DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
Report of Examination for Water Right Change

Change Point of Diversion to Point of Withdrawal

PRIORITY DATE
Pre-water code

WATER RIGHT NUMBER
Gold Creek Adjudicated Certificate No. 9
(Assigned Water Right No. S4-32009J)

WATER RIGHT NUMBER
CS4-32009J

MAILING ADDRESS
JOHN & LORRAINE CLEES & KURT CLEES
1941 HWY 153
CARLTON WA 98814-9009

REMARKS
Superseding Gold Creek Adjudicated Certificate No. 9 Surface Water Certificate Nos. 9226 and S4-23803C share a common point of withdrawal and have overlapping places of use.

Total Quantity Authorized for Withdrawal

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AC-FT/YR)
404	GPM	134.2

Purpose

PURPOSE	WITHDRAWAL RATE ADDITIVE	WITHDRAWAL RATE NON-ADDITIVE	UNITS	ANNUAL QUANTITY (AC-FT/YR) ADDITIVE	ANNUAL QUANTITY (AC-FT/YR) NON-ADDITIVE	PERIOD OF USE
Irrigation	404		GPM	134.2		04/15 - 09/15

IRRIGATED ACRES ADDITIVE	IRRIGATED ACRES NON-ADDITIVE
43.8	

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Okanogan	Groundwater	Methow River	48 Methow

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Well	3122070004	ALF-311	31N	22 E	07	NENE	48.20597	-120.12435

Datum: NAD83/WGS84

Place of Use (See Attachment 1)

PARCELS

3122070001, and 3122070005

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

That portion of Government Lot 2 lying south of the state highway and the SE 1/4 NE 1/4 of Section 7, T. 31 N., R. 22 E.W.M., Okanogan County, Washington. See Attachment 1.

Proposed Works

A well, with well tag No. ALF-311, is 88 feet deep with a 12-inch casing, a hollow vertical line shaft turbine 50 HP motor (U.S. Electrical Motors, Catalog #HO50S2BLG, Model # BF54A) and a 5 stage pump (Gould, Model #11CLC), providing water to an irrigation system consisting of three center pivots with LEPA emitters and end guns and undertree impact sprinklers for the orchard.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Started	Completed	In Full Use

Measurement of Water Use

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

Provisions

Flow Limitations

This authorization can only be exercised when water is available from Gold Creek at the original point of diversion (NW¼SE¼ of Section 18, T. 31 N., R. 22 E.W.M.) in Gold Creek Certificate No. 9.

Surface Water Certificate Nos. 9226 and S4-23803C are also appurtenant to the described place of use for this authorization. In total, the three water rights cannot exceed 911 gpm, 234.3 ac-ft/yr for the irrigation of 78 acres. If Gold Creek water is not available, but the Methow River is meeting minimum flows (WAC 173-548-020), water use is limited to 700 gpm, 234.3 ac-ft/yr. If Gold Creek water is not available and Methow River minimum flows are not being met, water use is limited to 301 gpm, 77.2 ac-ft/yr. If Gold Creek water is available, but the Methow River is not meeting minimum flows, water use is limited to 705 gpm, 211.4 ac-ft/yr.

Wells, Well Logs and Well Construction Standards

All wells constructed in the state must 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 must be decommissioned.

All wells must 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 must remain attached to the well. If you are required to submit water measuring reports, reference this tag number. Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

Measurements, Monitoring, Metering and Reporting

An approved measuring device must 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, which 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. Installation, operation and maintenance requirements are enclosed as a document titled "Water Measurement Device Installation and Operation Requirements". http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html

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

Easement and Right-of-Way

The water source and/or water transmission facilities are not wholly located upon land owned by the applicant. Issuance of a water right change authorization by this department 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.

Schedule and Inspections

Department of Ecology personnel, upon presentation of proper credentials, will 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.

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 find the change of water right as recommended will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER the requested change to the point of diversion under Change Application No. CS4-32009J, subject to existing rights and the provisions specified above.

YOUR RIGHT TO APPEAL

You have a right to appeal this decision to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this decision. 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 this decision:

- File your appeal and a copy of this decision 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 decision 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.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey WA 98503 **Pollution Control Hearings Board** 1111 Israel Road SW, Ste 301 Tumwater WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia WA 98504-7608 **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://www.leg.wa.gov/CodeReviser

Signed at Yakima, Washington, this 10 day of July 2012.

