

8/6/79

Introduced by: Bill Reams

79-630

ORDINANCE NO. 4435

AN ORDINANCE adopting the Sewerage General Plan Duwamish County Sewer Service Area under the provisions of KCC 20.12.030 and RCW 36.94.

PREAMBLE:

The Council of King County declares it advisable and necessary for the public health and welfare of the inhabitants of the County to establish, purchase, acquire and construct a system of sewerage for an area of the County.

A comprehensive sewage plan has been prepared entitled "Sewerage General Plan Duwamish County Sewer Service Area." A King County Duwamish Area Plan Review Committee has been selected and organized, has reviewed the plan and on September 14, 1978, recommended its approval all in accordance with Chapter 36.94 RCW.

King County filed a Declaration of Nonsignificance for the proposal on April 25, 1979.

King County by letter dated June 7, 1979, addressed to METRO from the Director of the Department of Planning and Community Development certified the consistency of the plan with county land use plans and policies pursuant to METRO Resolution No. 2933 and Ordinance 4226.

King County by memo dated June 7, 1979, addressed to the Director of Public Works from the Director of Planning and Community Development has certified the consistency of the proposed plan with the County Comprehensive Plan pursuant to RCW 36.94.

METRO by letters dated November 9, 1977, November 28, 1977 and June 1, 1979 has approved the plan and its revision pursuant to Chapter 35.58 RCW, Section 5 of Metro's Rules and Regulations and Section 11 of the Agreement for Sewage Disposal between the Municipality of Metropolitan Seattle and King County dated July 17, 1975. The Metro Council by Resolution 3219 has approved the plan pursuant to RCW 36.94.

Sewer service to this area is consistent with the King County Sewerage General Plan.

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

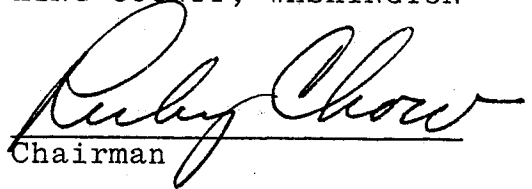
SECTION 1. The "Sewerage General Plan Duwamish County Sewer Service Area" as revised on July 20, 1978 (attached) is hereby adopted as an amendment to Chapter 7 of the King County Sewerage General Plan pursuant to Chapter 36.94 RCW and as an element to the comprehensive plan for King County under the provisions of KCC 20.12.030. The Sewerage General Plan for the Duwamish County

1 Sewer Service Area is an amplification and augmentation of the
2 County Comprehensive Plan, as provided in Chapter 7 of the King
3 County Sewerage General Plan.

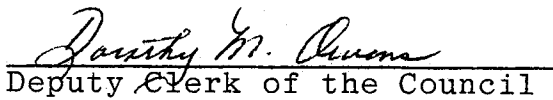
4 INTRODUCED AND READ for the first time this 14th day of
5 May, 1979.

6 PASSED this 6th day of August, 1979.

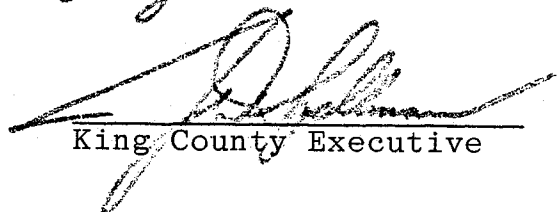
7
8 KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

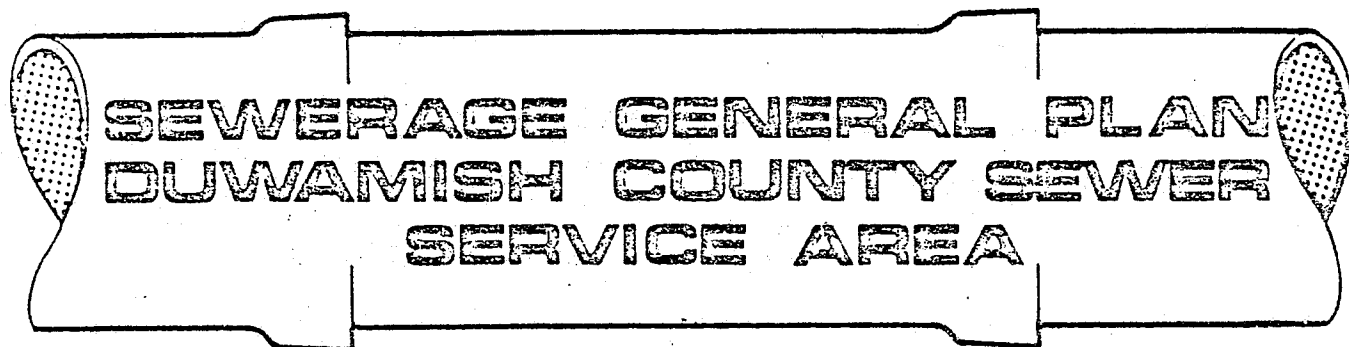
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10 
Chairman

