STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
September 9, 1996	G2-29414		

NAME
Manke Lumber Company

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
1717 Marine View Drive	Tacoma	Washington	98422

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well (to be drilled)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	750	134

QUANTITY, TYPE OF USE, PERIOD OF USE
134 Acre-feet per year — Municipal supply — Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
Proposed 1300 feet South and 150 feet West of the center of Section 26.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼ SW¼	26	19	1W	13	Thurston

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The East Half of the NW Quarter of the NE Quarter; the South Half of the NE Quarter; the South Half of the NW Quarter; the North Half of the SW Quarter and the North Half of the South Half of the SW Quarter ; and the NW ¼ of the NW ¼; all in Section 26.

DESCRIPTION OF PROPOSED WORKS

A proposed well constructed at an approximate depth of 600 feet.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	January 1, 2012	January 1, 2013

REPORT

BACKGROUND:

On September 9, 1996, James Manke, on behalf of Manke Lumber Company, filed an application to withdraw public ground water from one well. The amount requested was 750 gallons per minute (gpm) for multiple domestic supply for 335 connections for a proposed development to be named "Silver Hawk." The project site is located in the Deschutes River Watershed in Water Resources Inventory Area (WRIA) 13.

Public notice was published on October 24 and October 31, 1996. No letters of protest were received.

Based on the provisions of Chapters 90.03 and 90.44 Revised Code of Washington (RCW), I recommend approval of this application.

INVESTIGATION:

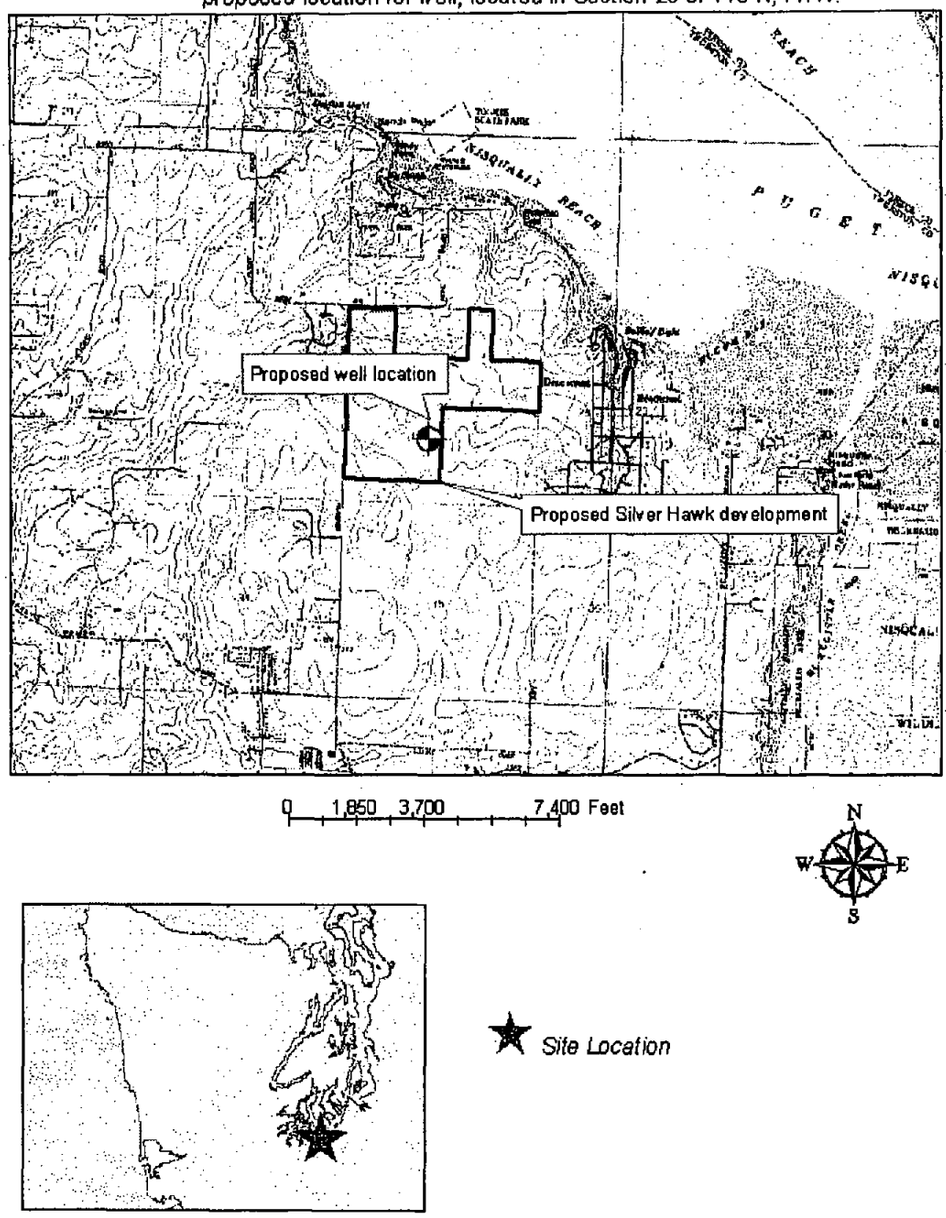
The Manke property consists of approximately 340 acres for a planned residential development, located directly south of Tolmie State Park in the south Puget Sound area of Thurston County. The Silver Hawk project site is located on the Johnson Point Peninsula on property that looks north eastward towards the Nisqually Reach, approximately one mile from marine water. The property is currently forested and slopes gently toward the Nisqually Reach, where the land surface terminates in steep bluffs to Puget Sound. The area surrounding the Manke property is largely medium density residential housing developments, semi-rural, agricultural, and forestland. The location of the proposed Silver Hawk development is shown on Figure 1.

