South King County
Ground Water Management Plan

Supplement 1 – Area Characterization

Prepared by:
South King County
Ground Water Advisory Committee

South King County
Ground Water
Advisory Committee

SUPPLEMENT TO THE SOUTH KING COUNTY GROUND WATER MANAGEMENT PLAN

Area Characterization

July 2003

Data and technical information included was assembled prior to 1996. Subsequent data and studies by study participants and others has not been included in this plan.

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CHAPTER 1

INTRODUCTION

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CHAPTER 1 INTRODUCTION

The project area, shown in Figure 1, encompasses approximately 260 square miles in the southwest portion of King County. It is bounded on the north by the Duwamish and Cedar Rivers, on the east by the Black Diamond area, on the south by the Green River and Pierce County, and on the west by Puget Sound.

There are four principal physiographic features within the area including the Des Moines Upland, the Covington Upland, the Federal Way Upland and the Green River Valley. The Des Moines and Covington Uplands are drift plains whose surfaces generally lie about 400 to 600 feet above mean sea level. The Federal Way Uplands are predominantly recharge areas in which water percolates downward to water bearing strata and eventually migrates to discharge areas. Numerous small to moderate sized drainage features provide internal drainage for the shallow ground water systems that occur within the uplands. Soos, Jenkins, and Covington Creeks are the principal internal drainage features within the Covington Upland. Des Moines, Salmon and Miller Creeks are the principal internal drainage features with the Des Moines Upland.

The larger drainage features within the area such as the Green, Cedar, and Duwamish Rivers and Puget Sound are predominantly regional discharge areas for the deep percolation that originates within the uplands.

CHAPTER 2

GROUND WATER MANAGEMENT AREA BOUNDARIES

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CHAPTER 2 GROUND WATER MANAGEMENT AREA BOUNDARIES

Within this study, the major physiographic features have been used to define four project subareas. The subarea boundaries generally coincide with hydrogeologic boundaries. The project subareas include the following:

- Des Moines Upland is bounded by Seattle on the north, Midway on the south, the Green/Duwamish River Valley on the east, and Puget Sound on the west. The Green River Valley, the Duwamish River and Puget Sound are major discharge features that serve as natural boundaries for the Des Moines Upland. A topographic low and a ground water divide separate the Des Moines Upland from the Federal Way Upland.

- Federal Way Upland is bounded by Midway on the north, Pierce County and the Puyallup Valley on the south, the Green River Valley on the east, and Puget Sound on the west. The Green River Valley, the Puyallup Valley, and Puget Sound serve as natural boundaries for the Federal Way Upland.

- Green River Valley is bounded by Renton on the north, Pierce County on the south, by the Covington Upland on the east, and the Des Moines Upland on the west. The Green River Valley is almost entirely a discharge area from a regional aspect. The Valley walls serve as the east and west margins of the subarea. Bedrock deposits which outcrop in the upland west of Renton serve as the northern boundary of the subarea. A ground water divide occurs in vicinity of the Pierce-King County boundary and separates subsurface flow to the Puyallup Valley from subsurface flow to the Green River Valley.

- Covington Upland is bounded by the Cedar River on the north, the Green River on the south, the Black Diamond area on the east, and the Green River Valley on the west. The Cedar and Green Rivers and the Green River Valley serve as natural discharge boundaries. Bedrock deposits that occur east of the Black Diamond area provide a natural barrier to the east.

A series of five base maps shown in the Figures are used to characterize the study area within this report. All the base maps and accompanying information in Volume II of Grant No. 1 are presented at a scale of 1:48,000 (1 inch = 4000 feet). A single base map is used for each of the Des Moines, Federal Way, and Green River Valley subareas. Two base maps were required to provide full coverage of the north and south zones of the Covington Upland.

The drainage, topography and geology are described by subarea in Volume II of Grant No. 1.

CHAPTER 3

JURISDICTIOJNS IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA (GWMA)

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rights. As a regulatory agency, Ecology is responsible for the cleanup of leaks and spills of hazardous materials except in navigable waters, oversight of the Resource Conservation and Recovery Act (RCRA) facilities and state hazardous waste cleanup sites, and the regulation of underground storage tanks.

3.2.2 Washington State Department of Health, Office of Environmental Health Programs

The Washington State Department of Health (DOH) is involved in a variety of programs that influence ground water management. As part of the Northwest Drinking Water Operations Programs, the DOH is responsible for oversight for Group A public water supplies, plan review including well site inspections and final system certificate of completion review.

Under the heading of the On-Site Sewage Program, the DOH is the state agency responsible for enforcing the Washington Administrative Code (WAC) 248-96, the regulations that prescribe design and installation standards for septic systems. The DOH is also responsible for guideline development and performance review of alternative sewage disposal systems and also manages the wellhead protection program. The DOH conducted an area wide ground water monitoring project in the spring of 1995. This project included a statewide sampling of 1,326 wells for pesticides and herbicides including 77 sites in King County. Results of the analysis indicated two wells in King County exceeded the EPA's detection limit for pesticides/herbicides. The results of this project has allowed the DOH to grant waivers to purveyors for ongoing monitoring.

3.2.3 Washington State Department of Natural Resources

The management of state lands for coal and mine production in the GWMA is the responsibility of the Washington State Department of Natural Resources. The Department of Natural Resources also collects hydrologic data as part of it's timber management program.

3.2.4 Washington State Board for Community, Trade and Economic Development

The Washington State Board for Community, Trade and Economic Development office of Community Development is responsible for implementing the Growth Management Act.

3.2.5 Washington State Department of Transportation

The Washington State Department of Transportation is involved in highway planning and in the GWMA carries out shoulder and ditch maintenance as well as roadside spraying for plant control. Interstates 5 and 405, Highways 18 and 99 and State Routes 161, 164, 167, 169, 181, 509, 515, 516 and 518 are maintained by the Department of Transportation in the study area.

3.3 KING COUNTY AGENCIES

The following King County agencies operate in the GWMA. Each of these agencies conducts activities that either directly or indirectly affect ground water management in the area.

3.3.1 King County Council

The King County Council has legislative authority to enact ordinances and regulations governing protection of ground water resources, including land use provisions. In the past, the King County Council has administered water resource, land use, and wetlands programs in addition to assisting in community plan reviews. The King County Council adopted the King County Comprehensive Plan (KCCP) in November 18, 1994, and the Community Plans for Enumclaw, Federal Way, Green River, Highline, Soos Creek, Tahoma Raven Heights, West Hill and White Center. In June 1993, the King County Council adopted the Potential Annexation Area Boundary Recommendations Report for unincorporated South-West King County.

3.3.2 King County Department of Natural Resources and Parks

Divisions of Natural Resources and Parks are involved in the implementation of the KCCP, the Community Plans for Soos Creek, Tahoma Raven Heights, West Hill and White Center environmental reviews and land use development. The four divisions of the King County Department of Natural Resources and Parks are: the Water and Land Resources Division, Waste Water Treatment Division, Solid Waste Division, and Parks Division.

3.3.3 Department of Development and Environmental Services

The Department of Development and Environmental Services is responsible for the regulation and enforcement of land development and zoning in the GWMA. Its specific duties include development control, commercial and residential permitting, sensitive area monitoring, and SEPA review. The Department of Development and Environmental Services also implements the Community Plans for Soos Creek, Tahoma Raven Heights, West Hill and White Center by issuing building permits and by administering rezones and plats.

Resource Planning Section, Environmental Division

Resource Planning is the lead agency for compilation of the natural environment chapter of the KCCP. Resource Planning also studies the interaction of wetlands and surface runoff and is involved in drainage basin planning.

CHAPTER 3 JURISDICTIONS IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA (GWMA)

The role of public agencies with jurisdiction in the Ground Water Management Area (GWMA) is discussed below:

3.1 FEDERAL AGENCIES

The following federal agencies influence ground water management in various ways both through their role as regulatory bodies, and in their capacity as policy makers.

3.1.1 Environmental Protection Agency

The Environmental Protection Agency (EPA) administers numerous programs that influence ground water management in the GWMA, provides technical assistance to state and municipal officials on a variety of ground water-related issues, and acts as a regulatory agency. As a lead agency, the EPA deals with water pollution, underground storage tanks, pesticide and herbicide use, liquid waste, landfills, hazardous waste management (including the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Superfund Amendments and Reauthorization Act (SARA) of 1986 sites and generators), and drinking water management. As a support agency, the EPA is involved with the regulation of lagoons and holding ponds, sewage waste disposal, sludge application, spill control and prevention, solid waste handling, storm-water runoff, ground water, surface water, wetlands, and wells and water rights.

The EPA administers the Sole Source Aquifer Program, performed the Pesticides in Ground Water Survey, and developed and implements the Agricultural Chemicals in Ground Water Strategy.

3.1.2 United States Geological Survey

The United States Geological Survey (the Survey) is a non-regulatory branch of the U.S. Department of Interior. The Survey has the major responsibility within the Federal Government for assessing the nation's water resources. The availability of plentiful supplies of high quality water is an important consideration in managing the natural resource, water resource investigations and data collection. As the nation's largest water resources information agency, the Survey conducts investigations on lakes, streams, reservoirs, river basins, estuaries, aquifer systems, and glaciers. In cooperation with more than 900 state and local agencies, the Survey conducts investigations for evaluating, developing, and managing the nation's water resources. In addition to data collection, the investigations may include

site-specific or regional studies on the availability and uses of water and the impact of human activities on the hydrologic environment. In addition, emergency situations such as droughts or floods are monitored and analyzed. The Survey has ongoing studies designed to understand and define ground and surface water relations but also has recognized the high priority placed on understanding the quantity and quality of ground water in the state. The Survey conducted a study of wells in the GWMA in 1987 and also was a technical consultant to the South King County Ground Water Advisory Committee in Grant No.1.

3.1.3 U. S. Department of Agriculture

The U. S. Department of Agriculture provides technical assistance to landowners and communities concerning municipal sludge applications, livestock, crops, irrigation design, wildlife, and animal-waste ponds. The U. S. Department of Agriculture is a lead agency for pesticide and herbicide programs and administers programs such as fish and wildlife conservation programs and watershed projects.

3.1.4 Natural Resources Conservation Service

The resource management agency of the U.S. Department of Agriculture, the Natural Resources Conservation Service (formerly known as the Soil Conservation Service) provides technical assistance related to resource management issues. Conservation systems are designed for local conditions to sustain and improve soil and water quality by addressing erosion control, nutrient management, wetlands conservation and restoration, wildlife habitat improvement, flood control and streambank stabilization. The Natural Resource Conservation Service works with the King Conservation District to assist landowners develop and implement conservation plans unique to their particular farm.

3.2 WASHINGTON STATE AGENCIES

The following agencies operate at the state level, but influence ground water affairs at a local level as well.

3.2.1 Washington State Department of Ecology

The Washington State Department of Ecology (Ecology) is charged with protecting the waters of the state, and, therefore, the activities of Ecology affect ground water management decisions in the GWMA both directly and indirectly. Funding for the development of the South King County Ground Water Management Plan (Plan) comes from the Centennial Clean Water fund, a grant administered by Ecology. Ecology issues discharge permits and performs compliance monitoring and enforces discharge regulations, and responds to pollution incidents. Ecology is a lead agency in over 20 environmental categories, including aquifer depletion, seawater intrusion, water resources, well construction and abandonment, and water

3.3.4 Seattle King County Health Department (SKCHD), Environmental Health Division

The SKCHD is an advisory and regulatory body involved in a wide variety of topics, including regulation of Group B public water systems. The SKCHD was co-lead agency for the development of the GWMP. SKCHD has coordinated the activities necessary for the development of the South King County Ground Water Management Plan (Plan) including collecting ground water quality and quantity data, managing the ground water database and drafting technical issue papers for development of the Plan. On January 1, 1996, the King County Department of Natural Resources and Parks (KCDNR) replaced the SKCHD as co-lead agency for completion of the Plan.

The SKCHD is also responsible for evaluating soil quality preparatory to permitting for on-site wastewater disposal systems. SKCHD issues permits for proposed septic tank systems, responds to complaints about and regulates the repair of failing systems, reviews all subdivision proposals for which on-site sewage disposal is proposed, and educates homeowners in the proper maintenance of their systems. The Solid Waste Section of SKCHD is responsible for permitting landfills, overseeing and permitting sludge applications and sampling ground water in areas around the landfill.

The Local Hazardous Waste Management Program in King County helps businesses and households in identifying hazardous wastes, reducing the amount of hazardous waste and in managing these wastes properly. The goal of the program is to divert the maximum amount of household hazardous waste and small quantity generator waste from disposal in the municipal waste stream and from the environment.

The Local Hazardous Waste Management Program in King County covers these areas: household hazardous waste education and collection; small quantity generator education/technical assistance; collection; compliance; and program evaluation. The household hazardous waste education coordinator is housed at the SKCHD, and staff in the other agencies collaborate on the household hazardous waste education activities. The compliance activities include the Interagency Regulatory Advisory Committee, which reviews proposed regulations, the field teams perform on-site audits and other advisory visits and respond to complaints about businesses. Evaluation of the program is accomplished by implementation of the evaluation strategy developed by the SKCHD. The actual data analysis is carried out by consultants, overseen by SKCHD. (Local Hazardous Waste Management Plan, November 1990, Final Plan and EIS and Local Hazardous Waste Management Plan Annual Report, Calendar Year 1994, June 1995.)

3.3.5 King County Department of Transportation

The following divisions of the King County Department of Transportation conduct the activities described below in the GWMA.

Roads Division

In addition to construction and maintenance of roads and associated drainage, the Roads Division is responsible for vegetation control along the roadside.

3.4 LOCAL AGENCIES

3.4.1 Cities

The cities of Algona, Auburn, Black Diamond, Burien, Covington, Des Moines, Federal Way, Kent, Maple Valley, Normandy Park, Pacific, Renton, Sea-Tac and Tukwila responsibilities may include: review and approval of proposed developments; development of framework for future growth within the city limits; comprehensive planning (Land Use, Parks & Recreation, Transporation, Surface Water Mangement, Natural Resources, etc.) and administration; street maintenance; spraying for plant control; stormwater facility maintenance and enhancement; and local water quality and quantity protection.

3.4.2 Water and Sewer Districts

The water and sewer districts provide water and/or sewer service within a specific area. Responsibilities include: develop and update water and wastewater comprehensive plans; monitor ground water quality and quantity; develop water resource or wellhead protection and conservation programs; and conduct water quality analysis. The utilities providing these services in the GWMA are the Covington Water District, the Highline Water District, King County Water Districts 20, 45, 49, 54, 85, 111 and 125, the Lakehaven Utility District, Midway Sewer District, Rainier Vista Sewer District, and the Val-Vue Sewer District.

3.4.3 Seattle Public Utilities

Within the boundaries of the designated study area, the Seattle Public Utilities (SPU) provides drinking water to customers within its direct service area, and sells water at wholesale rates to several water districts under long term contracts. The SPU's interest in this ground water management program is linked directly to the development and operation of its Highline Well Field, located north of the Seattle-Tacoma International Airport. In 1994, the SPU successfully completed a study of artificial recharge sponsored by the U.S. Bureau of Reclamation. This program involves the diversion of water from Cedar River in the fall/winter/spring seasons and injecting into the Highline Aquifer, via dual-purpose production wells, where it is stored for recovery during the peak summer demand period.

3.5 OTHER AGENCIES

3.5.1 South King County Regional Water Association

The South King County Regional Water Association (RWA) is an association of Group A public water system purveyors in South King County which functions under the legal authority of the Interlocal Cooperation Act. The RWA is the co-lead agency for the development of the Plan.

3.5.2 King Conservation District

The King Conservation District works with the urban and agricultural community to implement animal management and land use practices that increase productivity while minimizing soil erosion and water pollution. The District is neither a branch of county government nor an enforcement agency, but rather a political subdivision of state government authorized by Chapter RCW 89.08. The King Conservation District is dedicated to the conservation and best uses of the natural resources of King County.

3.5.3 The Muckleshoot Indian Tribe

The Muckleshoot Indian Tribe Reservation is situated in South King County near the Pierce County border. The tribe holds federally reserved fishing rights, which were established by treaty. In-stream flows are a critical component of fish habitat.

The tribe has planning and environmental planning and management authority over its reservation lands. A summary of the jurisdictional areas of the above agencies can be seen in Figure 3.

CHAPTER 4

LAND AND WATER USE

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CHAPTER 4 LAND AND WATER USE

The quality and quantity of both surface and ground water is known to be impacted by the type and intensity of land use activities that occur in a water shed or recharge area. Consequently, correlating land use evaluation with corresponding water quality assessments may impact contamination potential.

4.1 PLANS, POLICIES, AND REGULATIONS AFFECTING LAND USE

An understanding of existing land use activities and development trends in the GWMA must include a discussion of King County and the cities and land use policies influencing these factors.

County-wide Planning Policies

The County-wide Planning Policies provide a framework in the planning entities Comprehensive Plan (cities and King County). The cities in the GWMA have Comprehensive Plans which meet the Growth Management Act requirements.

In the County-wide Planning Policies, the following policy addresses ground water. Currently, in addition to this GWMP there are four Ground Water Management Plans that have been approved and certified by Ecology, these include: Redmond, Issaquah, East King County, and Vashon. Each plan was prepared in conjunction with an advisory committee with representatives from suburban cities, businesses, private well owners, environmental groups, and state agencies. The plans identify aquifer recharge areas and propose strategies for protection of ground water through preservation and protection of the aquifers.

- **CA-5** All jurisdiction shall adopt policies to protect the quality and quantity of ground water where appropriate:

    a. Jurisdictions that are included in Ground Water Management Plans shall support the development, adoption, and implementation of the Plans; and

    b. The SKCHD and affected jurisdictions shall develop county-wide policies outlining best management practices within aquifer recharge areas to protect public health; and

    c. King County and ground water purveyors including cities, special purpose districts, and others should jointly:

1. Prepare ground water recharge area maps using common criteria and incorporating information generated by Ground Water Management Plans and purveyor studies;

2. Develop a process by which land use jurisdictions will review, concur with, and implement, as appropriate, purveyor Wellhead Protection Programs required by the Federal Safe Drinking Water Act:

3. Determine which portions of mapped recharge areas and Wellhead Protection Areas should be designated as critical; and

4. Update critical areas maps as new information about recharge areas and Wellhead Protection Areas becomes available.

- **CA-6** Land use actions should take into account the potential impacts on aquifers determined to serve as water supplies. The depletion and degradation of aquifers needed for potable water supplies should be avoided or mitigated: otherwise a proven, feasible replacement source of water supply should be planned and developed to compensate for potential lost supplies.

Comprehensive Plan

King County's Comprehensive Plan (KCCP) establishes countywide policies and goals as well as a framework for policy making at the local level. The Comprehensive Plan is concerned with land use in the county and directs decisions affecting growth and land development.

The KCCP was adopted on November 18, 1994. The plan has subsequently been amended with the latest ammendments (2000 ammendments) approved March 2, 2001.

The KCCP establishes policy priorities for ground water management for all of King County. The Comprehensive Plan calls for the implementation of these policies through land use plans and development review. Ground water policies should also be used to guide the County's review of the plans prepared for water and sewer purveyors and other government projects.

The policies in the KCCP adopted November 18, 1994, state the following key protection strategies for ground water:

- **E-148** In unincorporated King County, areas identified as sole source aquifers or as areas with high susceptibility for ground water contamination where aquifers are used for potable water are designated as Critical Aquifer Recharge Areas as shown on the map, entitled Areas Highly Susceptible to Ground Water Contamination. Since this

map focuses primarily on water quality issues, the County shall work in conjunction with cities and ground water purveyors to designate and map recharge areas which address ground water quantity concerns as new information from ground water and wellhead protection studies adopted by county or state agencies becomes available. Updating and refining the map shall be an ongoing process.

- **E-149** King County should protect the quality and quantity of ground water countywide by:

    a. Implementation adopted Ground Water Management Plans;

    b. Reviewing and implementing approved Wellhead Protection Programs in conjunction with cities, state agencie and ground water purveyors;

    c. Developing, with affected jurisdictions, best management practices for new development and for forestry, agriculture, and mining operations recommended in adopted Ground Water Management Plans and Wellhead Protection Programs. The goals of these practices should be to promote aquifer recharge quality and to strive for no net reduction of recharge to ground water quantity; and

    d. Refining regulations to protect critical aquifer recharge areas and wellhead protection areas.

- **E-150** King County should protect ground water recharge quantity by promoting methods that infiltrate runoff where site conditions permit, except where potential ground water contamination cannot be prevented by pollution source controls and stormwater pretreatment.

- **E-151** In making future zoning and land use decisions which are subject to environmental review, King County shall evaluate and monitor ground water policies, their implementation costs, and the impacts upon the quantity and quality of ground water. The depletion or degradation of aquifers needed for potable water supplies should be avoided or mitigated, and the need to plan and develop feasible and equivalent replacement sources to compensate for the potential loss of water supplies should be considered.

- **E-152** King County should protect ground water in the Rural Area by:

    a. Preferring land uses that retain a high ratio of permeable to impermeable surface area and that maintain or augment the infiltration capacity of the natural soils; and

b. Requiring standards for seasonal and maximum vegetation clearing limits, impervious surface limit, and, where appropriate, infiltration of surface water. These standards should be designed to provide appropriate exceptions consistent with Policy R-231.

Community Plans

Community Plans represent an element of the King County planning process in place prior to adoption of the 1994 King County Comprehensive Plan. The Community Plans, now considered historical documents reflect a process that allowed citizens and planning officials to develop local goals and policies. The important relevant elements of the Community Plan have now been incorporated into the KCCP.

Basin Plans - These basin plans in the study area have been completed and adopted by King County. These three plans are Cedar River, Hylebos Creek and Lower Puget Sound, and Soos Creek Basins. King County is conducting a basin study of the May Creek, Salmon Creek and Seola Creeks (Brogan, personal communication, 1994). A study of the Mill Creek water quality was also conducted in 1992.

Cedar River Current & Future Conditions Report - This area is situated in the north east section of the GWMA and is only partly within the study area. The report focuses on geology and ground water in the Cedar River Basin, surface water hydrology, flooding, erosion and deposition, water quality, aquatic habit and agency response.

Hylebos Creek and Lower Puget Sound Executive Proposed Basin Plan - This area is situated in the southwest corner of the GWMA. The Mill Creek Basin area extends form Kent to Algona. This plan includes geology, ground water, stream channel erosion and deposition, hydrology, flooding, water quality, land use trends and habitat.

Mill Creek Water Quality Management Plan - This area is situated in the south central section of the GWMA. The Mill Creek Basin area extends from Kent to Algona. This Plan focuses on surface water quality.

Soos Creek Basin Plan - This basin is located in the southeast area of the GWMA. This plan includes hydrology and hydraulics, land use, surface water quality, ground water, geology, erosion and deposit of sediment and plants and animals. The Plan study is mentioned in this plan.

4.2 LAND USE IMPACTS

A survey of existing and historical land use activities was completed in Grant No. 1 within the GWMA. Land use categories within the GWMA were patterned after the EPA's Office of Technology Assessment's system for categorizing various sources of ground water contamination. These source classifications were used as a guide in researching activities within South King County. The results of the investigation were then graphically displayed to correlate the location of potential contamination sites with quality of the ground water.

These overlays of land use activities along with more specific descriptions of potential impacts on ground water are contained in the discussions for each subarea in Appendices A through D of Volume II. These land use activities in the Volume II report of Grant No. 1 are updated in the following pages:

4.2.1 On-Site Sewage Systems

On-site sewage systems are found throughout the GWMA including within city limits.

All on-site sewage systems are regulated by the SKCHD. New on-site sewage systems must conform to location and design guidelines established by the King County Board of Health Regulations Title 13.

On-site sewage systems may be a source of non-point pollution to ground water in extremely permeable soils or within high recharge areas above ground water. However, on-site sewage systems if properly designed, installed and maintained may be the preferred alternative to sewers because of lower water use and the reinfiltration of their wastewater to the ground.

A priority should be to locate all septic systems especially those with a history of failure and those located in potential ground water recharge zones. The on-site sewage system drainfield is a potential contributor of phosphates, nitrates and synthetic organic chemicals to surface and ground water. More research is needed on the actual threat to ground water posed by drainfields in the study area.

4.2.2 Stormwater

Storm water is important to ground water management for two reasons. First, storm water has the potential to carry contaminants, such as oil and grease found along roadways and other impervious surfaces, to ground water recharge zones. In addition, stormwater management can affect ground water quantity if stormwater is directed to ground water recharge areas. Stormwater in the GWMA is collected by a variety of methods: open ditches, closed pipes, closed systems, tightline systems, culverts, catch basins, swales, combined sewers, storm sewers, and oil and water separators.

Stormwater is discharged into detention facilities, lined biofiltation facilities, wetlands, canals, creeks, rivers and Puget Sound.

To comply with the Puget Sound Water Quality Management Plan, local governments in the Puget Sound basin must adopt stormwater technical manuals and stormwater ordinances by January 1, 1995. A local government may adopt the manual prepared by Ecology or prepare its own manual as long as it has "substantially equivalent technical standards" to those of Ecology's manual.

Ecology has developed stormwater management guidelines, under the 1989 Puget Sound Water Quality Management Plan. The guidelines which became effective in mid-1994, are directly relevant to I-5, I-405, State Routes 161, 164, 167, 169, 181, 509, 515, 516, 518 and 599 and Highways 18 and 99 in the study area. The guidelines will be implemented by local jurisdictions and the State Department of Transportation (King County Surface Water Management Division 1991).

One problem associated with urban runoff is the complexity of the contaminants. The result is that more complex and variable contaminants are seeping into the ground water.

A research priority in this area should be to determine the extent to which storm water runoff represents a threat to ground water quality. This research would also locate those areas where a significant amount of vehicular oils and greases are channeled by storm water systems into sensitive ground water recharge zones.

4.2.3 Landfills

There are no landfills presently in operation in the South King County GWMA. There are, however, 10 abandoned landfills scattered throughout the study area.

King County is presently conducting a hydrogeological investigation of the closed Puyallup/Kit Corner landfill. Seven monitoring wells have been installed since 1993. These wells have been sampled for a wide range of parameters including priority pollutants. The results of these samples are not yet available. Additional wells are to be installed on this site in the future (Komorita, personal communication, 1994).

King County will also be conducting a hydrogeological investigation of the closed Bow Lake landfill commencing in 1996 including the installation of monitoring wells (Komorita, personal communication, 1994). King County operates two transfer stations, one at Algona and the other at Bow Lake. Solid waste from these transfer stations is transported daily to the Cedar Hills landfill south of Issaquah.

The Seattle King County Health Department (SKCHD) has sampled public wells for priority pollutants around the Puyallup/Kit Corner landfill since 1989. The sample results all met the

Safe Drinking Water Act requirements. SKCHD has discontinued this program as all these available wells are now required to sample for priority pollutants (Hickok, personal communication, 1994). The data collected from the investigations of the Puyallup/Kit Corner and from the Bow Lake landfills should be shared and entered into their database.

4.2.4 Hazardous Waste

Hazardous waste, as defined in Washington's Administrative Code (Chapter 173-303-070 to 120 WAC), is a material that is ignitable, corrosive, reactive, or toxic. Hazardous wastes can be introduced to the environment, including ground water, in number of ways. For RCRA-regulated generators and potential small waste generators in the GWMA not served by a public sewer system, hazardous wastes may be discharged to septic systems through sinks, toilets, or floor drains. Inadvertent or intentional discharges to storm water disposal systems represent another release mechanism. Small quantities of hazardous wastes that are discarded along with normal solid waste refuse can be placed in landfills and contributed to leachate contamination of the underlying ground water. Finally, hazardous wastes that are deposited on exposed ground surfaces from traffic accidents, spills, or from improper storage can percolate into the soil and may migrate via recharging precipitation into the ground water environment.

To be regulated under the federal RCRA, a commercial or industrial facility must generate at least 220 pounds per month of hazardous waste; transport dangerous/hazardous waste; treat, store or dispose of dangerous/hazardous waste; or burn or blend dangerous waste fuels. Several commercial and industrial facilities located within the GWMA generate quantities of hazardous or extremely hazardous waste regulated under RCRA. Ecology maintains a record of businesses that generate, store, treat or transport hazardous waste in the state.

In Volume II of Grant No.1, Appendices A through D provide more specific descriptions on hazardous waste generators. Some of these sites have undergone an assessment but the remaining sites are ranked and categorized on their potential for contamination.

Although these facilities are located throughout the area they are more prevalent within the Green River Valley and along the industrial corridor of the Duwamish River.

Small quantity generators produce less than 220 lbs. of hazardous waste each month. The Local Hazardous Waste Management Program assess how small quantity generators store, use and dispose of hazardous waste. The SKCHD and King County co-staff the Local Hazardous Waste Management Program field unit that inspects any business that has the potential to generate hazardous waste. Hazardous waste spillage at small quantity generators is a high priority. Businesses where hazardous waste spillage is observed are referred to Ecology for follow up. These businesses must still handle their waste properly according to Chapter 173-303 WAC and Title 10 of the King County Board of Health.

The SKCHD should monitor data collected by Ecology and the Local Hazardous Waste Management Program regarding hazardous waste generator impacts on ground water quality.

4.2.5 Underground Storage Tanks

Underground Storage Tanks found throughout the study area represent another potential threat to ground water quality and quantity. Faulty underground storage tank system components and poor facility management practices are the most cited causes of leaks and spills, collectively and commonly referred to as releases, from underground storage tanks. Releases from underground storage tank systems are especially problematic in areas with shallow aquifers or where ground water drawn from private wells is the primary source of drinking water (Knowlton, 1994).

Underground storage tanks without special leak containment or leak detection systems represent a potential threat to ground water quality. At some point during the active life of any underground storage tank without environmental controls, hazardous substances stored in ground water recharge zones will probably lead to some form of ground water contamination.

Ecology maintains a list of underground storage tanks in the GWMA. There are presently 1,283 underground storage tanks operational in the GWMA (Table 4.1). This list is not all-inclusive, it reflects only those systems reported to Ecology. The list does represent the majority of regulated underground storage tank systems in the area. Table 4.2 lists the age ranges of the underground storage tanks in the GWMA, and Table 4.3 lists the types of substances found in those underground storage tanks. Table 4.4 summarizes the sizes of these underground storage tanks.

Since January 1989, Ecology has maintained a database of current and former contaminated underground storage tanks. Table 4.5 (Ecology 1994) lists 64 sites in the GWMA where underground storage tank cleanups are in progress or have taken place.

Under the Model Toxic Control Act (MTCA) underground storage tank owners are responsible for site cleanup and for sending the report to Ecology, which gives them a cleanup status. Ecology is not an active participant; the sites are independently cleaned up by the owners(s). Of the 64 sites, twenty-five (25) had ground water contamination. Of these 25 sites, five (5) sites have forwarded their final independent cleanup report to Ecology (conducted). At thirteen (13) sites clean up of ground water contamination is in progress. There are three (3) sites where Ecology is not aware of any remedial action and cleanup of ground water contamination is necessary (awaiting category). Ecology has been notified of ground water contamination where the underground storage tank systems have failed but have no further information at three (3) other sites (unknown category). At one (1) site of ground water contamination cleanup has occurred and monitoring is ongoing.

Although underground storage tanks represent a potential threat to ground water in the GWMA, some incidents are either unreported or undetected. The documentation of unregulated home heating oil tanks is difficult not only due to the hidden nature of the tanks, but also because not enough is known about the location, composition, and contents of many of the abandoned underground storage tanks in the area. Homes that once used or still rely upon fuel oil stored in underground storage tanks are common in western Washington. Home heating oil tanks are small (between 300-500 gallons) compared to most regulated underground storage tanks. Smaller tanks were typically constructed of thinner gauge steel and provide shorter service than large, regulated systems. The average useful life of a 500-gallon steel tank that does not have corrosion prevention (i.e. cathodic protection) has been estimated at about 20 years. Most underground home heating oil tanks in western Washington are old and not cathodically protected. Ecology does not regulate nor track information about underground home heating oil tanks (Knowlton 1994).

A priority of future research should be identification of underground storage tanks located in areas where there is significant recharge to aquifers. Special guidelines may be designed for the location and monitoring of underground storage tanks in these recharge zones. Additional research should also try to locate smaller private underground storage tanks, especially residential heating oil tanks, in the GWMA. Home heating oil tanks that have not been permanently decommissioned, whether by removal or closure in situ, may pose a serious threat to ground water resources in the GWMA. Improperly closed heating oil tanks (i.e. those which still contain petroleum products (or have not been secured from reuse) are the greatest concern (Knowlton 1994).

To understand the actual ground water impacts of an underground storage tank leak or accident, an additional research priority should be to identify the extent and type of contamination possible from such an incident.

4.2.6 Transportation

Roadside Spraying - Roadside spraying usually attempts to accomplish one of four objectives: (1) to control excess weed growth; (2) to limit the spread of brush and trees; (3) to protect newly planted beds from disease and insects; and (4) to control insects and weeds at specific spots (Uyeda 1988). Within the state of Washington, labeling, distribution, transportation, application, use restrictions, and disposal of pesticides are governed by Chapter 16-288 WAC. The issuance and monitoring of statewide pesticide use permits is the responsibility of the Washington State Department of Agriculture.

Three public agencies conduct roadside spraying in the GWMA: the Washington State Department of Transportation, King County, and the various cities. Each of these agencies is required by law (Chapter 17-21 RCW) to record the details of each spraying event and to retain those records for a period of 7 years. Spraying records, showing specific quantities

and locations of herbicidal applications in the GWMA, may be obtained from the Department of Transportation's Bellevue office, from King County, and from the cities.

The State Department of Transportation is responsible for vegetation control on I-5 and I-405 and State Routes 161, 164, 167, 169, 181, 509, 515, 516, 518 and 599 and Highways 18 and 99. The Department of Transportation sprays weeds appearing within 2 feet of roadside, around fire hydrants and manholes, and in drainage ditches. State roadsides in the GWMA are sprayed once a year, usually during the month of April, primarily using three herbicides: Karmex, Krovar, and Roundup. (The above are trade name formulations containing herbicides diuron, bromacil and glyphosate).

King County serves unincorporated portions of the GWMA. King County applies herbicides to control noxious weeds on right of ways and weed and grass growth on gravel shoulders and around guard rails. Either Escort or Garlon is used for broad leaf control. Oust or Roundup is used for the non-selective control on the shoulders. The use of the chemicals simazine and atrazine was discontinued after 1989 because they are water soluble and can't be used in permeable soils. All herbicides, including those not on a "restricted use," are applied by certified pesticide applicators (Matsuno 1994).

The SKCHD conducts ongoing soils and water monitoring to determine the residual levels of pesticides and monitors their degradation over time. According to the 1989 monitoring report, no herbicide residuals were found in surface water samples. As expected, low levels of herbicide residuals were found in soil samples taken at a depth of 4 inches.

The results for simazine and atrazine indicate that roadside spraying does not appear to pose a significant threat to water quality. Further, the amount of herbicides applied has decreased over the years through improved application methods, such as dilution with water and overall decreased application volumes.

The application of herbicides and pesticides for roadside plant control can threaten ground water quality in two ways. First, chemicals may be transported by storm water into high ground water recharge areas. And second, pesticides may percolate into shallow aquifers through fissures or dry and sandy soils. Vegetation and clay soils that exist along roadside in the GWMA may act to effectively absorb some pesticides before they reach ground water. However, particular attention should be paid to the quantity and type of chemical applied, especially if a chemical is likely to destroy or inhibit grass growth (Horner and Mar 1982).

Although ground water impacts from roadside chemical applications is statistically improbable, additional information is needed in four areas:

- the location of dry and sandy soils and exposed aquifers that may facilitate the contamination of ground water by chemicals applied at roadsides;

- the types of roadside chemicals most likely to percolate through soils to an aquifer as well as those which inhibit grass growth;
- the quantities and locations of chemical applications; and
- reports of any accidents or improper storage, handling or transport of pesticides and herbicides used for plant control in the GWMA.

Highway Runoff - As rain washes over a roadway, it carries oils and greases into soils and storm water systems. Runoff of this kind is likely to occur on highways and heavily traveled roads where there is frequent truck traffic (Horner and Mar 1982). Common contaminants found in stormwater runoff from roads include petroleum products, heavy metals, and soot. In areas where existing roads cross streams, untreated road runoff may be discharged directly to local streams in the GWMA.

Highway contaminants react to vegetation and soil as do pesticides and herbicides when applied to roadsides. Ground water infiltration by highway runoff is possible in very porous earth and in areas of exposed aquifers. Studies of highway runoff in western Washington have shown that vegetation may effectively capture pollution in upper soil layers (Horner and Mar 1982). However, the precise conditions under which runoff pollutants may be contained in surface soil is not yet known.

Highway runoff for Interstates 5 and 405 and other heavily traveled roads in the GWMA flows into vegetated storm water channels thus decreasing the chances of ground water contamination. However, some channels are maintained with mechanical blades that may clear soil and vegetation allowing highway runoff to infiltrate into ground water.

The most comprehensive study of highway runoff in Washington State was conducted by the State Department of Transportation between 1977 and 1982 (Horner and Mar 1982). Although these reports discuss the conditions under which runoff may lead to ground water contamination, the degree and impact of potential contamination is never quantified. Since the 1982 study no comprehensive studies of highway runoff have been conducted in Washington State. However, the State Department of Transportation will be conducting a highway runoff characterization and Best Management Practices effectiveness monitoring program in King County for the National Pollutant Discharge Elimination System (NPDES) Permit Program and the Highway Runoff Rule (Chapter 173-270 WAC). Samples will be collected for a complete range of parameters including metals and priority pollutants (Schaftlein, 1994).

Additional research is necessary to determine the type and quantity of contaminants that flow from road surfaces. In addition, more information is needed on storm water drainage for major roads in the study area.

Hazardous Materials Spills - The term "hazardous material" refers to "hazardous waste" as well as "hazardous substances," both generally defined as materials that pose a substantial present or potential threat to human health or the environment (Horner and Mar 1982). The majority of hazardous substances traveling on GWMA roads are petroleum products. These products are most frequently transported in the GWMA along Interstates 5 and 405, State Routes 161, 164, 167, 169, 181, 509, 515, 516, 518 and 599 and Highways 18 and 99.

The exact frequency and routes of hazardous material traffic is not yet known. Future research should determine the probability of a hazardous material accident occurring in the study area and the circumstances under with such an accident would threaten ground water quality.

Ecology responds to reports of petroleum or hazardous material spills in the GWMA. A spill response team is available on a 24-hour basis to implement and monitor cleanup operations for accidents that occur on highways or roads, at manufacturing plants, or any location in the GWMA. Ecology's procedure for responding to spills depends on the substance spilled as well as on the severity and location of the accident (Baker 1990).

The goal of evaluating the risk of a hazardous material spill is to provide information to decision makers in the following areas:

- the location of accident zones where hazardous material spills are likely to occur;
- a description of sensitive areas where spills would threaten ground water quality; and
- an estimation of the resources needed in any remediation effort resulting from a spill.

In order to complete this evaluation, the following research process may be followed:

- state traffic volume data will estimate the number of trucks that have used major roads in the GWMA in past years;
- accident statistics will then help to determine the probability of a truck accident occurring on these roads;
- additional data is then needed to determine the percentage of trucks carrying hazardous materials in order to locate principal accident zones and the likelihood of a hazardous material accident occurring;
- further research will indicate the number of hazardous material accidents that result in spills as well as the quantity and substance of those spills; and finally,

- research is needed to estimate the probability of spilled hazardous materials reaching and contaminating ground water.

4.2.7 Agriculture

Livestock keeping and crops are the primary agricultural activities in the GWMA. The Green River and Covington subareas (Volume II of Grant No. 1) are the main areas used for agriculture.

Agricultural activities causing nonpoint pollution can be divided into two groups: (1) practices associated with livestock keeping and (2) practices associated with crop production. Pollutants most identified with farming activities are sediment, nutrients, organic materials, pesticides and pathogens. Activities that can generate these pollutants in crop production are soil tillage, improper application of fertilizers and pesticides, and irrigation. Animal production activities that generate these pollutants include: animal confinement, overgrazing of pastures, unrestricted livestock access to streams, and improper application of fertilizers and pesticides (Fitch, 1994).

Virtually all of the water quality programs that are associated with livestock keeping and crop production can be prevented if the land users will take time to learn about and implement the skills needed to run their type of operation (Fitch, 1994).

Additional research is needed on the types and quantities of agricultural fertilizers and pesticides used in the GWMA. This information would allow for a complete analysis of how agricultural activities affect ground water quality.

4.2.8 Mining

Quarries and mines can pose problems for ground water management in that they often leave large portions of an aquifer directly exposed to surface water and industrial contaminants. These areas may be significant ground water recharge zones.

The location of mines can be found in Volume II of Grant No. 1 of the Plan. There is little mining activity within the GWMA. However, several mining operations are located just east of the study area in Black Diamond. Wells in this area should be monitored for potential ground water impacts from these operations.

4.2.9 Well Construction and Decommissioning

Although not actually a source of contamination, the methods used to construct a well can have a significant impact on water quality. For instance, unless a well is sealed properly, the casing can act as a conduit for pollutants originating at the ground surface to travel to an underlying aquifer. Additionally, if a well penetrates more than one aquifer unit, water from

the various aquifer units can mix. If the water of one aquifer unit is contaminated, it can, under certain hydrologic conditions, introduce contaminants to other aquifer units. Adequate well design and construction standards must be enforced to prevent water quality problems of this nature.

An unknown number of wells may no longer be in use or may be decommissioned in the near future due to growth of centralized public water systems in the GWMA. Some wells were drilled prior to the introduction of well construction standards and are not equipped with adequate sanitary seals. Thus, they will continue to provide an opportunity for land surface contaminants to migrate to ground water.

The Minimum Standards for Construction and Maintenance of Water Wells (Chapter 173-160 WAC) requires that well drillers submit a report on the construction of every new water well to Ecology. Such reports should include the information necessary to describe the well's location, surface elevation, and the type of well construction. In addition, the report should provide pertinent data concerning the geologic conditions encountered during construction and the characteristics of the aquifer.

Well reports serve as an important database for the evaluation and management of ground water resources within the GWMA. Meeting present and future demands for drinking water in the GWMA may be dependent on ground water; thus, the accuracy and completeness of well reports is necessary to develop future water planning for the area.

Decommissioned wells which have been identified are reported by subarea in Volume II of Grant No. 1 of this Plan. However, future data collection efforts should attempt to identify improperly decommissioned wells or wells that were improperly constructed and should be decommissioned in the GWMA. A data sort showing locations of wells which predate subsequent service by a water system can be used to define areas of higher probability for the existence of unused wells. An additional task should be the identification of shallow, particularly dug wells, located in the most physically susceptible and recharge areas.