11 ATTEST:

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13 
14 Deputy Clerk of the Council

15 APPROVED this 15th day of August, 1979.

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17 
18 King County Executive



**SEWERAGE GENERAL PLAN
DUWAMISH COUNTY SEWER
SERVICE AREA**

(Duwamish Industrial Sewer Collection System)

U.S. Department of Commerce - Economic Development Administration

Exhibit 18 - B

KING COUNTY DEPARTMENT OF PUBLIC WORKS

MAY 18, 1976

Revised July 20, 1978

SEWERAGE GENERAL PLAN

DUWAMISH COUNTY SEWER SERVICE AREA

The following sewerage plan for the proposed Duwamish Sewer Service area is prepared in compliance with the requirements of 36.94 R.C.W., King County Ordinance No. 1709 (as amended) and in conformity with guidelines of the U.S. Department of Commerce, Economic Development Administration related to Public Works Projects. (Public Law 89-136, Catalogue No. 11.300)

The basic plan was prepared in May, 1976, as part of the E.D.A. grant application.

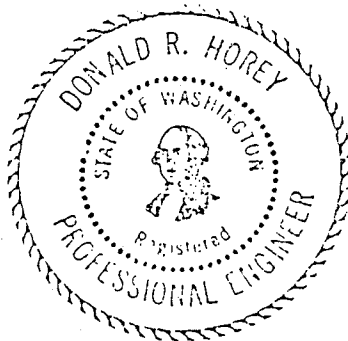
Financial sections of the report were updated and revised in July, 1978, by the County financial consultant, William P. Harper & Son & Company.