The subject property is undeveloped and a well has not been drilled. The proposed well location is in the southern portion of the property, where the elevation is highest (Figure 1). The proposed well diameter is 16 inches and the anticipated depth is 600 feet below ground surface (bgs). Full build-out is expected by 2012.

The project has complied with State Environmental Policy Act (SEPA) and received a "Mitigated Determination of Non-Significance" in August 2005. Thurston County served as the Lead Agency in the SEPA process.

In consideration of this application, a field investigation was conducted on September 5, 2001 by Tammy Hall. Other investigations included a review of recorded water rights, registered claims, water well reports, hydrogeologic information of the area, and additional information supplied by the applicant. Hydrogeology and impairment analysis was discussed in two Department of Ecology Memorandums, dated April 22, 2003 and December 6, 2005, prepared by Tammy Hall, licensed hydrogeologist at Department of Ecology's Southwest Regional Office.

Figure 1. Manke Lumber Co. property for the proposed Silver Hawk development and proposed location for well, located in Section 26 of T19 N, R1W.



General Area Hydrogeology

The presented geologic/ hydrogeologic information was compiled from the following references:

- Drost, B.W., Turney, G.L., Dion, N.P., and Jones, M.A., 1999, *Conceptual Model and Numerical Simulation of the Ground-Water-Flow System in the Unconsolidated Sediments of Thurston County, Washington*: US Geological Survey Water Resources Investigations Report 99-4165.
- Drost, B.W., Turney, G.L., Dion, N.P., and Jones, M.A., 1998, *Hydrology and Quality of Ground Water in Northern Thurston County, Washington*: US Geological Survey Water-Resources Investigations Report 92-4109 (revised).
- Sinclair, Kirk and Pitz, Charles, 1999, *Estimated Baseflow Characteristics of Selected Washington Rivers and Streams*: Washington Department of Ecology Water Supply Bulletin No. 60.

A series of glacial advances and retreats is largely responsible for the resulting landscape in the Puget Sound area. These episodes of glaciation have been marked by layers of unconsolidated deposits more than 2,000 feet deep in some areas of Thurston County.

These unconsolidated deposits may be glacial or non-glacial in origin. The non-glacial deposits were left by streams carrying meltwater or by water that was impounded behind masses of ice. Glacial deposits, described as tills or hardpan, were deposited directly by the glacier.

Glacial aquifers may be composed predominately of sand and /or gravel, but may also contain relatively thin and discontinuous lenses of clay and /or silt. In addition, confining layers composed predominately of silt and (or) clay, may also contain local lenses of coarse sand or gravel. The deposits are referred to as "hydrogeologic" units because they were identified using a combination of hydrologic (hydraulic conductivity and hydraulic continuity) and geologic (primarily grain size and sorting) properties.

The unit exposed at the ground surface in the area of the project site is identified as Vashon age till (Qvt). This unit is considered to be a poor source of water. Qvt is generally between 25 and 50 feet in thickness but locally may be as thick as 150 feet.

Underlying the Qvt, is the Kitsap Formation (Qf). The Qf is composed of predominately poorly permeable materials, but thin lenses of sand and gravel can yield relatively small quantities of water suitable for domestic use. It is also effective in retarding the downward percolation of groundwater into the underlying units and has the ability to act as a confining layer to those materials lying below it. Qf is generally between 15 and 75 feet thick.

The Vashon advance outwash, represented as Qva, is an important aquifer in northern Thurston County. In the Johnson Point Peninsula area, the unit is relatively thin or absent, and therefore has not been developed extensively. Where it is present, Qva is generally between 15 and 35 feet thick, but locally may exceed 150 feet in thickness. The top of the Qva generally occurs between 50 and 200 feet above sea level.