4.2.10 Fertilizer/Pesticide Applications

Fertilizer use besides commercial agriculture, in the GWMA, consists of turf applications at public golf courses, residential lawns, and institutional lawns. Turf fertilizers are a source of two potential contaminants, nitrate and phosphate. Of the two, nitrate represents the greatest risk to ground water contamination because of its high water solubility and high mobility in the soil column.

Phosphates in turf fertilizers generally do not pose a significant threat to ground water for a number of reasons. First, the water solubility of phosphate is low and much of the available phosphorus will be utilized within the root zone. The pH of the turf and underlying soil is conductive to the rapid binding of phosphate with aluminum ions found in abundance in

western Washington soils (Braun, 1989). The use of phosphate on turf is essentially self-limiting. Only a relatively small amount of phosphate is used by grasses and little of that is undesirable seed head growth, diminishing the aesthetic quality of the turf.

There are a number of golf courses in the GWMA. Fertilizing practices are essentially the same for most golf courses in western Washington. The Cooperative Extension Service suggests that nitrate contamination of both ground and surface water associated with turf fertilizers can be avoided through frequent, low-level applications. Over-watering the turf after fertilizer application should be avoided to reduce the opportunity for nitrate wash-through. Use of urea should be avoided since it converts rapidly to nitrate. Ammonia sulfate is the recommended form of nitrogen because it is assimilated quickly, becomes tied up in the organic matter of the turf, and converts slowly to nitrate.

The nature of turf fertilizer use for residential and institutional lawns in the GWMA is not documented. Presumably, the amount applied and the frequency of application varies widely. Pesticides/herbicides are applied to the forested area in the southeast corner of the Covington subarea (see Volume II of Grant No. 1 of this Plan).

Fertilizer use may not pose a significant threat to ground water in the GWMA. Future data collection efforts should focus on obtaining information on the types and quantities of fertilizers and pesticides used by golf courses and nurseries, etc. and monitoring ground water quality from wells in the vicinity of these establishments.

4.2.11 Ground Water Quantity

The amount of ground water available and the amount that can be recharged into the ground is affected by land use, population growth, and water use.

Ground water recharge is affected by the amount of vegetation, soil conditions, and the topography of the potential recharge area. Vegetation decreases the velocity of runoff as water is diverted around plant stems and roots. This is a benefit to recharge because slowing the runoff increases the time available for infiltration and thereby increases infiltration. By clear-cutting the land and removing vegetation, ground water recharge can be diminished.

Soils composed of coarse-grained material such as sand and gravel are generally more porous and good for recharge than those composed of fine-grained particles such as clay. Sealing over these recharge areas with parking lots, and residential and commercial buildings reduces the amount of ground water recharge.

The slope of the surface upon which precipitation falls affects the amount of precipitation that recharges into the ground. More rain tends to run off a steep slope than off a level plain.

With population growth there is an increase in the number of residential and commercial buildings, roads, and parking lots sealing over ground water recharge areas. There is also an increased demand for water. Ground water withdrawals from the aquifer, when combined with covering over of recharge areas, can lead to a diminished ground water supply for drinking water purposes. Because ground water and surface water are interconnected, surface water features such as lake levels and the base flow of creeks are impacted by diminished ground water levels.

With the demands for more ground water, agencies and purveyors need to plan for methods to protect this valuable finite resource. A method to enhance recharge is to maintain portions of residential areas in their natural state or permit the planting of vegetation in these areas. Storm water facilities can be constructed to recharge ground water provided that the stormwater is first adequately treated so as not to contaminate ground water. The State is also currently investigating ways to treat and reuse wastewater.

The use of low-use water fixtures in residential and commercial buildings and educating the public in water saving habits will also conserve the ground water resource.

4.3 POPULATION PROJECTIONS

Demographic indicators are helpful in estimating the amount and types of increased water demand predicted for the GWMA.

The most reliable predictor of future population and development patterns in the study area is available through the Puget Sound Regional Council. Projections are presented in terms of forecast and analysis zones.

There are thirty-two forecast and analysis zones within the GWMA. In June 1988, there were twenty-six forecast and analysis zones (see Volume 1, Table 11-7 of the Plan). The Puget Sound Regional Council changed the boundaries and numbers of the forecast and analysis zones in 1991 based on the revised 1990 census. Where the population was large enough, existing forecast and analysis zones were split into two or more zones. The new forecast and analysis zones numbers were based on the original zone numbers (Kilgren, personal communication). Figure 4 shows the revised forecast and analysis zones.

The total population within the GWMA was 410,279 in 1980, 517,021 in 1990 and is projected to be 611,015 in 2000. The total population is projected to be 662,007 in 2010 and 714,649 in 2020 (Table 4.6. and Figure 4.1).

4.4 WATER USE

A summary of average and peak day water demand for the Plan study area by subarea is provided in Volume I of Grant No. 1, Table II-10 and graphically depicted in Exhibit II-6 of that document. The water demand projections shown include all of the above reference demands, i.e. municipal and domestic, commercial/industrial, irrigation, fish propagation and heat exchange. All total municipal and domestic water demand accounts for approximately 93 percent of the existing average day water demand during the irrigation season. During the non-irrigation season, municipal and domestic water demand accounts for about 96 percent of the existing average day water demand. Monthly, quarterly, and seasonal fluctuations in water demand beyond average and peak daily usage patterns were considered but found to be of small impact. This is particularly true where irrigation and commercial/industrial process activities are small outside the summer period.

The total average day existing water resource requirement was about 78 million gallons per day for 1989. It is projected to increase to approximately 117 million gallons per day in 2020, assuming water consumption habits and lifestyle does not change from existing conditions. If an increase in multi-family housing units is assumed to occur in and urban areas of South King County, and a municipal and domestic water conservation program is initiated at the county and local utility levels, then the anticipated average day demand in 2020 is projected to be about 100 million gallons per day. Hence, an additional water resource requirement during a peak day would be approximately 76 to 126 million gallons per day.

4.5 FUTURE DEVELOPMENT

A detailed analysis of existing land use activities in the GWMA, together with projected residential, commercial, and industrial development trends, is needed to assess land use activities that account for ground water contamination and to determine to what extent the demand for ground water is likely to increase in the future.

CHAPTER 5

TOPOGRAPHY, CLIMATE, AND SURFACE WATER FEATURES

South King County
Ground Water Management Plan
Area Characterization Supplement

July 2003

CHAPTER 5 TOPOGRAPHY, CLIMATE, AND SURFACE WATER FEATURES

5.1 TOPOGRAPHY

The South King County study area can be considered as a single glaciated upland plane bisected by the valley of the Green/ Duwamish River (and White River in the south). The result is an eastern and a western upland separated by a central north south trending lowland valley. The western portion of upland includes the Highline and Federal way subareas. These subareas are bounded on the west by steep sea cliffs and the Puget Sound. The eastern upland area, the Covington Upland, extends to the Valley of the Cedar River to the east and north and the Upper Green River Valley to the south. The elevations of the uplands are generally between 200 and 400 feet with some hills reaching above 500 feet. The Green River Valley Subarea consists of a low lying valley filled with recent alluvial deposits. It extends from 75 feet elevation in the south to sea level as it gently slopes to Elliott Bay in the north. Most of the Green River Valley Subarea lies between 30 and 60 feet elevation.

5.2 CLIMATE

The climate of the study area is typical of the Puget Sound Lowland with cool dry summers and mild rainy winters. The majority of the rainfall pertinent to ground water systems falls between October and March. Average annual precipitation averages 39-inches near Puget Sound to 60-inches at the eastern margin of the study area (Luzier, Water Supply Bulletin 28, 1969).

5.3 SURFACE WATER DRAINAGE SYSTEMS

In addition to the Green River, several other drainage systems are significant within the study area. Some such as the Soos Creek system on the Covington Upland, are related to the Green River drainage system. Others, such as the Hylebos drainage system in the Federal Way Area, are separate and drain directly to Puget Sound without confluence with the Green. Both the eastern and western upland areas are dissected by stream systems which escort much of the surface flow to the Puget Sound. Fourteen significant drainages systems have been identified in the study area. Some of the upland areas drain to closed basins which retained the water and allow it to evaporate or to infiltrate to the ground water. The study area contains many minor streams which drain the steep slopes that lie adjacent to the uplands areas.

5.4 AQUIFER SYSTEMS

Six major aquifer systems were identified within the project vicinity in Grant No. 1 of the study (Volume 1). Table 5.1 provides detailed descriptions of these aquifer systems and the following symbols. From shallowest to deepest, the aquifers include:

- Qal
- Qvr
- Qva
- Qc(2)
- Qc(3)
- Qc(4)/Qc(u)

The Qal, Qvr, and locally, the Qva aquifers are most susceptible to land use impacts given their shallow occurrence and the general absence of low permeability zones which could serve to protect water quality. Figure 5 depicts the areas of aquifer susceptibility to ground water contamination in the GWMA.

The productivity of the major aquifers is quite variable. The Qal, Qvr, Qva, and Qc(2) aquifers are used extensively for domestic and small community supplies. These aquifers, as well as the deeper Qc(2), Qc(4)/Qc(u) aquifers also serve major water purveyors within localized areas.

CHAPTER 6

GRANT NO. 2 DATA COLLECTION

South King County
Ground Water Management Plan
Area Characterization Supplement

July 2003

CHAPTER 6 GRANT NO. 2 DATA COLLECTION

6.1 INTRODUCTION

The South King County Ground Water Management Plan (GWMP) Grant No. 1 studies identified an abundance of hydrogeologic data with which to define aquifer systems, production potential, and resource vulnerability. To some extent, the available data needed for characterizing ground water resources and establishing management strategies was generally satisfactory. However, in many ways, data were relatively sparse or absent, and there was general agreement among most planners and scientists involved in the program, that additional data would be required to properly manage the resources in the South King County area. A significant shortcoming of the Grant No. 1 study was a general absence of data for assessing long-term trends; particularly those related to stream flow, water use, water levels, and water quality. Much of the existing data that are available from the various state and local agencies are referenced by different identification schemes making it very difficult to correlate the information. In addition, some areas of the hydrostratigraphic framework were poorly defined because there was an absence of deeper well information.

The Grant No. 2 studies were directed towards establishing a comprehensive monitoring network to assess long-term trends as well as installing deeper exploratory wells in key areas to better understand the occurrence and nature of the principal aquifers in the area. Many of the data deficiencies that were identified in the Grant No. 1 effort are described in detail in the South King County Ground Water Management Plan, Data Collection and Analysis Plan (1989). This report addresses the results of the data collection efforts related to water level monitoring and water quality sampling. In addition, the report describes the findings obtained from test well drilling that was performed as part of project "match" activity as described in Section 6.6.

6.2 MONITORING NETWORK

Objectives

The primary objective of the monitoring network was to establish a system of wells that could be used to assess long-term changes in water levels and water quality. Water level trends provide a means of evaluating impacts to the hydrologic system that may be related to changing land use patterns, recharge, ground water pumpage, and climatic conditions. Water quality data provides a means to evaluate the overall quality of the resource and to identify problems such as ground water contamination and sea water intrusion. Water quality trend information can provide insight as to the possible impacts that land use activities may be having upon the ground water resource.

Network Design

A network of 80 wells was selected for the South King County area based on the following criteria:

- broad coverage throughout all four subareas including the Des Moines Upland, the Federal Way Upland, the Green River Valley and the Covington Upland (north and south);
- representation of all the principal aquifer zones (Qal, Qvr, Qva, Qc(2), Qc(3), Qc(4), and Qc(u)); (See Table 6.1)
- wells that have supporting documentation such as construction and geologic data; and
- wells that are accessible for water level measurements, and sampling.

A listing of the wells including ownership, wellhead elevation, depth, completed aquifer, miscellaneous construction details, and monitoring activity (water level and water quality) are presented in Table 6.1 (the well locations are presented in Figure 6.1.).

All of the wells that were incorporated into the network were initially selected by the above criteria and then reduced in number to those, whose owner's permitted site access, had access ports for water level monitoring, and taps and pumps for water quality sampling. In addition, a notebook of data was assembled for each site. The notebook information included:

- drillers log;
- site sketch;
- descriptions of measuring points and sampling taps;
- well location map;
- field inventory form; and
- pictures of the site, measuring point, and sampling tap.

The notebooks are stored at King County.

The responsibility for monitoring was shared between seven of the larger water purveyors in the study area and the SKCHD. The water purveyors that participated in the program included:

- Seattle Public Utilities
- Lakehaven Utility District
- City of Kent
- City of Auburn
- King County Water Districts 54 and 75
- King County Water District 111
- Covington Water District.

The water purveyors assumed responsibility for all of the public supply wells that exist in or near their service area. The SKCHD assumed responsibility for the small public water systems and privately owned wells that occur throughout the project vicinity.

Monitoring and sampling equipment were purchased with program monies and provided to each of the seven water purveyors as well as the SKCHD. The equipment included such items as electric well sounders, pH/conductivity meters, tape measures, etc.

Several training sessions were provided to all of the water purveyors on the use of the equipment as well as procedures to be employed in water level measurement, water quality sampling, and data management.

6.3 WATER LEVEL MONITORING

Historical Data

Historical water level trend information for the South King County area was reviewed and summarized during Grant No. 1 activities. The data were obtained from the United States Geological Survey, water purveyors, and consultant files. Historical water level trends were plotted for each of the subareas to evaluate long-term changes in water levels and their relationship to pumpage and precipitation patterns.

A summary of the trend analysis can be found in the Plan Report Volume II of Grant No. 1. In general, significant water level declines where identified in the Qc(4) aquifer in the Des Moines area and within the Qc(3) aquifer of the Federal Way Upland. Water levels in most other areas appeared to be relatively stable.

A significant amount of historical water level data were available for the Federal Way subarea. However, very limited long-term data were available for the other three subareas.

Grant No. 2 Water Level Monitoring

Additional existing wells were targeted for long-term water level monitoring as part of the Grant No. 2 activity. These well were selected to provide general coverage within all of the subareas and all the principal aquifers.

During Grant No. 2, water level measurements were collected approximately once per month by water purveyors and SKCHD personnel. In some cases, water purveyors would make more frequent visits to these wells and would correspondingly collect more data.

Water level data collected by the water purveyors were forwarded to the SKCHD where it was entered into a project database.

Wellhead elevation information was obtained from the water purveyors for most of the sites, entered into the database, and then used to reduce water level depth data into water level elevation data.

Water Level Trends and Analysis

Water level trends for 60 of the monitoring wells are presented in Appendix A (Available upon request). Trend plots were only prepared for sites that had a significant amount of data (i.e., typically more than two years of records). The plots are organized by the public land survey numbering system (i.e., section, township, and range). Plots were only prepared for wells that had more than one year of data. Several different scaling factors had to be used for both the time axis and the water level elevation axis in order to accentuate the trend information. Well ownership, well number, altitude, and depth information is also included on each plot.

The following conclusions can be drawn from the data:

- Significant water level declines occurred within the Federal Way upland during the 1980's (i.e., more than 5 to 10 feet). The decline included a well in the Qc(3) aquifer (Well 21N/04E-07R01), and to a lesser extent wells in the Qva aquifer (Wells 21N/04E-07Q06, 21N/04E-18C01, 21N/04E-19B01). However, water levels within most of these areas have stabilized in the past few years. This stabilization may be

related to changes in pumpage patterns that have been implemented by the Lakehaven Utility District as part of resource management efforts. The water level trends observed within the Federal Way area during the Grant No. 2 monitoring period are generally consistent with the historical trends presented in the Grant No. 1 report.

- Approximately five feet of water level decline may have occurred since 1990 within the Qal and Qvr aquifers that underlie the Auburn area (Wells 21N/05E-30L03, 21N/05E-30L04, 21N/05E-30J03). A similar pattern of decline may have occurred in various Qvr and Qc(2) aquifers within the east Covington Upland (22N/06E-28J02, 22N/06E-36A02, 21N/06E-07P01, 21N/06E-11H01). The declines may be a result of lower than normal precipitation patterns that have occurred in recent years or may possibly be related to pumpage patterns in the area. The water level decline should be closely monitored in the next five years.

- Historical pumpage data for the study area is somewhat limited. Some of these data were assembled and presented in the Grant No. 1 studies reports. Ecology has only recently begun requiring metering and reporting of water use data for public water supply sources. In the future, Ecology will be maintaining a data base of water use data which will be accessible to SKCHD. As this pumpage data is completed, it should be compared to the water level trends to assess their significance.

- Many of the wells that are included in the monitoring network are used for production purposes and as such exhibit large fluctuations in water levels due to pumping (Wells 21N/04E-25M01, 21N/04E-29D01, 21N/05E-19A02, 21N/05E-30B03). The effects of pumping make it more difficult to interpret water level trends. Future monitoring should make use of non-pumping wells where possible.

6.4 WATER QUALITY MONITORING

Historical Data

Historical water quality information regarding the occurrence of potential ground water contamination in South King County was reviewed and summarized during Grant No. 1 activities. Data was gathered from several sources including Ecology, SKCHD, and the United States Geological Survey. Historical water quality data gathered since 1970 was plotted and evaluated for trends, in order to determine if aquifer conditions were changing as a result of human activity in each sub-area. Results of known contamination sites were not included in the statistical trend analyses so that background results would not be skewed and regional trends in water quality could be evaluated.

A summary of the trend analyses can be found in the Plan Report Grant No. 1, Volume II. In general, no significant trends in any of the indicator parameters were found. Very few

parameters were measured at levels that exceeded maximum contaminant levels with the exception of naturally occurring iron and manganese.

Historical information regarding the occurrence of organic indicator parameters was virtually non-existent in the data base, and additional data gaps in each sub-area were identified. Existing wells were identified and targeted for future water quality and water level monitoring under Grant No. 2, to more accurately assess the sub-areas aquifer characteristics and their relationship with land surface activities.

Western Processing

The Western Processing site is a Superfund site where clean up of contaminants is currently ongoing. The site is located in the Kent Valley.

There are four aquifers under the Western Processing site and three aquitards. Ground water contamination appears to be confined to the upper two aquifers. The major contaminants detected in the two upper aquifers are trichloroethylane, cis-1,3-Dichloropropene, vinyl chloride and zinc. The lower two aquifers do not appear to be contaminated but are very high in manganese and iron. The EPA is overseeing cleanup of the site.

The City of Kent has three wells near the site, two at South 212th and East Valley Freeway, and one at 208th and East Valley Freeway. These three wells are screened in an aquifer below and east of the Western Processing site. Water quality results from these wells to date have met the Safe Drinking Water Act Standards.

Grant No. 2 Sampling Program

A collection and analysis plan for water quality data was developed for each subarea within South King County. Predominant land use activities and sensitive areas were identified and specific subarea monitoring needs were incorporated in the recommended sampling program carried out under Grant No. 2.

Water quality monitoring was conducted in two phases, during 1990 and 1991, so that conditions during relatively dry periods (August) and periods of high recharge (April) could be evaluated.

A water quality monitoring program was developed such that adequate background information could be collected and updated, and the potential impacts from land use activities could be identified. Indicator parameters were selected based on predominant land uses within each subarea, and remaining Safe Drinking Water Act contaminants were also measured to form a basis for continued monitoring efforts.

Monitoring for selected categories of regulated chemicals was divided between the two sampling events (see Table 6.2)

All sites were analyzed for inorganic parameters and coliform bacteria. In addition, field measurements of pH, conductivity, and temperature were gathered at all 47 sites. Additional water quality analyses were conducted from wells in areas where contaminant sources could potentially pose a hazard to Group A and Group B public water supplies (as defined by the state Department of Health) and individual wells. These sites were sampled for volatiles and semi-volatiles as well. Twelve sites were also sampled in 1991 for the remaining priority pollutants, including pesticides and polychlorinated biphenyls. A breakdown of water quality analyses conducted by well location is provided in Table 6.3.

6.5 WATER QUALITY DATA AND ANALYSIS

An evaluation of the results obtained during both sampling rounds is presented in this section.

Inorganics and Bacteria - Inorganic analyses were conducted to screen for potential contamination from metals and nutrients associated with human activities and land use practices. Bacterial analyses were conducted to determine if aquifer conditions are suitable to promote the proliferation of pathogenic organisms, should they be introduced to the subsurface environment. The results of analyses for both monitoring rounds within each subarea are presented.

Des Moines Upland - Ten existing monitoring wells were located and sampled within the Des Moines Upland subarea. All of the wells were completed in either the Qva, Qc(2), Qc(3), or Qc(4) aquifer zones (Table 5.1).

Of these zones, the Qva is the most susceptible to land use impacts given its shallow occurrence and the presence of highly permeable soils. However, most ground water supplies are obtained from the Qc(3) (intermediate) and Qc(4) (deep) aquifers.

Results of both sampling rounds indicate that the Qva, Qc(3), and Qc(4) aquifers are relatively free from contamination due to human land use practices. It should be noted however, that this conclusion is based on limited water quality data.
Continued data collection would be necessary to confirm that the aquifers are free from contamination in the Des Moines Upland area. Concentrations of all the anthropogenic metals and nutrients tested were well below maximum contaminant levels, with the exception of mercury at site 16N01 in 1990. A mercury concentration of 0.0045 mg/L was measured, and the maximum contaminant level for mercury is 0.002 mg/L. Mercury was not detected at this site in the subsequent 1991 sampling event.

Iron and manganese levels consistently exceeded their respective secondary maximum contaminant levels of 0.3 mg/L and 0.05 mg/L from all three aquifers during both sampling events. Both of these metals are currently regulated for aesthetic purposes only. Although iron and manganese are naturally occurring metals, their presence in excess of maximum contaminant levels can render water undesirable or unusable. Furthermore, it is possible that manganese will be regulated in the future for health purposes as well as for aesthetics. The anticipated primary maximum contaminant levels for manganese may be set at 0.2 mg/L. Sites with iron and/or manganese levels in excess of maximum contaminant levels are shown in Figure 6.2.

The Total Coliform regulation is based on the presence or absence of coliform bacteria in a 100 mL sample. Any positive result (i.e., coliform present) triggers repeat monitoring requirements in public water supply distribution systems. Total Coliform bacteria were detected at sites 16D02, 16K01, and 21C02 during the August 1990 sampling event only. Fecal Coliform were also present at site 16K01 (Figure 6.3). The presence of total and fecal coliform may indicate the presence of septic tank or wastewater effluent, urban runoff, animal rearing facilities, among other activities. At the time of sample collection, the majority of the residences surrounding the well sites consisted of single-family units with on-site sewage systems. Each of these wells are located just north of Sea-Tac airport, near the source of Miller Creek. Land uses consist primarily of single family units, with some agricultural and industrial activity. This area was designated as being locally sensitive during Grant No. 1 investigations since the soil was classified as having high to medium permeability.

The excessive levels of total coliform (2000 most probable number/100 mL) at sites 16D02 and 21C02 indicate that conditions may be suitable for proliferation of other pathogenic microorganisms. The presence of greater than 2000 most probable number/100 mL in the Qva aquifer at site 16D02 suggests that either contamination occurred during sampling or that a high degree of subsurface percolation is occurring at this location allowing for the introduction and proliferation of coliform bacteria. No coliform bacteria were detected at any sites during the April 1991 sampling event. Typically, coliform bacteria thrive in a nutrient-rich environment resulting in die-off once conditions are no longer favorable for survival.

Additional sampling should be conducted at the locations where positive results were obtained to determine if the presence of coliform was caused by contamination during sampling, the presence of a persistent source of bacteria or infiltration from a localized source.

Green River Valley - Inorganic and coliform bacteria samples were collected from nine sites in the Green River Valley subarea. The wells sampled from this subarea were completed in the Qal, Qvr, and Qc(3) aquifers. Inorganic parameters were collected to monitor the impact of industrial/commercial activity in the northern and southern sections of the valley, as well as urbanization throughout the subarea.

Lead was detected at levels in excess of the 0.05 mg/L maximum contaminant level at site 19A02 during both monitoring rounds. Levels were measured at 0.094 mg/L and 0.064 mg/L during the August and April events, respectively. Well 19A02 is completed in the Qvr aquifer (which has no overlying protective layer), in area classified as having high soil permeability. The area is primarily zoned as residential with single family units, however, some manufacturing/industrial activities do occur in the immediate vicinity of the well. The well site is bordered to the east by agricultural activity. Additionally, chromium levels equal to the 0.1 mg/L maximum contaminant level were measured at site 25Q03, adjacent to the Pacific Landfill. This well was completed in the shallow Qal aquifer which is also unprotected by an overlying layer.

Detection of heavy metals at these locations indicate that both the Qvr and Qal aquifers are potentially effected by water quality degradation resulting from human activities. However, the vast majority of identified hazardous waste generators, stores, and transporters are located in the northern portion of the subarea, and evidence of contamination was not observed in the samples collected from monitoring wells in the northern portion of the subarea during either monitoring round.

Nitrate was detected in various wells (Figure 6.4), however, all levels were below the 10 mg/L (as N) maximum contaminant level. Sites with nitrate levels greater than (2 mg/L) (as N) are listed in Table 6.4. The 2 mg/l threshold for inclusion on the list was chosen as a concentration above which levels should be carefully observed.

Nitrate levels appear to have increased at site 19E01 between 1990 and 1991. This well is completed in the shallow Qal aquifer and observed nitrate levels may be a result of nearby agricultural activity located just northwest and southwest of the well site. According to the results of the Grant No. 1 investigation, the general area surrounding site 19E01 is sewered, and therefore, nitrate contaminants from sewage discharge is less likely than in areas served by on-site septic systems. Approximately, 19 percent of Auburn is unsewered. Coliform bacteria were not detected at any of the locations from which elevated nitrate levels were measured. Simultaneous presence of coliform bacteria would suggest that nitrate levels are a result of septic tank discharge.

Extremely high levels of iron and manganese were measured from several locations in the Green River Valley subarea. Iron concentrations at site 26R01 (Qal aquifer) were an order of magnitude greater than the 0.3 mg/L secondary maximum contaminant level, and manganese levels were between four to eight times greater than the 0.05 mg/L secondary maximum contaminant level. Although iron and manganese are naturally occurring metals, it is very likely that water from this region would require treatment if it were to be used as a public supply.

Federal Way Upland - All of the well test sites in the Federal Way Upland subarea were completed in the Qva, Qc(3), or Qc(4) aquifers. The Qva aquifer is relatively permeable and supports most of the production wells in the area.

Iron and manganese levels exceeded respective secondary maximum contaminant level of 0.3 mg/L and 0.05 mg/L in many of the wells sampled from the Federal Way subarea. Manganese levels in seven of the eight wells sampled were in excess of 0.05 mg/L, with concentrations ranging from 0.08-0.29 mg/L. The highest manganese levels were measured in samples collected from the Qva aquifer. Two samples from the Qc(3) aquifer had manganese levels between 0.082-0.16 mg/L. Similarly, the highest iron levels were measured from the Qva and Qc(3) aquifers with concentrations of 0.92 mg/L, or three times the secondary maximum contaminant level. As mentioned previously, it is very likely that water collected from this region of the Qva and Qc(3) aquifers would require treatment if the water were to be used as a public supply.

Little evidence of contamination from human activity was observed, with the exception of mercury measured near the maximum contaminant level at site 07R01. A level of 0.0018 mg/L was detected during the August 1990 sampling event and the maximum contaminant level for mercury is 0.002 mg/L. The area surrounding the well site consists primarily of single family units, with interspersed industrial and agricultural activities. It is possible that elevated mercury levels are associated with the near-by Redondo Pit. The mercury source does not appear to be persistent since mercury levels were below detection during the April 1991 sampling event.

Covington Upland - Twenty-one well sites in the Covington subarea were completed in the Qvr, Qva, Qc(2), Qc(3), and Qc(4) aquifers, with two of the wells reaching bedrock. Although two-thirds of the study area are unsewered, nitrate levels were typically undetectable with the exception of a 2.5 mg/L (as N) measurement at site 13G03 during April 1991. Neither total or fecal coliform were measured at any of the sites during either sampling round.

Iron and manganese levels in excess of the secondary maximum contaminant level were measured in samples collected from each of the aquifers in the Covington Upland Subarea. Manganese levels of up to an order of magnitude greater than the secondary maximum contaminant level were measured from the Qc(2) aquifer, although levels in excess of 0.05 mg/L were also measured from the Tbr, Qva, Qvr, and Qc(3) aquifer zones as well. Very high iron levels were measured in well 25F01 completed in the Tbr aquifer.

Iron levels were 3.9 mg/L at this location, more than an order of magnitude greater than the 0.3 mg/L secondary maximum contaminant level. Thirteen of the fifteen wells sampled in the Covington Upland Subarea exceeded either the iron or manganese secondary maximum contaminant level. As discussed previously, iron and manganese are regulated primarily for

aesthetic purposes, although a primary maximum contaminant level (health related) has been proposed for manganese at 0.2 mg/L.

Very few hazardous waste transporters or generators were identified in the study area during Grant No. 1 investigations, and subsequently, very few of the heavy metals associated with such activities were detected at or near maximum contaminant levels during either sampling event. Only arsenic was found at excessive levels in one sample (site 36A02) at 0.118 mg/L during the April 1991 sampling event. This site is situated in the Qc(2) aquifer, adjacent to areas that receive pesticide applications. Arsenic has been used as a component of pesticides and may enter ground water as a result of agricultural drainage (United States Geological Survey, 1992). The maximum contaminant level for arsenic is currently set at 0.05 mg/L.

Volatile and Semi-Volatile Organics, Pesticides and Polychorinated Biphenyls - Results of Grant No. 1 activities identified large water quality data gaps with respect to contamination from organic compounds. Although available data and test results from the United States Geological Survey investigations did not reveal any excessive concentrations of organic contaminants, a wider sample base was required to more thoroughly assess the vulnerability of the region to contamination from industrial, commercial, and agricultural activities.

Indicator parameters for industrial and urban land uses were identified and wells, which were strategically located, were targeted for sampling (Figure 6.5). The general criteria used for selecting monitoring sites for organic contamination included:

- monitor shallow Qva aquifer in the Des Moines subarea to assess potential impacts related to urbanization;
- monitor shallow Qva aquifer (Redondo-Milton Channel) since it serves as the principle source of water in the Federal Way subarea;
- monitor intermediate and deep aquifers to provide baseline water quality data;
- monitor the shallow Qal aquifer since it serves as a significant ground water source in the southern portion of the Green Valley subarea;
- monitor Qvr aquifer in Auburn area since it is highly productive, occurs at relatively shallow depths, and recharge to the aquifer is relatively high;
- monitor the Qc(2) aquifer under the Covington Upland since it is locally susceptible to contamination where the overlying till unit is absent; and
- monitor deep Qc(3) aquifer to provide baseline data.

As a result of the above criteria twenty-six (26) of the existing monitoring wells were sampled and analyzed for the complete suite of volatile organics. Twelve of the forty-seven (47) sites were also analyzed for semi-volatiles, pesticides, and polychlorinated biphenyls.

A complete list of sites sampled for each parameter is provided in Appendix C. Samples for organic parameters were collected during the April 1991 sampling event only.

Volatile Organics - Methylene chloride and chloroform were erroneously indicated in many of the samples analyzed for volatile organics. However, review of quality assurance/quality control data revealed that both of these compounds were detected in the method blanks and trip blanks as well. These parameters are not representative of actual field conditions because they were detected in laboratory method blanks. Based on method blank results and past laboratory contamination, these parameters entered the samples in the laboratory. A detailed quality assurance/quality control review has been included in Appendix E.

Semi-volatiles, Polychlorinated biphenyls and Pesticides - Twelve (12) sites were selected to be sampled for semi-volatile organics, polychlorinated biphenyls and pesticides. Three (3) of these sites were located in the Green River Valley subarea and the remaining eight (8) were distributed among the other three subareas, as shown in Table 6.3. None of the parameters were detected in any samples. All trip blanks and method blanks were satisfactory, verifying the accuracy of the reported results.

Conclusions - Very few samples contained contaminant levels in excess of maximum contaminant levels, as determined under the Safe Drinking Water Act, suggesting that water quality has not been greatly impacted by industrial, residential, or agricultural activities where these samples were collected. Sites that contained contaminant levels of concern are summarized in Table 6.5.

Semi-volatile organics, pesticides and polychlorinated biphenyls were not detected at any of the sampling sites. Methylene chloride and chloroform were detected in most of the samples, however, trip blanks and method blanks also contained detectable levels of these contaminants. It is not possible to verify the presence of these compounds without additional sampling. Overall, water quality in each of the aquifers where tested appears to be relatively free of inorganic, microbiological, and organic contamination.

6.6 MATCHING FUND DRILLING PROJECTS

Several drilling projects were accomplished within the GWMA which qualified as local matching funds to project grant monies provided for the project by the Department of Ecology. The information gained and the monitoring capabilities established by these programs enhanced the ground water management capabilities in the South King County area.

A total of nine drilling projects were included in the study. Six of these consisted of exploration/monitoring well drilling, two were exploration/production well projects and one was an exploration well only. Table 6.6 lists the responsible entity, the project name, and the date of completion of each of the matching fund projects. Appendix D contains the well logs developed when these wells were drilled. A brief discussion of each project is then presented in the order in which the project was completed.

Lakehaven Utility District, Exploration and Monitoring Wells 25T1 AND 25T2

Two wells were drilled on one site, wells 25T1 and 25T2. The Lakehaven Utility District recognized a need to define the eastern extent of its Mirror Lake Aquifer and at the same time address a need for further definition of the Federal Way Deep Aquifer. The project to accomplish this consisted of drilling an exploration well to 1200 feet at the site of their storage tanks 1 & 4 (SE 1/4 of NW 1/4 of Section 8, T.21 N., R.4 E.). The drilling, which included cable tool and mud rotary methods, culminated in the placement of two monitoring wells in 1987. The first tested three distinct zones of the Deep Aquifer between 850 and 1020 feet below land surface (elevation 448 ft) and was completed as a Deep Aquifer monitoring well with screens from 847 to 872 feet. The second well is a 6-inch monitoring well placed by air rotary methods to a depth of 420 feet which provides the capability of monitoring the Intermediate - Mirror Lake Aquifer. These wells provided much needed information for the definition of the lateral extent and the water quality of both the Intermediate and the Deep aquifer systems. In addition, they have provided monitoring capabilities which have helped to define the dynamic response of these aquifers. Future water level monitoring of both wells is planned. Both wells have been essential in the evaluation of artificial recharge plans at this site. Subsequent injection testing at Well 25 on this site demonstrated the feasibility of recharge in the Mirror Lake Aquifer using ground water from Redondo-Milton Channel Aquifer. Further, these tests provided valuable insights into the recharge characteristics of the Mirror Lake Aquifer which may lead to a broadly expanded artificial recharge program for the aquifer. Additional information regarding the project is available in the Robinson & Noble Test Drilling Report 78-48L.

King County Water District 111, Exploration and Production Well 7

King County Water District 111, in response to a need to define the aquifer conditions in the southwest portion of its service area and to develop further production capacity, undertook an exploration drilling project. The drilling took place in Section 34, T22N, R5E near the southeast corner of the Reber Ranch in July and August, 1988. A 12-inch diameter well was drilled to 255 feet where an aquifer capable of a sustained yield of about 250 gpm was identified. Drilling encountered predominantly glacial outwash sediments typical of the Covington Upland area. The well provided information that clarified the water resource situation in a critical demand area for the District and discovered a source of higher quality water than is found in most production wells in the area.

Though the aquifer is of only moderate transmissivity (1500 - 2000 gpd/ft) it represents a significant resource in the management of the water quality of the delivered water and in the operation of the system. The District plans to place the well into production in 1994. Additional project information is available in Robinson & Noble Construction and testing report 80-56D.

Covington Water District, Exploration Drilling at Tank Site 2

In response to a need to define the production potential of its northern service area, Covington Water District initiated a test drilling program in March, 1989, at its Tank 2 Site (North Central Section 29, T22N, R6E). An 8-inch well was drilled using cable tool methods to a depth of 350 feet. The well was then drilled to a total depth of 1213 feet using direct circulation mud rotary methods. All materials below 300 feet encountered were fine grained unconsolidated sediments. Although several minor aquifers were found above 300 feet, no aquifer capable of supporting a production of more than 300 gpm was penetrated and the hole was subsequently abandoned. This test drilling program provided important information regarding the depth to which unconsolidated sediments extend in this area and demonstrated that the area has significant limitations as far as water production potential. Though the results were negative they enhanced the ability of the District to plan for future demands and to manage the ground water resources of its northern service area.

King County Water District 111, Exploration and Production Drilling of Well 9

Well 9 was drilled with the intention of defining the production potential of the glacial sediments that lie above a regional clay unit in the eastern portion of the service area. The well is located in the NW 1/4 of the NW 1/4 of Section 35, T22N, R5E at 152nd Ave. SE and SE 275th Street and was drilled between December 1988 and July 1989. Subsequent to initial drilling to 319 feet with cable tool methods, exploration to 410 feet was accomplished with mud rotary methods. Drilling stopped due to excessive mud loss in a highly permeable unit encountered from 366 to 417 feet below land surface. The well was completed and tested in this zone. The aquifer was found to have high production potential and good water quality. The information gained in the project has demonstrated the presence of an aquifer that represents the best production zone found in the District to date. The well is currently used for production; static and pumping water level monitoring is accomplished on a regular basis. Additional information is available in Robinson & Noble Construction Report 80-56E.

King County Water District 111, Exploration and Monitoring Well 8

Well 8 was drilled with the intention of defining the deep production potential in the southwest portion of the service area. The well drilled between September 1998 and May 1989 is located in the SW 1/4 of the SW 1/4 of Section 34, T22N, R5E near Well 7 on the Reber Ranch Property. Drilling reached a total depth of 1200 feet using a combination of

cable tool and mud rotary drilling methods. One deep potential production zone (915-925 feet) was identified and tested.

Testing indicated a transmissivity of less than 1000 gallons per day/per foot which is insufficient to support any practical production from the zone. Minimal water quality tested was complete in this zone. The deep screen was removed, the casing pulled back and the well was ultimately completed as an observation point for Well 7 at a depth of 248 feet. In this capacity the well provides significant management information for the shallow aquifer system of the area and provides for proper resource management of the Well 7 aquifer.
Future water level monitoring is planned when Well 7 begins production. Additional information for this project is available in the Robinson and Noble Construction Report 80-56D2.

Lakehaven Utility District, Exploration and Monitoring Well 26T

This project was accomplished in order to demonstrate the presence or absence of the Intermediate and Deep Aquifers in the southwest portion of the District. The well was drilled in late 1989 and early 1990 to 1115 feet through a sequence of unconsolidated sediments which was predominantly fine grained low permeability material. No significant water producing zones were encountered beneath 630 feet. Testing of the sand and gravel units between 630 and 420 demonstrated that only marginal production of up to 400 gallons per minute was likely from the site. Since the water quality would probably require treatment for iron and manganese the zone was not pursued as a production site at this time. The well was completed as a regional water level monitoring well at a depth of 477 feet. Future water level monitoring is planned. The drilling demonstrated a western boundary to the Federal Way Deep Aquifer and showed that the Intermediate Aquifer System at the site has significantly different geologic and water quality characteristics than are found to the north. The project was valuable in defining the deeper aquifer geometry and the resultant well provides a monitoring site remote from production sites. This will provide much needed regional response data which will enhance the resource management capability of the District. Additional information about the project is available in Robinson & Noble Report of Test Drilling 78-48M.

Lakehaven Utility District, Exploration and Monitoring Well 17T

This project was designed to expand the definition of the Federal Way Deep Aquifer northward. The exploration well, drilled in February, 1990, is located at an existing Redondo-Milton Channel Aquifer production site (Wells 17 &17A). The site is located in the northwest portion of the service area in the NE 1/4 of the NW 1/4 of section 18, T21N, R4E. The drilling identified a significant presence of sand in the Mirror Lake Aquifer which is part of the Intermediate Aquifer System of the region. The well was completed in a gravel portion of the Deep Aquifer between 925 and 950 feet below land surface (approximately 625-650 feet below sea level). The aquifer was tested and found to have a high production potential

and good water quality. In addition to aquifer definition, the well currently serves as an observation and monitoring point for a production well which was subsequently drilled to the Deep Aquifer at the site. Information regarding this project is available in the Robinson and Noble Inc. - Report of Test Drilling 78-48N.

Seattle Public Utilities, West Seattle Exploration and Monitoring Well

The Seattle Public Utilities (SPU), in response to a need to define the northern extent of the Highline Aquifer Complex, drilled an exploration well in May 1990 in the Beverly Park area of West Seattle (SW 1/4 of Section 5, T23N, R4E). The well was drilled to a total depth of 488 feet using cable tool drilling methods.
The project demonstrated that the Intermediate Aquifer was present, though of limited production potential. The project culminated as a monitoring well which serves as part of the resource management network for the Highline Aquifer Recharge Program. The Highline Aquifer is the key element of Seattle's conjunctive use program and as such, is a major factor in the ground water resource management of the South King County area. Additional information about the project is available in the CH_2M Construction and Testing Report SEA18810.1E, Beverly Park Observation Well.

Covington Water District, Exploration and Monitoring Well at Wax Road Site

The Wax Road Well was designed as an exploration/monitoring well to identify and evaluate a suspected shallow aquifer in the NE 1/4 of the SW 1/4 of Section 36, T22N, R5E. It was drilled in 1990 by cable tool methods to a depth of 187 feet and was completed between 74 and 100 feet below land surface. A production potential of 500 gallons per minute was identified on this site. The water quality was found to be good except for a slightly elevated manganese concentration. The project was subsequently expanded to include deeper exploration. An 8-inch nominal hole was placed to 1200' using mud rotary drilling methods. A zone from 427 to 490 feet was tested, but found to have little production potential. Eventually, the well had a final completion in the same aquifer as the first well. If water rights can be secured, the site will be used for future production. Overall, this project resulted in considerable information being generated regarding the hydrogeologic characteristics of this strategic area of the Covington Upland. Further information on this project is available in the Robinson and Noble, Inc. Construction and Testing Report 5417D.

CHAPTER 7

RECOMMENDATIONS FOR FUTURE MONITORING AND DATA COLLECTION

South King County
Ground Water Management Plan
Area Characterization Supplement

July 2003

CHPATER 7 RECOMMENDATIONS FOR FUTURE MONITORING AND DATA COLLECTION.

7.1 INTRODUCTION

Long-term data collection is an essential requirement for proper management of the areas resources. The Grant No. 2 monitoring effort was largely oriented towards establishing a network of wells for water level and water quality monitoring.