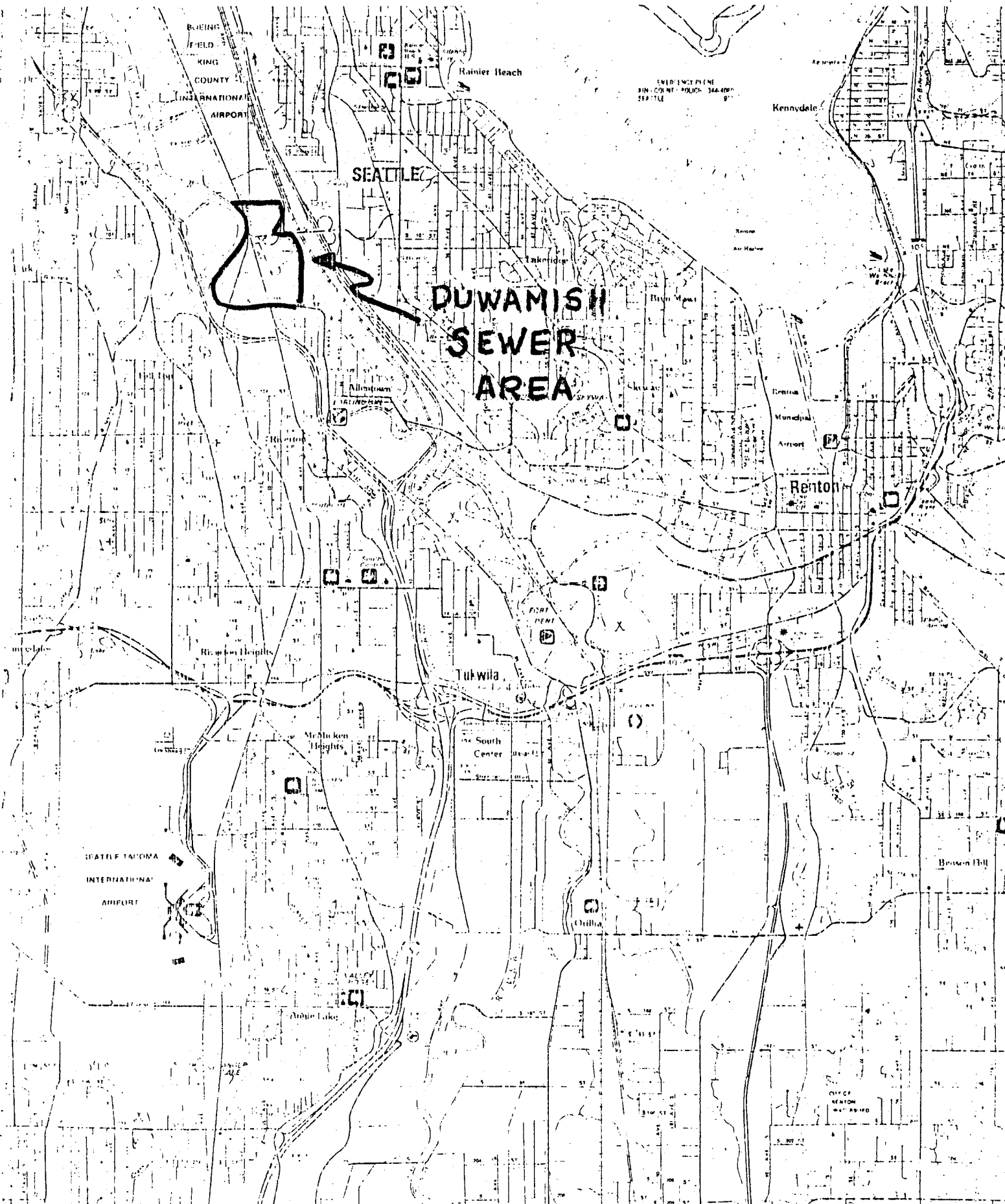
KING COUNTY DEPARTMENT OF PUBLIC WORKS

JAMES W. GUENTHER, DIRECTOR

D. R. HOREY, COUNTY ROAD ENGINEER

July 20, 1978





**DUWAMISH
SEWER
AREA**

SEATTLE

Kennedale

Renton

Tukwila

SEATTLE TACOMA
INTERNATIONAL
AIRPORT

Burien Hill

EMERGENCY PHONE
FIRE - 344-4000
POLICE - 344-4000
SEATTLE

CITY OF
SEATTLE
WASHINGTON

The following sewer general plan encompasses a sub-basin designated EB-3 in the approved comprehensive sewer plan entitled "Metropolitan Seattle Sewerage & Drainage Survey," dated May 19, 1958. The study and report was prepared by the firm of Brown and Caldwell and was subsequently adopted by resolution by the Municipality of Metropolitan Seattle and by ordinance by King County.

LOCATION & DESCRIPTION OF THE AREA

The service area is located in unincorporated King County in the Duwamish River Valley. The north boundary is the city limits of the City of Seattle, the boundary on the west is the Duwamish River and on the south is a sub-basin designated EB-1 which is presently being studied by Val Vue Sewer District. Interstate highway I-5 was constructed several years after determination of sub-district boundaries. Property acquisition for the highway together with steep slopes and deep fills caused by construction makes I-5 a practical easterly boundary of the sub-basin.

Two separate and distinct local neighborhoods occupy the study area. The northerly portion, the Duwamish Industrial area, is entirely zoned for heavy industry and is federal grant eligible under provisions of the Public Works and Economic Development Act of 1965. A County Sewer Service Area is being formed in this neighborhood to provide a sanitary sewer collection system in accordance with provisions

of 36.94 R.C.W. Application is being made for 60% federal grant assistance for the proposed project from the U. S. Department of Commerce, Economic Development Administration.

The southerly portion of the study area is Allentown, a depressed area of small residences, with zoning a mixture of residential, commercial and some industrial. A sewage collection system is urgently needed; however, because of extremely low property values a local improvement district is deemed infeasible. Attempts to secure U. S. Housing and Urban Development Block Grant funds failed because of the "transitional" status of the area. The neighborhood is also ineligible for either E.P.A. or E.D.A. collection system funding under current guidelines. When development of a collection system will proceed, cannot be predicted at this time. King County will continue to seek grant assistance.

The study area consists almost entirely of flat valley bottom land. A hill of sub-eocene basalt formerly occupied a portion of the area; however, the bulk of this material was quarried in the years between 1920 and 1950. The Boeing Airplane Company Plant 2 situated two miles to the north was constructed upon fill material from the site early in World War II.

Soils are generally "Oridia-Seattle-Woodinville Association. Somewhat poorly drained and very poorly drained." (U.S. Department of Agriculture, Soil Conservation Service -- King County Soil Survey - 1973). Some areas contain hydraulic fill deposited during realigning of the Duwamish River in the early years of this century.

The area is not designated as a flood plain. However, it is predicted that deep ditches and structures will require de-watering during construction adding substantially to construction costs. The nearby Duwamish River is a tidal estuary and test bores will be required to determine the extent of the tidal influence on the water table.

Studies by the Seattle-King County Health Department in 1969 and 1970 indicated severe failures of existing septic tank systems. Over 35 raw sewage connections to the river were discovered. The Holiday Inn operates its own sewage treatment plant; however, the plant does not conform to the standards established by Public Law 92-500.

Following a series of meetings between health and governmental authorities in 1970, King County was asked to do sewer planning for the area. The County prepared a report in 1971 covering the Allentown and West Duwamish area. Attempts to sewer the area have been made from that time to this date.

DESIGN CRITERIA

The purpose of this section is to present design criteria to be used in the planning of proposed facilities in accordance with the comprehensive sewerage plan set forth in this study.

These criteria include provisions for lift stations, trunk lines, and lateral sewers as well as provisions for individual service connections. The criteria are based on

the requirements of the various regulatory agencies, the Municipality of Metropolitan Seattle, and on proven and accepted practices normally used in the design and construction of sewerage facilities.

