



State of Washington
**REPORT OF EXAMINATION
FOR WATER RIGHT APPLICATION**

PRIORITY DATE October 3, 2011	WATER RIGHT NUMBER
MAILING ADDRESS LAND LLOYD DEVELOPMENT PO BOX 3889 FEDERAL WAY WA 98063-3889	SITE ADDRESS (IF DIFFERENT) PO BOX 3889

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AC-FT/YR)
45	GPM	9.05

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE		UNITS	ANNUAL QUANTITY (AC-FT/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE		ADDITIVE	NON-ADDITIVE	
Irrigation of lawn and garden	45	-	GPM	9.05	-	05/01 - 09/30

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS
4.5	-	-	-

Source Limitations

SOURCE FACILITY/DEVICE	A S	WITHDRAWAL OR DIVERSION RATE	ANNUAL QUANTITY (AC-FT/YR)	PERIOD OF USE (mm/dd)
AEC569	-	45 GPM	9.05	05/01 - 09/30

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
KITTITAS	GROUNDWATER	-	39-UPPER YAKIMA

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
AEC569	14811	AEC569	19N	14E	02	NENE	47.1738	-121.0509

Datum: NAD83/WGS84

Place of Use (See Attachment 1 - Project Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

Portions of Kittitas County Parcel Nos. 15904 and 15910.

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

All that portion of the following described property bounded on the Northwest by Fowler Creek Road; on the North by Westside Road and bounded on the East, the Southerly, and the Southwest border by the following described line. Commencing at the NE of corner of Parcel ID 15904, the True Point of Beginning for this description, Thence: South 2°48'4" West 483 feet; thence North 52°11'9" West 145 feet; Thence North 77°16'32" West 219 feet; Thence South 89°41'54" West 379 feet; Thence North 54°6'43" West 232 feet; Thence North 75°57'49" West 113 feet; Thence South 79°37'25" West 523 feet; Thence North 29°1'45" West 153 feet to the terminus of this line.

Proposed Works

A well, 86 feet deep with a 6 inch casing, providing water to an underground 'pop-up' style sprinkler irrigation system.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
NA	October 1, 2013	October 1, 2014

Measurement of Water Use

How often must water use be measured?	*Bi-weekly
How often must water use data be reported to Ecology?	Annually (Jan 31)
What volume should be reported?	Total Annual Volume (acre-feet)
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm)

**Bi-weekly means every two weeks*

Provisions

Wells, Well Logs and Well Construction Standards

1. All wells constructed in the state shall meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard shall be decommissioned.
2. All wells shall be tagged with a Department of Ecology unique well identification number. If you have an existing well and it does not have a tag, please contact the well-drilling coordinator at the regional Department of Ecology office issuing this decision. This tag shall remain attached to the well. If you are required to submit water measuring reports, reference this tag number.
3. Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required

Measurements, Monitoring, Metering and Reporting

4. 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.
5. Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Central Regional Office. If you do not have Internet access, you can still submit hard copies by contacting the Central Regional Office for forms to submit your water use data.
6. 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.

Easement and Right-of-Way

7. The water source and/or water transmission facilities are not wholly located upon land owned by the applicant. Issuance of a water right authorization by the Department of Ecology does not convey a right of access to, or other right to use, land which the applicant does not legally possess. Obtaining such a right is a private matter between applicant and owner of that land.

Water Use Efficiency

8. The water right holder is required to maintain efficient water delivery systems and use of up-to-date water conservation practices consistent with RCW 90.03.005.

Proof of Appropriation

9. 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.

Schedule and Inspections

10. 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.

Mitigation Offered

11. Water use under this authorization is contingent upon the conveyance of an equal (7.69 acre-feet per year) or greater amount of consumptive use from a suitable instream flow right (see Land Lloyd / Ecology Trust Water Right Agreement) to the Water State Trust Water Right Program.
12. Any valid priority calls against the source Trust Water Right No. CS4-00714sb2, based on local limitations in water availability, will result in temporary curtailment of the use of water under the permit until the priority call for water ends.

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 of use is beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. G4-35529, 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

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>.

Signed at Yakima, Washington, this 4th day of December 2012.

Mark Kemner, WR Section Manager by Sage Pink
 Mark Kemner, LHG, Section Manager
 Water Resources Program/CRO

INVESTIGATOR'S REPORT

Application for Water Right -- Land Lloyd Development

Water Right Control No. G4-35529

Kurt Walker, Department of Ecology

BACKGROUND

This report serves as the written findings of fact concerning Water Right Application Number G4-35529.

Priority Processing

This application is being priority processed because it qualifies under the criteria found in the Upper Kittitas Groundwater Rule WAC 173-539A-060, which provides that certain applications may be processed prior to competing applications.

Project Description

On October 3, 2011, Land Lloyd Development Inc of Federal Way, Washington, (the applicant) filed an application with the Washington State Department of Ecology (Ecology) for a water right permit to appropriate public groundwater. The application was assigned control number G4-35529. The applicant requested authorization for an instantaneous withdrawal (Qi) of 45 gallons per minute (gpm) for the irrigation of approximately 6.0 acres. During subsequent communications, the applicant revised the request down to 4.5 acres of irrigation.

The subject property has historically been irrigated using surface water from Fowler Creek under Acquavella Adjudication Court Claim No. 00714. The property was historically irrigated using flood techniques. However, since approximately 2003, the applicant has been irrigating approximately 4.5 acres by means of 'pop-up' style sprinklers. The other portion of the historic place of use (POU) continued to be flood irrigated.

On April 12, 2012, Court Claim No. 00714 was changed from irrigation to instream flow and mitigation under Change Authorization CS4-00714sb2. CS4-00714sb2 now serves as mitigation for new uses through creation and operation of the Land Lloyd Water Bank. Specific terms and use of the Land Lloyd Water Bank are described in Attachment 3 – Trust Water Right Agreement between Land Lloyd Development Inc. and Ecology.

Table 1 Summary of Requested Water Right

Applicant Name:		Land Lloyd Development						
Date of Application:		10/3/2011						
Place of Use		See page 2 for legal description.						
County		Waterbody			Tributary To		WRIA	
Kittitas		Groundwater					39-Upper Yakima	
Purpose		Rate	Unit	Ac-ft/yr	Begin Season	End Season		
Irrigation		45	GPM	9.05	05/01	09/30		
Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
Groundwater	14811	AEC569	19N	14E	02	NE NE	47.1739	-121.0509

CFS = Cubic Feet per Second; Ac-ft/yr = Acre-feet per year; Sec. = Section; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area; E.W.M. = East of the Willamette Meridian; Datum: NAD83/WGS84.

Legal Requirements for Approval of Appropriation of Water

Chapters 90.03 and 90.44 RCW authorize the appropriation of public water for beneficial use and describe the process for obtaining water rights. Laws governing the water right permitting process are contained in RCW 90.03.250 through 90.03.340 and RCW 90.44.050. In accordance with RCW 90.03.290, determinations must be made on the following four criteria in order for an application for water rights to be approved:

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

This report serves as the written findings of fact concerning all things investigated regarding Water Right Application No. G4-35529.