In the future, the monitoring program should be expanded to include a wider range of water resource information such as stream flow, lake levels, water use, climatic data, etc. A substantial increase in the frequency of well data collection of the number of monitoring wells is not necessarily warranted; rather the coordination of existing data collection programs and the development of data management systems and protocols would be highly desirable. A considerable amount of data collection is occurring within the area. However, much of the data collection is as yet not coordinated or shared between the parties. Streamflow data are routinely collected by King County as part of watershed management studies (See Table 7.1 for list of gauging stations and Figure 7 for location of the gauging stations); King County and SKCHD collect water quality and water quantity data in the vicinity of landfills; water purveyors collect water use and water quality data from their supply wells as part of regulatory monitoring efforts; the SKCHD collects water quality data on small public water supply systems; Ecology collects well construction and water rights data; King County collects water quality data; and National Oceanic and Atmospheric Association (NOAA) collects climatic data; etc.

The recommendations presented within this section recognize that some additional information and a comprehensive monitoring program are warranted throughout all areas, not just those of known or existing major supplies or suppliers. The list of activities was also developed with the knowledge that sources of funding for implementing these recommendations are unresolved, as yet. However, exploratory drilling and other data collection activities by State and local agencies, private interests, or public purveyors should hopefully be influenced by this list of recommended actions.

7.2 HYDROGEOLOGIC DATA COLLECTION

The general recommendations for hydrogeologic data collection within the South King County planning area are summarized in the following (specific recommendations for each of the subareas are then presented):

- In general, dedicated monitoring wells throughout the area are preferred for long-term monitoring of water levels and water quality. Many wells that are included in the existing monitoring network are used for production purposes and consequently, it is very difficult to identify static water level trends. Several of the private wells used in the study are also strongly effected by pumping. Dedicated monitoring wells that are located somewhat distant from the pumping center provide much better definition of regional water level changes.

- Dedicated monitoring wells will likely be installed in the future by many of the local water purveyors developing monitoring networks for local Wellhead Protection Programs. These monitoring wells should be incorporated into the regional network as they are installed. Well logs and other pertinent construction information as well as on-going monitoring data should be forwarded to King County so that it can be incorporated into the data base system.

- Water level monitoring and reporting by local water purveyors should be expanded in the future. The participation of water purveyors in the program was generally good. The City of Renton also collects a large amount of water level data from the lower Cedar River area. Arrangements should be made to have Renton's participation in the program.

- King County representatives should meet periodically (annually) with water purveyor representatives to discuss data collection issues and to verify that the monitoring equipment is properly calibrated and functioning.

- An Ecology unique well identification number should be placed on all of the existing monitoring wells. The well tag consists of a six digit number that is permanently attached to the wellhead. A well tagging form is completed for each site which documents the well's location, ownership, and other pertinent construction details. The information collected on the form will be shared with King County, the SKCHD, Ecology, Department of Health, the United States Geological Survey and other interested agencies. The six digit identification number will serve as a future standard within the State. The database should be modified to accommodate this well numbering system and where possible, all future data collection should adhere to this system. The identification number will facilitate correlation between the field, office, and computer data base systems. At the time of tagging, the well location should be established using the Global Positioning System.

- Many of the wells on record have not been computerized given limited project resources. In addition, many of the wells that were received from the United States Geological Survey's database system (WATSTOR) have not been field checked. Field survey of wells would provide accurate definition of well location, elevation,

construction details, water levels, and ownership. At a minimum, all public water system wells should be field checked and incorporated into the database.

- King County and the United States Geological Survey maintain most of the stream gauging sites within the study area. Stream gauging sites were established by the County in order to develop stormwater plans. The United States Geological Survey operates sites for flood control and for general resource planning purposes.
  Many of the sites that are currently monitored provide important data for long-term trending analysis. Of particular interest are the gauging sites that are located in small urban watersheds. These sites provide valuable information to assess land use impacts upon base flow quantities and the effects of urbanization on stormwater runoff. Efforts should be made to maintain these gauging sites in the future.

Specific recommendations for continued or expanded monitoring in each of the four subareas are presented below:

DES MOINES UPLAND

Water Level Measurements

Extensive water level monitoring is occurring within the Highline wellfield area north of SeaTac airport as part of the SPU's artificial recharge testing program. The recharge program consists of a number of pilot testing studies that are designed to evaluate the feasibility of injecting surface water from the Cedar River supply system into local ground water systems for later recovery during summer peaking periods. The SPU wells are listed in Table 7.2.

- A cluster of wells installed by Seattle for the artificial recharge testing program at the northern end of the wellfield (wells OW-8S, OW-8I, and OW-8D) should also be incorporated into the monitoring network. In addition to the Seattle wells, an existing well owned by King County Water District No. 49 (23N/04E-19B01) should be incorporated into the monitoring network. This well lies on the western edge of the Highline aquifer system and would be a useful control point for the Qc(3) aquifer. Several attempts were made to coordinate access to this well with District No. 49, but a satisfactory agreement could not be reached. Water level data for the southern portion of the Des Moines upland are relatively good. Many of the sites that are currently being monitored in this area are used for production purposes and static water levels to some extent show the effects of this pumpage. Efforts should be made to locate wells in this area that could be used for dedicated monitoring.

- The lower portion of Des Moines Creek would be the preferred area for additional monitoring; particularly within the Qc(3) and Qc(4) aquifers where there is a greater potential for sea water intrusion. Sea water intrusion parameters such as

conductivity, total dissolved solids, and chloride should also be monitored in the deeper wells in this area.

- Continue water level monitoring in the southern portion of the Des Moines upland as listed in Table 7.3.

Stream Gauging

- Miller Creek - Maintain the existing stream gauging station - 42A

- Des Moines Creek - Establish a new stream gauging station near the mouth, downstream from existing stations 11B and 11A.

Lake Level Measurements

Tub Lake - Use existing staff gauge to monitor lake levels to evaluate possible impact on wetlands from development in the Highline area. Historical data for this site may be available from the Seattle Public Utilities.

Water Produced

Although all public water systems routinely collect information on the quantity of water produced, a system for standardizing data gathering and recording efforts should be created and implemented throughout the subarea. A protocol for forwarding data on water produced to King County and incorporating it into the project database should be developed.

Exploratory Needs

The sites shown below are recommended for exploratory drilling in order to improve the definition of the extent and character of the major aquifer systems and their importance for providing additional water supply to the area:

- West of SeaTac Airport in the Qc(3) and Qc(4) aquifers approximately 200 feet below sea level.

- Additional wells in the West Seattle area at depth of 100 to 200 feet below sea level.

- South of Des Moines and east of Salt Water State Park into the Qc(3) and Qc(4) aquifers.

GREEN RIVER VALLEY

Water Level Measurements

- Water level monitoring within the southern portion of the Green River Valley is generally adequate. There are several dedicated monitoring wells that provide good definition of seasonal and long-term water level trends in the two principal aquifer (Qal and Qvr) that are used for public water supply in the area.

- A few sites that are currently being monitored in this area are used for production purposes and static water levels to some extent show the effects of this pumpage.

- Very little monitoring is occurring in the central and northern portions of the Green River Valley. Two to four additional sites should be identified in the valley sediments in the vicinity of Kent (Township 22N, Range 4E, Sections 23 - 26).

- The City of Renton collects a considerable amount of water level data from a network of dedicated monitoring wells in the Cedar River Valley and north Green River Valley area (Township 23N, Range 5E, Sections 17 - 18). This area lies along the northern margins of the GWMA. These data would be useful in characterizing water level trends in this area. Efforts should be made to establish procedures to periodically transfer these data to King County.

- Recent water level declines in the Qal and Qvr aquifers in the Auburn vicinity need to be monitored closely. Pumping patterns in the area need to be examined and correlated to the water level declines. Approximately three to five years of additional monitoring data will be needed to assess the significance of these declines.

- Water level monitoring should be discontinued at Auburn production well No. 1 (21N/05E-19A02) and well No. 2 (21N/05E-30B03) because pumpage efforts preclude collection of reliable trend data.

- Continue monitoring of water levels in the Green River Valley area as listed in Table 7.4.

Stream Gauging

Monitoring of the United States Geological Survey Station No. 113000 on the Green River near Auburn should be continued.

Lake Level Measurements

No lake level measurements were identified for the Green River Valley subarea.

Water Produced

Although all public water systems routinely collect information on the quantity of water produced, a system for standardizing data gathering and recording efforts should be created and implemented throughout the subarea. A protocol for forwarding data on water produced to King County and incorporating it into the project database should be developed.

Exploratory Needs

The sites shown below are recommended for exploratory drilling in order to improve the definition of the extent and character of the major aquifer systems and their importance for providing additional water supply to the area:

- New monitoring wells east of the city's development in Auburn for water level and water quality in the upgradient direction.
- New well west of Auburn Well No. 1 site drilled into the Qvr aquifer to provide seasonal and long-term water level trends.
- Exploratory drilling at the Valley's East Hill to establish the relationship of valley wall to valley fill at Pacific and to define production potential of the valley wall material.
- Up-gradient of Coal Creek Springs for water quality information.
- Deep exploratory/monitoring wells in the central and north valley area (Kent vicinity and north to Renton).
- Proposed water level measurement wells in the upper Green River Valley are discussed in the Covington Upland sub-area since these wells are hydrogeologically connected.

FEDERAL WAY UPLAND

Water Level Measurements

Water level monitoring within the Federal Way upland is relatively extensive and a good long-term record exists from which to evaluate the effects of pumping and other management activities.

- Lakehaven Utility District collects water level data from a number of wells that are not included in the GWMA monitoring network (e.g. Wells 2, 8, 9, 10, 10A, 15, 15A, 16, 18, 20A, 23). Data for these sites should be forwarded to King County for inclusion into the project database.

- Water level monitoring should be discontinued at Lakehaven Utility District well 21 (21/043E-29D01) because pumpage effects preclude collection of reliable trend data.

- Continue monitoring of water levels in the Federal Way area as listed in Table 7.5.

Stream Gauging

Existing King County stream gauging sites should be equipped, maintained, or relocated to a stable nearby location. These locations are as follows:

- 24B - Hylebos Creek
- 3C - Redondo Creek
- 3B - Lakota Creek

A stream gauging station should be established in the upper reaches of Hylebos Creek to define baseflow conditions.

Lake Level Measurements

Lake level measurement should be collected on a monthly basis at two to three sites in the Federal Way vicinity to provide background data on lake fluctuations. The following sites should be considered for monitoring:

- Mirror Lake - Install and monitor staff gauge.
- Panther Lake - Install and monitor staff gauge.
- Brook Lake - Install and monitor staff gauge.

Water Produced

Although all public water systems routinely collect information on the quantity of water produced, a system for standardizing data gathering and recording efforts should be created and implemented throughout the subarea. A protocol for forwarding data on water produced to King County and incorporating it into the project database should be developed.

Exploratory Needs

- Exploratory drilling and the installation of additional monitoring wells could improve the definition of the extent and character of the major aquifer systems and their importance for providing additional water supply to the area.

The sites shown below are recommended for exploratory drilling:

- Exploratory drilling to 1,000 feet at Brook Lake for deep aquifer definition.

- Exploratory drilling to 1,200 feet at Lakehaven Utility District 21st Avenue Tank site for deep aquifer production.

COVINGTON UPLAND

Water Level Measurements

- The water level monitoring network for the Covington Upland should be expanded to incorporate more sites within the areas west of Lake Youngs (Sections 3, 4, 9, 10 of Township 22N, Range 5E) and the lower Soos Creek area (Sections 9 - 16, Township 21N, Range 5E).

- Two to four additional monitoring sites should be established within the Green River Valley upstream of Auburn. Water level trends within the valley aquifer would be useful in evaluating stream aquifer continuity and in stream flow impacts. Water level monitoring in this area should be coordinated with the Muckleshoot Indian Tribe.

- Water levels in many of the Water District 111 wells appear to be strongly effected by pumpage (e.g. 22N/05E-35D01). The District should make efforts to locate other wells in the area that could be used for dedicated monitoring.

- Recent water level declines in the Qvr and Qc(2) aquifers in the East Covington area need to be monitored closely. Pumpage patterns in the area need to be examined and correlated to the water level declines. Approximately three to five years of additional monitoring data will be needed to assess the significance of these declines.

- Continue monitoring of water levels in the Covington Upland area as listed in Table 7.6.

Stream Gauging

- Re-establish a gauging station on Big Soos Creek at King County Surface Water Management's Site No. 54A and maintain the following stream gauging stations:

    - Covington Creek - 09A
    - Jenkins Creek - 26A
    - Panther Creek - 03A
    - Springbrook Creek - 03B

- Establish a stream gauging station on Martinez Creek downstream from the private trout farm near Kent Springs. A location near the railroad bridge is recommended. Martinez Creek is a tributary to Jenkins Creek.

Lake Level Measurements

Lake level measurements should be collected on a monthly basis at two to four sites in the Covington Upland to provide baseline trend information. Sites that should be considered for monitoring include:

- Lake Morton - Install and monitor staff gauge.
- Lake Wilderness - Install and monitor staff gauge.
- Lake Meridian - Install and monitor staff gauge.
- Lake Sawyer - Generate a stage/discharge curve for the outfall weir and monitor discharge through the weir.
- Lake Youngs - Perform a water balance on the lake to assess seepage losses and recharge to the aquifer system.

Water Produced

Although all public water systems routinely collect information on the quantity of water produced, a system for standardizing data gathering and recording efforts should be created and implemented throughout the subarea. A protocol for forwarding data on water produced to King County and for incorporating it into the project database should be developed.

Exploratory Needs

The sites shown below are recommended for exploratory drilling in order to improve the definition of the extent and character of the major aquifer systems and their importance for providing additional water supply to the area:

- In the south service area of Covington Water District, a site near Getty Oil test well is under consideration.
- Drilling and testing to establish the production potential of the recently discovered aquifer near Kangley.
- Exploratory drilling to define the shallow aquifer systems east of Lake Sawyer.
- Exploratory drilling in an as yet undetermined location east of Wilderness Lake.
- Exploratory drilling near Lake Nielson in the southwest portion of the Covington Water District.
- Deep explorations in the northeast and southwest corners of Section 34, Township 22N, Range 5E.
- Deep explorations at as yet unspecified sites in the southwest and southeast portions of King County Water District 111 service area.
- Deep exploration east of 212th/208th Street wells to establish the eastern extent of the aquifer system.
- Exploration wells drilled to bedrock in areas that lie west and south of Lake Youngs.
- Exploration drilling in Hazelwood School area.
- Deep exploration 1,000 feet or more to explore the Qc(4) and Qcu aquifers along the Pipeline 5 alignment.
- Quadrant well site located in Section 15, Township 21N, Range 5E.
- Exploration near Lake 12 well, Section 6, Township 21N, Range 7E, under the Bonneville Power Administration powerlines.
- Exploration in Section 20, Township 21N, Range 7E, southeast of Green River near Hyde Lake.
- Exploration near Lake Devine and Shady Lake.
- Exploration near Covington Water District office or shop area.
- Deepen the Grandon well. Well site location needs to be confirmed.

7.3 WATER QUALITY DATA COLLECTION

Historical water quality data were analyzed during Grant No. 1 activities. Water quality trends were evaluated and no significant trends were observed. Data gaps were identified, and a monitoring program was developed to provide additional baseline data, assess conditions on a regional basis, and fill known data gaps. Analysis of the water quality data gathered during Grant No. 2 activities suggests that land use practices have had little measurable impact on water quality conditions at the specific locations sampled throughout the study area. However, this conclusion is based on a limited amount of data and continued monitoring would be necessary to verify water quality conditions.

Indicator Parameters

Amendments to the Safe Drinking Water Act have resulted in changes to the lists of regulated inorganic and organic parameters. New contaminants have been added, maximum contaminant levels have been adopted, and certain maximum contaminant levels have been changed to reflect the most recent updates on health effects. Maximum contaminant level changes that have occurred since water quality parameters were measured throughout the GWMA are listed in Table 7.7.

Additionally, certain indicator parameters such as lead, mercury, chromium, and nitrate were present in several samples collected from each of the boundary areas.

Recommendations:

- Evaluate future data in relation to the existing maximum contaminant levels well as the new maximum contaminant levels as listed above.

- Update parameter lists on an annual basis to ensure complete analysis of required parameters, with respect to the most recently established maximum contaminant levels.

- Those sites with nitrate levels above 2 mg/L as nitrogen should be resampled to determine if long-term trends can be identified.

- All the wells within the monitoring network should be accurately located and have accurate elevations located using the Global Positioning System.

In addition:

- The water quality of stormwater outlets during storm events should be monitored where these outlets discharge to ground water and creeks.

- The water quality and quantity of ground water wells near sand and gravel mines should be monitored.

- The water quality data collected from wells at and surrounding the closed Puyallup/Kit Corner landfill, etc. by King County and the SKCHD should be assessed and entered into the King County ground water database.

- The location of commercial and residential underground storage tanks needs to be identified to determine the extent and type of ground water contamination.

- The types and quantities of fertilizer and pesticide applications, including roadside spraying, golf courses and agricultural activities need to be monitored for their impacts on ground water quality.

- Hazardous material spills, particularly transportation spills, need to be monitored for their impacts on ground water.

- Data collated by Ecology, the SKCHD, and King County on hazardous waste generators' impacts on ground water quality needs to be monitored.

- The location of improperly constructed or abandoned wells needs to be identified to determine impacts on ground water contamination.

Data Gaps

Trend analysis of historical data gathered during Grant No. 1 identified various indicator parameters for which no previous data existed. Theses parameters are listed in Table 7.8.

Samples were collected and analyzed for each of these parameters (in addition to all other regulated inorganic and organic contaminants) during Grant No. 2. Satisfactory data was gathered for each parameter with the exception of methylene chloride. As discussed previously, methylene chloride contamination of trip blanks and method blanks resulted in inconclusive analyses for this compound and chloroform.

The results of future ground water and surface water quality monitoring should be analyzed periodically as data becomes available to determine whether ground water contamination has occurred or is occurring. If any contamination is discovered, recommendations should be made as to what modifications and/or additions to the monitoring system would enable increased definition of the extent of contamination.

Also, the natural geochemistry of the water sample analysis should be analyzed to determine the water quality characteristics of specific aquifers and areas where ground water exchange or mixing may be occurring. These data should be entered into the King County ground water database.

Recommendations:

- Collect samples from selected high vulnerability wells and analyze for regulated volatile organics to verify the presence or absence of methylene chloride and chloroform. Ensure that trip blanks are carried to all sampling sites for quality assurance/quality control verification.

- The physical susceptibility map for the GWMA has been produced based on the factors of surficial geology, slope, and impervious land use. A recharge map should be produced for the GWMA based on the factors of depth to water, surficial geology and slope. Determination of recharge areas within the drainage basin will be accomplished by comparative weighing and ranking of these factors.

- The aquifer susceptibility map, recharge map, a water level contour map, and the estimates of total ground water recharge should be updated as new information becomes available.

- Future data collection should also focus on the characterization of, and recharge to, the deep aquifers in the GWMA.

- The management plan should include efforts to evaluate the impacts of continued development on the ground water resources.

- The GWMA aquifer source capacities should be estimated. This information is necessary for water right evaluation and land use planning.

- Maximum (aquifer-specific) water source capacity data are necessary for all permitted water sources in the GWMA. Water rights capabilities must be derived from the same data used to determine maximum water source capacities.

- Peak usage requirements for water suppliers would also help to determine their ability to deliver water under existing water rights and source capacities.

Monitoring Program

Historical water quality analyses and sampling events conducted during Grant No. 2 activities have provided an expansive baseline of information regarding conditions in the six aquifers identified in the study region.
In order to continue to monitor the impacts of land use activities on regional water quality, it is necessary to periodically collect additional samples for chemical analysis.

Many of the well sites targeted during Grant No. 2 also serve as public water supply wells. Under the Safe Drinking Water Act, these wells are regularly monitored for inorganics, volatile organics, polychlorinated biphenyls, and certain pesticides on a schedule established by the State Department of Health. This regulatory compliance data should be transmitted from the State Department of Health files to local county health departments. Coordination between the programs would greatly reduce additional monitoring needs.

Additionally, most utilities are beginning detailed monitoring programs in response to the EPA's Wellhead Protection Program. This program typically involves the development of detailed hydrogeologic and water quality profiles, requiring extensive ground water monitoring programs. Any data generated under the Wellhead Protection Program by each utility should be forwarded to King County for inclusion into the GWMA data base system.

Results of Grant No. 1 and 2 water quality investigations suggest that regional ground water quality would meet most drinking water criteria under the Safe Drinking Water Act; with the exception of lead levels at site 19A02 in the Green River Valley subarea, elevated chromium levels at site 25Q03, and elevated mercury levels at site 16N01 in the Des Moines Upland subarea. Contamination from any of these metals indicates that localized ground water is being impacted by industrial activity. Additional monitoring of these wells will help to verify the persistence of the potential contamination sources.

Recommendations:

- Coordinate the transfer of regulatory compliance monitoring data at all public water supply wells within the study area to King County for incorporation into their databases.

- Supply data collected under the Plan to those utilities conducting Wellhead Protection Programs, and to King County; and coordinate the integration of results from monitoring conducted under the Wellhead Protection Program.

- Resample the wells discussed above and analyze for inorganics above to determine if contamination from heavy metals is present. If results are positive, investigate and determine the sources of contamination.

In summary, there appears to be little degradation of regional water quality resulting from human activities. The efforts and expenses associated with continued extensive monitoring for public water supply wells do not seem warranted at this time, provided that regulatory compliance data and any other related resource information is made available, evaluated, and incorporated into the regional database. However, additional data needs to be collected from resource protection wells that are used for water level monitoring and water quality sampling only (e.g., non-pumping monitoring wells adjacent to public supply wells), and appropriately located individual private wells to assist trending and characterization of the aquifers. These wells would not have a regulatory requirement under the Safe Drinking Water Act for water quality testing. Additionally, all wells would not have any requirements for water level monitoring except through Ecology's guidelines regarding water use, demand forecasting, methodology, and conservation programs. Water level data gathered would support this program. A minor monitoring effort is justified for the purpose of determining heavy metal levels (lead, mercury, and chromium) at spot locations. Additionally, if regulatory volatile organic chemical data indicate that contamination from methylene chloride or chloroform has occurred, further monitoring may be required.

Public Awareness

The ground water resources of the GWMA are limited. The ground water management program should include an extensive education program to encourage water conservation and protection.

Purveyors, city officials, government agencies, businesses, school children and the public need to be educated about protecting the ground water resources from contamination and depletion. Moreover, the protection strategies should be updated regularly as new information becomes available.

CHAPTER 8

REFERENCES

South King County
Ground Water Management Plan
Area Characterization Supplement

July 2003

CHAPTER 8 REFERENCES

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TABLES

South King County
Ground Water Management Plan
Area Characterization Supplement

July 2003

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
BP 03156	10407 SE 256TH	KENT	LEADED GAS	10000-19999 GALLONS	11
BRUNDAGE-BONE CONCRETE	1055 4TH AVENUE N	KENT	UNLEADED GAS	111-1100 GALLONS	6
BRUNDAGE-BONE CONCRETE	1055 4TH AVENUE N	KENT	DIESEL FUEL	10000-19999 GALLONS	6
CIRCLE K #1457	10602 SE 256TH ST	KENT	UNLEADED GAS	5000-9999 GALLONS	22
CIRCLE K #1457	10602 SE 256TH ST	KENT	LEADED GAS	5000-9999 GALLONS	22
U.S. POSTAL SERVICE	10612 S.E. 240 ST.	KENT	UNLEADED GAS	5000-9999 GALLONS	2
FIRESTONE STORES 31C8	10624 SE 240TH	KENT	USED/WASTE OIL	111-1100 GALLONS	11
ROGER J & MICHAEL G WEST	1133 W JAMES	KENT	UNLEADED GAS	10000-19999 GALLONS	2
ROGER J & MICHAEL G WEST	1133 W JAMES	KENT	LEADED GAS	10000-19999 GALLONS	2
ROGER J & MICHAEL G WEST	1133 W JAMES	KENT	UNLEADED GAS	10000-19999 GALLONS	2
CARPINITO BROTHERS INC	1148 N CENTRAL	KENT	LEADED GAS	111-1100 GALLONS	13
CARPINITO BROTHERS INC	1148 N CENTRAL	KENT	DIESEL FUEL	111-1100 GALLONS	13
SEATTLE JUNCTION	12001 SE 227 PLACE	KENT	DIESEL FUEL	5000-9999 GALLONS	3
91713 PDQ 1100 APSI	1202 W MEEKER	KENT	UNLEADED GAS	10000-19999 GALLONS	6
91713 PDQ 1100 APSI	1202 W MEEKER	KENT	LEADED GAS	10000-19999 GALLONS	6
91713 PDQ 1100 APSI	1202 W MEEKER	KENT	UNLEADED GAS	10000-19999 GALLONS	6
AMERICAN NATIONAL CAN CO	1220 N SECOND STREET	KENT	USED/WASTE OIL	10000-19999 GALLONS	15
BP 03138	13054 KENT-KANGLEY RD	KENT	LEADED GAS	5000-9999 GALLONS	7
BP 03138	13054 KENT-KANGLEY RD	KENT	UNLEADED GAS	5000-9999 GALLONS	7
BP 03138	13054 KENT-KANGLEY RD	KENT	UNLEADED GAS	10000-19999 GALLONS	7
BP 03138	13054 KENT-KANGLEY RD	KENT	USED/WASTE OIL	111-1100 GALLONS	7
BP 11058	13122 SE 240TH	KENT	UNLEADED GAS	10000-19999 GALLONS	8
BP 11058	13122 SE 240TH	KENT	LEADED GAS	5000-9999 GALLONS	8
BP 11058	13122 SE 240TH	KENT	UNLEADED GAS	10000-19999 GALLONS	8
THE SOUTHLAND CORP. 2323-	13131 SE 240TH	KENT	UNLEADED GAS	10000-19999 GALLONS	15
THE SOUTHLAND CORP. 2323-	13131 SE 240TH	KENT	UNLEADED GAS	10000-19999 GALLONS	15
THE SOUTHLAND CORP. 2323-	13131 SE 240TH	KENT	LEADED GAS	10000-19999 GALLONS	15
TEXACO STATION	13201 SE 272	KENT	LEADED GAS	10000-19999 GALLONS	6
TEXACO STATION	13201 SE 272	KENT	LEADED GAS	10000-19999 GALLONS	6
TEXACO STATION	13201 SE 272	KENT	LEADED GAS	5000-9999 GALLONS	6
TEXACO STATION	13201 SE 272	KENT	UNLEADED GAS	10000-19999 GALLONS	6
MIDWAY EQUIPMENT CO INC.	1408 NORTH CENTRAL AVENUE	KENT	DIESEL FUEL	2001-4999 GALLONS	15
SEATTLE BISHOPS STOREHOUS	1412 WEST MORTON	KENT	DIESEL FUEL	5000-9999 GALLONS	10
LIFT STATION #10	14321 SE 255 PLACE	KENT	DIESEL FUEL	111-1100 GALLONS	1
MERIDIAN CO 070435	14422 SE 260TH ST	KENT	DIESEL FUEL		25
CIRCLE K #1459	15209 SE 272ND W	KENT	UNLEADED GAS	1101-2000 GALLONS	37
CIRCLE K #1459	15209 SE 272ND W	KENT	UNLEADED GAS	5000-9999 GALLONS	37
CIRCLE K #1459	15209 SE 272ND W	KENT	UNLEADED GAS	1101-2000 GALLONS	37
CIRCLE K #1459	15209 SE 272ND W	KENT	LEADED GAS	5000-9999 GALLONS	37
STATION 75	15635 SE 272ND ST	KENT	DIESEL FUEL	1101-2000 GALLONS	3
LAKE YOUNGS PRECINCT 3	16223 SE 176TH PLACE	KENT	UNLEADED GAS	10000-19999 GALLONS	20
ARTHUR L. FOSS DBA FOSS G	16255 S.E. 256TH ST.	KENT	UNLEADED GAS	111-1100 GALLONS	32
ARTHUR L. FOSS DBA FOSS G	16255 S.E. 256TH ST.	KENT	UNLEADED GAS	111-1100 GALLONS	32
BP OIL COMPANY #01964	16405 SE 272ND	KENT	UNLEADED GAS	10000-19999 GALLONS	29
BP OIL COMPANY #01964	16405 SE 272ND	KENT	UNLEADED GAS	10000-19999 GALLONS	29
BP OIL COMPANY #01964	16405 SE 272ND	KENT	LEADED GAS	10000-19999 GALLONS	29
BILLENES DELI #117	1720 S 272ND	KENT	DIESEL FUEL	5000-9999 GALLONS	29
BILLENES DELI #117	1720 S 272ND	KENT	ALCOHOL BLEND	10000-19999 GALLONS	29
BILLENES DELI #117	1720 S 272ND	KENT	ALCOHOL BLEND	10000-19999 GALLONS	29
BILLENES DELI #117	1720 S 272ND	KENT	ALCOHOL BLEND	5000-9999 GALLONS	29

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
ARCO 5568	17450 SE 272ND ST	KENT	UNLEADED GAS	10000-19999 GALLONS	5
ARCO 5568	17450 SE 272ND ST	KENT	LEADED GAS	10000-19999 GALLONS	5
CIRCLE K #1525	17624 SE 272ND	KENT	UNLEADED GAS	10000-19999 GALLONS	8
CIRCLE K #1525	17624 SE 272ND	KENT	LEADED GAS	10000-19999 GALLONS	8
CIRCLE K #1525	17624 SE 272ND	KENT	UNLEADED GAS	10000-19999 GALLONS	8
BP 03145	18010 E VALLEY HWY	KENT	UNLEADED GAS	10000-19999 GALLONS	29
BP 03145	18010 E VALLEY HWY	KENT	UNLEADED GAS	10000-19999 GALLONS	29
BP 03145	18010 E VALLEY HWY	KENT	LEADED GAS	10000-19999 GALLONS	29
ARCO 5530	1809 W MEEKER ST	KENT	UNLEADED GAS	10000-19999 GALLONS	6
ARCO 5530	1809 W MEEKER ST	KENT	LEADED GAS	10000-19999 GALLONS	6
ARCO 5530	1809 W MEEKER ST	KENT	UNLEADED GAS	10000-19999 GALLONS	6
FORTE INC	18211 E. VALLEY HIGHWAY	KENT	LEADED GAS	10000-19999 GALLONS	11
VIKING FREIGHT SYSTEM INC	18221 E. VALLEY HIGHWAY	KENT	DIESEL FUEL	10000-19999 GALLONS	14
LIFT STATION #11	18401 SE TIMBERLANE BLVD	KENT	DIESEL FUEL	111-1100 GALLONS	93
FOOD SERVICES OF AMERICA	18430 E. VALLEY HWY.	KENT	USED/WASTE OIL	111-1100 GALLONS	12
ROLLINS LEASING 102	18441 E. VALLEY HWY.	KENT	DIESEL FUEL	10000-19999 GALLONS	12
ROLLINS LEASING 102	18441 E. VALLEY HWY.	KENT	DIESEL FUEL	10000-19999 GALLONS	12
ROLLINS LEASING 102	18441 E. VALLEY HWY.	KENT	DIESEL FUEL	10000-19999 GALLONS	12
ROLLINS LEASING 102	18441 E. VALLEY HWY.	KENT	DIESEL FUEL	10000-19999 GALLONS	12
ROLLINS LEASING 102	18441 E. VALLEY HWY.	KENT	OTHER	5000-9999 GALLONS	12
ROLLINS LEASING 102	18441 E. VALLEY HWY.	KENT	DIESEL FUEL	10000-19999 GALLONS	12
ROLLINS LEASING 102	18441 E. VALLEY HWY.	KENT	USED/WASTE OIL	111-1100 GALLONS	12
COVINGTON WATER DISTRICT	18631 SE 300TH PLACE	KENT	UNLEADED GAS	111-1100 GALLONS	27
COVINGTON WATER DISTRICT	18631 SE 300TH PLACE	KENT	DIESEL FUEL	111-1100 GALLONS	27
LITTLE DELI MART INC	19243 84TH S	KENT	LEADED GAS	10000-19999 GALLONS	3
LITTLE DELI MART INC	19243 84TH S	KENT	DIESEL FUEL	5000-9999 GALLONS	3
LITTLE DELI MART INC	19243 84TH S	KENT	UNLEADED GAS	10000-19999 GALLONS	3
LITTLE DELI MART INC	19243 84TH S	KENT	UNLEADED GAS	10000-19999 GALLONS	3
SCARSELLA BROS. INC	19440-84TH AVE SO	KENT	LEADED GAS	111-1100 GALLONS	15
SCARSELLA BROS. INC	19440-84TH AVE SO	KENT	DIESEL FUEL	111-1100 GALLONS	15
SCARSELLA BROS. INC	19440-84TH AVE SO	KENT	USED/WASTE OIL	111-1100 GALLONS	10
GENERAL ELECTRIC CREDIT A	19443 77TH AVE SO P O BOX	KENT	LEADED GAS	5000-9999 GALLONS	15
GENERAL ELECTRIC CREDIT A	19443 77TH AVE SO P O BOX	KENT	UNLEADED GAS	10000-19999 GALLONS	15
LAKERIDGE PAVING COMPANY	19601 SE FRONTAGE RD # O	KENT	DIESEL FUEL	5000-9999 GALLONS	15
KENT SOC 070963	19616 68TH S	KENT	UNLEADED GAS	10000-19999 GALLONS	25
KENT SOC 070963	19616 68TH S	KENT	UNLEADED GAS	5000-9999 GALLONS	14
TOYS R US INC	19826 RUSSELL RD S	KENT	DIESEL FUEL	10000-19999 GALLONS	12
ARCO 5544	19860 68TH AVENUE S	KENT	UNLEADED GAS	10000-19999 GALLONS	5
ARCO 5544	19860 68TH AVENUE S	KENT	LEADED GAS	10000-19999 GALLONS	5
ARCO 5544	19860 68TH AVENUE S	KENT	UNLEADED GAS	10000-19999 GALLONS	5
MATLACK INC KENT TERMINAL	19929 76TH AVENUE S	KENT	OTHER	5000-9999 GALLONS	11
MATLACK INC KENT TERMINAL	19929 76TH AVENUE S	KENT	DIESEL FUEL	20000-29999 GALLONS	11
MATLACK INC KENT TERMINAL	19929 76TH AVENUE S	KENT	DIESEL FUEL	20000-29999 GALLONS	11
SOUTH CENTER OIL INC	20007 80 AVE SO	KENT	LEADED GAS	10000-19999 GALLONS	4
SOUTH CENTER OIL INC	20007 80 AVE SO	KENT	DIESEL FUEL	10000-19999 GALLONS	4
SOUTH CENTER OIL INC	20007 80 AVE SO	KENT	UNLEADED GAS	10000-19999 GALLONS	4
CITY OF KENT GOLF COURSE	2020 W MEEKER	KENT	LEADED GAS	111-1100 GALLONS	4
BOEING SPACE CENTER	20403 68TH AVE S	KENT	DIESEL FUEL	111-1100 GALLONS	13
BOEING SPACE CENTER	20403 68TH AVE S	KENT	DIESEL FUEL	20000-29999 GALLONS	13
BOEING SPACE CENTER	20403 68TH AVE S	KENT	UNLEADED GAS	10000-19999 GALLONS	13

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
MINIT-LUBE #1114	23610 PACIFIC HWY S	KENT	OTHER	5000-9999 GALLONS	6
THE SOUTHLAND CORP. 2323-	23847 108TH SE	KENT	UNLEADED GAS	10000-19999 GALLONS	8
THE SOUTHLAND CORP. 2323-	23847 108TH SE	KENT	UNLEADED GAS	10000-19999 GALLONS	8
THE SOUTHLAND CORP. 2323-	23847 108TH SE	KENT	LEADED GAS	10000-19999 GALLONS	8
BOB ROBBINS	23953 104TH AVE SE	KENT	UNLEADED GAS	10000-19999 GALLONS	9
BOB ROBBINS	23953 104TH AVE SE	KENT	UNLEADED GAS	10000-19999 GALLONS	9
BOB ROBBINS	23953 104TH AVE SE	KENT	DIESEL FUEL	10000-19999 GALLONS	9
BOB ROBBINS	23953 104TH AVE SE	KENT	LEADED GAS	10000-19999 GALLONS	9
ARCO 4484	24001 PACIFIC COAST HWY	KENT	UNLEADED GAS	10000-19999 GALLONS	5
ARCO 4484	24001 PACIFIC COAST HWY	KENT	UNLEADED GAS	10000-19999 GALLONS	5
ARCO 4484	24001 PACIFIC COAST HWY	KENT	LEADED GAS	10000-19999 GALLONS	5
JULIUS ROSSO WHOLESALE	24202 FRAGER ROAD	KENT	DIESEL FUEL	111-1100 GALLONS	15
JULIUS ROSSO WHOLESALE	24202 FRAGER ROAD	KENT	LEADED GAS	111-1100 GALLONS	15
ORGANIZATIONAL MAINTENANCE	24410 MILITARY RD	KENT	DIESEL FUEL	2001-4999 GALLONS	5
ORGANIZATIONAL MAINTENANCE	24410 MILITARY RD	KENT	UNLEADED GAS	111-1100 GALLONS	5
STATION 74	24611 116TH AVE SE	KENT	UNLEADED GAS	2001-4999 GALLONS	3
STATION 74	24611 116TH AVE SE	KENT	DIESEL FUEL	5000-9999 GALLONS	3
KMART #3413	24800 W VALLEY HWY	KENT	USED/WASTE OIL	111-1100 GALLONS	16
MERIDIAN VY COUNTRY CLUB	24830 136TH SE	KENT	UNLEADED GAS	111-1100 GALLONS	2
MERIDIAN VY COUNTRY CLUB	24830 136TH SE	KENT	DIESEL FUEL	111-1100 GALLONS	2
TRANSPORTATION SERVICES	25211 104TH SE	KENT	DIESEL FUEL	10000-19999 GALLONS	2
TRANSPORTATION SERVICES	25211 104TH SE	KENT	USED/WASTE OIL	111-1100 GALLONS	20
STATION 72	25620 140 AVE SE	KENT	DIESEL FUEL	1101-2000 GALLONS	12
STATION 72	25620 140 AVE SE	KENT	UNLEADED GAS	1101-2000 GALLONS	12
RANGER FIBERGLASS BOATS	25802 PACIFIC HWY S	KENT	HAZARDOUS	1101-2000 GALLONS	15
GOODYEAR TIRE & RUBBER CO	25923 104TH AVE SE	KENT	USED/WASTE OIL	111-1100 GALLONS	7
GOODYEAR AUTO SERVICE CTR	25951 104TH AVE SE	KENT	USED/WASTE OIL	111-1100 GALLONS	7
THE SOUTHLAND CORP. 2322-	26007 PACIFIC HWY S	KENT	LEADED GAS	10000-19999 GALLONS	15
THE SOUTHLAND CORP. 2322-	26007 PACIFIC HWY S	KENT	UNLEADED GAS	10000-19999 GALLONS	15
THE SOUTHLAND CORP. 2322-	26007 PACIFIC HWY S	KENT	UNLEADED GAS	10000-19999 GALLONS	15
LAKESIDE INDUSTRIES	26010 180TH SE	KENT	LEADED GAS	5000-9999 GALLONS	15
LAKESIDE INDUSTRIES	26010 180TH SE	KENT	DIESEL FUEL	5000-9999 GALLONS	15
STATION 73	26512 MILITARY ROAD S	KENT	DIESEL FUEL	2001-4999 GALLONS	3
KENT AREA 4 MAINT HDQTRS	26620 68TH AVENUE S	KENT	UNLEADED GAS	5000-9999 GALLONS	3
KENT AREA 4 MAINT HDQTRS	26620 68TH AVENUE S	KENT	DIESEL FUEL	5000-9999 GALLONS	3
STAR LAKE	26701 28 AVE SO	KENT	UNLEADED GAS	10000-19999 GALLONS	27
STAR LAKE	26701 28 AVE SO	KENT	DIESEL FUEL	10000-19999 GALLONS	27
FIRE STATION 6	27010 15TH AVE SO	KENT	UNLEADED GAS	111-1100 GALLONS	11
FIRE STATION 6	27010 15TH AVE SO	KENT	DIESEL FUEL	111-1100 GALLONS	11
ARCO 5363	27202 PACIFIC HIGHWAY S	KENT	UNLEADED GAS	10000-19999 GALLONS	6
ARCO 5363	27202 PACIFIC HIGHWAY S	KENT	LEADED GAS	10000-19999 GALLONS	6
ARCO 5363	27202 PACIFIC HIGHWAY S	KENT	UNLEADED GAS	10000-19999 GALLONS	6
ERNST DISTRIBUTION CENTER	27232 72ND AVE S	KENT	DIESEL FUEL	10000-19999 GALLONS	29
ERNST DISTRIBUTION CENTER	27232 72ND AVE S	KENT	DIESEL FUEL	10000-19999 GALLONS	29
SPRINGWOOD APARTMENTS	27360 129 PL SE	KENT	UNLEADED GAS	111-1100 GALLONS	15
SEATTLE CAN PLANT	27402 72ND AVENUE S	KENT	HAZARDOUS	10000-19999 GALLONS	13
SEATTLE CAN PLANT	27402 72ND AVENUE S	KENT	USED/WASTE OIL	5000-9999 GALLONS	13
SEATTLE CAN PLANT	27402 72ND AVENUE S	KENT	USED/WASTE OIL	10000-19999 GALLONS	13
SEATTLE CAN PLANT	27402 72ND AVENUE S	KENT	OTHER	10000-19999 GALLONS	13
COMMERCIAL CARRIERS	27430 72ND AVE	KENT	DIESEL FUEL	10000-19999 GALLONS	25