The design period is the length of time that a given facility provide adequate service. The period selected for a given facility is based on the economic life of the facility. Factors which influence the economic life of a facility are the useful life of the facility, cost of replacing the facility, cost of increasing the capacity of the facility, and the projected rate of growth of population served by the facility.

Facilities with a long or indefinite life and which can be expanded only at a great expense and low population growth rates tend to favor increased design periods. These facilities include sewer trunks and lift stations. Facilities with a relatively short useful life or which can be replaced or expanded at a reasonable cost along with rapid population growth rates and stable economic conditions tend to favor shorter design periods. These facilities include lift station components such as pumps and motors. In planning for these facilities, consideration must also be given to the ability of the consumer to pay for the improvements.

The design period for this study is forty years for the area to be served. The existing Metro Elliot Bay trunk is sized for ultimate development.

One lift station, to serve approximately 30 acres south of South 112th Street, is an interim measure to serve the area until a proposed Metro Lift Station is constructed nearby as part of the "Val Vue Interceptor Project." For many years sewer planning for the general area has proposed that sewage from the City of Tukwila and Val Vue Sewer District to the south would ultimately be pumped from the area of this study to the existing Elliott Bay Interceptor and thence to the Metro West Point Sewage Treatment plant for treatment and disposal. However, on going studies indicate a possibility that sewage originating south of the study area may be diverted instead to the Renton Metro Plant. The proposed lift station in the study area will be a package type station with duplex pumps sized to handle predicted flows from 30 acres in Stage 1. Provision will be made for installation of an additional package station in the future if the Allentown area is sewered in Stage 2. If the Val Vue Interceptor is constructed to transport sewage northerly, the proposed stations will be removed. They will remain in service if diversion to the Renton Treatment Plant is selected for the Val Vue-Tukwila sewage.

BASIS OF SEWAGE QUANTITIES

Average Dry Weather Flow (ADWF)

Average Sanitary Sewage	70	
Average Industrial Waste Flow	0	
Summer Infiltration, 300 gpad at 10 persons per acre	30	100 gpcd

Peak Wet Weather Flow (PWWF)

Peak Sanitary Sewage, 70 gpcd		
x 3.33	233	
Peak Flow Industrial Waste	0	
Winter Infiltration, 600 gpad at		
10 persons per acre	60	
Winter Storm Inflow, 500 gpad at		
10 persons per acre	50	343 gpcd

Minimum Dry Weather Flow (MDWF)

Minimum Sanitary Sewage		
70 x 0.5	35	
Industrial Waste Flow	0	35 gpcd

BASIS OF SEWAGE CHARACTERISTICS

5-Day BOD, lbs. per capita per day (PCD)

Sanitary Sewage	0.17	
Allowance for Garbage	0.06	0.23 pcd

Suspended Solids, lbs. per capita per day (PCD) 0.23 pcd

A preliminary investigation indicates that little industrial waste is presently being generated in the study area. However, the heavy industry zoning in the Duwamish area indicates a good possibility of such production in the future. King County's adopted sewer ordinance (King County Code 13.04) encompasses the existing industrial waste requirements of the Municipality of Metropolitan Seattle. Because of federal requirements of Public Law 92-500, Metro requirements are under study and undoubtedly will be revised. Contractual arrangements between King County and Metro will require revision of the County ordinance to conform to the Metro regulations.

GROUND WATER INFILTRATION

The quantity of water which may infiltrate into a sewer can be estimated and will generally increase with the age of the sewer. However, the design of the sewer system and the inspection during the course of construction will have much to do with the amount of infiltration that will enter the sewer pipes. By the use of certain types of joint materials, it can be assured that pipe joints will be more effective, remain in better condition and last longer than would other types of joints.

On the basis of using rubber gaskets or other improved materials now available, the design allowance for infiltration would be as shown in the table below. Utilizing the data from this table and considering trunks, lateral sewers and side sewers, the design basis for ground water infiltration and storm inflow for new sewers is 600 and 500 gallons per acre per day, respectively.

ALLOWANCE INFILTRATION FOR VARIOUS SIZED SEWERS

<u>Pipe Sizes (inches)</u>	<u>Infiltration in Gallons per hour per 100 feet</u>
8"	3.2
10"	4.0
12"	4.8
15"	6.0
18"	7.2
21"	8.4
24"	9.6
30"	12.0

SEWER SIZING

Sewers shall be designed with sufficient capacity to carry peak flows from the tributary area at ultimate development. The minimum diameter of gravity laterals shall be eight-inches and side sewers, six-inches. Four-inch house sewers to serve a single residence will be permitted.

The ability of a sewer to transport suspended solids, contained in sewage is related to the velocity of flow in the sewer. A velocity of two-feet per second is generally considered to be the minimum which will keep pipe surfaces clean and free of deposited material.

