of the study area, which is now treated at West Point, to the Renton plant); expansion of the Renton treatment plant to 99 MGD capacity; construction of a tunnel and outfall to convey effluent to Puget Sound; and installation of solids processing facilities at the Renton plant (Renton sludge is currently discharged via a force main to Metro's West Point plant). Construction of the preferred program projects would be phased; Phase 1 construction would occur between 1981 and 1985, and Phase 2 construction would occur between 1986 and 1993.

FIGURE 2. ALTERNATIVES A-3 & A-5 (PREFERRED PROGRAM)



WEST POINT SERVICE AREA

RENTON 2000 SERVICE AREA

TREATMENT PLANT

EFFLUENT OUTFALL

SERVICE AREA TRANSFER FACILITIES

PUMP STATION

WHAT ARE THE IMPACTS OF LONG-TERM WASTEWATER ALTERNATIVES?

The Draft EIS fully evaluates all the possible impacts of the long-term Wastewater Management Alternatives including:

- [ ] Cost
- [ ] Construction impacts
- [ ] Water quality and biological impacts
- [ ] Growth impacts
- [ ] Resource use impacts
- [ ] Recreation impacts

Cost vs. water quality benefits will be a main basis for selecting a long-term alternative.

Table 1 lists the costs of each of the alternatives.

Alternative A-1 (nitrification) has the least capital (construction) cost. Increases in the Metro monthly charge assuming 75% funding from EPA, would be $2.50 per month. These increases would be used to pay for the local share of the construction costs and ongoing operation and maintenance costs. If EPA funding were less than 75% local costs would be expected to be greater.

The preferred program with Point Pulley discharge (A-3) has the next lowest capital costs. More of the costs of this alternative are grant eligible, however, so that the increase in monthly charge would be only $2.10 per month.

Both the Alki Point discharge option (A-5), and the Kenmore treatment plant option (B-1), would be considerably more expensive and for both the increase in monthly charge would be $2.60.

TABLE 1. COMPARISONS OF COSTS OF ALTERNATIVES

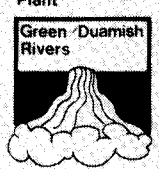
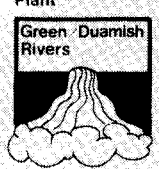
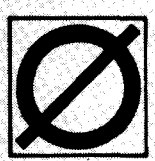
	Point Pulley Alki Point PREFERRED PROGRAM	Renton Plant  ALTERNATIVE A-1	Kenmore Plant  ALTERNATIVE B-1	 NO PROJECT
Capital cost ($ million)	310 (A-3) 410 (A-5)	262	323	—
Annual operation and maintenance costs ($ million)	8.9 (A-3) 9.3 (A-5)	12.6	11.4	Slight increase
Present worth cost ($ million)	279 (A-3) 357 (A-5)	267	329	—
Increase in Metro monthly charge, assuming 75% grant funding	2.10 (A-3) 2.60 (A-5)	2.50	2.60	Slight increase
Assuming 50% grant funding	3.20 (A-3) 4.00 (A-5)	3.50	3.70	Slight increase
Assuming 0% grant funding	5.50 (A-3) 7.00 (A-5)	5.40	6.10	Slight increase

TABLE 2. COMPARISON OF MAJOR WATER QUALITY IMPACTS OF ALTERNATIVES

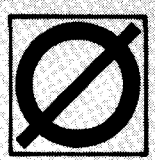
TYPE OF IMPACT	Long-term impacts on Green/Duwamish River	Long-term impacts on Puget Sound
PREFERRED PROGRAM Point Pulley Alki Point 	Future water quality problems and risks to salmon migration are avoided by diversion of effluent to Puget Sound.	No major impacts expected. Localized increases in turbidity, ammonia, and heavy metals could occur near outfall. Alki Point (A-5) discharge preferred to Point Pulley (A-3) discharge due to shorter effluent residence time in Puget Sound.
ALTERNATIVE A-1 Renton Plant 	Ammonia and dissolved oxygen problems would be solved through nitrification. Temperature standards, DOE effluent dilution guidelines, and permit limits for certain heavy metals would be exceeded. Fish migration could be adversely affected.	No major impacts expected from Green/Duwamish River discharge, which eventually enters Puget Sound.
ALTERNATIVE B-1 Kenmore Plant 		No major impacts expected. Localized increases in turbidity, ammonia, and heavy metals could occur near outfall.
NO PROJECT 	Major ammonia and dissolved oxygen problems would occur, in addition to those impacts shown for A-1 and B-1. River water quality could become toxic to salmon.	Impacts of Green/Duwamish River discharge when it would enter Puget Sound are unknown.

Table 2 summarizes the water quality impacts of each of the alternatives.

If "No Project" were implemented the long-term impacts on Green/Duwamish River water quality would be adverse. Specifically, quality of the river water could become toxic to existing fisheries. The runs of steelhead, cutthroat trout, and salmon in the Green/Duwamish River are among the largest in the Puget Sound and are valued at about $5 million annually. The river below the Renton plant is a migration route for juvenile salmon and trout en route to the ocean and for adults returning to spawn higher in the watershed.

