File NR G2-30599
WR Doc ID 5279877

DEPARTMENT OF
ECOLOGY
State of Washington

State of Washington
REPORT OF EXAMINATION
FOR WATER RIGHT APPLICATION

PRIORITY DATE	WATER RIGHT NUMBER
5/16/2012	G2-30599

MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
KANOOGA BEACH #2 WATER SYSTEM 6565 KIMBALL DRIVE, SUITE 101 GIG HARBOR WA 98335	

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
100	GPM	13.3

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Group Domestic	100		GPM	13.3		01/01 - 12/31

Source Limitations

SOURCE FACILITY/DEVICE	A|S	WITHDRAWAL OR DIVERSION RATE	ANNUAL QUANTITY (AF/YR)	PERIOD OF USE (mm/dd)
WELL				01/01 - 12/31

A|S: A=Alternate; S=Standby/Reserve

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
KITSAP	GROUNDWATER		15-KITSAP

Pierce

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
WELL			20N	01W	27	NW/SE	N47.19068	W122.78820

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use (POU) of this water right is the Plat of Kanooga Beach and Short Plat 78-733 and Lot 3 of Short Plat 78-351.

Proposed Works

One existing well (Unique Well ID AEK611), one proposed well, existing pumphouse, submersible pump, and two-inch diameter PVC distribution system. As an alternative to drilling a new well, the applicant may approach the owner of an existing well (Unique Well ID APR603) on Lot 3 of Short Plat 78-733 regarding consolidation of service.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
2013	2019	2033

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	By January 31 each year
What volume should be reported?	Total Annual Volume (AFY)
What rate should be reported?	Peak Rate of Withdrawal (gpm)

Provisions

Well Testing

Within two years of this authorization, the applicant shall conduct additional testing of the existing well to determine the well's maximum instantaneous production rate. This pump test shall be performed at a constant rate of discharge for a minimum of 24 hours in duration. Water quality samples, collected at the start and end of the test and at six-hour intervals, should be analyzed by a state-accredited laboratory for both chloride and total dissolved solids. Prior to testing, the land surface and casing elevations of the Kanooga Beach #2 well should be determined by professional survey so that all water levels can be related to mean sea level. Tidal data from the nearest applicable tidal station should be identified and noted in the test data. If possible, water levels in the 72nd St. Ct. Water System's well (Unique Well ID APR603) should also be collected. A report summarizing this data shall be submitted to Ecology.

Within three years of this authorization, the applicant must decide whether the existing well is adequate to meet the proposed peak system demands, decide how to proceed, and notify Ecology of the decision. The applicant may elect to drill an additional well or make other arrangements to address the shortfall. Otherwise, the authorized withdrawal rate for this permit will revert to 34 gpm that has been shown to be available.

Measurements, Monitoring, Metering and Reporting

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", WAC 173-173.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for

modifications to some of the requirements. Water measurement and reporting requirements are described above.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Chloride Monitoring

By January 31 of each year, the following information shall be submitted in writing to the Department of Ecology. April and September measurements from the subject well(s) of: 1) Chloride and conductivity (the chemical analysis shall be performed by a state-accredited laboratory) 2) Depth to static water level (with pump off long enough to allow for stabilization). The chloride/conductivity sampling and the static water level measurement shall be conducted concurrently. This data collection will assist the applicant and Ecology in determining if actions are necessary to prevent an increasing trend in chloride concentrations (an indicator of seawater intrusion). Preventative actions may include – reducing the instantaneous pumping rate, reducing the annual volume pumped, scheduling pumping to coincide with low tides, raising the pump intake, and/or limiting the number of service connections.

Proof of Appropriation

The water right holder shall file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the permit. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

Findings of Facts

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that water is available from the source in question; that there will be no impairment of existing rights; that the purpose(s) of use are beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. G2-30599, subject to existing rights and the provisions specified above.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Signed at Lacey, Washington, this 7th day of March 2013.

Michael J. Gallagher

Michael Gallagher, Section Manager
Water Resources Program/SWRO
Department of Ecology

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov. To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

INVESTIGATOR'S REPORT
Application for Water Right – Kanooga Beach #2 Water System
Water Right Control Number G2-30599

BACKGROUND

This report serves as the written findings of fact concerning Water Right Application Number G2-30599.