MINIMUM SLOPES FOR SEWER PIPE

<u>Pipe Sizes In Inches</u>	<u>Slope Foot/Foot</u>
8	0.005
10	0.004
12	0.003
15	0.0025
18-21	0.002
24-30	0.0015
36-54	0.0010

Diameters of gravity sewers constructed of concrete are determined by means of Manning's pipe friction formula, using a roughness coefficient "n" of 0.0013 and considering the pipe to be flowing 0.8 full.

The design of force mains is predicted on the basis that they flow full and under pressure. Again, as in the case of gravity sewers, the mains must be capable of carrying the peak flow from a given area.

Force main design shall be based on a minimum self-cleansing velocity of 3 FPS. Roughness coefficient will depend on the pipe material selected.

Existing Residences	6
Resident Population	20
Existing Business/Commercial/ Industrial Estimated Work Force	360

Population of Census Tract No. 0263 (1970) was 1930. This census tract generally conforms to the boundary of the overall study area (EB-3). Resident population with EB-3 north of the Duwamish Collection System area is estimated as 80. The balance of the resident population, approximately 1,850, resides in the Allentown neighborhood to the south of the Duwamish Collection System area.

Upon completion of the collection system, a work force of approximately 1,000 is predicted to gradually accumulate within the area.

ZONING

The study area of the Duwamish Collection System is entirely zoned Heavy Industry as is the presently sewered area to the north. To the south, the Allentown neighborhood is zoned Residential except for a few commercially zoned lots and a parcel owned by Burlington Northern Railroad zones for Heavy Industry.

INTERGOVERNMENTAL AGREEMENTS

A County-wide sewer agreement has been negotiated between King County and the Municipality of Metropolitan Seattle. An environmental assessment was prepared and circulated. The County-Metro agreement which provides for Metro treatment of sanitary sewage collected by the County, has been executed and is in force.

King County and Metro also have an agreement providing for joint use of the Metro 42" Elliott Bay Interceptor which traverses the project area. This agreement provides that the County may connect side sewers directly to the Interceptor, without the need for a costly collection line to serve a portion of the Duwamish area. King County has agreed to reimburse Metro \$11.30 per front foot of property directly served by the Interceptor. This charge is based on the cost of an 8" line at the time the Interceptor was constructed in 1963. An 8" line constructed in 1976 would cost over twice as much as the \$11.30 per foot charge provided in the joint use agreement.

DEVELOPER EXTENSIONS OF THE SEWER SYSTEM

In accordance with policy developed in other County sewer districts, developer extension agreements will be negotiated which will include, for example, the following requirements:

1. Plans and specifications shall be prepared by a licensed professional engineer.

2. Plans and specifications shall be approved by the Washington State Department of Ecology, Metro and King County.
3. Inspection and testing shall be by an engineer approved by the County.
4. An area charge shall be paid prior to connection.
5. Upon acceptance of the work, the facilities shall be deeded to King County.

*NOTE: See Attachment A for revisions to pages 11, 12, 13, and 14.

QUANTITIES & ESTIMATED COSTS-PROPOSED
DUWAMISH COLLECTION SYSTEM (PRELIMINARY)

QUANTITY	ITEM	EST.COST	TOTAL
2,990 L.F.	12" Gravity Sewer	\$ 25.00	\$ 74,750
4,300 L.F.	8" Gravity Sewer	21.00	90,300
41 EA.	Standard Manholes	1,000.00	41,000
1 L.S.	West Sewage Lift Station	22,000.00	22,000
1 L.S.	East Sewage Lift Station	27,000.00	27,000
9,000 C.Y.	Select Backfill Material	6.50	58,500
500 L.F.	4" Force Main	8.00	2,400
400 L.F.	6" Force Main	10.30	4,120
3,000 L.F.	6" Side Sewer	9.00	27,000
400 L.F.	Bore & Case for 8" Line	70.00	28,000
7,326 S.Y.	Asphalt Patch	4.00	29,304
200 Ton	Asphalt Overlay	15.00	3,000
	SUB-TOTAL		\$407,374
	Contingencies (10%)		40,700
	Sales Tax (5.3%)		25,748
	EST. TOTAL CONSTRUCTION		\$471,822
	Surveying		\$ 7,000
	Boring & Soils Sampling		2,000
	System Design		38,000
	Reimburse Metro (1100 L.F. @ \$11.50 per L.F.)		12,455
	Construction Staking		4,000
	Resident Inspection		6,000
	Interest During Construction		3,600
	Bond Counsel Fees		2,500
	Printing & Advertising		500
	SUB-TOTAL		\$ 76,035

Total Construction (Incl. S.S.T.)	\$471,822
Total Engineering, Legal, Etc.	76,033
Total Project Cost.	\$547,855
Say	\$550,000
Portion from Grant (60%)	\$330,000
Portion from U.L.I.D. (40%)	\$220,000