Underlying the Qf and Qva are coarse-grained Salmon Springs (?) Drift, penultimate deposits, and other deposits (Qc). The Qc unit is one of the most widely used aquifers in Northern Thurston County. Groundwater in this unit generally occurs under confined conditions, and where the entire thickness of Qc has been penetrated, the formation is generally about 30 feet thick.

The unconsolidated and undifferentiated sediments beneath Qc are designated as TQu. These deposits are primarily thought to be older than Salmon Springs Drift but may also contain some younger materials. The TQu unit is likely glacial outwash in origin and aquifers within the unit are generally coarse-grained and interbedded with fine-grained deposits. The lateral extent of the individual aquifers is uncertain due to the relatively few wells that tap these deposits. Groundwater found in the TQu is typically confined by overlying and underlying silt and/or clay layers. Recharge to the aquifer is presumed to be by direct vertical leakage, probably over a widespread area.

Information gathered from wells tapping aquifers in the TQu indicates that static water levels are generally between 100 feet to 50 feet above msl and become closer to sea level as you approach marine water. Based on results of specific capacity tests performed in 50 wells throughout northern Thurston County assessed by the US Geological Survey, hydraulic conductivity values range from about 4 to 2,700 feet per day (ft/day), with a median value of 34 ft/day.

Horizontal flow direction of groundwater within aquifers is generally from areas of higher head to areas of lower head. Groundwater generally moves toward marine water bodies and to surface drainage channels. Beneath the upland areas on the peninsulas, water levels in Qva are generally higher than Qc, indicating that water flows vertically downward, passing through Qf (where present) and discharging to underlying units and either to salt water or to surface water drainages. Recharge to all aquifers is by precipitation and vertical leakage.

Hydrologic Analysis

Additional information was obtained from the following resource materials:

- Robinson, Roberts, & Associates, Inc., June 1971, *Exploration for a Ground-Water Supply Well for Jones Beach State Park.*
- Robinson & Noble, Inc., September 1987, *Construction Report for Lacey Well 8R.*
- Robinson & Noble, Inc., September 1984, *Test/Production Drilling at Hawks Prairie for the Glacier Park Company.*

The property for the proposed Silver Hawk development slopes northeasterly towards Nisqually Reach, surface elevations ranging from 240 to 140 feet above msl. The surface elevation at the proposed well site is approximately 220 feet above msl. The unit exposed at the ground surface is the Qvt (Drost, 1998).

The applicant indicates that a well has not yet been installed but the target aquifer is within the "pre Vashon" age deposits, likely within the TQu unit. The target depth is approximately 600 feet bgs, approximately 400 feet below msl. The applicant opted not to obtain a preliminary permit to drill a test well, but rather chose to rely on the information gathered from the drilling of the Glacier Park well (Robinson & Noble, 1984, Certificate # G2-28621), since the proposed withdrawal is located approximately ½ mile from the Glacier Park well and conditions are expected to be similar.

A cross section provided by Robinson & Noble in the Glacier Park report (1984) transects the Manke property and provides an interpretation of the subsurface in the vicinity of the proposed withdrawal. This cross section shows the ground surface mantled with a thin veneer of Qvr underlain by "Layer A" described as Vashon and Esperance Sequence, which likely corresponds to both the Qvt and Qva (Drost, 1998). The Layer A sequence is found from elevations of 200 to 75 feet above msl. Underlying Layer A is Layer B, or Kitsap Formation (Qf) which is present from approximately 75 feet above msl to 50 feet below msl. Layer C, or Qc (Drost, 1998) underlies Layer B and is found from 50 to 100 feet below msl. Layer D likely corresponds to the upper portion of the TQu and is described as gravel with a matrix of sand, silt, and clay. Layer E is identified at depths below 250 feet below msl and is also the TQu.

The Glacier Park well has a completed depth of 600 feet bgs, fully penetrating the aquifer, and is screened from 539 to 590 feet bgs (approximately 294 to 345 feet below msl) across the entire aquifer thickness. The static water level (SWL) of the Glacier Park well is approximately 200 feet bgs, approximately 50 feet above msl. The location of the Glacier Park well is shown in Figure 2.

A 24-hour pump test was conducted on the Glacier Park well. The well was pumped at a rate of 755 gpm, which is roughly the same rate of the proposed Silver Hawk well. Pump test results indicated a near-well transmissivity (T) of approximately 7,348 feet squared per day (ft^2/fday) and a more distant T value of 4,275 ft^2/day, with a specific capacity of 25.8 gpm per foot of drawdown. The amount of total drawdown in the well at the conclusion of the pump test was measured at 32.5 feet, or 17.5 feet above msl. Data gathered from the 24-hour pump test also indicated that drawdown would be expected for approximately 100 days before equilibrium would be reached. Maximum drawdown in the pumping well when equilibrium conditions are reached is expected to be approximately sea level, or an additional 17.5 feet of drawdown from the 24-hour pump test.