Kanooga Beach #2 is an existing development located on Whiteman Road KPS just northwest of Taylor Bay at the southern end of Key Peninsula in Pierce County, Washington. The community is currently served by a Group B Water System with a permit exempt well and two active connections. The applicant projects the system will ultimately serve up to 40 residential connections, many of which are anticipated to be vacation properties with seasonal occupancy.

Cost Reimbursement

This application is being processed under a cost reimbursement agreement between the applicant the Department of Ecology. This report has been prepared by Robinson Noble, Inc.

Table 1 Summary of Requested Water Right

Applicant Name:	Kanooga Beach #2 Water System (KB2WS)
Date of Application:	5/16/2012
Place of Use	The place of use (POU) of this water right is the Plat of Kanooga Beach, Short Plat 78-733, and Lot 3 of Short Plat 78-351.

County	Waterbody	Tributary To	WRIA
Pierce	Groundwater		15-Kitsap

Purpose	Rate	Unit	Ac-ft/yr	Begin Season	End Season
Group Domestic	100	GPM	13.3	01/01	12/31

Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
Well			20N	01W	27	NW/SE	N47.19068	W122.78820

Legal Requirements for Approval of Appropriation of Water

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the county or counties where the water is to be stored, diverted and used. Notice of this application was published in The Peninsula Gateway on June 6 and June 13, 2012. There were no formal protests to the application as a result of publication.

State Environmental Policy Act (SEPA)

A water right application is subject to a SEPA threshold determination (i.e., an evaluation whether there are likely to be significant adverse environmental impacts) if any one of the following conditions are met.

(a) It is a surface water right application for more than 1 cubic foot per second, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cubic feet per second, so long as that irrigation project will not receive public subsidies;
(b) It is a groundwater right application for more than 2,250 gallons per minute;
(c) It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
(d) It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);
(e) It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

Because this application does not meet any of these conditions, it is categorically exempt from SEPA and a threshold determination is not required.

INVESTIGATION

Geology and Hydrogeologic Setting

The geology of the Key Peninsula is described in the Washington Division of Geology and Earth Resources Open File Report 2003-21, *Geologic Map of the Longbranch 7.5-minute Quadrangle, Thurston, Pierce, and Mason Counties, Washington* (Logan and others, 2003). The shallow geology of the peninsula is dominated by late-Wisconsinan-age Vashon Drift, reflecting the classic glacial sequence of glacial till (Qgt) overlying advance outwash deposits (Qgas). These, in turn, overlie a thick sequence of pre-Vashon deposits extending to, and below, mean sea level. These sediments consist of both fine-grained materials (Qps) and coarser-grained materials (Qpg). The fine-grained materials primarily consist of nonglacial sand deposits, laminated silt, minor peat, and gravel; the coarser, oxidized gravel deposits are of presumed glacial origin.

Although located across the Nisqually Reach, the hydrogeologic setting of the Kanooga Beach area is well characterized by the USGS Water-Resources Investigations Report 99-4165, *Conceptual Model and Numerical Simulation of the Ground-Water-Flow System in the Unconsolidated Sediments of Thurston County, Washington* (Drost and others, 1999). This study uses a different nomenclature than Logan and others (2003), particularly for pre-Vashon age geologic units, however they indicate that Vashon Drift materials (particularly Qgas) generally host a shallow aquifer and coarser units of the pre-Vashon-age materials (Qps and Qpg) comprise the deeper aquifer, referred to herein as the sea-level aquifer. Both the Qgas and Qps contain fine-grained sequences that serve as confining layers separating the shallow and sea-level aquifers, however no single confining unit was identified that could be correlated throughout the study area.

