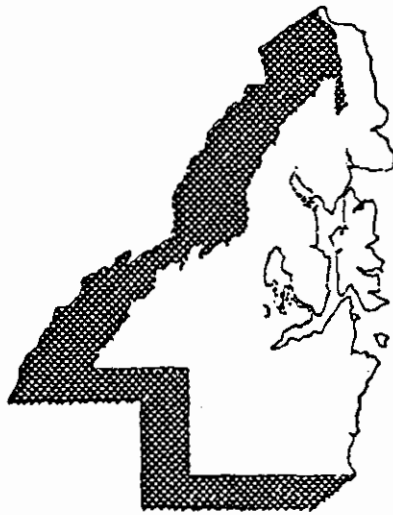


APPENDIX E



APPENDIX E

SOUTH KITSAP

1. DRAINAGE AND TOPOGRAPHY

The topography of the South Kitsap subarea is similar to all other subareas with the exception of the topographic high of Gold Mountain, elevation 1761, and the surrounding hills which comprises the northwest corner of the subarea. The drainage pattern (see Volume I, Exhibit II-7) is unique in the County with generally large, elongated, and SSW-NNE trending basins. This may be a reflection of the direction of the Pleistocene ice flows. Basins 305, 268, and 275 have a high value of low flow per unit area which may represent a large groundwater component. No basin in the subarea has an anomalously low value of low flow per unit area.

2. GEOLOGY

A. Surficial Geology

For presentation purposes the South Kitsap subarea has been split into two parts, west and east. The surface geology for the two is similar but does have some interesting differences. Unit 1 crops out in both the west and the east. In the west (see Exhibit E-1) the bedrock unit is comprised of Tertiary volcanics and the outcrops of Unit 1 in the east (see Exhibit E-2) are comprised of the Blakeley Formation. In the west, elongated peat deposits of Unit 4 occur trending SSW-NNE. These deposits of Unit 4 accentuate the topographic reflection of the direction of Vashon ice movement in this subarea. Along the western edge of Exhibit E-2 are large north-south trending deposits of Units 3, 4, and 7. This may be interpreted as being a surface expression of a large outwash channel and an ancient lake or lakes.

B. Subsurface Geology

The subsurface geology of the South Kitsap Subarea is represented in Exhibits E-5 through E-11. Exhibits E-3 and E-4 show the location of the database wells in this subarea. Cross section A-A' (see Exhibit E-7) is traced through an area that contains very few data points, especially to the south. Exhibit E-8 shows some shallow domestic wells completed in perched water bearing zones in unit Qg1. A far greater number of wells are completed in Units Qg1a, Qg2, and Qg3. Several wells in Exhibits E-9 and E-10 are completed in Unit Qg1a but no wells along the trace of the other cross sections, Exhibits E-7, E-8, and E-11, are completed there.

where?

Several wells on each cross section are completed in Unit Qg2. Exhibit E-9 shows four wells (Wells 16G02, 16G05, 28C01, 09G02) that are completed in Unit Qg3 with each having a calculated transmissivity value. These values are surprisingly consistent with a range of 450 to 1400 gpd/ft yet on Exhibit E-11 a well completed in the same unit, albeit several miles to the west, indicates a transmissivity of 100,000 gpd/ft. This demonstrates the variability of the characteristics of these units. A few wells are completed in each of the Units Qg4 and Qg5. When compared to other subareas the number of deep wells completed in these two units is small.

3. PRINCIPAL AQUIFERS

eight are shown
Seven defined aquifer systems occur within the South Kitsap Subarea; all are situated in the northern half of the subarea (see Exhibits E-12 and E-13). These are: Clam Bay, Gorst, North Lake-Bremerton South, Port Orchard, Salmonberry, Yukon, and Wilson Creek. Aquifer characteristics are presented in Table E-1.

13
The Clam Bay aquifer system (see Exhibit E-~~12~~) is noted on the north end of cross section C-C' (see Exhibit E-9). Several wells (see Table C-1) are completed in this aquifer system which is found northwest of Manchester. This silty sand and gravel aquifer is encountered from approximately sea level to 150 feet below sea level (note Well 16G05, Exhibit E-9) within unit Qg3. The extent of this unit is limited by the occurrence of the surrounding bedrock (Unit Tb, Blakeley Formation) Therefore, subsequent expansion of the boundaries of this aquifer seems unlikely.

Yes I do, and see 3 screens in intervals in 3 separate units
3
The Yukon aquifer system (see Exhibit E-~~12~~) is noted on cross section C-C' (see Exhibit E-9). Table E-1 lists some of the wells used to delineate the aquifer boundaries. This sand and gravel aquifer is encountered from approximately sea level to 150 feet below sea level (note Well 33G02, Exhibit E-9) within Unit Qg3. The northern boundary is indicated by the absence of a productive zone in Well 28C01. The extent of the aquifer in all other directions is poorly defined.

13
The Wilson Creek aquifer system (see Exhibit E-~~12~~) is noted on cross section F-F' (see Exhibit E-11). Table E-1 lists the wells used to determine the extent of the aquifer. This gravel and sand aquifer was first recognized upon the drilling of Well 10C04. The aquifer is encountered from approximately 150 to 50 feet above sea level (note Wells 10C01 and 03N01, Exhibit E-11) within Unit Qg2. The areal extent of this aquifer is not well defined and could possibly extend appreciably beyond the boundaries as drawn.

13
The Port Orchard Deep aquifer system (see Exhibit E-~~12~~) is noted on the northern end of cross section B-B' (see Exhibit E-8). Several deep wells (partial list on Table E-1) encounter this sand and gravel aquifer from approximately 650 to

1,100 feet below sea level (note Well 25M01, ^{no screen?} Exhibit E-8) within Unit Qg5. Due to the depth of this aquifer and the lack of deep wells outside the immediate area, the extent of the aquifer is not well defined and boundaries probably could be expanded with additional information.

The Salmonberry aquifer system located ¹³ directly south of the Port Orchard Deep aquifer system (see Exhibit E-12) is noted on cross section B-B' and F-F' (see Exhibits E-8 and E-11). This gravel and sand aquifer is encountered from approximately 150 to 250 feet below sea level (see Well 01K01, Exhibits E-8 and E-11) within Unit Qg4. The extent of this aquifer is not well defined and the boundaries could be expanded with addition information.

If this is one system, why are two shown on Ex. E-12?

¹² The Northlake-Bremerton South aquifer system (see Exhibit E-13) is not shown on any cross sections. This system consists of three aquifers. The shallowest is in the southern part of the delineated area and is found from 200 to 250 feet above sea level. This aquifer has a semi-perched behavior and could possibly be intertied by leakage to the two deeper aquifers in the northern portion of the area. The middle aquifer is found from approximately 150 to 200 feet below sea level (note Well 33K02, Table E-1) and is within Unit Qg4. The deeper aquifer is encountered from approximately 450 to 525 feet below sea level (note Well 33L02, Table E-1) within Unit Qg5. Pumping of each of the two deeper aquifers produces minor interference on the other, suggesting possible leakage between them. The shallow aquifer system in the south could possibly contribute groundwater flow to Coulter Creek (see Volume I, Exhibit II-7) and thus the boundaries of this system could be extended far to the south.

¹² The Gorst aquifer system (see Exhibit E-13), found in the Gorst Creek valley at the base of Gold Mountain, is noted on cross section A-A' (see Exhibit E-7). Several wells, some listed in Table E-1, are completed in this very productive sand and gravel aquifer. The aquifer is encountered from 50 feet above to 100 feet below sea level (note Well 36R01, Exhibit E-7) within Unit Qg3. This aquifer system exhibits large values of transmissivity. One important feature of this aquifer system is the potential for a large amount of recharge from the Gold Mountain area. The northern boundary of this aquifer is the bedrock of Unit Tv at Gold Mountain. The boundaries to the south and east are less well defined and could possibly be expanded.

and section F-F' Ex. E-11
looks more like 0 ft. on A-A'

4. GROUNDWATER FLOW SYSTEM

Two (2) groundwater elevation contour maps for the shallow aquifer system in the South Kitsap Subarea are presented in Exhibits E-14 and E-15. These maps cover the west and east portions of the South Kitsap subarea. They illustrate the general water level elevations and directions of horizontal groundwater flow in the shallow aquifer system. Areas of groundwater recharge and discharge can also be inferred from the map.

need to clear this up

Generally, shallow groundwater in this subarea flows either north to Sinclair Inlet, west to Colvos Passage, or south to Carr or Case Inlets. Along with seeps and springs adjacent to the coast, several streams discharge to the north including Blackjack and Gorst Creeks. In the west coastal seeps, springs, and streams discharge groundwater to Colvos Passage. Ollala Creek flows west-southwest and drains the long, steep sided Ollala Valley. (Much of the shallow groundwater from the southern, interior half of the subarea appears to be drawn south to Case and Carr Inlets via a number of streams including Burley, Purdy, Minter, and Coulter Creeks.)

In the western portion of the South Kitsap Subarea there appears to be one recharge area, located in the north-central highlands, from which groundwater flow emanates out radially. In the eastern half of the subarea there appears to be 3 main recharge areas which are all situated around centrally located Long Lake. Some flow from each of these recharge areas discharges into Long Lake, which in turn discharges to Yukon Harbor (Puget Sound) in the northeast via Curley Creek.

5. WATER BALANCE AND RECHARGE

Long-term average water balance components for the South Kitsap subarea are presented in Table II-14, Volume I. Average precipitation is estimated to range between 45 and 55 inches/year; average evapotranspiration between 17 and 19 inches/year; average runoff between 7 and 10 inches/year; and average direct recharge between 21 and 26 inches/year.

Precipitation estimates are based on the analysis of U. S. Weather Bureau data and the precipitation isohyetal presented in Exhibit II-15, Volume I. Evapotranspiration was estimated using the Thornthwaite method assuming a 3- to 5-inch soil moisture holding capacity. Runoff was estimated to be approximately 15 to 20 percent of total precipitation. The runoff multiplier reflects the moderate to high infiltration potential of the area (Exhibit II-13, Volume I).

6. POTENTIAL DEVELOPABLE YIELD

Estimates of potential developable yield (PDY) for the South Kitsap subarea are shown in Table II-15, Volume I. Two set of PDY estimates are presented within the table. The low end estimate (first four columns) assumes the effective recharge area that contributes to groundwater development is confined to the principal aquifer zones. The aquifer zones include Gorst, Port Orchard, Bremerton South, North Lake, Salmonberry, Clam Bay, Yukon, and Wilson Creek. The recharge area to these aquifers was assumed to extend approximately 0.5 miles beyond the inferred limits of the aquifers which are shown on Exhibit II-8, Volume I, (exclusive of areas that extend into Puget Sound).

The high end estimate of PDY (column 5 through column 8 of Table II-15, Volume I) assumes that the entire subarea, with the exception of bedrock and the high relief areas in vicinity of Puget Sound, contributes recharge to the groundwater system.

"Shallow or deep?"

Both estimates assume that a percentage of the total long-term average recharge within specified areas can be economically captured for development without imposing significant impacts on the hydrologic system (see Volume I, Section II.C.10).

The estimated recharge areas and recharge rates for the principal aquifers within the South Kitsap subarea are presented in Table II-15, Volume I. The PDY for these aquifer is estimated to be between 1.1 and 12.8 MGD (i.e. for C1 = 0.3 and C2 = 0.5, respectively). The recharge areas for the Port Orchard, Bremerton South, North Lake, and Salmonberry aquifers as well as the (Clam Bay and Yukon aquifers coalesce) thus the two sets of aquifers were treated as two lumped aquifer systems.

Why isn't this discussed in "Principal Aquifers" section?

what happened to the 21-26 in ps on p. E-4?

The PDY for the entire subarea based on a recharge rate of 22 inches/year and a total recharge area of 119 square miles is estimated to be between 37.4 and 62.3 MGD (i.e. for C1 = 0.3 and C2 = 0.5, respectively).

Existing withdrawal (average day) from the subarea based on 1985 water use data is approximately 5.38 MGD which falls well below the lower bound of the PDY estimate. Groundwater development is projected to increase to approximately 12.15 MGD by the year 2040. This level of development lies near the upper limit of the PDY estimate for the principal aquifers but well below the lower limit of the PDY estimate for the entire subarea.

There are insufficient water level trend data and other hydrologic information to assess whether present levels of development are creating adverse impacts within the subarea.

7. LAND USE AND WATER QUALITY ANALYSIS

A. Land Use Activities

The survey of existing and historical land use in the South Kitsap subarea with potential for impacting groundwater quality are depicted in Exhibits E-16 through E-27 and are discussed according to the Office of Technology Assessment's (OTA) categories where appropriate.

(1) Category 1 - Sewered/Unsewered Areas

Existing sewered areas within the South Kitsap subarea include the Cities of Port Orchard, Manchester, and portions of

Bremerton. The population living outside of these areas utilize on-site sewage disposal systems. Potential future sewered areas are defined as having an urban or semi-urban classification. Both existing and future sewered areas are depicted on Exhibits E-16 and E-17. In addition, the county operates one sludge application facility in this subarea which is located on Exhibit E-18.

(2) Category 2 - Landfills/Hazardous Waste Sites/Underground Storage Tanks

There are several historical landfills located within the South Kitsap subarea, including the County-owned Ollala site, the municipal site at Port Orchard, and the following privately owned sites; the Zinc dump near Port Orchard, and Norseland near the Bremerton Airport. Demolition sites which are currently operating include Bremerton Auto, which has public access, Childress, and Morrison Sand and Gravel, which both have private access. A total of 10 regulated hazardous waste sites in the county are located in this subarea, with the main concentrations in the Port Orchard and Manchester areas. This includes the Strandley Scrap Metal/Manning Property which is on the Superfund list. This site, located near the Pierce Kitsap County border, was used to salvage transformers from 1972 to 1983. Polychlorinated biphenyls (PCBs) were found to be present in samples taken from the site. The majority of reported underground storage tanks can also be found in the Port Orchard and Manchester areas, with 156 tanks reported at Port Orchard and 44 reported in Manchester. Regulated hazardous waste sites, numbers of underground storage tanks, and locations of current and historical landfills are shown on Exhibits E-18 and E-19.

(3) Category 3 - Transportation

Major transportation corridors running through the South Kitsap-Bremerton subarea include State Routes (SR) 3, 16, and 160. The state Department of Transportation reports annually on accident frequency on state roads. The accident figures for transportation corridors indicate the potential for spills along specific sections of road. Values for the number of accidents from 1986 and accident rates for sections of state and federal highways are shown in Exhibits E-22 and E-23. The South Kitsap subarea also contains an extensive rail system to the Bangor Submarine Base which is shown. In addition to materials spills, transportation corridors contain right-of-ways on which herbicides and pesticides may have been applied for weed control.

(4) Category 4 - Agricultural/Mining

The South Kitsap subarea has a large surface area for potential agricultural and forestry use, even with the urbanized areas of Port Orchard and Manchester, as can be seen in Exhibits E-20 and E-21. The areas shown are currently classified as Rural (2.5 acre), meaning that the maximum density allowable will ultimately be only one dwelling unit for every 2.5 acres. Application of herbicides and pesticides from this type of land use might potentially affect groundwater quality. Agricultural crops include raspberries, Christmas trees, large areas of grass pasture, and smaller areas in vegetables. Agricultural pesticides used include dicamba, picloram, methomyl, simazine, atrazine, hexazinone, and simazine. Forest plantations throughout the county are normally sprayed with chemical herbicides once or twice during their sixty year life. This spraying occurs either during the winter while the trees are dormant, or during the early spring before the new growth has obtained three-quarters of its growth. Three surface mining sites were located and are also shown on Exhibits E-20 and E-21 as well.

(5) Category 6 - Wetlands

Wetland areas may indicate an area of groundwater-surface water interaction. Locations of wetland areas were obtained from the National Wetlands Survey completed by the Department of Interior's Fish and Wildlife Service. These locations were mapped for South Kitsap and are displayed in Exhibit E-24 and E-25.

(6) Land Use/Zoning

Each of the subareas have land use policies in place which have been prepared by Kitsap County and the cities within each subarea. Exhibits E-26 and E-27 display the future land use categories for the South Kitsap subarea, according to the Kitsap County Department of Community Development.

B. Water Quality Trends

Water quality trends for the indicator parameters discussed in Volume I, Section II, Approach and Findings, were performed for data within the South Kitsap-West and South Kitsap-East subareas. The analysis was completed separately for shallow and deep wells, using a 100 foot depth as the cutoff between shallow and deep wells. For South Kitsap-West, a total of 27 wells, 6 shallow and 21 deep, were used in the trending analysis. For South Kitsap-East, a total of 113 wells, 29 shallow and 84 deep

were used. Exhibits E-28 and E-29 present the location of wells from which water quality observations above the maximum contaminant level were observed.

Data did not exist for the following indicator parameters:

- Cyanide
- Copper
- Methylene Chloride
- Tetrachloroethylene
- 1,1,1-Trichloroethane
- Trichloroethylene
- Mercury
- Zinc
- Boron
- Phenols
- PCB
- Tin
- BTX
- TOX, TOC
- Indicator Pesticides

Trend plots for the remainder of indicator parameters can be seen in Technical Appendix H. Overall, no significant trends were calculated for any of the indicator parameters from either the shallow or the deep wells. Iron and manganese levels were found to be higher than secondary standards in several of the wells

C. Sensitive Areas

Existing water quality data does not indicate any areas sensitive to land use activity in the South Kitsap subarea, although the amount of data for trending purposes is limited. The majority of the principal aquifer zones throughout the county are located at relatively deep depths and are protected from surface contamination sources by low permeability layers. However, ongoing water quality investigations at the Strandley Scrap Metal site should continue to be evaluated.

8. WATER USE AND WATER RIGHTS

A. Population

Based on the Puget Sound Council of Governments (PSCOG), June 1988, Population and Employment Forecast, the estimated existing population for the South Kitsap Subareas (West and East) is approximately 51,040 (1989). Future population is estimated to increase from 73,308 in 2010 to

104,098 in 2040. These population figures are summarized on Tables E-2 and E-3 by Forecast Analysis Zones (FAZs). Approximately 55 percent of the population within these subareas is located in the rural area, with about 45 percent of the population located in the semi-urban/rural areas. Approximately 73 percent of the population is located in the South Kitsap - East Subarea and the remaining 27 percent is located in the South Kitsap - West Subarea.

B. Water Demand

(1) Municipal and Domestic

Average and peak day municipal and domestic water demand projections are population driven. Average day demands were derived based on an assumed average gpcd for three levels of development (i.e., urban, semi-urban/rural, and rural) to reflect varying mixes of residential, commercial, and industrial customers. Average per capita demands of 175, 140, and 100 gpd were assumed for existing conditions for urban, semi-urban/rural, and rural areas, respectively. Peak day demands were derived from average day demands by multiplying by an assumed peak to average day factor of 2.3, 3.0, and 3.0 for urban, semi-urban/rural, and rural areas, respectively. These average and peak day numbers are consistent with existing water demands experienced by utilities in Kitsap County and similar areas of the State.

Average day water demand is summarized on Tables E-4 and E-5 and peak day demand is summarized on Tables E-6 and E-7. Existing total average day and peak day demand is estimated to be approximately 6.0 and 13.6 MGD, respectively. Average day is projected to increase from between approximately 7.4 and 8.6 MGD in 2010 to 22.2 and 25.7 MGD in 2040. Peak day demand is projected to range between 31.5 and 36.5 MGD in 2040.

The higher consumption values assume no change in water use patterns from existing condition. The lower values assume water conservation and an increase in multi-family housing units. Conservation assumes water savings of 5 percent in 1995 and 10 percent in 2000 and thereafter for all areas. An increase in multi-family units in the urban and transitional areas only was assumed to result in a savings of 1.5 and 3.5 percent in 1995 and 3 and 7 percent in 2000 and thereafter, respectively.

(2) Other

Very little other use is estimated for this subarea. As shown on Tables E-8 and E-9, 2.8 and 1.2 MGD of commercial/industrial and irrigation water use is projected for South Kitsap - West and South Kitsap - East Subareas, respectively. Commercial/industrial water use was based on existing water rights and was estimated to be about 0.05 MGD. The majority of commercial/industrial supplies are provided by public water supplies within the area. Based on existing water rights, fish propagation has been estimated to require approximately 2.0 MGD with most of the water use occurring the South Kitsap - West Subarea. Stock watering is negligible in South Kitsap. Irrigation has been estimated to remain at present estimated water use rate of less than 0.8 MGD.

Irrigation water use for 1985 was based on 1982 Bureau of Census agricultural statistics data for number of acres irrigated. Irrigation water use in 2040 was based on future land use. Irrigation estimates by subarea were apportioned based on existing water right records from Department of Ecology (Ecology). The number of acres under irrigation was assumed to be irrigated at an average rate of 1.5 acre-feet per acre per year. Irrigation figures were also based on a 150-day irrigation season rather than a calendar year as with other water uses.

C. Water Rights

The groundwater right information presented on Tables E-10 and E-11 have been primarily derived from the water right printout records of Ecology, dated July 11, 1988. The Table is divided into two parts. The first part contains all water rights for public water supply (i.e., identified on water right records as either "domestic multiple" or "domestic municipal"). The second part includes all the remaining water rights of record. Where a water right authorizes use for public water supply and one or more other uses, the right appears in both parts of the Table.

The Tables do not include claims to groundwater rights or groundwater rights that have been established under the permit exemption provisions of the State Ground Water Code.

In the South Kitsap - West Subarea, public water supply groundwater rights comprise 56 percent of the annual authorization (acre-feet per year) under all the recorded water rights. The water right authorization of 2,167 acre-feet per year for fish propagation is approximately 90

percent of the authorizations for all uses other than public water supply and 40 percent of total authorizations. The annual authorization of 175 acre-feet for irrigation is approximately 3 percent of total authorization.

In the South Kitsap - East Subarea, public water supply groundwater rights comprise 98 percent of the annual authorization (acre-feet per year) under all the recorded water rights. The total annual authorization under water rights for uses other than for public water supply are minimal.