ESTIMATED MAINTENANCE AND OPERATION

The estimated yearly maintenance and operation costs of the system are as follows:

Maintenance of Lift Stations	\$1,560
Power	925
Vehicle Expense	320
Maintenance of Gravity Lines	250
Billing Expense (35 a/c)	420
Supplies	<u>150</u>
Total	\$3,625

ESTIMATED MONTHLY SERVICE CHARGE

It is estimated that a monthly service charge of \$7.80 would be charged for each equivalent residential connection. It is anticipated that commercial and industrial users will pay a monthly service charge based on a conversion to a residential equivalent and the amount of water consumed. Total yearly income generated by the monthly service on the basis of 142 residential equivalents is expected to be \$13,291.20. The basic Metro charge would require \$6,049.20 leaving \$7,242 to be applied to maintenance and operation expense and a contribution to the bond fund.

FINANCING THE IMPROVEMENTS

King County's share of construction may be financed by the issuance of sewer revenue bonds. Amortization is planned on the basis of 100% from assessments against the property benefited.

The estimated assessment would be approximately \$2,000 per acre. The assessment roll would total \$220,000. Assessments will be levied against all of the property in the district specifically benefited by the construction of the sewerage collection system. It is anticipated that assessments will be composed of a front footage charge, an area charge and a connection charge. The special assessments shall be for the sole purpose of payment into a revenue bond fund created for the payment of revenue bonds issued to pay the cost of the proposed improvement.

The following table indicates preliminary cash flow projections for assessment income and the retirement of a \$220,000 term bond issue.

<u>Year</u>	<u>Principal(1)</u>	<u>Interest(2)</u>	<u>Total Assessment Income</u>	<u>Interest (3)On Bonds</u>	<u>Estimated Bond Call</u>	<u>Bonds Outstanding After Call</u>
1979	\$31,900.00	\$15,950.00	\$47,850.00	\$14,850.00	\$30,000	\$190,000
1980	27,720.00	13,637.25	41,357.25	12,825.00	30,000	160,000
1981	24,057.00	11,627.55	35,684.55	10,800.00	25,000	135,000
1982	20,849.40	9,883.42	30,732.82	9,112.50	20,000	115,000
1983	18,042.75	8,371.84	26,414.59	7,762.50	20,000	95,000
1984	15,588.94	7,063.74	22,652.67	6,412.50	15,000	80,000
1985	13,445.46	5,933.54	19,379.00	5,400.00	15,000	65,000
1986	11,574.78	4,958.74	16,533.53	4,387.50	10,000	55,000
1987	9,943.79	3,119.47	14,063.36	3,712.50	15,000	40,000
1988	8,523.25	3,398.65	11,921.90	2,700.00	5,000	35,000
1989	7,287.38	2,780.71	10,068.09	2,362.50	10,000	25,000
1990	6,213.45	2,252.38	8,465.83	1,687.50	5,000	20,000
1991	5,281.43	1,801.90	7,083.33	1,350.00	10,000	10,000
1992	4,473.68	1,419.00	5,892.68	675.00	5,000	5,000
1993	3,774.67	1,094.65	4,869.33	337.50	5,000	
1994	3,170.72	820.99	3,991.71			
1995	2,649.82	591.11	3,240.93			
1996	2,201.39	399.00	2,600.39			
1997	1,816.15	239.40	2,055.55			
1998	1,485.94	107.73	1,593.67			

(1) Estimated that 10% of outstanding assessments prepay each year.

(2) Assumed rate - 7.25%

(3) Assumed bond rate - 6.75%

SUMMARY-DUWAMISH INDUSTRIAL SEWER AREA

The U.L.I.D., as proposed, has a great deal of public support and the firm backing of the Seattle-King County Department of Public Health. No serious construction problems are foreseen and the proposed assessment and charges will benefit the property. Payments of assessments may be paid over a period of not to exceed 20 years and should not work a hardship on the property owners. The proposed U.L.I.D. is economically feasible.

PROPOSED ALLENTOWN SEWER SYSTEM

Sub-basin EB-3 consists of two separate and distinct neighborhoods. The Duwamish Industrial Area studied in the preceeding 15 pages of this report is Heavy Industry zoned, contains only a few residences and has a high valuation for assessment purposes. The area is also eligible for Economic Development Federal funding assistance.

The following pages discuss the Allentown portion of the study area. Much of the Allentown soils resemble the area immediately north, i.e., flat river bottom land, however, approximately 20 percent is sub-eocene basalt. The area is zones 75 percent residential, 18 percent industrial and the balance commercial.

Assessed valuation of the Allentown land and structures is quite low. Approximately 325 residences, 5 commercial establishments and 1 railroad installation occupy the area. A study conducted for the U. S. Department of Commerce, Economic Development Administration in 1974 which covered the entire Duwamish basin indicated land values of \$0.30 per square foot compared to \$1.51 per square foot in the Duwamish Industrial area immediately to the north. Fifty percent of the residences were valued at "under \$15,000," according to the report. Median age of the population was somewhat older than the average for the County as a whole.