The preferred program would avoid Green/Duwamish River water quality and fisheries impacts by diverting Renton effluent to Puget Sound. Based on previous studies no major impacts on the Sound are predicted by the proposed diversion.

If Alternatives A-1 or B-1 were selected, some but not all of these problems would be avoided.

Implementation of the preferred program appears the best way to protect the Green/Duwamish River water quality.

CONSTRUCTION IMPACTS

Each of the alternatives would have short-term construction and site-related impacts, most of which would be minor. Construction of the tunnel and outfall from either the Renton plant (under the preferred program) or the Kenmore plant (Alternative B-1) could have more serious short-term impacts on recreation, traffic, or spoils disposal. Mitigation measures are available to reduce these impacts. Alternative A-1 would avoid the impacts of constructing a tunnel and outfall to Puget Sound.

INTERIM WATER QUALITY IMPACTS

Any of the alternatives (except the No Project Alternative) would take a minimum of 5 years to design and build. During this time, short-term deterioration in Green/Duwamish River water quality can be expected as sewage flows continue to increase beyond the Renton treatment plant's treatment capacity.

Temperature, dissolved oxygen, and ammonia water quality standards would be violated, and DOE effluent dilution guidelines would continue to be exceeded. Deteriorating water quality would increase the risks of impaired salmon migration or fish kills.

SECONDARY IMPACTS

The processes of growth and urbanization have major effects on the environment. The Lake Washington/Green River Basin study area has grown rapidly over the last decade, and this rapid growth is projected to continue in the future.

EPA policies require the agency to consider the secondary (indirect) environmental impacts of wastewater projects that receive federal construction grants. These secondary impacts are caused by the community growth which wastewater facilities are constructed to accommodate. The secondary impacts of a project may often be more significant than the project's direct impacts.

The secondary impacts of a project may often be more significant than the project's direct impacts.

Because Metro has relied on local land use policies in designating the sewer service area, and on PSCOG population projections to project wastewater flows, the proposed wastewater system improvements will not "cause" the growth projected by other agencies, but rather will assist in its accommodation. Although neither Metro nor EPA is institutionally "responsible" for causing growth and its accompanying secondary impacts within the study area, the philosophy that EISs are full disclosure documents dictates that such secondary impacts be examined in these documents.

Secondary impacts analyzed in the EIS include air quality, surface water and biology, groundwater, land use, public service systems, and public finance. The results of the secondary impact analysis are summarized in Table 3. Of particular concern to EPA are: 1) water quality deterioration and losses of migratory salmon and trout. This could result from urbanization-induced nonpoint source pollution; 2) risks to groundwater or surface water from inadequately sited, operated, or maintained on-site systems; 3) conversion of prime farmlands; and 4) development of wetlands and floodplains. EPA policies and programs require that these impacts be mitigated where possible.

MITIGATION MEASURES

As revealed by their previous discussion, a number of adverse impacts could accompany implementation of Metro's Wastewater Management Plan. The most important available mitigation measure for these adverse impacts are listed below. Not all these measures are the responsibility of EPA or Metro. Although EPA approval of Metro's Plan is not contingent on actions which are the responsibility of other agencies, it is desirable that all potential mitigation measures be displayed for public review and comment.

CONSTRUCTION AND SITE-RELATED IMPACTS OF TUNNELS AND OUTFALLS

RECREATIONAL USE IMPACTS

☐ Schedule construction during off-peak recreational periods.

TRAFFIC IMPACTS

☐ Reroute traffic around construction sites and provide flagmen.

SPOILS DISPOSAL IMPACTS

☐ Use spoils for fill or dispose of spoils in an acceptable location.

TABLE 3. SUMMARY OF SECONDARY IMPACTS

IMPACT AREA	IMPACT
Air quality	Population projections used for wastewater management planning are consistent with those used for Puget Sound Air Quality Management Plan (AQMP). Therefore, increased emissions from study area growth have been accounted for in the AQMP.
Surface water and biology	Water quality deterioration and anadromous fish losses are occuring now because of urbanization, and could continue in the future. High-growth subdrainage basins will be particularly affected.
Groundwater	Risks to groundwater (and surface water) from inadequately sited, operated or maintained on-site systems in nonsewer area will occur.
Land Use ☐ Prime farmland conversion	Between 3,950 and 5,213 acres of prime farmland could be converted to nonfarm uses over the next 20 years in Sammamish Valley, Lower Green River Valley, and Upper Green River Valley agricultural districts.
☐ Sensitive areas	Study area growth could occur on soil-related sensitive areas, wetlands, and floodplains. High-growth subdrainage basins which contain relatively large acreages of these sensitive areas would be particularly affected.
Public Service Systems	Study area growth will increase demands on public services such as wastewater management, water supply, drainage, solid waste management, recreation, social services, transportation, and electricity and gas.
Public finance	Study area growth will increase both public costs and revenues, and could create fiscal problems for some local government.