Extrapolating precipitation values from Drost and others (1999) across the Nisqually Reach suggests the Kanooga Beach area receives roughly 47.5 inches of precipitation annually, corresponding with roughly

19.5 inches of groundwater recharge annually. Similarly, the USGS Scientific Investigations Report 2010-5055 (*Hydrogeologic Framework, Groundwater Movement, and Water Budget in the Chambers-Clover Creek Watershed and Vicinity, Pierce County, Washington;* Savoca and others, 2010), suggests the Kanooga Beach area receives 50 inches of precipitation and 15 inches of groundwater recharge annually.

The Phase I Assessment (Northwest Water Systems, 2012) assumed the same body of public groundwater for this application was the area within a ¼-mile radius extending from the KB2WS wellhead. This radius, however, does not correspond with any topographic or hydrologic divides in a manner consistent with Ecology's Policy 2010, *Defining and Delineation of Water Sources*. The KB2WS is located on the southwestern margin of a topographic high that may result in localized divides in the shallow aquifer, but these divides are likely not as pronounced in the deeper, more regionally extensive sea-level aquifer in which the current KB2WS well is completed. As such, the proposed same body of public groundwater is presumed to be bound by the following features: the topographic low extending between Taylor Bay on the southwest and Filucy Bay to the northeast; the topographic low extending from Filucy Bay to the northwest into the SW/4 of the NE/4 of Section 14 and then west to Whiteman Cove; and the Nisqually Reach. This roughly triangular area is approximately 4.3 square miles in size. Based upon the above recharge estimates, this area likely receives between 3,440 and 4,472 acre-feet per year of groundwater recharge.

The Department of Ecology's Washington State Well Log Viewer (http://apps.ecy.wa.gov/welllog/) yielded records of 142 wells determined to be within the same body of public groundwater as defined above. Wells were plotted according to the quarter-quarter section provided by the drillers. Records for wells thought to be completed in the sea-level aquifer were identified for the purpose of constructing a cross-section across the peninsula and through Kanooga Beach to evaluate water levels in the sea-level aquifer. However, due to the steep topography and inaccuracies in the mapped locations, water levels for wells interpreted to be completed in the sea-level aquifer ranged from more than 35 feet above to almost 20 feet below mean sea level.

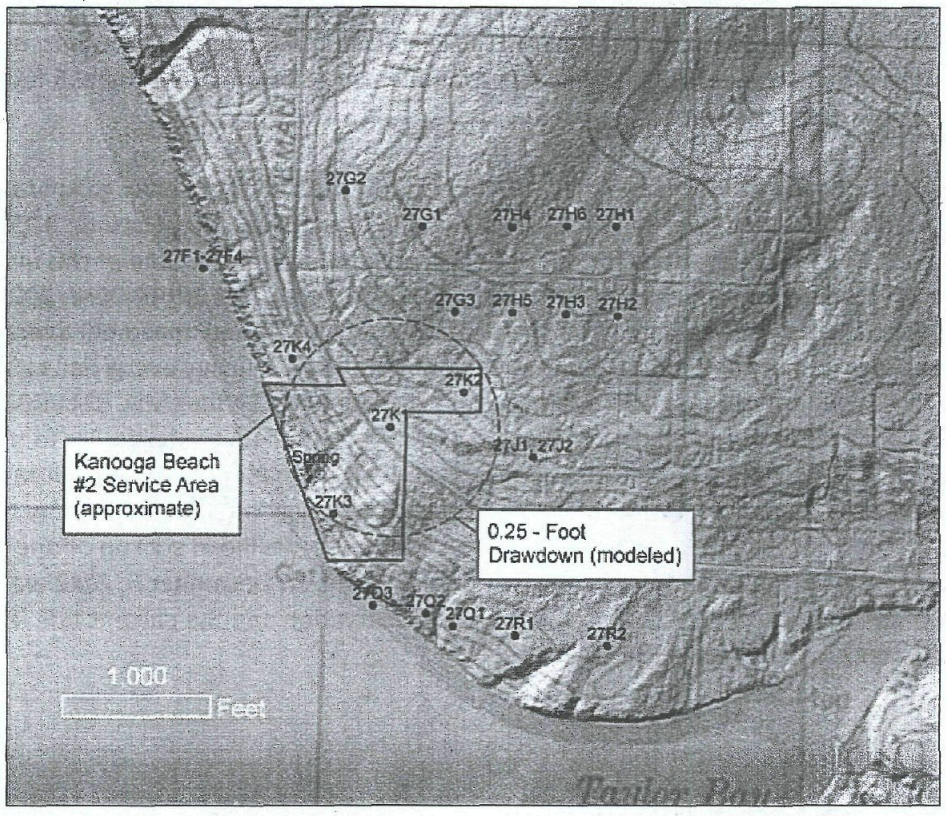
The existing Kanooga Beach #2 well is completed between 206 and 216 feet below ground surface (BGS) and had a reported static water level of 187.2 feet BGS (188.2 feet below top of casing; BTOC) on December 5, 2012. As survey elevations for the site were not available at the time of this evaluation, the Puget Sound LiDAR Consortium's *Pierce County Lowlands 2004 - Bare Earth LiDAR DEM* (2002 data) files were obtained for the area. This dataset has a six-foot raster resolution and maximum overall vertical accuracy on the order of one-foot, although areas of steep terrain with heavy evergreen canopies will be less accurate. This LiDAR dataset indicates a land surface elevation of 194 feet MSL (NAVD88) at the well (located by GPS coordinates obtained during the site visit). This elevation is very similar to the approximately 192 foot MSL land surface elevation indicated on the hand-drawn contour map, reportedly prepared by a surveyor for the Kanooga Beach Plat application and provided by the applicant. Based upon the LiDAR land surface elevation of 194 feet MSL and a wellhead stickup of one foot, the static water level elevation collected by Northwest Water Systems on December 5, 2012 was 6.8 feet above MSL. Without knowing the time of the water level observation and the current tide level, a reliable groundwater gradient cannot be calculated.