Information in Drost (1998) indicates that groundwater flow in the general area of the Manke property flows northeastward and discharges to the Nisqually Reach.

Neighboring Water Users

The surrounding area is rural to semi rural in nature, with the highest concentration of residential development close to the shore line. Much of the area that surrounds the proposed Silver Hawk development consists of medium density housing developments that are served by water purveyors.

Using distance drawdown relationships and aquifer test information obtained from the Glacier Park well (Robinson & Noble, 1984), an estimated pumping radius of approximately 5,800 feet (1.1 miles) is expected. This means that wells located within this 5,800 foot radius have the potential to be impacted by pumping from the Silver Hawk well if they are sited within the TQu. Wells sited in aquifers above the TQu (Qva or Qc) should not be affected even if they are located within the 5,800 foot radius. Wells located outside the 5,800 foot radius should not be affected.

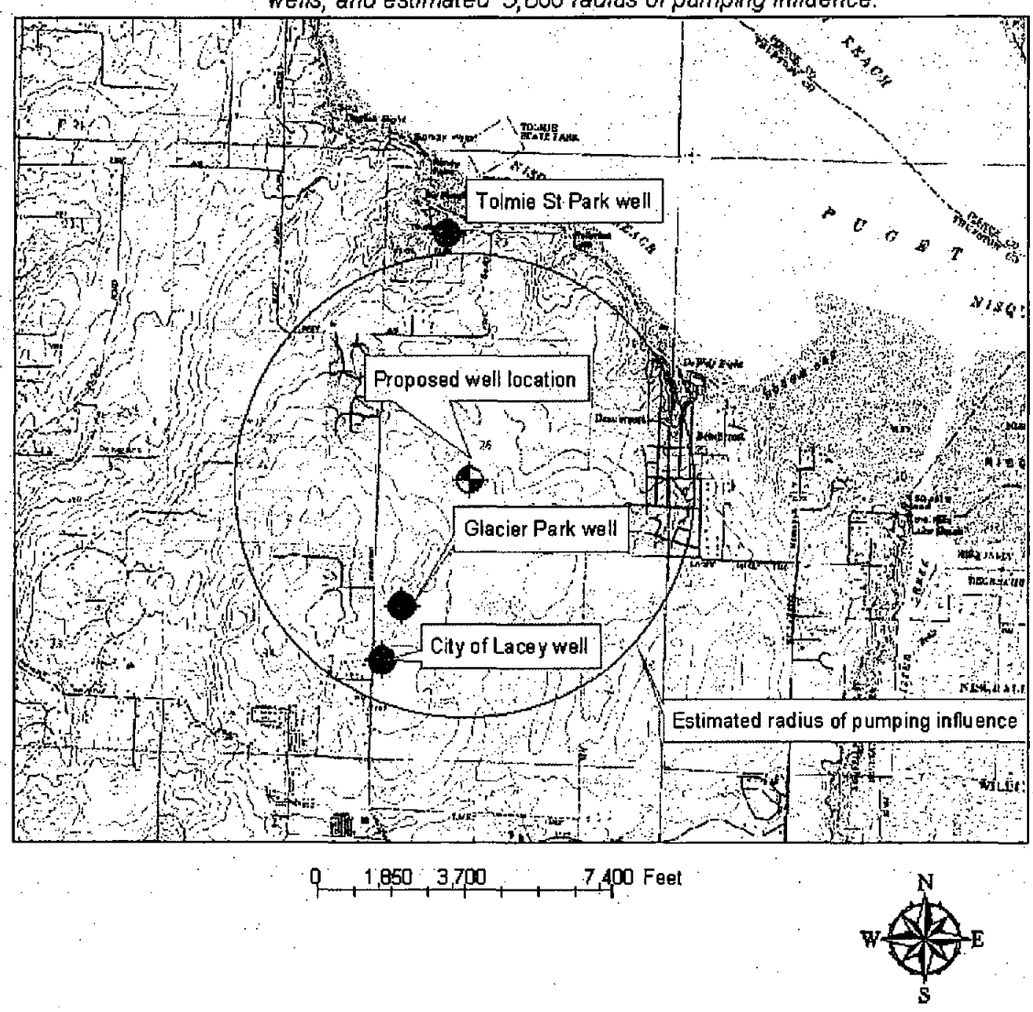
Ecology's databases were queried to determine the number of water right certificates, permits, and claims located within approximately an approximate 7,600 foot radius from the proposed withdrawal. The radius was chosen using the following criteria: ease of records retrieval, area physiography, the assumption that groundwater flow generally mimics surface topography, and an estimated pumping radius of 5,800 feet.