Mark Kemner, Section Manager
Water Resources Program/CRO

INVESTIGATOR'S REPORT

BACKGROUND

On November 13, 2007, John and Lorraine Clees and Kurt Clees submitted Change Application No. CS4-32009J. This application was submitted along with two other Change Application Nos. CS4-09226C and CS4-23803C@1, all proposing to change the point of diversion on the Methow River to a single well. The applications indicate that 8 acres will be fallowed and a new, more efficient system will be used to avoid any future curtailment in favor of the instream flows set in WAC 173-548. The 8 acres are solely served by junior right No. S4-23803C. Sometime between 2006 and 2009, the water right holder received technical and financial assistance from the Methow Salmon Recovery Foundation and the Department of Ecology to fund this project (Grant No. C0500191). The project included a more efficient irrigation system, decreased irrigation to 70 acres, and withdrawal from a well instead of diverting surface water. Change Applications were submitted to obtain approval for the project. The upgrades were made before the change authorizations could be processed.

Table 1: Attributes of Superseding Adjudicated Gold Creek Certificate No. 9 and Proposed Change CS4-32009J.

Attributes	Existing	Proposed
Name	JOHN CLEES	JOHN AND LORRAINE CLEES AND KURT CLEES
Priority Date	Pre-water code	
Change Application Date		November 13, 2007
Instantaneous Quantity	0.9 cfs (404 gpm)	Same
Annual Quantity	180 ac-ft/yr	Same
Purpose of Use	Irrigation of 45 acres	Same
Period of Use	April 15 to September 15th	April 1 – September 30
Place of Use	That portion of Government Lot 2 lying south of the state highway and the S ¼NE¼ of Section 7, T. 31 N., R. 22 E.W.M., Okanogan County, Washington	Same
Source	Point of Diversion, Methow River: 750 ft south and 500 ft west of the northeast corner of Sec. 7, T 31 N, R 22 EWM	Point of Withdrawal, well: NE¼, NE¼, Sec. 7, T 31 N, R 22 EWM

Legal Requirements for Proposed Change

- Public Notice
  - A public notice of the proposed change was published in the *Methow Valley News* on August 11 and August 18, 2010. No protests were received during the 30-day protest period.

- Priority Processing
  - WAC Chapter 173-152-050(2)(c)(ii) states that an application for a proposed water use that is nonconsumptive and if approved would substantially enhance or protect the quality of the natural environment. This investigation was performed by RH2 Engineering, Inc. on behalf of the Department of Ecology under cost reimbursement contract No. C1000190.

- State Environmental Policy Act (SEPA)
  - This application is categorically exempt from SEPA (WAC 197-11-800(4)). Therefore, a threshold determination is not required.

- Water Resources Statutes and Case Law
  - 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 claim or right. This is necessary to establish whether the claim or right is eligible for change. *R.D. Merrill v. PCHB* and *Okanogan Wilderness League v. Town of Twisp.*

  - A point of diversion for a surface water right may be changed to a groundwater point of withdrawal. The authority is derived from RCW 90.03.380, RCW 90.44.020-030, RCW 90.44.100 and RCW 90.54.020(9). RCW 90.03.380(1) states that a water right that has been put to beneficial use may be changed if it would not result in detriment or injury to other water rights. Additionally, moving the point of diversion to a groundwater withdrawal requires compliance with the groundwater code (RCW 90.44), including a finding that there be no detriment to the public welfare and that the existing diversion and the proposed point of withdrawal take water from the same water source.
    - Therefore an investigation is performed including the following criteria:
    - A tentative determination must be made on the extent and validity of the water right proposed for change.
    - The proposed well must tap the same source of water as the original surface water diversion.
    - There must be no enlargement of the right due to the change.
    - Water must be physically available at the well location.
    - Other existing rights must not be impaired.

INVESTIGATION

History of Water Use

For the purposes of discussing and estimating historic water use, all three water rights appurtenant to the Clees property will also be discussed individually as well as collectively, even though this report is specific to Change Application No. CS4-32009J.