Two meetings were held in the Allentown area by the County Planning staff in late 1975 and early 1976. Attendance

by residents was sparse and great disinterest in forming a sewer assessment district to provide a sanitary sewer system was expressed by those few residents who attended.

The combination of low property values, a relatively costly collection system caused by terrain and soil conditions and income levels in the neighborhood below the county-wide median make it unlikely a Utility Local Improvement District can be formed to install a sewer system in the immediate future. An attempt to secure federal block grant funding in 1975 and 1976 was unsuccessful. County planners believe the neighborhood will ultimately become an industrial area.

QUANTITIES & ESTIMATED COSTS-PROPOSED
ALLENTOWN COLLECTION SYSTEM (PRELIMINARY)

<u>QUANTITY</u>	<u>ITEM</u>	<u>EST. COST</u>	<u>TOTAL</u>
900 L.F.	12" Gravity Sewer	\$ 25.00	\$ 22,500
19,660 L.F.	8" Gravity Sewer	21.00	412,860
78 EA.	Standard Manhole	1,000.00	78,000
1 L.S.	Sewage Lift Station	27,000.00	27,000
25,000 C.Y.	Select Backfill Material	6.50	162,500
1,515 L.F.	6" Force Main	10.30	15,604
9,900 L.F.	6" Side Sewer	9.00	89,100
15,000 S.Y.	Asphalt Patch	4.00	60,000
600 Ton	Asphalt Overlay	15.00	9,000
	SUBTOTAL		\$ 876,564
	Contingencies (10%)		87,000
	Sales Tax		52,002
	EST. TOTAL CONSTRUCTION		\$1,015,566
	Surveying		\$ 17,000
	Boring & Soils Sampling		3,000
	System Design		90,000
	Construction Staking		9,000
	Resident Inspection		20,000
	Interest During Construction		11,000
	Bond Counsel Fees		4,000
	Printing & Advertising		11,000
	EST. TOTAL - ENGINEERING, LEGAL, ETC.		\$ 165,000
	SUMMARY - TOTAL CONSTRUCTION		\$1,015,566
	Engineering, Legal, Etc.		165,000
	EST. TOTAL PROJECT COST		\$1,170,566
	SAY		\$1,170,000

MAINTENANCE & OPERATION OF THE PROPOSED SYSTEM

Lift Station Maintenance	\$ 3,500
Power	1,100
Maintenance of Gravity Lines	3,000
Billing Expense	1,800
Truck Expense	800
Supplies	100
TOTAL (Per Year)	\$10,500

EST MONTHLY SERVICE CHARGE REQUIRED

Metro Charge (Basic)	\$3.55
Revenue Bond Fund	2.25
M & O Expense	2.00
Billing Expense	2.00
MONTHLY SERVICE CHARGE	\$9.80

SUMMARY - ALLENTOWN AREA

Under present conditions it appears unlikely a sewer U.L.I.D. can be formed in Allentown. King County will continue to seek out grant funds or other means of funding which may become available in the future. When and if the project can be made financially feasible, the County will proceed with installation of a sanitary sewer system.

ATTACHMENT A

The following data revises the cost estimates and financial information provided on pages 11, 12, 13, and 14 of the Sewerage General Plan, Duwamish-County Sewer Service Area.

The revisions address only cost and financial data which was based upon information as of February 1, 1979. No changes have been made to the boundary or technical portions of the plan.

ESTIMATED MAINTENANCE AND OPERATION

The estimated yearly maintenance and operation costs of the system are as follows:

Maintenance of Lift Stations	\$2,077
Power	1,232
Vehicle Expense	426
Maintenance of Gravity Lines	333
Billing Expense	560
Supplies	<u>200</u>
TOTAL	\$4,828

ESTIMATED MONTHLY SERVICE CHARGE

It is estimated that a monthly service charge of \$7.80 would be charged for each equivalent residential connection. It is anticipated that commercial and industrial users will pay a monthly service charge based on a conversion to a residential equivalent and the amount of water consumed. Total yearly income generated by the monthly service on the basis of 142 residential equivalents is expected to be \$13,291.20. The basic Metro charge would require \$6,049.20 leaving \$7,242 to be applied to maintenance and operation expense and a contribution to the bond fund.

FINANCING THE IMPROVEMENTS

King County's share of construction may be financed by the issuance of sewer revenue bonds. Amortization is planned on the basis of 100% from assessments against the property benefited.

The estimated assessment would be approximately \$5,000 per acre. The assessment roll would total \$545,000. Assessments will be levied against all of the property in the district specifically benefited by the construction of the sewerage collection system. It is anticipated that assessments will be computed by the zone & termini method as provided by law and a connection charge. The special assessments shall be for the sole purpose of payment into a revenue

bonds issued to pay the cost of the proposed improvement.