The water right certificates and permits located within this distance with wells that are completed in the TQu, the same unit as the proposed Silver Hawk well, are summarized in Table 1. Figure 2 shows locations for each well/certificate, the proposed Silver Hawk well location, and the estimated radius of pumping influence of 5,800 feet. The wells associated with each certificate/permit are situated cross-gradient from the proposed Silver Hawk well location (Drost, 1998).

Table 1. Water Right Certificates and Permits with wells completed in the TQu.

File #	Distance (ft)	Person	Doc	gpm	Qa	Well depth	Geo unit
G2-28621	3500	Hawks Prairie Estates Inc	Pmt	800	231	600	TQu
G2-27371	4800	Lacey City	Pmt	800	1026	646	TQu
G2-00372	6000	WA Parks & Recreation Commission	Cert	90	21.36	344	TQu

Figure 2. Proposed well location; locations of Glacier Park, City of Lacey and Tolmie State Park wells; and estimated 5,800 radius of pumping influence.



The certificate nearest to the proposed well is approximately 3,500 feet south and is issued to Hawks Prairie Estates (G2-28961, Glacier Park well). Because this well is located within the radius of influence of 5,800 feet, interference drawdown is expected. Using distance-drawdown relationships, the Glacier Park well will likely experience an interference drawdown of approximately 1.6 feet. Since the Glacier Park well is completed at 400 feet below msl and has a pumping water level near sea level, there is adequate available drawdown to compensate for the effects of pumping the proposed well.

The City of Lacey well is located approximately 4,800 feet south of the proposed Silver Hawk well. Using distance drawdown relationships, interference drawdown from the proposed well is expected to be approximately 0.6 feet. Information on City of Lacey well indicates adequate available drawdown to compensate for well interference from the proposed Silver Hawk well.

A third certificate issued for a well completed in the TQu is issued to Washington State Parks (Tolmie (Jones) State Park) and is located approximately 6,000 feet north of the proposed well. Because the State Park well is outside the expected pumping radius, interference drawdown is not expected.

A query of water right certificates and permits with wells completed above the TQu within a 7,600 foot radius of the proposed Silver Hawk well are summarized in Table 2. These certificates and permits correspond to water purveyors that provide domestic supply to the developments that surround the proposed development. All water right certificates and permits issued are either upgradient or cross gradient from the proposed well (Drost, 1998). The nearest certificates and permits are located approximately 3,500 feet away and area issued to Mance and Sons Residential Developers.

It is not expected that wells completed in the Qva or Qc will experience interference drawdown from pumping the proposed Silver Hawk well; although, it is possible that pumping may induce additional leakage. However, communication between shallow wells and the deeper aquifer is likely to be minimal, due to approximately 400 feet of low permeability materials that separate wells completed in the two hydrogeologic units. In addition, because of area physiography, the dominant direction of groundwater flow is toward the Nisqually Reach rather than flow between individual hydrogeologic units.

Table 2. Water Right Certificates and Permits within 7,600 feet with wells that are completed in units above the TQu.

Distance (ft)	Person	Doc	gpm	Qa	Section	Geo unit
3500	Mance & Son Residential Developers	Cert	65	20	27	Qc
3500	Mance & Son Residential Developers	Cert	100	19	27	Qva
3500 & 4600	Mance & Son Water Systems Inc	Pmt	250	70	27	Qc
4200	American Water Resources	Pmt	120	25.5	23	Qc
4500	DROHMAN ROBERT R	Cert	50	80	34	Qva
4500	Prairie Ridge Water Co	Pmt	125		34	Qva
4500	Prairie Ridge Water Co	Pmt	175		34	Qva
4700	Mance & Son Residential Developers	Cert	32	7	23	Qc
4700	Mance & Son Residential Developers	Cert	45	4	23	Qva
7400 & 4800	Mance & Son Water Systems Inc	Pmt	100	20	22 & 27	Qc
4800	Mance & Son Residential Developers	Pmt	100	2	22	Qc
5300	Beachcrest Water Co	Cert	250	211.7	25	Qva
5600	M & R Construction & Utilities	Cert	250	301.7	25	Qva
6000	BURKE DENNIS A	Cert	60	4.5	23	Qc
7000	DAYTON R G / B A	Cert	20	5.6	34	Qva
7400	Mance & Son Residential Developers	Pmt	100	2	22	Qc
7500	Washington Water Service Co	Pmt	98	50	27	Qc
7500	Washington Water Service Co	Pmt	199	134	27	Qva
7600	Marvin Road Water Co	Cert	125	99.5	34	Qc

In addition to the certificates and permits previously discussed, following is a summary of additional surface water rights, claims, and well reports that may that be located up to 2 miles from the proposed Silver Hawk well:

- A total 2 surface water rights certificates have been issued authorizing a combined instantaneous diversion rate of 0.32 cubic feet per second (cfs) and 1 ac-ft per year. Water use is from springs and streams for multiple domestic supply.
- A search of Ecology's well log data base identified 145 water wells with depths that range from 40 feet to 646 feet (City of Lacey well). The majority of the wells are less than 200 feet deep and draw water from the Qva.
- Ecology records list approximately 47 water right claims that were filed for wells in the area. The exact location of these claims is not known.