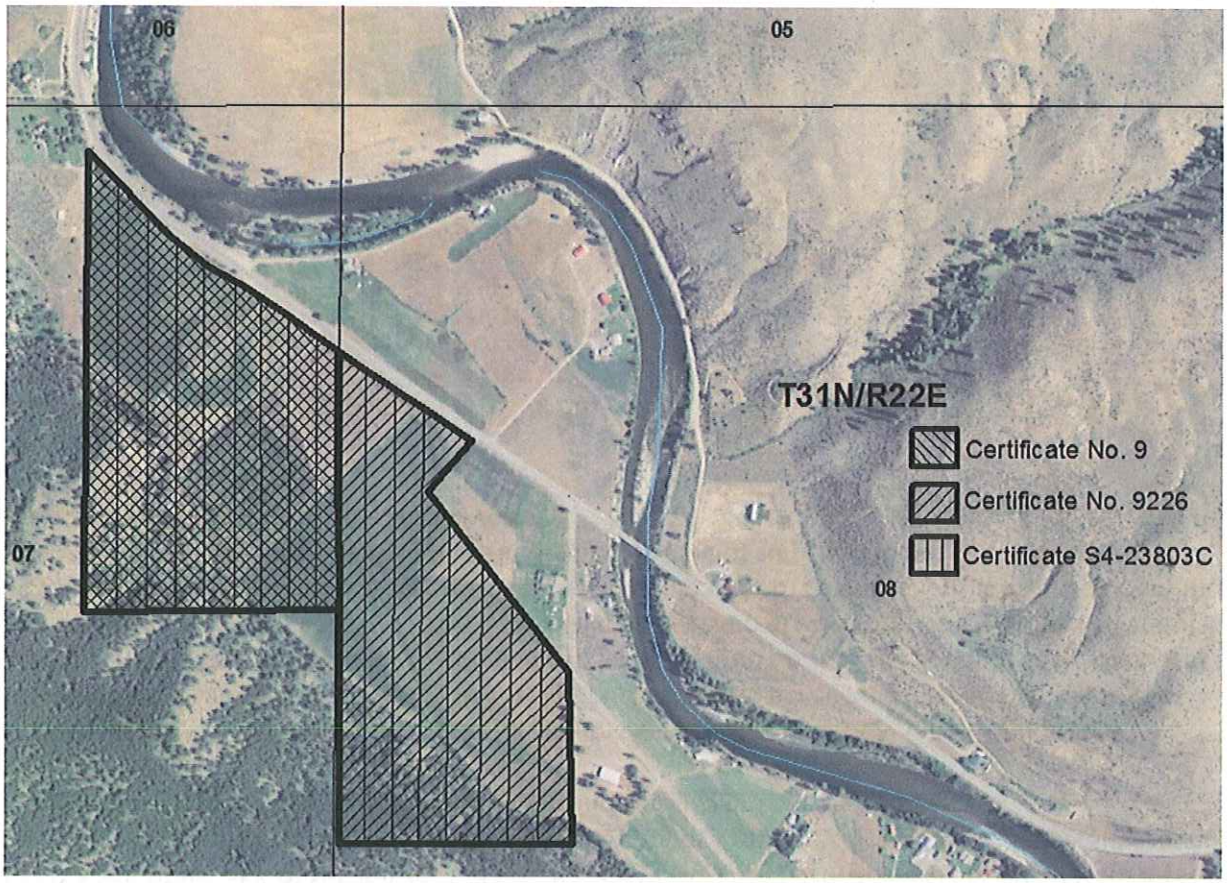
Superseding Gold Creek Adjudicated Certificate No. 9 (Certificate No. 9, assigned database No. S4-32009J) is the subject of this report and the most senior water right appurtenant to the Clees property. Certificate No. 9 is a Class 3 right issued in 1929 without a specific priority date (presumed to be before 1917), for 1.64 cfs (0.90 cfs for irrigation of 45 acres, 0.74 cfs for conveyance losses in the gravity flow ditch) within "Lot 2 and the SE¼ of the NE¼ of Section 7, T. 31 N., R. 22 E.W.M. (see Figure 1). This certificate included a note indicating it was non-additive to Libby Creek water rights:

> "The quantity of water available for this land from Libby Creek ...will be deducted from the quantity of water allotted to the Commercial Bank in the Gold Creek Water Right adjudication."

It is not clear which Libby Creek certificate this refers to, however, there is a Libby Creek Adjudicated Certificate No. 77 issued to J.M. Pate for the irrigation of 30 acres in the NE¼ of Section 7, T. 31 N., R. 22 E.W.M. The place of use for the full quantity of the certificate was changed in 1932 from Lot 3, within the NW¼NE¼ of Section 7, T. 31 N., R. 22 E.W.M. to all that portion of Lots 8 and 9, Section 32, and the SE¼ of the SE¼ of Section 31, T. 31 N., R. 22 E.W.M., lying north and west of the present located State Highway across said described lands. Therefore, Libby Creek Certificate No. 77 and its subsequent changes are no longer related to Gold Creek Certificate No. 9 or the Clees property.

In 1988, Ecology issued a Superseding Certificate following a change to Gold Creek Adjudicated Certificate No. 9 which authorized the diversion of 0.9 cubic feet per second (cfs) and 180 ac-ft/yr of water from the Methow River, for the irrigation of 45 acres from April 15 to September 15. The water duty per acre is 0.02 cfs, 4 ac-ft/yr. This change allows diversion of water from the Methow River but only when flows in Gold Creek were sufficient to have supported the diversion. This diversion from the Methow River is interruptible when flows in Gold Creek are not sufficient to satisfy senior rights. This has not happened in at least the last 10 years.