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
BOEING SPACE CENTER	20403 68TH AVE S	KENT	DIESEL FUEL	111-1100 GALLONS	5
BOEING SPACE CENTER	20403 68TH AVE S	KENT	DIESEL FUEL	111-1100 GALLONS	5
BOEING SPACE CENTER	20403 68TH AVE S	KENT	DIESEL FUEL	20000-29999 GALLONS	13
ULRICH CO 070138	206 STATE STREET	KENT	DIESEL FUEL	111-1100 GALLONS	2
BOEING-KENT BENAROYA	20651 84TH S	KENT	UNLEADED GAS	1101-2000 GALLONS	4
STATION 76	20676 72ND AVE S	KENT	USED/WASTE OIL	111-1100 GALLONS	5
STATION 76	20676 72ND AVE S	KENT	DIESEL FUEL	2001-4999 GALLONS	5
CIRCLE K #1602	20727 108TH AVENUE SE	KENT	UNLEADED GAS	10000-19999 GALLONS	8
CIRCLE K #1602	20727 108TH AVENUE SE	KENT	UNLEADED GAS	10000-19999 GALLONS	8
CIRCLE K #1602	20727 108TH AVENUE SE	KENT	LEADED GAS	10000-19999 GALLONS	8
MR SUDSY CAR WASH INC	209 SO CENTRAL	KENT	UNLEADED GAS	10000-19999 GALLONS	20
MR SUDSY CAR WASH INC	209 SO CENTRAL	KENT	UNLEADED GAS	10000-19999 GALLONS	20
MR SUDSY CAR WASH INC	209 SO CENTRAL	KENT	LEADED GAS	5000-9999 GALLONS	29
STATION 77	21006 132 AVE SE	KENT	DIESEL FUEL	111-1100 GALLONS	12
BP 11054	21208 68TH AVENUE S	KENT	LEADED GAS	10000-19999 GALLONS	29
BP 11054	21208 68TH AVENUE S	KENT	UNLEADED GAS	10000-19999 GALLONS	29
BP 11054	21208 68TH AVENUE S	KENT	UNLEADED GAS	10000-19999 GALLONS	29
ARCO 5219	21214 84TH AVE S	KENT	LEADED GAS	10000-19999 GALLONS	8
ARCO 5219	21214 84TH AVE S	KENT	UNLEADED GAS	10000-19999 GALLONS	8
ARCO 5219	21214 84TH AVE S	KENT	UNLEADED GAS	10000-19999 GALLONS	8
AUTOMATIC TRANSMISSION SP	21225 84TH AVE S	KENT	USED/WASTE OIL	111-1100 GALLONS	19
POZZI BROS. TRANSPORTATION	21441 76TH AVE S	KENT	DIESEL FUEL	5000-9999 GALLONS	17
POZZI BROS. TRANSPORTATION	21441 76TH AVE S	KENT	LEADED GAS	5000-9999 GALLONS	17
POZZI BROS. TRANSPORTATION	21441 76TH AVE S	KENT	DIESEL FUEL	5000-9999 GALLONS	17
ERNIES TRUCK STOP	21804 84TH AVE S	KENT	DIESEL FUEL	20000-29999 GALLONS	2
ERNIES TRUCK STOP	21804 84TH AVE S	KENT	UNLEADED GAS	10000-19999 GALLONS	3
ERNIES TRUCK STOP	21804 84TH AVE S	KENT	UNLEADED GAS	10000-19999 GALLONS	3
ERNIES TRUCK STOP	21804 84TH AVE S	KENT	LEADED GAS	10000-19999 GALLONS	3
ERNIES TRUCK STOP	21804 84TH AVE S	KENT	DIESEL FUEL	20000-29999 GALLONS	2
BUDGET RENT-A-CAR OF WASH	22005-84TH S	KENT	UNLEADED GAS	5000-9999 GALLONS	20
BUDGET RENT-A-CAR OF WASH	22005-84TH S	KENT	DIESEL FUEL	10000-19999 GALLONS	9
MCDONALD INDUSTRIES INC	22431 83RD AVE S	KENT	DIESEL FUEL	10000-19999 GALLONS	7
MCDONALD INDUSTRIES INC	22431 83RD AVE S	KENT	UNLEADED GAS	5000-9999 GALLONS	7
TEXACO STATION	22588 84TH AVE S	KENT	LEADED GAS	10000-19999 GALLONS	5
TEXACO STATION	22588 84TH AVE S	KENT	DIESEL FUEL	10000-19999 GALLONS	5
TEXACO STATION	22588 84TH AVE S	KENT	UNLEADED GAS	10000-19999 GALLONS	5
TEXACO STATION	22588 84TH AVE S	KENT	UNLEADED GAS	10000-19999 GALLONS	5
SYSCO FOOD SERVICES	22820 54TH AVENUE S	KENT	USED/WASTE OIL	111-1100 GALLONS	5
SYSCO FOOD SERVICES	22820 54TH AVENUE S	KENT	DIESEL FUEL	10000-19999 GALLONS	10
SYSCO FOOD SERVICES	22820 54TH AVENUE S	KENT	DIESEL FUEL	10000-19999 GALLONS	10
SYSCO FOOD SERVICES	22820 54TH AVENUE S	KENT	OTHER	111-1100 GALLONS	5
VALLEY I-5	23051 MILITARY ROAD S	KENT	UNLEADED GAS	1101-2000 GALLONS	15
VALLEY I-5	23051 MILITARY ROAD S	KENT	UNLEADED GAS	1101-2000 GALLONS	15
VALLEY I-5	23051 MILITARY ROAD S	KENT	USED/WASTE OIL	111-1100 GALLONS	15
SOUTHGATE OIL	23428 PACIFIC HWY S	KENT	HEATING FUEL	20000-29999 GALLONS	3
SOUTHGATE OIL	23428 PACIFIC HWY S	KENT	HEATING FUEL	20000-29999 GALLONS	35
SOUTHGATE OIL	23428 PACIFIC HWY S	KENT	LEADED GAS	5000-9999 GALLONS	18
SOUTHGATE OIL	23428 PACIFIC HWY S	KENT	DIESEL FUEL	111-1100 GALLONS	3
SOUTHGATE OIL	23428 PACIFIC HWY S	KENT	HEATING FUEL	10000-19999 GALLONS	30
MINIT-LUBE #1114	23610 PACIFIC HWY S	KENT	OTHER	2001-4999 GALLONS	-

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
COMMERCIAL CARRIERS	27430 72ND AVE	KENT	USED/WASTE OIL	1101-2000 GALLONS	25
COMMERCIAL CARRIERS	27430 72ND AVE	KENT	UNLEADED GAS	5000-9999 GALLONS	20
COMMERCIAL CARRIERS	27430 72ND AVE	KENT	DIESEL FUEL	10000-19999 GALLONS	25
SMITH BROS FARMS	27441 68 SO W VALLEY HWY	KENT	LEADED GAS	5000-9999 GALLONS	32
GLENN'S AUTO REPAIR & TIRE	27606 16TH AVE. S	KENT	USED/WASTE OIL	111-1100 GALLONS	7
COVINGTON SUBSTATION	28401 COVINGTON WAY SE	KENT	DIESEL FUEL	5000-9999 GALLONS	19
COVINGTON SUBSTATION	28401 COVINGTON WAY SE	KENT	DIESEL FUEL	111-1100 GALLONS	9
COVINGTON SUBSTATION	28401 COVINGTON WAY SE	KENT	LEADED GAS	10000-19999 GALLONS	19
NORMAN C. GRIER DBA CREST	29300 179TH PLACE S E	KENT	AVIATION FUEL	5000-9999 GALLONS	20
NORMAN C. GRIER DBA CREST	29300 179TH PLACE S E	KENT	AVIATION FUEL	10000-19999 GALLONS	11
NORMAN C. GRIER DBA CREST	29300 179TH PLACE S E	KENT	AVIATION FUEL	5000-9999 GALLONS	20
GONNASON MARINA INC	307 S CENTRAL	KENT	UNLEADED GAS	111-1100 GALLONS	7
MINIT-LUBE #1108	309 SO WASHINGTON	KENT	OTHER	2001-4999 GALLONS	11
MINIT-LUBE #1108	309 SO WASHINGTON	KENT	USED/WASTE OIL	111-1100 GALLONS	15
CONTINENTAL BAKING CO	310 NO WASHINGTON	KENT	DIESEL FUEL		20
CONTINENTAL BAKING CO	310 NO WASHINGTON	KENT	DIESEL FUEL		20
SEATTLE INTERNATIONAL RAC	31001 144TH AVE SE	KENT	LEADED GAS	2001-4999 GALLONS	19
NORTHWEST METAL PRODUCTS	401 N 4TH PO BOX 10	KENT	DIESEL FUEL	2001-4999 GALLONS	15
NORTHWEST METAL PRODUCTS	401 N 4TH PO BOX 10	KENT	UNLEADED GAS	111-1100 GALLONS	15
JACKPOT #311	405 SOUTH CENTRAL	KENT	LEADED GAS	10000-19999 GALLONS	20
JACKPOT #311	405 SOUTH CENTRAL	KENT	UNLEADED GAS	10000-19999 GALLONS	20
JACKPOT #311	405 SOUTH CENTRAL	KENT	LEADED GAS	10000-19999 GALLONS	20
TOM'S AUTO AND TRUCK INC	406 N. RAILROAD	KENT	USED/WASTE OIL	111-1100 GALLONS	15
THE SOUTHLAND CORP. 2323-	511 S CENTRAL AVE	KENT	LEADED GAS	10000-19999 GALLONS	8
THE SOUTHLAND CORP. 2323-	511 S CENTRAL AVE	KENT	UNLEADED GAS	10000-19999 GALLONS	8
THE SOUTHLAND CORP. 2323-	511 S CENTRAL AVE	KENT	UNLEADED GAS	10000-19999 GALLONS	8
CITY OF KENT	5821 S. 240TH	KENT	UNLEADED GAS	10000-19999 GALLONS	5
CITY OF KENT	5821 S. 240TH	KENT	USED/WASTE OIL	111-1100 GALLONS	20
CITY OF KENT	5821 S. 240TH	KENT	UNLEADED GAS	10000-19999 GALLONS	5
CITY OF KENT	5821 S. 240TH	KENT	DIESEL FUEL	2001-4999 GALLONS	5
CHEVRON 92678	631 N CENTRAL	KENT	USED/WASTE OIL	111-1100 GALLONS	29
CHEVRON 92678	631 N CENTRAL	KENT	UNLEADED GAS	5000-9999 GALLONS	11
CHEVRON 92678	631 N CENTRAL	KENT	LEADED GAS	5000-9999 GALLONS	11
CHEVRON 92678	631 N CENTRAL	KENT	UNLEADED GAS	5000-9999 GALLONS	11
THE BOXMAKER INC	6412 SOUTH 190TH ST	KENT	DIESEL FUEL	1101-2000 GALLONS	6
POLYFORM US LTD	7030 SOUTH 224TH	KENT	HAZARDOUS	5000-9999 GALLONS	5
POLYFORM US LTD	7030 SOUTH 224TH	KENT	HAZARDOUS	2001-4999 GALLONS	14
OBERTO SAUSAGE CO INC	7060 SO 238TH ST	KENT	DIESEL FUEL	2001-4999 GALLONS	3
OBERTO SAUSAGE CO INC	7060 SO 238TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	15
OBERTO SAUSAGE CO INC	7109 S 180TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	1
ARCO 5839	7109 S 180TH ST	KENT	LEADED GAS	10000-19999 GALLONS	1
ARCO 5839	7109 S 180TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	1
ARCO 5839	7109 S 180TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	1
T & S MINI MART/ARCO	711 N CENTRAL AVENUE	KENT	LEADED GAS	10000-19999 GALLONS	14
T & S MINI MART/ARCO	711 N CENTRAL AVENUE	KENT	UNLEADED GAS	5000-9999 GALLONS	23
T & S MINI MART/ARCO	711 N CENTRAL AVENUE	KENT	UNLEADED GAS	5000-9999 GALLONS	23
T & S MINI MART/ARCO	711 N CENTRAL AVENUE	KENT	UNLEADED GAS	5000-9999 GALLONS	23
THE SOUTHLAND CORP. 2323-	711 N WASHINGTON	KENT	LEADED GAS	10000-19999 GALLONS	13
THE SOUTHLAND CORP. 2323-	711 N WASHINGTON	KENT	UNLEADED GAS	10000-19999 GALLONS	13
THE SOUTHLAND CORP. 2323-	711 N WASHINGTON	KENT	UNLEADED GAS	10000-19999 GALLONS	13

TABLE 4.1 | *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
BP 11051	720 NORTH CENTRAL	KENT	UNLEADED GAS	10000-19999 GALLONS	12
BP 11051	720 NORTH CENTRAL	KENT	LEADED GAS	10000-19999 GALLONS	12
BP 11051	720 NORTH CENTRAL	KENT	UNLEADED GAS	10000-19999 GALLONS	12
KENT OPERATING BASE	7260 S 224 ST	KENT	LEADED GAS	2001-4999 GALLONS	14
SAWDUST SUPPLY CO INC	7409 SOUTH 202	KENT	LEADED GAS	2001-4999 GALLONS	12
SAWDUST SUPPLY CO INC	7409 SOUTH 202	KENT	DIESEL FUEL	10000-19999 GALLONS	12
SAWDUST SUPPLY CO INC	7409 SOUTH 202	KENT	DIESEL FUEL	10000-19999 GALLONS	12
SAWDUST SUPPLY CO INC	7409 SOUTH 202	KENT	USED/WASTE OIL	1101-2000 GALLONS	12
SAWDUST SUPPLY CO INC	7409 SOUTH 202	KENT	DIESEL FUEL	10000-19999 GALLONS	12
DOWELL CO	760 N CENTRAL	KENT	LEADED GAS		20
COLONIAL CEDAR COMPANY	7800 SOUTH 206TH ST	KENT	DIESEL FUEL	1101-2000 GALLONS	15
ASSOCIATED GROCERS INCORP	7890 SOUTH 188TH	KENT	DIESEL FUEL	10000-19999 GALLONS	14
FLEET SERVICE CENTER	8001 SOUTH 212TH ST	KENT	DIESEL FUEL	5000-9999 GALLONS	14
FLEET SERVICE CENTER	8001 SOUTH 212TH ST	KENT	UNLEADED GAS	5000-9999 GALLONS	14
FLEET SERVICE CENTER	8001 SOUTH 212TH ST	KENT	USED/WASTE OIL	111-1100 GALLONS	14
LIQUID AIR CORPORATION	8008 SOUTH 222ND ST	KENT	LEADED GAS	111-1100 GALLONS	2
LIQUID AIR CORPORATION	8008 SOUTH 222ND ST	KENT	DIESEL FUEL	5000-9999 GALLONS	2
WILLIG FREIGHT LINES	8200 S 216TH ST	KENT	DIESEL FUEL	20000-29999 GALLONS	8
WILLIG FREIGHT LINES	8200 S 216TH ST	KENT	DIESEL FUEL	20000-29999 GALLONS	8
WILLIG FREIGHT LINES	8200 S 216TH ST	KENT	DIESEL FUEL	20000-29999 GALLONS	8
NORTHWEST ALUMINUM PROD	821 SOUTH CENTRAL AVENUE	KENT	DIESEL FUEL	1101-2000 GALLONS	7
NORTHWEST ALUMINUM PROD	821 SOUTH CENTRAL AVENUE	KENT	UNLEADED GAS	5000-9999 GALLONS	7
J.P.FRANCIS AND ASSOC INC	8223 S222ND ST	KENT	UNLEADED GAS		18
URESCO CONSTRUCTION MATER	8246 SOUTH 194TH	KENT	DIESEL FUEL	20000-29999 GALLONS	15
SOUTH CENTER OIL INC	828 S CENTRAL	KENT	UNLEADED GAS	20000-29999 GALLONS	11
SOUTH CENTER OIL INC	828 S CENTRAL	KENT	UNLEADED GAS	10000-19999 GALLONS	11
SOUTH CENTER OIL INC	828 S CENTRAL	KENT	DIESEL FUEL	20000-29999 GALLONS	11
SOUTH CENTER OIL INC	828 S CENTRAL	KENT	LEADED GAS	20000-29999 GALLONS	11
SOUTH CENTER OIL INC	828 S CENTRAL	KENT	DIESEL FUEL	20000-29999 GALLONS	11
SOUTH CENTER OIL INC	828 S CENTRAL	KENT	DIESEL FUEL	20000-29999 GALLONS	11
DI PIETRO TRUCKING CO	8612 SO 218TH ST	KENT	DIESEL FUEL	10000-19999 GALLONS	13
DI PIETRO TRUCKING CO	8612 SO 218TH ST	KENT	LEADED GAS		13
TRI-STATE CONST. INC.	8615 SOUTH 192ND	KENT	USED/WASTE OIL	111-1100 GALLONS	15
TRI-STATE CONST. INC.	8615 SOUTH 192ND	KENT	UNLEADED GAS	10000-19999 GALLONS	15
TRI-STATE CONST. INC.	8615 SOUTH 192ND	KENT	DIESEL FUEL	30000-49999 GALLONS	15
ARCO 5774	8815 SOUTH 180TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 5774	8815 SOUTH 180TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 5774	8815 SOUTH 180TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 5774	8815 SOUTH 180TH ST	KENT	LEADED GAS	10000-19999 GALLONS	2
SUNSET SEPTIC TANK CO INC	918-SOUTH CENTRAL	KENT	UNLEADED GAS	111-1100 GALLONS	20
SUNSET SEPTIC TANK CO INC	918-SOUTH CENTRAL	KENT	DIESEL FUEL	111-1100 GALLONS	15
SUNSET SEPTIC TANK CO INC	918-SOUTH CENTRAL	KENT	DIESEL FUEL	111-1100 GALLONS	15

TABLE 4.1 OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
ELLIOTT TIRE & SERVICE	10002 16TH AVE SWATER	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	20
MAINTENANCE SHOP	1015 SW 174TH ST	SEATTLE	LEADED GAS	111-1100 GALLONS	11
ZIP MARKET	10645 16TH AVE S.W.	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	7
ZIP MARKET	10645 16TH AVE S.W.	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	7
ZIP MARKET	10645 16TH AVE S.W.	SEATTLE	LEADED GAS	10000-19999 GALLONS	7
TOP HAT MINI MART	10723 1ST AVENUE S	SEATTLE	LEADED GAS	5000-9999 GALLONS	6
TOP HAT MINI MART	10723 1ST AVENUE S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	6
SEA TAC FORD TRUCK SALES	11000 PACIFIC HWY S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	3
MCCOY RACING PRODUCTS INC	11064 1ST AVE S	SEATTLE			32
MCCOY RACING PRODUCTS INC	11064 1ST AVE S	SEATTLE	LEADED GAS	5000-9999 GALLONS	25
MCCOY RACING PRODUCTS INC	11064 1ST AVE S	SEATTLE	LEADED GAS		32
MCCOY RACING PRODUCTS INC	11064 1ST AVE S	SEATTLE			32
MCCOY RACING PRODUCTS INC	11064 1ST AVE S	SEATTLE	LEADED GAS		32
CROFT RENTALS INC.	11229 16TH AVE. SW.	SEATTLE	LEADED GAS	1101-2000 GALLONS	20
THE SOUTHLAND CORP. 2371-	11657 DES MOINES WAY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	13
THE SOUTHLAND CORP. 2371-	11657 DES MOINES WAY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	13
THE SOUTHLAND CORP. 2371-	11657 DES MOINES WAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	13
SOUTH OPERATING BASE ANNE	11911 EAST MARGINAL WAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	8
SOUTH OPERATING BASE ANNE	11911 EAST MARGINAL WAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	8
JOSEPH B. MEDER	12025 DES MOINES WAY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	11
JOSEPH B. MEDER	12025 DES MOINES WAY S	SEATTLE	UNLEADED GAS		11
JOSEPH B. MEDER	12025 DES MOINES WAY S	SEATTLE	LEADED GAS	5000-9999 GALLONS	11
JOSEPH B. MEDER	12025 DES MOINES WAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	11
JOSEPH B. MEDER	12025 DES MOINES WAY S	SEATTLE	UNLEADED GAS		11
JOSEPH B. MEDER	12025 DES MOINES WAY S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	11
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	USED/WASTE OIL	1101-2000 GALLONS	6
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	OTHER	5000-9999 GALLONS	14
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	HAZARDOUS	5000-9999 GALLONS	14
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	OTHER	5000-9999 GALLONS	14
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	USED/WASTE OIL	1101-2000 GALLONS	14
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	USED/WASTE OIL	1101-2000 GALLONS	29
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	14
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	OTHER	5000-9999 GALLONS	14
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	14
SOUTH BASE	12100 EAST MARGINAL WAY S	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	14
UNIT REPAIR FACILITY	12200 EAST MARGINAL WAY S	SEATTLE	USED/WASTE OIL	1101-2000 GALLONS	29
SECURITY PACIFIC BANK	12400 E MARGINAL WAY S	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	10
SECURITY PACIFIC BANK	12400 E MARGINAL WAY S	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	10
SECURITY PACIFIC BANK	12400 E MARGINAL WAY S	SEATTLE	DIESEL FUEL	1101-2000 GALLONS	15
GLENDALE OIL CO INC	12462 DES MOINES MEM DR	SEATTLE	KEROSENE	5000-9999 GALLONS	32
GLENDALE OIL CO INC	12462 DES MOINES MEM DR	SEATTLE	HEATING FUEL	10000-19999 GALLONS	32
GLENDALE OIL CO INC	12462 DES MOINES MEM DR	SEATTLE	HEATING FUEL	10000-19999 GALLONS	32
WATER DISTRICT NO. 20	12606 1ST AVE S	SEATTLE	DIESEL FUEL	111-1100 GALLONS	11
WATER DISTRICT NO. 20	12606 1ST AVE S	SEATTLE	UNLEADED GAS	111-1100 GALLONS	11
CIRCLE K #1476	12660 FIRST AVENUE S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	1
CIRCLE K #1476	12660 FIRST AVENUE S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	1
CIRCLE K #1476	12660 FIRST AVENUE S	SEATTLE	LEADED GAS	10000-19999 GALLONS	1
BECKER TRUCKINGAS	12677 E MARGINAL WAY S	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	19
BECKER TRUCKINGAS	12677 E MARGINAL WAY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	19
NORTHWEST TRANSPORT	12855 48TH AVE S STR	SEATTLE			

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
HERTZ EQUIP. RENTAL CORP	12900 48TH AVE S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	6
HERTZ EQUIP. RENTAL CORP	12900 48TH AVE S	SEATTLE	DIESEL FUEL	2001-4999 GALLONS	6
HERTZ EQUIP. RENTAL CORP	12900 48TH AVE S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	6
PRIORITY ARCO #1	13222 FIRST AVENUE S	SEATTLE	LEADED GAS	111-1100 GALLONS	29
PRIORITY ARCO #1	13222 FIRST AVENUE S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
PRIORITY ARCO #1	13222 FIRST AVENUE S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	29
NEW LIFE INC 409	13515 AMBAUM BLVD SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	4
NEW LIFE INC 409	13515 AMBAUM BLVD SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	4
NEW LIFE INC 409	13515 AMBAUM BLVD SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	4
NEW LIFE INC 409	13515 AMBAUM BLVD SW	SEATTLE	LEADED GAS	10000-19999 GALLONS	4
MINIT-LUBE #1115	13654 ST AVE S	SEATTLE	OTHER	2001-4999 GALLONS	11
MINIT-LUBE #1115	13654 ST AVE S	SEATTLE	OTHER	111-1100 GALLONS	15
MINIT-LUBE #1115	13654 ST AVE S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	15
DOYLE BIG DIPPER CAR WASH	13855 1ST AVE S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	20
DOYLE BIG DIPPER CAR WASH	13855 1ST AVE S	SEATTLE	LEADED GAS	10000-19999 GALLONS	20
DOYLE BIG DIPPER CAR WASH	13855 1ST AVE S	SEATTLE	UNLEADED GAS		15
MALLARD LAKE APARTMENTS	1400 SW 107TH ST	SEATTLE	DIESEL FUEL	111-1100 GALLONS	29
PERFORMANCE AUTO SERVICE	14025 1ST AVE S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	11
BLAKLEY BROTHERS INC	1407 SO 129TH ST	SEATTLE	LEADED GAS	111-1100 GALLONS	20
ARTHUR L. SPENCER	1418 S W 107TH	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	8
ARTHUR L. SPENCER	1418 S W 107TH	SEATTLE	LEADED GAS	5000-9999 GALLONS	2
ARTHUR L. SPENCER	1418 S W 107TH	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	7
ARTHUR L. SPENCER	1418 S W 107TH	SEATTLE	OTHER	5000-9999 GALLONS	2
THE SOUTHLAND CORP. 2322-	14207 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	12
THE SOUTHLAND CORP. 2322-	14207 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	12
THE SOUTHLAND CORP. 2322-	14207 PACIFIC HWY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	12
BURIEN FUEL CO	14260 DES MOINES MEMORIAL	SEATTLE	DIESEL FUEL	2001-4999 GALLONS	11
BURIEN FUEL CO	14260 DES MOINES MEMORIAL	SEATTLE	KEROSENE	5000-9999 GALLONS	11
BURIEN FUEL CO	14260 DES MOINES MEMORIAL	SEATTLE	KEROSENE	10000-19999 GALLONS	32
BP 03154	14415 PACIFIC HWY S	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	32
BP 03154	14415 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
BP 03154	14415 PACIFIC HWY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	29
JOSEPH P. EGAN	14438 MILITARY ROAD S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
JOSEPH P. EGAN	14438 MILITARY ROAD S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	20
JOSEPH P. EGAN	14438 MILITARY ROAD S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
CHERRY CO 070305	14605 8TH AVE S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	32
CIRCLE K #1478	14605 FIRST AVENUE S	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	2
CIRCLE K #1478	14605 FIRST AVENUE S	SEATTLE	LEADED GAS	5000-9999 GALLONS	17
CIRCLE K #1478	14605 FIRST AVENUE S	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	27
CIRCLE K #1478	14605 FIRST AVENUE S	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	27
CIRCLE K #1478	14605 FIRST AVENUE S	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	27
BP 03153	14807 1ST AVE S	SEATTLE	LEADED GAS	5000-9999 GALLONS	11
BP 03153	14807 1ST AVE S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	11
BP 03153	14807 1ST AVE S	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	11
BP 03153	14807 1ST AVE S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	11
BP 03153	14807 1ST AVE S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	11
ANDY'S HANDY MART	150 SW 160TH	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	2
ANDY'S HANDY MART	150 SW 160TH	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	2
ANDY'S HANDY MART	150 SW 160TH	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	2

TABLE 4.1 OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
MR. GASTROS 291	15003 AMBAUM BLVD S W	SEATTLE	LEADED GAS	5000-9999 GALLONS	35
MR. GASTROS 291	15003 AMBAUM BLVD S W	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	35
MR. GASTROS 291	15003 AMBAUM BLVD S W	SEATTLE	LEADED GAS	5000-9999 GALLONS	35
J&J MOTOR INC.	15026 1ST AVE S	SEATTLE	USED/WASTE OIL		15
J&J MOTOR INC.	15026 1ST AVE S	SEATTLE	UNLEADED GAS	111-1100 GALLONS	15
CHARLEY'S SHELL	15041 DESMOINE WAY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	15
CHARLEY'S SHELL	15041 DESMOINE WAY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	20
CHARLEY'S SHELL	15041 DESMOINE WAY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
CHARLEY'S SHELL	15041 DESMOINE WAY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
WHITE CENTER TIRE AND TEX	1505 SW ROXBURY ST	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	6
WHITE CENTER TIRE AND TEX	1505 SW ROXBURY ST	SEATTLE	LEADED GAS	10000-19999 GALLONS	6
WHITE CENTER TIRE AND TEX	1505 SW ROXBURY ST	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	6
WHITE CENTER TIRE AND TEX	1505 SW ROXBURY ST	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	6
WHITE CENTER TIRE AND TEX	1505 SW ROXBURY ST	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	6
WHITE CENTER TIRE AND TEX	1505 SW ROXBURY ST	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	6
SEATTLE FIRE STATION 11	1514 SOUTH WEST HOLDEN ST	SEATTLE	DIESEL FUEL	111-1100 GALLONS	20
ARCO 5515	15252 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	5
ARCO 5515	15252 PACIFIC HIGHWAY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	5
ARCO 5515	15252 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	5
WASHINGTON STATE PATROL-S	15666 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
CROMBIES CHEVRON	15804 DES MOINES WY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	6
CROMBIES CHEVRON	15804 DES MOINES WY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	6
CROMBIES CHEVRON	15804 DES MOINES WY S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	6
CROMBIES CHEVRON	15804 DES MOINES WY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	6
BP 11048	15846-1ST AVE S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
BP 11048	15846-1ST AVE S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	10
BP 11048	15846-1ST AVE S	SEATTLE	LEADED GAS	10000-19999 GALLONS	10
DOLLAR RENT A CAR	15858 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	2
WILLIES TEXACO	15939 DES MOINES WAY S	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	15
WILLIES TEXACO	15939 DES MOINES WAY S	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	15
WILLIES TEXACO	15939 DES MOINES WAY S	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	15
CITYWIDE HORTICULUTRE	1600 S DAKOTA STREET	SEATTLE	UNLEADED GAS	1101-2000 GALLONS	3
CITYWIDE HORTICULUTRE	1600 S DAKOTA STREET	SEATTLE	DIESEL FUEL	111-1100 GALLONS	3
BOEING SOUTH PARK	1600 SOUTH HENDERSON	SEATTLE	DIESEL FUEL	111-1100 GALLONS	8
RENTAL MART	16055 PACIFIC HWY S	SEATTLE	LEADED GAS		25
WILLIES TEXACO	16402 MILITARY RD S	SEATTLE	LEADED GAS	2001-4999 GALLONS	10
WILLIES TEXACO	16402 MILITARY RD S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	10
WILLIES TEXACO	16402 MILITARY RD S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
WILLIES TEXACO	16402 MILITARY RD S	SEATTLE	LEADED GAS	2001-4999 GALLONS	10
WASHINGTON MEML PK & MORT	16445 PACIFIC HWY S	SEATTLE	UNLEADED GAS	111-1100 GALLONS	32
WASHINGTON MEML PK & MORT	16445 PACIFIC HWY S	SEATTLE	LEADED GAS	111-1100 GALLONS	32
BP 03166	16850 INTERNATIONAL BLVD	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	3
BP 03166	16850 INTERNATIONAL BLVD	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	3
BP 03166	16850 INTERNATIONAL BLVD	SEATTLE	LEADED GAS	10000-19999 GALLONS	3
BP 03166	16850 INTERNATIONAL BLVD	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	3
EARL MINARD	17010 PACIFIC HWY S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	3
EARL MINARD	17010 PACIFIC HWY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	3
EARL MINARD	17010 PACIFIC HWY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	3
EARL MINARD	17010 PACIFIC HWY S	SEATTLE	LEADED GAS	5000-9999 GALLONS	3
EARL MINARD	17010 PACIFIC HWY S	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	3
WEYERHAEUSER COMPANY	17590 STARLING DRIVE	[illegible]			

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
WEYERHAEUSER COMPANY	17590 STARLING DRIVE	SEATTLE	UNLEADED GAS		11
WEYERHAEUSER COMPANY	17590 STARLING DRIVE	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	11
WEYERHAEUSER COMPANY	17590 STARLING DRIVE	SEATTLE	AVIATION FUEL	10000-19999 GALLONS	11
DOLLAR RENT A CAR	17600 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
DOLLAR RENT A CAR	17600 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
CIRCLE K STORE # 1991	17700 AMBAUM BLVD	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	5
CIRCLE K STORE # 1991	17700 AMBAUM BLVD	SEATTLE	LEADED GAS	10000-19999 GALLONS	5
CIRCLE K STORE # 1991	17700 AMBAUM BLVD	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	5
ALAMO RENT-A-CAR INC	17801 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	2
BUDGET RENT-A-CAR	17808 PACIFIC HIGHWAY S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	29
BUDGET RENT-A-CAR	17808 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
BUDGET RENT-A-CAR	17808 PACIFIC HIGHWAY S	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	29
H.S.D. 401 TRANSPORTATION	17910 8TH AVE S.	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	32
H.S.D. 401 TRANSPORTATION	17910 8TH AVE S.	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	32
H.S.D. 401 TRANSPORTATION	17910 8TH AVE S.	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	19
H.S.D. 401 TRANSPORTATION	17910 8TH AVE S.	SEATTLE	LEADED GAS	10000-19999 GALLONS	19
H.S.D. 401 TRANSPORTATION	17910 8TH AVE S.	SEATTLE	LEADED GAS	10000-19999 GALLONS	19
WAYNE ROUSHS SERVICE CNTR	18032 1ST AVENUE S	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	20
WAYNE ROUSHS SERVICE CNTR	18032 1ST AVENUE S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	15
WAYNE ROUSHS SERVICE CNTR	18032 1ST AVENUE S	SEATTLE	UNLEADED GAS		20
WAYNE ROUSHS SERVICE CNTR	18032 1ST AVENUE S	SEATTLE	LEADED GAS	5000-9999 GALLONS	15
WAYNE ROUSHS SERVICE CNTR	18032 1ST AVENUE S	SEATTLE	UNLEADED GAS		15
CHEVRON 92259	18514 PACIFIC HWY S	SEATTLE	USED/WASTE OIL		20
CHEVRON 92259	18514 PACIFIC HWY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
CHEVRON 92259	18514 PACIFIC HWY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	20
RAINIER GOLF AND COUNTRY	1856 S 112TH	SEATTLE	UNLEADED GAS	111-1100 GALLONS	7
RAINIER GOLF AND COUNTRY	1856 S 112TH	SEATTLE	UNLEADED GAS	111-1100 GALLONS	7
SEA-TAC SOC 070797	18800 DES MOINES WAY	SEATTLE	UNLEADED GAS	000-9999 GALLONS	14
SEA-TAC SOC 070797	18800 DES MOINES WAY	SEATTLE	UNLEADED GAS	0000-19999 GALLONS	21
AVIS RENT A CAR	18811 16TH AVE S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	1
THRIFTY RENT-A-CAR	18836 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	25
SEA-TAC DISTRIBUTION CTR	1900 S 146 STREET	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	8
BUDGET RENT-A-CAR	19030-28TH AVENUE S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	8
BUDGET RENT-A-CAR	19030-28TH AVENUE S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	8
NATIONAL CAR RENTAL	19707 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	13
NATIONAL CAR RENTAL	19707 PACIFIC HIGHWAY S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	13
NATIONAL CAR RENTAL	19707 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	13
NATIONAL CAR RENTAL	19707 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	13
NATIONAL CAR RENTAL	19707 PACIFIC HIGHWAY S	SEATTLE	OTHER	111-1100 GALLONS	13
NATIONAL CAR RENTAL	19707 PACIFIC HIGHWAY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	13
CHEVRON 94411	19923 PAC HWY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	20
CHEVRON 94411	19923 PAC HWY S	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
CHEVRON 94411	19923 PAC HWY S	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	20
CHEVRON 94411	19923 PAC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	20
BP 11255	19924 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
BP 11255	19924 PACIFIC HWY S	SEATTLE	LEADED GAS	5000-9999 GALLONS	10
BP 11255	19924 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
THE SOUTHLAND CORPORATION	20008 PACIFIC HWY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	7
THE SOUTHLAND CORPORATION	20008 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	7
THE SOUTHLAND CORPORATION	20008 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	7

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
CLEARWATER AND CO INC	20220 PACIFIC HIGHWAY S	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	4
ALAMO RENT A CAR INC	20636 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	4
SEATTLE FIRE STATION 29	2139 FERRY AVE SOUTH WEST	SEATTLE	DIESEL FUEL	111-1100 GALLONS	20
THE SOUTHLAND CORP. 2322-	21415 PACIFIC HWY S	SEATTLE	LEADED GAS	10000-19999 GALLONS	12
THE SOUTHLAND CORP. 2322-	21415 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	12
THE SOUTHLAND CORP. 2322-	21415 PACIFIC HWY S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	12
PETERSEN NORTHWEST CORP	21841 PACIFIC HWAY S	SEATTLE	DIESEL FUEL	1101-2000 GALLONS	37
PETERSEN NORTHWEST CORP	21841 PACIFIC HWAY S	SEATTLE	UNLEADED GAS	1101-2000 GALLONS	37
GAI'S SEATTLE FRENCH BAKI	23012 MILITARY ROAD S	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	11
BESCO ROOFING INC	233 S HOLDEN STREET	SEATTLE	LEADED GAS	111-1100 GALLONS	6
BESCO ROOFING INC	233 S HOLDEN STREET	SEATTLE	LEADED GAS	111-1100 GALLONS	6
ROYAL HYWAY TOURS	255 SOUTH HOLDEN ST.	SEATTLE	UNLEADED GAS	111-1100 GALLONS	23
ROYAL HYWAY TOURS	255 SOUTH HOLDEN ST.	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	23
FLT OPS/ADMIN & TRAININGAS	2651 SO 192ND STREET	SEATTLE	DIESEL FUEL	111-1100 GALLONS	8
U.S. POSTAL SERVICE	2721 S.W. TRENTON ST.	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	2
TERMINAL 5	2805 26TH AVENUE SW	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	29
TEXACO STATION	2805 SW ROXBURY AVE	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	5
TEXACO STATION	2805 SW ROXBURY AVE	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	5
TEXACO STATION	2805 SW ROXBURY AVE	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	5
TEXACO STATION	2805 SW ROXBURY AVE	SEATTLE	LEADED GAS	10000-19999 GALLONS	5
BP 03142	2841 SO 188TH	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	22
BP 03142	2841 SO 188TH	SEATTLE	LEADED GAS	10000-19999 GALLONS	22
BP 03142	2841 SO 188TH	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	22
BP 03142	2841 SO 188TH	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	22
BP 03117	2851 SW ROXBURY	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
BP 03117	2851 SW ROXBURY	SEATTLE	LEADED GAS	5000-9999 GALLONS	10
BP 03117	2851 SW ROXBURY	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
BP 03117	2851 SW ROXBURY	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	10
COMMUNICATIONS SOUTH TWR	35TH SW & SW MYRTLE ST	SEATTLE	UNLEADED GAS	111-1100 GALLONS	32
WEST SEATTLE GOLF COURSE	35TH SW & SW SNOQUALMIE	SEATTLE	LEADED GAS	111-1100 GALLONS	11
WEST SEATTLE GOLF COURSE	35TH SW & SW SNOQUALMIE	SEATTLE	OTHER	111-1100 GALLONS	11
INCO EXPRESS INC.	3600 SOUTH 124TH	SEATTLE	UNLEADED GAS	2001-4999	20
INCO EXPRESS INC.	3600 SOUTH 124TH	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	20
INCO EXPRESS INC.	3600 SOUTH 124TH	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	15
INCO EXPRESS INC.	3600 SOUTH 124TH	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	20
SEATTLE FIRE STATION 32	3715 SOUTH WEST ALASKA ST	SEATTLE	DIESEL FUEL	111-1100 GALLONS	25
PUMP STATION #14	3716 SW 170TH	SEATTLE	HEATING FUEL	111-1100 GALLONS	15
THE SOUTHLAND CORP. 2322-	3801 CALIFORNIA AVE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
THE SOUTHLAND CORP. 2322-	3801 CALIFORNIA AVE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
THE SOUTHLAND CORP. 2322-	3801 CALIFORNIA AVE SW	SEATTLE	LEADED GAS	10000-19999 GALLONS	10
GENERAL CONSTRUCTION CO	3838 W MARGINAL WAY SW	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	20
GENERAL CONSTRUCTION CO	3838 W MARGINAL WAY SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
GENERAL CONSTRUCTION CO	3838 W MARGINAL WAY SW	SEATTLE	LEADED GAS	111-1100 GALLONS	20
QUIK 24	3901 SW ALASKA STREET	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	10
QUIK 24	3901 SW ALASKA STREET	SEATTLE	DIESEL FUEL	50000+ GALLONS	10
QUIK 24	3901 SW ALASKA STREET	SEATTLE	LEADED GAS	10000-19999 GALLONS	10
QUIK 24	3901 SW ALASKA STREET	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	10
PRECISION TUNE	4000 SW ALASKA STREET	SEATTLE	OTHER	111-1100 GALLONS	6
PRECISION TUNE	4000 SW ALASKA STREET	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	6
PRECISION TUNE	4000 SW ALASKA STREET	SEATTLE	OTHER	111-1100 GALLONS	-

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
JACKPOT #235	4001 CALIFORNIA AVE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	27
JACKPOT #235	4001 CALIFORNIA AVE SW	SEATTLE		10000-19999 GALLONS	27
DON OLSON	4026 MARINE VIEW DRIVE	SEATTLE	LEADED GAS	1101-2000 GALLONS	29
RICHARD J BARNECUT	4100 SW ADMIRAL WAY	SEATTLE	LEADED GAS	111-1100 GALLONS	32
RICHARD J BARNECUT	4100 SW ADMIRAL WAY	SEATTLE	LEADED GAS	111-1100 GALLONS	32
RICHARD J BARNECUT	4100 SW ADMIRAL WAY	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	27
RICHARD J BARNECUT	4100 SW ADMIRAL WAY	SEATTLE	KEROSENE	111-1100 GALLONS	32
RICHARD J BARNECUT	4100 SW ADMIRAL WAY	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	27
RICHARD J BARNECUT	4100 SW ADMIRAL WAY	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	32
RICHARD J BARNECUT	4100 SW ADMIRAL WAY	SEATTLE	DIESEL FUEL	111-1100 GALLONS	32
EXPRESS FUEL STOP INC	4115 SW ADMIRAL WAY	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	11
EXPRESS FUEL STOP INC	4115 SW ADMIRAL WAY	SEATTLE	LEADED GAS	10000-19999 GALLONS	11
EXPRESS FUEL STOP INC	4115 SW ADMIRAL WAY	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	11
RASMUSSEN EQUIPMENT CO	415 SOUTH CLOVERDALE ST	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	14
RASMUSSEN EQUIPMENT CO	415 SOUTH CLOVERDALE ST	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	14
THE SOUTHLAND CORP. 2322-	4415-22 35TH SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	13
THE SOUTHLAND CORP. 2322-	4415-22 35TH SW	SEATTLE	LEADED GAS	10000-19999 GALLONS	13
THE SOUTHLAND CORP. 2322-	4415-22 35TH SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	13
WEST CO 070297	4427 CALIFORNIA AVE SW	SEATTLE	DIESEL FUEL	1101-2000 GALLONS	29
ACE CONSTRUCTION	4446 S 131ST PL	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	15
WEST FUEL CO	4455 35 AVE SW	SEATTLE	LEADED GAS	2001-4999 GALLONS	15
WEST FUEL CO	4455 35 AVE SW	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	20
WEST FUEL CO	4455 35 AVE SW	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	20
MIDAS MUFFLER & BRAKE	4457 FAUNTLEROY AVE SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	25
BP 11060	4580 FAUNTLEROY WAY SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	8
BP 11060	4580 FAUNTLEROY WAY SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	8
BP 11060	4580 FAUNTLEROY WAY SW	SEATTLE	LEADED GAS	5000-9999 GALLONS	8
BP 11060	4580 FAUNTLEROY WAY SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	8
BP 03136	4603 SO 188TH	SEATTLE	LEADED GAS	10000-19999 GALLONS	29
BP 03136	4603 SO 188TH	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
BP 03136	4603 SO 188TH	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
STARROW ENTERPRISES	4611 S 134TH PL	SEATTLE		5000-9999 GALLONS	15
COURTESY TIRE	4820 CALIFORNIA AVE SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	6
JACKPOT #247	5235 DELRIDGE WAY	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	7
JACKPOT #247	5235 DELRIDGE WAY	SEATTLE	LEADED GAS	10000-19999 GALLONS	7
JACKPOT #247	5235 DELRIDGE WAY	SEATTLE	LEADED GAS	10000-19999 GALLONS	7
MARINE LUMBER SERVICE INC	525 SOUTH CHICAGO ST.	SEATTLE	LEADED GAS	1101-2000 GALLONS	11
MARINE LUMBER SERVICE INC	525 SOUTH CHICAGO ST.	SEATTLE	UNLEADED GAS	1101-2000 GALLONS	11
MARINE LUMBER SERVICE INC	525 SOUTH CHICAGO ST.	SEATTLE	LEADED GAS	1101-2000 GALLONS	11
MARINE LUMBER SERVICE INC	525 SOUTH CHICAGO ST.	SEATTLE	LEADED GAS	111-1100 GALLONS	20
HOLNAM INC	5400 W MARGINAL WAY SW	SEATTLE	UNLEADED GAS	111-1100 GALLONS	29
HOLNAM INC	5400 W MARGINAL WAY SW	SEATTLE	DIESEL FUEL	1101-2000 GALLONS	29
DUWAMISH SHIPYARD INC	5658 WEST MARGINAL WAY SW	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	15
DUWAMISH SHIPYARD INC	5658 WEST MARGINAL WAY SW	SEATTLE	DIESEL FUEL	2001-4999 GALLONS	15
DUWAMISH SHIPYARD INC	5658 WEST MARGINAL WAY SW	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	15
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	AVIATION FUEL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	DIESEL FUEL	111-1100 GALLONS	