Table E-1 Aquifer Characteristics Data
South Kitsap Subarea

Local Well Number	Ground Surface	Elevation in Feet (MSL)		Static Water Level	Transmissivity in gpd/ft (3)	Storage Coefficient (3)	Specific Capacity in gpm/ft (4)	Potential Well Yield in gpm (5)	Owner Well Name and Number
		Top of Screen (1)	Bottom of Screen (2)						
CLAM BAY									
24N/02E-16G05	39.00	-51.00	-98.00	12.00	1400	0.0003000	0.71	29	NOAA-1 WELL
24N/02E-16K01	25.00	-39.00	-110.00	19.00	12000		13.59	525	USN-3
24N/02E-16L02	55.00	-25.00	-82.00	6.40	21000		8.39	175	WATAUGA BEACH WELL
24N/02E-21B01	180.00	-109.00	-140.00		15000				MANCHESTER WELL NO. 10
24N/02E-15P01	63.00	-157.00	-163.00	33.40			3.51	351	USN-2 WELL
YUKON									
24N/02E-33G02	185.00	-294.00	-314.00	45.00	37800		4.78	478	MANCHESTER WELL NO. 6
24N/02E-33J01	20.00	-131.50	-156.00	34.10			7.51	751	COLBY WELL NO.3 MANCHESTER WD
24N/02E-29Q01	220.00	29.00	-30.00	163.20	2700	0.0003000	2.31	206	MANCHESTER BULLMAN ROAD WELL NO. 4
24N/02E-28C01	340.00	10.00	-15.00	85.40	1600		1.48	74	CALIFORNIA TANK WELL. MANCHSTER WD
WILSON CREEK									
23N/02E-10C04	350.00	77.00	47.00	85.00	71000				MANCHESTER WELL NO. 9
23N/02E-03Q01	315.00	-30.00	-40.00	95.00			3.00	250	SOUTH KITSAP SCHOOL DIST #402
23N/02E-03N01	330.00	83.00	78.00	130.00			3.33	104	LUZ WELL
PORT ORCHARD DEEP									
24N/01E-26K08	20.00	-749.00	-784.00	21.58			0.00		PORT ORCHARD WATER DEPT WELL NO. 7
24N/01E-25M01	60.00	-745.00	-772.00	81.00			20.00	1330	PORT ORCHARD WATER DEPT WELL NO. 6
24N/01E-25H01	100.00	-660.00	-905.00	71.50	6200		1.51	151	ANNAPOLIS WD WELL NO. 6
24N/01E-25Q01	116.00	-1034.00	-1124.00	91.00	8000		3.38	338	ANNAPOLIS WD WELL NO. 1-B
SALMONBERRY									
24N/01E-01K01	340.00	-145.00	-180.00	125.00	8000		17.50	1750	ANNAPOLIS WD WELL NO. 11
23N/01E-02M03	270.00	-160.00	-232.00	168.00			3.90	260	PORT ORCHARD WELL NO. 8
NORTH LAKE-BREMERTON SOUTH									
24N/01E-33L02	61.40	-478.60	-516.60	79.90	82000		9.11	911	BREMERTON-ANDERSON CREEK WELL NO.8
24N/01E-33K02	32.40	-157.60	-207.60	60.40			9.82	982	BREMERTON-ANDERSON CREEK WELL NO. 2
23N/01E-09C02	420.00	251.50	210.00	295.30	70000	0.0020000	13.23	386	MCCORMICK LAND CO WELL NO. 2

Table E-1 Aquifer Characteristics Data
South Kitsap Subarea

Local Well Number	Ground Surface	Elevation in Feet (MSL)		Static Water Level	Transmissivity in gpd/ft (3)	Storage Coefficient (3)	Specific Capacity in gpm/ft (4)	Potential Well Yield in gpm (5)	Owner Well Name and Number
		Top of Screen (1)	Bottom of Screen (2)						
GORST									
24N/01E-31F01	120.00	-80.00	-94.00	130.30			4.33	433	BREMERTON WATER UTIL. GORST CREEK TW2A
24N/01E-32E03	120.28	12.28	-27.72	97.28	110000		6.76	383	DOMSEA FARMS WELL NO. 3
24N/01W-36R01	220.00	-48.00	-74.00	225.00	12000		10.93	1093	PISTOL RANGE WELL NO. 1 (8")
24N/01W-35R01	277.00	56.00	42.00	220.60			8.78	878	BREMERTON WATER UTIL. GORST CREEK TW-1
24N/01W-36P01	212.00	54.00	33.50	190.70			2.66	242	BREMERTON WATER UTIL. GORST CREEK TW3
24N/01W-36R02	220.00	-38.00	-73.00	225.00	16000				PISTOL RANGE
24N/01W-36R02	220.00	-38.00	-73.00	225.25	16000	0.0003000	7.43	743	BREMERTON PISTOL RANGE WELL 3
23N/01E-01B01	325.00	-45.00	-75.00	209.00			1.03	67	GOLD MTN. GC NO. 1

NOTES:

- (1) Elevation of top of upper most screen or perforated section (some wells have multiple completions).
- (2) Elevation of bottom of lower most screen or perforated section.
- (3) Transmissivity and storage coefficient values are obtained from relatively extensive testing of the well as part of well development investigations.
- (4) Specific capacity is based on bail test or pump test data and is equal to the flow rate divided by the drawdown.
- (5) Potential well yields are estimated as the product of 2/3's the available drawdown or 100 feet (whichever is less). Potential well yields of greater than 2,500 gpm are indicated as >2,500 to reflect reasonable well yields. The available drawdown is equal to the difference between the static water level and the top of the screen or perforated section of the well.

TABLE E-2

SUBAREA 5A - SOUTH KITSAP WEST
POPULATION PROJECTION

: FAZ : : NOS.	% IN : SUB-AREA:	YEAR									
		1970	1980	1985 (1)	1990	1995 (1)	2000	2010 (1)	2020	2030 (2)	2040 (2)
9002	10%	1,067	1,738	1,992	2,246	2,448	2,650	3,064	3,478	3,893	4,307
9004	89%	3,904	7,225	8,688	10,150	11,361	12,571	14,640	16,708	18,776	20,844
9005	14%	164	302	396	489	551	612	743	874	1,005	1,136
9901	22%	905	1,248	1,301	1,354	1,516	1,678	1,886	2,094	2,302	2,510
TOTAL		6,040	10,514	12,377	14,240	15,876	17,511	20,333	23,154	25,976	28,798

- (1) Linearly extrapolated.
(2) Straight line projection.

Source: Puget Sound Council of Governments (PSCOG) June 1988 Population and Employment Forecasts

TABLE E-3
 SUBAREA 5B - SOUTH KITSAP EAST
 POPULATION PROJECTION

: FAZ : : NOS. :	% IN :SUB-AREA:	YEAR									
		1970	1980	:1985 (1):	1990	:1995 (1):	2000	:2010 (1):	2020	:2030 (2):	2040 (2):
9002	90%	9,739	15,866	18,185	20,505	22,349	24,194	27,975	31,756	35,536	39,317
9003	100%	6,594	11,767	14,069	16,370	18,073	19,776	23,180	26,583	29,987	33,390
9004	11%	486	899	1,081	1,263	1,413	1,564	1,821	2,078	2,335	2,593
TOTAL		16,819	28,532	33,335	38,137	41,835	45,534	52,975	60,417	67,858	75,300

- (1) Linearly extrapolated.
- (2) Straight line projection.

Source: Puget Sound Council of Governments (PSCOG) June 1988 Population and Employment Forecasts

TABLE E-4

SUBAREA 5A - SOUTH KITSAP WEST
MUNICIPAL AND DOMESTIC WATER DEMAND
AVERAGE DAY DEMAND (MGD)

SCENARIO	FAZ NOS.	WATER USE CATEGORY	GPCD	YEAR							STRAIGHT-LINE	
				1980	1985	1990	1995	2000	2010	2020	2030	2040
SCENARIO 1 - EXISTING CONDITION (1)												
	9002	Semi-Urban/Rural	140	0.24	0.28	0.31	0.34	0.37	0.43	0.49	0.54	0.60
	9004	Rural	100	0.72	0.87	1.02	1.14	1.26	1.46	1.67	1.88	2.08
	9005	Rural	100	0.03	0.04	0.05	0.06	0.06	0.07	0.09	0.10	0.11
	9901	Rural	100	0.12	0.13	0.14	0.15	0.17	0.19	0.21	0.23	0.25
TOTAL				1.12	1.32	1.51	1.69	1.86	2.16	2.45	2.75	3.05
SCENARIO 2 - MULTI-FAMILY INCREASE (2)												
	9002	Semi-Urban/Rural	140	0.24	0.28	0.31	0.34	0.37	0.43	0.49	0.54	0.60
	9004	Rural	100	0.72	0.87	1.02	1.14	1.26	1.46	1.67	1.88	2.08
	9005	Rural	100	0.03	0.04	0.05	0.06	0.06	0.07	0.09	0.10	0.11
	9901	Rural	100	0.12	0.13	0.14	0.15	0.17	0.19	0.21	0.23	0.25
TOTAL				1.12	1.32	1.51	1.69	1.86	2.16	2.45	2.75	3.05
SCENARIO 3 - WITH WATER CONSERVATION (3)												
	9002	Semi-Urban/Rural	140	0.24	0.28	0.31	0.33	0.33	0.39	0.44	0.49	0.54
	9004	Rural	100	0.72	0.87	1.02	1.08	1.13	1.32	1.50	1.69	1.88
	9005	Rural	100	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.09	0.10
	9901	Rural	100	0.12	0.13	0.14	0.14	0.15	0.17	0.19	0.21	0.23
TOTAL				1.12	1.32	1.51	1.60	1.67	1.94	2.21	2.48	2.75
SCENARIO 4 - CONSERVATION AND MULTI-FAMILY INCREASE (4)												
	9002	Semi-Urban/Rural	140	0.24	0.28	0.31	0.31	0.31	0.36	0.40	0.45	0.50
	9004	Rural	100	0.72	0.87	1.02	1.08	1.13	1.32	1.50	1.69	1.88
	9005	Rural	100	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.09	0.10
	9901	Rural	100	0.12	0.13	0.14	0.14	0.15	0.17	0.19	0.21	0.23
TOTAL				1.12	1.32	1.51	1.59	1.65	1.91	2.18	2.44	2.70

(1) Assumes the following average gallons per capita per day (gpcd) demand for existing conditions for each area:

Water Use Category	Average GPCD
Rural	100
Semi-Urban/Rural	140
Urban	175

- (2) Assumes increase in multi-family units in both the urban, semi-urban and semi-rural areas resulting in gradual reduction in per capita water consumption of 1.5% in the urban area and 3.5% in the semi-urban/rural areas for the year 1995, up to 3% and 7%, respectively, for the year 2000 and thereafter.
- (3) Assumes conservation savings in gallons per capita per day (gpcd) of 5% in 1995 up to 10% in 2000 and thereafter for all urban, semi-urban/rural, and rural areas.

TABLE E-5

SUBAREA 5B - SOUTH KITSAP EAST
MUNICIPAL AND DOMESTIC WATER DEMAND
AVERAGE DAY DEMAND (MGD)

SCENARIO	FAZ NOS.	WATER USE CATEGORY	GPCD	YEAR							STRAIGHT-LINE	
				1980	1985	1990	1995	2000	2010	2020	2030	2040
SCENARIO 1 - EXISTING CONDITION (1)												
	9002	Semi-Urban/Rural	140	2.22	2.55	2.87	3.13	3.39	3.92	4.45	4.98	5.50
	9003	Rural	100	1.18	1.41	1.64	1.81	1.98	2.32	2.66	3.00	3.34
	9004	Rural	100	0.09	0.11	0.13	0.14	0.16	0.18	0.21	0.23	0.26
	TOTAL			3.49	4.06	4.63	5.08	5.52	6.42	7.31	8.21	9.10
SCENARIO 2 - MULTI-FAMILY INCREASE (2)												
	9002	Semi-Urban/Rural	140	2.22	2.55	2.87	2.97	3.05	3.52	4.00	4.48	4.95
	9003	Rural	100	1.18	1.41	1.64	1.72	1.78	2.09	2.39	2.70	3.01
	9004	Rural	100	0.09	0.11	0.13	0.13	0.14	0.16	0.19	0.21	0.23
	TOTAL			3.49	4.06	4.63	4.82	4.97	5.77	6.58	7.39	8.19
SCENARIO 3 - WITH WATER CONSERVATION (3)												
	9002	Semi-Urban/Rural	140	2.22	2.55	2.87	3.02	3.15	3.64	4.13	4.63	5.12
	9003	Rural	100	1.18	1.41	1.64	1.81	1.98	2.32	2.66	3.00	3.34
	9004	Rural	100	0.09	0.11	0.13	0.14	0.16	0.18	0.21	0.23	0.26
	TOTAL			3.49	4.06	4.63	4.97	5.28	6.14	7.00	7.86	8.72
SCENARIO 4 - CONSERVATION AND MULTI-FAMILY INCREASE (4)												
	9002	Semi-Urban/Rural	140	2.22	2.55	2.87	2.86	2.81	3.25	3.69	4.13	4.57
	9003	Rural	100	1.18	1.41	1.64	1.72	1.78	2.09	2.39	2.70	3.01
	9004	Rural	100	0.09	0.11	0.13	0.13	0.14	0.16	0.19	0.21	0.23
	TOTAL			3.49	4.06	4.63	4.71	4.73	5.50	6.27	7.04	7.81

(1) Assumes the following average gallons per capita per day (gpcd) demand for existing conditions for each area:

Water Use Category	Average GPCD
Rural	100
Semi-Urban/Rural	140
Urban	175

- (2) Assumes increase in multi-family units in both the urban, semi-urban and semi-rural areas resulting in gradual reduction in per capita water consumption of 1.5% in the urban area and 3.5% in the semi-urban/rural areas for the year 1995, up to 3% and 7%, respectively, for the year 2000 and thereafter.
- (3) Assumes conservation savings in gallons per capita per day (gpcd) of 5% in 1995 up to 10% in 2000 and thereafter for all urban, semi-urban/rural, and rural areas.
- (4) Combination of Scenarios 2 and 3.

TABLE E-6

SUBAREA 5A - SOUTH KITSAP WEST
MUNICIPAL AND DOMESTIC WATER DEMAND
PEAK DAY DEMAND (MGD)

SUB-AREA	FAZ NOS.	WATER USE CATEGORY	PEAK/AVG FACTOR	YEAR							STRAIGHT-LINE	
				1980	1985	1990	1995	2000	2010	2020	2030	2040
SCENARIO 1 - EXISTING CONDITION (1)												
9002		Semi-Urban/Rural	3.0	0.73	0.84	0.94	1.03	1.11	1.29	1.46	1.63	1.81
9004		Rural	3.0	2.17	2.61	3.05	3.41	3.77	4.39	5.01	5.63	6.25
9005		Rural	3.0	0.09	0.12	0.15	0.17	0.18	0.22	0.26	0.30	0.34
9901		Rural	3.0	0.37	0.39	0.41	0.45	0.50	0.57	0.63	0.69	0.75
TOTAL				3.36	3.95	4.54	5.06	5.57	6.47	7.36	8.26	9.16
SCENARIO 2 - MULTI-FAMILY INCREASE (2)												
9002		Semi-Urban/Rural	3.0	0.73	0.84	0.94	1.03	1.11	1.29	1.46	1.63	1.81
9004		Rural	3.0	2.17	2.61	3.05	3.41	3.77	4.39	5.01	5.63	6.25
9005		Rural	3.0	0.09	0.12	0.15	0.17	0.18	0.22	0.26	0.30	0.34
9901		Rural	3.0	0.37	0.39	0.41	0.45	0.50	0.57	0.63	0.69	0.75
TOTAL				3.36	3.95	4.54	5.06	5.57	6.47	7.36	8.26	9.16
SCENARIO 3 - WITH WATER CONSERVATION (3)												
9002		Semi-Urban/Rural	3.0	0.73	0.84	0.94	0.98	1.00	1.16	1.31	1.47	1.63
9004		Rural	3.0	2.17	2.61	3.05	3.24	3.39	3.95	4.51	5.07	5.63
9005		Rural	3.0	0.09	0.12	0.15	0.16	0.17	0.20	0.24	0.27	0.31
9901		Rural	3.0	0.37	0.39	0.41	0.43	0.45	0.51	0.57	0.62	0.68
TOTAL				3.36	3.95	4.54	4.80	5.01	5.82	6.63	7.43	8.24
SCENARIO 4 - CONSERVATION AND MULTI-FAMILY INCREASE (4)												
9002		Semi-Urban/Rural	3.0	0.73	0.84	0.94	0.94	0.92	1.07	1.21	1.36	1.50
9004		Rural	3.0	2.17	2.61	3.05	3.24	3.39	3.95	4.51	5.07	5.63
9005		Rural	3.0	0.09	0.12	0.15	0.16	0.17	0.20	0.24	0.27	0.31
9901		Rural	3.0	0.37	0.39	0.41	0.43	0.45	0.51	0.57	0.62	0.68
TOTAL				3.36	3.95	4.54	4.77	4.94	5.73	6.53	7.32	8.11

(1) Assumes the following peak gallons per capita per day (gpcd) demand for existing conditions for each area:

Water Use Category	Peak GPCD
Rural	300
Semi-Urban/Rural	420
Urban	402.5

- (2) Assumes increase in multi-family units in both the urban, semi-urban and semi-rural areas resulting in gradual reduction in per capita water consumption of 1.5% in the urban area and 3.5% in the semi-urban/rural areas for the year 1995, up to 3% and 7%, respectively, for the year 2000 and thereafter.
- (3) Assumes conservation savings in gallons per capita per day (gpcd) of 5% in 1995 up to 10% in 2000 and thereafter for all urban, semi-urban/rural, and rural areas.
- (4) Combination of Scenarios 2 and 3.

TABLE E-7

SUBAREA 5B - SOUTH KITSAP EAST
MUNICIPAL AND DOMESTIC WATER DEMAND
PEAK DAY DEMAND (MGD)

SUB-AREA	FAZ NOS.	WATER USE CATEGORY	PEAK/AVG FACTOR	YEAR							STRAIGHT-LINE	
				1980	1985	1990	1995	2000	2010	2020	2030	2040
SCENARIO 1 - EXISTING CONDITION (1)												
	9002	Semi-Urban/Rural	3.0	6.66	7.64	8.61	9.39	10.16	11.75	13.34	14.93	16.51
	9003	Rural	3.0	3.53	4.22	4.91	5.42	5.93	6.95	7.97	9.00	10.02
	9004	Rural	3.0	0.27	0.32	0.38	0.42	0.47	0.55	0.62	0.70	0.78
TOTAL				10.46	12.18	13.90	15.23	16.56	19.25	21.94	24.62	27.31
SCENARIO 2 - MULTI-FAMILY INCREASE (2)												
	9002	Semi-Urban/Rural	3.0	6.66	7.64	8.61	9.06	9.45	10.93	12.40	13.88	15.36
	9003	Rural	3.0	3.53	4.22	4.91	5.42	5.93	6.95	7.97	9.00	10.02
	9004	Rural	3.0	0.27	0.32	0.38	0.42	0.47	0.55	0.62	0.70	0.78
TOTAL				10.46	12.18	13.90	14.90	15.85	18.43	21.00	23.58	26.15
SCENARIO 3 - WITH WATER CONSERVATION (3)												
	9002	Semi-Urban/Rural	3.0	6.66	7.64	8.61	8.92	9.15	10.57	12.00	13.43	14.86
	9003	Rural	3.0	3.53	4.22	4.91	5.15	5.34	6.26	7.18	8.10	9.02
	9004	Rural	3.0	0.27	0.32	0.38	0.40	0.42	0.49	0.56	0.63	0.70
TOTAL				10.46	12.18	13.90	14.47	14.91	17.32	19.74	22.16	24.58
SCENARIO 4 - CONSERVATION AND MULTI-FAMILY INCREASE (4)												
	9002	Semi-Urban/Rural	3.0	6.66	7.64	8.61	8.59	8.43	9.75	11.07	12.39	13.71
	9003	Rural	3.0	3.53	4.22	4.91	5.15	5.34	6.26	7.18	8.10	9.02
	9004	Rural	3.0	0.27	0.32	0.38	0.40	0.42	0.49	0.56	0.63	0.70
TOTAL				10.46	12.18	13.90	14.14	14.20	16.50	18.81	21.11	23.42

(1) Assumes the following peak gallons per capita per day (gpcd) demand for existing conditions for each area:

Water Use Category	Peak GPCD
Rural	300
Semi-Urban/Rural	420
Urban	402.5

- (2) Assumes increase in multi-family units in both the urban, semi-urban and semi-rural areas resulting in gradual reduction in per capita water consumption of 1.5% in the urban area and 3.5% in the semi-urban/rural areas for the year 1995, up to 3% and 7%, respectively, for the year 2000 and thereafter.
- (3) Assumes conservation savings in gallons per capita per day (gpcd) of 5% in 1995 up to 10% in 2000 and thereafter for all urban, semi-urban/rural, and rural areas.
- (4) Combination of Scenarios 2 and 3.

TABLE E-8

SUBAREA 5A - SOUTH KITSAP WEST
SUMMARY OF WATER DEMAND PROJECTIONS
AVERAGE DAY DURING IRRIGATION SEASON

SUB- AREA :	WATER USE CATEGORY :	YEAR						STRAIGHT-LINE	
		1985	1990	1995	2000	2010	2020	2030	2040
SCENARIO 1 - EXISTING CONDITION (1)									
Municipal	(5)	1.05	1.21	1.35	1.49	1.72	1.96	2.20	2.44
Domestic/Single Family	(6)	0.26	0.30	0.34	0.37	0.43	0.49	0.55	0.61
Commerical/Industrial	(7)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Irrigation	(8)	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Fish Propagation	(9)	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Stock Watering	(10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Scenario 1		3.85	4.05	4.22	4.39	4.69	4.99	5.29	5.59
SCENARIO 2 - WITH MULTI-FAMILY INCREASE (2)									
Municipal	(5)	1.05	1.21	1.35	1.49	1.72	1.96	2.20	2.44
Domestic/Single Family	(6)	0.26	0.30	0.34	0.37	0.43	0.49	0.55	0.61
Commerical/Industrial	(7)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Irrigation	(8)	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Fish Propagation	(9)	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Stock Watering	(10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Scenario 2		3.85	4.05	4.22	4.39	4.69	4.99	5.29	5.59
SCENARIO 3 - WITH WATER CONSERVATION (3)									
Municipal	(5)	1.05	1.21	1.28	1.34	1.55	1.77	1.98	2.20
Domestic/Single Family	(6)	0.26	0.30	0.32	0.33	0.39	0.44	0.50	0.55
Commerical/Industrial	(7)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Irrigation	(8)	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Fish Propagation	(9)	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Stock Watering	(10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Scenario 3		3.85	4.05	4.14	4.21	4.48	4.74	5.01	5.28
SCENARIO 4 - WITH CONSERVATION AND MULTI-FAMILY INCREASE (4)									
Municipal	(5)	1.05	1.21	1.27	1.32	1.53	1.74	1.95	2.16
Domestic/Single Family	(6)	0.26	0.30	0.32	0.33	0.38	0.44	0.49	0.54
Commerical/Industrial	(7)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Irrigation	(8)	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Fish Propagation	(9)	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Stock Watering	(10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Scenario 4		3.85	4.05	4.12	4.18	4.45	4.71	4.98	5.24

- (1) Assumes the following average gallons per capita per day (gpcd) demand for existing conditions for each area:
- | Water Use Category | Average GPCD |
|--------------------|--------------|
| Rural | 100 |
| Semi-Urban/Rural | 140 |
| Urban | 175 |
- (2) Assumes increase in multi-family units in both the urban, semi-urban and semi-rural areas resulting in gradual reduction in per capita water consumption of 1.5% in the urban area and 3.5% in the semi-urban /rural areas for the year 1995 up to 3% and 7%, respectively, for the year 2000 and thereafter.
- (3) Assumes conservation savings in gallons per capita per day (gpcd) of 5% in 1995 up to 10% in 2000 and thereafter for all urban, semi-urban/rural, and rural areas.
- (4) Combination of Scenarios 2 and 3.
- (5) Includes all water supplied by public water systems based on estimate of number of persons served by Class 1 - 4 water systems. Approximately 80 percent of population is presently served by public supply.
- (6) Assumes remaining population (approximately 20 percent of the County) is served by individual wells.
- (7) Based on existing annual water right records from Department of Ecology.
- (8) Total for 1985 through 2040 based on 1982 Bureau of the Census agriculture statistic. Proportioned to subareas based on water right records from Department of Ecology. Number of acres assumed to be irrigated at 1.5 acre-feet per acre per year. Also, water use based on a 5 month irrigation period rather than average over 12 month period.
- (9) Based on existing annual water right records from Department of Ecology.
- (10) Based on existing annual water right records from Department of Ecology.