Figure 1: Clees Water Rights, Places of Use



Other Water Rights Appurtenant to the Clees Property

Surface Water Certificate No. 9226 (assigned database No. S4-09226C) was issued to Virgil Woodkey in 1964 for 0.67 cfs, 210 ac-ft/yr for the irrigation of 70 acres (within the larger property boundary in Figure 1). Two Superseding Certificates were issued in 1987 for this right to more specifically define the place of use. This certificate is partially additive to the Gold Creek Certificate No. 9 with respect to 25 acres and a portion of the annual volume. The most recent Superseding Certificate states that "a maximum of 1.14 cfs, 255 ac-ft/yr is authorized for use under the two rights (Certificate No. 9 and Certificate No. 9229) for the irrigation of 70 acres." Therefore, the water duty for the additional 25 acres is 3.64 ac-ft/yr. For a quantitative analysis of this right see the Extent and Validity section of the Report of Examination for CS4-09226C.

Surface Water Certificate No. S4-23803C was issued to John Clees in 1978 and a Superseding Certificate was issued in 1987 to correct the place of use description and better describe the interrelationship of all the rights appurtenant to the place of use. The Superseding Certificate authorizes 0.89 cfs, 334 ac-ft/yr for the irrigation of 78, which is subject to flows set in WAC 173-548. It also states that "the maximum use shall not exceed 2.03 cfs, 334 ac-ft/yr for the irrigation of 78 acres" also covered by Certificate No. 9 and Certificate No. 9226. Aerial photos show that the 8 acres of irrigation covered by the additive portion of S4-23803C have been consistently irrigated prior to the conversion from a surface water diversion to a well sometime between 2006 and 2009. For a quantitative analysis of this right see the Extent and Validity section of the Report of Examination for CS4-23803C@1.

Claim No. G4-108135CL was submitted by John Clees for domestic uses within Section 7, T. 31 N., R. 22 E.W.M. Claim no.'s S4-301733CL, S4-301735CL, and S4-302175CL were all submitted by Gamble Land and Timber LTD for stock watering on lands within Sections 22, 23, 26, and the SE¼NE¼ of Section 7; all in T. 31 N., R. 22 E.W.M.

Water Use Analysis

This section is a discussion of water use on the Clees property. The end of this section provides detailed calculations of total water use for all three water rights and water use specifically attributed to Certificate No. 9 (S4-32009J).

Irrigated Acres:

Aerial photos were examined dating from 2009, 2006, 1995, 1974, 1964, and 1954. These aerial photos show that the property (see Figure 1 above) has been continuously irrigated over that time period. In addition, photos from 1974, 1995, and 2006 also show active irrigation with patters suggesting the use of hand-line, wheel-line, or fixed set impact sprinklers at the time the photo was taken. The photo from 2009 shows that three partial center pivot irrigation circles had been installed on the property. Color differences between irrigated and non-irrigated areas suggest that the circles were in partial operation.

During the time period of at least 1974 through 2006, there was approximately 18 acres of apple orchard and the remainder of the irrigable property was planted with alfalfa and/or pasture. Sometime between 2006 and 2009 approximately half of the orchard was removed.

Aerial photo analysis suggests that acreage in excess of 78 acres (approximately 86 acres) has been irrigated since at least 1995. Also, there has been some irrigation outside the authorized place of use on adjacent Parcel No. 3122072001. The water right holder is responsible for complying with the limitations of their water right such as the number of irrigated acres and place of use.

Analysis of the 2009 aerial photo suggests that 70 acres were being irrigated. Of the total irrigated acres, 9.2 acres is orchard and 60.8 acres is alfalfa and/or pasture.

Instantaneous Pumping Rate:

The highest instantaneous pumping rate associated with the Clees' project was documented in a letter from Mr. John Clees to Ecology in February 1974, indicating that his Methow River pumping plant could produce 1000 gpm (2.23 cfs) at that time. Historically, there was not a meter installed on the surface water diversion.

A site visit on August 8, 2010 confirmed that the Methow River point of diversion is no longer operable. Sometime between 2006 and 2009 the Clees' changed their water use from the authorized diversion to a well. The well, with well tag No. ALF-311, was not in operation during the site visit so the instantaneous flow rate could not be confirmed. The change applications request to convert to a well with a pump (5 stage, Gould, Model #11CLC) and motor (50 HP, U.S. Electrical Motors, Catalog #HO50S2BLG, Model # BF54A) designed for roughly 600 gpm.