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	20
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	AVIATION FUEL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	AVIATION FUEL	2001-4999 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	UNLEADED GAS	111-1100 GALLONS	15
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	AVIATION FUEL	2001-4999 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	AVIATION FUEL	2001-4999 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	AVIATION FUEL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	AVIATION FUEL	111-1100 GALLONS	25
CC S SEATTLE COMMUNITY	6000 16TH AVE SW	SEATTLE	LEADED GAS	111-1100 GALLONS	15
TERMINAL 115	6020-6730 W. MARGINAL WAY	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	20
TERMINAL 115	6020-6730 W. MARGINAL WAY	SEATTLE	DIESEL FUEL	1101-2000 GALLONS	20
SELLAND AUTO TRANSPORT	615 SOUTH 96TH	SEATTLE	UNLEADED GAS	1101-2000 GALLONS	11
SELLAND AUTO TRANSPORT	615 SOUTH 96TH	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	11
HANS TEXACO	6302 35TH SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	29
HANS TEXACO	6302 35TH SW	SEATTLE	UNLEADED GAS	2001-4999 GALLONS	29
HANS TEXACO	6302 35TH SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	29
HANS TEXACO	6302 35TH SW	SEATTLE	DIESEL FUEL	2001-4999 GALLONS	29
SOUTH SEATTLE MARKET	6352 35TH AVENUE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	5
SOUTH SEATTLE MARKET	6352 35TH AVENUE SW	SEATTLE	LEADED GAS	10000-19999 GALLONS	5
SOUTH SEATTLE MARKET	6352 35TH AVENUE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	5
AL BOLSER TIRE STORES	6515 WEST MARGINAL WAY SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	7
WHAJIN & KYUNG HEE KIM	6540 CALIFORNIA AVE SW	SEATTLE	LEADED GAS	2001-4999 GALLONS	4
WHAJIN & KYUNG HEE KIM	6540 CALIFORNIA AVE SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
WHAJIN & KYUNG HEE KIM	6540 CALIFORNIA AVE SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	20
JERRY & RICHARD DISHNEAU	7132 DELRIDGE WAY SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	17
JERRY & RICHARD DISHNEAU	7132 DELRIDGE WAY SW	SEATTLE	LEADED GAS	5000-9999 GALLONS	23
JERRY & RICHARD DISHNEAU	7132 DELRIDGE WAY SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	17
WASTE MANAGEMENT OF SEA	7201 W MARGINAL WAY SW	SEATTLE	DIESEL FUEL	20000-29999 GALLONS	20
WASTE MANAGEMENT OF SEA	7201 W MARGINAL WAY SW	SEA LE	DIESEL FUEL	10000-19999 GALLONS	20
WASTE MANAGEMENT OF SEA	7201 W MARGINAL WAY SW	SEA LE	DIESEL FUEL	10000-19999 GALLONS	15
JONES WASHINGTON STEVEDOR	7245 W. MARGINAL WAY S.W.	SEATTLE	DIESEL FUEL	10000-19999 GALLONS	11
JONES WASHINGTON STEVEDOR	7245 W. MARGINAL WAY S.W.	SEATTLE	LEADED GAS	10000-19999 GALLONS	11
JONES WASHINGTON STEVEDOR	7245 W. MARGINAL WAY S.W.	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	11
SEATTLE FIRE STATION 37	7300 35TH AVE SOUTHWEST	SEATTLE	UNLEADED GAS	111-1100 GALLONS	25
LINCOLN PARK #86	7367 47TH AV SW	SEATTLE	UNLEADED GAS	111-1100 GALLONS	8
LINCOLN PARK #86	7367 47TH AV SW	SEATTLE	DIESEL FUEL	111-1100 GALLONS	32
WEBB, JW ENT/LINCOLN PARK	7427 FAUNTLEROY WAY S.W.	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	25
WEBB, JW ENT/LINCOLN PARK	7427 FAUNTLEROY WAY S.W.	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	11
WEBB, JW ENT/LINCOLN PARK	7427 FAUNTLEROY WAY S.W.	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	25
HEGGE CHEVRON	7580 35TH SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	29
HEGGE CHEVRON	7580 35TH SW	SEATTLE	LEADED GAS	5000-9999 GALLONS	29
HEGGE CHEVRON	7580 35TH SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
SEATTLE FIRE STATION 26	800 SOUTH CLOVERDALE ST	SEATTLE	DIESEL FUEL	111-1100 GALLONS	15
LEE'S SANITATION SERVICE	849 SO 164TH P.O.BOX 6653	SEATTLE	DIESEL FUEL	111-1100 GALLONS	11
LEE'S SANITATION SERVICE	849 SO 164TH P.O.BOX 6653	SEATTLE	DIESEL FUEL	111-1100 GALLONS	11
LEE'S SANITATION SERVICE	849 SO 164TH P.O.BOX 6653	SEATTLE	DIESEL FUEL	111-1100 GALLONS	11
LEE'S SANITATION SERVICE	849 SO 164TH P.O.BOX 6653	SEATTLE	UNLEADED GAS	111-1100 GALLONS	11
LEE'S SANITATION SERVICE	849 SO 164TH P.O.BOX 6653	SEATTLE	DIESEL FUEL	111-1100 GALLONS	11

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
CHEVRON 98473	28806 MILITARY RD S	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	11
CHEVRON 98473	28806 MILITARY RD S	FEDERAL WA	LEADED GAS	5000-9999 GALLONS	11
DON DIVELBISS	28806 PACIFIC HWY S	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	8
DON DIVELBISS	28806 PACIFIC HWY S	FEDERAL WA	LEADED GAS	5000-9999 GALLONS	8
DON DIVELBISS	28806 PACIFIC HWY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	8
DON DIVELBISS	28806 PACIFIC HWY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	8
SUSAN HARRANG	30509 PACIFIC HIGHWAY S	FEDERAL WA	USED/WASTE OIL	1101-2000 GALLONS	15
ORIENTAL GARDEN CENTER	30650 PACIFIC HIGHWAY S	FEDERAL WA	KEROSENE	111-1100 GALLONS	8
ORIENTAL GARDEN CENTER	30650 PACIFIC HIGHWAY S	FEDERAL WA	UNLEADED GAS	111-1100 GALLONS	8
CHEVRON 98538	31204 PACIFIC HWY S	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	8
CHEVRON 98538	31204 PACIFIC HWY S	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	8
CHEVRON 98538	31204 PACIFIC HWY S	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	8
CHEVRON 98538	31204 PACIFIC HWY S	FEDERAL WA	LEADED GAS	5000-9999 GALLONS	8
SUDS & CLEAN	31458 PACIFIC HWY S	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	20
SUDS & CLEAN	31458 PACIFIC HWY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	20
SUDS & CLEAN	31458 PACIFIC HWY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	20
KING COUNTY FIRE DISTRICT	31617 1ST AVE S	FEDERAL WA	DIESEL FUEL	2001-4999 GALLONS	15
KING COUNTY FIRE DISTRICT	31617 1ST AVE S	FEDERAL WA	UNLEADED GAS	2001-4999 GALLONS	15
KING COUNTY FIRE DISTRICT	31617 1ST AVE S	FEDERAL WA	UNLEADED GAS	2001-4999 GALLONS	15
SEA TAC TIRE CO	31629 PACIFIC HY S	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	15
AL WILEY	31660 PACIFIC HIGHWAY S	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	23
AL WILEY	31660 PACIFIC HIGHWAY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	25
AL WILEY	31660 PACIFIC HIGHWAY S	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	25
AL WILEY	31660 PACIFIC HIGHWAY S	FEDERAL WA	LEADED GAS	5000-9999 GALLONS	25
ARCO 5243	31855 PACIFIC HIGHWAY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	7
ARCO 5243	31855 PACIFIC HIGHWAY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	7
ARCO 5243	31855 PACIFIC HIGHWAY S	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	7
FIRE STATION 1	3203 SO 360TH ST	FEDERAL WA	DIESEL FUEL	2001-4999 GALLONS	15
FIRE STATION 1	3203 SO 360TH ST	FEDERAL WA	UNLEADED GAS	2001-4999 GALLONS	15
FIRESTONE #3192	32529 PACIFIC HWY S	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	7
MINIT-LUBE #1512	32836 PACIFIC HWY S	FEDERAL WA	OTHER	5000-9999 GALLONS	6
MINIT-LUBE #1512	32836 PACIFIC HWY S	FEDERAL WA	OTHER	2001-4999 GALLONS	6
MINIT-LUBE #1512	32836 PACIFIC HWY S	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	6
REINHARD DIST CO INC	33101 PAC HWY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	29
REINHARD DIST CO INC	33101 PAC HWY S	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	29
REINHARD DIST CO INC	33101 PAC HWY S	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	29
REINHARD DIST CO INC	33101 PAC HWY S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	29
GREASE MONKEY	33505 21ST AVENUE SW	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	4
BP 11047	33520 21ST AVE SW	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	9
BP 11047	33520 21ST AVE SW	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	9
BP 11047	33520 21ST AVE SW	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	9
BP 11047	33520 21ST AVE SW	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	9
CORPORATE HEADQUARTERS	33663 32ND DR S	FEDERAL WA	LEADED GAS		32
BP 11046	33800 1ST AVE S	FEDERAL WA	USED/WASTE OIL	2001-4999 GALLONS	12
BP 11046	33800 1ST AVE S	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	12
BP 11046	33800 1ST AVE S	FEDERAL WA	LEADED GAS	5000-9999 GALLONS	11
BP 11046	33800 1ST AVE S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	12
BP 11046	33800 1ST AVE S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	12
SEATTLE BULK MAIL CENTER	34301 9TH AVE S	FEDERAL WA	DIESEL FUEL	2001-4999 GALLONS	1
SEATTLE BULK MAIL CENTER	34301 9TH AVE S	FEDERAL WA	UNLEADED GAS	2001-4999 GALLONS	

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
THE SOUTHLAND CORP. 2322-	104 SW 312TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	9
THE SOUTHLAND CORP. 2322-	104 SW 312TH	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	9
THE SOUTHLAND CORP. 2322-	104 SW 312TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	9
FEDERAL WAY SCHOOL DIST.	1066 SO. 320TH ST.	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	20
FEDERAL WAY SCHOOL DIST.	1066 SO. 320TH ST.	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	20
FEDERAL WAY SCHOOL DIST.	1066 SO. 320TH ST.	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	20
BROADWAY TRUCK STOPS	1511 S 348TH	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	4
BROADWAY TRUCK STOPS	1511 S 348TH	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	4
BROADWAY TRUCK STOPS	1511 S 348TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	4
BROADWAY TRUCK STOPS	1511 S 348TH	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	4
BROADWAY TRUCK STOPS	1511 S 348TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	4
DON DIVELBLISS	1520 348 TH S E	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	5
DON DIVELBLISS	1520 348 TH S E	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	5
DON DIVELBLISS	1520 348 TH S E	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	5
DON DIVELBLISS	1520 348 TH S E	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	5
SEARS ROEBUCK & CO	1701 S 320TH ST	FEDERAL WA	USED/WASTE OIL		20
FEDERATED DEPT STORES INC	1901 SOUTH SEA-TAC MALL	FEDERAL WA	DIESEL FUEL	111-1100 GALLONS	15
EVERGONE, INC.	1910 SOUTH 344TH STREET	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	3
BP 03160	2100 SW 356TH	FEDERAL WA	LEADED GAS	5000-9999 GALLONS	6
BP 03160	2100 SW 356TH	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	6
BP 03160	2100 SW 356TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	6
BP 03160	2100 SW 356TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	6
BP 03160	2100 SW 356TH	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	6
LLOYD ENTERPRISES INC	2102 S 341ST	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	6
LLOYD ENTERPRISES INC	2102 S 341ST	FEDERAL WA	UNLEADED GAS	2001-4999 GALLONS	6
LLOYD ENTERPRISES INC	2102 S 341ST	FEDERAL WA	DIESEL FUEL	1101-2000 GALLONS	6
ROADRUNNER DELI & GROCERY	2121 SW 356TH	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	11
ROADRUNNER DELI & GROCERY	2121 SW 356TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	11
ROADRUNNER DELI & GROCERY	2121 SW 356TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	11
ARCO 5241	2202 SOUTH 320TH ST	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 5241	2202 SOUTH 320TH ST	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 5241	2202 SOUTH 320TH ST	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	29
ARCO 5241	2202 SOUTH 320TH ST	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	2
BP 11050	2535 SOUTH 320TH/I-5	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	10
BP 11050	2535 SOUTH 320TH/I-5	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	10
BP 11050	2535 SOUTH 320TH/I-5	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	10
BP 11050	2535 SOUTH 320TH/I-5	FEDERAL WA	DIESEL FUEL	10000-19999 GALLONS	10
CIRCLE K STORE #8603	27121 MILITARY ROAD S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	6
CIRCLE K STORE #8603	27121 MILITARY ROAD S	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	6
CIRCLE K STORE #8603	27121 MILITARY ROAD S	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	6
BP 11068	28718 MILITARY RD/288TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	29
BP 11068	28718 MILITARY RD/288TH	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	23
BP 11068	28718 MILITARY RD/288TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	29
BP 11068	28718 MILITARY RD/288TH	FEDERAL WA	UNLEADED GAS	10000-19999 GALLONS	23
BP 11068	28718 MILITARY RD/288TH	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	29
BP 11068	28718 MILITARY RD/288TH	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	21
BP 11068	28718 MILITARY RD/288TH	FEDERAL WA	LEADED GAS	10000-19999 GALLONS	29
BP 11068	28718 MILITARY RD/288TH	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	23
CHEVRON 98473	28806 MILITARY RD S	FEDERAL WA	UNLEADED GAS	5000-9999 GALLONS	11
CHEVRON 98473	28806 MILITARY RD S	FEDERAL WA	USED/WASTE OIL	111-1100 GALLONS	11

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
ABC RENTALS INC	13602 AMBAUM BLVD SW	BURIEN	DIESEL FUEL	111-1100 GALLONS	25
USA PETROLEUM CORPORATION	303-A SW 148TH	BURIEN	UNLEADED GAS	10000-19999 GALLONS	29
USA PETROLEUM CORPORATION	303-A SW 148TH	BURIEN	LEADED GAS	10000-19999 GALLONS	29
USA PETROLEUM CORPORATION	303-A SW 148TH	BURIEN	UNLEADED GAS	20000-29999 GALLONS	29
BURIEN	8TH AVE S & DES MOINES WA	BURIEN	UNLEADED GAS	10000-19999 GALLONS	32
BURIEN	8TH AVE S & DES MOINES WA	BURIEN	LEADED GAS	10000-19999 GALLONS	32
BURIEN	8TH AVE S & DES MOINES WA	BURIEN	DIESEL FUEL	10000-19999 GALLONS	32
TEXACO STATION	21449 PACIFIC HWY SOUTH	DES MOINES	LEADED GAS	10000-19999 GALLONS	7
TEXACO STATION	21449 PACIFIC HWY SOUTH	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	7
TEXACO STATION	21449 PACIFIC HWY SOUTH	DES MOINES	UNLEADED GAS	5000-9999 GALLONS	7
E-Z MART	21620 MARINE VIEW DR S	DES MOINES	LEADED GAS	10000-19999 GALLONS	15
E-Z MART	21620 MARINE VIEW DR S	DES MOINES	UNLEADED GAS	5000-9999 GALLONS	15
R P ESLEY	22026 MARINE VIEW DRIVE	DES MOINES	LEADED GAS	10000-19999 GALLONS	7
R P ESLEY	22026 MARINE VIEW DRIVE	DES MOINES	USED/WASTE OIL	111-1100 GALLONS	7
R P ESLEY	22026 MARINE VIEW DRIVE	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	7
R P ESLEY	22026 MARINE VIEW DRIVE	DES MOINES	DIESEL FUEL	5000-9999 GALLONS	7
R P ESLEY	22026 MARINE VIEW DRIVE	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	7
DES MOINES MARINA	22307 DOCK AVE. S	DES MOINES	LEADED GAS	5000-9999 GALLONS	25
DES MOINES MARINA	22307 DOCK AVE. S	DES MOINES	DIESEL FUEL	5000-9999 GALLONS	25
DES MOINES MARINA	22307 DOCK AVE. S	DES MOINES	LEADED GAS	10000-19999 GALLONS	25
DES MOINES MARINA	22307 DOCK AVE. S	DES MOINES	LEADED GAS	1101-2000 GALLONS	25
DES MOINES SERVICE CENTER	2255 S 223RD ST	DES MOINES	UNLEADED GAS	5000-9999 GALLONS	2
DES MOINES SERVICE CENTER	2255 S 223RD ST	DES MOINES	DIESEL FUEL	5000-9999 GALLONS	2
BROWN BEAR CARWASH	22706 MARINE VW DR S	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	29
BROWN BEAR CARWASH	22706 MARINE VW DR S	DES MOINES	LEADED GAS	5000-9999 GALLONS	29
BROWN BEAR CARWASH	22706 MARINE VW DR S	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	29
RON MC CLUNG	23031 PAC HWY S	DES MOINES	DIESEL FUEL	10000-19999 GALLONS	10
RON MC CLUNG	23031 PAC HWY S	DES MOINES	LEADED GAS	10000-19999 GALLONS	10
RON MC CLUNG	23031 PAC HWY S	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	10
RON MC CLUNG	23031 PAC HWY S	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	10
MIDAS MUFFLER/BRAKE SHOP	23100 PACIFIC HWY S	DES MOINES	USED/WASTE OIL	111-1100 GALLONS	29
DP FUELS INC.	23419 PACIFIC HIGHWAY S	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	9
DP FUELS INC.	23419 PACIFIC HIGHWAY S	DES MOINES	UNLEADED GAS	10000-19999 GALLONS	9
DP FUELS INC.	23419 PACIFIC HIGHWAY S	DES MOINES	LEADED GAS	10000-19999 GALLONS	9
DES MOINES CO 070087	802 S 223RD STREET	DES MOINES	DIESEL FUEL	1101-2000 GALLONS	36
PUMP STATION #11	16TH & SW 175TH	NORMANDY P	HEATING FUEL	111-1100 GALLONS	15

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
PALMER COKING COAL	31407 HWY. 169 / PO BOX 1	BLACK DIAM	DIESEL FUEL	10000-19999 GALLONS	20
PALMER COKING COAL	31407 HWY. 169 / PO BOX 1	BLACK DIAM	DIESEL FUEL	10000-19999 GALLONS	20
DIAMOND MART	32632 3RD AVE. SUITE A	BLACK DIAM	DIESEL FUEL	10000-19999 GALLONS	8
DIAMOND MART	32632 3RD AVE. SUITE A	BLACK DIAM	LEADED GAS	10000-19999 GALLONS	8
DIAMOND MART	32632 3RD AVE. SUITE A	BLACK DIAM	UNLEADED GAS	10000-19999 GALLONS	8
HAROLD & BRIAN LEE	21641 MAPLE VALLEY HWY	MAPLE VALL	UNLEADED GAS	10000-19999 GALLONS	29
HAROLD & BRIAN LEE	21641 MAPLE VALLEY HWY	MAPLE VALL	UNLEADED GAS	10000-19999 GALLONS	29
HAROLD & BRIAN LEE	21641 MAPLE VALLEY HWY	MAPLE VALL	DIESEL FUEL	10000-19999 GALLONS	29
HAROLD & BRIAN LEE	21641 MAPLE VALLEY HWY	MAPLE VALL	LEADED GAS	10000-19999 GALLONS	29
FRANK GOODWIN	22240 SE 272ND STREET	MAPLE VALL	UNLEADED GAS	5000-9999 GALLONS	6
FRANK GOODWIN	22240 SE 272ND STREET	MAPLE VALL	LEADED GAS	5000-9999 GALLONS	6
FRANK GOODWIN	22240 SE 272ND STREET	MAPLE VALL	UNLEADED GAS	5000-9999 GALLONS	6
SUMMIT	22801 SE 272 STREET	MAPLE VALL	DIESEL FUEL	10000-19999 GALLONS	27
SUMMIT	22801 SE 272 STREET	MAPLE VALL	UNLEADED GAS	10000-19999 GALLONS	27
CHEVRON 94283	23701 MAPLE VALLEY HWY	MAPLE VALL	USED/WASTE OIL		8
CHEVRON 94283	23701 MAPLE VALLEY HWY	MAPLE VALL	UNLEADED GAS	10000-19999 GALLONS	8
CHEVRON 94283	23701 MAPLE VALLEY HWY	MAPLE VALL	LEADED GAS	10000-19999 GALLONS	8
CHEVRON 94283	23701 MAPLE VALLEY HWY	MAPLE VALL	UNLEADED GAS	10000-19999 GALLONS	8
LIFT STATION #15	25331 WITTE ROAD SE	MAPLE VALL	DIESEL FUEL	111-1100 GALLONS	1
SHOP FAST	26804 MAPLE VY BLK-DIAMND	MAPLE VALL	LEADED GAS	10000-19999 GALLONS	12
SHOP FAST	26804 MAPLE VY BLK-DIAMND	MAPLE VALL	LEADED GAS	10000-19999 GALLONS	12
SHOP FAST	26804 MAPLE VY BLK-DIAMND	MAPLE VALL	UNLEADED GAS	10000-19999 GALLONS	12
BP 03144	26821 MAPLE VALLEY HWY	MAPLE VALL	LEADED GAS	5000-9999 GALLONS	7
BP 03144	26821 MAPLE VALLEY HWY	MAPLE VALL	UNLEADED GAS	5000-9999 GALLONS	7
BP 03144	26821 MAPLE VALLEY HWY	MAPLE VALL	UNLEADED GAS	10000-19999 GALLONS	7
BP 03144	26821 MAPLE VALLEY HWY	MAPLE VALL	USED/WASTE OIL		7
STUTH COMPANY INC	28620 MAPLE VALLEY RD. S.	MAPLE VALL	UNLEADED GAS	2001-4999 GALLONS	8
STUTH COMPANY INC	28620 MAPLE VALLEY RD. S.	MAPLE VALL	DIESEL FUEL	2001-4999 GALLONS	8
STUTH COMPANY INC	28620 MAPLE VALLEY RD. S.	MAPLE VALL	DIESEL FUEL	2001-4999 GALLONS	8

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
SOUTHCENTER TEXACO	501 TUKWILA PKWY	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	4
UNITED PARCEL SERVICE	550 ANDOVER PARK WEST	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	15
ARCO 6155	5800 SOUTHCENTER BLVD	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	15
ARCO 6155	5800 SOUTHCENTER BLVD	TUKWILA	UNLEADED GAS	5000-9999 GALLONS	20
ARCO 6155	5800 SOUTHCENTER BLVD	TUKWILA	UNLEADED GAS	5000-9999 GALLONS	20
ARCO 6155	5800 SOUTHCENTER BLVD	TUKWILA	LEADED GAS	5000-9999 GALLONS	20
TUKWILA PUBLIC WORKS	600 MINKLER BLVD	TUKWILA	DIESEL FUEL	2001-4999 GALLONS	20
TUKWILA PUBLIC WORKS	600 MINKLER BLVD	TUKWILA	UNLEADED GAS	2001-4999 GALLONS	20
TUKWILA PUBLIC WORKS	600 MINKLER BLVD	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	20
CITY HALL TUKWILA	6200 SOUTHCENTER BLVD.	TUKWILA	DIESEL FUEL	111-1100 GALLONS	15
DALLAS & MAVIS FORWARDING	6350 SOUTH 143RD STREET	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	20
DALLAS & MAVIS FORWARDING	6350 SOUTH 143RD STREET	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	20
DALLAS & MAVIS FORWARDING	6350 SOUTH 143RD STREET	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	20
DALLAS & MAVIS FORWARDING	6350 SOUTH 143RD STREET	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	20
WESTERN CASCADE TRUCK	6440 SOUTH 143RD STREET	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	11
WESTERN CASCADE TRUCK	6440 SOUTH 143RD STREET	TUKWILA	DIESEL FUEL	2001-4999 GALLONS	11
WESTERN CASCADE TRUCK	6440 SOUTH 143RD STREET	TUKWILA	DIESEL FUEL	2001-4999 GALLONS	11
WESTERN CASCADE TRUCK	6440 SOUTH 143RD STREET	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	11
BP OIL GAS SUPPLIER	15060 PAC. HWY S	TUKWILA	LEADED GAS	5000-9999 GALLONS	2
BP OIL GAS SUPPLIER	15060 PAC. HWY S	TUKWILA	UNLEADED GAS	5000-9999 GALLONS	2
BP OIL GAS SUPPLIER	15060 PAC. HWY S	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	2

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
GASOHOL	14004 PACIFIC HIGHWAY S	TUKWILA	USED/WASTE OIL		8
GASOHOL	14004 PACIFIC HIGHWAY S	TUKWILA	ALCOHOL BLEND	10000-19999 GALLONS	11
GASOHOL	14004 PACIFIC HIGHWAY S	TUKWILA	DIESEL FUEL	5000-9999 GALLONS	20
DANIEL BOONE PAINT CO INC	15701 NELSEN PLACE S	TUKWILA	HAZARDOUS	5000-9999 GALLONS	15
DANIEL BOONE PAINT CO INC	15701 NELSEN PLACE S	TUKWILA	HAZARDOUS	10000-19999 GALLONS	15
DANIEL BOONE PAINT CO INC	15701 NELSEN PLACE S	TUKWILA	HAZARDOUS	10000-19999 GALLONS	15
DANIEL BOONE PAINT CO INC	15701 NELSEN PLACE S	TUKWILA	HAZARDOUS	1101-2000 GALLONS	15
DANIEL BOONE PAINT CO INC	15701 NELSEN PLACE S	TUKWILA	HAZARDOUS	5000-9999 GALLONS	15
DANIEL BOONE PAINT CO INC	15701 NELSEN PLACE S	TUKWILA	HAZARDOUS	1101-2000 GALLONS	15
N C MACHINERY CO.	17025 WEST VALLEY HWY	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	2
CELLO BAG COMPANY, INC.	17100 WEST VALLEY HWY	TUKWILA	HAZARDOUS	2001-4999 GALLONS	2
VACANT	17202 SOUTHCENTER PKWY	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	15
RYDER TRUCK RENTAL INC	17850 WEST VALLEY HWY	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	15
RYDER TRUCK RENTAL INC	17850 WEST VALLEY HWY	TUKWILA	OTHER	5000-9999 GALLONS	15
RYDER TRUCK RENTAL INC	17850 WEST VALLEY HWY	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	15
RYDER TRUCK RENTAL INC	17850 WEST VALLEY HWY	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	15
RYDER TRUCK RENTAL INC	17850 WEST VALLEY HWY	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	15
RYDER TRUCK RENTAL INC	17850 WEST VALLEY HWY	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	15
RYDER TRUCK RENTAL INC	17850 WEST VALLEY HWY	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	15
RYDER TRUCK RENTAL INC	17850 WEST VALLEY HWY	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	15
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	OTHER	111-1100 GALLONS	13
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA			26
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	OTHER	111-1100 GALLONS	13
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	DIESEL FUEL	30000-49999 GALLONS	20
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA		111-1100 GALLONS	26
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	OTHER	2001-4999 GALLONS	29
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	OTHER	2001-4999 GALLONS	29
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	26
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	UNLEADED GAS	5000-9999 GALLONS	26
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	UNLEADED GAS	30000-49999 GALLONS	20
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA			26
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	OTHER	111-1100 GALLONS	13
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	26
M.A. SEGALE, INC.	18801 SOUTHCENTER PARKWAY	TUKWILA	OTHER	2001-4999 GALLONS	29
CHEVRON 91557	220 STRANDER BLVD	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	2
CHEVRON 91557	220 STRANDER BLVD	TUKWILA	USED/WASTE OIL		2
CHEVRON 91557	220 STRANDER BLVD	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	2
CHEVRON 91557	220 STRANDER BLVD	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	2
CHEVRON 91557	220 STRANDER BLVD	TUKWILA	LEADED GAS	10000-19999 GALLONS	2
TUKWILA FIRE STA. 51	444 ANDOVER PARK EAST	TUKWILA	DIESEL FUEL	111-1100 GALLONS	20
FARWEST PAINT MANUFACT	4522 SOUTH 133RD STREET	TUKWILA	OTHER	2001-4999 GALLONS	16
FARWEST PAINT MANUFACT	4522 SOUTH 133RD STREET	TUKWILA	DIESEL FUEL	5000-9999 GALLONS	16
FARWEST PAINT MANUFACT	4522 SOUTH 133RD STREET	TUKWILA	OTHER	2001-4999 GALLONS	16
FARWEST PAINT MANUFACT	4522 SOUTH 133RD STREET	TUKWILA	OTHER	2001-4999 GALLONS	16
FARWEST PAINT MANUFACT	4522 SOUTH 133RD STREET	TUKWILA	OTHER	2001-4999 GALLONS	16
FEDERATED DEPT STORES INC	500 SOUTHCENTER MALL	TUKWILA	OTHER	2001-4999 GALLONS	16
SOUTHCENTER TEXACO	501 TUKWILA PKWY	TUKWILA	DIESEL FUEL	111-1100 GALLONS	25
SOUTHCENTER TEXACO	501 TUKWILA PKWY	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	4
SOUTHCENTER TEXACO	501 TUKWILA PKWY	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	4
			LEADED GAS	10000-19999 GALLONS	4

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
AIRPORT DRAYAGE COMPANY	16215 AIRCARGO RD SEA-TAC	SEATAC	DIESEL FUEL	5000-9999 GALLONS	10
AIRPORT DRAYAGE COMPANY	16215 AIRCARGO RD SEA-TAC	SEATAC	UNLEADED GAS	5000-9999 GALLONS	10
U.S. POSTAL SERVICE	16601 AIR CARGO RD.	SEATAC	UNLEADED GAS	5000-9999 GALLONS	29
BUDGET RENT-A-CAR OF WASH	17801 INTERNATIONAL BLVD	SEATAC	UNLEADED GAS	10000-19999 GALLONS	2
HERTZ RENT A CAR	18625 DES MOINES WAY	SEATAC	UNLEADED GAS	20000-29999 GALLONS	11
HERTZ RENT A CAR	18625 DES MOINES WAY	SEATAC	OTHER	1101-2000 GALLONS	11
HERTZ RENT A CAR	18625 DES MOINES WAY	SEATAC	UNLEADED GAS	20000-29999 GALLONS	11
HERTZ RENT A CAR	18625 DES MOINES WAY	SEATAC	USED/WASTE OIL	1101-2000 GALLONS	11
HANGAR BUILDING	18650 ALASKA SERVICE RD	SEATAC	UNLEADED GAS	5000-9999 GALLONS	11
HANGAR BUILDING	18650 ALASKA SERVICE RD	SEATAC	USED/WASTE OIL	1101-2000 GALLONS	11
HANGAR BUILDING	18650 ALASKA SERVICE RD	SEATAC	HAZARDOUS	111-1100 GALLONS	8
HANGAR BUILDING	18650 ALASKA SERVICE RD	SEATAC	LEADED GAS	5000-9999 GALLONS	11
HANGAR BUILDING	18650 ALASKA SERVICE RD	SEATAC	HAZARDOUS	10000-19999 GALLONS	8
DELTA AIR LINES	18753 28 AVENUE SOUTH	SEATAC	AVIATION FUEL	50000+ GALLONS	32
DELTA AIR LINES	18753 28 AVENUE SOUTH	SEATAC	AVIATION FUEL	20000-29999 GALLONS	32
DELTA AIR LINES	18753 28 AVENUE SOUTH	SEATAC	AVIATION FUEL	20000-29999 GALLONS	32
ADVANTAGE RENT A CAR	21104 PACIFIC HWY S	SEATAC	UNLEADED GAS	10000-19999 GALLONS	1
FEDERAL EXPRESS CORP	2450 S 161 ST	SEATAC	UNLEADED GAS	5000-9999 GALLONS	15
FEDERAL EXPRESS CORP	2450 S 161 ST	SEATAC	DIESEL FUEL	5000-9999 GALLONS	15
FEDERAL EXPRESS CORP	2450 S 161 ST	SEATAC	USED/WASTE OIL	2001-4999 GALLONS	15
AIRGO FREIGHT INC	2460 S 161ST ST	SEATAC	DIESEL FUEL	10000-19999 GALLONS	5
AIRGO FREIGHT INC	2460 S 161ST ST	SEATAC	UNLEADED GAS	10000-19999 GALLONS	5
AIR CARGO BUILDING	2600 SO 165TH ST	SEATAC	LEADED GAS	5000-9999 GALLONS	10
CITY OF SEATAC FIRE SERV	2929 S 200 STREET	SEATAC	UNLEADED GAS	111-1100 GALLONS	8
CITY OF SEATAC FIRE SERV	2929 S 200 STREET	SEATAC	DIESEL FUEL	111-1100 GALLONS	8
RTRA SEATAC INTRNL AIRPT	47 26' 30"N 122 18' 51"W	SEATAC	LEADED GAS	1101-2000 GALLONS	35
ATBM SEATAC INTRNL AIRPT	47 26' 37" N 122 18' 07"	SEATAC	DIESEL FUEL	111-1100 GALLONS	16
LOCALIZER SEATAC INTRNL	47 26'09"N 122 18'36"W	SEATAC	LEADED GAS	111-1100 GALLONS	20
ASR SEATAC INTRNL AIRPORT	47 27' 07" N 122 18' 51"	SEATAC	DIESEL FUEL	111-1100 GALLONS	16
ALS SEATAC INTRNL AIRPORT	47 27' 53" N 130 0' 0" W	SEATAC	DIESEL FUEL	1101-2000 GALLONS	15
GS GLIDE SLOPE SEATAC INT	47 27'39"N 122 18'29"W	SEATAC	LEADED GAS	111-1100 GALLONS	19
RTRD SEATAC INTRNL AIRPT	47 28' 18" N 122 18' 16"	SEATAC	LEADED GAS	111-1100 GALLONS	36
VORTAC AT SEATAC	LONG 122 18 30 LAT 47 26	SEATAC	LEADED GAS	111-1100 GALLONS	33
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	DIESEL FUEL	1101-2000 GALLONS	15
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	LEADED GAS	5000-9999 GALLONS	7
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	USED/WASTE OIL	111-1100 GALLONS	16
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	DIESEL FUEL	1101-2000 GALLONS	20
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	LEADED GAS	2001-4999 GALLONS	15
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	DIESEL FUEL	1101-2000 GALLONS	20
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	UNLEADED GAS	5000-9999 GALLONS	7
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	UNLEADED GAS	2001-4999 GALLONS	15
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	UNLEADED GAS	111-1100 GALLONS	29
SEA-TAC INTRNL AIRPORT	PO BOX 68727	SEATAC	DIESEL FUEL	5000-9999 GALLONS	7
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	UNLEADED GAS	5000-9999 GALLONS	20
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC		10000-19999 GALLONS	10
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25

TABLE 4.1 *OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA*

Site Name	Address		Substance	Size	Age
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORTHWEST AIRLINES INC	SEA-TAC INTRNL AIRPORT	SEATAC	UNLEADED GAS	10000-19999 GALLONS	10
AVIS RENT A CAR	SEA-TAC INTL AIRPORT	SEATAC	UNLEADED GAS	10000-19999 GALLONS	2
NATIONAL CAR RENTAL SYSTE	SEA-TAC AIRPORT RENTAL	SEATAC	LEADED GAS	10000-19999 GALLONS	1
HERTZ RENT A CAR	SEATTLE-TACOMA INTRNL	SEATAC	UNLEADED GAS	10000-19999 GALLONS	2
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	20000-29999 GALLONS	32
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	UNLEADED GAS	10000-19999 GALLONS	1
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	30000-49999 GALLONS	32
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	USED/WASTE OIL	111-1100 GALLONS	6
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	UNLEADED GAS	20000-29999 GALLONS	2
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	50000+ GALLONS	20
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	20000-29999 GALLONS	32
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	30000-49999 GALLONS	32
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	50000+ GALLONS	20
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	20000-29999 GALLONS	32
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	USED/WASTE OIL	111-1100 GALLONS	6
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	20000-29999 GALLONS	32
UNITED AIRLINES, INC.	SEATTLE-TACOMA INTRNL	SEATAC	AVIATION FUEL	30000-49999 GALLONS	25
NORDSTROM INC.	1201 ANDOVER PARK EAST	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	15
CITY OF TUKWILA	12026 42 AVE S	TUKWILA	UNLEADED GAS	111-1100 GALLONS	20
PENSKE TRUCK LEASING CO.,	12840 48TH AVENUE S	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	18
PENSKE TRUCK LEASING CO.,	12840 48TH AVENUE S	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	18
6237	13038 INTERURBAN AVE	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	4
6237	13038 INTERURBAN AVE	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	4
6237	13038 INTERURBAN AVE	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	4
J & S PETROLEUM	13138 INTERURBAN AVE	TUKWILA	UNLEADED GAS	5000-9999 GALLONS	7
J & S PETROLEUM	13138 INTERURBAN AVE	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	7
J & S PETROLEUM	13138 INTERURBAN AVE	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	7
J & S PETROLEUM	13138 INTERURBAN AVE	TUKWILA	LEADED GAS	10000-19999 GALLONS	7
J & S PETROLEUM	13138 INTERURBAN AVE	TUKWILA	DIESEL FUEL	10000-19999 GALLONS	7
BP 11064	13310 INTERURBAN AVE	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	3
BP 11064	13310 INTERURBAN AVE	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	3
BP 11064	13310 INTERURBAN AVE	TUKWILA	LEADED GAS	10000-19999 GALLONS	3
BP 11064	13310 INTERURBAN AVE	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	3
PACIFIC XPRESS #60	13435 INTERURBAN AVENUE S	TUKWILA	LEADED GAS	20000-29999 GALLONS	29
PACIFIC XPRESS #60	13435 INTERURBAN AVENUE S	TUKWILA	LEADED GAS	20000-29999 GALLONS	29
FOSTER GOLF COURSE	13500 INTERURBAN	TUKWILA	UNLEADED GAS	111-1100 GALLONS	37
VOLVO WHITE BUILDING	14000 INTERURBAN AVENUE S	TUKWILA	USED/WASTE OIL	111-1100 GALLONS	5
GASOHOL	14004 PACIFIC HIGHWAY S	TUKWILA	LEADED GAS		20
GASOHOL	14004 PACIFIC HIGHWAY S	TUKWILA	UNLEADED GAS	10000-19999 GALLONS	11
GASOHOL	14004 PACIFIC HIGHWAY S	TUKWILA	UNLEADED GAS		

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
MOLNERS ONE STOP INC.	8855 9TH SW	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	25
MOLNERS ONE STOP INC.	8855 9TH SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	25
MOLNERS ONE STOP INC.	8855 9TH SW	SEATTLE	UNLEADED GAS	1101-2000 GALLONS	25
MOLNERS ONE STOP INC.	8855 9TH SW	SEATTLE	USED/WASTE OIL	111-1100 GALLONS	25
U-SAVE OIL CO,INC	9061 DELRIDGE WAY	SEATTLE	LEADED GAS	5000-9999 GALLONS	3
U-SAVE OIL CO,INC	9061 DELRIDGE WAY	SEATTLE	DIESEL FUEL	5000-9999 GALLONS	3
U-SAVE OIL CO,INC	9061 DELRIDGE WAY	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	3
U-SAVE OIL CO,INC	9061 DELRIDGE WAY	SEATTLE	UNLEADED GAS	5000-9999 GALLONS	3
TEXACO	9200 35TH AVENUE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
TEXACO	9200 35TH AVENUE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
TEXACO	9200 35TH AVENUE SW	SEATTLE	USED/WASTE OIL	10000-19999 GALLONS	29
TEXACO	9200 35TH AVENUE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
TEXACO	9200 35TH AVENUE SW	SEATTLE	LEADED GAS	10000-19999 GALLONS	29
LIBERTY #904	9857 17TH. AVE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	23
LIBERTY #904	9857 17TH. AVE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	23
LIBERTY #904	9857 17TH. AVE SW	SEATTLE	LEADED GAS	2001-4999 GALLONS	23
PARK LAKE HOMES	9900 8TH AVE SW	SEATTLE	UNLEADED GAS	111-1100 GALLONS	7
SHORT STOP #1	6317 CALIFORNIA AVE SW	SEATTLE	LEADED GAS	10000-19999 GALLONS	29
SHORT STOP #1	6317 CALIFORNIA AVE SW	SEATTLE	UNLEADED GAS	10000-19999 GALLONS	29
SHORT STOP #1	6317 CALIFORNIA AVE SW	SEATTLE		5000-9999 GALLONS	29