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 Daily Record* on January 6, 2012, and January 13, 2012. No protests or objections were received.

Consultation with the Department of Fish and Wildlife

The Department of Ecology must give notice to the Department of Fish and Wildlife of applications to divert, withdraw or store water.

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 1.0 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 listed conditions, and no other known aspects of the project require review through SEPA, a threshold determination is not required.

INVESTIGATION

Site Visit

A site visit was performed by Kurt Walker from the Department of Ecology on December 6, 2011, and was attended by Robert (Bob) Couper and Robert Lloyd of Land Lloyd Development Inc.

Proposed Use and Basis of Water Demand

The applicant has requested to irrigate up to 4.5 acres of existing lawn and garden within the subject POU. Water demand for the requested irrigation was calculated using Ecology's Guidance Document 1210, *Determining Irrigation Efficiency and Consumptive Use*, in conjunction with the Washington Irrigation Guide (WIG). According to the WIG, pasture/turf in the Cle Elum area has a crop irrigation requirement (CIR) of 18.11 inches/year (USDA, 1985). The total irrigation requirement can be calculated by dividing the CIR by the Irrigation efficiency (Ea). The chosen Ea is consistent with Ea used in Change Authorization CS4-00714sb2.

Formula 1

$$CIR \div Ea = \text{Irrigation Requirement}$$

Calculation 1 – Irrigation Requirement

$$18.11 \text{ inches per acre} \div 75\% = 24.14 \text{ inches per acre or } 2.01 \text{ acre - feet (ac-ft) per acre}$$

Calculation 2 – Proposed Irrigation Water Use

$$2.01 \text{ ac-ft per acre} \times 4.5 \text{ acres} = 9.05 \text{ ac-ft}$$

The consumptive portion of total water use was determined using the methods, calculations, and formulas listed above. The consumptive use value of 85% of total use was chosen based on work performed under Change Authorization No. CS4-00714sb2. In other words, consistent methodology was applied to the historic and proposed consumptive and non-consumptive calculations. As a result, the new appropriation will not result in an increase of consumptive or non-consumptive uses for the requested irrigation.

The consumptive and non-consumptive use quantities are listed in Table 2 below.

Table 2 – Total and Consumptive Water Use

<i>Use</i>	<i>Total Use (ac-ft)</i>	<i>Consumptive Use (ac-ft)</i>
Irrigation of 4.5 acres	9.05	7.69

Other Rights Appurtenant to the Place of Use

The historic Acquavella Court Claim No. 00714 and recent Change Authorization No. CS4-00714sb2 (both owned by Land Lloyd Development Inc), overlap the subject POU. Court Claim No. 00714 authorized up to 0.2 cfs and 30.0 acre-feet per year (ac-ft/yr) for the irrigation of 10 acres and 1.3 cubic feet per second (cfs) for conveyance. Under CS4-00714sb2, all authorized surface water diversions under Court Claim No. 00714 ceased, and the purpose of use was changed from irrigation to instream flow and mitigation. A portion of this change to Court Claim No. 00714 is being offered as mitigation for Water Right Permit Application G4-35529 and other new uses through the management of a Trust Water Right Agreement (TWRA). See Attachment 3 for TWRA.

Hydrogeologic Analysis

A hydrogeologic analysis was prepared by Kurt Walker to identify groundwater sources, supply information regarding groundwater availability, and assess the potential impacts associated with groundwater withdraws under Water Right Application G4-35529.

Existing literature, including geologic maps, geologic unit descriptions, area well logs, topographic maps, air photos, geomorphic features, and site observations were used to characterize the hydrogeologic conditions of the site. The proposed well (AEC569) is completed into an unconsolidated sediment groundwater source (see Figure 1). For purposes of this report the author has tentatively assigned the name "Lower Alluvial (LAS)" to the subject groundwater source.

Figure 1 — Groundwater Source

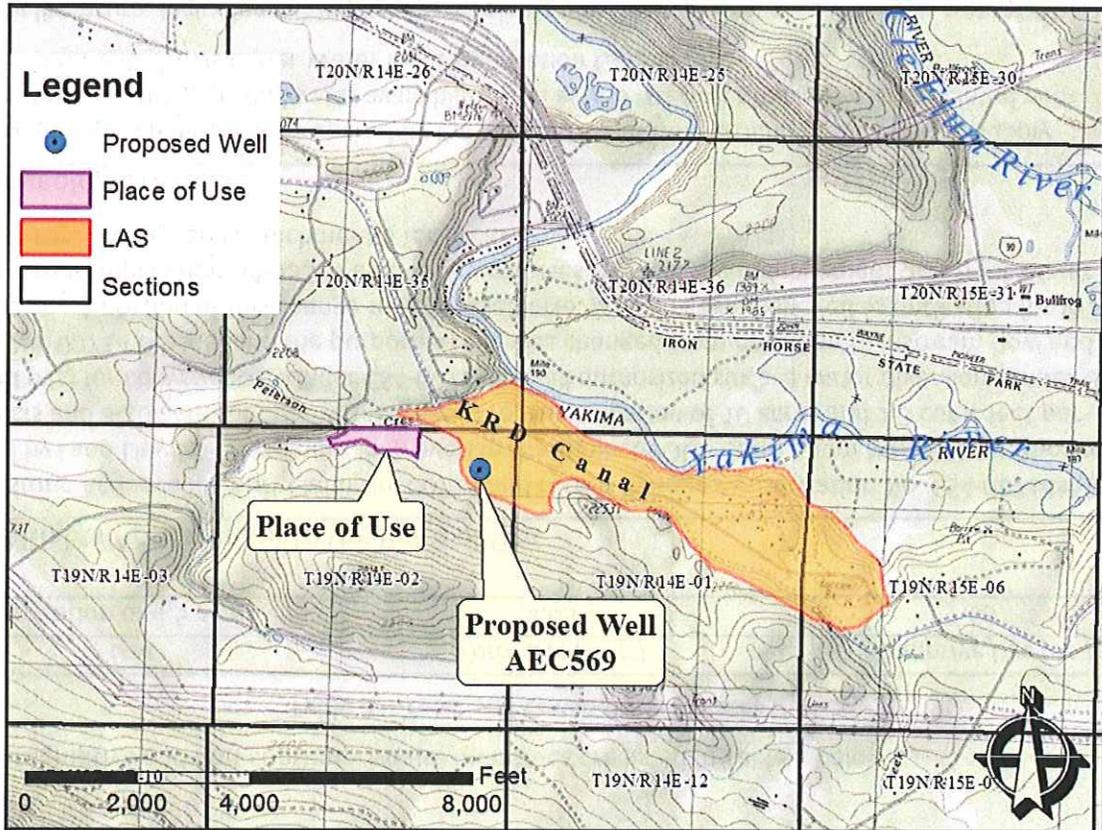


Figure 1: Areal extent of groundwater sources over USGS topographic contour map.