The August 8, 2010 site visit A McCrometer, Model #M0300 McPropeller flow meter had been installed on the discharge pipe leading from the well, but water was not being pumped and so operation of the meter could not be confirmed. Also, during the site visit it could not be confirmed if the pump motor was connected to a dedicated power meter. The Clees have been using the well as their sole irrigation source for at least the last two years. Use of the original point of diversion reportedly ceased when use of the well commenced.

Annual Quantity

Due to a lack of metering records the annual volume diverted from the Methow River was estimated using the Washington Irrigation Guide (WIG). The nearest Climate Station in the WIG is the Methow Station, which is located approximately 8.75 miles to the southeast near the community of Methow in the Methow Valley. The WIG contains the following crop irrigation requirements:

Table 2. Washington Irrigation Guide (1985) – Methow Station

Crop	Crop Irrigation Requirement (inches/year)
Alfalfa	25.00
Pasture/Turf	26.49
Apples w/Cover	31.25

Required Equations:	Defined Terms:
$TIR = \frac{CIR}{E} * 100$ $Qa_{CU} = Qa * \%CU$	TIR – Total Irrigation Requirement CIR – Crop Irrigation Requirement E – Irrigation System Efficiency in Percent Qa – Annual Volume Pumped Qa_{CU} – Annual Volume Consumptively Used %CU – Percent of Total Use Consumed

For wheel line sprinklers, an average irrigation efficiency of 75% was determined using Ecology's Guidance 1210 (GUID 1210). For solid set undertree impact sprinklers an average irrigation efficiency of 75% is assumed per GUID 1210. Acreage for each crop type was based on calculating the area occupied by orchard from the 2006 aerial photos and then subtracting that acreage from 78 acres, which is the maximum acreage authorized under these water rights. Documentation in the water rights file (Bob Barwin site visit map dated May 12, 1987) suggests that both alfalfa and pasture/turf were grown on the property. For this reason, we have estimated the CIR for those areas as being the average of the two crops, which is 25.75 inches per year. These crop duties were used to determine the annual quantity (Qa) in ac-ft/yr for the irrigation of 78 acres with three water rights.

<u>Alfalfa and/or Pasture</u>

$TIR = \frac{25.75 \text{ inches}}{75} * 100$

TIR = 34.33 inches

$Qa = 59.8 \text{ acres} * \frac{34.33 \text{ inches}}{12 \text{ inches/ft}}$

Qa = 171.1 ac-ft/yr
Qa_{CU} = 171.1 ac-ft/yr * 85%
Qa_{CU} = 145.4 ac-ft/yr consumptive
Total =234.3 total, 199.1 ac-ft/yr consumptive

<u>Apples with Cover</u>

$TIR = \frac{31.25 \text{ inches}}{75} * 100$

TIR = 41.67 inches

$Qa = 18.2 \text{ acres} * \frac{41.67 \text{ inches}}{12 \text{ inches/ft}}$

Qa = 63.2 ac-ft/yr
Qa_{CU} = 63.2 ac-ft/yr * 85%
Qa_{CU} = 53.7 ac-ft/yr consumptive

The calculated maximum historic use under the three Clees water rights is 234 acre feet per year (171.1 + 63.2).

Tentative Determination of Superseding Gold Creek Certificate No. 9

Analysis of air photos showed that 43.8 acres have been consistently irrigated with Superseding Gold Creek Certificate No. 9 (S4-32009J). The total acreage is broken down into 29.2 acres of alfalfa or pasture and 14.6 acres of orchard with cover and the water duties are calculated here:

Alfalfa and/or Pasture

$$TIR = \frac{25.75 \text{ inches}}{75} * 100$$

TIR = 34.33 inches

$$Qa = 29.2 \text{ acres} * \frac{34.33 \text{ inches}}{12 \text{ inches/ft}}$$

Qa = 83.5 ac-ft/yr
Qa_{CU} = 83.5 ac-ft/yr * 85%
Qa_{CU} = 71.0 ac-ft/yr consumptive
Total =134.2 total, 114.1 ac-ft/yr consumptive

Apples with Cover

$$TIR = \frac{31.25 \text{ inches}}{75} * 100$$

TIR = 41.67 inches

$$Qa = 14.6 \text{ acres} * \frac{41.67 \text{ inches}}{12 \text{ inches/ft}}$$

Qa = 50.7 ac-ft/yr
Qa_{CU} = 50.7 ac-ft/yr * 85%
Qa_{CU} = 43.1 ac-ft/yr consumptive

The irrigation practices used prior to 2009 required 134.2 ac-ft/yr, 114.1 ac-ft/yr consumptive use. Installation of center pivots after 2009 decreased the required water duty to 114.4 ac-ft/yr; leaving a difference of 19.8 ac-ft/yr (8.5 ac-ft/yr consumptive use). Therefore, 19.8 ac-ft/yr is available to be donated to the Trust Water Right Program under Certificate No. 9. These calculations are discussed further in a Memo to the file which is available upon request.