Site Visit and Details

A site visit was conducted on October 4, 2012 by James Hay, LHG (Senior Hydrogeologist with Robinson Noble, Inc.). The property owner's representative, Ray Jones, provided a tour of the KB2WS. The system currently consists of the existing six-inch diameter well (Unique Well ID AEK611) and submersible pump, a pumphouse, and a two-inch diameter PVC distribution system that is currently connected to two residences. The well, located on Pierce County Parcel No. 4880000211, was drilled in 1961 prior to the Water Well Construction Act (18.104 RCW) of 1971 and is completed in the sea-level aquifer between the depths of 206 and 216 feet BGS. The original construction appears to meet current construction standards with the possible exception of a surface seal. This was addressed in 2000 when the exterior well casing was overdrilled and an 18-foot-deep bentonite sanitary seal was installed. The well is generally thought to be in good condition, though the proprietary Everdur material used for the screen in the well is known in the industry to have a greater potential for failure than modern screens of stainless steel construction.

Figure 1 shows the KB2WS service area (proposed place of use, POU), the three wells located within the POU, nearby wells in the adjacent quarter-quarter sections, and the results of analytical modeling (see below). Wells 27K1 and 27K2 were located with a recreational-grade Global Positioning System (GPS) unit. Wells that could be associated with parcels in the Pierce County Assessor-Treasurer's Electronic Property Information Profile online database (http://epip.co.pierce.wa.us/CFApps/atr/ePIP/search.cfm) were placed on the map at the approximate center of their parcels; otherwise, wells are mapped at the center of the quarter-quarter sections indicated on the well log.

Figure 1 KB2WS service area, steady-state modeled drawdown, and wells



Weathered glacial till (Qgt) was observed adjacent to the wellhead (27K1; Figure 1), but the surficial geology of the site is generally obscured by vegetation. There is a draw just to the west of 27K1 that runs northeast to southwest. Todd Krause, P.E. (Northwest Water Systems, Inc.), also serving as the applicant's representative, indicated that this draw was previously inspected during a heavy rainstorm and no surface flow was noted in the area surrounding the well. During the site visit, the draw was investigated roughly 75 feet to the south of Whiteman Road and no indications of channeled flow were noted.

