DEPARTMENT OF ECOLOGY State of Washington

State of Washington
REPORT OF EXAMINATION FOR CHANGE FOR TRUST WATER RIGHT

PRIORITY DATE	WATER RIGHT NUMBER	WATER RIGHT CONTROL NUMBER	TRUST TERM
7/13/1975	G1-22389C	CG1-22389C	PERMANENT

WATER RIGHT OWNER
BIG LAKE WATER ASSOCIATION
POST OFFICE BOX 2248
MOUNT VERNON WA 98273

Quantities and Purposes of Use of the Trust Water Right

16 gallons per minute and 12.42 acre-feet per year (5.55 ac-ft/yr for mitigation purposes for new groundwater uses and 6.87 ac-ft/yr for groundwater preservation & instream flow augmentation)

Trust Water Right Place of Use

WATERBODY	TRIBUTARY TO	COUNTY	WATER RESOURCE INVENTORY AREA
Groundwater	Nookachamps Creek Subbasin	Skagit	3-Lower Skagit

The place of use of this trust water right is the Nookachamps Creek Subbasin down-gradient of Lot 64, Plat 1, Lakeview Estates, Big Lake, Skagit County (within the SE¼ SW¼ SW¼ of Section 25, Township 34 North, Range 4 East, W.M.)

Provisions Related to the Trust Water Right

Real Estate Excise Tax
This decision may create a Real Estate Excise Tax liability for the seller of water rights. The Department of Revenue has requested notification of potentially taxable water right related actions, and therefore will be given notice of this decision, including document copies. Please contact the state Department of Revenue to obtain specific requirements for your project. Phone: (360) 570-3265. The mailing address is: Department of Revenue, Real Estate Excise Tax, PO Box 47477, Olympia WA 98504-7477 Internet: http://dor.wa.gov/. E-mail: REETSP@DOR.WA.GOV.

Well Decommissioning
The wells associated with this water right (Wells 3 & 4) must be properly decommissioned in accordance with RCW 18.104 and WAC 173-160. Decommissioning must occur within 18 months of the issuance of this report of examination.

Transfer of Ownership
Certificate G1-22389C will be permanently held in trust after the deed of ownership is conveyed to the Department of Ecology.

Findings of Facts, Decision, and Order

Upon reviewing the investigator's report, I find all facts relevant and material to the subject application have been thoroughly investigated. Furthermore, I find the change of water right as recommended will not be detrimental to existing rights.

Therefore, I ORDER the requested change of place of use and purpose of use under Trust Water Right Application No. CG1-22389C, be approved subject to existing rights and the provisions on page 1.

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 Bellevue, Washington, this 26 day of June, 2013.

Jacqueline Klug, Section Manager

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
Buck Smith, Senior Hydrogeologist
Department of Ecology
Water Right Certificate G1-22389C
Water Right Control Number CG1-22389C

BACKGROUND

This report serves as the written findings of fact regarding Water Right Application CG1-22389C. The subject application for change is a request to place the perfected quantities of groundwater certificate G1-22389C into the Trust Water Rights Program (trust) for groundwater preservation, instream flow augmentation, and mitigation purposes within the Nookachamps Creek Subbasin of the Skagit River Watershed.

EXISTING Water Right Attributes

Original Right Owner:	Big Lake Water Company (now known as Big Lake Water Association)
Priority Date:	07/13/1975
Place of Use:	Area served by Big Lake Water Company

County	Source	Tributary To	WRIA
Skagit	Groundwater	Nookachamps Creek	3-Skagit

Purpose of Use	Rate	Unit	Ac-ft/yr	Begin Season	End Season
Municipal Water Supply Purposes	16	GPM	26	01/01	12/31

Source Name	Lot Number	Plat Number	Twp	Rng	Sec	QQQ QQ Q
Two wells (Nos. 3 & 4)	64	Plat 1, Lakeview Tracts, Big Lake	34N	04E	25	SE¼ SW¼ SW¼

WRIA = Water Resource Inventory Area, GPM = Gallons per minute; Ac-ft/yr = Acre-feet per year; Twp = Township, Rng = Range, Sec = Section; QQQ QQ Q = Quarter-Quarter-Quarter of a section.

REQUESTED Water Right Attributes

Applicant Name:	Big Lake Water Association
To be Conveyed to:	State of Washington, Department of Ecology, Trust Water Rights Program
Date of Application:	10/9/2012
Place of Use:	Down-gradient of Lot 64, Plat 1, Lakeview Estates, Big Lake, Skagit County (within the SE¼ SW¼ SW¼ of Section 25, Township 34 North, Range 4 East, W.M.)

County	Waterbody	Tributary To	WRIA
Skagit	Groundwater	Nookachamps Creek	3-Lower Skagit

Purposes of Use	Rate	Unit	Ac-ft/yr	Begin	End
Groundwater preservation, instream flow augmentation, and mitigation for new groundwater uses	16	GPM	26	01/01	12/31

Source Name for Trust	Parcel No.	Twp	Rng	Sec	QQQ QQ Q
Nookachamps Creek Subbasin groundwater down-gradient of the original points of withdrawal	P67139	34N	04E	25	NE¼ SW¼ SW¼

Legal Requirements for the Requested Change

The following is a list of requirements that must be met prior to authorizing the proposed change.