The following table indicates preliminary cash flow projections for assessment income and the retirement of a \$540,000 term bond issue.

PRELIMINARY ESTIMATES DUWAMISH U.L.I.D.

	Assessment Billing			Anticipated Repayment			Estimated Debt Retirement	
	Principal ⁽¹⁾	Interest ⁽²⁾	Total	Principal	Interest ⁽³⁾	Total	Interest On Bonds	Est. Bond Call
1980	\$27,000	\$39,150.00	\$66,150.00	\$103,950.00	\$39,150.00	\$143,100.00	\$36,450.00	\$105,000
1981	27,000	37,192.50	64,192.50	84,915.00	31,613.62	116,528.62	29,362.50	85,000
1982	27,000	35,235.00	62,235.00	69,251.63	25,457.29	94,708.91	23,625.00	75,000
1983	27,000	33,277.50	60,277.50	56,376.68	20,436.54	76,813.22	18,562.50	55,000
1984	27,000	31,320.00	58,320.00	45,806.05	16,349.24	62,155.28	14,850.00	50,000
1985	27,000	29,362.50	56,362.50	37,138.13	13,028.30	50,166.43	11,475.00	35,000
1986	27,000	27,405.00	54,405.00	30,039.96	10,335.78	40,375.74	9,112.50	35,000
1987	27,000	25,447.50	52,447.50	24,235.63	8,157.89	32,393.51	6,750.00	25,000
1988	27,000	23,490.00	50,490.00	19,496.70	6,400.80	25,897.50	5,062.50	20,000
1989	27,000	21,532.50	48,532.50	15,634.14	4,987.29	20,621.44	3,712.50	15,000
1990	27,000	19,575.00	46,575.00	12,491.68	3,853.82	16,345.50	2,700.00	15,000
1991	27,000	17,617.50	44,617.50	9,940.19	2,948.17	12,888.36	1,687.50	15,000
1992	27,000	15,660.00	42,660.00	7,873.08	2,227.51	10,100.59	675.00	5,000
1993	27,000	13,702.50	40,702.50	6,202.45	1,656.71	7,859.16	337.50	5,000
1994	27,000	11,745.00	38,745.00	4,855.87	1,207.03	6,062.90		
1995	27,000	9,787.50	36,787.50	3,773.70	854.98	4,628.68		
1996	27,000	7,830.00	34,830.00	2,906.93	581.39	3,488.32		
1997	27,000	5,872.50	32,872.50	2,215.28	370.63	2,585.91		
1998	27,000	3,915.00	30,915.00	1,665.72	210.03	1,875.75		
1999	27,000	1,957.50	28,957.50	1,231.19	89.26	1,320.45		

(1) Estimated that 15% of outstanding assessments prepay each year.

(2) Assumed rate - 7.25%

(3) Assumed bond rate - 6.75%

SUMMARY-DUWAMISH INDUSTRIAL SEWER AREA

The U.L.I.D., as proposed, has a great deal of public support and the firm backing of the Seattle-King County Department of Public Health. No serious construction problems are foreseen and the proposed assessment and charges will benefit the property. Payments of assessments may be paid over a period of not to exceed 20 years and should not work a hardship on the property owners. The proposed U.L.I.D. is economically feasible.

QUANTITIES AND ESTIMATED COSTS

PROPOSED DUWAMISH COLLECTION SYSTEM

(PRELIMINARY)

	<u>EST COST</u>	<u>TOTAL</u>
2990 LF 12" sewer	33.00	98,670
4300 LF 8" sewer	28.00	120,400
41 Ea Stand. M/H	1,000.00	41,000
4 LS Sewer Lift Station	40,000.00	160,000
9000 CY Select backfill	6.50	58,500
300 LF 4" Force main	12.00	3,600
400 LF 6" Force Main	15.00	6,000
300 LF 6" Side sewer	17.00	51,000
400 LF Bore & Case for 8"	75.00	30,000
7326 SY Asphalt patch	6.00	43,956
300 Ton Asphalt Overlay	25.00	7,500
300 Ton Crushed Surfacing	9.00	2,700
128,000 Sq Ft shoring	0.40	<u>51,200</u>
SUBTOTAL		\$674,526
CONTINGENCIES 10%		67,500
SALES TAX 5.4%		40,069
TOTAL CONSTRUCTION		782,095
FINANCIAL ADVISOR		5,000
SYSTEM DESIGN		38,000
REIMBURSE METRO (1100 LF @ 11.30 per LF)		12,430
CONSTRUCTION STAKING		4,000
RESIDENT INSPECTOR		30,000
PRINTING, ETC		500
TOTAL COST		<u>\$89,930</u>
LESS EDA SHARE		\$872,025
		<u>330,000</u>
		\$542,025