Executive Summary from the hydrogeologic analysis,

The site area lies within a geologically complex setting of the Upper Yakima River Basin. Tectonic forces have folded and faulted the bedrock, and multiple glacial periods have reshaped the topography and redistributed large volumes of rock and sediment. When saturated, the glacial sediments contain useable quantities of groundwater. The subject application proposes to a well to tap groundwater from the Lower Alluvial Source (LAS). The LAS is comprised of the saturated portion of unconsolidated Bullfrog member glacial deposits. The LAS is recharged by precipitation and leakage from the Kittitas Reclamation District Main Canal. Most of the groundwater discharge from the LAS comes by way of pumping for existing domestic purposes. Groundwater is expected to be physically available in the quantities requested. Additionally, the proposed uses are not expected to result in adverse impacts to existing groundwater users.

For full hydrogeologic analysis, see Attachment 2.

Impairment Considerations

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection. 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.
- Interrupt or interfere with the availability of water at the authorized point of diversion of a surface water right. A surface water right conditioned with instream flows may be impaired if a proposed use or change would cause the flow of the stream to fall to or below the instream flow more frequently or for a longer duration than was previously the case.
- Interrupt or interfere with the flow of water allocated by rule, water rights, or court decree to instream flows.
- 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).

Impairment, Qualifying Groundwater Withdrawal Facilities, and Well Interference

Impairment of Groundwater Rights

Ecology's water rights and well log databases were searched to identify nearby groundwater rights and groundwater users which may be affected by the proposed groundwater appropriations. A hydrogeologic assessment of the site was performed in part to address the potential for impairment of existing groundwater rights. The hydrogeologic report finds that adverse impacts due to withdrawals under the subject application are not likely. See Attachment 2 for full hydrogeologic assessment of source characterization and impairment potential.

Impairment of Surface Water Rights

While there are multiple surface water rights identified down gradient of the proposed point of withdrawal (well), no surface water users are expected to be severely impacted under this authorization. Additionally, the applicant has offered mitigation in the form of instream flow to offset the consumptive use impacts associated with the withdrawals. See CS4-00714sb2 and Department of Ecology & Land Lloyd Inc. Trust Water Right Agreement (Attachment 3) for details of the mitigation offered.

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 groundwater present in quantities and quality and on a sufficiently frequent basis to provide a reasonably reliable source for the requested beneficial use or uses. In addition, the following factors were considered:

- Volume of water represented by senior water rights, including federal or tribal reserved rights or claims;
- Water right claims registered under Chapter 90.14 RCW;
- Groundwater uses established in accordance with Chapter 90.44 RCW, including those that are exempt from the requirement to obtain a permit; and
- Potential riparian water rights, including non-diversionary stock water.
- Lack of data indicating water usage can also be a consideration in determining water availability, if the department cannot ascertain the extent to which existing rights are consistently utilized and cannot affirmatively find that water is available for further appropriation.

Legal Availability

To determine whether water to be legally available for appropriation, the following factors were considered:

- Regional water management plans – which may specifically close certain water bodies to further appropriation.
- Existing rights – which may already appropriate physically available water.
- Fisheries and other instream uses (e.g., recreation and navigation). Instream needs, including instream and base flows set by regulation. Water is not available for out of stream uses where further reducing flow level of surface water would be detrimental to existing fishery resources.
- The Department may deny an application for a new appropriation in a drainage where adjudicated rights exceed the average low flow supply, even if the prior rights are not presently being exercised. Water would not become available for appropriation until existing rights are relinquished for non-use by state proceedings.

Beneficial Use

The use of water for irrigation is defined in statute as a beneficial (RCW 90.54.020(1)).**Public Interest Considerations**

When investigating a groundwater right application, Ecology is required to consider whether the proposed use is detrimental to the public interests. Ecology must consider how the proposed use will affect an array of factors such as wildlife habitat, recreation, water quality, and human health. The environmental amenities and values associated with the area were taken into account during the consideration of this application.

Consideration of Protest and Comments

No protests or objections were filed against this application.

Conclusions

- Water is physically available in quantities sufficient to meet proposed appropriation.
- Water is legally available under the provisions of WAC 173-539A, when combined with the proposed mitigation measures.
- According to RCW 90.54.020, irrigation is considered a beneficial use.
- Approval of the proposed appropriation, when combined with the proposed mitigation measures, will not result in impairment of existing water right holders.
- Approval of the proposed appropriation, when combined with the proposed mitigation measures, is not detrimental to the public interest.

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:

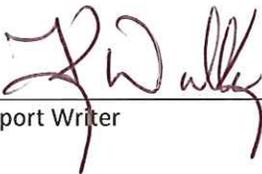
- 45 gpm
- 9.05 acre-feet per year
- Irrigation of 4.5 acres of lawn and garden from May 1 – September 30

Point of Withdrawal

NE $\frac{1}{4}$ NE $\frac{1}{4}$, Section 2, Township 19 North, Range 14 E.W.M.

Place of Use

As described on page 2 of this report.


Report Writer

12-4-12
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

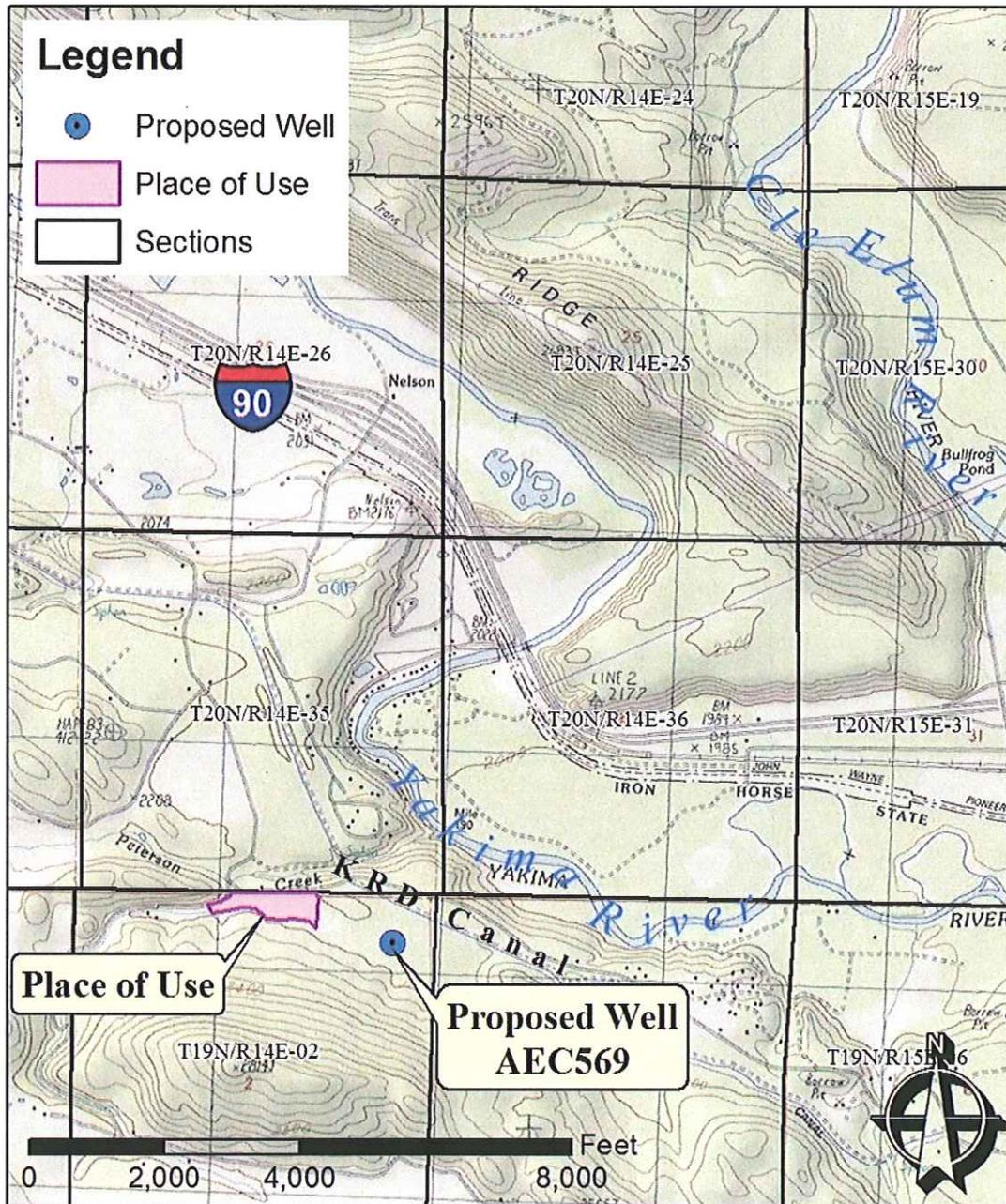
United States Department of Agriculture, 1985. Washington Irrigation Guide, Appendix A.