Public Notice

RCW 90.03.280 and RCW 90.42.040(5)(a) require notice of a trust 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 acquired and/or used. Notice of the subject application was published in the *Skagit Valley Herald* on October 19 & 26, 2012.

Consultation with the Department of Fish and Wildlife

On February 14, 2013, Steve Boessow, Washington Department of Fish & Wildlife (WDFW) Water Rights Biologist provided Ecology with the following comments regarding the subject application:

> *WDFW has no objections provided the usual care and conditions are exercised. We would expect that the water would be used to mitigate new wells at or downstream of Big Lake and that no surface water diversions would be part of this exchange.*

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.

- 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;
- It is a groundwater right application for more than 2,250 gallons per minute;
- It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
- 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);
- 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.

Relevant Water Resources Statutes, Administrative Rules, and Case Law

The following statutes, rules, and court cases (case law) are relevant to the request for change.

- RCW 90.03.380(1) states that a water right that has been put to beneficial use may be changed. The point of diversion (withdrawal), place of use, and purpose of use may be changed if it would not result in harm or injury to other water rights.

- RCW 90.42.040 Trust Water Rights Program
  (1) A trust water right acquired by the state shall be placed in the state trust water rights program to be managed by the department. The department shall exercise its authorities under the law in a manner that protects trust water rights. Trust water rights acquired by the state shall be held in trust and authorized for use by the department for instream flows, irrigation,

municipal, or other beneficial uses...to resolve critical water supply problems. The state may acquire a groundwater right to be placed in the state trust water rights program.

(2) The department shall issue a water right certificate in the name of the state of Washington for each permanent trust water right conveyed to the state indicating the quantity of water transferred to trust, the reach or reaches of the stream or the body of public groundwater that constitutes the place of use of the trust water right, and the use or uses to which it may be applied.

(3) A trust water right retains the same priority date as the water right from which it originated.

(4) Exercise of a trust water right may be authorized only if the department first determines that neither water rights existing at the time the trust water right is established, nor the public interest will be impaired.

- RCW 90.42.080(5) - the consumptive quantity of a trust water right acquired by the state and held or authorized for use by the department is equal to the consumptive quantity of the right prior to transfer into the trust water rights program.

- WAC 173-503 Instream Resources Protection Program – Lower & Upper Skagit River Water Resources Inventory Area (WRIA 3 & 4) – Nookachamps Creek subbasin.

- WAC 173-152-050(2)(g) - this application qualifies for priority processing whereby water right change applications may be processed prior to applications submitted at an earlier date when the proposed water use is for a water budget neutral project. A water budget neutral project is defined as a project where diversions or withdrawals of waters of the state are proposed in exchange for at least an equivalent amount of water from other water rights, the trust water program, a water bank, relinquishment of other water rights, or other mitigation projects that result in no diminishment of the source.

- The Washington Supreme Court has held that Ecology, when processing an application for change to a water right, is required to make a tentative determination of extent and validity of the right. This is necessary to establish whether the water right is eligible for change. *R.D. Merrill v. PCHB* and *Okanogan Wilderness League v. Town of Twisp.*

INVESTIGATION

The Big Lake Water Association (BLWA) submitted three applications for change to their existing groundwater rights (G1-22387C, G1-22388C, & G1-22389C). This report addresses the change request for groundwater certificate G1-22389C. However, there is substantial commonality in the investigation for all three applications because the three rights and their authorized points of withdrawal are used conjunctively by BLWA. Therefore, much of the following also includes information for G1-22387C and G1-22388C, along with the total annual quantities eligible for change. As stated previously, the purpose of the three change applications is to permanently place the BLWA groundwater rights into the trust program.

To assist the Department of Ecology (Ecology) in determining the extent, validity, and value of these rights, Ecology contracted the Washington Water Trust (WWT) and WestWater Research LLC (WestWater). Both the WWT and WestWater submitted reports to Ecology. The WWT report is titled *Big Lake Water Association Project – Water Rights History and Beneficial Use Assessment.* The WestWater report is titled *Valuation Analysis of the Big Lake Water Association.*

In addition, the BLWA submitted a water right quantification report, a membership/connections list (and related explanatory memo), a power bill spreadsheet showing BLWA power usage for 2008-2011, Skagit County Sewer District PUD water bills (used for beneficial use extrapolation purposes), and a declaration of water usage by Ken Hoffman (a long-time resident of the Big Lake community).

All of the above information was used in the preparation of this report, along with information from a site visit to BLWA, information from the WA Department of Health (DOH) Sentry database, the most recent BLWA Water Facility Inventory (WFI) report, the Skagit County Assessor's database, and various maps.

Background and History of the BLWA system

The greater Big Lake community is a census designated place (CDP) of 1,835 people (2010 Census) and approximately 3,000 acres, located in Skagit County near Mt. Vernon, WA. The BLWA is a Group A water system serving a more narrowly defined unincorporated community of approximately 118 people (per DOH) located on the northeastern shore of Big Lake, on and around the former Day Lumber Company mill site and company-owned town. The BLWA service area encompasses approximately 102 acres and has the capacity for 70 connections (approved by DOH). Most of the connections served by the system are located along Lakeview Boulevard, which runs parallel to the eastern lake shore.