Where the southern beach access easement intersects with this draw, about 300 feet to the southwest, an area of seeps was noted at an estimated elevation of 60 to 65 feet above MSL, and an estimated one-and-a-half to two gpm flow was observed running onto the beach at the base of the draw. Where not obscured by vegetation, the bluff was comprised of nearly vertical exposures of laminated silt and peat layers interbedded with sand and gravel deposits (Qps) and occasional lenses of coarser sand and gravel with iron-oxide staining (Qpg).

Two other permit-exempt wells are also located within the proposed KB2WS service area. Well 27K2 (Unique Well ID APR603; Figure 1) is located on Pierce County Parcel No. 0020278021 (Lot 3 of Short Plat 78-733) and is part of another Group B system known as the 72nd St. Ct. Water System, which has no active connections. This well was drilled in 2006 and is completed between 268 and 278 feet below ground in the sea-level aquifer. Well 27K3 (Figure 1) is located on Lot 21 of the Kanooga Beach plat (Pierce County Parcel No. 4880000211). This well was drilled in 1978 and is completed between 157 and 163 feet below ground in the sea-level aquifer. Ray Jones indicates that this well was not placed into use due to concerns regarding saltwater intrusion and that the well will be formally decommissioned if the KB2WS water right process is successful.

Proposed Use and Basis of Water Demand

The application requests an instantaneous quantity of 100 gpm, which is intended to meet the peak hourly demand of the system without a reservoir. The engineer's current design does not include a reservoir because the majority of lots within the Kanooga Beach #2 Water System are anticipated to be vacation properties and the incorporation of a reservoir would complicate operations with the potential for stagnant water during periods of low occupancy.

The requested annual allotment of 13.3 ac-ft/yr was calculated at 0.33 ac-ft/yr (equivalent to an annual average of 296.8 gpd) per home for 40 homes.

Other Rights Appurtenant to the Place of Use

A review of water right documents of record provided by Ecology identified a cancelled groundwater permit, 5481-A (G2-*05803PWRIS), was formerly appurtenant to the property. This permit had been issued for 50 gpm and 5.6 acre-feet per year (ac-ft/yr) with a priority date of January 11, 1961. This permit was cancelled in 1962. The listed permittee was "Dunn L A," which corresponds with the name on the KB2WS well log. It appears that the KB2WS well is the same well referenced by cancelled permit 5481-A.

A groundwater claim (G2-124932CL) is also appurtenant to the property. This claim, filed by Robert W. Osborne on June 25, 1974, is for 50 gpm from a well and is based upon "Book No. 11 of Ground Water Permits on Page 5481 under Application No. 5803." The claim reflects the date of first use of water as April 20, 1961, corresponding with the date of the KB2WS well log, which also references water right application 5803. As such, it appears that the applicant's well is also the same well referenced in this claim. The claim documents the exempt well use occurring at the time it was filed.

Impairment Considerations

A water right application may not be approved if it would:

- Interrupt or interfere with the availability of water to an adequately constructed groundwater withdrawal facility of an existing right. An adequately constructed groundwater withdrawal facility is one that (a) is constructed in compliance with well construction requirements and (b) fully penetrates the saturated zone of an aquifer or withdraws water from a reasonable and feasible pumping lift.
- Degrade the water quality of the source to the point that the water is unsuitable for beneficial use by existing users (e.g., via sea water intrusion).

Data from a March 4, 1997 pumping test of the KB2WS well by Nicholson Drilling was provided in the supporting documentation for the Phase I Assessment. This pumping test was accomplished at a rate of 34 gallons per minute (gpm) for a duration of eight hours and 30 minutes. The test resulted in four feet of drawdown from a static water level of 185 feet BTOC. Water levels stabilized within four minutes at 189 feet BTOC (roughly six feet above sea level according to the DEM elevation) and started to track with tidal changes. When the pump was turned off, water levels essentially recovered to their pre-test levels within two minutes. Water samples collected after 30 minutes, four hours and 30 minutes, and eight hours and 30 minutes had chloride concentrations of 3.93 mg/L, 5.89 mg/L, and 3.93 mg/L, respectively. The well had a pre-test chloride level of 4.91 mg/L on March 3, 1997. Todd Krause indicates that this pumping rate was limited by the installed pump and a future test of the well will be accomplished with a larger pump to establish this well's maximum instantaneous production rate. If the existing well is not capable of producing the necessary instantaneous quantity to meet peak hourly demand, the applicant plans to drill an additional well or make other arrangements.