Washington Department of Ecology Well Database, available at: <http://apps.ecy.wa.gov/welllog/>

Washington Department of Health, Office of Drinking Water SENTRY Data Base System, available at: <https://fortress.wa.gov/doh/eh/portal/odw/si/Intro.aspx>

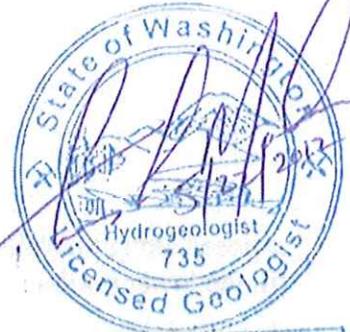
Washington Department of Natural Resources (WDNR) Digital 1:100,000 Geologic Maps, available at: http://www.dnr.wa.gov/ResearchScience/Topics/GeosciencesData/Pages/gis_data.aspx

Attachment 1



Attachment 2 - Hydrogeologic Report

TECHNICAL MEMORANDUM



THOMAS L. MACKIE

DATE: May 22, 2012
TO: File
FROM: Kurt Walker
RE: Hydrogeologic Technical Analysis for Water Right Application G4-35529, Kittitas County, Washington. Report by Kurt Walker and reviewed by Tom Mackie.

Executive Summary:

The site area lies within a geologically complex setting of the Upper Yakima River Basin. Tectonic forces have folded and faulted the bedrock, and multiple glacial periods have reshaped the topography and redistributed large volumes of rock and sediment. When saturated, the glacial sediments contain useable quantities of groundwater. The subject application proposes to use a well to tap groundwater from the Lower Alluvial Source (LAS). The LAS is comprised of the saturated portion of unconsolidated Bullfrog member glacial deposits. The LAS is recharged by precipitation and leakage from the Kittitas Reclamation District Main Canal. Most of the groundwater discharge from the LAS comes by way of pumping for existing domestic purposes. Groundwater is expected to be physically available in the quantities requested. Additionally, the proposed uses are not expected to result in adverse impacts to existing groundwater users.

Purpose:

This hydrogeologic review has been prepared to identify and characterize the proposed groundwater source, supply information regarding groundwater availability, and assess the potential impacts associated with groundwater withdraws under Water Right Application G4-35529.

Application Overview:

Water Right Application G4-35529 requests to use groundwater in the amount of 45 gallons per minute (gpm) and 9.05 acre-feet per year (afy) for the purposes irrigation of 4.5 acres of lawn and/or garden.

Site Location:

The site is located within the main stem Yakima River Valley approximately 5 miles west of the city of Cle Elum. The subject parcels are primarily situated on the North side of a topographic high between Spex Arth Creek to the east and Peterson/Fowler Creek to the west. The Kittitas Reclamation District (KRD) Main Canal flows from west to east near the northeast property boundary (see Figure 1).

Geologic Setting:

The subject area lies within a U-shaped NW-SE trending valley formed as the result of glacial activity during multiple glacial advances, most recently Fraser-age and Vashon-age glaciation which occurred between approximately (~) 25,000 and 10,000 years ago. While bedrock is

exposed along the valley walls and ridges, glacial and more recent alluvial deposits blanket and fill the lower portions of this glacial shaped topography.

Area Bedrock

Tabor et al (2000) map the bedrock in the vicinity of the project area as Darrington Phyllite (DP) of the Easton Metamorphic Suite (see Figure 2). The DP forms the basement rocks of interest. Evidence suggests that the DP was formed from Middle and Late Jurassic marine shale and sandstone protoliths in a high-pressure, deep subduction-zone environment during the Early Cretaceous. The DP is described as containing quartz veins and lenses, and as locally interbedded with schist. The DP is obscured by mass wasting deposits to the east, grades to tonalite gneiss to the south, and is cut by major faults to the north and west of the property.