The BLWA (formerly Big Lake Water Company) was incorporated in 1947. BLWA appears to have used surface water as its source prior to the 1970s, when it developed the wells currently in use. As the surrounding community grew and BLWA began to reach the limits of its system, the Skagit PUD brought new service to the area via the Big Lake Local Utility District (LUD). The LUD's service line was buried next to BLWA's line down Lakeview Blvd. Beginning in 1993 when the Big Lake LUD came online, new homes in the area (as well as some current BLWA users) connected to the LUD. Some of the BLWA members who connected to the LUD maintained their BLWA accounts, while others did not. The LUD requires a confirmation of disconnection from the BLWA system, so any BLWA user who is also connected to the LUD uses BLWA water for outdoor use only.

Water Rights

The BLWA owns four certificated water rights, three of which are for groundwater (see Table 1 below). BLWA also owns a surface water certificate (No. 3161) with a March 20, 1948, priority date for 0.35 cubic feet per second. It is not a subject of this change application, and at this time Ecology is not negotiating for the purchase of it, nor has BLWA applied to change it.

Table 1: BLWA Groundwater Rights

	G1-22387C	G1-22388C	G1-22389C
Priority Date	7/13/1975	7/13/1975	7/13/1975
Annual Quantity Listed (acre-feet/year)	21	23	26
Instantaneous Quantity (gallons/minute)	13	14	16
Place of Use	Area Served by Big Lake Water Co.	Area Served by Big Lake Water Co.	Area Served by Big Lake Water Co.

Each of these groundwater certificates is provisioned to be supplemental to each other, so that the total annual quantity under G1-22387C, G1-22388C, and G1-22389C cannot exceed 70 acre-feet.

Site Visit

A site visit was conducted on January 17, 2013, by Ecology personnel (Buck Smith, John Rose, & Kellie Arthur) who met onsite with BLWA personnel (Steve Harmon & Bill Vervaart). Mr. Harmon is the BLWA president. Mr. Vervaart has served as the system operator for the past 8 years.

During the site visit the water system was in full operation as it currently exists. Ecology personnel observed the following.

- The "Pumphouse" - this building is located at 16902 Lakeview Blvd. It contains a 22,000 gallon open-topped, concrete storage tank. Water from the operational BLWA wells (1, 3, 4, & 5) enters the building through individual PVC pipes. The water then spills into the open-topped storage tank. From the tank, water is piped through a booster pump, pressure tank, and chlorinator into the BLWA distribution system. If needed, there is also a backup supply pipeline from the Skagit County PUD #1 system to the storage tank. Location coordinates are: 48.4002276, -122.2410961

- Well 1 – located within a small shed attached to the south side of the pumphouse. This well (along with well 2) was authorized as one of the two points of withdrawal for water right G1-22388C. The well is 8 inches in diameter and 65 feet deep. Its steel casing is centered within a 36-inch diameter concrete "tile" vertical standpipe. The well's Ecology unique identification number is AER337. On the day of our visit, the static water level was 14.4 feet. The submersible well pump was operating and feeding water into the storage tank. Coordinates: 48.4001454, -122.2411705

- Well 2 – located several feet away from well 1, within the same small shed. This well (along with well 1) was authorized as one of the two points of withdrawal for water right G1-22388C. It is also 8 inches in diameter and 65 feet deep. This well has been disconnected from service (well 1 is now the sole source for the subject right). At some point in the past (before Bill Vervaart became operator) the well pump, plumbing, and electrical were removed, so this well is no longer operable, without considerable effort and expense. This well's unique well number is AER335. On the day of our visit, the static water level was 15.6 feet. Coordinates: 48.4001454, -122.2411705

- Well 3 – located on the west side slope of the BLWA property. This well (along with well 4) was authorized as one of the two points of withdrawal for the subject water right (G1-22389C). The well is 8 inches in diameter and 147 feet deep. This well is covered with a small plywood housing. We removed a number of blackberry vines and tilted the housing to get access to the wellhead. We could hear water flowing into the piping system due to the well's flowing artesian nature. This well has no pump installed. It delivers water solely through artesian pressure, then gravity flow to the storage tank for distribution throughout the BLWA system. Because it is a flowing artesian well, the static water level was not measured (but would be higher than ground surface). Its unique well number is AER334. Coordinates: 48.4005743, -122.2430760

- Well 4 – also located on the west side slope of the BLWA property. It is approximately 100 feet south of well 3. This well (along with well 3) was authorized as one of the two points of withdrawal for the subject water right (G1-22389C). The well is 8 inches in diameter and 147 feet deep. It also is covered with a small plywood housing. Again, we removed a number of blackberry vines and tilted the housing to get access to the wellhead. We could hear water flowing into the piping system due to the well's flowing artesian nature. This well has no pump installed. It delivers water solely through artesian pressure, then gravity flow to the storage tank for distribution throughout the BLWA system. Because it is a flowing artesian well, the static water level was not measured (but would be higher than ground surface). Its unique well number is AER336. Coordinates: 48.4002376, -122.2430522