TABLE E-9

SUBAREA 5B - SOUTH KITSAP EAST
SUMMARY OF WATER DEMAND PROJECTIONS
AVERAGE DAY DURING IRRIGATION SEASON

SUB- AREA :	WATER USE CATEGORY :	YEAR						STRAIGHT-LINE	
		1985	1990	1995	2000	2010	2020	2030	2040
SCENARIO 1 - EXISTING CONDITION (1)									
Municipal	(5)	3.25	3.71	4.06	4.42	5.13	5.85	6.57	7.28
Domestic/Single Family	(6)	0.81	0.93	1.02	1.10	1.28	1.46	1.64	1.82
Commerical/Industrial	(7)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Irrigation	(8)	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Fish Propagation	(9)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stock Watering	(10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Scenario 1		4.33	4.90	5.35	5.79	6.68	7.58	8.48	9.37
SCENARIO 2 - WITH MULTI-FAMILY INCREASE (2)									
Municipal	(5)	3.25	3.71	3.97	4.23	4.91	5.60	6.29	6.97
Domestic/Single Family	(6)	0.81	0.93	0.99	1.06	1.23	1.40	1.57	1.74
Commerical/Industrial	(7)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Irrigation	(8)	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Fish Propagation	(9)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stock Watering	(10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Scenario 2		4.33	4.90	5.24	5.55	6.41	7.27	8.13	8.99
SCENARIO 3 - WITH WATER CONSERVATION (3)									
Municipal	(5)	3.25	3.71	3.86	3.98	4.62	5.26	5.91	6.55
Domestic/Single Family	(6)	0.81	0.93	0.96	0.99	1.15	1.32	1.48	1.64
Commerical/Industrial	(7)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Irrigation	(8)	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Fish Propagation	(9)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stock Watering	(10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Scenario 3		4.33	4.90	5.09	5.24	6.04	6.85	7.65	8.46
SCENARIO 4 - WITH CONSERVATION AND MULTI-FAMILY INCREASE (4)									
Municipal	(5)	3.25	3.71	3.77	3.79	4.40	5.02	5.63	6.25
Domestic/Single Family	(6)	0.81	0.93	0.94	0.95	1.10	1.25	1.41	1.56
Commerical/Industrial	(7)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Irrigation	(8)	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Fish Propagation	(9)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stock Watering	(10)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL Scenario 4		4.33	4.90	4.98	5.00	5.77	6.54	7.31	8.08

- (1) Assumes the following average gallons per capita per day (gpcd) demand for existing conditions for each area:
- | Water Use Category | Average GPCD |
|--------------------|--------------|
| Rural | 100 |
| Semi-Urban/Rural | 140 |
| Urban | 175 |
- (2) Assumes increase in multi-family units in both the urban, semi-urban and semi-rural areas resulting in gradual reduction in per capita water consumption of 1.5% in the urban area and 3.5% in the semi-urban /rural areas for the year 1995 up to 3% and 7%, respectively, for the year 2000 and thereafter.
- (3) Assumes conservation savings in gallons per capita per day (gpcd) of 5% in 1995 up to 10% in 2000 and thereafter for all urban, semi-urban/rural, and rural areas.
- (4) Combination of Scenarios 2 and 3.
- (5) Includes all water supplied by public water systems based on estimate of number of persons served by Class 1 - 4 water systems. Approximately 80 percent of population is presently served by public supply.
- (6) Assumes remaining population (approximately 20 percent of the County) is served by individual wells.
- (7) Based on existing annual water right records from Department of Ecology.
- (8) Total for 1985 through 2040 based on 1982 Bureau of the Census agriculture statistic. Proportioned to subareas based on water right records from Department of Ecology. Number of acres assumed to be irrigated at 1.5 acre-feet per acre per year. Also, water use based on a 5 month irrigation period rather than average over 12 month period.
- (9) Based on existing annual water right records from Department of Ecology.
- (10) Based on existing annual water right records from Department of Ecology.

TABLE E-10

GROUNDWATER RIGHT INFORMATION
KITSAP COUNTY GROUNDWATER MANAGEMENT AREA
SOUTH KITSAP WEST

PUBLIC WATER SUPPLY (1) WATER RIGHTS

Source I.D. (2)	Location	Control No.	GPM	MGD	AF/YR(s) (3)	Comments (4)
T22N, R01E						
Howard	22N 01E 03A	G1-22260C	40	.06	4	
Harbor Water Co. (Greenwood Water)	22N 01E 03L	G1-22986C	50	.07	8.1	Cl.4-01625X
BKS Water System	22N 01E 03A	G1-23936C	100	.14	10	Cl.2-03581D
Harbor Water Co.	22N 01E 03J	G1-24193C	50	.07	25	
Log, Inc.	22N 01E 04	G1-00536C	100	.14	49	
Glenwood Farms	22N 01E 05Q	G1-24794C	166	.24	21.2	Cl.2-362419 362332
Molgard (Pine Rd. Est.)	22N 01E 08C	G1-24797P	74	.11	10	Cl.2-37286Y
Kings Garden, Inc.	22N 01E 10Q	G1-20393C	90	.13	19.5	CU (Inst.) w/S, R&B, I-30
Harbor Water Co. (Spruce Rd.)	22N 01E 10C	G1-21496C	50	.07	6	Cl.2-83424J
Daniel	22N 01E 10	G1-23234C	10	.01	3	
Harbor Water Co. (Spruce Rd.)	22N 01E 10C	G1-24861P	200	.29	6 (s)	Cl.2-83424J
Subtotal			930	1.33	31.5 187.3	
T22N, R01W						
Wye Lk Ac Tr Water	22N 01W 01	G1-22257C	60	.09	26	Cl.2-98684P
Subtotal			60	.09	26	

TABLE E-10 continued

Source I.D. (2)	Location	Control No.	GPM	MGD	AF/YR(s) (3)	Comments (4)
T23N, R01E						
Woodward	23N 01E 03J	G1*09654C	50	.07	6.5	
Snider	23N 01E 03N	G1-24693P	30	.04	6	
Munro	23N 01E 03	G1-24790P	37	.05	4.5	
Lombard	23N 01E 04J	G1-22905C	25	.04	9	C1.4-47830C
Iliad, Inc.	23N 01E 05	G1-24634P	20	.03	10	
Sunnyslope W.D.	23N 01E 06	G1*04777C	200	.29	135 (s)	C1.1-85550H
					10.6	
Nelson	23N 01E 06G	G1-23235C	10	.01	2.25	
Sunnyslope W.D.	23N 01E 06	G1-24383P	200	.29	135 (s)	C1.1-85550H
					10.6	
Sunnyslope W.D.	23N 01E 07	G1*02414C	130	.19	135	C1.1-85550H
McCormick Land Co.	23N 01E 09C	G1-24437P	600	.86	300	C2-40529X
	23N 01E 09G					CU (Inst.) w/I-100
Lorenz (wells) (Lara Lee-Navy Yard)	23N 01E 15K	G1-22505C	60	.09	6	C2-43294Y
Smith Presbyterian of Seattle	23N 01E 15H	G1-23904C	45	.06	5	
	23N 01E 17Q	G1*03667C	20	.03	32	
WA Congregational Harbor Water Co. (Little Tree Water)	23N 01E 20A	G1*04204C	41	.06	14	
	23N 01E 27K	G1-23073C	100	.14	36	C2-022368
Wells Harbor Water Co. (Wicks Lake Ranches)	23N 01E 28Q	G1-24139P	45	.06	6	C1.4-17127Q
	23N 01E 31H	G1-22486C	100	.14	17	C2-967287
Harbor Water Co. (Wicks Lake Ranches)	23N 01E 31	G1-23416C	200	.29	125	C2-967287
Harbor Water Co. (Homestead Acres)	23N 01E 33A	G1-23138C	60	.09	14.4	C2-33969M
Garrison (Cedarbrook Garrison)	23N 01E 33Q	G1-24032P	600	.86	30	C1.2-14001T
Harbor Water Co. (Parkview Terrace)	23N 01E 33A	G1-24860P	75	.11	25	C1.1-66215N

TABLE E-10 continued

Source I.D. (2)	Location	Control No.	GPM	MGD	AF/YR(s) (3)	Comments (4)
T23N, R01E continued						
Harbor Pump & Wtr. (Parkview Terrace)	23N 01E 34	G1-00061C	198	.29	125.5	C1.1-66215N
Harbor Water Co. (Parkview Terrace)	23N 01E 34	G1-21212C	<u>250</u>	<u>.36</u>	<u>125.5</u>	C1.1-66215N
Subtotal			3,096	4.45	1,055.85	
T23N, R01W						
Aero Mobile Park	23N 01W 12C	G1-22275C	12	.02	19.2	
Fairview Estates 1	23N 01W 36B	G1-22370C	<u>65</u>	<u>.09</u>	<u>14</u>	
Subtotal			77	.11	33.2	
T24N, R01E						
Bremerton	24N 01E 33L	G1*05570C	450	.65	700	C1.1-08200R
Bremerton	24N 01E 33L	G1-22932C	<u>600</u>	<u>.86</u>	<u>960</u>	(s) C1.1-08200R
Subtotal			1,050	1.51	700	
T24N, R01W						
Bremerton	24N 01W 36R	G1-23939C	<u>650</u>	<u>.94</u>	<u>1,040</u>	C1.1-08200R
Subtotal			650	.94	1,040	
TOTAL			<u>5,863</u>	<u>8.43</u>	<u>3,042.35</u>	

Footnotes:

- (1) Public water supply includes all water rights recorded with a use designation of "domestic multiple" or "domestic municipal" based on Ecology water right printout dated July 11, 1988.
- (2) Under Source I.D. column, the entry is generally the original water right holder. The parenthetical entry denotes the public water supply entity from DSHS records.

Footnotes continued:

- (3) (s) = Supplemental rights are not included in subtotal or totals.
- (4) Under Comments, the class of public supply system and DSHS water facility inventory number is shown; also, CU - Common Usage (i.e. water right quantities are not broken down by use category; and CU (Inst.) - Common Usage (Instantaneous) (i.e., the instantaneous rate of withdrawal is not broken down by use category).

TABLE E-10 continued

ALL OTHER RECORDED GROUNDWATER RIGHTS

Source I.D.	Location	Control No.	Use (1)	GPM	MGD	AF/YR(s) (2)	Comments (3)
T22N, R01E							
Hall	22N 01E 03R	G1*02455C	D I-8	45	.06	16	CU
McCay	22N 01E 04K	G1*10951C	D I-10	25	.04	1 10	CU (Inst.)
Drescher	22N 01E 04D	G1-21891C	D S I-2	30	.04	1 1 4	CU (Inst.)
Sandstrom	22N 01E 04N	G1-22433C	D I-1	20	.03	2	CU
Olsen	22N 01E 09E	G1*05918C	D I-9	80	.12	23.6	CU
McCloskey	22N 01E 09A	G1-22039C	D C&I	80	.12	4 26	CU (Inst.)
DeWitty	22N 01E 10J	G1*11207C	D I-3	17	.02	1 6	CU (Inst.)
Kings Garden, Inc.	22N 01E 10Q	G1-20393C	S R&B I-30			1 2.5 57	CU (Inst.) w/DM
Subtotal			I-63	297	.43	156.1	
T23N, R01W							
Bremerton Water	23N 01W 01B	G1-23787C	I-100	130	.19	75	
Frederickson	23N 01W 10C	G1-20973C	D	10	.01	2	
Thon	23N 01W 12Q	G1-23798C	D	27	.04	3	
Subtotal			I-100	167	.24	80	
T23N, R01E							
Cooper	23N 01E 03J	G1*07349C	D I-2	12	.02	5	CU
Kent	23N 01E 07M	G1-00158C	D I-2	10	.01	1 5	CU (Inst.)

TABLE E-10 continued

Source I.D.	Location	Control No.	Use (1)	GPM	MGD	AF/YR(s) (2)	Comments (3)
T23N, R01E continued							
Dillon	23N 01E 07L	G1-24163C	FP	20	.03	15	
McCormick Land Co.	23N 01E 09C&G	G1-24437P	I-100			150	CU (Inst.) w/DM
Crone	23N 01E 15	G1-00520C	D	11	.02	1.7	CU (Inst.)
			I-1			1.3	
Flanagan	23N 01E 15L	G1-21601C	D	15	.02	2	
Bickle	23N 01E 18C	G1-22558C	D	36	.05	4	CU (Inst.)
			FP			10	
			I-8			16	
Lyon	23N 01E 22P	G1-00333C	D	10	.01	1	CU (Inst.)
			I-2			5	
Kincaid	23N 01E 22Q	G1-24613B	D	30	.04	1	CU (Inst.)
			S			1	
			I-2			4	
Weaver	23N 01E 27	G1-22901G	D	14	.02	1	CU (Inst.)
			I-5			5	
Subtotal			I-122	158	.22	229	
T24N, R01E							
Domsea Farms	24N 01E 32E	G1-22050C	FP	220	.32	350	
Domsea Farms	24N 01E 32E	G1-22551C	FP	350	.50	448	
Domsea Farms	24N 01E 32	G1-22606C	FP	325	.47	448	
Domsea Farms	24N 01E 32E	G1-22644C	FP	350	.50	448	
Domsea Farms	24N 01E 32E	G1-22674C	FP	325	.47	448	
Bergner	24N 01E 33J	G1*07852C	D	20	.03	1	CU (Inst.)
			I-3			6	
Subtotal			I-3	1,590	2.29	2,149	
TOTAL			<u>288</u>	<u>2,212</u>	<u>3.18</u>	<u>2,614.1</u>	
GRAND TOTALS				8,075	11.61	5,656.45	

Footnotes:

- (1) Use abbreviations are as follows: D - Domestic Supply; I-_____ - Irrigation-(number of acres); C&I - Commercial and/or Industrial; R&B - Recreational and/or Beautification; WP - Wildlife Propagation; FP - Fish Propagation; and S - Stockwatering.
- (2) (s) = Supplemental rights are not included in subtotal or totals.
- (3) CU - Common Usage (i.e. water right quantities are not broken down by use category); CU (Inst.) - Common Usage (Instantaneous) (i.e. the instantaneous rate of withdrawal is not broken down by use category); and CU w/DM or CU (Inst.) w/DM means common usage with domestic multiple or domestic municipal entry in the public water supply table.

TABLE E-11

GROUNDWATER RIGHT INFORMATION
KITSAP COUNTY GROUNDWATER MANAGEMENT AREA
SOUTH KITSAP EAST

PUBLIC WATER SUPPLY (1) WATER RIGHTS

Source I.D. (2)	Location	Control No.	GPM	MGD	AF/YR(s) (3)	Comments (4)
T22N, R01E						
Fleming	22N 01E 01R	G1-21371C	30	.04	6	CU (Inst.)
Talmo, Inc.	22N 01E 02K	G1-23896C	100	.14	7.5	C1.4-19659A DSHS - 30 gpm
Burley Water Assn.	22N 01E 11A	G1-20172C	150	.22	24.5	C1.2-09450C
Wauna-Easley	22N 01E 11N	G1-23577C	90	.13	15	C1.2-39740L
Clayton Pl. Water	22N 01E 12C	G1-23332C	50	.07	5	C1.2-13445B
Cassidy	22N 01E 12L	G1-23675C	60	.09	38	
Subtotal			480	.69	96	
T22N, R02E						
Prospect Pt. Beach	22N 02E 03C	G1-00060C	16.8	.02	19	C1.2-697206
Ofsthum	22N 02E 03L	G1-23251P	35	.05	10	
Ritchie	22N 02E 03L	G1-23258C	50	.07	10	
South Kitsap #402	22N 02E 05A	G1*07268C	25	.04	33.6	
Skrivanich	22N 02E 05E	G1-24010P	40	.06	4	
Nack Water System	22N 02E 06D	G1-24014C	40	.06	4.2	C1.4-10998M
Orsborn	22N 02E 06G	G1-24481P	30	.04	4	
Zimmerman	22N 02E 07C	G1-24264C	30	.04	6	C1.4-16418
Richardson Water (Pine Lk. Mobile Home Est. 1-3)	22N 02E 08F	G1*09555C	45	.06	24	C1.2-67397Y
Richardson Water (Pine Lk. Mobile Home Est. 1-3)	22N 02E 08F	G1-00637C	200	.29	200 24 (s)	C1.2-67397Y
Harbor Pump & Wtr. (Alpinewood)	22N 02E 08R	G1-20289C	11	.02	8.6	C1.2-018404
Pine Lk. Dev. Inc.	22N 02E 08F	G1-22904C	112	.16	48.6	C1.2-67398F
Matejka	22N 02E 08	G1-24699P	40	.06	4.5	C1.4-37144R

TABLE E-11 continued

Source I.D. (2)	Location	Control No.	GPM	MGD	AF/YR(s) (3)	Comments (4)
T22N, R02E continued						
Harbor Pump & Wtr. (Alpinewood)	22N 02E 08	G1-24768C	100	.14	44.6 (s)	Cl.2-018404
S. Olalla Water	22N 02E 09F	G1*10117C	30	.04	13	Cl.4-82180K
Harbor Pump & Wtr. (Olalla)	22N 02E 09A	G1-20305C	30	.04	15	Cl.2-63215F
Sunny Core Water	22N 02E 09	G1-21563C	40	.06	17.6	Cl.2-85320F
Harbor Water Co. (Seaview)	22N 02E 09	G1-24077C	<u>100</u>	<u>.14</u>	<u>40</u>	Cl.2-769209
Subtotal			974.8	1.39	462.1	
T23N, R01E						
Frees	23N 01E 01E	G1*00645C	50	.07	11.75	
Annapolis W.D.	23N 01E 01K	G1-00597C	750	1.08	1,200	Cl.1-02600W
Annapolis W.D.	23N 01E 01K	G1-24053C	1,300	1.87	1,460 (s)	Cl.1-02600W
Port Orchard Church of the Nazarene	23N 01E 02N	G1-23207C	20	.03	5	Cl.3t-02354V
Stoican	23N 01E 11	G1-21810C	25	.04	5	CU w/I-.75 ad C&I
Bethel Community Water System	23N 01E 12N	G1*00556C	20	.03	17	Cl.2-05950R
Martell	23N 01E 12M	G1*09997C	98	.14	27	
Pearson	23N 01E 12E	G1-20162C	5	.01	5	
Estep (Bethel East)	23N 01E 12L	G1-21180C	90	.13	16	Cl.2-05965L
Martell	23N 01E 12L	G1-22795C	73	.11	12.5	
Crown Properties (Krista Firs)	23N 01E 12N	G1-23034C	95	.14	45	Cl.4-43175U
Robertson	23N 01E 13R	G1-21034C	15	.02	2	
Berry	23N 01E 13H	G1-22836C	50	.07	27	
G&W Water Corp. (Regency Park)	23N 01E 13C	G1-22840C	20	.03	17.1	Cl.2-71727A
Wick Homes, Inc.	23N 01E 13N	G1-22955C	60	.09	18	
Congdon	23N 01E 14	G1-21165P	50	.07	7	
Harbor Water Co. (Strattonwood)	23N 01E 23H	G1-24079C	100	.14	32.5	Cl.2-84618N
Szymanski	23N 01E 24A	G1-23321C	40	.06	9	Cl.4-86767P

TABLE E-11 continued

Source I.D. (2)	Location	Control No.	GPM	MGD	AF/YR(s) (3)	Comments (4)
T23N, R01E continued						
Szymanski	23N 01E 24B	G1-23322C	30	.04	4	C1.4-86765N
Shobert Const. Co.	23N 01E 24H	G1-23406C	55	.08	42	
Harbor Water Co. (Horizons West)	23N 01E 24H	G1-24859C	40	.06	64 (s)	C1.1-343754
Harbor Water Co. (Horizons West)	23N 01E 25J	G1-21241C	100	.14	43	C1.1-343754
Harbor Water Co. (Horizons West)	23N 01E 25J	G1-23033C	100	.14	160	C1.1-343754
Harbor Water Co. (Horizons West)	23N 01E 25J	G1-23637C	300	.43	203 (s)	C1.1-343754
Harbor Water Co. (Parkview Terr.)	23N 01E 26	G1-22796C	200	.29	320	C1.1-66215N
Harbor Water co. (Parkview Terr.)	23N 01E 35	G1-20098C	<u>100</u>	<u>.14</u>	<u>16</u>	C1.1-66215N
Subtotal			3,786	5.45	2,041.85	
T23N, R02E						
Hower	23N 02E 02	G1*02307C	30	.04	48	CU w/C&I
USCE	23N 02E 02	G1*02559C	11	.02	10	
Ryan Built Homes	23N 02E 05K	G1-23452C	100	.14	16.4	
Asvelo	23N 02E 06J	G1-22972C	25	.04	4.5	
Dillon	23N 02E 07	G1*06225C	22	.03	35.2	
Goerz	23N 02E 07	G1-22574C	60	.09	11	
Harbor Water Co.	23N 02E 08R	G1-22463C	50	.07	36	
Illes	23N 02E 09M	G1-22878C	20	.03	3	
Trauba	23N 02E 09L	G1-22917C	25	.04	7.2	
Sedgwick Enterprises, Inc.	23N 02E 10	G1-00529C	100	.14	51	
Manchester W.D.	23N 02E 10C	G1-22787C	160	.23	125	C1.1-507002
Tribune Publ.	23N 02E 15N	G1*03551C	20	.03	5.6	
Talmo (Long Lake View Est. 2-5)	23N 02E 17	G1-23610P	100	.14	25	C1.2-48031X

TABLE E-11 continued

Source I.D. (2)	Location	Control No.	GPM	MGD	AF/YR(s) (3)	Comments (4)
T23N, R02E continued						
Talmo (Long Lake View 2-5)	23N 02E 17H	G1-23755P	65	.09	54	Cl.2-48031X
DBA Asher-Wells (Kitsap W. M/H?)	23N 02E 18E	G1-00619C	150	.22	45	Cl.2-42635C
Richardson (Brook Haven)	23N 02E 18	G1-20244C	30	.04	19	Cl.4-08760Y
Sanderson & Assn. (Strawberry Hill PUD)	23N 02E 18	G1-22886C	125	.18	83.7	Cl.2-84625C
Kogan	23N 02E 18M	G1-23371C	25	.04	1	
Long Lake Water	23N 02E 20	G1-21950C	30	.04	12	Cl.2-48030D
Delta Dev. Co.	23N 02E 20C	G1-24034P	20	.03	10	Cl.4-10340E
Stockwell	23N 02E 21Q	G1-23226C	36	.05	6	
Stockwell	23N 02E 21Q	G1-23227C	36	.05	6	
Miller	23N 02E 21E	G1-23964C	30	.04	3	Cl.4-30064P
Iliad, Inc.	23N 02E 22	G1-24487C	92	.13	29.5	
Wimberly	23N 02E 27E	G1-22797C	80	.12	6	
Montgomery	23N 02E 27M	G1-24255P	10	.01	1.5	Cl.4-16911B
Busenbark	23N 02E 28	G1-23229C	10	.01	3	
Wood	23N 02E 29H	G1-23117P	50	.07	12	
Holmas (Hidden Acres)	23N 02E 31D	G1-24391C	100	.14	18	Cl.2-274866
Goetz	23N 02E 34	G1-00635C	45	.06	15	
Subtotal			1,657	2.36	702.6	
T24N, R01E						
Annapolis W.D.	24N 01E 25E	G1*00023C	2,000	2.88	1,620	Cl.1-02600W
US FHA	24N 01E 25G	G1*00055S	350	.50	570	
Port Orchard	24N 01E 25	G1*04166C	350	.50	560	Cl.1-68900V
Annapolis W.D.	24N 01E 25Q	G1-24052C	800	1.15	1,280	Cl.1-02600W
Port Orchard	24N 01E 26	G1-24586C	750	1.08	1,210	Cl.1-68900V
Annapolis W.D.	24N 01E 36G	G1-23178C	400	.58	400	Cl.1-02600W
Subtotal			4,650	6.69	5,640	

TABLE E-11 continued

Source I.D. (2)	Location	Control No.	GPM	MGD	AF/YR(s) (3)	Comments (4)
T24N, R02E						
Watauga Beach Com.	24N 02E 16	G1*03497C	80	.12	90	C1.2-935004
Dyrness	24N 02E 17Q	G1*07707C	33	.05	9.33	
Robins	24N 02E 20D	G1-22112C	20	.03	4	
Ryan Built Homes	24N 02E 20F	G1-22709C	100	.14	22	
Manchester W.D.	24N 02E 22M	G1*00372C	450	.65	420	C1.1-507002
Manchester W.D.	24N 02E 22N	G1*00373C	450	.65	420	C1.1-507002
USDI	24N 02E 25	G1*09295C	20	.03	8	
Stevens	24N 02E 28	G1-00541C	40	.06	10	
Stockwell (Water)	24N 02E 29	G1-00182C	50	.07	5	C1.4-84453V
Manchester W.D.	24N 02E 29	G1-20328C	50	.07	26.7	C1.1-507002
US FHA	24N 02E 31A	G1*00053S	325	.47	528	
Annapolis W.D.	24N 02E 31P	G1-21844C	200	.29	320 (s)	C1.1-02600W
Kitsap Co-BO/Comm.	24N 02E 31	G1-22697C	275	.40	4	CU (Inst.) w/I-25
Annapolis W.D.	24N 02E 31G	G1-24002C	280 (s)		240 (s)	
Kerkes	24N 02E 32D	G1*06917C	13.3	.02	3.7	
Manchester W.D.	24N 02E 33	G1*05640C	190	.27	304	C1.1-507002
Manchester W.D.	24N 02E 33L	G1-23372C	600	.86	291	C1.1-507002
Hinkley Hill Water	24N 02E 33	G1-24688C	21	.03	9	C1.4-30406P
Subtotal			2,917.3	4.21	2,154.73	
TOTAL			<u>14,465.1</u>	<u>20.79</u>	<u>11,097.28</u>	

Footnotes:

- (1) Public water supply includes all water rights recorded with a use designation of "domestic multiple" or "domestic municipal" based on Ecology water right printout dated July 11, 1988.
- (2) Under Source I.D. column, the entry is generally the original water right holder. The parenthetical entry denotes the public water supply entity from DSHS records.
- (3) (s) = Supplemental rights are not included in subtotal or totals.
- (4) Under Comments, the class of public supply system and DSHS water facility inventory number is shown; also, CU - Common Usage (i.e. water right quantities are not broken down by use category; and CU (Inst.) - Common Usage (Instantaneous) (i.e., the instantaneous rate of withdrawal is not broken down by use category).