Figure 1 – Site Location

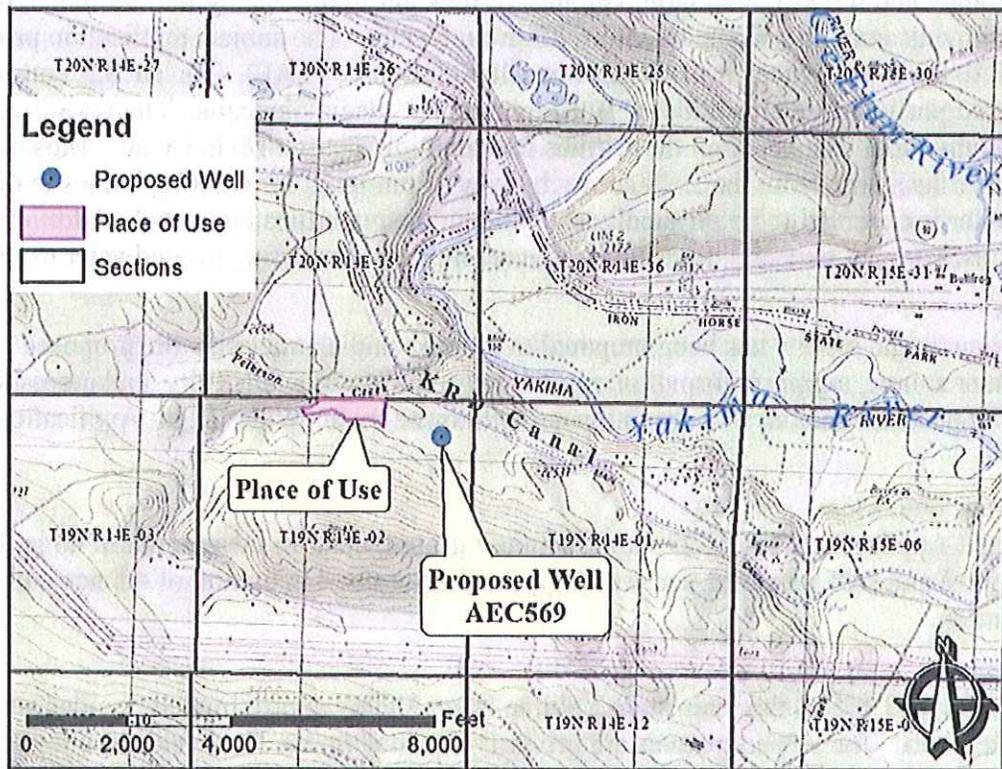


Figure 1: Site location over USGS topographic contour map.

Glacial History

The upper Yakima River Basin has experienced repeated glaciation including three major Pleistocene ice sheet advancements. Three major periods of glaciation sculpted the area terrain through ice scour erosion and related deposition. As ice advanced and retreated over the land, ridges and topographic highs were modified, valleys were deepened, and the upper basin attained

a characteristic U-shape profile. Erosional products were redistributed and deposited as glacial moraines, terraces, outwash, and lacustrine deposits.

Three major periods of glaciation left behind three major glacial deposits known locally as the Thorp Drift, Kittitas Drift, and Lakedale Drift (listed from oldest to youngest). In places, these glacial deposits are hundreds of meters thick (Porter, 1976). The Lakedale Drift is thought to broadly correlate with the deposition of the Fraser Drift (~ 19,000 years ago) and Vashon Drift (~ 15,000 years ago), both associated with the advancement of the Puget Lobe of the Cordilleran Ice Sheet in the vicinity of what is now the Puget Sound.

Figure 2 – Area Geology

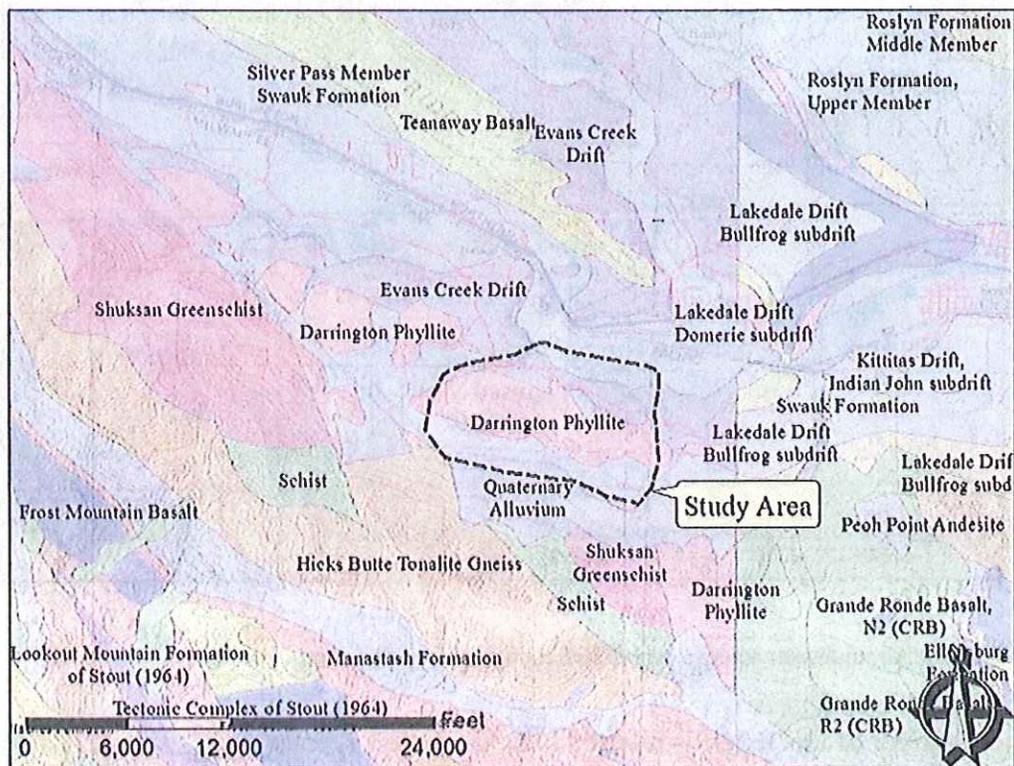


Figure 2: USGS Geologic Map over USGS topographic contour map.

The Bullfrog and pre-Lakedale(?) glacial deposits underlie much of the proposed place of use (see Figure 2). Arcing moraine crests (~ 2,200 – 2,400 feet above mean sea level) are located less than 3 km northwest and northeast of the site and mark the eastern most extent of the Bullfrog ice lobe advancement. While local thickness of this deposit is unknown, a large borrow pit ~ 5 km away exposes over 80 vertical meters of Bullfrog outwash.

Hydrogeologic Analysis of the Site:

Geologic maps, geologic unit descriptions, area well logs, topographic maps, air photos, geomorphic features, and site observations were used to characterize the hydrogeologic conditions of the site. The subject water source is described, and a simple water budget was constructed to assist in the evaluation of water availability and impairment.