- Well 5 – is located to the east of the pumphouse. This well was authorized as the point of withdrawal for water right G1-22387C. It is 8 inches in diameter and 90 feet deep. It is housed in a small building located approximately 65 feet west of Lakeview Blvd. It is a flowing artesian well, but it has a pump installed in order to reach its full pumping capacity. Its steel casing is centered within a 36-inch diameter concrete "tile" vertical standpipe. The well's unique identification number is AER338. The submersible well pump was operating and feeding water into the storage tank during our site visit. Coordinates: 48.4002734, -122.2407543

Proposed Purpose of Use

In 2001, Ecology adopted an Instream Resources Protection Program rule (WAC 173-503) for the Skagit River Basin (Water Resource Inventory Areas 3 & 4) which limited the development of new water uses. In 2006, the rule was amended to establish "reservations" for future surface and groundwater uses. These reservations are approaching (or have exceeded) the established limits in some tributary subbasins and have the potential to constrain economic development opportunities in the region. The subject change request (if approved) will allow for the development of a mitigation plan consistent with the rule to allow for future water use in the mainstem Nookachamps subbasin at such time in the future that the reservation for that subbasin is fully allocated. To accomplish this, the purpose of use of the three BLWA certificates must be changed to groundwater preservation, instream flow augmentation, and mitigation for new groundwater uses.

Current Purpose of Use

BLWA's subject three water right certificates currently list "community domestic supply" as the purpose of use. However, RCW 90.03.560 allows the purpose of use to be conformed to municipal supply purposes if the right meets the definitions outlined in RCW 90.03.015. RCW 90.03.015 defines a "municipal water supplier" as "an entity that supplies water for municipal water supply purposes". The statute further defines "municipal water supply purposes" as follows:

> (4) "Municipal water supply purposes" means a beneficial use of water: (a) For residential purposes through fifteen or more residential service connections or for providing residential use of water for a nonresidential population that is, on average, at least twenty-five people for at least sixty days a year; (b) for governmental or governmental proprietary purposes by a city, town, public utility district, county, sewer district, or water district; or (c) indirectly for the purposes in (a) or (b) of this subsection through the delivery of treated or raw water to a public water system for such use. If water is beneficially used under a water right for the purposes listed in (a), (b), or (c) of this subsection, any other beneficial use of water under the right generally associated with the use of water within a municipality is also for "municipal water supply purposes," including, but not limited

to, beneficial use for commercial, industrial, irrigation of parks and open spaces, institutional, landscaping, fire flow, water system maintenance and repair, or related purposes. If a governmental entity holds a water right that is for the purposes listed in (a), (b), or (c) of this subsection, its use of water or its delivery of water for any other beneficial use generally associated with the use of water within a municipality is also for "municipal water supply purposes," including, but not limited to, beneficial use for commercial, industrial, irrigation of parks and open spaces, institutional, landscaping, fire flow, water system maintenance and repair, or related purposes.

This right qualifies as a "municipal water supply purposes" water right because it has consistently been beneficially used to serve more than 15 connections for residential purposes. In addition, BLWA's historical water delivery to the Big Lake Store, Big Lake School, and the Big Lake Firehouse also qualify as municipal water supply purposes under this definition.

BLWA's historical delivery of water to a neighboring farm property for agricultural irrigation did not qualify as a community domestic supply purpose of use and accordingly also does not qualify as a municipal water supply purpose of use. Therefore, no quantitative credit can be given for the agricultural irrigation usage. The main reason for this determination is because none of the original three applications (G1-22387A, G1-22388A, & G1-22389A) or the reports of examination for these rights mentioned anything about agricultural irrigation. In fact, all three applications had "NA" written in the box titled "Irrigation, Number of Acres". So, there was no original intent by BLWA to serve agricultural irrigation water nor were change applications ever filed to authorize agricultural irrigation as a purpose of use.

Quantification of the BLWA Water Rights

RCW 90.14.140(2)(d) provides that "there shall be no relinquishment of any water right...if such right is claimed for municipal water supply purposes." BLWA's water rights meet the definition of municipal supply purposes; therefore they are not subject to relinquishment for nonuse. Consequently, the transferable amount of the water right under RCW 90.03.380 and RCW 90.44.100 will not be limited to the last five years of actual use. The quantification of the transferrable amount, absent abandonment of a portion of the water rights, will be based on the highest beneficial use of water historically used by BLWA.