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
BROWN'S CORNER SHORTSTOP	5550 AUBURN WY. S.	AUBURN	UNLEADED GAS	10000-19999 GALLONS	15
BROWN'S CORNER SHORTSTOP	5550 AUBURN WY. S.	AUBURN	UNLEADED GAS	2001-4999 GALLONS	15
BROWN'S CORNER SHORTSTOP	5550 AUBURN WY. S.	AUBURN	KEROSENE	111-1100 GALLONS	4
BROWN'S CORNER SHORTSTOP	5550 AUBURN WY. S.	AUBURN	DIESEL FUEL	1101-2000 GALLONS	4
AUBURN SCHOOL DISTRICT	615 15TH STREET SE	AUBURN	USED/WASTE OIL	111-1100 GALLONS	25
AUBURN SCHOOL DISTRICT	615 15TH STREET SE	AUBURN	DIESEL FUEL	10000-19999 GALLONS	20
AUBURN SCHOOL DISTRICT	615 15TH STREET SE	AUBURN	UNLEADED GAS	5000-9999 GALLONS	25
U-SAVE OIL CO	615 AUBURN WAY S	AUBURN	UNLEADED GAS	5000-9999 GALLONS	15
U-SAVE OIL CO	615 AUBURN WAY S	AUBURN	UNLEADED GAS	5000-9999 GALLONS	32
U-SAVE OIL CO	615 AUBURN WAY S	AUBURN	UNLEADED GAS	5000-9999 GALLONS	32
U-SAVE OIL CO	615 AUBURN WAY S	AUBURN	DIESEL FUEL	5000-9999 GALLONS	7
U-SAVE OIL CO	615 AUBURN WAY S	AUBURN	LEADED GAS	5000-9999 GALLONS	32
FABRICATION DIVISION	700 15TH STREET SW	AUBURN	DIESEL FUEL	10000-19999 GALLONS	3
FABRICATION DIVISION	700 15TH STREET SW	AUBURN	UNLEADED GAS	10000-19999 GALLONS	2
FABRICATION DIVISION	700 15TH STREET SW	AUBURN	HAZARDOUS	5000-9999 GALLONS	29
FABRICATION DIVISION	700 15TH STREET SW	AUBURN	DIESEL FUEL	111-1100 GALLONS	7
THE BRAKE PAD	701 37TH NE	AUBURN	USED/WASTE OIL	111-1100 GALLONS	11
AUBURN SENIOR HIGH SCHOOL	800 4TH STREET NE	AUBURN	USED/WASTE OIL	111-1100 GALLONS	6
AUBURN SENIOR HIGH SCHOOL	800 4TH STREET NE	AUBURN	USED/WASTE OIL	111-1100 GALLONS	6
GREEN RIVER AUTO	810 HARVEY RD	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
GREEN RIVER AUTO	810 HARVEY RD	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
GREEN RIVER AUTO	810 HARVEY RD	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
GREEN RIVER AUTO	810 HARVEY RD	AUBURN	USED/WASTE OIL	111-1100 GALLONS	25
THE S LAND CORP. 2323-	813 AUBURN WAY S	AUBURN	LEADED GAS	10000-19999 GALLONS	10
THE S LAND CORP. 2323-	813 AUBURN WAY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	10
THE S LAND CORP. 2323-	813 AUBURN WAY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	10
AUBURN 2	814 AUBURN WY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
AUBURN 2	814 AUBURN WY S	AUBURN	LEADED GAS	5000-9999 GALLONS	3
AUBURN 2	814 AUBURN WY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
UHAUL CO OF AUBURN	917 AUBURN WAY S	AUBURN	DIESEL FUEL	10000-19999 GALLONS	11
UHAUL CO OF AUBURN	917 AUBURN WAY S	AUBURN	LEADED GAS	10000-19999 GALLONS	11
UHAUL CO OF AUBURN	917 AUBURN WAY S	AUBURN	USED/WASTE OIL	111-1100 GALLONS	11
ABC RENTALS-KENT	1002 N CENTRAL AVE	KENT	KEROSENE	1101-2000 GALLONS	8
ABC RENTALS-KENT	1002 N CENTRAL AVE	KENT	LEADED GAS	111-1100 GALLONS	15
CHEVRON 93594	10120 SE 256TH ST	KENT	USED/WASTE OIL		11
CHEVRON 93594	10120 SE 256TH ST	KENT	UNLEADED GAS	5000-9999 GALLONS	11
CHEVRON 93594	10120 SE 256TH ST	KENT	LEADED GAS	5000-9999 GALLONS	11
CHEVRON 93594	10120 SE 256TH ST	KENT	UNLEADED GAS	5000-9999 GALLONS	11
FRED MEYER KENT SHOPPING	10201 SE 240TH AVE	KENT	DIESEL FUEL	111-1100 GALLONS	5
CITY BEVERAGES DIST INC	1025 NORTH 6TH AVE	KENT	DIESEL FUEL	5000-9999 GALLONS	12
CITY BEVERAGES DIST INC	1025 NORTH 6TH AVE	KENT	UNLEADED GAS	5000-9999 GALLONS	12
CIRCLE K #1546	10255 SE 240TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	8
CIRCLE K #1546	10255 SE 240TH ST	KENT	LEADED GAS	10000-19999 GALLONS	8
CIRCLE K #1546	10255 SE 240TH ST	KENT	UNLEADED GAS	10000-19999 GALLONS	8
ARCO 4228	10402 SE 256TH	KENT	UNLEADED GAS	10000-19999 GALLONS	4
ARCO 4228	10402 SE 256TH	KENT	UNLEADED GAS	10000-19999 GALLONS	4
ARCO 4228	10402 SE 256TH	KENT	LEADED GAS	10000-19999 GALLONS	4
BP 03156	10407 SE 256TH	KENT	UNLEADED GAS	10000-19999 GALLONS	11
BP 03156	10407 SE 256TH	KENT	USED/WASTE OIL	111-1100 GALLONS	11
BP 03156	10407 SE 256TH	KENT	DIESEL FUEL	5000-9999 GALLONS	11

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
FUEL FARM	325 C ST. N.W.	AUBURN	DIESEL FUEL	10000-19999 GALLONS	11
FUEL FARM	325 C ST. N.W.	AUBURN	DIESEL FUEL	10000-19999 GALLONS	11
FUEL FARM	325 C ST. N.W.	AUBURN	DIESEL FUEL	10000-19999 GALLONS	11
MIDAS MUFFLER & BRAKE	3302 AUBURN WAY N	AUBURN	USED/WASTE OIL	111-1100 GALLONS	29
AUBURN SERVICE CENTER	33940 WEYERHAEUSER WAY SO	AUBURN	DIESEL FUEL	1101-2000 GALLONS	25
AUBURN SERVICE CENTER	33940 WEYERHAEUSER WAY SO	AUBURN	UNLEADED GAS	10000-19999 GALLONS	15
DOXON MOTORS INC.	3405 AUBURN WAY N	AUBURN	USED/WASTE OIL	111-1100 GALLONS	10
DOXON MOTORS INC.	3405 AUBURN WAY N	AUBURN	UNLEADED GAS	1101-2000 GALLONS	15
INTERURBAN PLUMBING INC	36056 MILITARY ROAD S	AUBURN	UNLEADED GAS	111-1100 GALLONS	11
INTERURBAN PLUMBING INC	36056 MILITARY ROAD S	AUBURN	UNLEADED GAS	111-1100 GALLONS	11
ARCO 5660	3648 AUBURN WAY N	AUBURN	UNLEADED GAS	10000-19999 GALLONS	4
ARCO 5660	3648 AUBURN WAY N	AUBURN	UNLEADED GAS	10000-19999 GALLONS	4
ARCO 5660	3648 AUBURN WAY N	AUBURN	UNLEADED GAS	10000-19999 GALLONS	4
ARCO 5660	3648 AUBURN WAY N	AUBURN	LEADED GAS	10000-19999 GALLONS	4
THE SOUTHLAND CORP. 2323-	3702 AUBURN WAY N	AUBURN	UNLEADED GAS	10000-19999 GALLONS	11
THE SOUTHLAND CORP. 2323-	3702 AUBURN WAY N	AUBURN	LEADED GAS	10000-19999 GALLONS	11
THE SOUTHLAND CORP. 2323-	3702 AUBURN WAY N	AUBURN	UNLEADED GAS	10000-19999 GALLONS	11
ARCO 6175	3910 S 320TH ST	AUBURN	UNLEADED GAS	5000-9999 GALLONS	25
ARCO 6175	3910 S 320TH ST	AUBURN	UNLEADED GAS	10000-19999 GALLONS	25
ARCO 6175	3910 S 320TH ST	AUBURN	LEADED GAS	5000-9999 GALLONS	25
ARCO 6175	3910 S 320TH ST	AUBURN	UNLEADED GAS	5000-9999 GALLONS	14
AUBURN 3	3920 AUBURN WAY N	AUBURN	UNLEADED GAS	10000-19999 GALLONS	11
AUBURN 3	3920 AUBURN WAY N	AUBURN	UNLEADED GAS	5000-9999 GALLONS	11
AUBURN 3	3920 AUBURN WAY N	AUBURN	DIESEL FUEL	5000-9999 GALLONS	11
AUBURN 3	3920 AUBURN WAY N	AUBURN	LEADED GAS	10000-19999 GALLONS	11
AUBURN AIRPORT	400 23RD ST NE	AUBURN	AVIATION FUEL	5000-9999 GALLONS	25
AUBURN AIRPORT	400 23RD ST NE	AUBURN	AVIATION FUEL	5000-9999 GALLONS	25
VENTURE CONSTRUCTION, INC	4005 WEST VALLEY HYWY	AUBURN	UNLEADED GAS	2001-4999 GALLONS	11
VENTURE CONSTRUCTION, INC	4005 WEST VALLEY HYWY	AUBURN	LEADED GAS	2001-4999 GALLONS	20
VENTURE CONSTRUCTION, INC	4005 WEST VALLEY HYWY	AUBURN	DIESEL FUEL	2001-4999 GALLONS	20
THE SOUTHLAND CORP. 2323-	4026 A STREET	AUBURN	LEADED GAS	10000-19999 GALLONS	11
THE SOUTHLAND CORP. 2323-	4026 A STREET	AUBURN	UNLEADED GAS	10000-19999 GALLONS	11
THE SOUTHLAND CORP. 2323-	4026 A STREET	AUBURN	UNLEADED GAS	10000-19999 GALLONS	11
JACKPOT #309	415 AUBURN WAY N.E.	AUBURN	UNLEADED GAS	5000-9999 GALLONS	13
JACKPOT #309	415 AUBURN WAY N.E.	AUBURN	LEADED GAS	10000-19999 GALLONS	36
JACKPOT #309	415 AUBURN WAY N.E.	AUBURN	UNLEADED GAS	10000-19999 GALLONS	13
JACKPOT #309	415 AUBURN WAY N.E.	AUBURN	LEADED GAS	10000-19999 GALLONS	36
STAR RENTALS INC	4517 AUBURN WAY N	AUBURN	UNLEADED GAS	111-1100 GALLONS	8
STAR RENTALS INC	4517 AUBURN WAY N	AUBURN	DIESEL FUEL	111-1100 GALLONS	8
STAR RENTALS INC	4517 AUBURN WAY N	AUBURN	LEADED GAS	111-1100 GALLONS	8
MILES SAND & GRAVEL COMPA	47 17' 15" N 122 12' 42"	AUBURN	DIESEL FUEL	10000-19999 GALLONS	15
MILES SAND & GRAVEL COMPA	47 17' 15" N 122 12' 42"	AUBURN	DIESEL FUEL	5000-9999 GALLONS	15
MILES SAND & GRAVEL COMPA	47 17' 15" N 122 12' 42"	AUBURN	UNLEADED GAS	5000-9999 GALLONS	15
HUBNER BROTHERS CONSTRUCT	5021 SO 321ST	AUBURN	DIESEL FUEL		19
EAST MAIN SHORTSTOP	520 E. MAIN	AUBURN	LEADED GAS	10000-19999 GALLONS	15
EAST MAIN SHORTSTOP	520 E. MAIN	AUBURN	UNLEADED GAS	5000-9999 GALLONS	15
EAST MAIN SHORTSTOP	520 E. MAIN	AUBURN	UNLEADED GAS	10000-19999 GALLONS	15
ART FETTER LOGGING CO.	525 R ST SE	AUBURN	UNLEADED GAS	111-1100 GALLONS	15
ART FETTER LOGGING CO.	525 R ST SE	AUBURN	DIESEL FUEL	5000-9999 GALLONS	15
FIRESTONE STORE #31E9 010	535 15 ST NE	AUBURN	USED/WASTE OIL	111-1100 GALLONS	11
BROWN'S CORNER SHORTSTOP	5550 AUBURN WY. S.	AUBURN	LEADED GAS	10000-19999 GALLONS	15

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	KEROSENE	111-1100 GALLONS	32
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	UNLEADED GAS	10000-19999 GALLONS	25
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	LEADED GAS	10000-19999 GALLONS	32
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	KEROSENE	10000-19999 GALLONS	11
AUBURN SOC 070292	25 30TH NE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	28
AUBURN SOC 070292	25 30TH NE	AUBURN	DIESEL FUEL	2001-4999 GALLONS	15
AUBURN SOC 070292	25 30TH NE	AUBURN	USED/WASTE OIL	111-1100 GALLONS	13
CITY OF AUBURN	25 WEST MAIN STREET	AUBURN	DIESEL FUEL	10000-19999 GALLONS	15
CAVANAUGH ACE HARDWARE	26 E MAIN ST	AUBURN	KEROSENE	111-1100 GALLONS	8
CAVANAUGH ACE HARDWARE	26 E MAIN ST	AUBURN	KEROSENE	111-1100 GALLONS	8
CASE POWER & EQUIPMENT	2702 WEST VALLEY HWY N	AUBURN	USED/WASTE OIL	111-1100 GALLONS	8
CASE POWER & EQUIPMENT	2702 WEST VALLEY HWY N	AUBURN	LEADED GAS	111-1100 GALLONS	8
CASE POWER & EQUIPMENT	2702 WEST VALLEY HWY N	AUBURN	DIESEL FUEL	1101-2000 GALLONS	8
THE SOUTHLAND CORPORATION	28719 MILITARY RD SOUTH	AUBURN	UNLEADED GAS	10000-19999 GALLONS	7
THE SOUTHLAND CORPORATION	28719 MILITARY RD SOUTH	AUBURN	UNLEADED GAS	10000-19999 GALLONS	7
THE SOUTHLAND CORPORATION	28719 MILITARY RD SOUTH	AUBURN	LEADED GAS	10000-19999 GALLONS	7
TOM MATSON DODGE INC	2925 AUBURN WAY NO	AUBURN	UNLEADED GAS	1101-2000 GALLONS	7
CITY OF AUBURN GOLF COURS	29630 GREEN RIVER RD SE	AUBURN	LEADED GAS	111-1100 GALLONS	20
TONYS	305 A STREET SE	AUBURN	LEADED GAS	10000-19999 GALLONS	3
TONYS	305 A STREET SE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
TONYS	305 A STREET SE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
QUAKER STATE-MINIT-LUBE #	307 AUBURN WAY S	AUBURN	OTHER	2001-4999 GALLONS	15
QUAKER STATE-MINIT-LUBE #	307 AUBURN WAY S	AUBURN	USED/WASTE OIL	111-1100 GALLONS	15
QUAKER STATE-MINIT-LUBE #	307 AUBURN WAY S	AUBURN	OTHER	5000-9999 GALLONS	15
QUAKER STATE-MINIT-LUBE #	307 AUBURN WAY S	AUBURN	OTHER	1101-2000 GALLONS	15
FEDERAL AVIATION ADMINIST	3101 AUBURN WAY S	AUBURN	USED/WASTE OIL	111-1100 GALLONS	20
VALLEY PONTIAC-BUICK-GMC,	3104 AUBURN WAY N	AUBURN	UNLEADED GAS	1101-2000 GALLONS	15
VALLEY PONTIAC-BUICK-GMC,	3104 AUBURN WAY N	AUBURN	UNLEADED GAS	1101-2000 GALLONS	15
KING COUNTY FIRE DIST #44	31204 124 AVE S.E.	AUBURN	LEADED GAS	1101-2000 GALLONS	12
KING COUNTY FIRE DIST #44	31204 124 AVE S.E.	AUBURN	DIESEL FUEL	111-1100 GALLONS	12
CIRCLE K STORE #8881	31207 124TH AVE SE	AUBURN	LEADED GAS	10000-19999 GALLONS	5
CIRCLE K STORE #8881	31207 124TH AVE SE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	5
CIRCLE K STORE #8881	31207 124TH AVE SE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	5
TRUSS-SPAN CORPORATION	3136 B ST. NW	AUBURN	UNLEADED GAS	111-1100 GALLONS	5
TRUSS-SPAN CORPORATION	3136 B ST. NW	AUBURN	DIESEL FUEL	111-1100 GALLONS	5
NORAL PRECISION CO	32 G STREET NW	AUBURN	UNLEADED GAS	111-1100 GALLONS	20
BOB ROBBINS	32002 MILITARY RD S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	29
BOB ROBBINS	32002 MILITARY RD S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	29
BOB ROBBINS	32002 MILITARY RD S	AUBURN	LEADED GAS	10000-19999 GALLONS	29
POE CONSTRUCTION INC	3207 C ST NE	AUBURN	UNLEADED GAS	111-1100 GALLONS	15
SAFETY-KLEEN CORP	3210 C STREET NE	AUBURN	OTHER	10000-19999 GALLONS	14
BROOKSIDE DELI & GAS	32201 AUBURN-BLACK DIA	AUBURN	ALCOHOL BLEND	10000-19999 GALLONS	6
BROOKSIDE DELI & GAS	32201 AUBURN-BLACK DIA	AUBURN	ALCOHOL BLEND	5000-9999 GALLONS	6
BROOKSIDE DELI & GAS	32201 AUBURN-BLACK DIA	AUBURN	ALCOHOL BLEND	10000-19999 GALLONS	6
KING COUNTY FIRE DISTRICT	32316 148 AVE S.E.	AUBURN	UNLEADED GAS	1101-2000 GALLONS	11
KING COUNTY FIRE DISTRICT	32316 148 AVE S.E.	AUBURN	UNLEADED GAS	1101-2000 GALLONS	11
FUEL FARM	325 C ST. N.W.	AUBURN	DIESEL FUEL	10000-19999 GALLONS	11
FUEL FARM	325 C ST. N.W.	AUBURN	UNLEADED GAS	10000-19999 GALLONS	11
FUEL FARM	325 C ST. N.W.	AUBURN	UNLEADED GAS	10000-19999 GALLONS	11
FUEL FARM	325 C ST. N.W.	AUBURN	LEADED GAS	10000-19999 GALLONS	11

TABLE 4.1

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
RON MC CLUNG	1439 AUBURN WAY NORTH	AUBURN	UNLEADED GAS	10000-19999 GALLONS	10
ASPI DBA PDQ OIL CO #1101	1501 AUBURN WAY N	AUBURN	UNLEADED GAS	5000-9999 GALLONS	6
ASPI DBA PDQ OIL CO #1101	1501 AUBURN WAY N	AUBURN	UNLEADED GAS	5000-9999 GALLONS	6
ASPI DBA PDQ OIL CO #1101	1501 AUBURN WAY N	AUBURN	LEADED GAS	5000-9999 GALLONS	7
ECONO LUBE N TUNE #247	1537 AUBURN WAY	AUBURN	USED/WASTE OIL	111-1100 GALLONS	3
7-11 (2305 14481)	1539 SE 21ST STREET	AUBURN	UNLEADED GAS	10000-19999 GALLONS	7
7-11 (2305 14481)	1539 SE 21ST STREET	AUBURN	LEADED GAS	10000-19999 GALLONS	7
7-11 (2305 14481)	1539 SE 21ST STREET	AUBURN	UNLEADED GAS	10000-19999 GALLONS	7
BOTHELL BROS. CHEVROLET,	1600 AUBURN WAY NORTH	AUBURN	UNLEADED GAS	1101-2000 GALLONS	3
BOTHELL BROS. CHEVROLET,	1600 AUBURN WAY NORTH	AUBURN	USED/WASTE OIL	111-1100 GALLONS	3
JACKPOT #308	1602 "A" ST SE	AUBURN	UNLEADED GAS	5000-9999 GALLONS	16
JACKPOT #308	1602 "A" ST SE	AUBURN	LEADED GAS	10000-19999 GALLONS	16
JACKPOT #308	1602 "A" ST SE	AUBURN	UNLEADED GAS	5000-9999 GALLONS	16
DOUG'S AUTO ROW UNION	1725 AUBURN WAY N	AUBURN	LEADED GAS	5000-9999 GALLONS	11
DOUG'S AUTO ROW UNION	1725 AUBURN WAY N	AUBURN	DIESEL FUEL	1101-2000 GALLONS	11
DOUG'S AUTO ROW UNION	1725 AUBURN WAY N	AUBURN	UNLEADED GAS	2001-4999 GALLONS	20
DOUG'S AUTO ROW UNION	1725 AUBURN WAY N	AUBURN	UNLEADED GAS		20
DOUG'S AUTO ROW UNION	1725 AUBURN WAY N	AUBURN	UNLEADED GAS	2001-4999 GALLONS	20
KING COUNTY FIRE DISTRICT	19317 SE 384	AUBURN	DIESEL FUEL	111-1100 GALLONS	6
KING COUNTY FIRE DISTRICT	19317 SE 384	AUBURN	UNLEADED GAS	111-1100 GALLONS	3
CAMP BERACHAH MINISTRIES	19830 SE 328 PLACE	AUBURN	LEADED GAS	111-1100 GALLONS	27
CAMP BERACHAH MINISTRIES	19830 SE 328 PLACE	AUBURN	DIESEL FUEL	111-1100 GALLONS	27
AUBURN GENERAL HOSPITAL	20 2ND STREET NE	AUBURN	DIESEL FUEL	5000-9999 GALLONS	9
AUBURN GENERAL HOSPITAL	20 2ND STREET NE	AUBURN	DIESEL FUEL	111-1100 GALLONS	15
AUBURN PRINT466 LS51 3RDS	PACIFIC DIVISION	AUBURN	LEADED GAS	111-1100 GALLONS	25
TEXACO	201 AUBURN WAY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	29
TEXACO	201 AUBURN WAY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	29
TEXACO	201 AUBURN WAY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	29
TEXACO	201 AUBURN WAY S	AUBURN	LEADED GAS	10000-19999 GALLONS	29
CITY OF AUBURN-MOUNTAIN V	2020 MOUNTAIN VIEW DRIVE	AUBURN	DIESEL FUEL	111-1100 GALLONS	15
CITY OF AUBURN-MOUNTAIN V	2020 MOUNTAIN VIEW DRIVE	AUBURN	UNLEADED GAS	111-1100 GALLONS	15
SCOTTYS GENERAL CONSTRUCT	20405 SE 344	AUBURN	UNLEADED GAS	1101-2000 GALLONS	14
SCOTTYS GENERAL CONSTRUCT	20405 SE 344	AUBURN	DIESEL FUEL	1101-2000 GALLONS	14
DIAMOND	20827 AUBURN-BLACK DIA	AUBURN	DIESEL FUEL	10000-19999 GALLONS	25
DIAMOND	20827 AUBURN-BLACK DIA	AUBURN	UNLEADED GAS	10000-19999 GALLONS	25
WEST MAIN SHORTSTOP	210 WEST MAIN	AUBURN	UNLEADED GAS	1101-2000 GALLONS	4
WEST MAIN SHORTSTOP	210 WEST MAIN	AUBURN	UNLEADED GAS	1101-2000 GALLONS	4
DAVID G POLLART	2102 WEST VALLEY HWY N	AUBURN	DIESEL FUEL	10000-19999 GALLONS	5
DAVID G POLLART	2102 WEST VALLEY HWY N	AUBURN	USED/WASTE OIL	111-1100 GALLONS	5
BREWER CHRYSLER PLYMOUTH	2201 AUBURN AVE N	AUBURN	USED/WASTE OIL	111-1100 GALLONS	20
THE SOUTHLAND CORPORATION	2202 AUBURN WAY N	AUBURN	UNLEADED GAS	10000-19999 GALLONS	7
THE SOUTHLAND CORPORATION	2202 AUBURN WAY N	AUBURN	UNLEADED GAS	10000-19999 GALLONS	7
THE SOUTHLAND CORPORATION	2202 AUBURN WAY N	AUBURN	LEADED GAS	10000-19999 GALLONS	7
SHAUGHNESSY & COMPANY	221 30TH ST N E	AUBURN	DIESEL FUEL	5000-9999 GALLONS	25
SHAUGHNESSY & COMPANY	221 30TH ST N E	AUBURN	DIESEL FUEL	2001-4999 GALLONS	25
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	DIESEL FUEL	10000-19999 GALLONS	32
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	KEROSENE	2001-4999 GALLONS	32
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	DIESEL FUEL	10000-19999 GALLONS	32
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	KEROSENE	2001-4999 GALLONS	32
CENEX VALLEY SUPPLY COOP	238 8TH SE PO BOX 518	AUBURN	DIESEL FUEL	10000-19999 GALLONS	32

OPERATIONAL UNDERGROUND STORAGE TANKS REPORTED IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Site Name	Address		Substance	Size	Age
CITY OF PACIFIC POLICE	133 3RD AVE SE	PACIFIC	UNLEADED GAS	111-1100 GALLONS	9
CITY OF PACIFIC POLICE	133 3RD AVE SE	PACIFIC	DIESEL FUEL	111-1100 GALLONS	9
ARCO 5567	401 ELLINGSON ROAD	PACIFIC	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 5567	401 ELLINGSON ROAD	PACIFIC	LEADED GAS	10000-19999 GALLONS	2
ARCO 5567	401 ELLINGSON ROAD	PACIFIC	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 5567	401 ELLINGSON ROAD	PACIFIC	UNLEADED GAS	10000-19999 GALLONS	2
PROFICIENT FOOD COMPANY	1196 INDUSTRY DRIVE N	ALGONA	DIESEL FUEL	10000-19999 GALLONS	4
VALLEY TOP SOIL INC	35019 WEST HIGHWAY	ALGONA	UNLEADED GAS	111-1100 GALLONS	6
CONTINENTAL DIRT CONTRACT	10526 AUBURN-BLACK-DIA	AUBURN	DIESEL FUEL	5000-9999 GALLONS	23
CONTINENTAL DIRT CONTRACT	10526 AUBURN-BLACK-DIA	AUBURN	LEADED GAS	111-1100 GALLONS	23
CITY OF AUBURN FIRE DEPT.	1101 D STREET NE	AUBURN	DIESEL FUEL	111-1100 GALLONS	7
CITY OF AUBURN FIRE DEPT.	1101 D STREET NE	AUBURN	USED/WASTE OIL	1101-2000 GALLONS	7
CITY OF AUBURN FIRE DEPT.	1101 D STREET NE	AUBURN	UNLEADED GAS	111-1100 GALLONS	7
GREEN RIVER HOMES	1103 9TH STREET SE	AUBURN	UNLEADED GAS	111-1100 GALLONS	20
BP 11065	1111 17TH SE	AUBURN	LEADED GAS	10000-19999 GALLONS	3
BP 11065	1111 17TH SE	AUBURN	USED/WASTE OIL	111-1100 GALLONS	3
BP 11065	1111 17TH SE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
BP 11065	1111 17TH SE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	3
0028	112 THIRD NW	AUBURN	LEADED GAS	20000-29999 GALLONS	8
0028	112 THIRD NW	AUBURN	UNLEADED GAS	20000-29999 GALLONS	8
0028	112 THIRD NW	AUBURN		5000-9999 GALLONS	26
0028	112 THIRD NW	AUBURN	UNLEADED GAS	20000-29999 GALLONS	8
0028	112 THIRD NW	AUBURN	UNLEADED GAS	20000-29999 GALLONS	8
AUBURN CITY IMPORTS LTD	1148 EAST MAIN ST.	AUBURN	USED/WASTE OIL	111-1100 GALLONS	20
CHEVRON 95445	1156 AUBURN WY S	AUBURN	USED/WASTE OIL	111-1100 GALLONS	2
CHEVRON 95445	1156 AUBURN WY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	2
CHEVRON 95445	1156 AUBURN WY S	AUBURN	LEADED GAS	10000-19999 GALLONS	2
CHEVRON 95445	1156 AUBURN WY S	AUBURN	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 6120	1204 E MAIN STREET	AUBURN	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 6120	1204 E MAIN STREET	AUBURN	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 6120	1204 E MAIN STREET	AUBURN	UNLEADED GAS	10000-19999 GALLONS	2
ARCO 6120	1204 E MAIN STREET	AUBURN	USED/WASTE OIL	111-1100 GALLONS	3
ARCO 6120	1204 E MAIN STREET	AUBURN	LEADED GAS	10000-19999 GALLONS	2
OAK HARBOR FREIGHT LINES	1225 37TH STREET N W	AUBURN	DIESEL FUEL	10000-19999 GALLONS	4
OAK HARBOR FREIGHT LINES	1225 37TH STREET N W	AUBURN	DIESEL FUEL	10000-19999 GALLONS	4
OAK HARBOR FREIGHT LINES	1225 37TH STREET N W	AUBURN	LEADED GAS	10000-19999 GALLONS	4
BOW WOW AUTO PARTS TRACKS	123 W MAIN	AUBURN	USED/WASTE OIL	111-1100 GALLONS	20
THE SOUTHLAND CORP. 2323-	1302-8TH NE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	13
THE SOUTHLAND CORP. 2323-	1302-8TH NE	AUBURN	LEADED GAS	10000-19999 GALLONS	13
THE SOUTHLAND CORP. 2323-	1302-8TH NE	AUBURN	UNLEADED GAS	10000-19999 GALLONS	13
MAINTENANCE AND OPERATION	1305 C ST. S.W.	AUBURN	USED/WASTE OIL	111-1100 GALLONS	25
MAINTENANCE AND OPERATION	1305 C ST. S.W.	AUBURN	UNLEADED GAS	10000-19999 GALLONS	6
MAINTENANCE AND OPERATION	1305 C ST. S.W.	AUBURN	DIESEL FUEL	10000-19999 GALLONS	6
MAINTENANCE AND OPERATION	1305 C ST. S.W.	AUBURN	UNLEADED GAS	10000-19999 GALLONS	6
WDF AUBURN SHOP	13124 AUBURN BLACK DIA	AUBURN	DIESEL FUEL	5000-9999 GALLONS	17
WDF AUBURN SHOP	13124 AUBURN BLACK DIA	AUBURN	UNLEADED GAS	5000-9999 GALLONS	17
WDF AUBURN SHOP	13124 AUBURN BLACK DIA	AUBURN	USED/WASTE OIL	111-1100 GALLONS	25
VALLEY OFFICE	1400 W MAIN ST	AUBURN	UNLEADED GAS	2001-4999 GALLONS	12
RON MC CLUNG	1439 AUBURN WAY NORTH	AUBURN	UNLEADED GAS	10000-19999 GALLONS	10
RON MC CLUNG	1439 AUBURN WAY NORTH	AUBURN	LEADED GAS	10000-19999 GALLONS	10
RON MC CLUNG	1439 AUBURN WAY NORTH	AUBURN	DIESEL FUEL	10000-19999 GALLONS	10

TABLE 4.2 AGE OF UNDERGROUND STORAGE TANKS IN OPERATION IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Age (year)	Number of Tanks	Percent of Total
1-2	73	5.69%
3-5	159	12.39%
6-10	287	22.37%
11-15	343	26.73%
16-20	143	11.15%
21-30	213	16.60%
Greater than 30	65	5.06%
Total	1,283	100.00%

Source: Ecology, August 1994.

TABLE 4.3 SUBSTANCES CONTAINED IN UNDERGROUND STORAGE TANKS IN OPERATION IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

SUBSTANCE	NUMBER OF TANKS	(PERCENT OF TOTAL)
Leaded Gas	240	18.70%
Unleaded Gas	512	39.91%
Diesel Fuel	270	21.04%
Kerosene	13	1.01%
Used/Waste Oil	133	10.37%
Heating Fuel	7	0.55%
Aviation Fuel	40	3.12%
Alchohol Blend	7	0.55%
Unknown	61	4.75%
Total	1,283	100.00%

Source: Ecology, August 1994.

TABLE 4.4 SIZE OF UNDERGROUND STORAGE TANKS IN OPERATION IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

Size (gallons)	Number of Tanks	Percent of Total
111-1,100	263	20.50%
1,101-2,000	65	5.06%
2,001-4,999	84	6.55%
5,000-9,999	230	17.93%
10,000-19,999	549	42.79%
20,000-29,999	34	2.65%
30,000-49,999	22	1.71%
50,000+	4	0.31%
Unknown	32	2.49%
Total	1,283	100.00%

Source: Ecology, August 1994.

TABLE 4.5

ECOLOGY'S CURRENT AND FORMER CONTAMINATED UNDERGROUND STORAGE TANK SITES IN TH SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA JANUARY 7, 1994

	Address	City	Zip Code	Cleanup Status[a]	Media[b]
Chevron Station #9-9624	3450 S.W. 320th	Federal Way	98023-2209	In Progress	A,D
US West Equipment Bldg Federal	1900 S. 288th	Federal Way	98023-2770	Conducted	D
Exxon Station #7-7164	2100 S.W. 356th	Federal Way	98023-3058	Unknown	A,D
Unocal Station #5897	1600 S.W. 312th	Federal Way	98023-4407	Conducted	D
Exxon Station #7-7159	1650 S.W. Dash Point Rd	Federal Way	98023-4530	In Progress	A,D
Arco Station #4445	2020 S.W. 356th St.	Federal Way	98023-7255	Conducted	D
WA Parks & Rec Saltwater State	25205 8th Pl. S.	Kent	98031	Conducted	D
Unocal Station #6211	23845 Pacific Hwy. S.	Kent	98031	In Progress	A
Unocal Station #5575	24012 104th St. S.E.	Kent	98031	Conducted	D
BP Oil Station #11054	21208 68th Ave. S.	Kent	98031	Monitoring	A,D
Salmon Bay Steel Kent	22011 84th Ave. S.	Kent	98031	In Progress	D
Kent School Park Orchard 1110	110 S.E. 232nd St.	Kent	98031	Conducted	D
Pozzi Former Truck Stop	W. Harrison & 6th Ave.	Kent	98031	In Progress	D
Long Septic Tank	1018 S. Central Ave.	Kent	98031	Conducted	D
Union Pacific RR Kent	26850 72nd St. S.	Kent	98031	In Progress	D
Robbins Company	22245 76th Ave. S.	Kent	98031-0500	Conducted	D
Signal Electric	9012 S. 208th St.	Kent	98031-1227	In Progress	D

ECOLOGY'S CURRENT AND FORMER CONTAMINATED UNDERGROUND STORAGE TANK SITES IN TH SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA JANUARY 7, 1994

	Address	City	Zip Code	Cleanup Status[a]	Media[b]
Gull Station #0239	20746 108th S.E.	Kent	98031-1535	Conducted	D
Southland 7-11 Station #14468	23811 104th Ave. S.E.	Kent	98031-3313	Conducted	D
Texaco Station #004483	23953 104th Ave. S.E.	Kent	98031-3313	In Progress	D
Shell Station #17	23850 104th Ave. S.E.	Kent	98031-3314	Conducted	D
Southland 7-11 Station #20188	13131 S.E. 240th	Kent	98031-5021	In Progress	A,D
Kent School District Transportation	25211 104th S.E.	Kent	98031-6438	In Progress	D
Exxon Station #7-7075	10407 S.E. 256th	Kent	98031-7621	Unknown	A,D
Arco Station #4228	10402 S.E. 256th	Kent	98031-7688	In Progress	A,D
Exxon Station #7-2879	13054 Kent-Kangley Rd.	Kent	98031-7940	Awaiting	A,D
Valley Freeway Corporate Park	84th Ave. S. & S. 208th	Kent	98032	In Progress	A,D
American Steel	19022 80th Ave. S.	Kent	98032	Conducted	D
McDonald Industries	22431 83rd Ave.S.	Kent	98032	In Progress	D
King County Library Kent	Smith St. & 2nd Ave. N.	Kent	98032	Conducted	A,D
Eradco Used Car Lease	East Valley Hwy & South 1	Kent	98032	In Progress	A,D
Budget Truck Leasing	22005 84th South	Kent	98032	In Progress	D
Viking Freight Systems	18221 E. Valley Highway	Kent	98032-1002	In Progress	A,D
Cam Properties	18250 68th Ave. S.	Kent	98032-1044	Conducted	D
Unocal Station #6232	18060 West Valley Hwy.	Kent	98032-1067	In Progress	A,D
Gunter Brothers Inc.	19060 Frager Rd.	Kent	98032-1107	Conducted	D

ECOLOGY'S CURRENT AND FORMER CONTAMINATED UNDERGROUND STORAGE TANK SITES IN TH SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA JANUARY 7, 1994

	Address	City	Zip Code	Cleanup Status[a]	Media[b]
Miller Brands Brewing Co.	6030 S. 196th St.	Kent	98032-1167	Conducted	D
Master Halco	19240 E. Valley Hwy	Kent	98032-1238	Unknown	A,D
Metro Hauling	20848 77th Ave. S.	Kent	9032-1361	In Progress	D
Chempro Kent	20245 76th Ave. S.	Kent	98032-1362	Unknown	D
Lynden Transport	6250 S. 228th	Kent	98032-1809	In Progress	D
Exxon Station #73383	8315 S. 212th	Kent	98032-1928	In Progress	A,D
Liquid Air	8008 S. 222nd St.	Kent	98032-1943	Conducted	D
Ernies Truck Stop	21804 84th Ave. S.	Kent	98032-1943	In Progress	A,D
Olympic Steamship Co.	8220 S. 212th	Kent	98032-1959	Conducted	A,D
Olympic Steamship Schultz Card	8220 S. 212th	Kent	98032-1979	In Progress	A
US West Kent Soc 070963	19616 68th S.	Kent	98032-2100	Conducted	D
Boeing Aerospace: 1841 Building	20403 68th Ave. S.	Kent	98032-2316	In Progress	D
Boeing Aerospace: Bldg. 18-03	20403 68th Ave. S.	Kent	98032-2316	Unknown	D
Boeing Aerospace: Bldg. 7-133	20403 68th Ave.S.	Kent	98032-2316	In Progress	D
BP Oil Station #03144	26821 Maple Valley Hwy	Maple Valley	98038	In Progress	D
Exxon Station #7-3465	26821 Maple Valley Hwy	Maple Valley	98038	Conducted	A,D
Texaco Station Maple Valley	21641 Maple Valley Hwy	Maple Valley	98038	Conducted	D
Southland 7-11 Station #25650	23616 Witte Rd.	Maple Valley	98038-6079	Awaiting	A
King County Fire District #43	22225 S.E. 231st St.	Maple Valley	98038-8237	Conducted	D
Arco Station Covington	Wax Rd. & S.E. 272nd	Covington	98042	In Progress	D

ECOLOGY'S CURRENT AND FORMER CONTAMINATED UNDERGROUND STORAGE TANK SITES IN TH SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA JANUARY 7, 1994

	Address	City	Zip Code	Cleanup Status[a]	Media[b]
Kent School Jr. High #6	19600 S.E. 272nd St.	Kent	98042	In Progress	D
Circle K Station #4459	15209 S.E. 272nd West	Kent	98042-4223	Awaiting	D
Shell Station Kent 272nd	17239 S.E. 272nd	Kent	98042-4900	In Progress	A,D
Multicare Property Covington	17841 S.E. Wax Rd.	Covington	98042-4954	Conducted	A,D
Kent School District Meridian	24521 140th Ave. S.E.	Kent	98042-5161	Conducted	D
Texaco Station #010190	13201 S.E. 272nd	Kent	98042-8026	Awaiting	A,D
BP Oil Station #01964	16405 S.E. 272nd	Kent	98042-8211	Conducted	A,D
BPA Covington Substation	28401 Covington Way S.E.	Kent	98042-9106	In Progress	D

aCleanup Status Legend:
Conduct = Ecology received final independent action cleanup report - no further action.
Awaiting = Ecology not aware of any remedial action and cleanup necessary. Owner may have done cleanup but has not reproted it to Ecology. Ecology prioritized these sites on priority (if impacts to human health and ground water).
Monitoring = Sites where cleanup has occurred and monitoring is ongoing. As the results are near cleanup levels, iste isusually monitored for a year.
In Progress = Site cleanup in progress/ongoing.
Unknown = Ecology notified that tank system has failed but has no further information at this time.
b Media Legend:
A = Ground Water
B= Soil

E 4.6 POPULATION PROJECTIONS FOR THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

FORECAST ANALYSIS ZONE	1970	1980	1990	2000	2010	2020
3010	7,773	18,598	31,103	42,659	49,151	54,590
3020	11,692	13,827	18,587	21,767	23,101	24,798
3030	14,184	17,470	24,288	31,261	34,806	37,780
3045		16,898	22,676	27,766	30,665	33,684
3046		14,649	20,958	26,017	28,906	31,926
3110	2,946	3,502	5,595	7,559	8,881	10,224
3120	11,645	14,442	18,491	22,947	25,528	28,157
3130	10,080	11,838	14,510	16,326	17,123	18,276
3310	3,452	6,858	9,083	10,952	11,960	13,165
3320	3,522	9,307	16,302	21,239	23,244	25,181
3330		9,023	11,039	14,354	16,115	17,363
3413		5,528	5,456	5,657	6,025	6,539
3414		12,895	18,151	22,137	24,414	26,856
3415		11,021	15,345	20,036	23,100	26,320
3416		13,953	20,036	25,089	27,904	31,475
3425		6,980	11,162	14,661	16,861	18,468
3426		6,930	10,343	13,833	16,411	19,228

E 4.6 POPULATION PROJECTIONS FOR THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA

FORECAST ANALYSIS ZONE	1970	1980	1990	2000	2010	2020
3427		10,216	13,220	16,333	18,256	20,402
3505		16,797	26,863	34,714	39,467	44,099
3600		9,577	12,337	14,588	16,138	17,087
3705		26,867	27,143	28,180	28,264	28,927
3706		14,554	14,734	15,506	15,575	15,960
3815		17,697	17,740	18,225	18,454	18,943
3816		18,273	19,312	20,024	19,869	20,240
3825		13,921	15,153	15,820	15,794	16,129
3900	3,177	3,505	4,130	4,642	4,925	5,323
4110	8,976	11,052	14,987	17,282	17,581	17,997
5715		16,939	16,522	16,318	16,100	16,045
5716		17,577	21,195	23,380	25,415	26,834
5720	36,244	31,946	32,789	34,277	35,059	35,882
5816		3,857	4,047	3,779	3,388	3,191
5826		3,782	3,724	3,687	3,527	3,560
Total		410,279	517,021	611,015	662,007	714,649

Source: Puget Sound Council of Governments, June 1988 (1970).
Puget Sound Regional Council (1980 to 2020).