Figure 3 – Groundwater Source

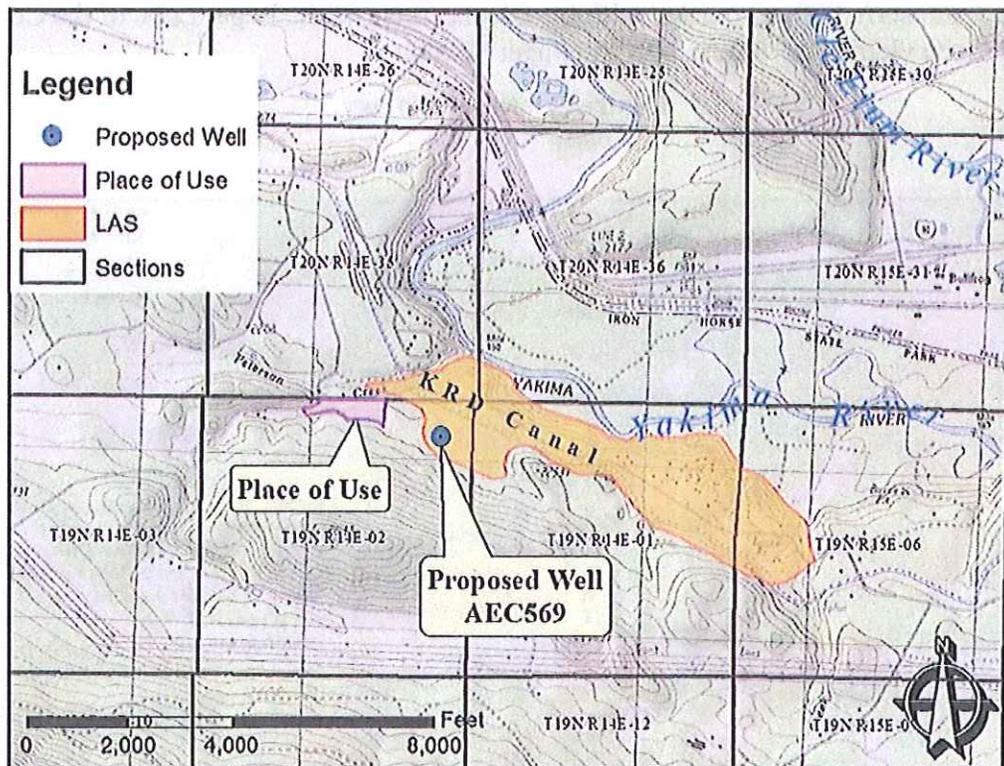


Figure 3: Groundwater sources over USGS topographic contour map.

Lower Alluvial Water Source

The subject aquifer of this report is referred to as the Lower Alluvial water source (LAS). The LAS is comprised of the saturated portion of unconsolidated Bullfrog member glacial deposits. The local Bullfrog deposits form a terrace ~ 160 feet above the current elevation of the Yakima River (see Figure 3). Recharge to the LAS consists of infiltration of direct precipitation, leakage from the Main Canal where unlined, and discharge from underlying bedrock. Discharge occurs to pumping wells and the underlying bedrock through percolation where head relationships allow.

Well logs indicate that Bullfrog deposits consist primarily of sand and gravel with some coarser and finer components. Well reports on file with Ecology show that most LAS wells are 6-inch diameter casing, unlined, unscreened, and completed to depths between 50 and 150 feet bgs.

Drillers report wells yields between 10 to 25 gpm and static water levels between 30 and 80 feet bgs at the time of drilling. Given the materials encountered, typical well construction, degree of formation penetration, and the small volumes required for domestic use, the yields reported by drillers are likely a low estimate of what the LAS is capable of producing.

The applicants LAS well (Ecology Well Tag No. AEC569) was drilled to a depth of 86 feet bgs in October of 1999. According to the well log, the driller encountered sand and gravel with small amounts of clay near the land surface and bottom of the hole. 6-inch casing was set to 85 feet bgs with a surface seal to 18+ feet. A 5-foot section of screen (5.5-inch diameter, 0.025-inch slot) was installed between 80 and 85 feet bgs. The driller reported a static water level of 47 feet bgs and estimated a yield of 25 gpm at the time of drilling. The applicant reports that the well has not undergone any pump draw down tests.

Water Budget

A simplified water budget was developed for the LAS in effort to assess the recharge - discharge relationship and physical water availability under steady state average conditions. The parameters evaluated included: precipitation (annual average), evapotranspiration (evaporation + transpiration), runoff (overland flow + subsurface/base flow), and change in groundwater storage. The water budget analysis is based off the following mass balance equation:

Equation 1 Basic Water Budget

$$\text{Precipitation} - \text{Evapotranspiration} - \text{Runoff} - \text{Change in Groundwater Storage} = \text{Zero}$$

Precipitation data was gathered from The PRISM Climate Group. PRISM (Parameter-elevation Regressions on Independent Slopes Model) data consists of spatially distributed average annual precipitation (AAP) values from 1971-2000 (PRISM, 2012). Average annual precipitation for the site varies slightly from east to west, but is roughly 32.0 – 37.0 inches/year. An evapotranspiration estimate of 12.0 inches/year was chosen based on Donaldson's (1979) assessment of evapotranspiration at Lake Cle Elum. Average annual runoff was estimated between 20.0 and 24.0 inches using runoff isopleths developed in conjunction with the Pacific Northwest River Basin Commission (1970). Factors contributing to changes in groundwater storage include: pumping (-), canal water leakage (+), infiltration of imported irrigation water (+), change in surface water infiltration (-/+), etc. Change in groundwater storage is expected to be very low to near zero for the BS and UAS, but is difficult to quantify given the low annual withdrawals and lack of groundwater level monitoring data. Similarly, it is difficult to estimate change in groundwater storage for the LAS. However, the LAS does receive a significant amount of leakage water from the KRD canal (estimated at roughly 2.5 times the annual natural recharge) which has likely increased groundwater storage and runoff over time since KRD installation and operation. See Table 1 below for summary of water budget analysis.

Results of the water budget analysis provide meaningful insight into the groundwater occurrence and behavior within the LAS. However, the values presented should not be treated as absolute amounts, but as a reference for consideration in management decisions. Additionally, the analysis was performed under average steady state conditions. Therefore, the results are not

representative for all years. For example, consecutive drought years or a series of wet years will affect the amount of runoff and recharge to each source. Other limitations of the analysis include:

- Timing of recharge and discharge.
- Climatic variation and trends.
- Effects of boundary conditions.
- Hydrologic variation within the source.

Table 1
Summary of Water Budget Analysis

Source	Area (acres)	^a Average Annual Recharge (afy)	^b Groundwater Use vs. Recharge (%)
Lower Alluvial (LAS)	280	341	16

^a Does not include infiltration of Kittitas Reclamation District canal leakage or foreign return flows.

^b Includes subject application (G4-35529) and assumes approval of application G4-35432.

Source Availability:

The groundwater source characterization and basic water budget analysis were considered during an evaluation of groundwater availability. Given the relatively low demand vs. recharge within the LAS, water appears to be physically available to satisfy the proposed uses.

Legal water availability is an Ecology determination that is, in part based on the information provided above.

Impairment of Existing Users:

Groundwater source characterization and basic water budget analysis were considered for evaluating potential for impairment to existing groundwater users. Given the current low demand on the LAS and relatively large distance from other known wells, the proposed uses from the LAS are not expected to have an adverse impact on other existing groundwater users.

Impairment is an Ecology determination that is, in part based on the information provided above. For more discussion regarding well interference and impairment, see Appendix A.

REFERENCES:

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- Porter, S. 1976. Pleistocene glaciation in the southern part of the North Cascade Range, Washington. Geological Society of America Bulletin 1976; 87; pgs 61-75.
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- Washington Department of Ecology Well Database.
- Washington Department of Natural Resources (WDNR) Digital 1:100,000 Geologic Maps, available at:
http://www.dnr.wa.gov/ResearchScience/Topics/GeosciencesData/Pages/gis_data.aspx

LIMITATIONS OF HYDROGEOLOGIC ANALYSIS:

This hydrogeologic analysis has been prepared for the Water Right Application No. G4-35529, WRIA 39, Kittitas County, Washington. This report is not intended for use for projects, applications, or determinations other than for Water Right Application No. G4-35443 and the information contained herein is not applicable to other sites. A number of unique, application or project specific factors were considered when preparing this analysis. This analysis should not be applied to any purpose or project besides the determination, application or project for which it was prepared.