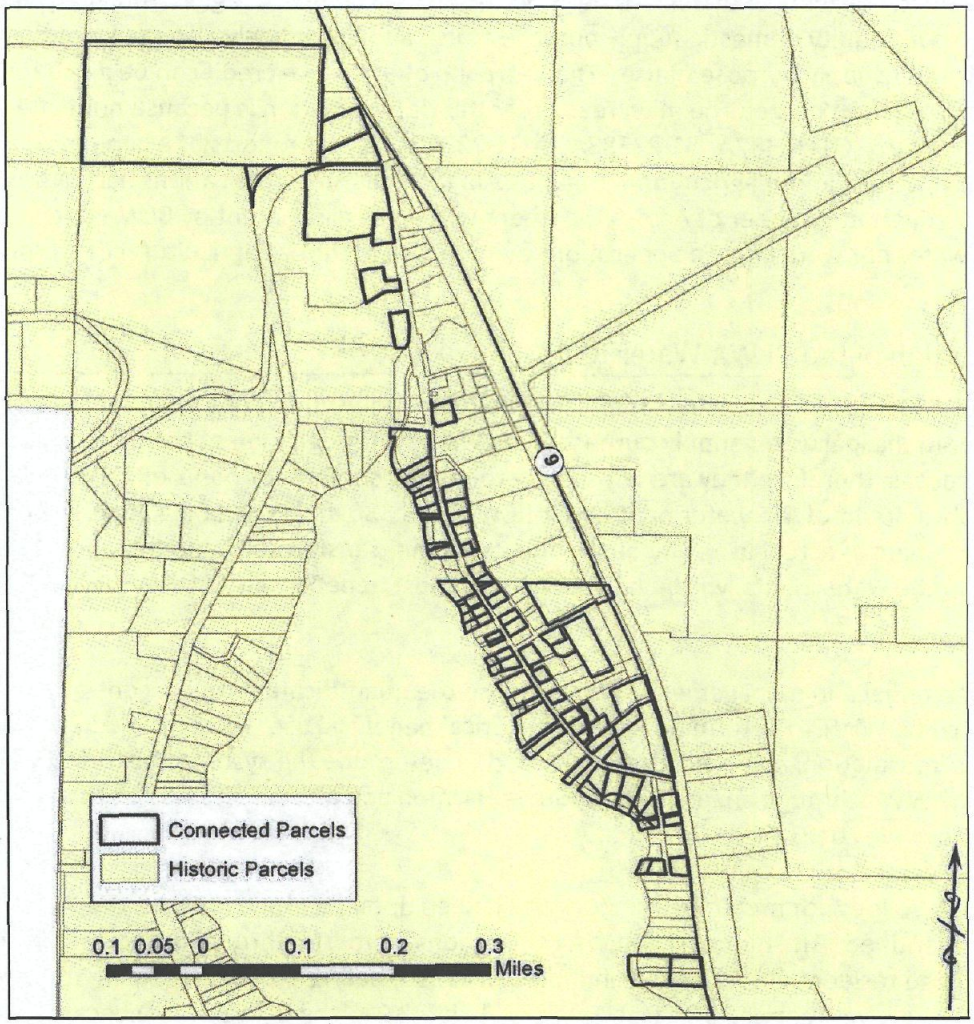
Ecology personnel and management decided to use the quantification report contracted for and provided by the WWT to determine BLWA's historical beneficial use. Background information, operations information, and other details needed to determine the system's historical water use were obtained by WWT through an interview of Steve Harmon and a WWT site visit to the BLWA service area on September 13, 2012.

Because BLWA does not meter its use, nor does it keep detailed usage records, the year of peak use was not easily identified. The number of BLWA connections increased throughout the 1980s, reaching their DOH approved residential connection limit of 70 by 1990, before steadily declining to their present number of roughly 40 connections (see Table 2). In late 1993 the Big Lake LUD became operational and some BLWA members began connecting to it. Peak use likely occurred during the time that the BLWA system was at its capacity and BLWA users had their first opportunity to switch, so 1993 was used as the year of peak use for the WWT analysis. Quantification methods used are described as follows based on outdoor and indoor use.

Outdoor Use

The first step the WWT used in determining the residential, commercial (non-farm), and governmental outdoor use was identifying parcels historically connected to the BLWA system. BLWA provided an accounts register from 2002, which had handwritten notes for users back to 1997. Using the names, account numbers (which corresponded to old addresses), current addresses, and the Skagit County Assessor's Web site, parcel numbers were found for all 66 account numbers on the BLWA register. Using a current GIS parcels layer from Skagit County, a connected parcels layer was created. This layer was compared against a historical parcels layer provided by Skagit County's GIS Department to determine the amount of change in the parcels over time. Although the exact date of the historical parcel layer is unknown, the Skagit County GIS Department believes it is from 1996 or 1997. As illustrated in Figure 1, there has not been significant change in the parcel boundaries.

Figure 1: Parcel Comparison



Using 1993 black and white aerial photos and Landsat 5 data taken August 4, 1993, irrigated lawns and gardens under the connected parcels were delineated. It should be noted that the Landsat image was displayed using the false color band combination of 4, 3, 2, so that areas of high photosynthetic activity would appear bright red. Standard aerial photo interpretation techniques (texture, pattern, & land use)

and color clues from the Landsat image were used to identify irrigation. xTool Pro was used to determine irrigated acreage.

To find the quantity of water used, an irrigation requirement had to be determined. On the September 13, 2012, site visit by WWT personnel, domestic irrigation was examined on lots currently served by BLWA. While there was some landscaping and gardens, the vast majority of outdoor water use was associated with lawns. The color, lushness, and vigor of lawns tended to vary from house to house, with some lawns being as lush and green as commercial turf and others being less lush and green. Despite the differences in lawn care between neighbors and WWT's inability to know how lawns in 1993 compared to commercial turf, it seemed reasonable to apply the Washington Irrigation Guide's (WIG's) crop irrigation requirement for pasture/turf in Sedro Woolley (11.12 inches/year per acre.).