Tentative Determination of all the Water Rights

The tentative determination analysis above addresses the combined use of the three water rights appurtenant to the Clees' property for the irrigation of 78 acres. The tentative determination suggests less water has been used than the maximum rates stated on the water right documents. This section, including Table 3, contains a breakdown of the beneficial use of the three water rights appurtenant.

Table 3. Tentative Determination Split Among Three Water Rights

Water Right No.	Priority Date	Qi		Qa (ac-ft/yr)		Acres		Interruptible based on
		CFS	GPM	Additive	Non additive	Additive	Non additive	
Gold Creek Adjudicated Certificate 9	Pre-water code	0.90	404	134.2		43.8		Gold Creek
Certificate 9226	February 8, 1963	0.67	301	77.2	134.2	26.2	43.8	None
S4-23803C	June 26, 1974	0.89		22.9	211.4	8	70	Methow River
Total		**2.03**[1]	**911**	**234.3**[2]		**78**		

[1] The maximum water use on 78 acres is stipulated in Superseding Certificate No. S4-23803C as not to exceed 2.03 cfs (911 gpm).

[2] This quantity is based on the tentative determinations made for each right. See the ROE's for CS4-23803C@1 and CS4-09226C for detailed calculations for these two rights.

Based on the difference in the total authorized quantity and the water needed to irrigate 70 acres with the updated center pivot system, there is a total water savings of 99.7[3] ac-ft/yr (234.3 ac-ft/yr – 334 ac-ft/yr). In summary, the tentative determination for all three rights is 234.3 ac-ft/yr, however the new center pivot system irrigating 70 acres only requires 176.9 ac-ft/yr.

Regulation Associated with Groundwater Use

Susan Burgdorff-Beery (Ecology Watermaster) indicated that S4-23803C has been regulated each year for at least the past 10 years (personal communication, July 6, 2010). Certificate No. 32009J also has the potential to be interrupted if a call is made by a senior water right holder that is downstream on Gold Creek. Susan Burgdorff-Beery (Ecology Watermaster) indicated that this certificate has not been regulated for at least the past 10 years and likely more (personal communication, July 6, 2010). However, the well location and connection to the Methow River will allow it to be regulated like a surface water diversion if needed in the future.

Hydrologic/Hydrogeologic Evaluation

Much of the information and language in this section was obtained from the 2003 USGS Water Resources Investigations Report 03-4244 titled "Hydrogeology of the Unconsolidated Sediments, Water Quality, and Ground-Water / Surface Water Exchanges in the Methow River Basin, Okanogan County, Washington", by Christopher P. Konrad, Brian W. Drost, and Richard J. Wagner.

[3] As part of the investigation, Ecology's consultant calculated water use based on crop requirements published in the Washington Irrigation Guide and efficiency guidelines in Ecology Guidance 1210. This analysis is available upon request.