TABLE 5.1 NOMENCLATURE AND REGIONAL CORRELATION OF STRATIGRAPHY IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT PLAN

Unit Symbol	Stratigraphic Sequence for Study	Suggested Regional Correlation	Geologic Character
Qal	Recent Alluvium	Quaternary Alluvium	Principally fine grained sand, silt, clay, and peat. Clean sand and gravel deposits locally occur in vicinity of the White River near Auburn and the Cedar River upstream of Renton.
Qom	Osceola Mudflow	Osceola Mudflow	Unsorted mixture of andesite rock fragments and wood in a clayey sand matrix. Large boulders near the base. Occurs primarily in the southern portion of the study area.
Qvr	Vashon Recessional Outwash	Vashon Recessional Outwash	Well-sorted sand and gravel deposits. Includes outwash plain, valley train, delta, and ice-contact kame and kame terrace deposits. Qvrl is a fine grained subset where material was locally deposited in recessional lakes.
Qvt	Vashon Till	Vashon Till	Compact mixture of gravel and occasional boulder in a gray clayey, silty sand matrix. Locally includes some cleaner sand and gravel lenses. Occur typically as an undulating carpet at the ground surface in South King County.
Qva	Vashon Advance Outwash	Vashon Advance Outwash, Colvos Sand, Experance Sand	Predominately sand and gravelly sand in Des Moines Upland. Usually has a higher percentage of gravel in most other portions of the study area. May locally include very fine sand and silt.
Qvl	Lawton Clay	Lawton Clay (Mullineaux, 1965)	Lacustrine deposits primarily composed of clay, silt, and fine sand deposited in the Vashon pro-glacial lake. More widespread in North King County than in the study area.
Qvu	Undifferentiated Vashon Deposits	Undifferentiated Vashon Deposits	An assortment of deposits including till, outwash, and lacustrine deposits that were deposited during the Vashon Stade of the Frazer Glaciation.

TABLE 5.1 NOMENCLATURE AND REGIONAL CORRELATION OF STRATIGRAPHY IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT PLAN

Unit Symbol	Stratigraphic Sequence for Study	Suggested Regional Correlation	Geologic Character
Qf(1)	First Fine Grained Unit	Olympia Interglacial	Principally fine-grained fluvial and lacuatrine consisting of sand, silt, clay, and peat. May locally contain some sand and gravel deposits.
Qc(2)	Second Coarse Grained Unit	Possession Drift (Easterbrook, 1968) Double Bluff Drift (Easterbrook, 1968)	Principally granular soils and till with a relatively fresh appearance. Till is difficult to distinguish from Vashon Till in outcrop. Found only in the Covington upland where it is an important groundwater aquifer. Tentatively correlated with Possession Drift suggesting that the Double Bluff advance did not reach as far south.
Qf(2)	Second Fine Grained Unit	Whidbey Formation (Easterbrook, 1968) Kitsap Formation (Garling, et.al., 1965)	Principally fine grained fluvial and lacustrine deposits consisting of sand, silt, clay, and peat. May locally contain some sand and gravel deposits.
Qc(3)	Third Coarse Grained Unit	Salmon Springs Drift (Crandell, et.al., 1958)	Typically recognized by its oxidized character both in outcrop and in well logs (rusty gravel). Occurs ubiquitously in all upland subareas in this study. An important source of groundwater in South King County.
Qc(4)	Fourth Coarse Gained Unit	Uncertain	Coarse grained deposits
Tbr	Tertiary Bedrock	Puget Group	Principally arkosic, micaceous sandstone and interbedded shale and coal. Locally includes thick sequence of volcanic sandstone and conglomerate, tuffaceous siltstone, tuffbreccia, and lava flows.

Table 6.1 SUMMARY OF GWMA MONITORING WELLS SOUTH KING COUNTY GROUND WATER MANAGEMENT PROGRAM

Local Well Number	Site ID Number	Well Owner	Site/Mailing Address	Source Aquifer	Site Elev. (ft-MSL)	Elev Code	Well Depth (ft)	Water Level Depth (ft)	Date of Site Visit	Well Dia. (in.)	Water Level	W.Q.	Status Codes	Responsible Party
21N/04E-12P01	471859122143101	City Auburn (T-9)	1305 C St SW Auburn, WA 98001	Qvr	70.00	M	280.0	3.33	1982/05/00	2	X		M	A
21N/04E-24E01	471740122143101	City Auburn (T-8)	1305 C St SW Auburn, WA 98001	Qvr	77.00	M	0.0	7.45	1990/05/07	0	X		M	A
21N/05E-07E02	471927122133502	City Auburn (T-5)	1305 C St. SW Auburn, WA 98001	Qvr	59.00	M	342.0	59.00	1981/11/04	8	X		M	A
21N/05E-18B01	471851122125501	City Auburn, No. 2	1305 C St. SW Auburn, WA 98001	Qvr	70.10	L	293.0	7.67	1968/11/20	30	X		P	A
21N/05E-19A02	471821122123601	City Auburn, No. 1	1305 C St SW Auburn, WA 98001	Qvr	105.00	L	134.0	41.00	1990/02/21	0	X	X	P	A
21N/05E-30B03	471711122125102	City Auburn, No. 4	1305 C St SW Auburn, WA 98001	Qvr	120.50	L	338.0	45.00	1984/03/08	24	X	X	P	A
21N/05E-30L04	471613122131503	City Auburn, T-3	1305 C St SW Auburn, WA 98001	Qvr	113.50	M	391.0	78.00	1981/10/30	8	X		M	A
21N/05E-30L03	471643122131504	City Auburn, T-3B	1305 C St. SW Auburn, WA 98001	Qal	114.00	M	96.0	77.00	1981/09/28	8	X		M	A
21N/05E-31Q01	471532122125301	City Auburn, No. 5	1305 C St. SW Auburn, WA 98001	Qc(u)	495.55	L	335.0			12	X	X	P	A
21N/04E-25M01	471637122144701	Algona	402 Warde St. S , Algona, WA 98001	Qal	79.40	L	68.0	1.35	1975/08/15	10	X	X	P	A/P
21N/04E-25Q02	471625122141201	City of Pacific, Well 1	100 Third Ave. SE, Pacific, WA 98047	Qal	72.00	L	8.0	-2.00	1986/07/30	8	X		M	A/P
21N/04E-25Q03	471624122141201	City of Pacific, Well 2	100 Third Ave. SE, Pacific, WA 98047	Qal								X	P	A/P
21N/06E-04B06	472025122024502	Covington Water Well B	3033-188th SE, Kent, WA 98042	Qc(2)	536.88	L	80.0	44.00	1969/02/25	10	X		P	CWD
21N/06E-04B09	472029122024101	Covington Water, Well A	3033-188th SE, Kent, WA 98042	Qc(2)	536.00	M	80.0	43.00	1975/12/13	16		X	P	CWD
22N/06E-28J03	472152122022402	Covington Water, Witte Road #2	3033-188th SE, Kent, WA 98042	Qc(2)	494.00	M	209.3	61.50	1992/09/16	8	X	X	P	CWD
22N/06E-36A02	472128121582301	Covington Water, Ravensdale	3033-188th SE, Kent, WA 98042	Qvr	618.50	I	40.8	22.21	1984/07/12	16	X	X	P	CWD
21N/03E-14A01	471845122224301	Twin Lakes C.C.		Qva	210.00	M	192.0	27.60	1984/07/27	12		X	P	LUD
21N/04E-07Q06	471908122201202	LUD, Well 23A	PO Box 4249, Federal Way, WA 98063	Qva	307.50	L	215.5	78.90	1984/10/10	20	X	X	P	LUD
21N/03E-12J02	471920122211601	LUD, Well 6 Replacement	PO Box 4249, Federal Way, WA 98063		270.00	M	141.0	33.00	1970/05/21	10	X		P	LUD
21N/04E-07R01	471906122200101	LUD, Well 20	PO Box 4249, Federal Way, WA 98063	Qva	339.00	L	366.0	137.40	1976/04/30	20	X	X	P	LUD
21N/04E-08F03	471930122192502	LUD, Well 25 (deep obs)	PO Box 4249, Federal Way, WA 98063	Qc(u)	447.50	L	877.0	345.00	1987/12/07	8	X		M	LUD
21N/04E-15L02	471813122170301	LUD, Well 10B	PO Box 4249, Federal Way, WA 98063	Qc(3)	410.00	M	455.0	275.00	1963/11/04	16	X	X	P	LUD
21N/04E-18C01	471844122204301	LUD, Well 17	PO Box 4249, Federal Way, WA 98063	Qva	293.00	L	190.0	62.30	1970/06/17	12	X	X	P	LUD
21N/04E-19B02	471751122203501	LUD, Site 19 obs.	PO Box 4249, Federal Way, WA 98063	Qc(u)	282.00	L	947.0	224.26	1986/03/24	8	X		M	LUD
21N/04E-19B03	471751122203502	LUD, Site 19	PO Box 4249, Federal Way, WA 98063	Qc(u)	283.30	L	934.0	227.00	1987/01/26	20	X	X	P	LUD
21N/04E-19B04	471754122202901	LUD, Site 19A obs	PO Box 4249, Federal Way, WA 98063	Qva	282.50	L	155.0	68.30	1990/04/16	8	X		M	LUD
21N/04E-29D01	471703122195701	LUD, Well 21	PO Box 4249, Federal Way, WA 98063	Qva	206.00	L	147.0	10.35	1981/04/07	16	X	X	P	LUD
21N/04E-32P01	471528122193701	McDowell, Homer		Qva	40.00	M	108.0	-4.77	1984/08/02	16	X		P	LUD
21N/04E-34P01	471527122170801	LUD, Well 22	PO Box 4249, Federal Way, WA 98063	Qc(3)	286.00	L	299.0	68.80	1981/03/27	12	X	X	P	LUD
21N/05E-08M02	471913122122101	Kent, Ramey-deep	200 4th Ave. S, Kent, WA 98032	Qvr	67.00	M	300.0	4.20	1983/03/11	12	X		M	K

Table 6.1 SUMMARY OF GWMA MONITORING WELLS SOUTH KING COUNTY GROUND WATER MANAGEMENT PROGRAM

Local Well Number	Site ID Number	Well Owner	Site/Mailing Address	Source Aquifer	Site Elev (ft-MSL)	Elev Code	Well Depth (ft)	Water Level Depth (ft)	Date of Site Visit	Well Dia. (in.)	Water Level	W.Q.	Status Codes	Responsible Party
21N/05E-08M03	471913122122102	City Kent, Ranney-shallow	200 4th Ave. S, Kent, WA 98032	Qal	63.00	M	72.0	9.90	1983/02/07	12	X		M	K
22N/04E-27M01	472149122173001	City Kent, Cambridge	200 4th Ave. S, Kent, WA 98032	Qc(4)	441.40	L	435.0	302.00	1981/09/10	16	X		M	K
22N/05E-07F02	472441122130501	City Kent, 212th St. No. 2	200 4th Ave. S, Kent, WA 98032	Qc(4)	53.30	L	366.0	-43.00	1983/06/	20		X	P	K
22N/05E-07J01	472424122123301	City Kent, Garrison Deep	200 4th Ave. S, Kent, WA 98032	Qc(3)	247.08	L	435.0	9.90	1983/02/07	12	X	X	P	K
22N/05E-17K03	472334122113101	City Kent, Blue Boy Tank	200 4th Ave. S, Kent, WA 98032	Qc(3)	497.60	L	455.0	263.00	1982/02/12	12	X		M	K
22N/05E-20E03	472254122120101	City Kent,East Hill	200 4th Ave. S, Kent, WA 98032	Qc(3)	436.22	L	251.0	185.00	1980/03/20	20	X	X	P	K
22N/05E-28E01	472154122105101	City Kent, Soos Creek Well	200 4th Ave. S, Kent, WA 98032	Qc(2)	425.00	L	410.0	184.00	1981/02/19	16	X	X	P	K
22N/05E-36A03	472124122060701	City Kent, Armstrong Springs	200 4th Ave. S, Kent, WA 98032	Qc(2)	369.00	L	90.0	14.74	1982/08/17	16		X	P	K
22N/05E-36A02	472124122060702	City Kent, Armstrong Springs (obs Well 2A)	200 4th Ave. S, Kent, WA 98032	Qc(2)	368.10	L	101.0	20.22	1990/08/14	8	X		M	K
22N/06E-26P01	472134122004301	City Kent, Clark Springs	200 4th Ave. S, Kent, WA 98032	Qvr	560.00	M	50.0	4.00	1968/01/30	0		X	P	K
22N/06E-26P04	472141122002402	City Kent, Clark Springs obs Well 2	200 4th Ave. S, Kent, WA 98032	Qvr	563.30	L		10.42	1990/05/30	8	X		M	K
22N/06E-33P05	472049122025702	City Kent, Kent SpringsTW-1 (B7)	200 4th Ave. S, Kent, WA 98032	Qvr	225.20	L	122.0	46.80	1969/08/	16	X	X	P	K
21N/05E-13G03	471852122082201	Hammons, Gary	17329 SE 324th St, Auburn, WA 98002	Qc(3)	365.00	M	58.0	11.00	1985/03/01	6	X	X	P	SKC
23N/05E-25R02	472646122061001	Holden, EC			558.00	M	255.0	91.50	1962/05/04	6	X		P	SKC
21N/05E-19E01	471737122132201	Holy Family Parish, J Lynch	505-17th Ave SE, Auburn, WA 98002	Qal	95.00	M	60.0	31.00	1967/12/15	8	X	X	P	SKC
21N/05E-30J03	471633122124001	Bailey, Mike	1334-37th Ave SE, Auburn, WA 98002	Qal	105.00	M	59.0	40.00	1982/07/08	6	X	X	P	SKC
21N/06E-07P01	471906122053701	Kuhlmann, Don	31608 Thomas Rd, Auburn, WA 98002	Qvr	400.00	M	46.0	7.00	1979/09/10	6	X	X	P	SKC
21N/06E-11H01	471925121594801	Reichert, Mathew	25920 SE 130th St, Black Diamond, WA 98010	Tbr	815.00	M	240.0	40.00	1980/02/04	6	X	X	P	SKC
21N/06E-17R01	471806122033701	Cronin, Mike	33220-210th SE, Auburn, WA 98002	Qi(3)/Qu	475.00	M	236.0	115.00	1985/08/20	6	X		P	SKC
21N/06E-20Q01	471716122035601	Benz, Gary & Rose	20621 SE Green Valley Rd, Auburn, WA 98002	Qal	159.14	M	34.0	5.61	1980/04/02	6	X	X	P	SKC
21N/06E-23B02	471756122001801	Palmer Coking Coal, Bill Combul	33143 Plass Rd, Black Diamond, WA 98010	Qu	650.00	M	128.0	102.00	1984/05/23	6	X		P	SKC
22N/04E-03K01	472522122164001	Pittigner, Fred	4301 S 200th St, Kent, WA 98032	Qc(3)	160.00	M	110.0	60.00	1973/12/28	6	X	X	P	SKC

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Local Well Number	Site ID Number	Well Owner	Site/Mailing Address	Source Aquifer	Site Elev (ft-MSL)	Elev Code	Well Depth (ft)	Water Level Depth (ft)	Date of Site Visit	Well Dia. (in.)	Water Level	W.Q.	Status Codes	Responsible Party
22N/04E-26R01	472136122145701	Smith Bros. Dairy North	27441-68th Ave. S, Kent, WA 98032	Qal	35.00	M	90.0	3.00	1983/10/28		X	X	P	SKC
22N/05E-36M01	472059122070401	Bonneville PWR			331.00	M	106.0	10.00	1941/04/10	10	X		P	SKC
22N/06E-06Q03	472510122051801	Schellhase, Robert	20415-190th SE, Renton, WA 98058	Qva/Qc(2)	525.00	M	97.0	65.00	1981/01/06	6	X	X	P	SKC
22N/06E-16D03	472400122032401	David, Dale & Louise	22424-212th SE, Maple Valley, WA 98038	Qc(3)	575.00	M	226.0	183.00	1978/09/20	6	X	X	P	SKC
23N/05E-25F01	472701122062701	Maple Valley Christian School	16700-174th Ave. SE, Renton, WA 98058	Tbr	656.00	M	203.0	26.00	1954/12/09	6	X	X	P	SKC
23N/05E-27K01	472701122090001	Fairwood Golf Club, Well 1		Qc(3)	494.00	M	249.0	100.00	1986/04/28	8	X			SKC
23N/05E-27K02	472701122085401	Fairwood Golf Club, Well 2		Qc(3)	475.00	M		126.20	1990/07/13	8	X			SKC
23N/04E-09N01	472932122183001	Seattle Water Dept, OW-7S	1509 S Spokane St, Seattle, WA 98144	Qva	345.00	M	71.0			0	X	X	M	SWD
23N/04E-16D01	472918122183601	Seattle Water Dept, OW-2I	1509 S Spokane St, Seattle, WA 98144	Qc(3)	363.00	L	300.5	81.00	1986/11/13	2	X		M	SWD
23N/04E-16D02	472919122182501	Seattle Water Dept, OW-2S	1509 S Spokane St, Seattle, WA 98144	Qva	362.70	L	75.0	61.00	1986/11/13	2	X	X	M	SWD
23N/04E-16K01	472842122175801	Seattle Water Dept, OW-3S	1509 S Spokane St, Seattle, WA 98144	Qva	400.25	L	109.0	84.00	1986/11/13	2	X	X	M	SWD
23N/04E-16K02	472842122175701	Seattle Water Dept, OW-3I	1509 S Spokane St, Seattle, WA 98144	Qc(3)	400.73	L	320.0	120.00	1986/11/13	2	X		M	SWD
23N/04E-16K03	472842122175601	Seattle Water Dept, OW-3D	1509 S Spokane St, Seattle, WA 98144	Qc(4)	399.82	L	523.0	162.00	1986/11/13	2	X		M	SWD
23N/04E-16N01	472834122183101	Seattle Water Dept, OW-6S	1509 S Spokane St, Seattle, WA 98144	Qva	344.56	L	47.0	29.00	1987/12/07	2	X	X	M	SWD
23N/04E-21C02	472821122181001	Seattle Water Dept, OW-5S	1509 S Spokane St, Seattle, WA 98144	Qva	432.44	L	149.5	124.00	1986/11/13	2	X	X	M	SWD
23N/04E-21H07	472810122173701	Seattle Water Dept, OW-4S	1509 S Spokane St, Seattle, WA 98144	Qva	405.27	L	107.5	95.00	1985/07/18	2	X		M	SWD
23N/04E-27C04	472733122175901	Seattle Water Dept, OW-1I	1509 S Spokane St, Seattle, WA 98144	Qc(3)	423.21	L	328.0	155.00	1985/06/24	8	X		M	SWD
23N/04E-30P02	472655122204501	SW Suburban Sewer District		Qc(3)	26.00		38.5	10.00	1986/08/28	8	X	X	P	SWD
22N/05E-21Q04	472230122101401	WD 111, Well 5	27239-132nd Ave., SE Kent, WA 98031	Qc(2)	517.80	L	368.0	142.00	1982/02/15	12	X	X	P	WD111
22N/05E-23M01	472757122082701	WD 111, Well 3	27239-132nd Ave., SE Kent, WA 98031	Qc(2)	350.80	I	79.0	1.00	1982/12/01	12	X	X	P	WD111
22N/05E-33J02	472058122095401	WD 111, Well 6	27239-132nd Ave., SE Kent, WA 98031	Qc(3)	371.50	I	215.0	27.00	1984/12/05	12	X	X	P	WD111
22N/05E-34N01	472039122093601	WD 111, Well 7	27239-132nd Ave., SE Kent, WA 98031	Qc(3)	345.00	M	255.0	34.50	1988/08/29	0	X		P	WD111

Table 6.1 SUMMARY OF GWMA MONITORING WELLS SOUTH KING COUNTY GROUND WATER MANAGEMENT PROGRAM

Local Well Number	Site ID Number	Well Owner	Site/Mailing Address	Source Aquifer	Site Elev. (ft-MSL)	Elev Code	Well Depth (ft)	Water Level Depth (ft)	Date of Site Visit	Well Dia. (in)	Water Level	W.Q.	Status Codes	Responsible Party
22N/05E-35D01	472148122081901	WD 111, Well 9	27239-132nd Ave., SE Kent, WA 98031	Qc(4)	346.90	L	438.7	9.10		0	X	X	P	WD111
22N/04E-08A03	472457122190201	WD 75 Des Moines	23828 30th Ave. S, Kent, WA 98032	Qc(4)	189.80	L	362.0	72.00	1983/07/06	24	X	X	P	WD54/WD7
22N/04E-08K05	472430122191701	WD 54, No. 3	922 S 219th St, Des Moines, WA 98198	Qc(3)	150.00	M	200.0	42.00	1955/06/03	12	X		M	WD54/WD7
22N/04E-08K07	472433122192101	WD 54, No. 4	922 S 219th St, Des Moines, WA 98198	Qc(4)	150.00	M	328.0	79.00	1967/06/13	16	X	X	P	WD54/WD7
22N/04E-08K08	472421122190501	WD 54, No. 5	922 S 219th St, Des Moines, WA 98198	Qc(3)	150.00	M	244.0	46.30	1982/05/06	12	X	X	P	WD54/WD7
22N/04E-09A04	472452122174101	WD 75 Angle Lake	23828 30th Ave. S, Kent, WA 98032	Qc(4)	337.63	L	485.0	202.00	1983/08/30	30	X	X	P	WD54/WD7

1) Responsible parties include:

C-Consultant
K-City of Kent
S-Seattle Water Department
A-City of Auburn
P-City of Pacific
LUD-Lakehaven Utility District
WD75-Water District 75
WD111-Water District 111
WD54-Water District 54
SKC-Seattle-King County Health
CWD-Covington Water District

2) Status Codes:

M-Monitoring Well
P-Production/Supply Well

3) Site Elevation Codes:

A-Elevation Determined with Altimeter
L-Elevation Determined with Level or Surveying Method (King County Datum)
M-Elevation Determined from Interpolation from Topographic Map
all measurements taken from mean sea level (MSL)

4) W.Q.:

Sampled for Water Quality Analysis

TABLE 6.2 MONITORING OF SELECTED CATEGORIES OF REGULATED CHEMICALS

Sample Date:	August 1990	April 1991
Sample Parameter:	Regulated Inorganics	Regulated Inorganics
	Additional Inorganics	Additional Inorganics
		Coliform Bacteria
		Volatile Organics
		Semi-Volatile Organics

TABLE 6.3 ANALYTICAL PARAMETERS BY SUBAREA

Sample ID	Owner	Owner ID	Inorganics	Coliform Bacteria	Volatile Organics	Semi-Vol. Organics	Pesticides	PCBs
Des Moines Upland Subarea								
23N/04E-16D02	Seattle	OW-2S	Yes	Yes	Yes			
23N/04E-16K01	Seattle	OW-3S	Yes	Yes	Yes	Yes	Yes	Yes
23N/04E-21C02	Seattle	OW-5S	Yes	Yes				
23N/04E-16N01	Seattle	OW-6S	Yes	Yes	Yes			
23N/04E-09N01	Seattle	OW-7S	Yes	Yes				
22N/04E-08K07	KCWD 54	Well 4	Yes	Yes				
22N/04E-08K08	KCWD 54	Well 5	Yes	Yes	Yes			
22N/04E-09A04	KCWD 75	Angle Lake	Yes	Yes				
22N/04E-08A03	KCWD 75	Des Moines	Yes	Yes				
23N/04E-30P02	SW Suburb. Sew		Yes	Yes				
22N/04E-03K01	Pittenger		Yes	Yes	Yes			
Federal Way Subarea								
21N/04E-07Q06	FWWS	Well 23A	Yes	Yes				
21N/04E-07R01	FWWS	Well 20	Yes	Yes				
21N/04E-15L02	FWWS	Well 10B	Yes	Yes	Yes			
21N/04E-18C01	FWWS	Well 17	Yes	Yes	Yes			
21N/04E-19B03	FWWS	Well 19	Yes	Yes				
21N/04E-29D01	FWWS	Well 21	Yes	Yes	Yes	Yes		
21N/04E-34P01	FWWS	Well 22	Yes	Yes				
21N/03E-14A01	Twin Lk. CC		Yes	Yes	Yes	Yes	Yes	Yes
Green River Subarea								
21N/05E-19A02	Auburn	Well 1	Yes	Yes	Yes	Yes		
21N/05E-30B02	Auburn	Well 4	Yes	Yes	Yes		Yes	Yes
21N/05E-31Q01	Auburn	Well 5	Yes	Yes	Yes			
21N/04E-25M01	Algona	Well 1	Yes	Yes	Yes			
21N/04E-25Q03	Pacific	Well 1	Yes	Yes	Yes	Yes	Yes	Yes
21N/05E-19E01	Holy Family		Yes	Yes				
22N/04E-26R01	Smith Dairy		Yes	Yes	Yes	Yes	Yes	Yes
21N/05E-30J03	Bailey		Yes	Yes	Yes			

TABLE 6.3 ANALYTICAL PARAMETERS BY SUBAREA

Sample ID	Owner	Owner ID	Inorganics	Coliform Bacteria	Volatile Organics	Semi-Vol. Organics	Pesticides	PCBs
			Covington Upland Subarea					
22N/05E-21Q04	KCWD 111	Well 5	Yes	Yes				
22N/05E-23M01	KCWD 111	Well 3	Yes	Yes	Yes	Yes	Yes	Yes
22N/05E-33J02	KCWD 111	Well 6	Yes	Yes	Yes			
21N/06E-04B08	CWD	Well A	Yes	Yes	Yes			
22N/06E-28J03	CWD	Witte Rd.	Yes	Yes	Yes			
22N/06E-36A02	CWD	Ravensdale	Yes	Yes	Yes			
22N/05E-07F02	Kent	212th St.	Yes	Yes				
22N/05E-07J01	Kent	Garrison Cr.	Yes	Yes				
22N/05E-20E03	Kent	East Hill	Yes	Yes				
22N/06E-26P03	Kent	Clark Sprs	Yes	Yes	Yes	Yes	Yes	Yes
22N/053-28E01	Kent	Soos Cr.	Yes	Yes				
22N/06E-33P05	Kent	Kent Sprs.	Yes	Yes	Yes	Yes	Yes	Yes
22N/05E-36A03	Kent	Armstrong Sprs. 2	Yes	Yes	Yes	Yes	Yes	Yes
22N/06E-06Q03	Schellhase		Yes	Yes				
22N/06E-16D03	David		Yes	Yes				
23N/05E-25F01	Maple V. Christ Sch.		Yes	Yes				
21N/06E-07P01	Kuhlmann		Yes	Yes	Yes	Yes	Yes	Yes
21N/06E-11H01	Reichert		Yes	Yes				
21N/06E-20Q01	Benz		Yes	Yes	Yes			
21N/05E-13G03	Hammons Ulleland		Yes	Yes				

TABLE 6.4 NITRATE LEVELS GREATER THAN 2 MG/L

Well Site	SAMPLING Nitrate (mg/L N)	Date
19A02	2.4	8/14/90
19A02	2.4	4/01/91
19E01	3.0	8/15/90
19E01	4.1	4/04/91
09N01	2.8	4/03/91

TABLE 6.5 WELL SITES WITH WATER QUALITY PARAMETER RESULTS ABOVE THE MAXIMUM CONTAMINANT LEVEL

Parameter	Units	Level	MCL	(Collection Site #)	Subarea	Date	Aquifer
Mercury	mg/L	0.0045	0.002	16N01	Des Moines	8/90	Qva
Total Coliform	MPN/100 mL	>2000	1	16D02	Des Moines	8/90	Qva
Total Coliform	MPN/100 mL	2000	1	21C02	Des Moines	8/90	Qva
Total Coliform	MPN/100 mL	22	1	16K02	Des Moines	8/90	Qva
Fecal Coliform	MPN/100 mL	2	1	16K01	Des Moines	8/90	Qva
Lead	mg/l	0.094	0.05	19A02	Green River	8/90	Qvr
Lead	mg/L	0.064	0.05	19A02	Green River	4/91	Qvr
Chromium	mg/L	0.1	0.1	25Q03	Green River	4/91	Qal
Arsenic	mg/L	0.118	0.05	36A02	Covington	4/91	Qc(2)

TABLE 6.6 **EXPLORATION/MONITORING WELLS DRILLED WITH MATCHING FUNDS IN THE SOUTH KING COUNTY GROUND WATER MANAGEMENT AREA**

District	Project Name	Date
Federal Way Water and Sewer District	Exploration/Monitor Wells 25T1 & 25T2	Dec., 1987
King Co. Water District 111	Exploration/Production Well 7	Aug., 1988
Covington Water District	Exploration Well - Tank 2 Site	April, 1989
King Co. Water District 111	Exploration/Production Well 9	July, 1989
King Co. Water District 111	Exploration/Monitor Well 8	Oct., 1989
Federal Way Water and Sewer District	Exploration/Monitor Well 26T	March, 1990
Federal Way Water and Sewer	Exploration/Monitor Well 17T	May, 1990
Seattle Public Utilities	Exploration/Monitor Well, West Seattle	May, 1990
Covington Water District	Exploration/Monitor Well - Wax Road	July, 1990

NOTE: Federal Way Water and Sewer District now called Lakehaven Utility District.

TABLE 7.1 STREAM GAUGES OPERATED BY KING COUNTY SURFACE WATER MANAGEMENT AS OF FEBRUARY 24, 1994 IN SOUTHWEST KING COUNTY

Name	Type(1)	Location	Legal	Agency(2)
03P	STG	Black River Pump Station in Renton		SWM/BP
09A	FLOW	Covington Creek at 168th Way SE, near Covington	SW 12 T21N R5E	SWM/BP
09B	FLOW	Lake Sawyer Inflow #1 (South)		SWM/WQ
09C	FLOW	Lake Sawyer Inflow #2 (Middle)		SWM/WQ
09D	FLOW	Lake Sawyer Inflow #3 (North)		SWM/WQ
09U	PCP	Covington Creek Precipitation, near Black Diamond		SWM/BP
24D	FLOW	Hylebos Creek at Hwy 99 in Federal Way		SWM/BP
26A	FLOW	Jenkins Creek at Kent - Black Diamond Rd., near Kent	NE 02 T21N R5E	SWM/BP
26U	PCP	Upper Jenkins Creek Precipitation, near Shadow Lake	SW 08 T22N R6E	SWM/BP
31B	FLOW	Stream 0302 above Maple Valley Highway, Renton	SE 22 T23N R5E	SWM/BP
31D	FLOW	Madsen Creek above Maple Valley Highway, near Renton	SW 23 T23N R5E	SWM/BP
31E	FLOW	Stream 0308 above Jones Road, near Renton	NE 24 T23N R5E	SWM/BP
31H	FLOW	Taylor Creek at 255th Ave., SE near Maple Valley	SE 04T22N R6E	SWM/BP
31I	FLOW	Taylor Creek at 238th Ave SE, near Maple Valley	NE 10 T22N R6E	SWM/BP
31U	PCP	Maplewood Basin Precipitation, near Renton	SE 15 T23N R5E	SWM/BP
31W	PCP	Lake Desire Precipitation, near Renton	NE 08 T22N R5E	SWM/BP
32U	PCP	Lower Green River Precipitation	SE 09 T21N R5E	SWM/BP
40A	FLOW	Green River at 218th Ave. SE, near Black Diamond	NW 28 T21N R6E	SWM/BP
40B	FLOW	Stream at Green River, near Black Diamond	SE 27T21N R6E	SWM/BP
40C	FLOW	Crisp Creek above hatchery, near Black Diamond	NW 29 T21N R6E	SWM/BP
40U	PCP	O'Grady Rain on 198th Ave SE northwest of Enumclaw		SWM/BP
41A	FLOW	Mill Creek at SR 181, near Kent	NW 25 T22N R5E	SWM/BP
54C	FLOW	Springwood Outflow	SE 28 T22N R5E	SWM/CIP
54F	FLOW	Springwood Inflow #1	SE 28 T22N R5E	SWM/CIP
54G	FLOW	Springwood Inflow #2	SE 28 T22N R5E	SWM/CIP
54H	FLOW	Soosette Cr. above SR18		SWM/CIP
54I	FLOW	Tributary 0089		Future-site
54V	PCP	Soos Creek Precipitation, near Meridian Heights	SW 23 T22N R5E	SWM/CIP
54W	PCP	Springwood Rainfall	SE 28 T22N R5E	SWM/CIP
BH2	WELL	Horseshoe Lake Ground Water Well #1		SWM/CIP
BH3	WELL	Horseshoe Lake Ground Water Well #2		SWM/CIP
BH4	WELL	Horseshoe Lake Ground Water Well #3		SWM/CIP
LAK	LAKE	Lake Moneysmith		SWM/BP
LAK	LAKE	Lake Kathleen		SWM/BP
LAK	LAKE	Peterson Lake		SWM/BP
LAK	LAKE	Spring Lake		SWM/BP
03A	FLOW	Panther Creek at Talbot Rd, Renton	SE 30 T23N R5E	SWM/BP
03B	FLOW	Springbrook creek above SR 167, near Kent	SE 31 T23N R5E	SWM/BP
03D	STG	Springbrook Creek @ SW 43rd St. in Renton		SWM/BP
03E	FLOW	Rolling Hills Creek		SWM/BP

TABLE 7.1 STREAM GAUGES OPERATED BY KING COUNTY SURFACE WATER MANAGEMENT AS OF FEBRUARY 24, 1994 IN SOUTHWEST KING COUNTY

Name	Type(1)	Location	Legal	Agency(2)
03P	STG	Black River Pump Station in Renton		SWM/BP
09A	FLOW	Covington Creek at 168th Way SE, near Covington	SW 12 T21N R5E	SWM/BP
09B	FLOW	Lake Sawyer Inflow #1 (South)		SWM/WQ
09C	FLOW	Lake Sawyer Inflow #2 (Middle)		SWM/WQ
03U	PCP	Panther Creek Precipitation, near Renton	SW 05 T22N R5E	SWM/BP
11A	FLOW	Des Moines Creek at Tyee Regional Pond, Sea-Tac	SW 06 T22N R4E	SWM/CIP
11B	STG	Tyee Regional Pond (stage), Sea-Tac	SW 06 T22N R4E	SWM/CIP
11C	FLOW	Des Moines Creek above Tyee Regional Pond, Sea-Tac	NW 06 T22N R4E	SWM/CIP
11D	FLOW	Des Moines Creek below SR 509, Des Moines	SW 08 T22N R4E	SWM/BP
11U	PCP	Tyee Rainfall	SW 06 T22N R4E	SWM/CIP
35F	FLOW	Seola Creek off Seola Beach Drive, Seattle	NW 12 T23N R3E	SWM/CIP
41A	FLOW	Mill creek @ Mouth, West Valley Highway, in Kent		SWM/CIP
41U	PCP	Star Lake Precipitation	NW 34 T22N R4E	SWM/BP
41V	PCP	Lake Dolloff Precipitation	SE 09 T21N R4E	SWM/BP
42A	FLOW	Miller Creek @ SW 175th Pl., in Normandy Park		SWM/BP
42B	FLOW	Lake Reba Outflow	NW 21 T23N R4E	SWM/CIP
42C	FLOW	Miller "I" Pond, @ S 171st Pl., near Sea-Tac		SWM/CIP
42D	FLOW	Miller Creek @ S 140th St Near Sea-Tac		SWM/BP
42E	FLOW	Walker Creek @ 13th SW, in Normandy Park		SWM/BP
42F	FLOW	Lake Reba Inflow #1		SWM/CIP
42G	FLOW	Lake Reba Inflow #2	NW 29 T23N R3E	SWM/CIP
42H	FLOW	Ambaum Outflow on Miller Creek @ 1st Ave S. in Sea-Tac		SWM/CIP
42I	FLOW	Ambaum Inflow on Miller Creek @ Ambaum Blvd. in Sea-Tac		SWM/CIP
42U	PCP	Lake Reba Precipitation	NW 21 T23N R4E	SWM/CIP
50A	FLOW	Salmon creek at Shorewood Drive, near Seattle	SE 12 T23N R3E	SWM/BP
50B	FLOW	Salmon Creek Bypass, just west of Shich-Shadel		SWM/BP
50C	FLOW	Lakewood Pumps, in Lakewood Park of 10th Ave SW		SWM/BP
50N	SAMP	NPDES gage #1 @ White Center Park off SW 102nd St.		SWM/WQ
50P	SAMP	NPDES gage #2 @ White Center park off 12th Ave SW		SWM/WQ
50U	PCP	Salmon Rain @ 15th Ave SW north of 108th St		SWM/BP
CSG	CRST	Seola crest Stage		SWM/CIP
CSG	CRST	Panther Crest Stage		SWM/CIP
CSG	CRST	Hermes Depression		SWM/CIP
CSG	CRST	Mayfair		SWM/CIP
LAK	LAKE	Panther Lake (Black River Basin)		SWM/BP
LAK	LAKE	Bingamon Pond		SWM/BP

Source: King County Surface Water Management

(1) *explanation*

STG: Stage Recorder

PCP: Precipitation

FLOW: Stream Flow

WELL: Groundwater Monitoring

LAKE: Staff Gauge Recording Gauge

SAMP: Auto Sampler Water Quality

TABLE 7.2 WATER LEVEL MONITORING SITES – SEATTLE PUBLIC UTILITIES WELLS

Township 23N, Range 4E

09N01	Qva
16N01	Qva
16D01	Qc(3)
16D02	Qva
16K01	Qc(3)
16K02	Qc(4)
16K03	Qva
21C02	Qva
21H07	Qc(3)
27C04	Qc(3)
30P02	Qva

TABLE 7.3 WATER LEVEL MONITORING SITES - DES MOINES UPLAND

Township 22N, Range 4E

03K01	Qc(3)
08A03	Qc(4)/Qc(u)
08K05	Qc(3)
08K07	Qc(4)
08K08	Qc(3)
09A04	Qc(4)

TABLE 7.4 WATER LEVEL MONITORING SITES - GREEN RIVER VALLEY

Township 21N, Range 4E	
25M01	Qal
25Q02	Qal
25Q03	Qal
Township 21N, Range 5E	
08M02	Qvr
08M03	Qal
12P01	Qvr
24E01	Qvr
07E01	Qvr
07E02	Qvr
18B01	Qvr
19E01	Qal
30L04	Qvr
30L03	Qal
31Q01	Qc(u)
30J03	Qal
Township 22N, Range 4E	
26R01	Qal

TABLE 7.5 WATER LEVEL MONITORING SITES - FEDERAL WAY AREA

Township 21N, Range 3E	
12J02	
Township 21N, Range 4E	
07Q06	Qva
07R01	Qva
08F03	Qc(u)
15L02	Qc(3)
18C01	Qva
19B01	Qva
19B03	Qc(u)
19B04	Qva
32P01	Qva
34P01	Qc(3)
Township 22N, Range 4E	
27M01	Qc(4)

TABLE 7.6 WATER LEVEL MONITORING SITES - COVINGTON UPLAND

Township 21, Range 6E	
04B06	Qc(2)
07P01	Qvr
11H01	Tbr
17R01	Qf(3)/Qu
20Q01	Qal
Township 22, Range 5E	
07J01	Qc(3)
17K03	Qc(3)
20E03	Qc(3)
28E01	Qc(2)
36A02	Qc(2)
36M01	
21Q04	Qc(2)
23M01	Qc(2)
33J02	Qc(3)
34N01	Qc(3)
35D01	Qc(4)
Township 22, Range 6E	
36A02	Qvr
06Q03	Qva/Qc(2)
26P04	Qvr
28J02	Qc(2)
33P05	Qvr
Township 23, Range 5E	
25F01	Tbr
27K02	Qc(3)

TABLE 7.7 MAXIMUM CONTAMINANT LEVEL CHANGES

Parameter	Old MCL (mg/L)	New MCL (mg/L)	Effective Date
Silver	0.05	0.01	ly 30, 1992
Selenium	0.01	0.05	ly 30, 1992
Barium	1.0	2.0	ly 30, 1992
Cadmium	0.01	0.0005	ly 30, 1992
Chromium	0.05	0.1	ly 30, 1992

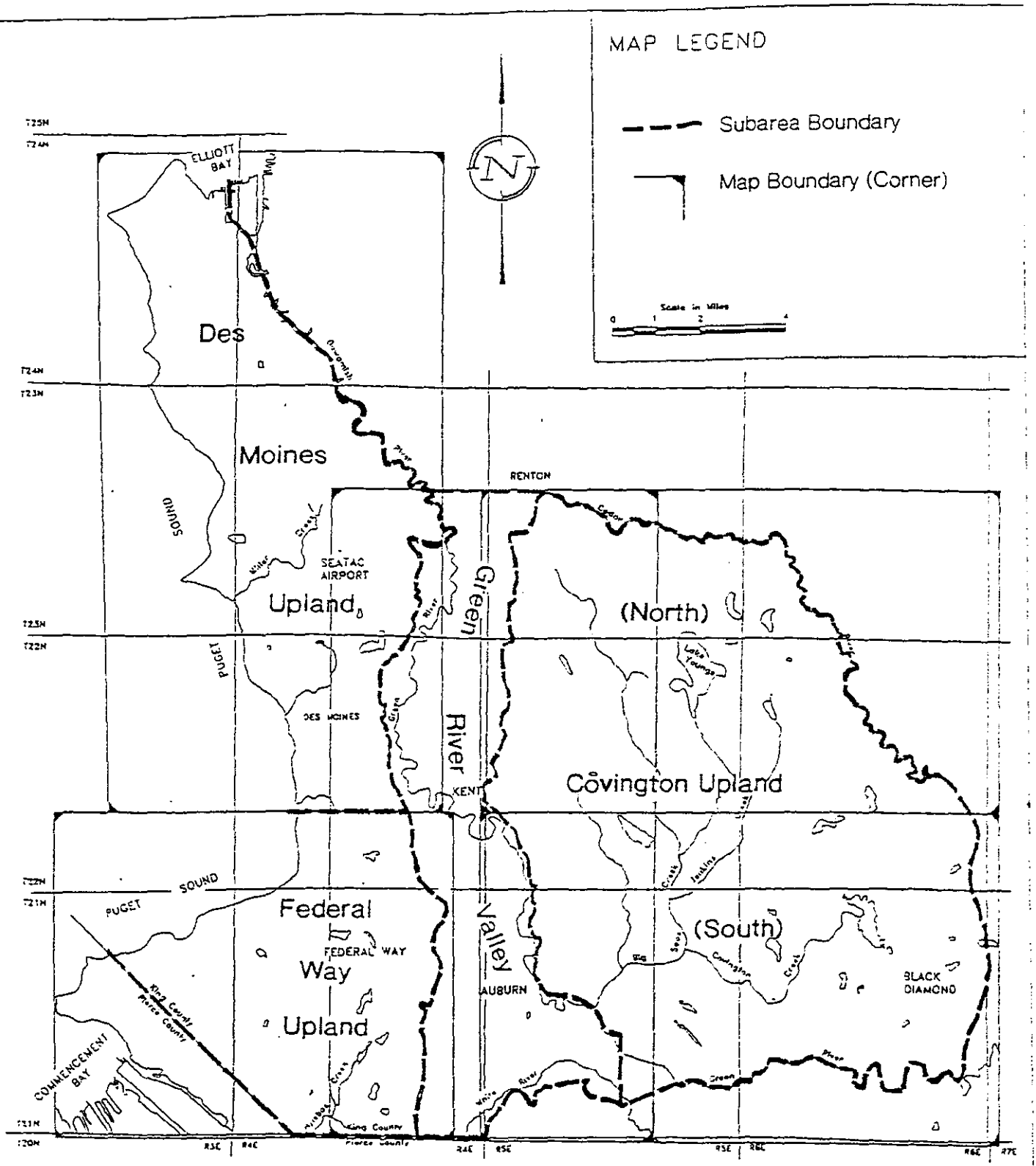
TABLE 7.8 INDICATOR PARAMETERS IN GRANT NO. 1 WHERE NO PREVIOUS HISTORICAL DATA EXISTED