When considering a water right for trust, it is always important to understand the consumptive and non-consumptive portions of all water uses associated with the right because this ultimately affects the quantity eligible for trust. To find the consumptive and non-consumptive portions of outdoor domestic water use the methods outlined in Ecology's GUID-1210 were used. During the WWT site visit to Big Lake no resident was irrigating their lawn or garden at the time. However, it was apparent that some homes had in-ground sprinkler systems while others relied on sprinklers attached to the ends of garden hoses. An efficiency rate of 75 percent was used, which is the average efficiency rate for pop-up impact sprinklers from GUID-1210. Per GUID-1210, an average return flow of 15% was used.

WWT used GIS analysis to derive an accurate estimate of outdoor (non-farm) use. Outdoor irrigation in 1993 totaled 12.94 acres, equating to 13.59 acre-feet of consumptive use. The acreage used in this calculation includes the ballfield at the school (3 acres). The calculations are as follows:

11.12 inches/acre/year water duty divided by 12 inches/foot = 0.9267 feet/acre/year
0.9267 feet/acre/year times 12.94 acres of irrigation = 11.99 acre-feet/year water needed
11.99 acre-feet/year needed applied at a 75% efficiency rate = 15.99 acre-feet/year application rate
15.99 acre-feet/year minus 15% nonconsumptive return flow = 13.59 acre-feet/year consumptive use

Therefore, <u>13.59</u> acre-feet per year of outdoor water use shall be considered to be consumptive use eligible for change. The return flow of 2.4 acre-feet per year (15.99-13.59) is not eligible for change.

Indoor Use – Residential Domestic

Without metering, indoor residential domestic use is difficult to determine. However, there are records showing the number of connections over the years, primarily from DOH. A constant from 1979-2012 is that DOH has approved up to 70 residential connections. Active connections were likely at their peak in 1993, when the LUD came online and BLWA members began slowly switching to the LUD. There is no specific piece of evidence from 1993 that shows the number of active connections. However, use of the 1990 Skagit PUD Feasibility Report numbers (see Table 2) seems reasonable.

Table 2: BLWA connections

Year	Connections	Source	Notes
1979	55	DSHS report quoted in Ecology ROE from 1980	Reported as "55 users" using 3.4 acre-feet/year
1983	67	Notes from engineer Paul Cheng via Nancy Feagin, DOH	65 residential
1990	72	Skagit PUD Feasibility Study	Including store and school
1995	67	DOH field notes	65 residential
2002	53	Email from BLWA operator to DOH	53 active connections, 62 with service rights
2012	38-40	BLWA memorandum to Ecology	
2012	45	DOH Sentry Database	Total calculated connections

BLWA (in their water quantification report) quoted a standard of 75 gallons per capita per day, sourced from an American Water Works Association (AWWA) manual (AWWA Design and Construction of Small Water Systems, 1984). In the declaration by Ken Hoffman (longtime Big Lake resident) supplied by the BLWA, Mr. Hoffman asserts that "the average household size was at least 3 persons, and probably significantly larger." (Hoffman, 2012) Using 70 residential connections as the assumed number for 1993, the AWWA per capita per day figure and the Hoffman household size number (70 connections x 75 gallons/person/day x 3 persons/household x 365 days/year), the result is 5,748,750 gallons/year (17.64 acre-feet/year).

However, the primary area where BLWA's estimate lacks rigor is in its reliance on the affidavit of a single individual as a source for the average household size in the service area. Skagit PUD's 2001 Water Service Plan for the Big Lake LUD uses an average household size of 2.64 persons. Using this number along with the 75 gallons per capita per day (70 connections x 75 gallons/person/day x 2.64 persons/household x 365 days/year), the result is 5,058,900 gallons/year (15.53 acre-feet/year).

The 2010 Census provides housing data for the Big Lake CDP: 1,835 people occupying 716 housing units, resulting in 2.56 persons per household. Following this number and the same methodology, the result is 4,905,600 gallons/year (15.05 acre-feet/year).

Ecology believes the most reliable estimate is the Skagit PUD's 2001 Water System Plan for the Big Lake LUD. Therefore, <u>15.53</u> acre-feet per year of indoor domestic water use shall be considered to be consumptive use eligible for change. (The BLWA service area is entirely on sewers, so all domestically used water is consumptive to the Nookachamps subbasin.)

Indoor Use – Commercial Domestic

The same methodology used for indoor residential domestic was used for calculating historical indoor use at the Big Lake School, Big Lake Store, and Big Lake Firehouse. The use factors were derived from the 2009 Water System Design Manual supplied by DOH.

Big Lake Elementary School has 295 students and 20 staff members. The DOH water system design manual estimates 20 gallons per day (gpd) per person, so the calculation (315 people x 20 gpd x 180 school days) results in 1,134,000 gallons/year (3.48 acre-feet/year).

Big Lake Store uses water in a bathroom, kitchen, and living residence. The DOH manual estimates 400 gpd for a store, so the calculation (400 gpd x 365 days) results in 146,000 gallons/year (0.45 acre-

feet/year). BLWA suggested that the store actually uses 600 gpd because of an additional residence and kitchen, resulting in 219,000 gallons/year (0.67 acre-feet/year). This number seems reasonable.