Seawater Intrusion in Thurston County

Seawater intrusion generally occurs in coastal wells that are completed near or below sea level where the water bearing materials are in hydraulic continuity with marine water. In general, chloride concentrations in Thurston County are relatively low, although small pockets of seawater intrusion occurs in localized areas. The Maximum Contaminant Level (MCL) allowed according Federal standards for chloride is 250 mg/l.

Available data from wells in the area indicates chloride concentrations are relatively low. Analytical data summarized Drost (1998) lists chloride concentrations collected in 1978 and 1989 for two wells located in the area of the proposed Silver Hawk well. One well, situated approximately 6,500 feet north of the proposed well location, less than 1,000 feet from marine water and completed in the Qc, reports

chloride concentrations of 2.4 milligrams per liter (mg/l). A second well, located approximately 5,400 feet east of the proposed well location and completed in the Qva, reports chloride concentrations of 3.2 mg/l.

The location of the proposed well is approximately one-mile from marine water. Because it will be completed in an aquifer below sea level and is likely to have a pumping water level near sea level, it has the potential to be at risk of seawater intrusion. Regular quarterly chloride monitoring will be required as a provision of this permit. If chloride concentrations significantly increase, mitigative measures will need to be performed, such as reducing the pumping rate so that a pronounced cone of depression does not develop.

Effects to Surface Water

Minimum instream flows were established in 1981 through Chapter 173-513-040 WAC, the Instream Resources Protection Program for the Deschutes River Basin Water Resource Inventory Area (WRIA) 13. The proposed well location is also north of the boundary with WRIA 11, the Nisqually River Water Resources Inventory Area. The WACs associated with each WRIA specify instream flows for certain streams and closes many year-round to groundwater withdrawals that negatively impact surface streams.

The proposed Silver Hawk well will be completed in an aquifer approximately 400 feet below msl and intercept water that would otherwise discharge to the Nisqually Reach of Puget Sound. Since the general direction of ground water flow is north eastward, directly to Puget Sound, withdrawals from the proposed well will not affect surface water in WRIAs 13 or 11.

Water Demand

The Silver Hawk development will be developed as a stand-alone Group A system operated by the developer that will supply water to 335 connections. The average daily demand is calculated based on Department of Health (DOH) guidelines according to the following mathematical equation:

$$ADD = \left(\frac{8000}{AAR}\right) + 200$$

Where: ***ADD*** = *Average Day Demand, (gallons-per-day/ERU)*

AAR = *Average Annual Rainfall, (inches-per-year)*

Using climatic information for Olympia, the average daily demand for 335 residences should not exceed 360 gallons per day per residence. The total water demand for this project should not exceed 134 ac-ft per year. This calculation assumes an annual water usage of .4 ac-ft per residence.

Public Water System Planning

According to RCW 90.03.015(4)(a), municipal water supply is defined as a beneficial use of water for residential purposes for fifteen or more residential service connections. Until the Silver Hawk development actually serves 15 or more residential connections, it will be regarded as having a purpose of community domestic supply. Once the system serves fifteen connections, the water right permit will become a municipal water supply right by operation of law.

Issuance of this approval is subject to implementation of all required conservation and planning standards. The Department of Health (DOH), Office of Drinking Water is directed by the legislature to adopt water use efficiency rules. These new rules (Chapter 246-290 WAC) are a requirement of the Municipal Water Supply – Efficiency Requirements Act, Chapter 5, Laws of 2003, First Special Session. The water right holder is specifically required to address Water Use Efficiency Planning Requirements, Distribution Leakage Standards, and Water Use Efficiency Goal Setting and Performance Reporting.

FINDINGS AND CONCLUSION:

Chapter 90.03 RCW and Chapter 90.44 RCW authorize the appropriation of public surface and groundwater for beneficial use and describe the process for obtaining water rights including the process to amend or change existing rights. Laws specifically governing the water right permitting process are Chapter RCW 90.03.250 through 90.03.340 RCW and Chapter 90.44.050 through 90.44.080 RCW.

Under state law the following four criteria must be met for a permit to be approved:

- Water must be available
- There must be no impairment of existing rights
- The water use must be beneficial
- The water use must not be detrimental to the public interest

Water Availability

Based on the hydrogeology of the area and the available information, a well completed at the proposed depth will draw water from the pre Vashon age deposits, within the TQu. Groundwater captured by the proposed Silver Hawk well is water that would otherwise discharge to the Nisqually Reach of Puget Sound.