TABLE E-11 continued

ALL OTHER RECORDED GROUNDWATER RIGHTS

Source I.D.	Location	Control No.	Use (1)	GPM	MGD	AF/YR(s) (2)	Comments (3)
T22N, R01E							
Fleming	22N 01E 01R	G1-21371C	I-2			4	CU (Inst.) w/DM
Blondell	22N 01E 02N	G1-21994C	D	25	.04	4	CU (Inst.)
			I-2			4	
Subtotal			I-4	25	.04	12	
T22N, R02E							
Avery	22N 02E 05D	G1*07983C	D	45	.06	1	CU (Inst.)
			I-5			10	
Lovelace	22N 02E 05D	G1*10414C	D	8	.01	1	
Staples	22N 02E 05C	G1-20140C	D	5	.01	2	CU (Inst.)
			I-1.5			2	
Thrall	22N 02E 05G	G1-21882C	D	12	.02	2	
Nelson	22N 02E 06E	G1-00083C	D	12	.02	1	CU (Inst.)
			S			.5	
			I-1			2.5	
Subtotal			I-7.5	82	.12	22	
T23N, R01E							
Port Orchard Church of the Nazarene	23N 01E 02N	G1-23339C	D	50	.07	10	
Hamilton	23N 01E 11B	G1-21302C	D	15	.02	2	CU (Inst.)
			I-1			2	
Stoican	23N 01E 11	G1-21810C	C&I				CU w/DM
			I-.75				
Ritzman	23N 01E 12P	G1-00057C	D	10	.01	1	
Thomas	23N 01E 14R	G1-00596C	I-4	40	.06	8	
Landon	23N 01E 14J	G1-22161C	D	50	.07	1	CU
			S			1	
			R&B				
			FP				
			I-5			10	

TABLE E-11 continued

Source I.D.	Location	Control No.	Use (1)	GPM	MGD	AF/YR(s) (2)	Comments (3)
T23N, R01E continued							
Orendorff	23N 01E 14E	G1-22895C	D I-1	15	.02	2	CU
Morrison Grovel	23N 01E 23	G1*03892C	C&I	50	.07	20	
Rowland	23N 01E 23N	G1-22911C	D	15	.02	1	
Shuford	23N 01E 23N	G1-22994C	D	5	.01	2	
Subtotal			I-11.75	250	.35	60	
T23N, R02E							
Hower	23N 02E 02	G1*02307C	C&I				CU w/DM
Buen	23N 02E 04Q	G1-20883C	D I-5	50	.07	2 10	CU (Inst.)
Holmes	23N 02E 05Q	G1-20516P	D I-5	20	.03	2 10	CU (Inst.)
Redwood	23N 02E 08	G1-21928C	D I-2.5	20	.03	2 5	CU (Inst.)
Coolen	23N 02E 10M	G1-24780C	D I-5	15	.02	1 5	CU (Inst.)
Tribune Pub. Co.	23N 02E 15N	G1*03551C	C&I				CU w/DM
Foreman	23N 02E 17	G1*11093C	D	30	.04	1	
Wiles	23N 02E 18L	G1-21816C	D I-8	15	.02	2 18	CU (Inst.)
Provo	23N 02E 19G	G1-23402P	D	10	.01	1	
Richmond	23N 02E 27F	G1-22422C	D I-1.5	15	.02	1 3	CU (Inst.)
Sanford	23N 02E 31E	G1-24357C	D	15	.02	1	
Gammill	23N 02E 32J	G1-23005C	D S	20	.03	13	CU
Subtotal			I-10 I-37	210	.29	77	

TABLE E-11 continued

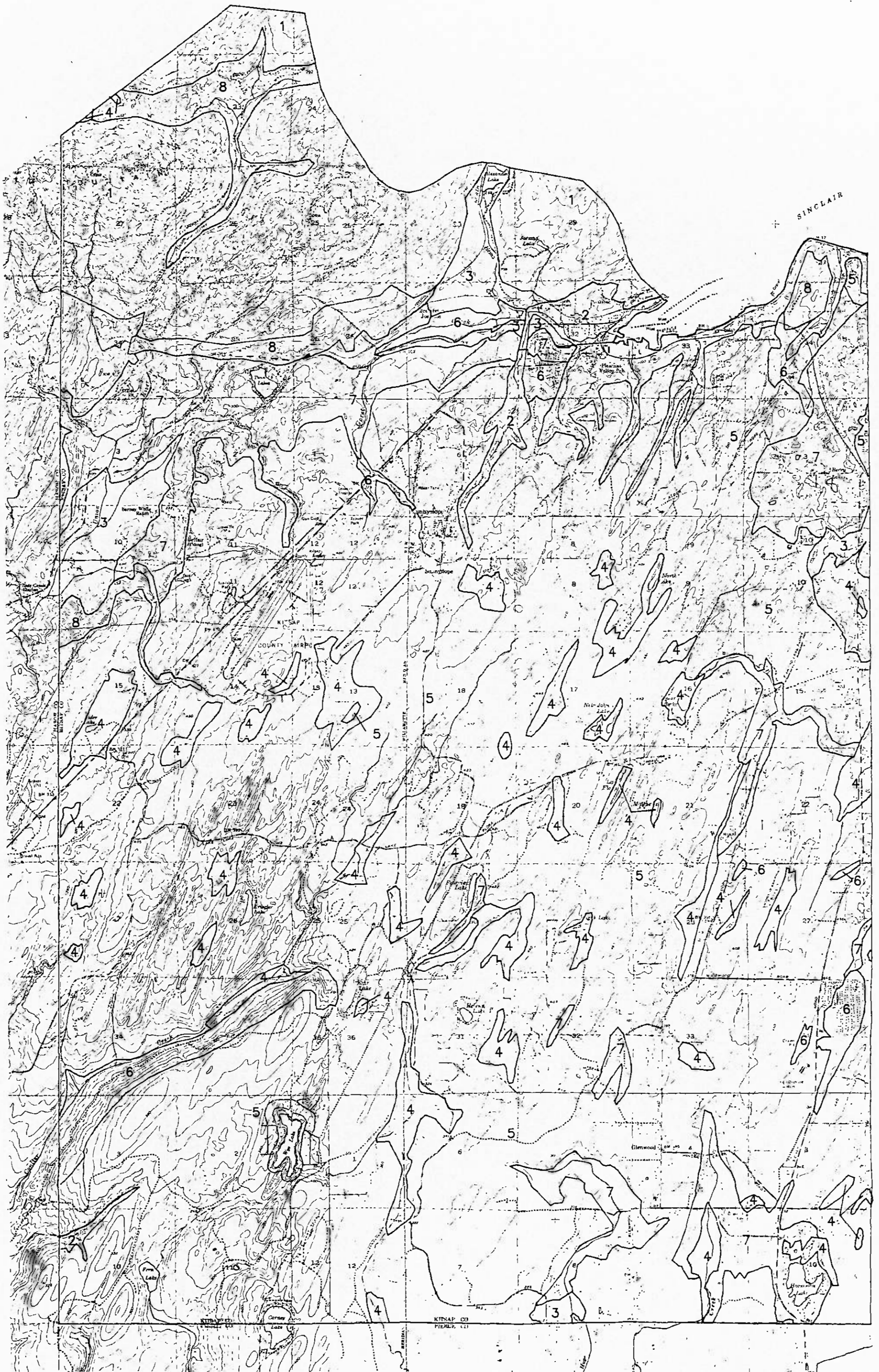
Source I.D.	Location	Control No.	Use (1)	GPM	MGD	AF/YR(s) (2)	Comments (3)
T24N, R01E							
Kitsap Co. Sewer District	24N 01E 25	G1-20203C	<u>C&I</u>	<u>10</u>	<u>.01</u>	<u>.04</u>	
Subtotal				10	.01	.04	
T24N, R02E							
USDI Bur. Sp Fish	24N 02E 16	G1-20690C	D FP	20	.03	4 28	CU (Inst.)
Tebbe	24N 02E 16E	G1-22110C	D I-7.2	40	.06	1 14	CU (Inst.)
Backstrom	24N 02E 20N	G1*05394C	D I-2	18.25	.03	4	CU
Bloomquist	24N 02E 29	G1-00615C	D I-1	10	.01	2	CU
Wiley	24N 02E 30N	G1-00185C	D I-3	10 30	.01 .04	1 5	
Kitsap Co-Bo/Comm.	24N 02E 31	G1-22697C	I-25			50	CU (Inst.) w/DM
Simpson	24N 02E 31	G1*10768C	D	10	.01	1	
Brockerman	24N 02E 33P	G1*06850C	D I-3	15	.02	1 6	CU (Inst.)
Anderson	24N 02E 34	G1*02458C	FP R&B I-2	35	.05	22	CU
Subtotal			I-43.2	<u>188.25</u>	<u>.26</u>	<u>139</u>	
TOTAL			<u>103.45</u>	<u>765.25</u>	<u>1.07</u>	<u>310.04</u>	
GRAND TOTAL				15,230.35	21.86	11,407.32	





Footnotes:

- (1) Use abbreviations are as follows: D - Domestic Supply; I-_____ - Irrigation-(number of acres); C&I - Commercial and/or Industrial; R&B - Recreational and/or Beautification; WP - Wildlife Propagation; FP - Fish Propagation; and S - Stockwatering.

Footnotes continued:

- (2) (s) = Supplemental rights are not included in subtotal or totals.
- (3) CU - Common Usage (i.e. water right quantities are not broken down by use category); CU (Inst.) - Common Usage (Instantaneous) (i.e. the instantaneous rate of withdrawal is not broken down by use category); and CU w/DM or CU (Inst.) w/DM means common usage with domestic multiple or domestic municipal entry in the public water supply table.



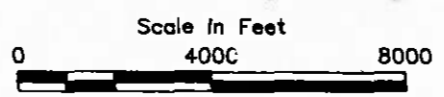





Kitsap County
Ground Water Management Plan
EXHIBIT E-1
Geologic Characteristics Map
South Kitsap (West)

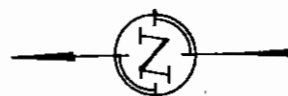


Map Unit	Unit Type	Unit Characteristics
1	Bedrock	Volcanic and Sedimentary Rocks
2	High Slope	Steep Topography/Complex Geology
3	Lacustrine	Lake and Flood Plain Sediments
4	Peat	Saturated Organic Sediments
5	"Till"	Poorly Sorted Glacial Deposits
6	Sands	Stratified Sand Deposits
7	Gravels	Gravels With Sand
8	Undifferentiated	Variable Unidentified Glacial Deposits

(Based on Deeter, 1979)
 Note: Refer to Volume I, Section II.4.B for descriptions of units

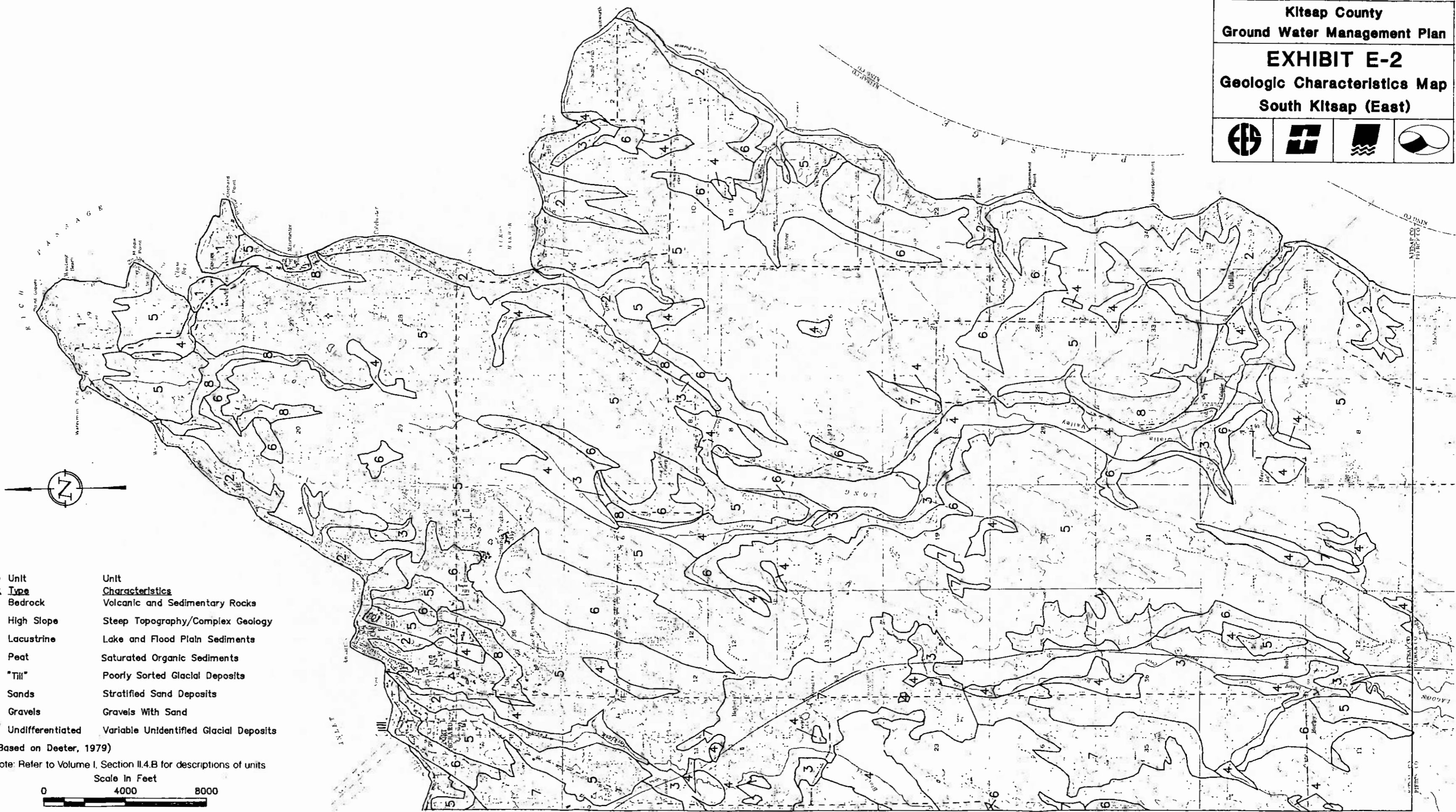
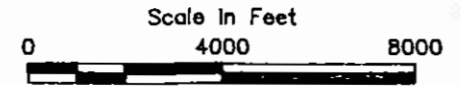


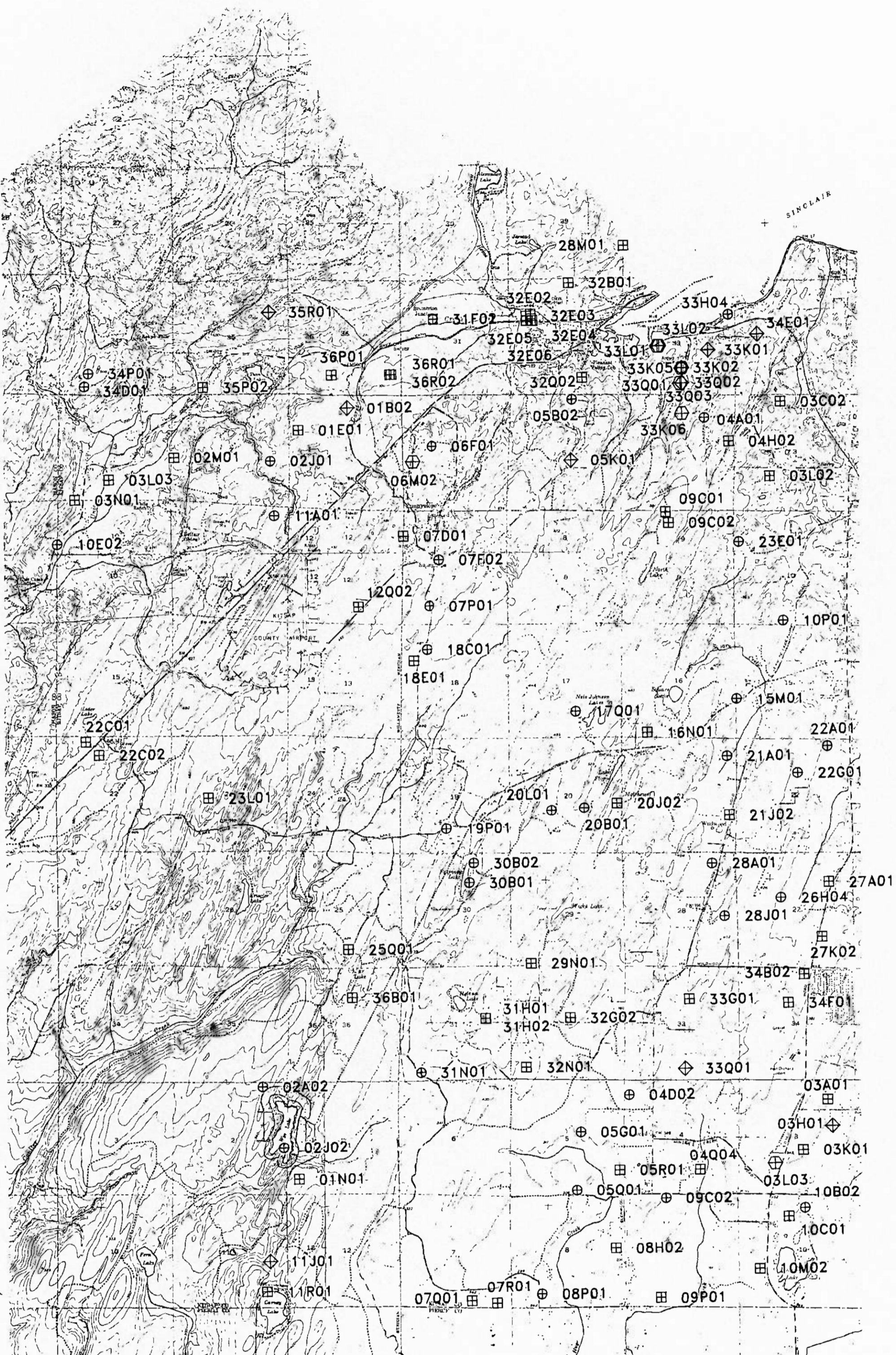
Kitsap County
Ground Water Management Plan
EXHIBIT E-2
Geologic Characteristics Map
South Kitsap (East)



Map Unit	Unit Type	Unit Characteristics
1	Bedrock	Volcanic and Sedimentary Rocks
2	High Slope	Steep Topography/Complex Geology
3	Lacustrine	Lake and Flood Plain Sediments
4	Peat	Saturated Organic Sediments
5	"Till"	Poorly Sorted Glacial Deposits
6	Sands	Stratified Sand Deposits
7	Gravels	Gravels With Sand
8	Undifferentiated	Variable Unidentified Glacial Deposits

(Based on Deeter, 1979)
 Note: Refer to Volume I, Section II.4.B for descriptions of units





Map Legend

⊕ 22N01 Well Location and Number





WELL DEPTH

- ⊕ 0 - 100 feet
- ⊞ 100 - 300 feet
- ⊠ 300 - 500 feet
- ⊡ > 500 feet


Scale in Feet







Kitsap County
Ground Water Management Plan
EXHIBIT E-3
Location of Database Wells
South Kitsap (west)

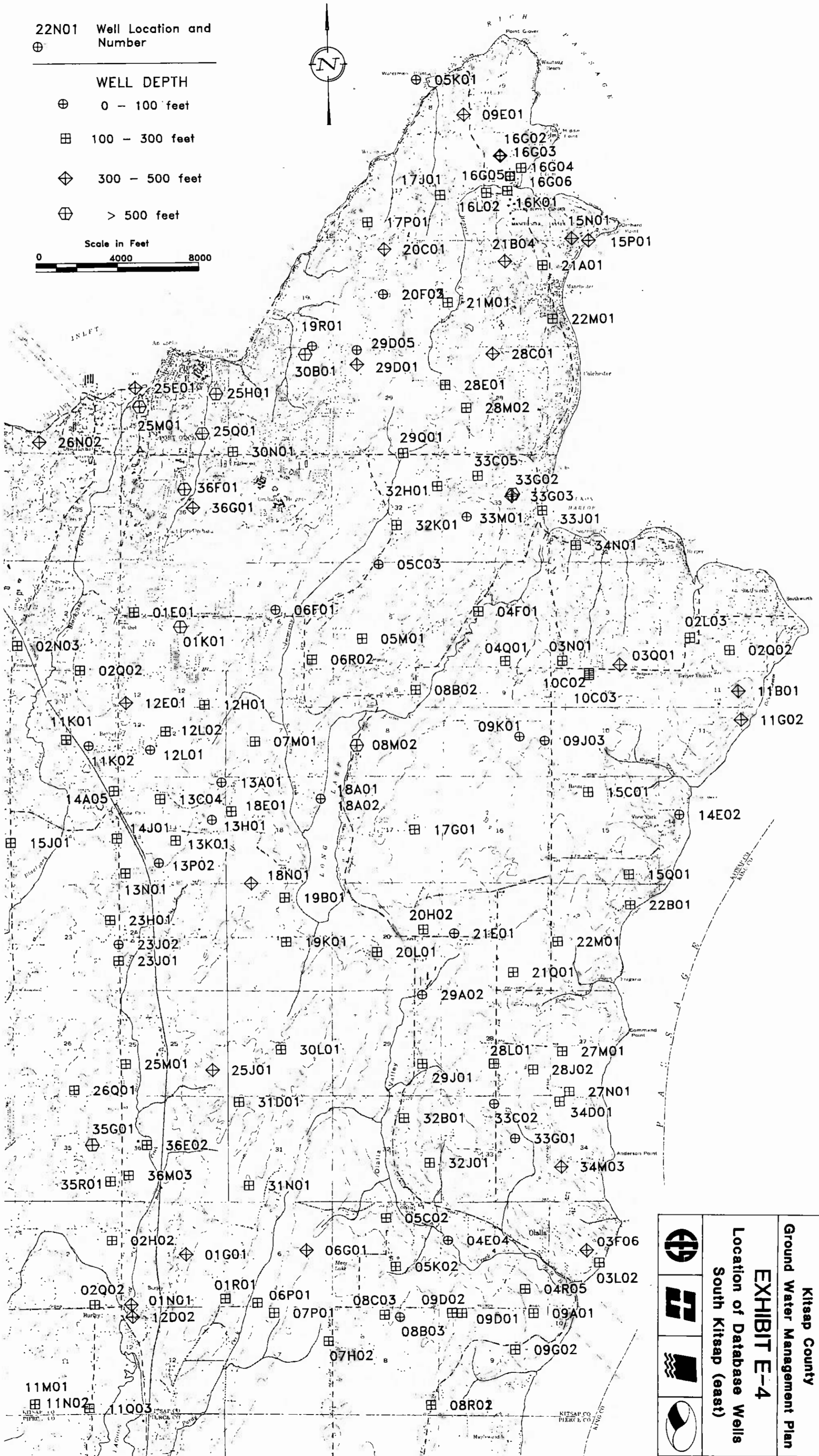
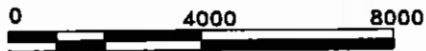
Map Legend