Big Lake Firehouse uses water in its two bathrooms and kitchen, and is staffed with up to four people. The DOH manual estimates that a restaurant uses 7-10 gpd per patron. Using the high end of the restaurant estimate as a proxy for the firehouse seems reasonable, considering the activities are similar. The calculation (4 persons x 10 gpd x 365 days) results in 14,600 gallons/year (0.04 acre-feet/year). Firehouse staff also uses water for the washdown of fire-fighting equipment. A reasonable estimate of washdown water needs is 0.25 acre-feet/year.

Therefore, the total (non-irrigation) commercial domestic use shall be equal to 4.44 acre-feet per year (3.48 + 0.67 + 0.04 + 0.25).

Total annual volume available for transfer

The total annual volume of water available for transfer is the amount of consumptive outdoor use plus the total domestic (residential & commercial) use. **Therefore, 13.59 + 15.53 + 4.44 = 33.56 acre-feet per year is eligible for change.**

The 33.56 acre-feet per year eligible for change is the total from all three BLWA groundwater certificates (G1-22387C, G1-22388C, & G1-22389C). The annual quantity eligible for change from each certificate shall be prorated based on each original allocation (Table 3). The prorated annual quantities will then be divided into water to be made available for future groundwater mitigation purposes (15 ac-ft/yr total) and for groundwater preservation (GP) and instream flow (ISF) augmentation (18.56 ac-ft/yr total). These quantities are based on the purchase and sales agreement entered into by Ecology and BLWA.

Table 3: Prorated Annual Quantity (Qa) Available for Change from each Certificate

	G1-22387C	G1-22388C	G1-22389C
Qa originally allocated (70 ac-ft/yr total)	21	23	26
% of the original 70 ac-ft/yr allocation	30%	33%	37%
Prorated Qa Eligible for Change (33.56 ac-ft/yr total)	10.07	11.07	12.42
Prorated Qa for Mitigation (15.0 ac-ft/yr total)	4.50	4.95	5.55
Prorated Qa for GP & ISF (18.56 ac-ft/yr total)	5.57	6.12	6.87

Instantaneous Quantity Eligible for Change

Based on field observations of the instantaneous rate flowing into the BLWA storage tank and the proof of appropriation form filed on April 27, 1982, the full 16 gallons per minute has been perfected and beneficially used. **Therefore, 16 gallons per minute is eligible for change.**

Impairment Considerations

Impairment occurs when there is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection, i.e., water rights that are both senior and junior in priority to the right the applicant seeks to change. Creating a trust water right under G1-22389C will not create an adverse

impact (impairment) on existing rights within the Nookachamps Creek subbasin nor the mainstem Skagit River, because no increase in consumptive use will occur as a result of approval of this change request. Indeed, there will be a decrease in consumptive use because, once the water right is placed in trust for the purposes of groundwater preservation, instream flow augmentation, and mitigation for new groundwater uses, there will be no further withdrawals of groundwater under this water right. Creation of this trust water right will provide a benefit to groundwater storage and will augment streamflow in the mainstem of Nookachamps Creek. If and when this trust right is proposed to be utilized for mitigation purposes to offset new groundwater uses, an impairment analysis will be completed during review of any proposed mitigation plan involving the exercise of this trust right.

Consideration of Protests

No protests were received during the statutory 30 day protest period, which expired on November 25, 2012. Steve Boessow of WDFW requested that trust water only be used to mitigate new wells at or downstream of Big Lake and that no surface water diversions would be part of this exchange. This request is reasonable and will be included in the recommendations.

Conclusions

Based on my investigation, I conclude the change of water right as requested will not be detrimental to existing rights.

RECOMMENDATION

Based on the above investigation and conclusions, I recommend this request for change be approved in the amounts and within the limitations listed below and subject to the provisions listed on page 1.

Authorized Quantities, Purposes of Use, Source, and Place of Use

- Authorized Quantities - 16 gpm and 12.42 ac-ft/yr
- Purposes of Use – 5.55 ac-ft/yr for mitigation purposes for new groundwater uses and 6.87 ac-ft/yr for groundwater preservation & instream flow augmentation
- Source – SE¼ SW¼ SW¼ of Section 25, Township 34 North, Range 4 East, Willamette Meridian
- Place of use - Nookachamps Creek Subbasin groundwater down-gradient of Lot #64, Plat 1, Lakeview Estates, Big Lake, Skagit County (within the SE¼ SW¼ SW¼ of Section 25, T34N, R4E)