It is concluded that groundwater is physically available for appropriation in the requested quantity. Water is therefore judged to be available for appropriation under existing Ecology regulations.

Impairment of Existing Rights

There are two certificated groundwater rights within the estimated zone of pumping influence of the proposed well that draw water from the same hydrogeologic unit. However, available information indicates that adequate available drawdown exists that will compensate for the effects of pumping from the proposed Silver Hawk well.

Although it is not expected that wells completed in shallower units will experience interference drawdown from pumping the proposed well, it is possible that pumping may induce additional leakage from the overlying units. However, communication between shallow wells and the deeper aquifer is likely to be minimal, due to approximately 400 feet of low permeability materials that separate wells completed in the two hydrogeologic units. In addition, because of area physiography, the dominant direction of groundwater flow is toward the Nisqually Reach rather than flow between individual hydrogeologic units.

The proposed location for the Silver Hawk well is approximately one mile west of the Nisqually Reach of Puget Sound. As such, the proposed Silver Hawk well will be completed in an aquifer approximately 400 feet below msl and intercept water that would otherwise discharge to marine water. Since the general direction of groundwater flow is north eastward, directly to Puget Sound, withdrawals from the proposed well will not affect surface water in WRIAs 13 or 11.

Beneficial Use

According to RCW 90.14.031, municipal supply is considered a beneficial use of water.

Public Interest

No detriment to the public interest was identified during the investigation of the subject application. The following were considered in reaching this conclusion:

Summary of Criteria for Public Interest Test

Public Interest Test Criteria	Comments
Potential for saltwater intrusion	The location of the proposed well is approximately one mile from marine water. Because it will be completed in an aquifer below sea level and is likely to have a pumping water level near sea level, it has the potential to be at risk of seawater intrusion. Regular quarterly chloride monitoring will be required as a provision of this permit. If chloride concentrations significantly increase, mitigative measures will need to be performed, such as reducing the pumping rate so that a pronounced cone of depression does not develop.
Impacts to water quality in hydraulically connected surface water.	This well will be completed in an aquifer system that discharges to Puget Sound and intercepts groundwater that would otherwise discharge to marine water. As such, withdrawals from this well will not affect regulated surface waters in the basin.
Population growth and lack of alternative supply	This appropriation is for a beneficial use -the supply of public water to a proposed development. This system will serve a total of 335 domestic connections that have not been constructed. This development is planned but anticipated given regional growth trends. Groundwater is expected to be the most reliable public water supply in this area.
Economic development and lack of alternative supply	This proposal would allow for the development of a rural community. Without access to a public water system, future water needs would otherwise be met with numerous exempt and small group wells.
Human health needs	This proposal would provide a public drinking water supply.
Promotion of regional public supply systems	This Group A system will eventually supply water to a total of 335 connections. Larger Group A systems, such as the proposed system, will promote a more regional public supply
Potential for aquifer contamination/pollution	The approval of this application is not expected to result in aquifer contamination or pollution.
Limits to multiple domestic water supply systems when other supplies are available	This proposal would reduce the number of domestic wells in the area by serving residential connections connected to the Group A system.
Potential for cumulative impacts to other water users	The impairment assessment indicates that other water users are not likely to be prevented from withdrawing their allotted water.

Consistency with water resource fundamentals of RCW 90.54	This permit meets the fundamentals of state water law, specifically: RCW 90.54.005 – Objectives to provide water for residential needs RCW 90.54.020 – Protect stream baseflows RCW 90.54.920 – No impairment of existing rights
Impacts to aquatic habitat	Aquatic habitat will not be impacted by the approval of this application.
Impacts to recreation or navigation uses	There is no detriment to recreation or navigation uses expected under this proposal.
The extent to which the proposal advances water conservation and efficient use	This system will meet Department of Health requirements for a water purveyor, which includes planning under all appropriate conservation and efficiency use requirements.
The extent to which the proposed use would create new burdens on the public for monitoring, oversight and regulation.	This proposal would require only minimal reporting of water levels and pumping records and would not create unnecessary burden for monitoring by public agencies. The responsibility of collecting, archiving, organizing and reporting the data is the applicant's.

After considering these criteria, no detriment to the public interest could be identified during the investigation of this application for groundwater.

RECOMMENDATIONS:

Based on the provisions of 90.03 and 90.44, I find that water is available for appropriation from the source in question and that the appropriation would not impair existing rights. I recommend the issuance of a water right permit for multiple domestic supply for 335 homes, in the amount of 750 gpm and 134 ac-ft per year. The time of use is year-round as needed.

The well will be installed at the specified location and completed within a water-producing zone within the TQu hydrologic unit.