22N01 Well Location and Number


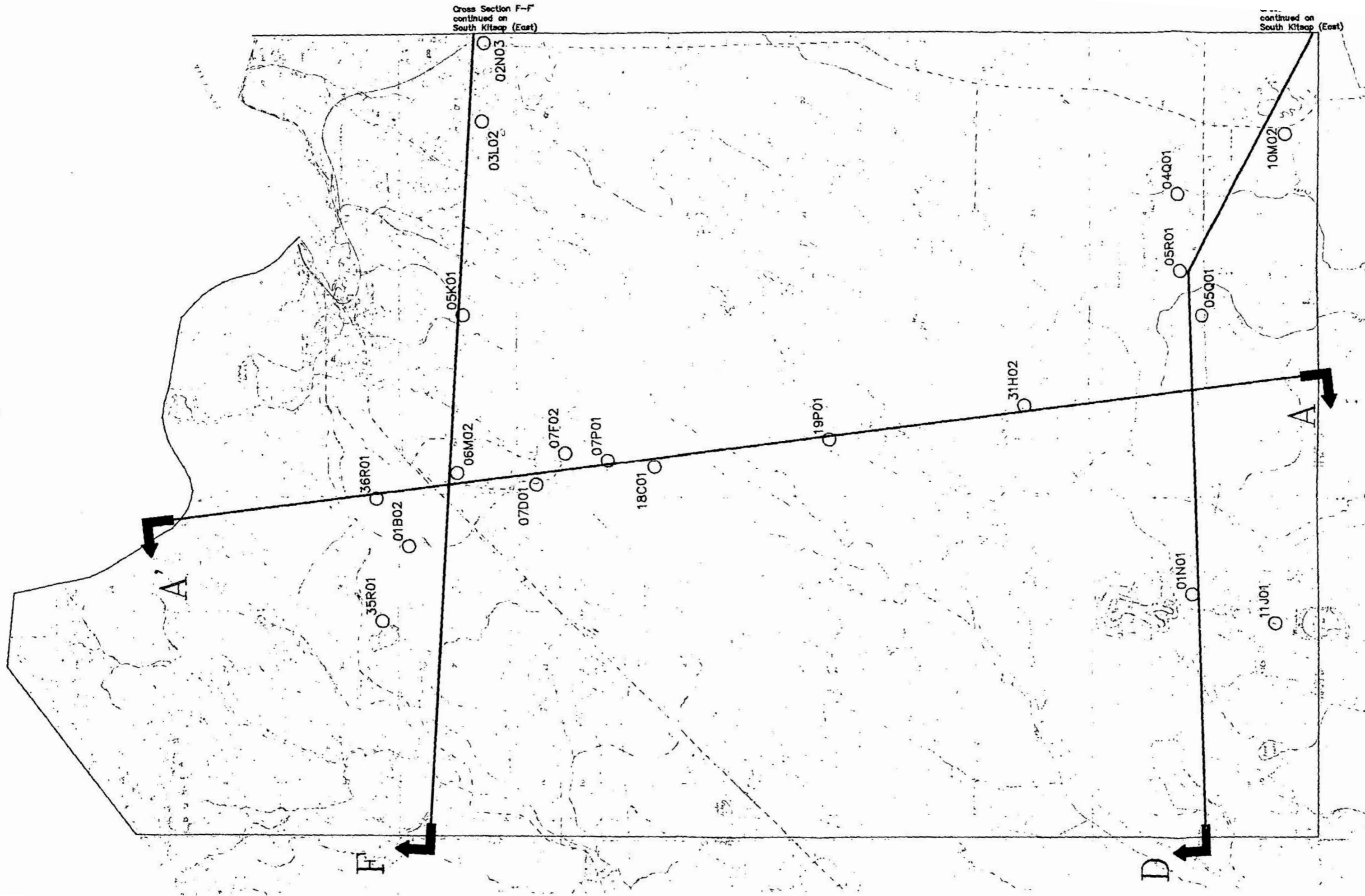
WELL DEPTH

-  0 - 100 feet
-  100 - 300 feet
-  300 - 500 feet
-  > 500 feet

Scale in Feet



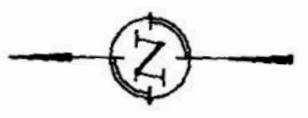
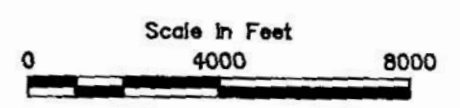
			
Kitsap County Ground Water Management Plan EXHIBIT E-4 Location of Database Wells South Kitsap (east)			



Map Legend

○ 24N01 Well Location and Local Well Number

A A' Subsurface Cross Section Location and Designation



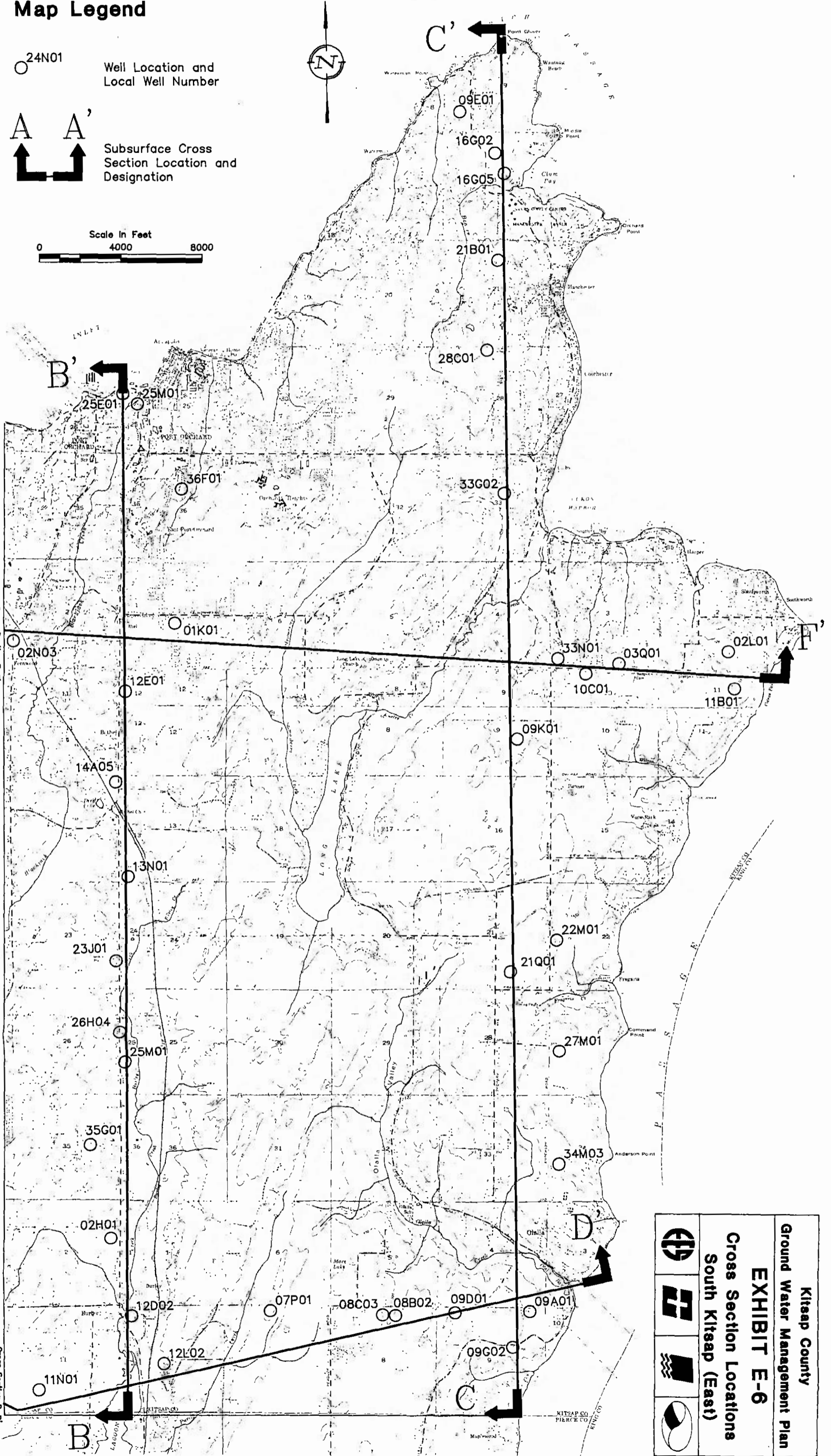
Kitsap County Ground Water Management Plan			
EXHIBIT E-5 Cross Section Locations South Kitsap (West)			

Map Legend

○ 24N01 Well Location and Local Well Number

A A' Subsurface Cross Section Location and Designation

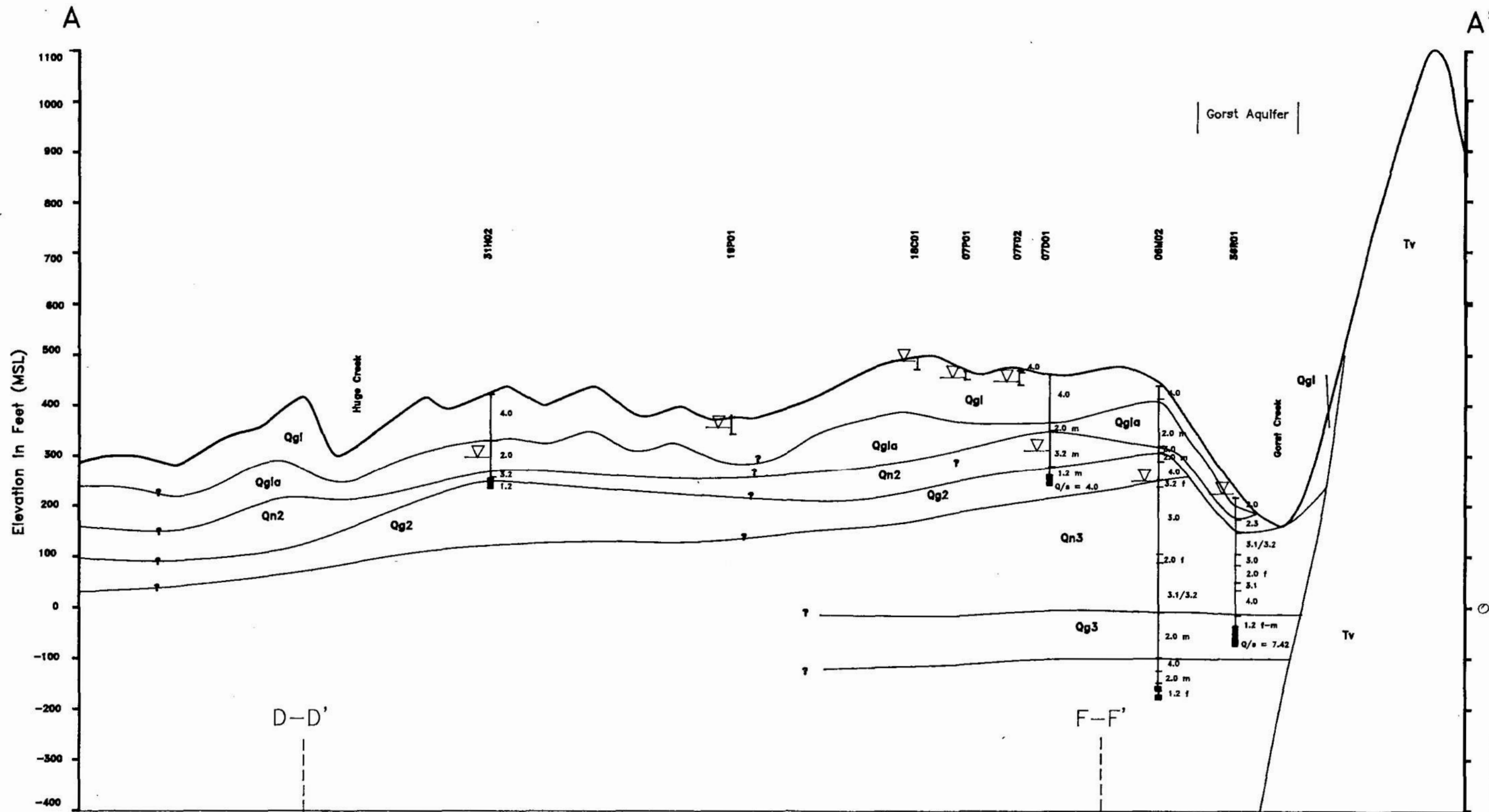
Scale In Feet
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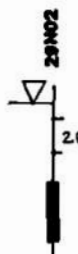
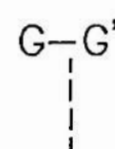
Cross Section F-F' continued on South Kitsap (West)

Cross Section D-D' continued on South Kitsap (West)

	Kitsap County
	Ground Water Management Plan
	EXHIBIT E-6
	Cross Section Locations
	South Kitsap (East)



CROSS SECTION LEGEND

	Well Number Static Water Level Elev. Lithologic Interval and Identifier Perforated or Screened Interval		Aquifer Zone and Name Cross Section Intersect
---	--	---	--

LITHOLOGY

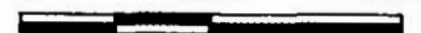
1.0	GRAVEL
1.2	Sandy GRAVEL (or GRAVEL and SAND)
1.3	SILTY SAND and GRAVEL
2.0	SAND
2.1	Gravelly SAND
2.3	SILTY SAND
3.0	SILT/CLAY
3.1	Gravelly SILT/CLAY
3.2	Sandy SILT/CLAY
4.0	GRAVEL with SAND, SILT/CLAY Matrix (as TIF)
5.0	Bedrock

f.m.c. Grain Size of Sand Fraction (fine, medium, coarse)
 T Transmissivity (gpd/ft) calculated from controlled pumping tests
 Q/s Specific Capacity (gpm/ft of drawdown), usually from drillers' records

Note: Refer to Table B-12 for descriptions of Stratigraphic Units (e.g. Qg1, Qn1)

Horizontal Scale in Feet

0 4000 8000







Vertical Scale in Feet

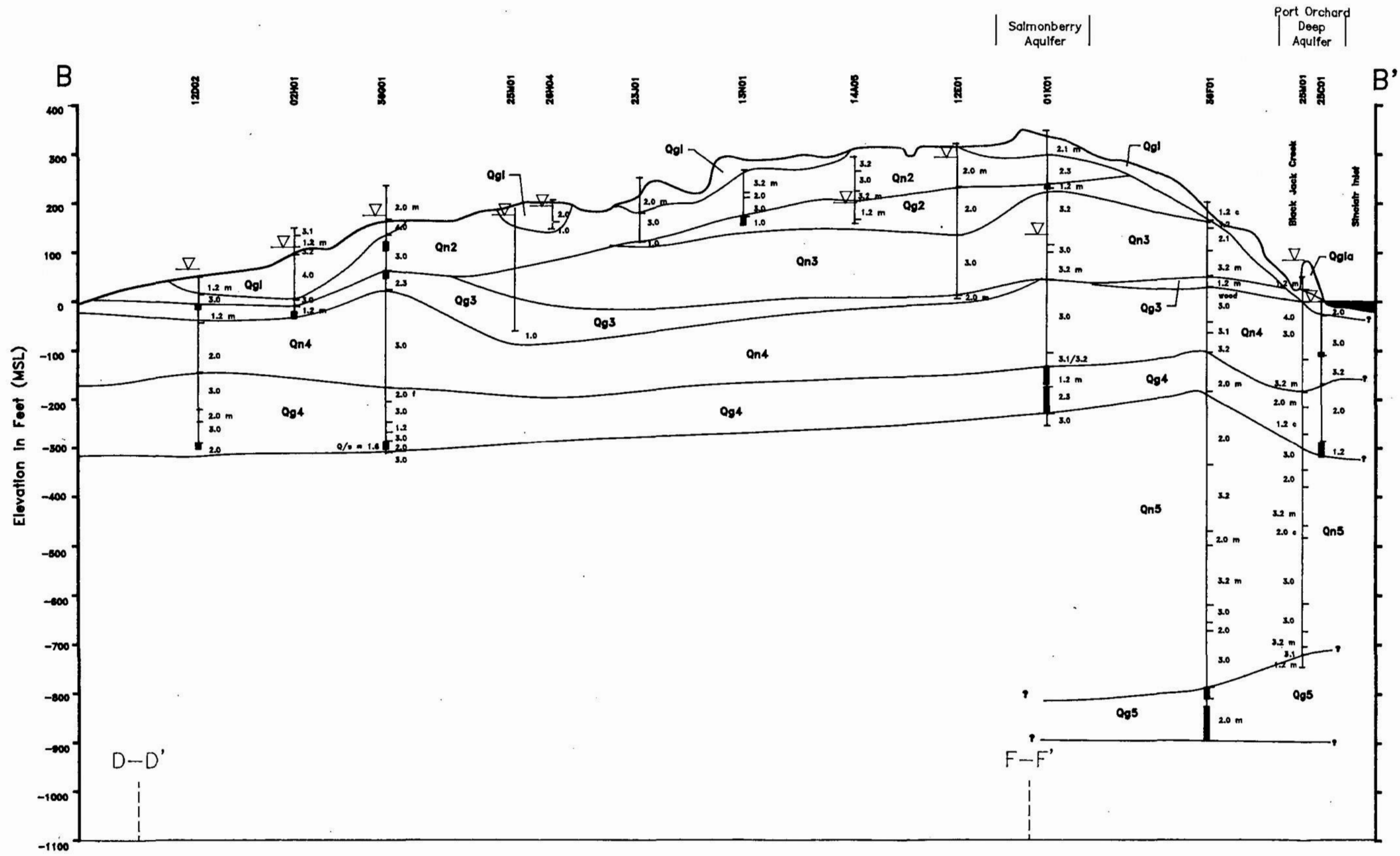
0 200 400

Vertical Exaggeration x 20

Kitsap County Groundwater Management Plan

EXHIBIT E-7 HYDROGEOLOGIC CROSS SECTION A-A'



CROSS SECTION LEGEND

	Well Number Static Water Level Elev. Lithologic Interval and Identifier Perforated or Screened Interval	Aquifer Zone and Name G-G'	Cross Section Intersect
--	--	---------------------------------	-------------------------

LITHOLOGY

1.0	GRAVEL
1.2	Sandy GRAVEL (or GRAVEL and SAND)
1.3	Silty SAND and GRAVEL
2.0	SAND
2.1	Gravelly SAND
2.3	Silty SAND
3.0	SILT/CLAY
3.1	Gravelly SILT/CLAY
3.2	Sandy SILT/CLAY
4.0	GRAVEL with SAND, SILT/Clay Matrix (as TR)
9.0	Bedrock

f.m.c. Grain Size of Sand Fraction (fine, medium, coarse)
 T Transmissivity (gp4/ft) calculated from controlled pumping tests
 Q/s Specific Capacity (gpm/ft of drawdown), usually from drillers' records

Note: Refer to Table B-12 for descriptions of Stratigraphic Units (e.g., Qg1, Qn1)

Horizontal Scale In Feet

0 4000 8000

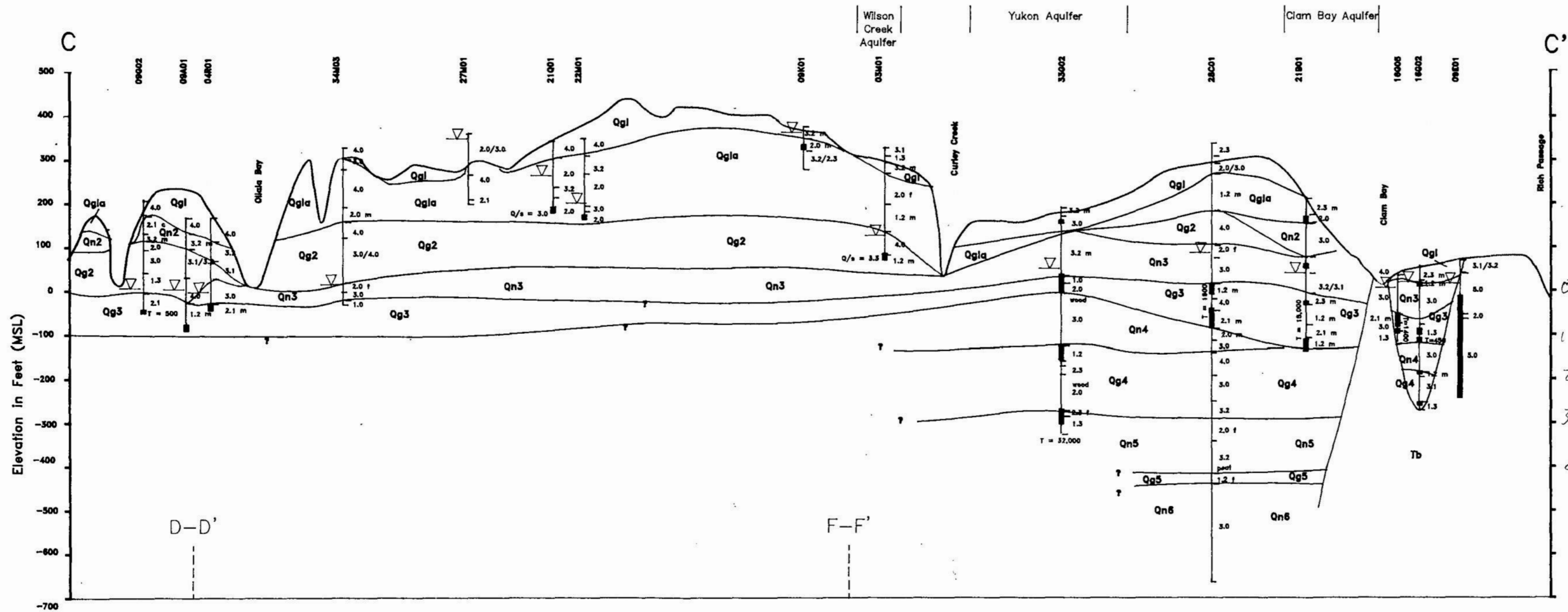
Vertical Scale In Feet

0 200 400

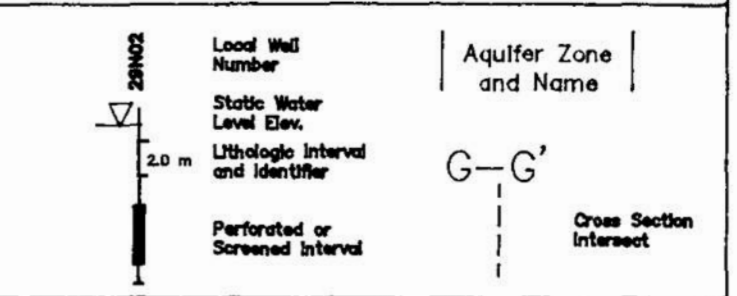
Vertical Exaggeration x 20

Kitsap County Groundwater Management Plan

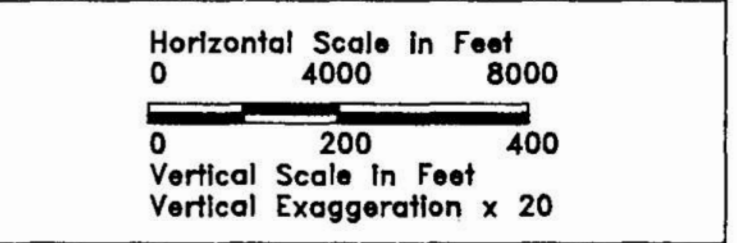
EXHIBIT E-8 HYDROGEOLOGIC CROSS SECTION B-B'