Because each hydrogeologic study is unique, each hydrogeologic analysis is unique and is based on conditions that existed at the time the determination, application or project investigation was performed. The findings and conclusions of this analysis may, however, be affected by the passage of time as a result of either manmade events or natural events.

The practice of geology, geological engineering and hydrogeology are far less exact than other engineering and natural science disciplines. Interpretations of subsurface conditions presented in this report are based on available data. As this is an analysis, professional judgment was applied to form a preliminary opinion about subsurface conditions throughout the area of interest. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. This analysis, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Appendix A

Impairment, Qualifying Ground Water Withdrawal Facilities, and Well Interference:

There are three concepts that are important when considering whether a withdrawal of water from a well would impair another existing water right. The concepts are defined as follows:

Impairment 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 subject right.

Qualifying ground water withdrawal facilities are defined as those wells which in the opinion of the Department are adequately constructed. An adequately constructed well is one that (a) is constructed in compliance with well construction requirements; (b) fully penetrates the saturated thickness of an aquifer or withdraws water from a reasonable and feasible pumping lift (WAC 173-150); (c) has withdrawal facilities capable of accommodating a reasonable variation in seasonal pumping water levels; and (d) the withdrawal facilities and pumping facilities are properly sized to match the ability of the aquifer to produce water.

Well interference is the overlap of the cones of depression for two or more wells. Well interference reduces the water available to the individual wells and may occur when several wells penetrate and withdraw ground water from the same aquifer. Each pumping well creates a drawdown cone. When several wells pump from the same aquifer, well density, aquifer characteristics, and pumping demand may result in individual drawdown cones that intersect and form a composite drawdown cone. At any point in an aquifer, the composite drawdown caused by pumping wells will be greatly influenced by the transmissivity (T) of the aquifer. In aquifers with high Ts, composite drawdown will generally be much less than in aquifers with similar properties but with low Ts. Transmissivity is related to hydraulic conductivity (K) and the saturated thickness (b) of an aquifer by the relationship $T=Kb$.

An aquifer's hydraulic conductivity (K) is derived from the physical properties of both the fluid and geologic materials that form an aquifer. Once formed, an aquifer's saturated thickness (b) becomes important in evaluating its transmissivity. For regions of similar K in an aquifer, a large saturated thickness will result in a much higher T than a small saturated thickness. As a result, regions of similar K in an aquifer with a large saturated thickness will experience less composite drawdown or well interference than with a small saturated thickness.

Some conditions, however, will increase or steepen composite drawdown in an aquifer. For instance, where characteristics (such as very fine, clay-rich, or poorly sorted sediments) of an unconfined aquifer cause significant drawdown relative to the saturated thickness, the composite drawdown will increase as saturated thickness is reduced and T becomes smaller. Additionally, in regions where negative or no-flow boundaries occur, such as near the edges of a valley fill aquifer where it is bounded by bedrock, composite drawdown will be steeper than in the central part (generally the greatest thickness region) of the aquifer. Consequently, it is commonly understood that the greatest composite drawdown or well interference is more likely to occur in regions of low transmissivities, thin saturated thicknesses and near negative or no-flow boundaries than in regions of high transmissivities, large saturated thicknesses, and away from negative or no-flow boundaries.

Attachment 3

Trust Water Right Agreement

This Trust Water Right Agreement is made and entered into as of the 7th day of February, 2012, by and between the Washington State Department of Ecology, State Trust Water Right Program ("Ecology") and Land Lloyd Development Company, Inc, (Lloyd).

Whereas, Ecology is the trustee of the Yakima River Basin Trust Water Rights Program as authorized under Chapter 90.38 RCW (the "Trust"); and

Whereas, Lloyd is the owner of certain water rights within the Yakima River basin as more particularly described and quantified in Exhibit A (the "Water") and presently appurtenant to the land legally described in Exhibit B (the "Land"), each such exhibit being attached hereto and incorporated herein; and

Whereas, Lloyd submitted a Trust Water Right Application to Ecology, WRTS File No. CS4-00714sb2 (the "Application"), to place the Water into the Trust for the purpose of enhancing in-stream flows and providing mitigation water to offset and allow for the permitting of new water rights, specifically Applications G4-35432, and G4-35529, and for potential new water uses requiring Determinations of Water Budget Neutrality (WBN determinations) in accordance with WAC 173-539A-050; and

Whereas, Ecology has accepted the Application, has completed its examination of the extent and validity of the Water and is prepared to issue its Trust Water Right Report of Examination concerning the extent and validity of the Water (the "ROE") and its trust water certificate (the "Certificate"). Exhibit D documents that determination, including quantification of the consumptive quantity associated with the right; and

Whereas, subject to the terms of this Agreement and the Application, Ecology confirms that it is willing, able and authorized to hold the Water in the Trust as provided for herein;

Now, therefore, in consideration of the forgoing, the mutual covenants and undertakings as hereinafter set forth, and other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto hereby agree as follows:

1. The purpose of this Agreement and the primary reason Lloyd is willing to place the Water into the Trust is to provide a senior water right as off-setting mitigation that will allow issuance of WBN determinations and Mitigated Groundwater Permits G4-35432 and G4-35529 to Lloyd within the Yakima River basin, particularly within Kittitas County. These new water uses will be mitigated by way of a permanent designation of such portion of Lloyd's beneficial interest in the Water in Trust as reasonably required to ensure no impairment to TWSA or other water rights; provided that any portion of such mitigation may also be provided by other means.

2. This Agreement shall be effective upon its mutual execution, and Lloyd's deposit of an executed quit claim deed in recordable form of the Water to the Trust substantially in the form of Exhibit C attached hereto and incorporated herein (the "Deed"); the giving of all requisite public notices for actions contemplated or referred to herein; the deposit of Ecology's letter accepting the Water into the Trust (the "Acceptance"); the deposit of the ROE and the Certificate, each in form and content acceptable to Lloyd; and the expiration of all notice, comment and appeal periods related to the full implementation of this Agreement, the ROE, and the Certificate.

3. Once this agreement is executed, Ecology will investigate the New Application (Applications for Water Right G4-35432 and G4-35529) and prepare a Report of Examination recommending issuance or denial of a permit based on applicable policy, rules, and law. Pursuant to WAC 173-539A-060, Ecology shall process its decision in a timely manner as provided under RCW 90.03.260-.340 and Chapter 90.44 RCW utilizing such portion of the Water in Trust as reasonably needed under the quantity allocation set out in Exhibit D which, together with any other proposed mitigation measures, shall reasonably offset the impacts of such new withdrawal.

3.1. Ecology will complete a Water Transfer Working Group ("WTWG") project description and will present it to the WTWG. Ecology, in consultation with the U.S. Bureau of Reclamation, will determine if some or all of the Water Lloyd designates would be assigned to the Reclamation-Ecology storage and delivery exchange contract.