WATER QUALITY IMPACTS

SHORT-TERM IMPACTS ON GREEN/DUWAMISH RIVER

☐ Increase treatment by

1) Fast track implementation of plant expansion*

2) Interim nitrification with existing facilities

3) Constructing special nitrification facilities

☐ Divert flow by

1) Diversion of additional 3 MGD to West Point via sludge mains*

2) Diversion of 10 MGD raw sewage to West Point via Riverton-Renton pump station, and/or

3) Diversion of effluent for land disposal on 2750 acres.

☐ Reduce dilution of influent waste flow to increase effectiveness of diversion by

1) Reduced summer flushing*

2) Local agency infiltration control, and/or

3) Water conservation

☐ Reduce in-river impact by

1) Interim river flow augmentation, and/or

2) Fish diversion or hatchery construction

☐ Reduce influent pollutant load by

1) Pre-nitrification in the Kent/Auburn lagoons

2) Sewer Moritorium

*Proposed for implementation by Metro

LONG-TERM IMPACTS ON PUGET SOUND (ASSUMING PREFERRED PROGRAM IS IMPLEMENTED)

☐ For heavy metals and other toxicant risks, complete Metro toxicant study (currently underway) and implement recommendations.

☐ Complete oceanographic and biological studies proposed by Metro for alternative outfall location.

SECONDARY IMPACTS

AIR QUALITY

☐ Continue to implement regional Air Quality Maintenance Plan

SURFACE WATER QUALITY AND FISHERIES IMPACTS DUE TO URBANIZATION

☐ Continue to implement Metro 208 areawide water quality planning

☐ Continue to implement local nonpoint source control programs

GROUNDWATER AND SURFACE WATER IMPACTS FROM ON-SITE SYSTEMS

☐ Establish comprehensive on-site system management program

☐ Provide adequate staffing, funding, and enforcement

☐ Encourage experimentation with alternative technologies

☐ Establish public education programs

☐ Determine ground water carrying capacity

☐ Establish institutional agreements for on-site system management

☐ Designate additional King County prime farmlands for protection under the Sewerage General Plan

☐ Conduct detailed prime farmland assessments in the future state-required EISs for interceptor sewers connecting to the Renton plant

DEVELOPMENT ON WETLANDS AND FLOODPLAINS

☐ Continue to implement King County sensitive areas policies

☐ Continue to implement local floodplain management programs and federal flood insurance programs

☐ Continue to implement King County's Sewerage General Plan and Metro Resolution 3380 policies, which prohibit sewering designated wetlands and floodplains

☐ Conduct detailed wetlands and floodplains assessments in future state-required EISs for interceptor sewers connecting to the Renton plant

LOSS OF PRIME FARMLANDS

☐ Continue to implement King County Purchase of Development Rights Program

☐ Continue to implement King County's Sewerage General Plan and Metro Resolution 3380 policies, which prohibit sewering of designated farmlands

PUBLIC SERVICES AND FINANCE

☐ Continue to implement existing local plans and policies

ADDITIONAL ALTERNATIVES AVAILABLE TO EPA

EPA may develop additional structural or administrative alternatives as part of the EIS. In the case of this Metro plan, EPA has determined that Metro has already examined a full range of long range structural alternatives. EPA adminis-

trative alternatives consist of funding and grant conditions. EPA will consider full, partial, and phased funding. EPA may also place conditions on future grants, to mitigate adverse impacts.

OPPORTUNITIES FOR PUBLIC INVOLVEMENT

Metro's proposed Wastewater Management Plan will have important far-reaching effects on the future of the residents and the environment of the Lake Washington/Green River Basin study area.

We would like your comments on the importance of the impacts of the preferred program, the pros and cons of the various alternative programs; the desirability of various alternatives available to EPA and the best ways to mitigate both short and long-term impacts.

HERE IS WHAT YOU CAN DO:

Send any comments you may have on this summary to EPA, Region X, 1200 Sixth Avenue, Seattle, Washington 98101 Attn: Roger Mochnick M/S 443. Written comments should be received by February 2, 1981.

You will have an opportunity to learn more about the project in Public Workshops which representatives from Metro and EPA will present in your area.

The workshops are scheduled as follows:

WORKSHOPS

January 6: Alki Point—Congregational Community Church, 7:00 p.m.

January 8: Bellevue—Puget Sound Power and Light Auditorium, 7:30 p.m.

January 14: Downtown Seattle—Exchange Building, 4th Floor Conference Room, 12 noon

January 15: Kent—City Council Chambers, 7:30 p.m.

PUBLIC HEARINGS

Later you may present the formal oral and written testimony at public hearings on the Draft Plan and Draft EIS scheduled for the following locations and dates:

January 21: Downtown Seattle—Exchange Building, 4th Floor Conference Room, 12 noon

January 21: Bellevue—Puget Sound Power and Light Auditorium, 7:00 p.m.

PLAN TO PARTICIPATE IN THE WORKSHOPS

PLAN TO TESTIFY AT THE HEARINGS