CROSS SECTION LEGEND



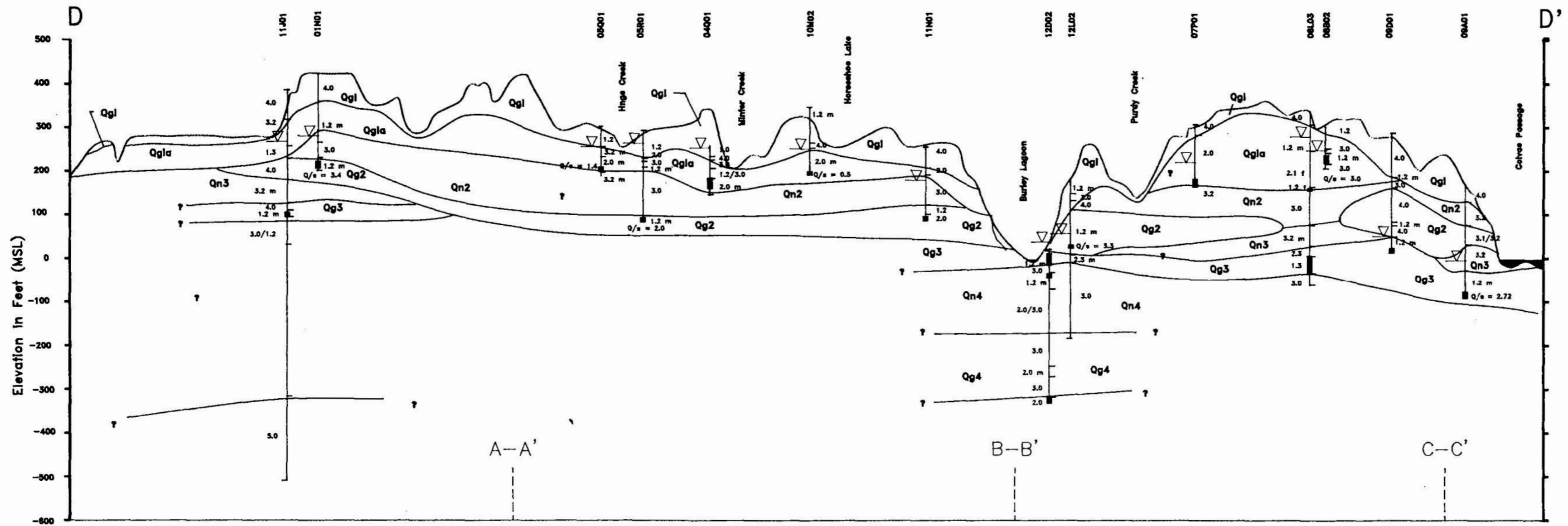
- ### LITHOLOGY
- 1.0 GRAVEL
 - 1.2 Sandy GRAVEL (or GRAVEL and SAND)
 - 1.3 SILTY SAND and GRAVEL
 - 2.0 SAND
 - 2.1 Coarsely SAND
 - 2.3 SILTY SAND
 - 3.0 SILT/CLAY
 - 3.1 Coarsely SILT/CLAY
 - 3.2 Sandy SILT/CLAY
 - 4.0 GRAVEL with SAND, SILT/CLAY Matrix (as TR)
 - 5.0 Bedrock
- f.m.c. Grain Size of Sand Fraction
(fine, medium, coarse)
- T Transmissivity (gpd/ft) calculated from controlled pumping tests
- Q/s Specific Capacity (gpm/ft of drawdown), usually from drillers' records
- Note: Refer to Table E-12 for descriptions of Stratigraphic Units (e.g., Qg1, Qn1)



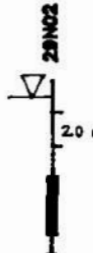
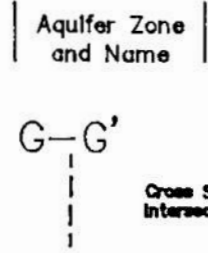
Kitsap County
Groundwater Management Plan

EXHIBIT E-9 HYDROGEOLOGIC CROSS SECTION C-C'





CROSS SECTION LEGEND

	Well Number Static Water Level Elev. Lithologic Interval and Identifier Perforated or Screened Interval		Aquifer Zone and Name Cross Section Interval
---	--	---	---


LITHOLOGY

1.0	GRAVEL
1.2	Sandy GRAVEL (or GRAVEL and SAND)
1.3	Silty SAND and GRAVEL
2.0	SAND
2.1	Gravelly SAND
2.3	Silty SAND
3.0	SILT/CLAY
3.1	Gravelly SILT/CLAY
3.2	Sandy SILT/CLAY
4.0	GRAVEL with SAND, SILT/CLAY Matrix (as TR)
5.0	Bedrock

f.m.c. Grain Size of Sand Fraction (fine, medium, coarse)
 T Transmissivity (gpd/ft) calculated from controlled pumping tests
 Q/s Specific Capacity (gpm/ft of drawdown), usually from driller's records

Note: Refer to Table B-12 for descriptions of Stratigraphic Units (e.g., Qg1, Qn1)





Horizontal Scale in Feet
 0 4000 8000

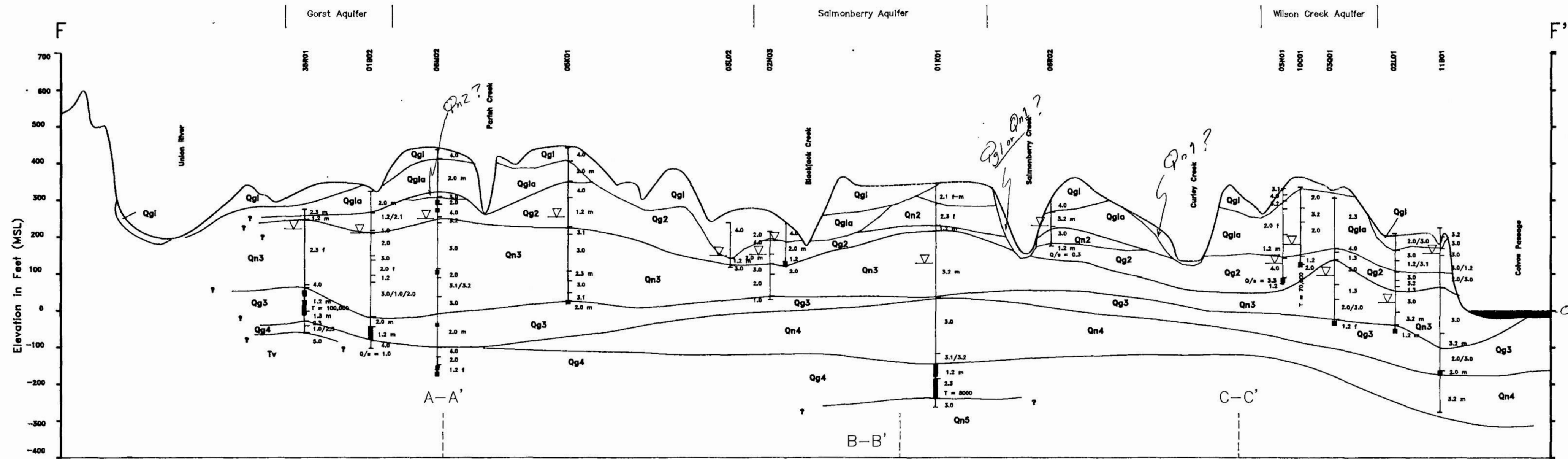


Vertical Scale in Feet
 0 200 400
 Vertical Exaggeration x 20

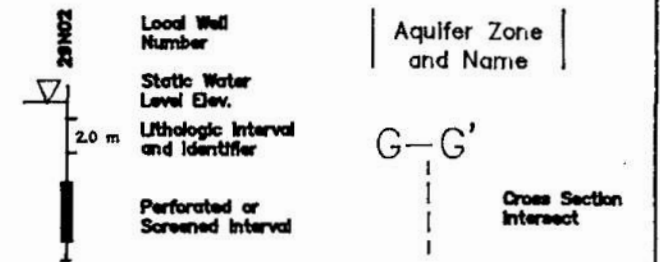
Kitsap County
Groundwater Management Plan

EXHIBIT E-10
HYDROGEOLOGIC
CROSS SECTION D-D'



CROSS SECTION LEGEND



LITHOLOGY

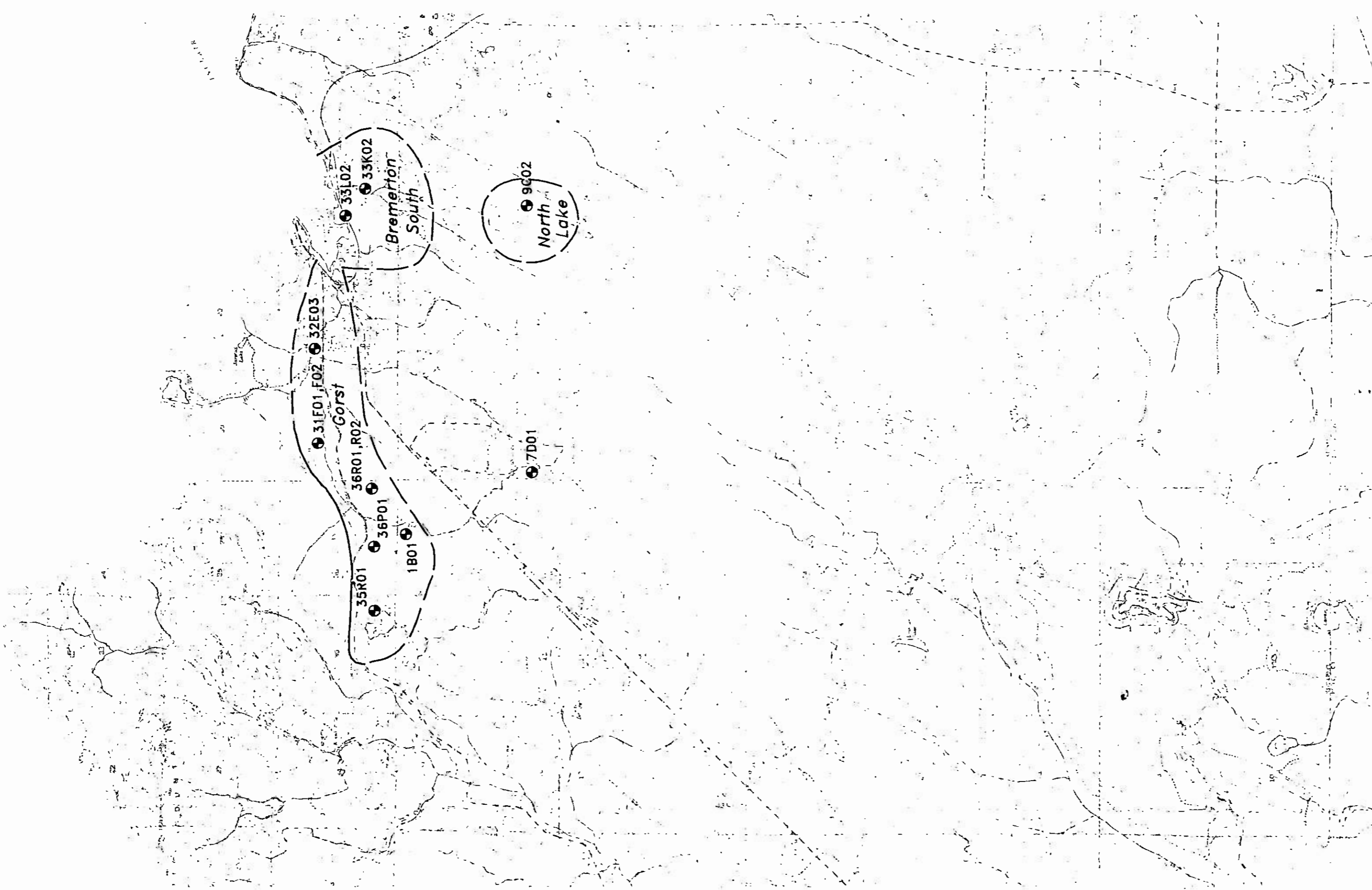
- 1.0 GRAVEL
 - 1.2 Sandy GRAVEL (or GRAVEL and SAND)
 - 1.3 Silty SAND and GRAVEL
 - 2.0 SAND
 - 2.1 Gravely SAND
 - 2.3 Silty SAND
 - 3.0 SILT/CLAY
 - 3.1 Gravely SILT/CLAY
 - 3.2 Sandy SILT/CLAY
 - 4.0 GRAVEL with SAND, SILT/clay Matrix (as TR)
 - 5.0 Bedrock
- f.m.c. Grain Size of Sand Fraction (fine, medium, coarse)
 T Transmissivity (gpd/ft) calculated from controlled pumping tests
 Q/s Specific Capacity (gpm/ft of drawdown), usually from driller records
 Note: Refer to Table E-12 for descriptions of Stratigraphic Units (e.g., Qg1, Qn1)

Horizontal Scale in Feet
 0 4000 8000
 Vertical Scale in Feet
 0 200 400
 Vertical Exaggeration x 20


Kitsap County
 Groundwater Management Plan


EXHIBIT E-11
 HYDROGEOLOGIC
 CROSS SECTION F-F'

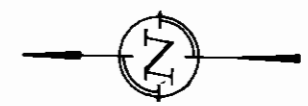
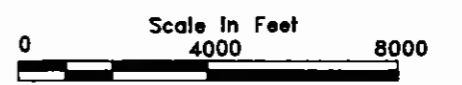








Map Legend


 Location of Principal Aquifers. Aquifer boundaries are very approximately defined. Solid lines are shown in areas where there is adequate subsurface control beyond the limits of the aquifer. Dashed lines are shown in areas where there is an absence of subsurface data with which to confirm the boundary location.


 34H01 Location of well used in defining the extent of the principal aquifers. See Appendix F for additional well information as well as aquifer characteristics data.



Kitsap County Ground Water Management Plan			
EXHIBIT E-12 Location of Principal Aquifers South Kitsap (west)			
			

Map Legend

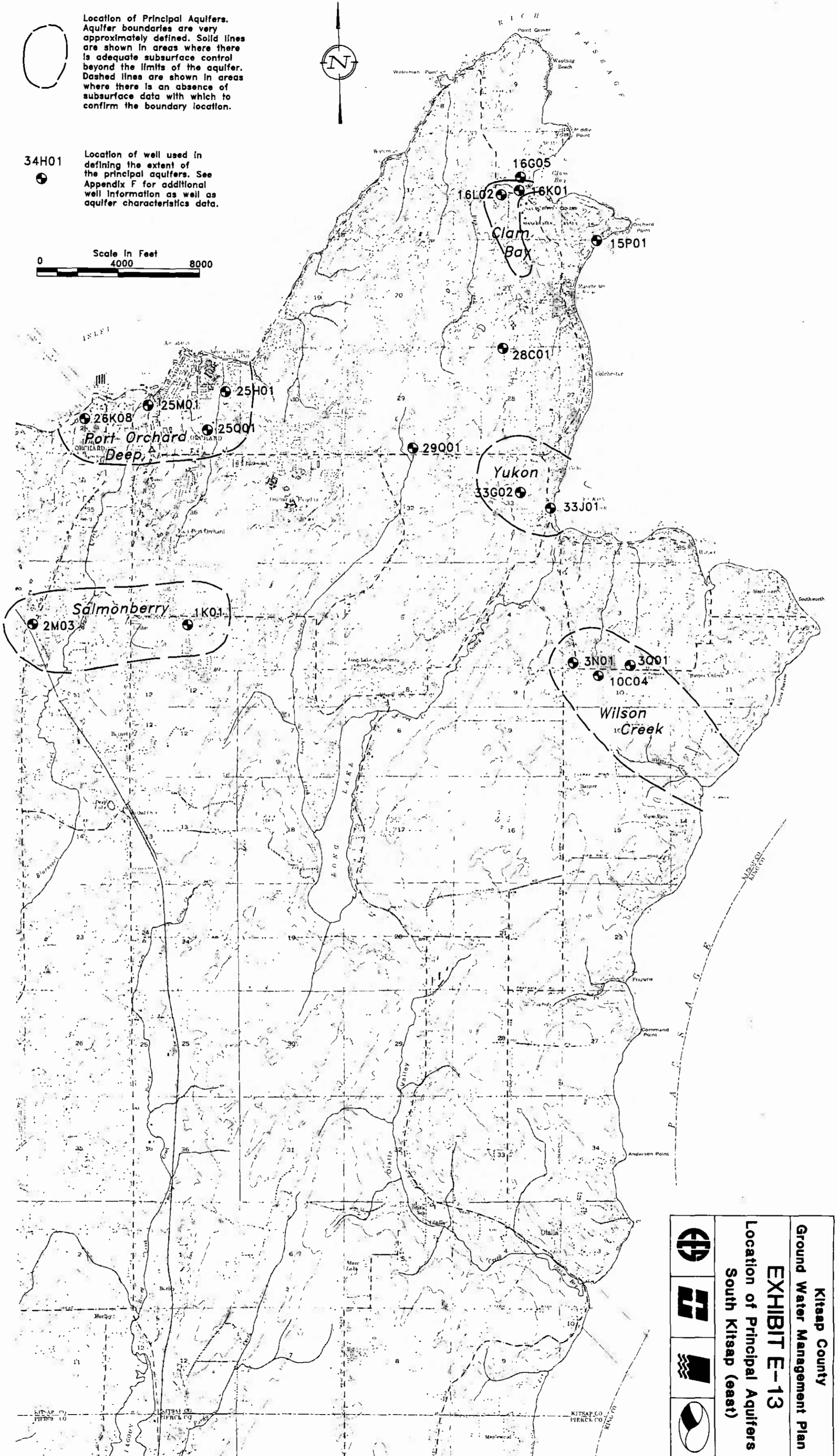
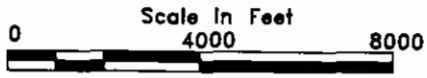


Location of Principal Aquifers. Aquifer boundaries are very approximately defined. Solid lines are shown in areas where there is adequate subsurface control beyond the limits of the aquifer. Dashed lines are shown in areas where there is an absence of subsurface data with which to confirm the boundary location.

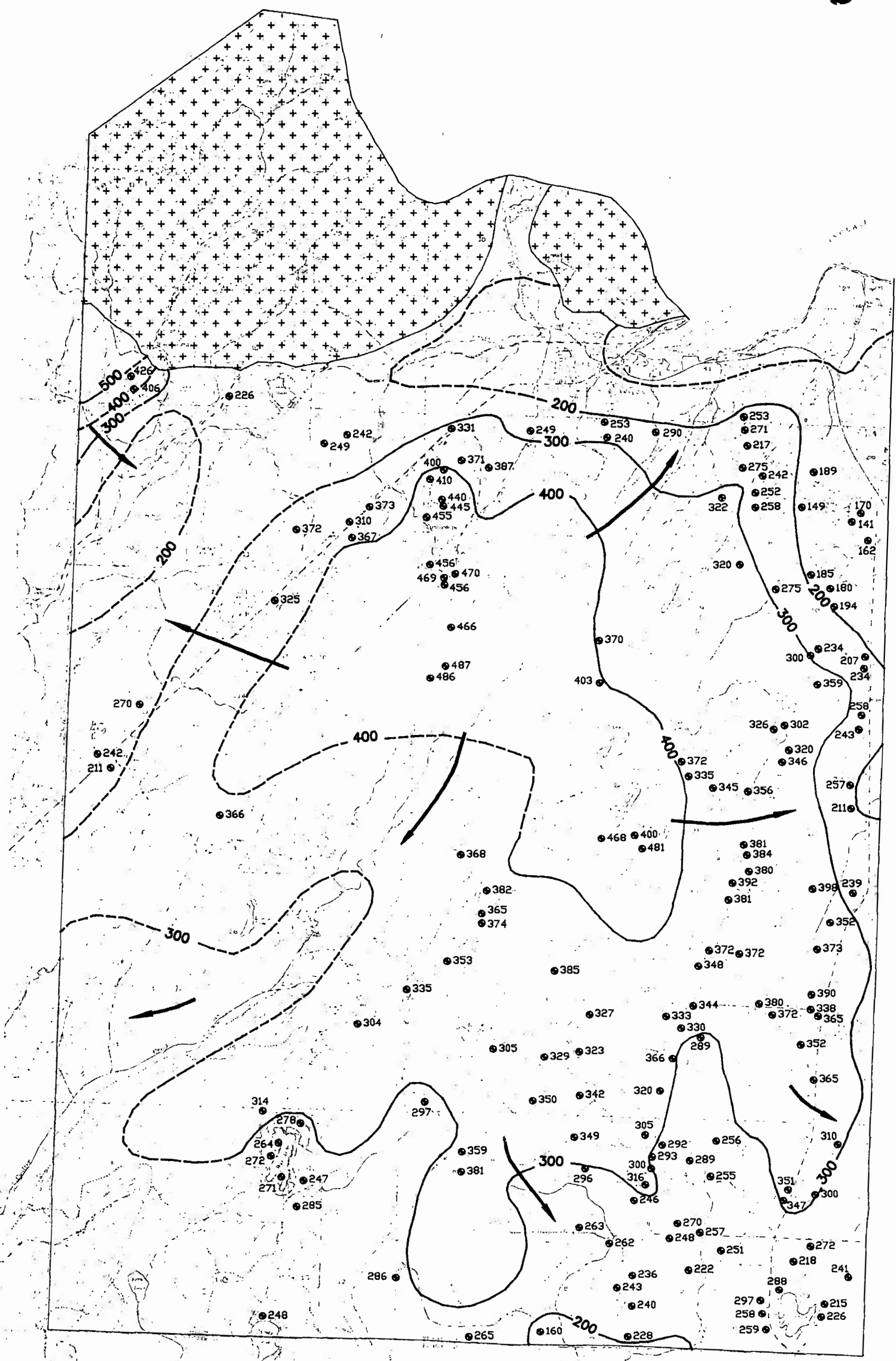
34H01



Location of well used in defining the extent of the principal aquifers. See Appendix F for additional well information as well as aquifer characteristics data.