3.2. With regard to domestic uses and so long as withdrawals are metered to users; and the subject project is, or will be made, subject to covenants, conditions and restrictions which impose water use restrictions for both inside and outside purposes which will be recorded against the project; and reasonable water use enforcement provisions are provided; and return flows are provided for through an approved septic or other waste treatment facility reasonably designed to infiltrate treated water in the general area from which it is being withdrawn, the allocation of Trust Water for mitigation shall be at a rate of not more than 0.392 acre-feet (350 gallons per day on a year round basis) per equivalent residential unit ("ERU").

3.3. Ecology's permit will specify the conditions and limitations on the use of water in a manner consistent with the Water held in the Yakima Pilot Water Bank as mitigation. Conditions relating to measuring and reporting water use and for reimbursement of any Ecology costs to administer the Reclamation-Ecology Exchange Contract will also be included in the permit.

4. Lloyd shall have the right at any time to withdraw the Application, terminate this Agreement and remove from the Trust any portion of the Water that has not been permanently allocated as mitigation of other water uses as set forth in this Agreement.

5. During the Term and in its capacity as a fiduciary, Ecology shall hold and manage the Water in trust pursuant to chapter 90.38 RCW and this Agreement as a part of the total water supply available ("TWSA") in the Yakima River. Ecology:

5.1 Shall take no position and make no assertions that the quantities and beneficial use of the Water is other than as stated in Exhibits A and D and paragraph 3 above, and this representation shall also apply to any Water removed from the Trust;

5.2 Shall, in addition to the protections against relinquishment in RCW 90.38.000, at all times during the Term manage, maintain, preserve and protect for the benefit of Lloyd and its successors, designees and assigns all aspects and attributes of the Water, including, but not limited to, the priority date, the total diversionary right, instantaneous quantity, and annual consumptive quantity from impairment, challenges, claims and relinquishment;

5.3 Shall process all New Applications and Requests for Determination of Water Budget Neutrality where portions of the Water is proposed as mitigation and shall take all steps necessary to comply with any restrictions imposed by other agreements to which Ecology may be subject, including, but not limited to memorandums of agreement and groundwater moratoriums or subsequently enacted water right processing rules; and

5.4 Shall not assess or charge Lloyd any costs or fees for maintaining the Water in the Trust; provided that Ecology may charge its regular costs and fees for water right applications, transfers and investigations or costs attributable to assignment of a portion of the Water to Ecology's USBR contract for storage and exchange contract.

6. In keeping with the purpose of this Agreement and as a material part of the consideration for this Agreement upon which its execution is dependent:

6.1 Lloyd makes the following undertakings, representations and warranties to Ecology:

6.1.1 Lloyd is a Washington corporation duly formed and authorized and fully able to enter into and perform all its obligations in this Agreement according to its terms.

6.1.2 Each individual executing this Agreement on behalf of Lloyd is duly authorized to execute and deliver this Agreement.

6.1.3 Upon its full execution, this Agreement is binding upon Lloyd in accordance with its terms.

6.1.4 Lloyd shall use its best efforts to fully and timely perform its obligations and actions contemplated by this Agreement.

6.2 Ecology makes the following undertakings, representations and warranties to Lloyd:

6.2.1 Ecology is a division of the State of Washington duly formed and authorized and fully able to enter into and perform all its obligations in this Agreement according to its terms.

6.2.2 Each individual executing this Agreement on behalf of Ecology is duly authorized to execute and deliver this Agreement.

6.2.3 Upon its full execution, this Agreement is binding upon Ecology in accordance with its terms.

6.2.4 Ecology shall use its best efforts to fully and timely perform its obligations and actions contemplated by this Agreement.

7. If either party defaults in its obligations under this Agreement; or if this Agreement, or a material portion thereof, be declared illegal or unenforceable; or, either party, through no fault or action by such party, should be incapable or prevented from performing any material obligations or actions, the non-defaulting party in the event of a default or either party in any other event shall have the right to the following:

7.1 As the computation of damages may be difficult, continue this Agreement and bring an action to specifically perform this Agreement.

7.2 Declare the Agreement null and void, whereupon the parties shall cooperate to end the trust water right relationship in an orderly manner as follows:

7.2.1 Lloyd shall identify all in-process designation agreements and inform Ecology of their status. Lloyd shall not make representations regarding in-process designations and shall each instance work with Ecology to determine in whether an assignment should be completed. If Ecology agrees, the permit and WBN determination processes will be completed promptly in accordance with applicable policies, rules, and law.

7.2.2 Ecology shall promptly convey to Lloyd or its designee the portion of the trust water right not yet designated and assigned as mitigation for individual ground water and surface water permits and determinations. If any reserve has been set aside to address uncertainty (see paragraph 3.6) associated with the then-existing mitigated permits, Ecology will retain such reserve until it is either assigned to individual permits or Ecology determines some or all of the reserve is unnecessary. Any reserve not needed shall be promptly conveyed by Ecology to Lloyd.

7.2.3 Each party shall be responsible for their own costs associated with ending the trust water right relationship in an orderly manner.

7.3 Pursue any other remedy now or hereafter available.

7.4 In no event shall the termination of this Agreement alter or affect any Water previously allocated for mitigation or permits granted relative to New Applications.

8. This Agreement may be assigned by Lloyd upon the giving of written notice to Ecology. This Agreement is binding upon and inures to the benefit of the parties to the Agreement as well as upon and to the benefit of their respective heirs, personal representatives, assigns and other successors in interest.

9. Any notice or communication required by this Agreement between Lloyd and Ecology shall be given to the addresses set forth below:

To Ecology:

Water Resources Section Manager
Washington Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, Washington 98902-3452

To Lloyd

Land Lloyd Development Company
Att. Bob Couper
PO Box 3889
Federal Way, WA 98063

10. No provision of this Agreement is severable from any and all other provisions of this Agreement. Should any provision of this Agreement be unenforceable for any reason outside the control of the parties and subject to the provisions of Paragraph 9.2, the party finding itself unable to enforce the provision may, at its sole discretion, declare this entire Agreement to be null and void.

11. If either party fails to exercise its rights under this Agreement, it will not be precluded from subsequent exercise of its rights under this Agreement. A failure to exercise rights will not constitute a waiver of any other rights under this Agreement, unless stated in a letter signed by an authorized representative of the party and attached to the original Agreement.

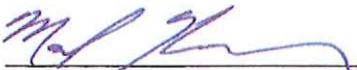
12. Amendments to this Agreement must be in writing and signed by an authorized representative of each of the parties.

13. Each party shall protect, defend, indemnify, and hold the other hold harmless from and against their respective acts and omissions and for all third party claims arising out of or related to this Agreement.

14. This Agreement will be governed and enforced under the laws of the State of Washington. Venue for any action arising under or related to this Agreement shall be in Kittitas County, Washington.

This Agreement is executed as of the date first above written.

WASHINGTON DEPARTMENT OF ECOLOGY

By: 
Mark Kemner, Section Manager
Water Resources Program/CRO
Date: 3/29/12

LAND LLOYD DEVELOPMENT INC

By: 
Robert Couper,
Officer
Date: 2-7-12