PROVISIONS:

"The well shall be installed within the specified location and be completed within a water-producing zone within the TQu hydrologic unit."

Completed well reports shall be submitted to the Department of Ecology within 30 days after the well has been completed. Test pump data shall be submitted to the Department of Ecology as it is obtained.

All wells constructed in the State shall meet the construction requirements of Chapter 173-160 WAC entitled "Minimum Standards for the Construction and Maintenance of Wells" and Chapter 18-104 RCW entitled "Water Well Construction".

The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Office of Water Supply, Department of Health, 1112 SE Quince Street, PO Box 47890, Olympia, Washington 98504-7890, prior to any new construction or alterations of a public water supply system.

A certificate of water right will not be issued until a final investigation is made.

The applicant is advised that notice of Proof of Appropriation of water (under which the final certificate of water right is issued) should not be filed until the permanent distribution system has been constructed and that quantity of water allocated by the permit to the extent water is required, has been put to full beneficial use.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded monthly. The maximum rate of withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit No., source name, annual quantity used including units, maximum rate of withdrawal including units, monthly meter readings including units, peak monthly flow including units, Department of Health WFI water system number and source number(s), purpose of use, open channel flow or pressurized diversion and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information. Submit data to: Department of Ecology, SWRO/WR PO Box 47775, Olympia, WA 98504-7775.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

A completed well report of the well(s) shall be submitted by the driller to the Department of Ecology within 30 days of completing this well. All pump test data for this well shall be submitted to the Department as it is obtained.

In accordance with Chapter 173-160 WAC, wells shall not be located within certain minimum distances of potential sources of contamination. These minimum distances shall comply with local health regulations, as appropriate. In general, wells shall be located at least 100 feet from sources of contamination. Wells shall not be located within 1,000 feet of a solid waste landfill.

Installation and maintenance of an access port as described in Chapter 173-160 is required. An air line and gauge may be installed in addition to the access port.

"This well will be tagged with a unique well identification number after drilling. This well number shall remain attached to the well, please reference this number when submitting data."

Permittee or certificate holder, and its successor(s) shall provide data on chloride concentrations for the well authorized by this permit or certificate with analysis performed by a state accredited laboratory. Accreditation information may be obtained from Ecology's Quality Assurance Program at (360) 895-4649. Sampling shall occur quarterly, with a copy of the laboratory results for all sampling events submitted by January 31 of the following year, to the Department of Ecology, Southwest Regional Office, Olympia, Washington.

If pumping of the well authorized by this permit or certificate causes chloride concentrations to exceed 100 milligrams per liter, immediate action shall be required to prevent concentrations from increasing (such as reducing the instantaneous withdrawal rate (gpm) of the well). If corrective measures fail to prevent chloride concentrations from exceeding said level in the future, permittee or certificate holder shall relinquish the option to perfect additional allocated quantities regardless of the stage of development.

The Water Quality Monitoring data shall be submitted in digital format and shall include the following elements:

1. Unique Well ID Number
2. Sampling date and time
3. Chloride concentration (mg/L)
4. Submit paper copy of laboratory report

The Water Resources Act of 1971, Chapter 90.54 RCW specifies certain criteria regarding utilization and management of the waters of the State in the best public interest. Favorable consideration of this application has been based on sufficient waters available, at least during portions of the year. However, it is pointed out to the applicant that this use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

In order to maintain a sustainable supply of water, pumping must be managed so that static water levels do not progressively decline from year to year. Water levels shall be measured and recorded monthly, using a consistent methodology. The length of the pumping period or recovery period prior to each measurement shall be constant, and shall be included in the record. Data for the previous year shall be submitted by January 31 to the Department of Ecology.

Static water levels data shall be submitted in digital format and shall include the following elements:

1. Unique Well ID Number
2. Measurement date and time
3. Measurement method (air line, electric tape, pressure transducer, etc.)
4. Well status (pumping, recently pumped, etc.)
5. Water level accuracy (to nearest foot, tenth of foot, etc.)
6. Description of the measuring point (top of casing, sounding tube, etc.)
7. Measuring point elevation above or below land surface to the nearest 0.1 foot
8. Land surface elevation at the well head to the nearest foot.
9. Static water level below measuring point to the nearest 0.1 foot.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

In accordance with Chapters 90.03 and 90.44 RCW, I find there is water available for appropriation from the source in question, that the appropriation as recommended is a beneficial use, and should not impair existing rights or be detrimental to public welfare.

REPORTED BY: _____ Date: March 3, 2006

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Ground Water Application Number G2-29414, subject to existing rights and indicated provisions, to allow appropriation of public ground water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this 3rd day of March, 2006.

Thomas Loranger
Water Resources Section Manager
Southwest Regional Office