Analytical Modeling

Based upon the construction of the KB2WS well and aquifer characteristics determined from the 1997 pumping test, an analytical model was constructed to evaluate the steady-state drawdown imposed on the confined sea-level aquifer. Using the specific capacity of the well and the 14-foot aquifer thickness indicated on the well log, a hydraulic conductivity of 163 ft/d was determined. Well production was modeled at a continuous 8.25 gpm (equivalent to the requested annual allocation of 13.3 acre-ft/year). No recharge was applied and no gradient was imposed. Under these conditions, the well imposes just over 1.1 feet of drawdown at the well and 0.25 feet of drawdown at a distance of 740 feet from the well (Figure 1).

It should be noted that the uncertainties in the aquifer characteristics used in this simple model have bearing on the implied potential for saltwater intrusion. As steady-state pumping water levels are presumed to be above mean sea level, the rapid stabilization of water levels observed in the 1997 test

could indicate that the 34-gpm production rate was insufficient to stress a productive aquifer. Coarse sands, such as those indicated on the KB2WS well log, can have hydraulic conductivity values in excess of 500 ft/d (Heath, 1983), which would have the effect of shrinking the 0.25-foot drawdown radius from 740 feet to seven feet from the well. Also, if the elevation of the KB2WS well is found to be lower than 194 feet, steady-state pumping water levels would be closer to sea level and the potential for sea level intrusion would rise.

The closest well to the KB2WS well is the 27K2 (72nd St. Ct. well) at approximately 580 feet, which would see slightly less than 0.28 feet (3.4 inches) of interference drawdown in the modeled, steady-state condition. This level of interference drawdown is unlikely to cause impairment of the 72nd St. Ct. well or other wells located at greater distances.

The applicant has requested a maximum instantaneous production rate of 100 gpm, which exceeds the well's existing demonstrated capacity of 34 gpm. To meet Department of Health requirements, the applicant proposes a future pumping test at rates of up to 100 gpm to evaluate both well and aquifer response. If the existing well has insufficient capacity to meet the projected instantaneous demand, the applicant has proposed drilling an additional well. At a presumed maximum peak day use of 34,000 gpd (850 gpd x 40 lots; equivalent to an average daily continuous production of 23.6 gpm), a well could produce this quantity of water in approximately 5.67 hours at a rate of 100 gpm. Given the short duration of pumping and the presumed infrequent need for this peak volume within a vacation community, the potential for lateral encroachment of saltwater within the sea-level aquifer as a result of this withdrawal is considered less likely than vertical upconing. The applicant's well is bottomed in an undetermined thickness of blue clay with a low vertical hydraulic conductivity, which should offer some protection from upconing. Regular monitoring and reporting of both production volumes and chloride concentrations should provide reasonable notice of an increasing trend in chloride concentrations (an indicator of seawater intrusion).

Water Availability

For water to be available for appropriation, it must be both physically and legally available.

Physical availability

For water to be physically available for appropriation there must be ground water present in quantities and quality and on a sufficiently frequent basis to provide a reasonably reliable source for the requested beneficial use.

Legal availability

To determine whether water is legally available for appropriation consideration is given to instream flows and closures set by regulation.

As indicated in Ecology's 2005 Report to the Legislature, Progress on Watershed Planning and Setting Instream Flows (Publication #05-11-038), watershed planning in WRIA 15 (Kitsap) progressed to a completed final draft watershed plan in June 2005, but the process was ultimately terminated because the Planning Unit was unable to reach consensus agreement on the plan. According to the Instream Resources Protection Program rule (WAC 173-515) and Ecology's *Focus on Water Availability, Kitsap Watershed, WRIA 15* (Publication #11-11-020, published August 2011, revised August 2012), the site is not located in an administratively closed basin and no instream flows have been set in proximity to the

site, although the potential for saltwater intrusion is noted. Population density in this area is characterized as less than 50 people per square mile.

Beneficial Use

The proposed use of water is a beneficial use.