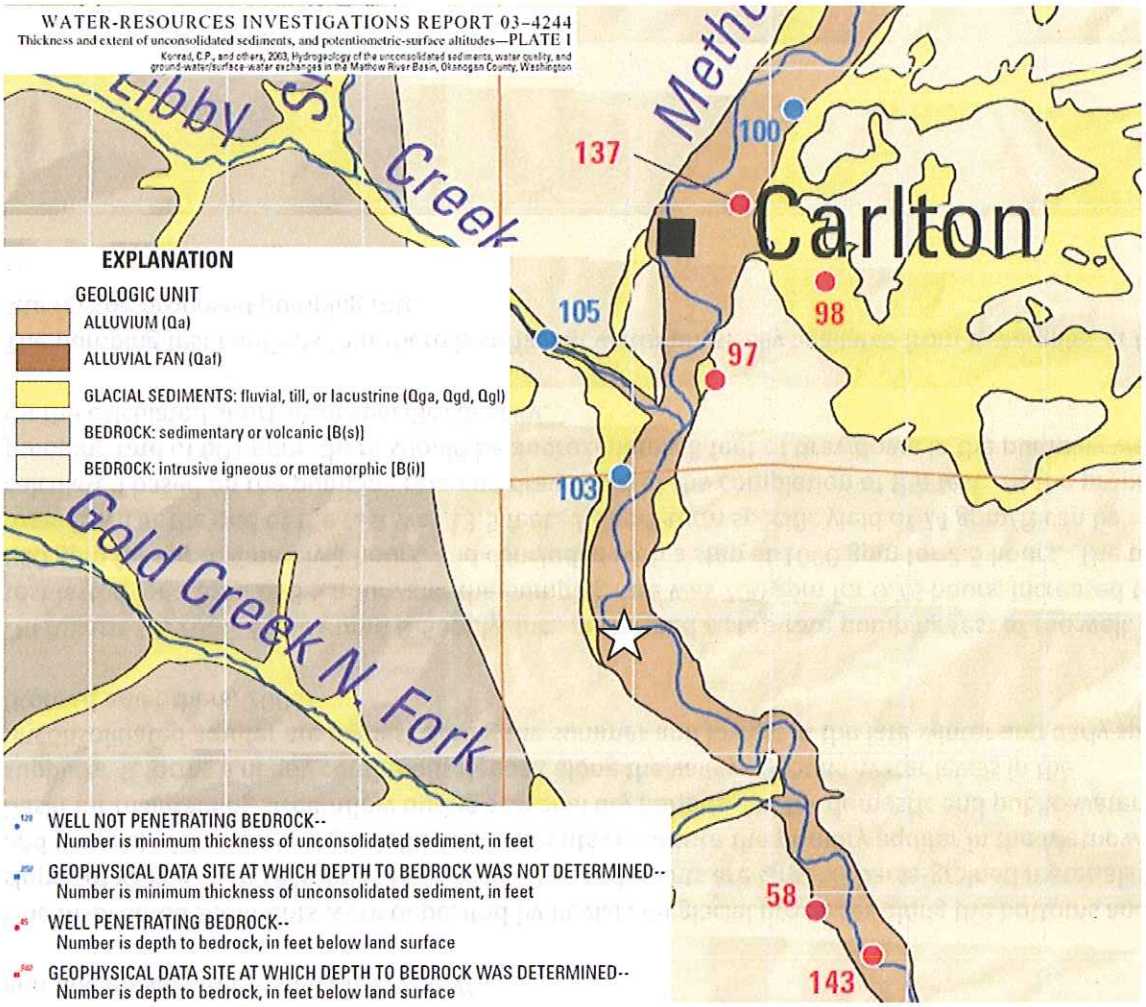


Figure 1. Geology and Depth to Bedrock Figure modified from Konrad and Others (2003). Location of Clees' well identified as white star. Ground water flow is along the trend of the unconsolidated valley sediments to the south-southeast in the vicinity of the Clees' well.

The most significant part of the ground-water reservoir, in terms of volume and proximity to rivers and the human population in the Methow River Basin, is the unconsolidated sediments along the bottoms and lower slopes of the major valleys (Figure 1). These unconsolidated sediments are composed mostly of sand and gravel and range in thickness from a few feet to more than a thousand feet. Wells open to these materials typically will yield more than 100 gpm. Relatively minor amounts of silts and clays (Qgl) and till (Qgd) occur within the mass of coarse-grained unconsolidated deposits. The fine-grained deposits are poorly transmissive and locally act as confining units. The existing data indicate that the confining units are of limited lateral extent. The bedrock underlying the unconsolidated valley sediments typically is a poor producer of ground water. Single-home domestic supplies can be obtained from the bedrock in some locations, but often require wells that penetrate and are open to several hundred feet of the bedrock (Konrad and others, 2003).

In the vicinity of the proposed point of withdrawal, the thickness of the unconsolidated sediments is approximately 100 feet. There was no indication of bedrock being encountered in the 90 foot deep Clees well. When drilling the Quisenberry well, which is located approximately 3,500 feet downstream from the Clees well and adjacent to the Methow River, bedrock was reported to be encountered at a depth of 87 feet. Both the Clees and Quisenberry wells were drilled for irrigation and completed with screened intervals adjacent to sand and gravel. Both well logs report that the wells could produce in excess of 100 gpm with no drawdown after at least an hour.

The Clees well is located approximately 70 feet from the bank of the Methow River. The depth to water in the well is approximately 37 feet (based on the original well log and static measured when the well was tested) which is similar to the height of the top of the casing above the level of the adjacent Methow River, which was measured as 35 feet during the August 8, 2010, site visit.

The unconsolidated sediments directly beneath the main Methow River valley form the most productive aquifers where the ground water is closely connected to the flow in the Methow River (Konrad and others, 2003).

Konrad and others (2003) calculated hydraulic conductivities from specific-capacity tests of 26 wells completed in the unconfined unit. Those calculations ranged from 20 to 3,500 ft/day with a median of 430 ft/day. The calculated hydraulic conductivities are consistent with published values for clean sand and fine gravel (Freeze and Cherry, 1979).