State of Washington
Hydrogeologist
1479
Licensed Geologist

Buck Smith

Buck Smith, Senior Hydrogeologist, License #1479

Stamp

J. R. "BUCK" SMITH

6/25/2013

Date

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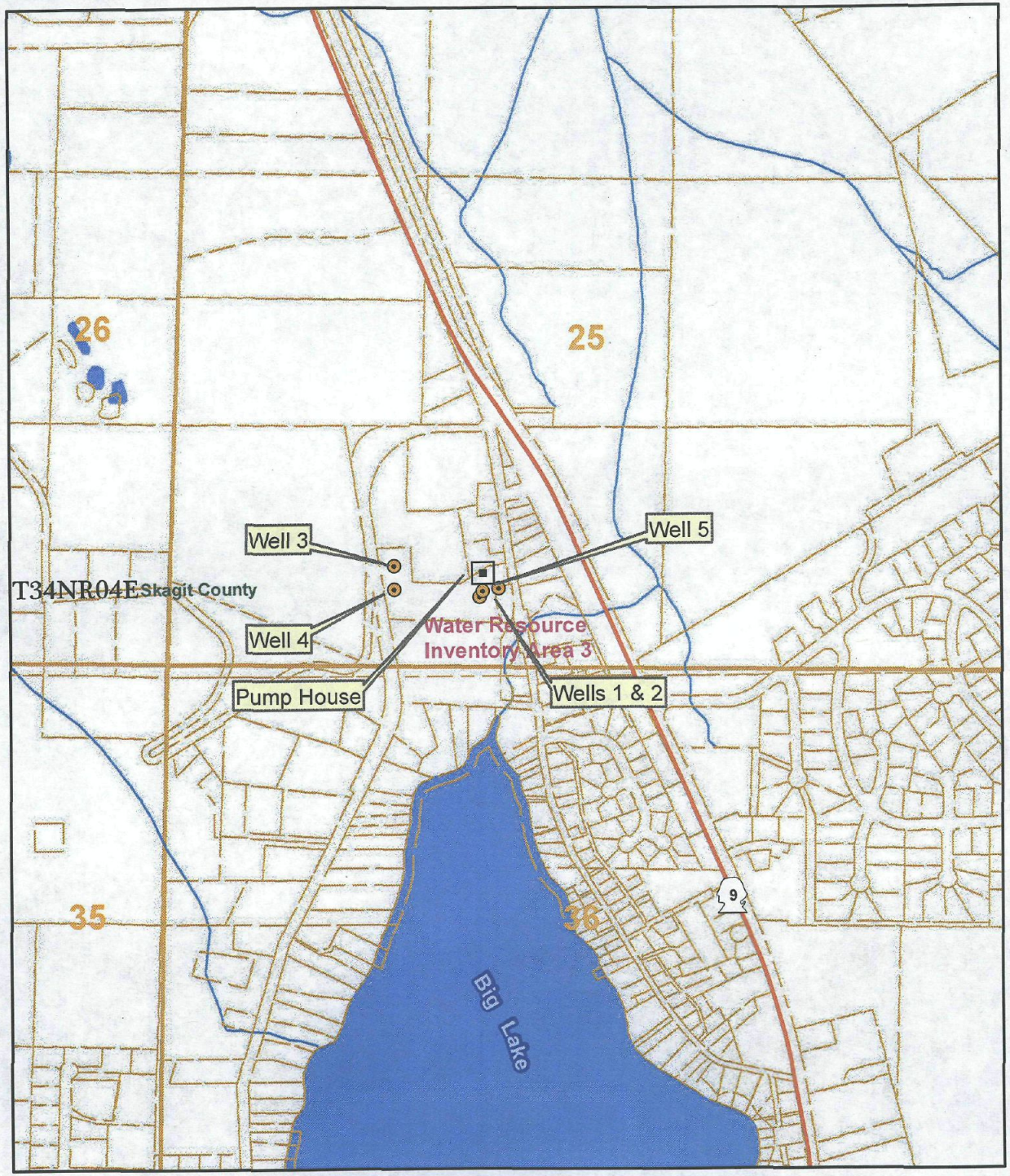
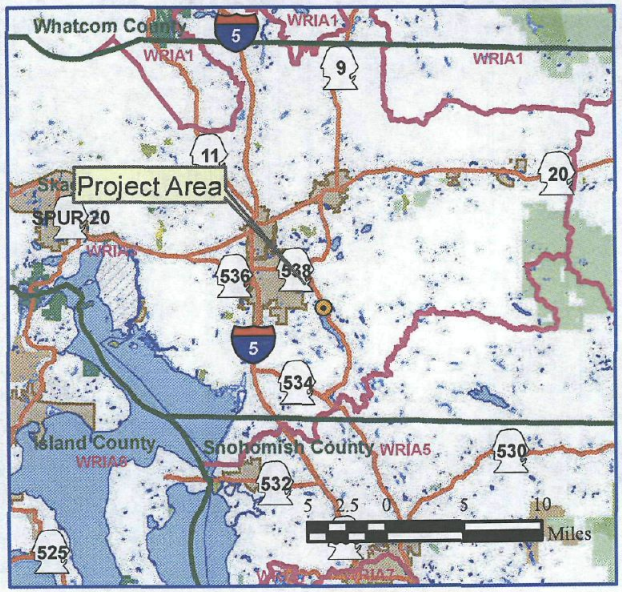
Big Lake Water Association
Water Right Numbers CG1-22387C, CG1-22388C
& CG1-22389C
Sec. 25 T 34N R 04E W.M.
WRIA 3- Skagit County

DEPARTMENT OF ECOLOGY
State of Washington





Interstate
US Highway
WRIA
Cities
Parcels
Water Courses
Water Bodies
SwampMarsh
Township
Section
Authorized Point of Withdrawal
Certificated Place of Use

N
W E
S

1,000 500 0 1,000 2,000
Feet

Place of use and point(s) of diversion/withdrawal are as defined on the cover sheetunder the headings,'LOCATION OF DIVERSION/WITHDRAWAL'and 'LEGALDESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

Attachment 1