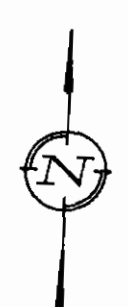
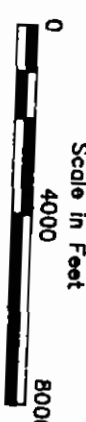


Kitsap County Ground Water Management Plan			
EXHIBIT E-13 Location of Principal Aquifers South Kitsap (east)			

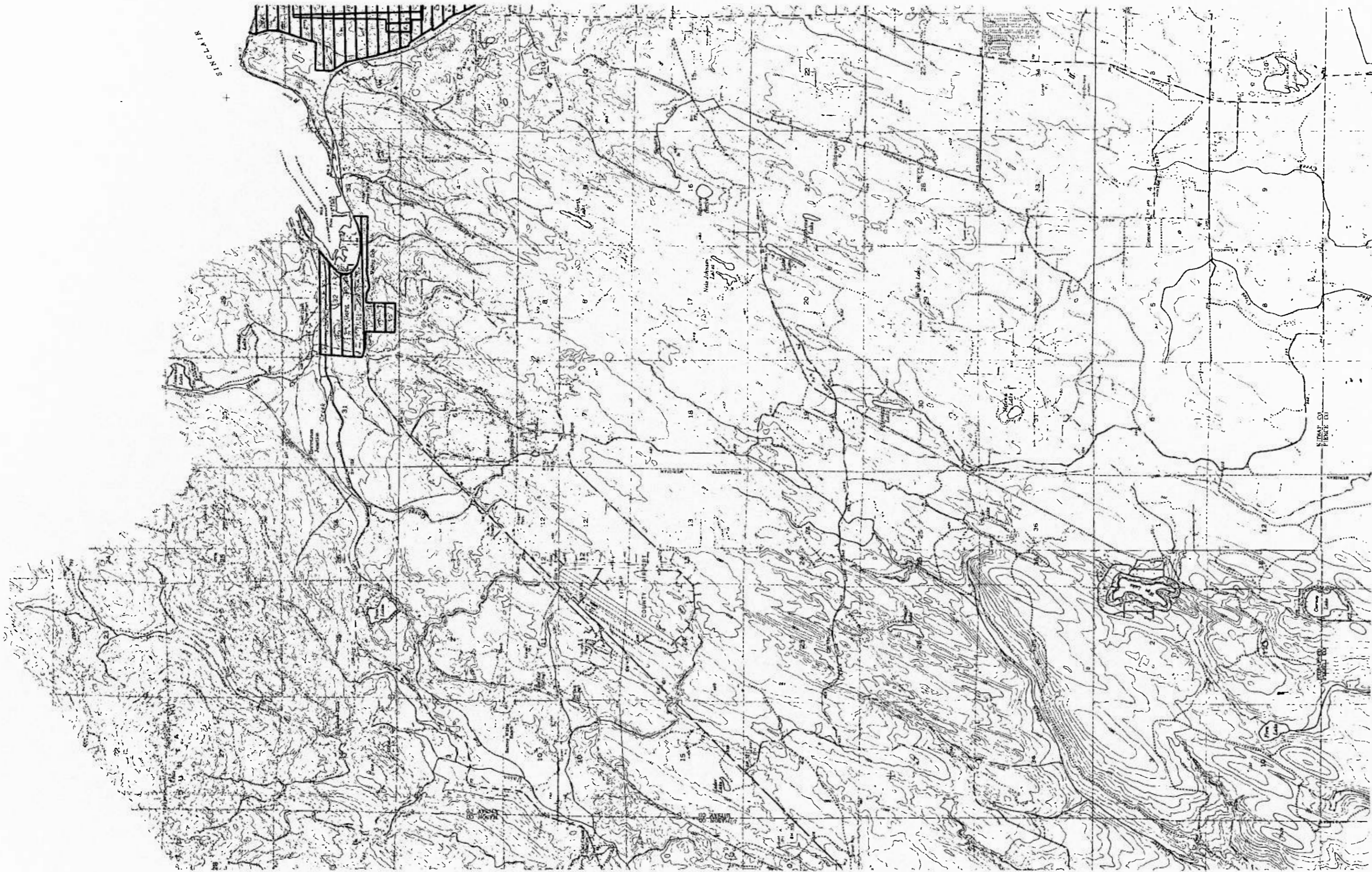


Map Legend

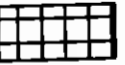
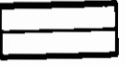
- 181 Static Water Level Spot Elevation in Feet. Data from Kitsap County GMAP Database.
- 100- Static Water Level Elevation Contour in Feet (dashed where inferred).
- + + + Outcrop of Tertiary Bedrock
- Generalized Groundwater Flow Direction



	Kitsap County
	Ground Water Management Plan
	EXHIBIT E-14
	Shallow Aquifer Groundwater
	Elevation Contours and Flow Directions
	South Kitsap (West)



LEGEND

- EXISTING SEWERED AREAS 
- FUTURE SEWERED AREAS 



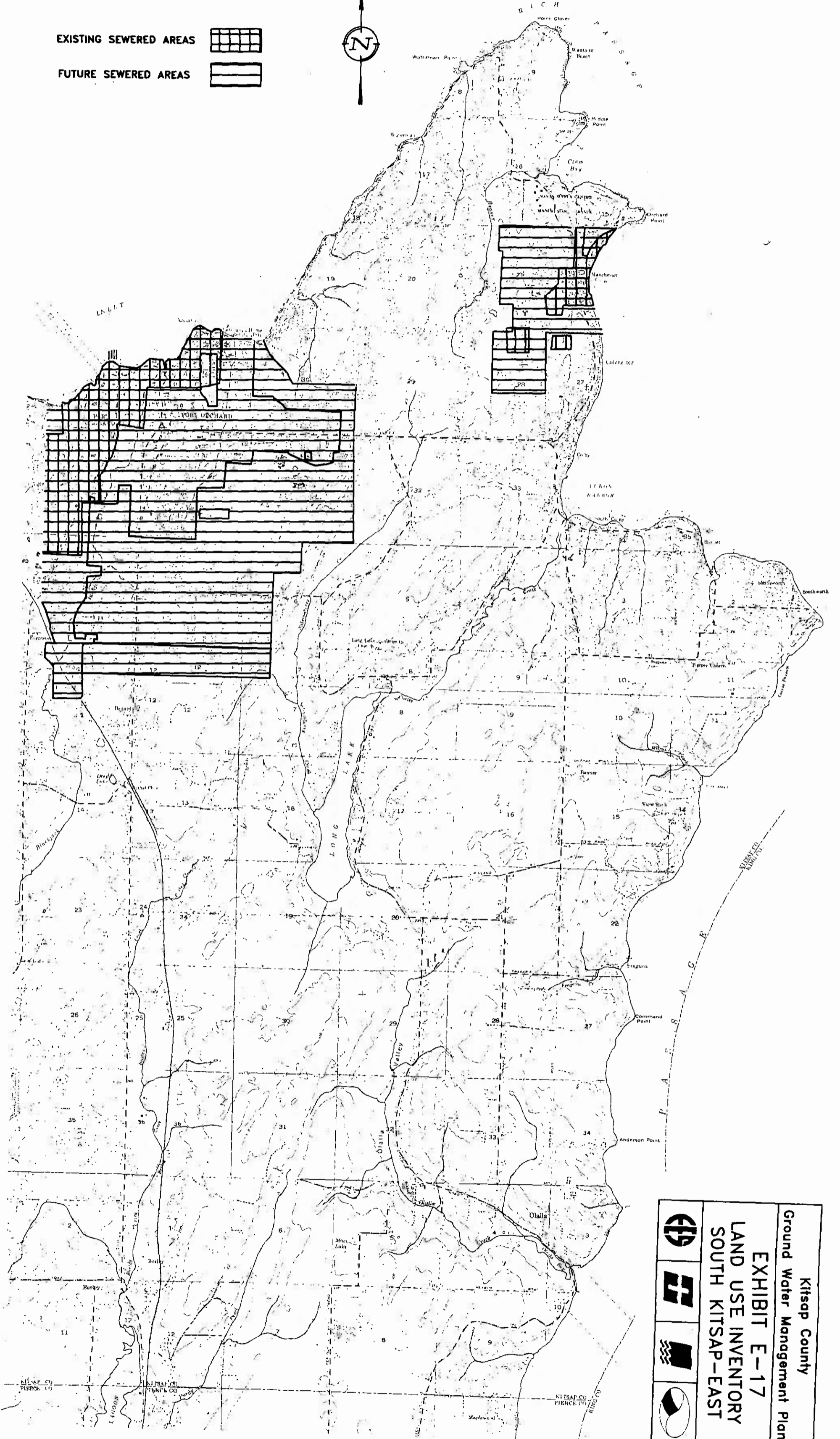
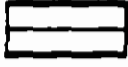
Kitsap County Ground Water Management Plan			
EXHIBIT E-16 LAND USE INVENTORY SOUTH KITSAP-WEST			






LEGEND

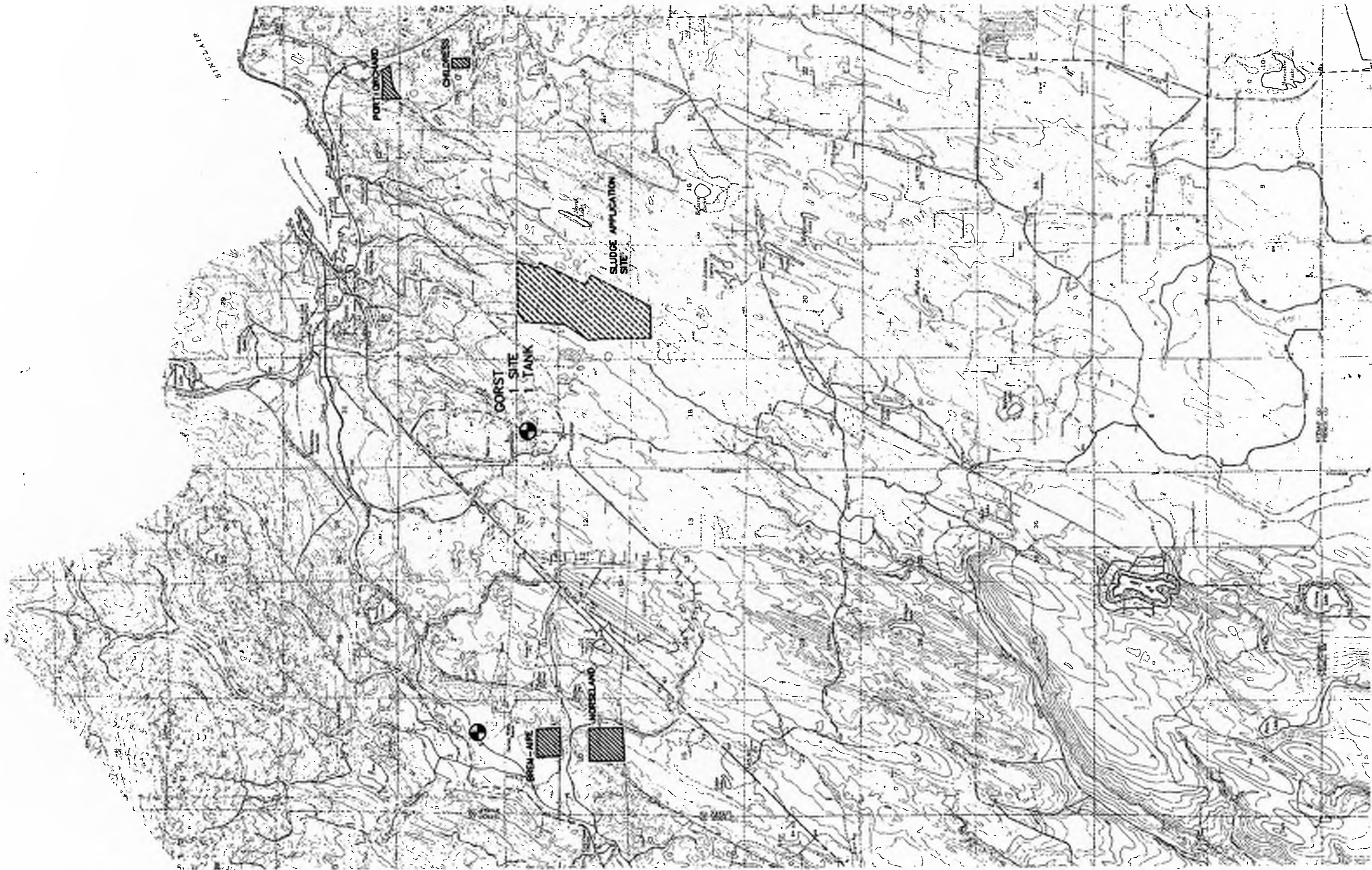
EXISTING SEWERED AREAS







FUTURE SEWERED AREAS



			
Kitsap County Ground Water Management Plan			
EXHIBIT E-17 LAND USE INVENTORY SOUTH KITSAP-EAST			
			



LEGEND

- REGULATED HAZARDOUS WASTE FACILITIES 
 - LANDFILLS 
 - UNDERGROUND STORAGE TANKS 
 - SLUDGE APPLICATION 
- PORT GAMBLE
2 SITES
5 TANKS



Kitsap County
Ground Water Management Plan

EXHIBIT E-18
LAND USE INVENTORY
SOUTH KITSAP-WEST

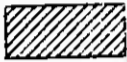


LEGEND

REGULATED HAZARDOUS WASTE FACILITIES

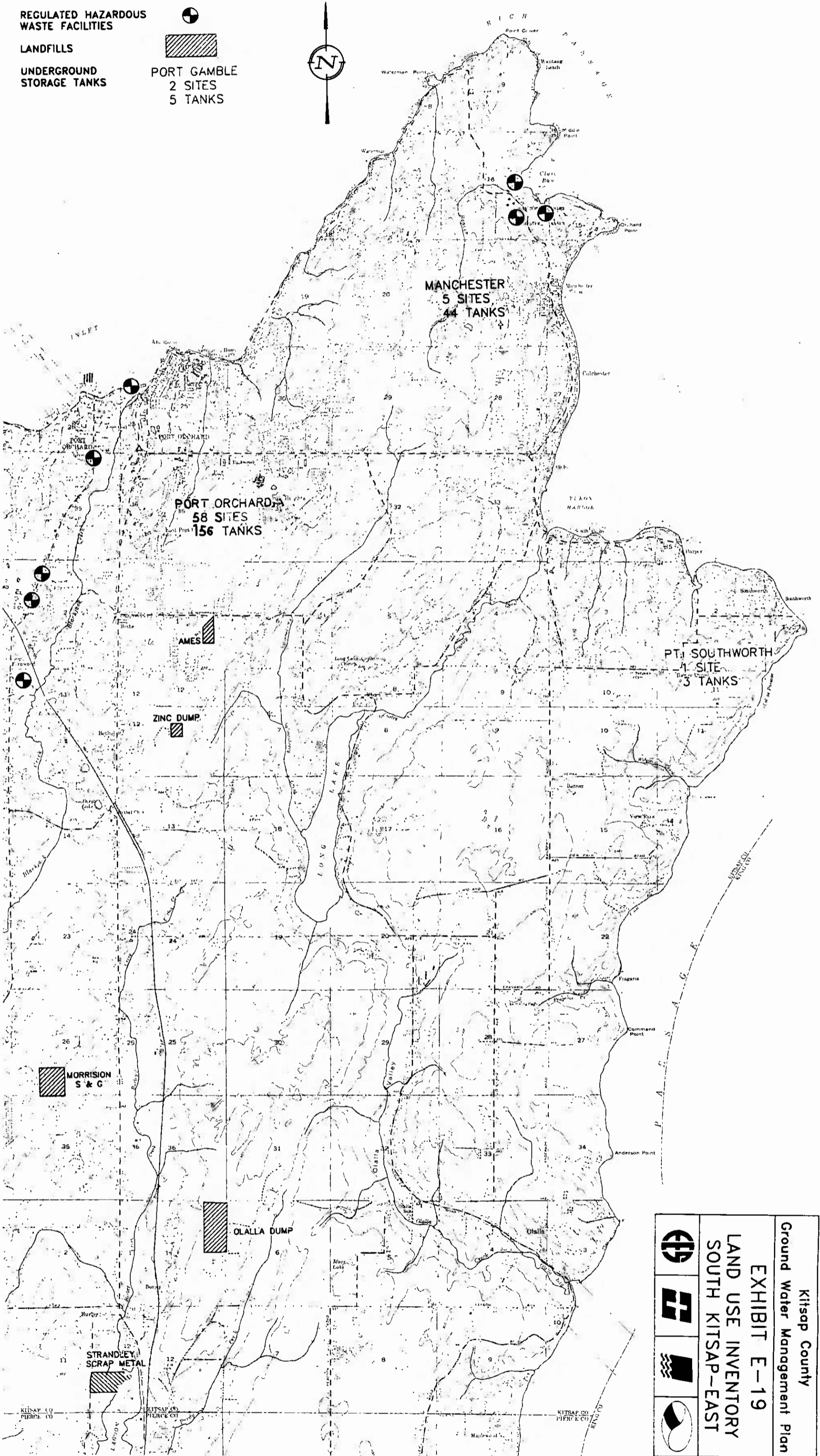


LANDFILLS

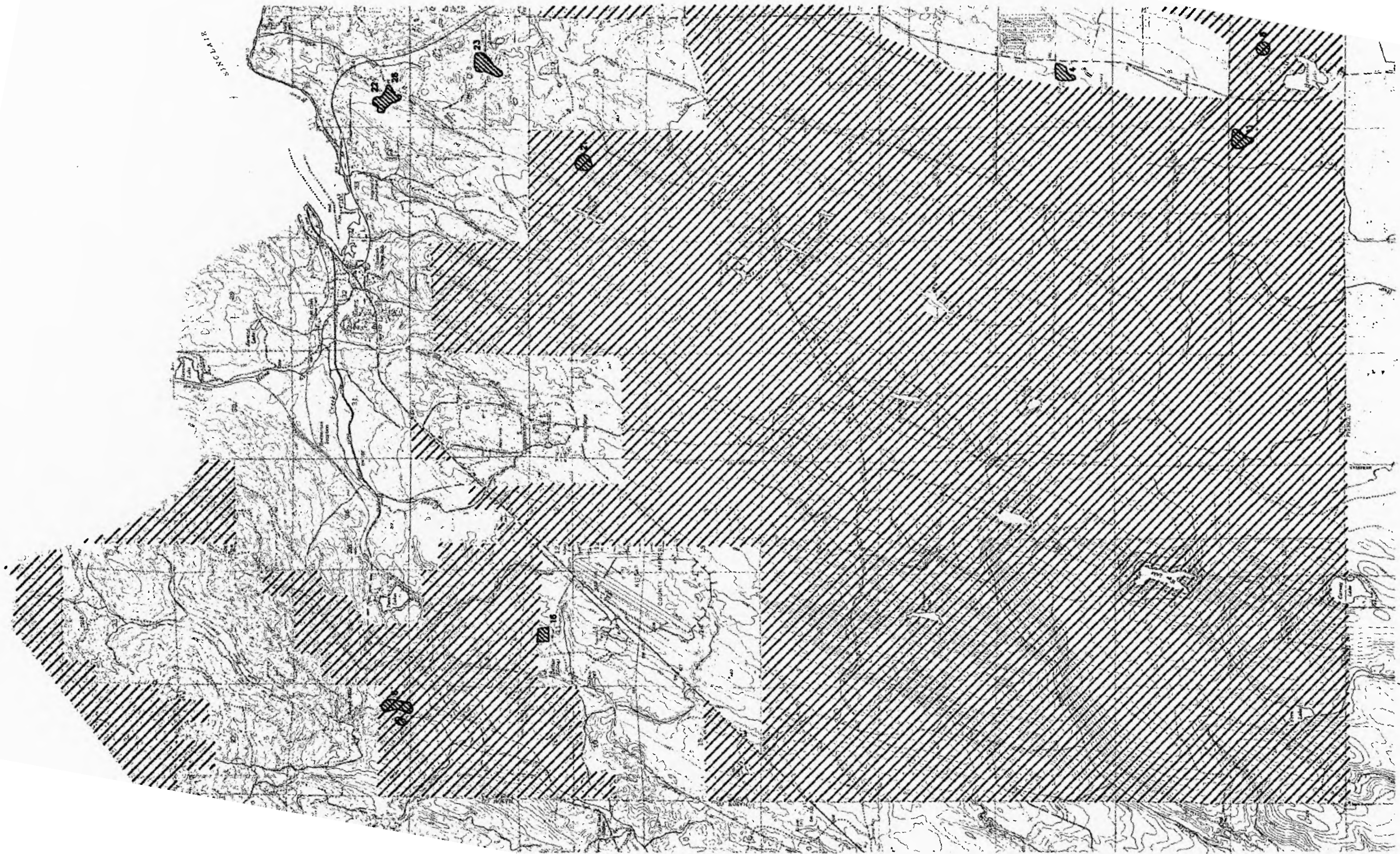


UNDERGROUND STORAGE TANKS

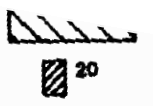
PORT GAMBLE
2 SITES
5 TANKS



<p>Kitsap County Ground Water Management Plan</p>			
<p>EXHIBIT E-19</p>			
<p>LAND USE INVENTORY SOUTH KITSAP-EAST</p>			



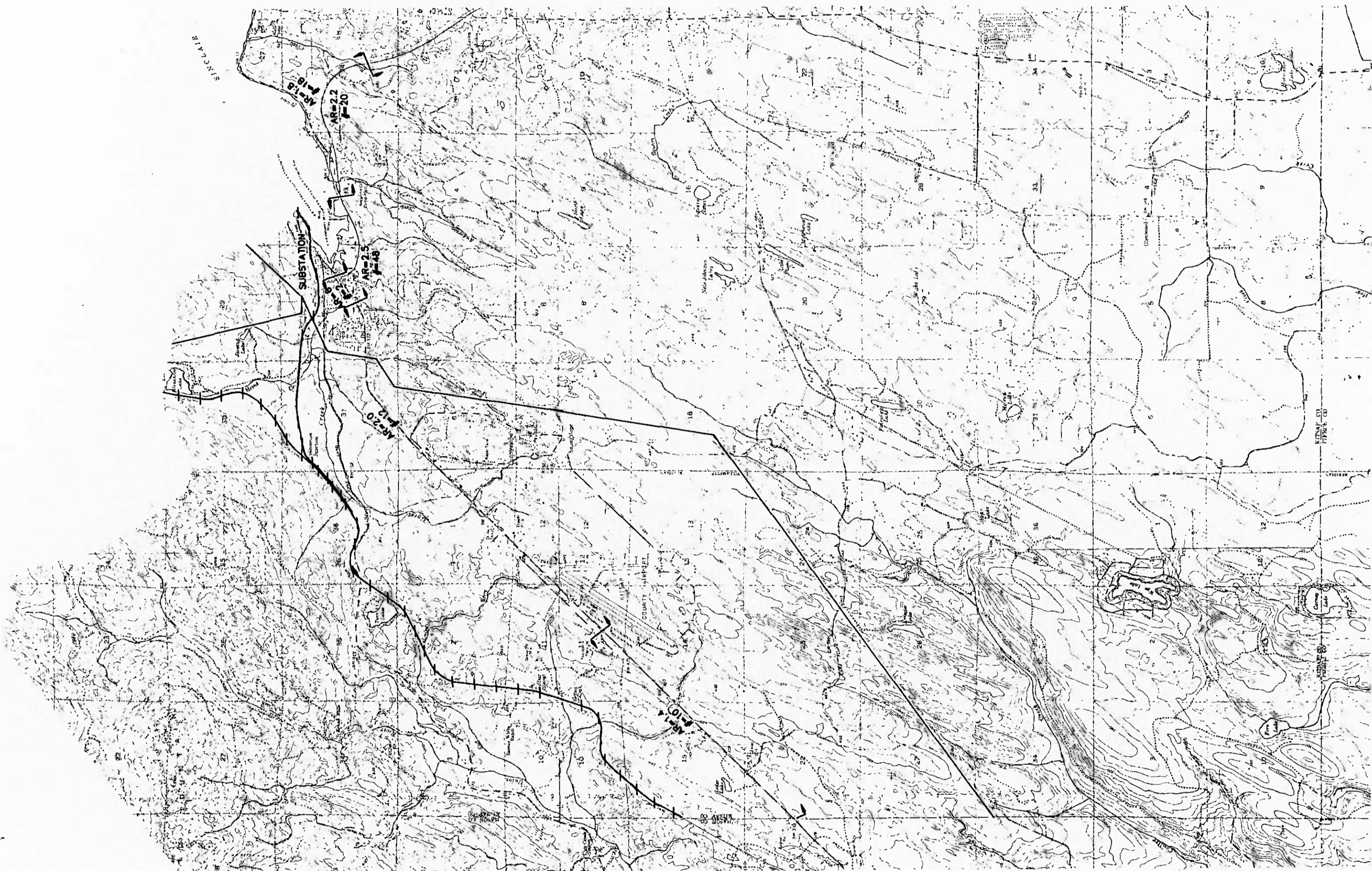
POTENTIAL AGRICULTURAL
AND FORESTRY AREAS
SURFACE MINES



Kitsap County
Ground Water Management Plan

EXHIBIT E-20
LAND USE INVENTORY
SOUTH KITSAP-WEST





LEGEND

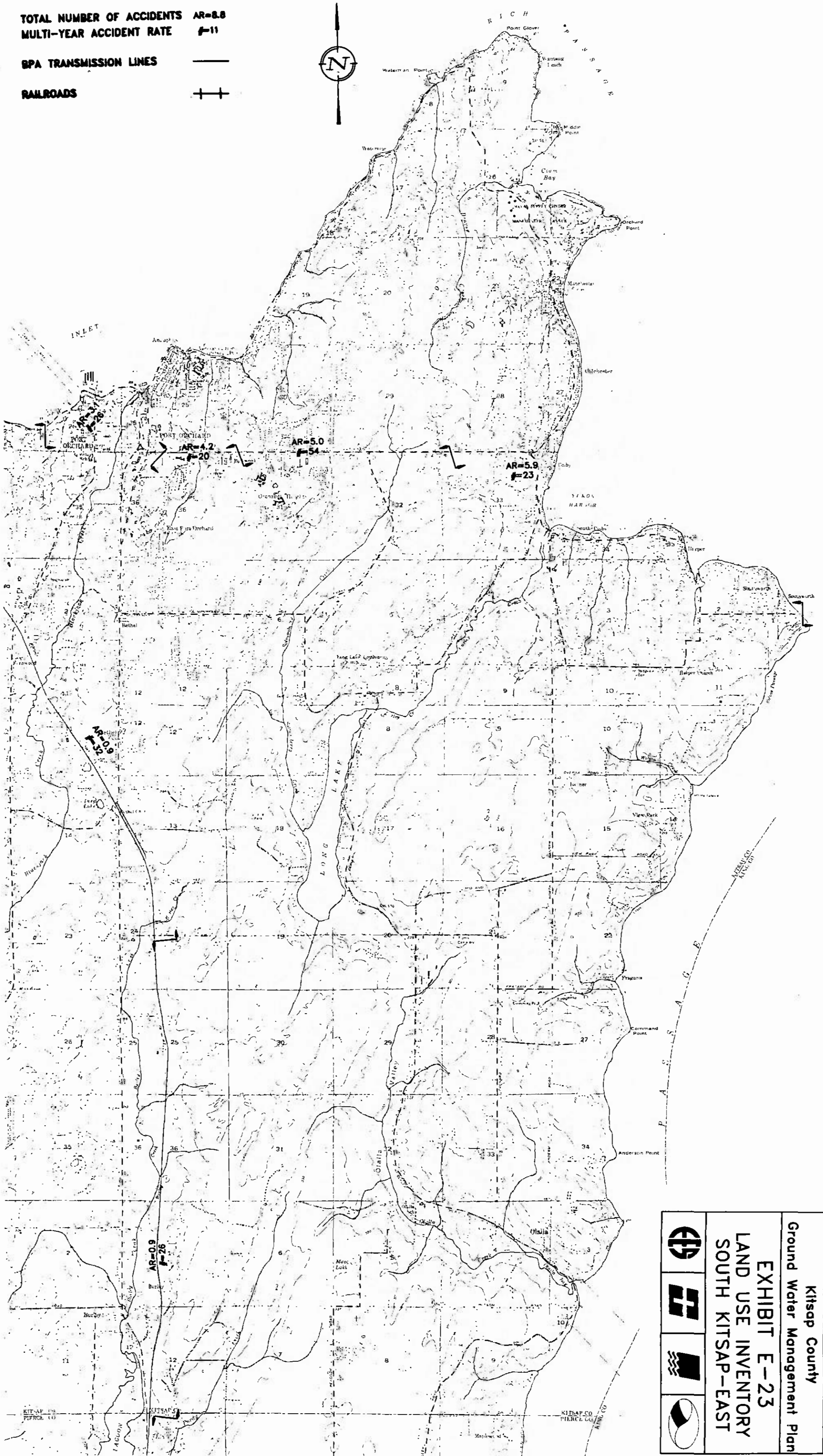
- TOTAL NUMBER OF ACCIDENTS AR=8.8
- MULTI-YEAR ACCIDENT RATE $\frac{1}{11}$
- BPA TRANSMISSION LINES ———
- RAILROADS —+—+—