Aluminum	Methylene Chloride
Calcium	Trichlorethylene
Cyanide	Tetrachloroethylene
Copper	1,1,1-Trichloroethane
Sulfate	pH

FIGURES

South King County
Ground Water Management Plan
Area Characterization Supplement

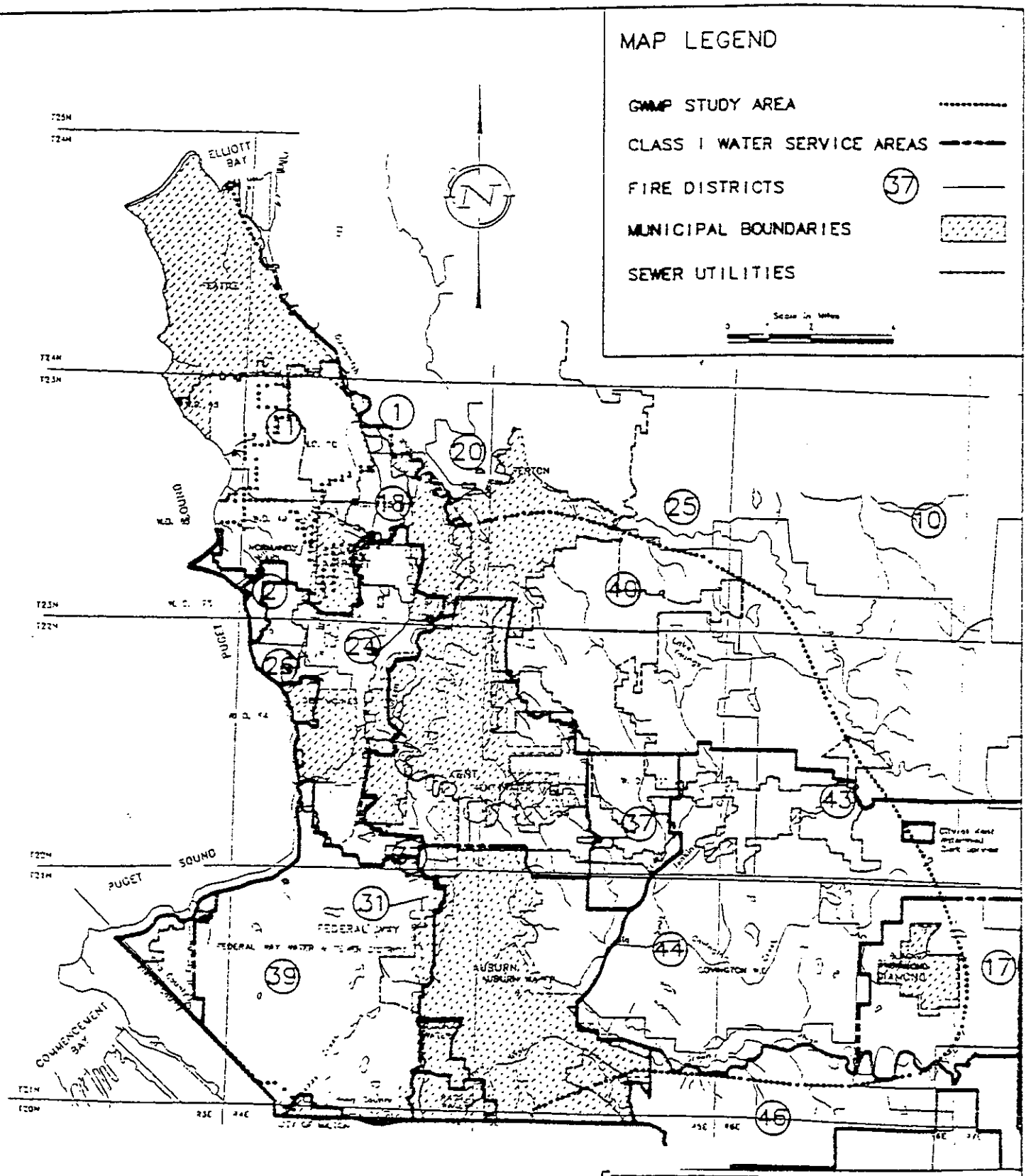
July 2003



South King County
Ground Water Management Plan

FIGURE 1

Subarea and Map Area Boundries

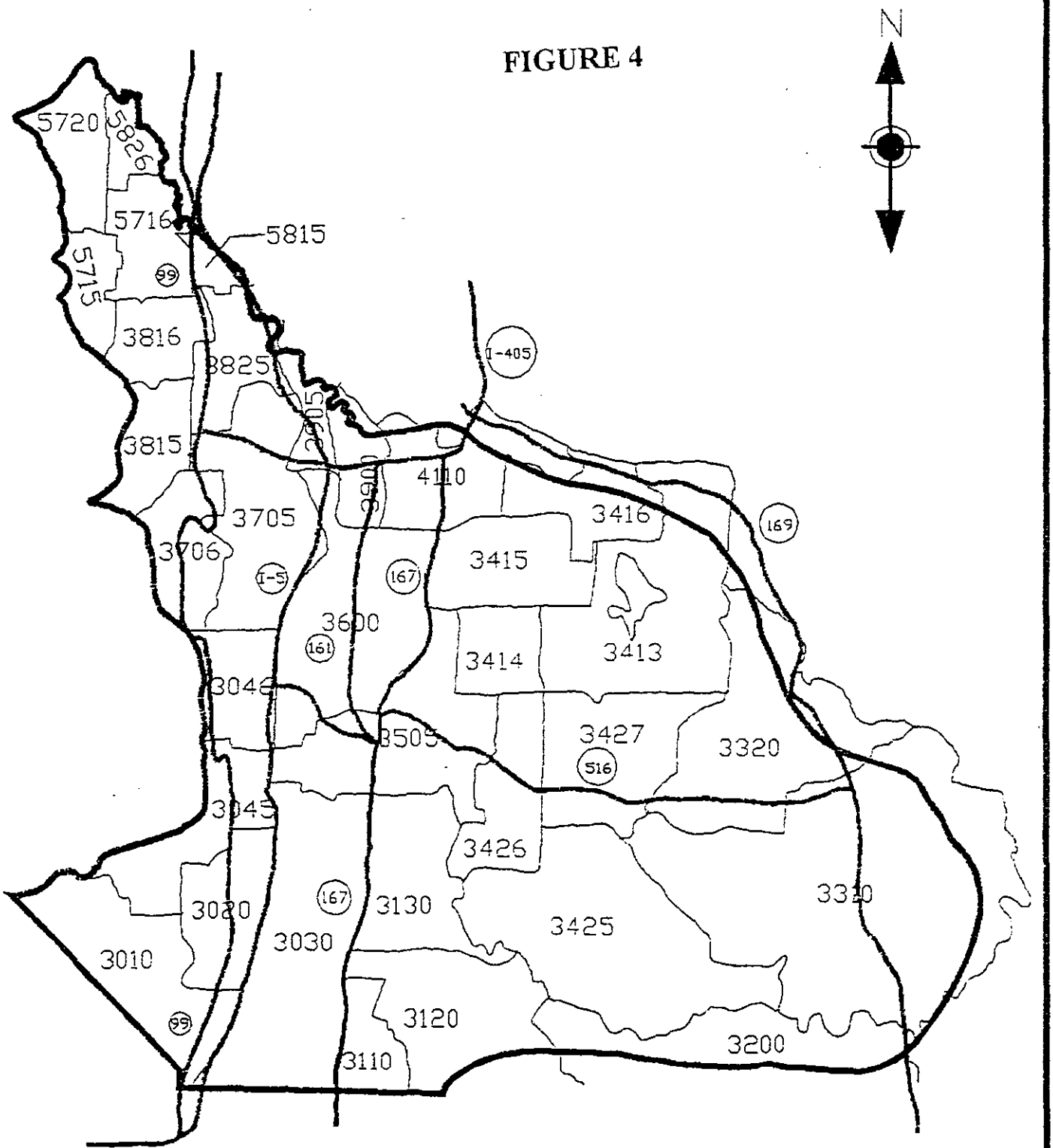


South King County Ground Water Management Plan

FIGURE 3

Jurisdictional Boundaries

FIGURE 4



SOUTH KING COUNTY GROUND WATER MANAGEMENT PLAN

FORECAST AND ANALYSIS
ZONES

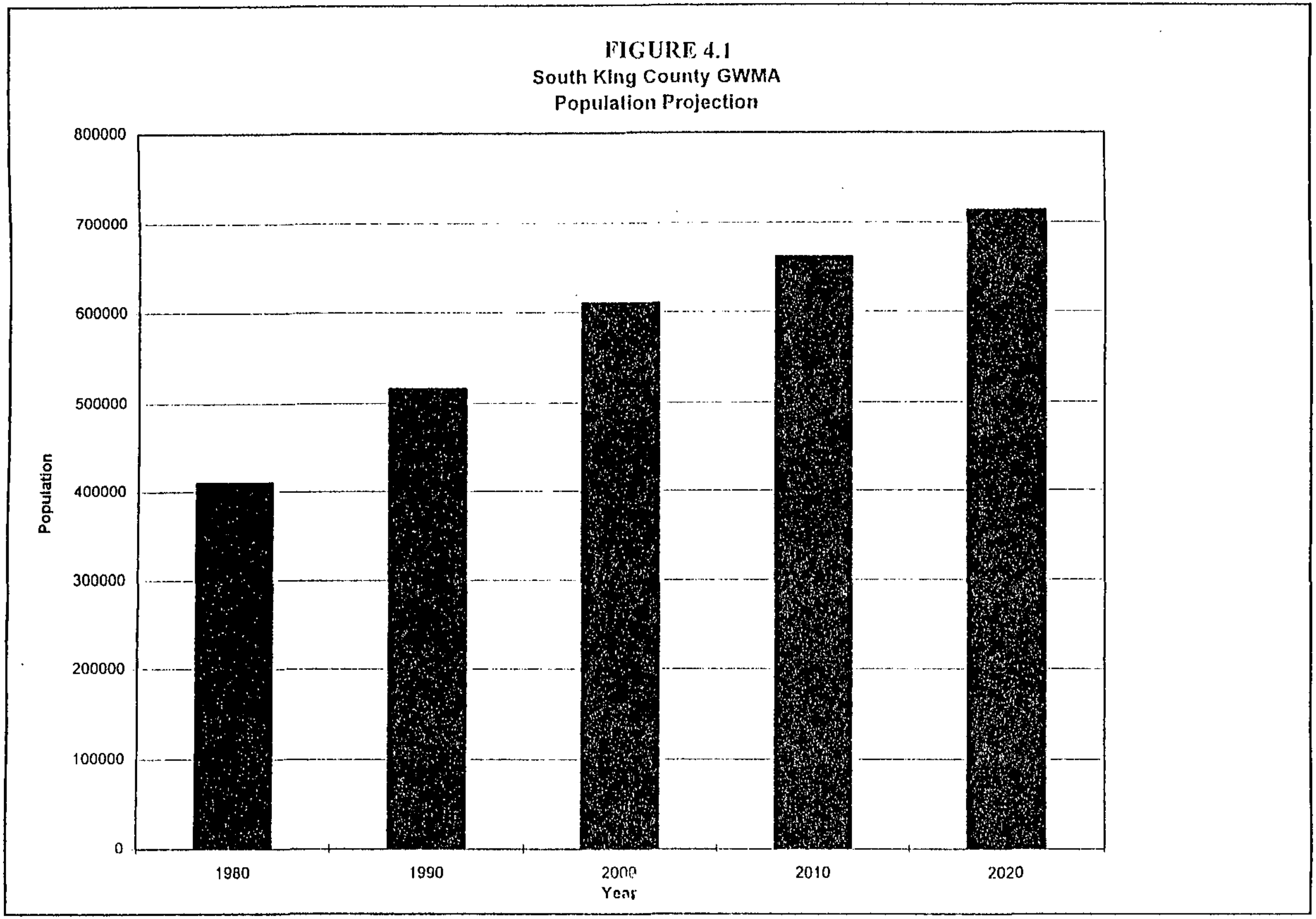


FIGURE 4.1
South King County GWMA
Population Projection
800000
700000
600000
500000
400000
300000
200000
100000
0
Population
1980
1990
2000
2010
2020
Year

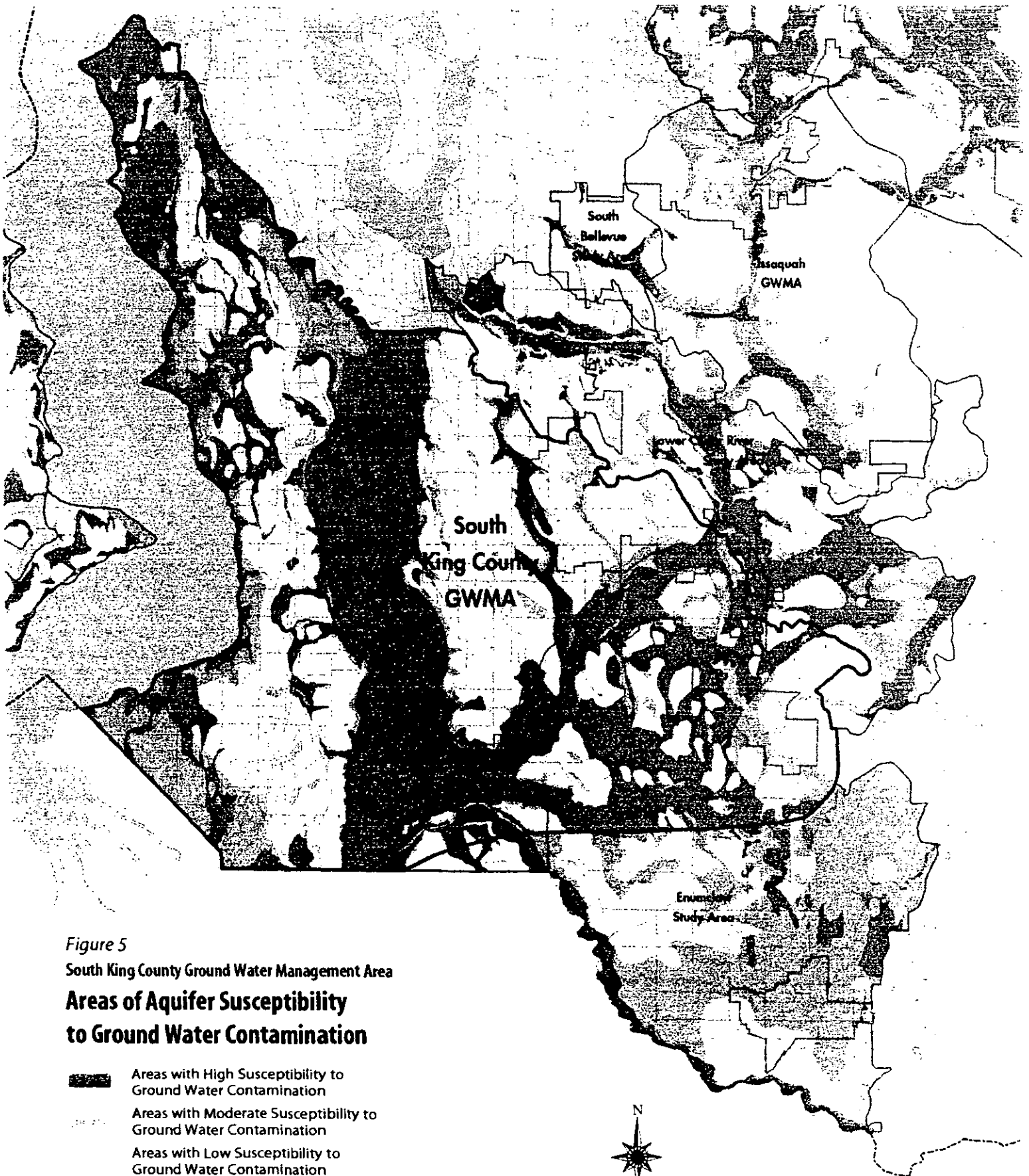


Figure 5

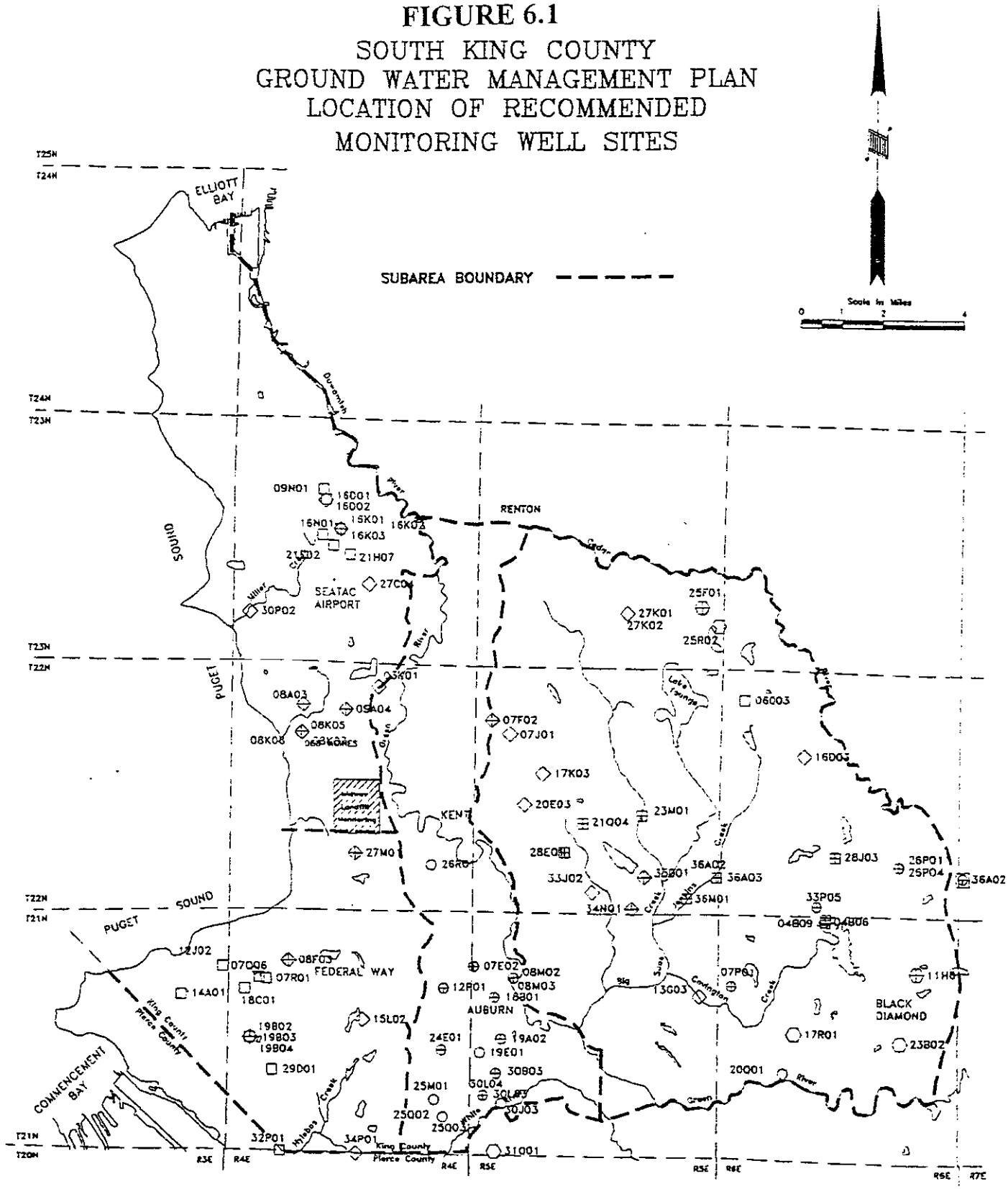
South King County Ground Water Management Area

Areas of Aquifer Susceptibility to Ground Water Contamination

- Areas with High Susceptibility to Ground Water Contamination
- Areas with Moderate Susceptibility to Ground Water Contamination
- Areas with Low Susceptibility to Ground Water Contamination
- Ground Water Management Area and Study Area Boundaries
- Urban Growth Area Boundary

FIGURE 6.1

SOUTH KING COUNTY GROUND WATER MANAGEMENT PLAN LOCATION OF RECOMMENDED MONITORING WELL SITES



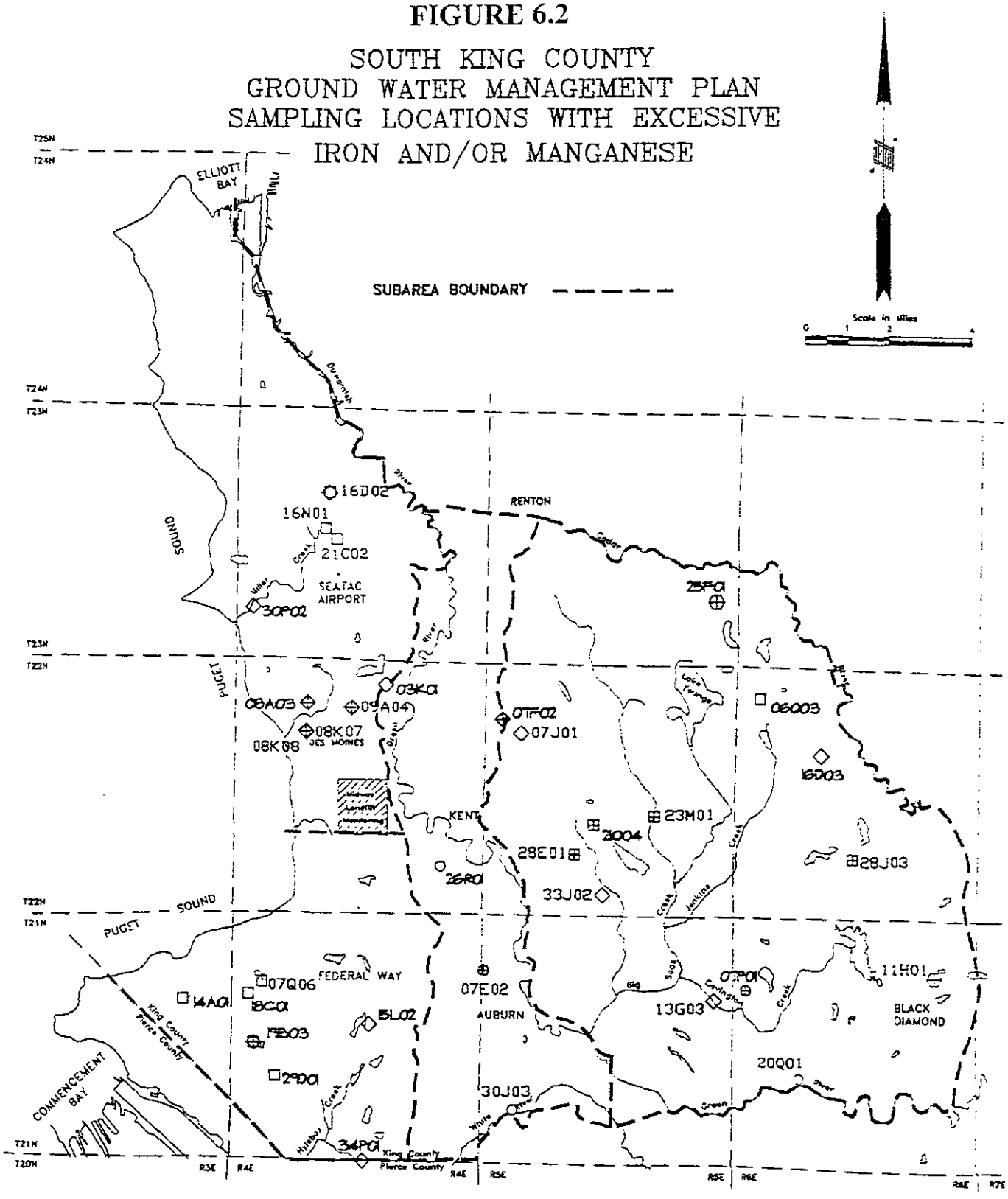
MAP LEGEND

Principal Aquifer for Well Completion

○ Qal	◇ Qc(3)	□ Qvs	⊕ Tbr (bedrock)
⊕ Qvr	⊕ Qc(4)/Qc(u)	⊟ Qc(2)	⬡ Undifferentiated

FIGURE 6.2

SOUTH KING COUNTY GROUND WATER MANAGEMENT PLAN SAMPLING LOCATIONS WITH EXCESSIVE IRON AND/OR MANGANESE



MAP LEGEND

Principal Aquifer for Well Completion

(Color may vary)

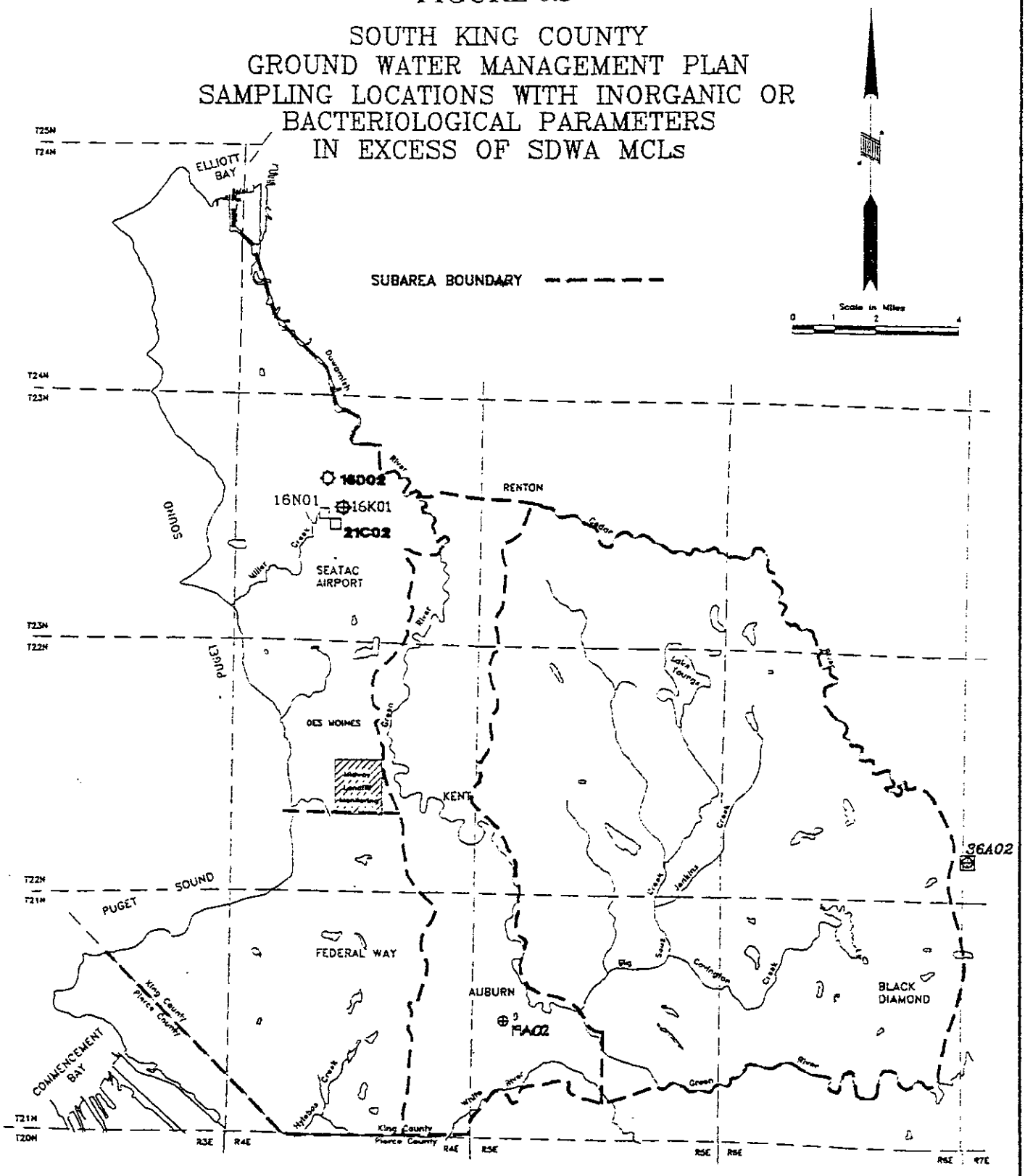
○ Qal	◇ Qc(3)	□ Qva	⊕ Tbr (bedrock)
⊕ Qvr	◈ Qc(4)/Qc(u)	⊞ Qc(2)	○ Undifferentiated

PARAMETER CODE

IRON | IRON AND MANGANESE | MANGANESE

FIGURE 6.3

SOUTH KING COUNTY GROUND WATER MANAGEMENT PLAN SAMPLING LOCATIONS WITH INORGANIC OR BACTERIOLOGICAL PARAMETERS IN EXCESS OF SDWA MCLs



MAP LEGEND

Principal Aquifer for Well Completion

(Color may vary)

○ Qal	◇ Qc(3)	□ Qva	⊕ Tbr (bedrock)
⊕ Qvr	◈ Qc(4)/Qc(u)	⊞ Qc(2)	⬡ Undifferentiated

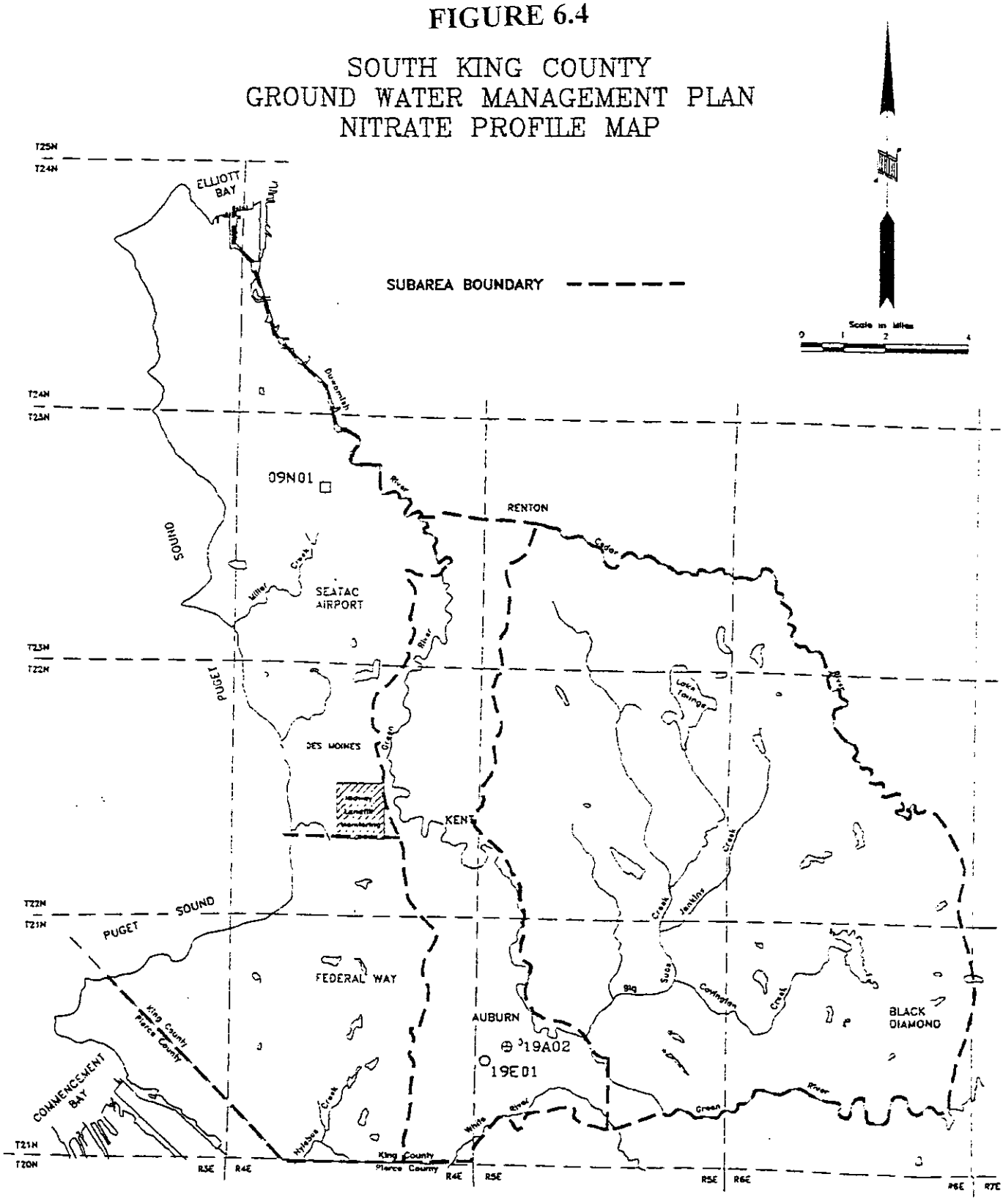
PARAMETER CODE

MERCURY LEAD *ARSENIC*

TOTAL FECAL & COLIFORM **TOTAL COLIFORM**

FIGURE 6.4

SOUTH KING COUNTY
GROUND WATER MANAGEMENT PLAN
NITRATE PROFILE MAP



MAP LEGEND

Principal Aquifer for Well Completion

(Color may vary)

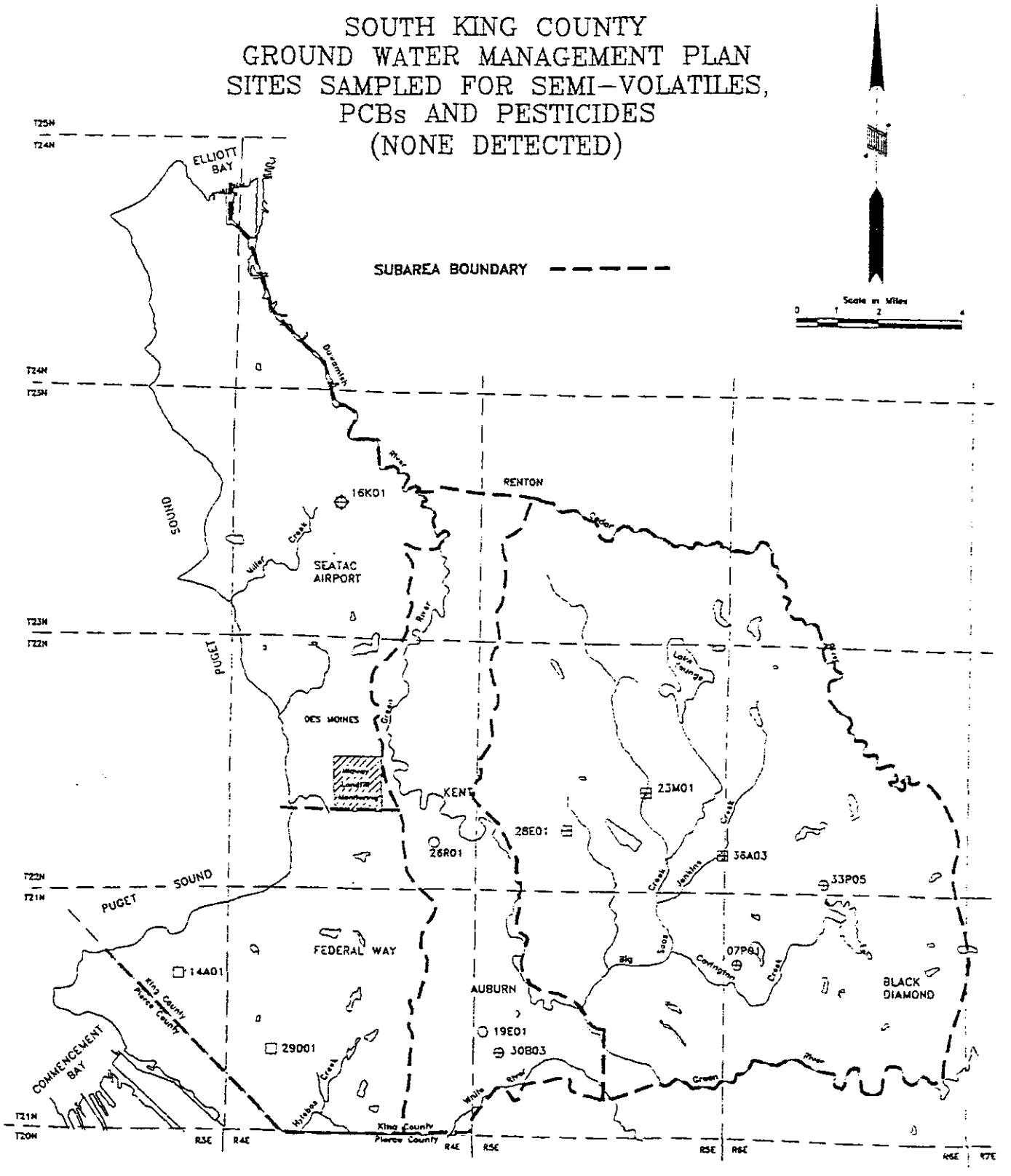
○	Qal	◇	Qc(3)	□	Qva	⊕	Tbr (bedrock)
⊕	Qvr	◈	Qc(4)/Qc(u)	⊞	Qc(2)	○	Undifferentiated

PARAMETER CODE

0-2 mg/L-N >2-5 mg/L-N

FIGURE 6.5

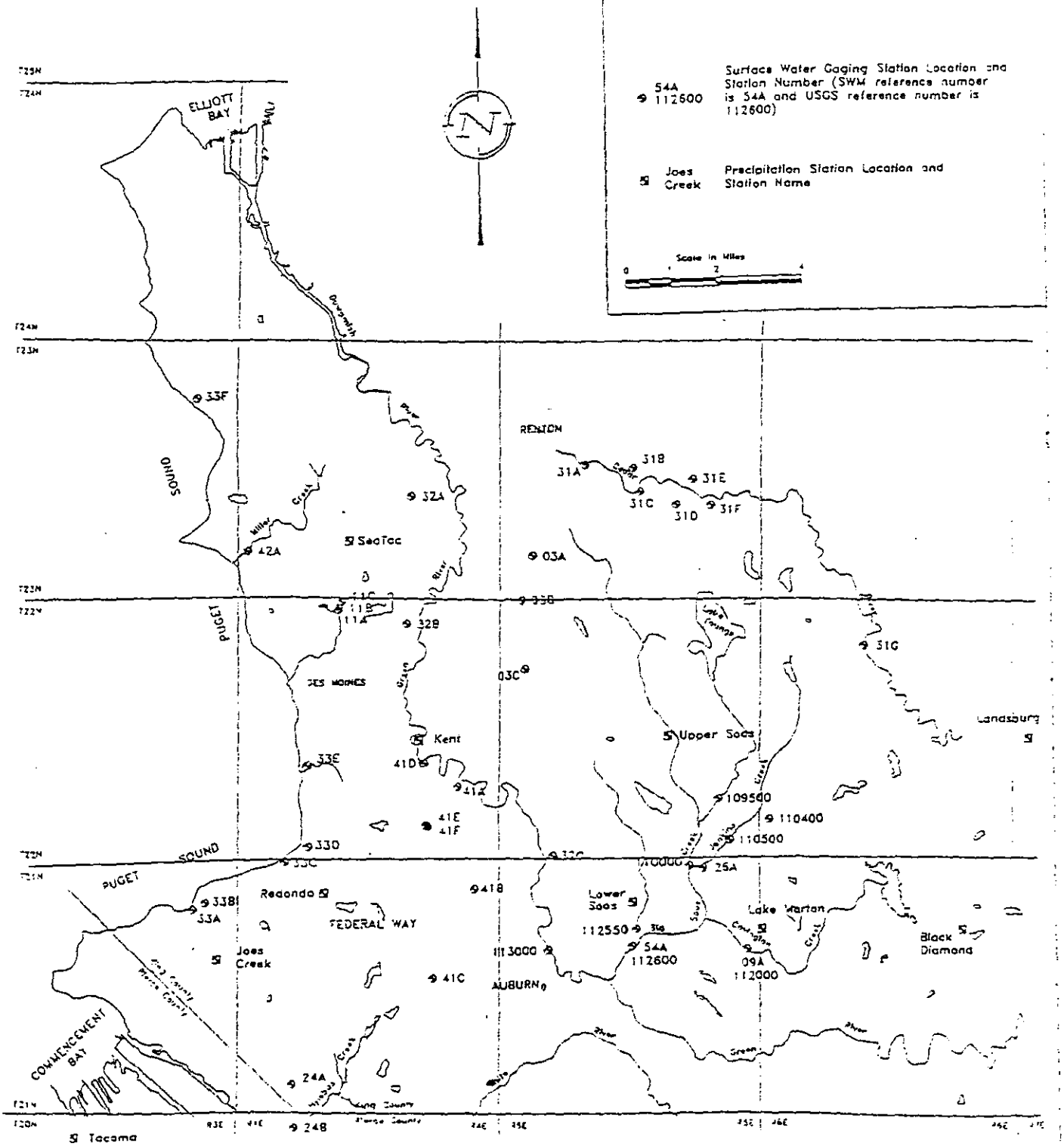
SOUTH KING COUNTY GROUND WATER MANAGEMENT PLAN SITES SAMPLED FOR SEMI–VOLATILES, PCBs AND PESTICIDES (NONE DETECTED)



MAP LEGEND

Principal Aquifer for Well Completion

○ Qal	◇ Qc(3)	□ Qva	⊕ Tbr (bedrock)
⊖ Qvr	◈ Qc(4)/Qc(u)	⊟ Qc(2)	⬡ Undifferentiated



South King County
Ground Water Management Plan

FIGURE 7

Surface Water and Precipitation Gauging Stations

APPENDICES

The following Appendices are available from the King County Department of Natural Resources and Parks

Appendix A	**Water Level Trends for Monitoring Wells**
Appendix B	**Water Quality Results**
Appendix C	**Sites Sampled for Volatiles, Semi-Volatiles, Pesticides and Polychlorinated Biphenyls**
Appendix D	**Well Construction Data**
Appendix E	**Related Documents** • **Data Collection and Analysis Plan** • **Quality Assurance Project Plan** • **Public Involvement Plan**

South King County
Ground Water Management Plan
Area Characterization Supplement

July 2003