Public Interest Considerations

RCW 90.03.290 requires that a proposed appropriate not be detrimental to the public interest.

RCW 90.54 (Water Resources Act of 1971) provides the most comprehensive list of legislative policies that guide the consolidation of public interest in the allocation of water. These policies generally require a balancing of the state's natural resources and values with the state's economic well-being. Specifically, the policies require allocation of water in a manner that preserves instream resources, protects the quality of water, provides adequate and safe supplies of water to serve public need, and makes water available to support the economic well-being of the state and its citizens.

Public water supply is considered a beneficial use in accordance with RCW 90.54.020.

Sea water intrusion evaluation

The static water level in the KB2WS well is inferred to be 6.8 feet above MSL, based upon available elevation datasets. Analytical steady-state modeling based on the provided pump test data suggests average pumping water levels will remain above sea level with minimal drawdown (0.25') along the coastline, minimizing the potential for both lateral intrusion along the coast and vertical upconing at the well. Chloride levels obtained for the KB2WS well during the pumping test were low (between 3.93 and 5.89 mg/l) and did not exhibit an increasing trend. Salinization of coastal wells as a result of KB2WS well withdrawals is expected to be insignificant and the provision for regular monitoring and reporting of both production volumes and chloride concentrations will document any indications of seawater intrusion.

No detriment to the public interest was identified during the examination of this application.

Conclusions

Water is available for appropriation.

This requested allocation is for a beneficial use, and will not impair existing rights or be detrimental to the public welfare.

No impacts to surface water were identified.

The potential for saltwater intrusion is considered to be moderate to low. This conclusion presumes the elevations obtained from the *Pierce County Lowlands 2004 - Bare Earth LiDAR DEM* are accurate and long-term average pumping water levels are above sea level.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that this request for a water right be approved in the amounts and within the limitations listed below and subject to the provisions listed above.

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial:

100 gpm
13.3 acre-feet per year
Group Domestic Supply

Point of Withdrawal
NW¼, SE¼, Section 27, Township 20 North, Range 01W W.M.

Place of Use
The Plat of Kanooga Beach, Short Plat 78-733, and Lot 3 of Short Plat 78-351.

Report Writer Phil Crane *Date* 3/7/2013

Reviewed by Phil Crane *Date*

If you need this publication in an alternate format, please call Water Resources Program at (360) 407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Selected References

Drost, B.W., Ely, D.M., and Lum II, W.E., 1999, *Conceptual model and numerical simulation of the ground-water-flow system in the unconsolidated sediments of Thurston County, Washington*: U.S. Geological Survey Water-Resources Investigations Report 99-4165, 254 p.

Heath, R.C., 1983, *Basic Ground-Water Hydrology*: U.S. Geological Survey Water-Supply Paper 2220, 86 p.

LiDAR Bare Earth DEM [q47122b72be.e00 and q47122b74be.e00]. (2002). The Woodlands, TX: Terrapoint. Available: Puget Sound LiDAR Consortium, Seattle, WA http://pugetsoundlidar.ess.washington.edu/index.htm [November 30, 2012].

Logan, R.L., Walsh, T.J., and Polenz, M., 2003, *Geologic Map of the Longbranch 7.5-minute Quadrangle, Thurston, Pierce, and Mason Counties, Washington*: Washington Division of Geology and Earth Resources Open File Report 2003-21, 42 x 36 in. color sheet, scale 1:24,000, http://www.dnr.wa.gov/Publications/ger_ofr2003-21_geol_map_longbranch_24k.pdf.

Northwest Water Systems, Inc., 2012, *Phase I Assessment for the Kanooga Beach #2 Water Right Application*; prepared for Kanooga Beach #2 Water System by Todd Krause, P.E., Northwest Water Systems, Inc., 6 p., 2 figs.

Pierce County Assessor-Treasurer Electronic Property Information Profile database http://epip.co.pierce.wa.us/CFApps/atr/ePIP/search.cfm

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WSDOE Water Resources Program Policy 2010 (POL-2010), 2007, *Defining and Delineation of Water Sources*, 10p.

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