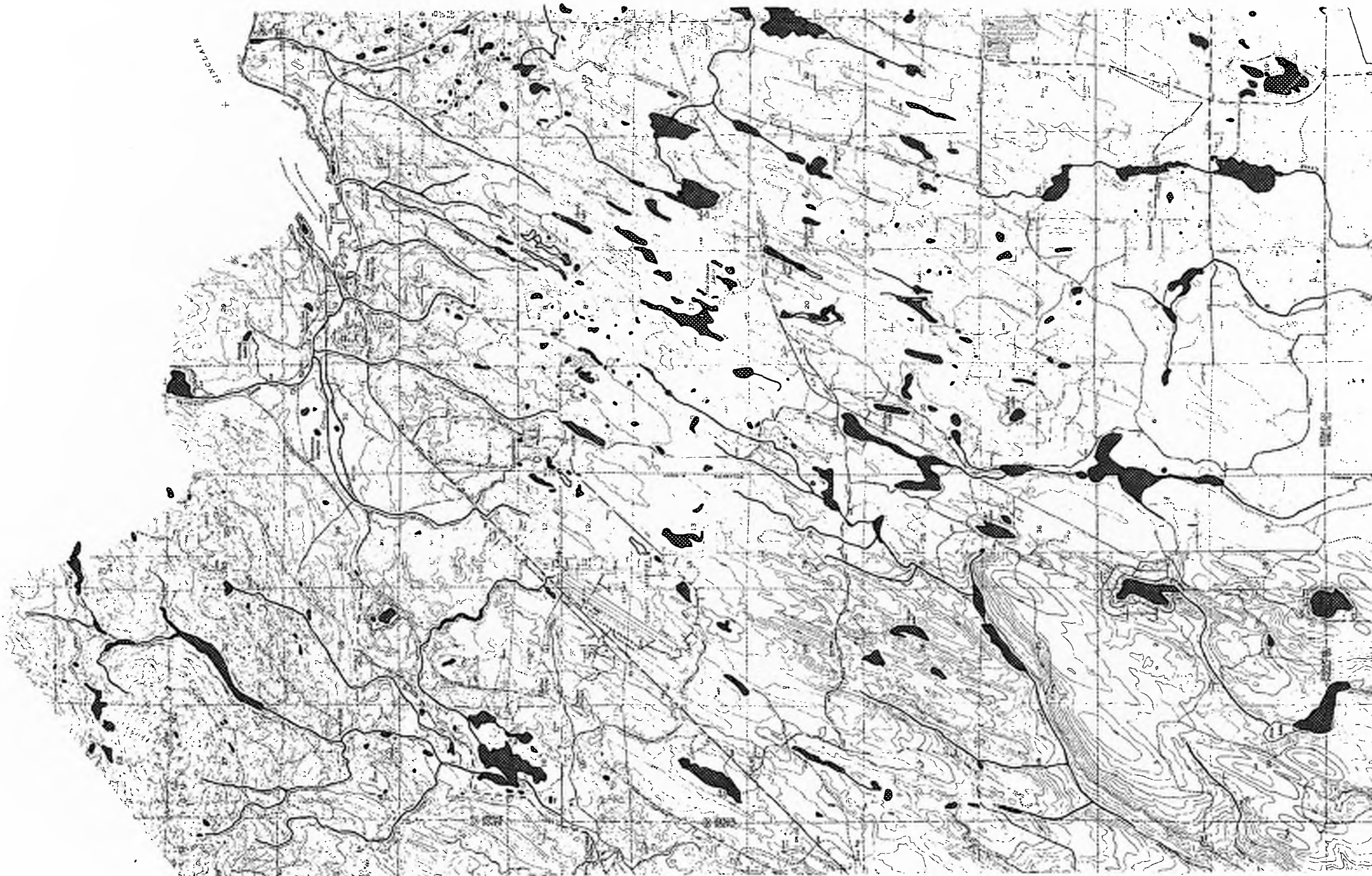
<p>Kitsap County Ground Water Management Plan</p>			
<p>EXHIBIT E-22 LAND USE INVENTORY SOUTH KITSAP-WEST</p>			

LEGEND

- TOTAL NUMBER OF ACCIDENTS AR=8.8
- MULTI-YEAR ACCIDENT RATE f=11
- BPA TRANSMISSION LINES ———
- RAILROADS + + +



Kitsap County Ground Water Management Plan			
EXHIBIT E-23 LAND USE INVENTORY SOUTH KITSAP-EAST			



LEGEND

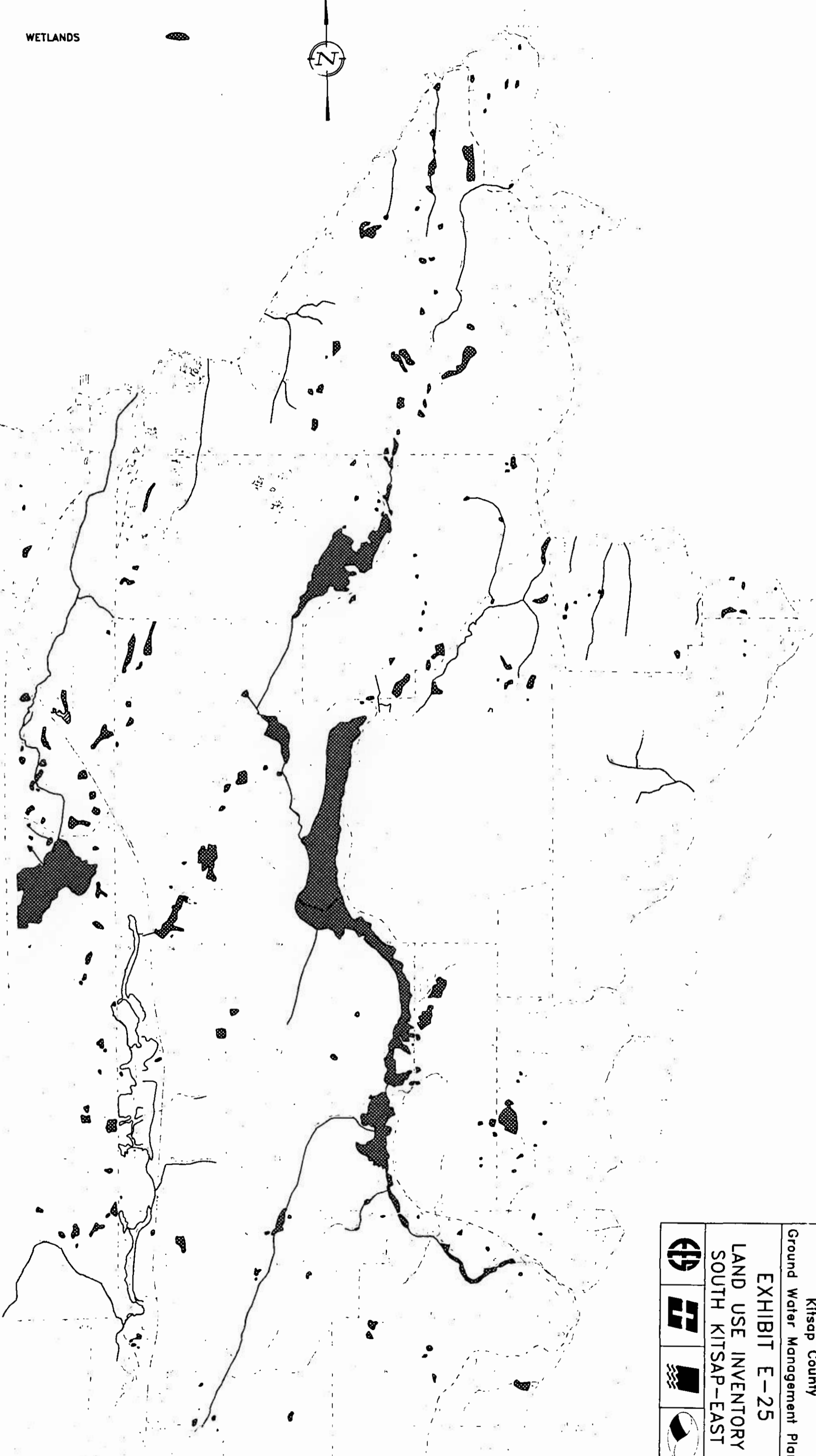
WETLANDS



Kitsap County Ground Water Management Plan			
EXHIBIT E-24 LAND USE INVENTORY SOUTH KITSAP-WEST			

LEGEND

WETLANDS










Kitsap County			
Ground Water Management Plan			
EXHIBIT E-25			
LAND USE INVENTORY			
SOUTH KITSAP-EAST			




S.P.C. 11.1



LEGEND

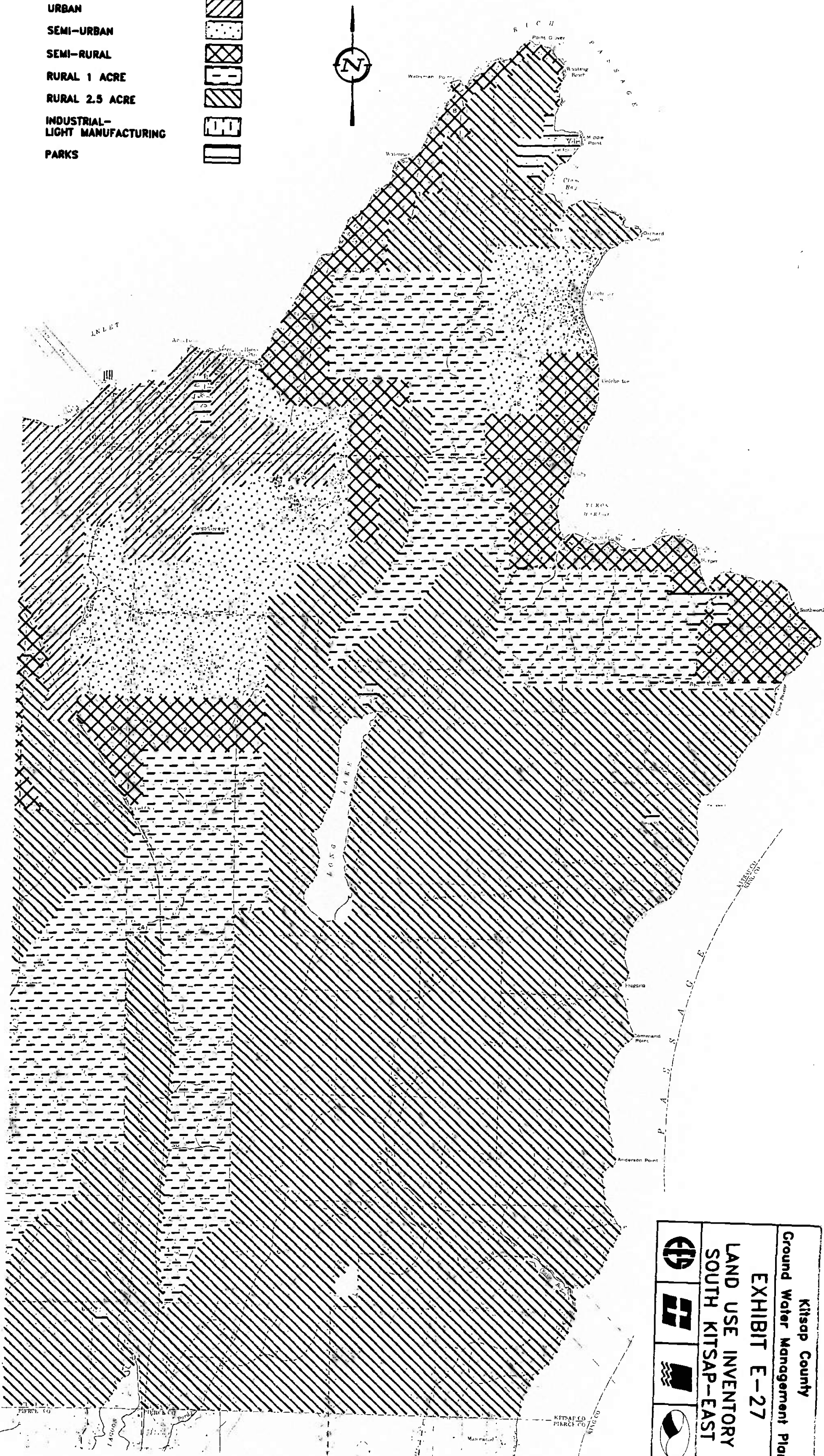
- URBAN 
- SEMI-URBAN 
- SEMI-RURAL 
- RURAL 1 ACRE 
- RURAL 2.5 ACRE 
- INDUSTRIAL-LIGHT MANUFACTURING 
- PARKS 



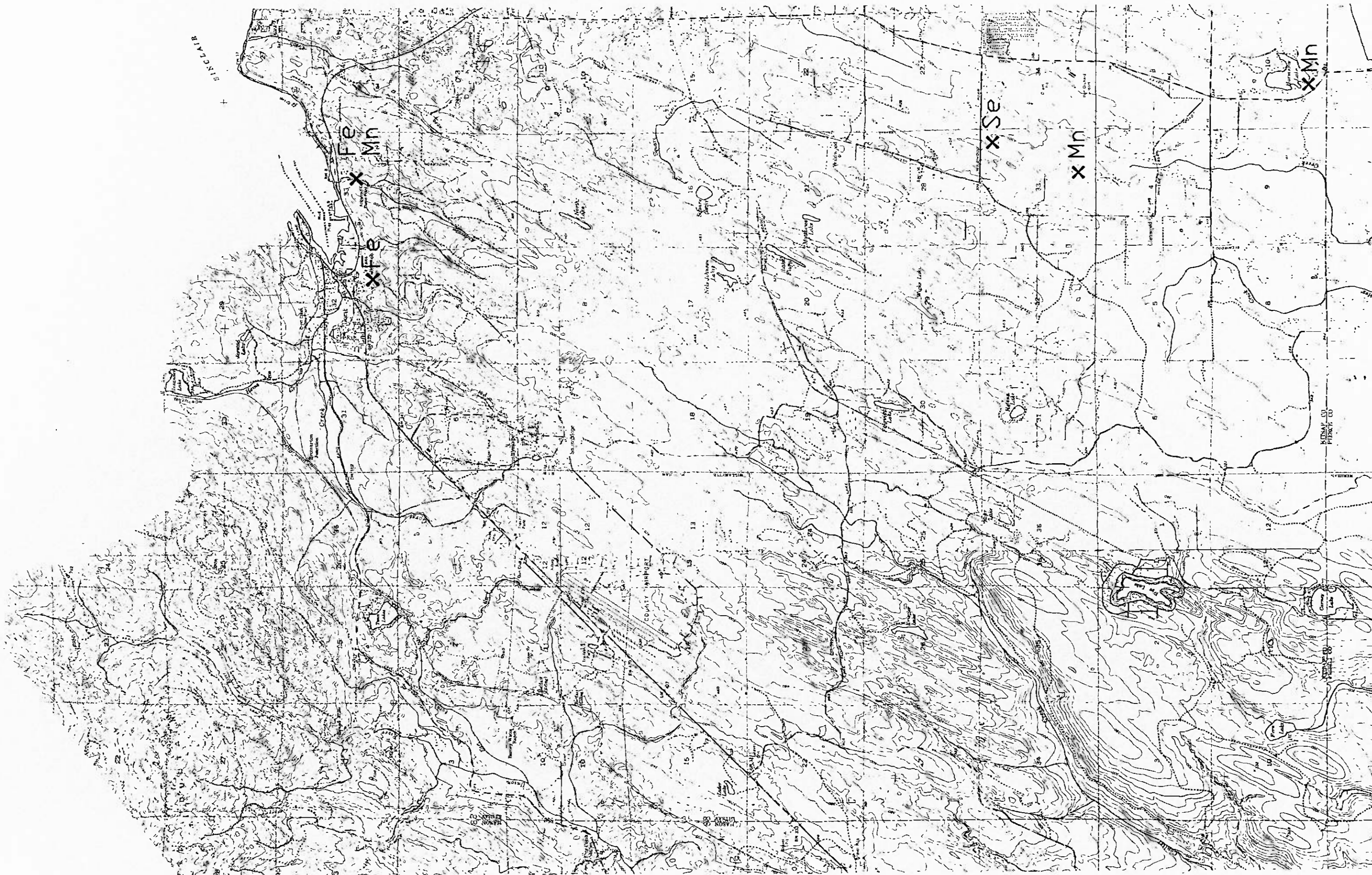
Kitsap County Ground Water Management Plan			
EXHIBIT E-26 LAND USE INVENTORY SOUTH KITSAP-WEST			
			

LEGEND

- URBAN
- SEMI-URBAN
- SEMI-RURAL
- RURAL 1 ACRE
- RURAL 2.5 ACRE
- INDUSTRIAL-LIGHT MANUFACTURING
- PARKS



<p style="text-align: center;">Kitsap County</p> <p style="text-align: center;">Ground Water Management Plan</p>			
<p>EXHIBIT E-27</p>			
<p>LAND USE INVENTORY</p> <p>SOUTH KITSAP-EAST</p>			



LEGEND

WELL SITE X

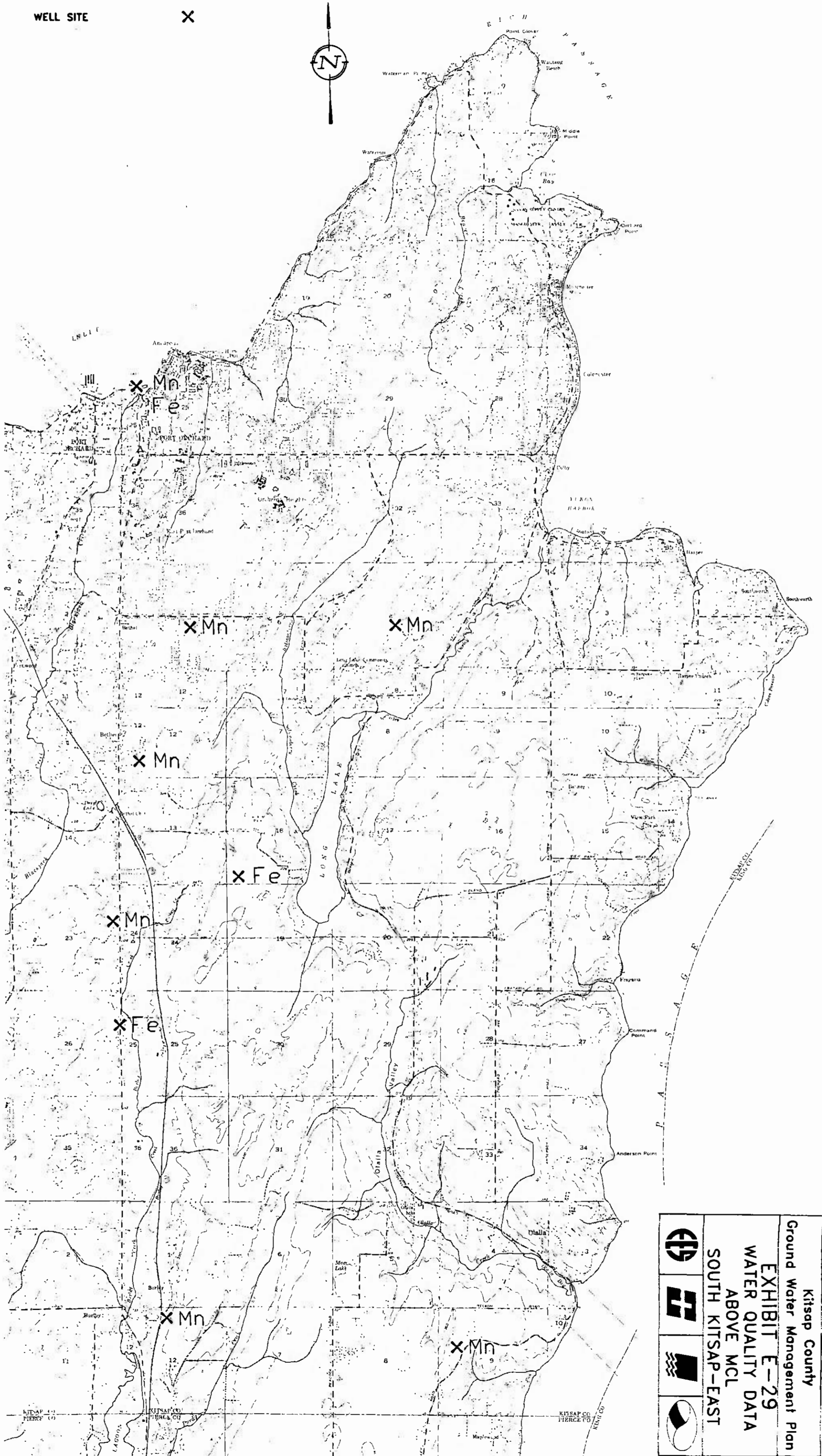


Kitsap County Ground Water Management Plan			
EXHIBIT E-28 WATER QUALITY DATA ABOVE MCL SOUTH KITSAP-WEST			

LEGEND

WELL SITE

X



	Kitsap County
	Ground Water Management Plan
	EXHIBIT E-29
	WATER QUALITY DATA
	ABOVE MCL
	SOUTH KITSAP-EAST