Unconsolidated sediments were deposited by fluvial and glacial processes along the bottoms and lower slopes of valleys in the Methow River Basin. The sediments are largely coarse-grained materials (sands and gravels). Alluvium and glaciofluvial sediments constitute the primary aquifer in the Methow River Basin for maintaining streamflow during seasonal dry periods and for domestic and public-water supplies. It forms a nearly continuous deposit along the valley. Ground-water levels in the unconsolidated aquifer are highest during the summer and lowest in the late winter and early spring. (Konrad and others, 2003)

On August 10, 2006, Fogle Pump & Supply, Inc., performed a step-rate pumping test of the well. This test lasted for a total of 6.5 hours and the pumping rate was 700 gpm for 0.75 hours, increased to 850 gpm for approximately 3 hours, and concluded with a step at 1000 gpm for 2.5 hours. The total drawdown at the end of the test was 13.5 feet. A short-term specific yield of 74 gpm/ft can be calculated based on the pumping rate and drawdown at the completion of the test. At the proposed pumping rate of 601 gpm, there should be approximately 8 feet of drawdown in the pumping well based on the calculated short-term specific capacity.

The pumping test confirms that there is sufficient water physically available from the aquifer at the well site for the proposed pumping rate.

For the following reasons, the Clees well is considered to be the same source of supply as the direct diversion from the Methow River:

1. The proximity of the Clees' well to the bank of the Methow River at the original point of diversion (approximately 70 feet).
2. The Clees well is only 90 feet deep and the water level in the well is approximately the same as the water level of the adjacent Methow River.
3. The Clees well is completed in the unconsolidated aquifer within the Methow River Valley, which is approximately one-half mile wide at this location and bounded on both sides by low permeability intrusive igneous and/or metamorphic bedrock.
4. This transfer does not move the point of withdrawal upstream of the next upstream control point as established in WAC 173-548.

Impairment Considerations

It is assumed that the nearest well is likely a permit exempt well used for domestic supply of a house located over 500 feet to the east on Preston Road. This is much greater than the distance from the Clees well to the Methow River, which is only 70 feet. Analysis of the data from the pumping test performed in August 2006, suggest that drawdown from pumping the well at 601 gpm will be approximately 8 feet in the pumping well and less with distance away from the well. Therefore, any interference drawdown in neighboring wells will be minimal in comparison to the available drawdown and total thickness of the unconsolidated aquifer. The Methow River will act as a recharge boundary and limit drawdown in the aquifer due to the pumping of this well.

Impairment of Minimum Instream Flow Water Rights

The term "instream flow" is used to identify a specific stream flow (typically measured in cubic feet per second, or cfs) at a specific location for a defined time, and typically following seasonal variations. Instream flows are usually defined as the stream flows needed to protect and preserve instream resources and values, such as fish, wildlife and recreation. Instream flows are most often described and established in a formal legal document, typically an adopted state rule.

Once established, a minimum flow constitutes an appropriation with a priority date as of the effective date of the rule establishing the minimum flow (RCW 90.03.345). Thus, a minimum flow set by rule is an existing right which may not be impaired (RCW 90.03.345; RCW 90.44.030).

Since the point of withdrawal is immediately adjacent to the original point of diversion and can be regulated like a surface water diversion, there will be no impairment of the instream flows established in WAC 173-548 due to this change.

Public Interest Considerations

No detriment to the public interest could be identified during the investigation of this change application.

Consideration of Protests and Comments

The Washington State Department of Fish and Wildlife approves of this water right change application since it eliminates the surface water diversion infrastructure from the Methow River (email from Constance Iten to Andrew Dunn, 8/3/2010).

Comments were solicited from the Yakama Nation and Colville Confederated Tribes for this change application. No comments were received.

Conclusions

I conclude that S4-32009J is in good standing and is eligible for change. I have determined that the change to S4-32009J will not enlarge the certificate. Approval of this change request will not cause impairment of existing rights or be detrimental to the public welfare. Based on these conclusions, this change request should be approved subject to existing rights and the included provisions and a Superseding Certificate should be issued.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that the request for change to Superseding Gold Creek Certificate No. 9 (S4-32009J) be approved in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2.

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:

404 gpm (0.9 cfs)
134.2 ac-ft/yr (additive)
Irrigation of 43.8 acres
April 1 to September 30.

Point of Withdrawal

A well located in Government Lot 2 (NE¼NE¼), Section 7, Township 31 North, Range 22 E.W.M.

Place of Use

That portion of Government Lot 2 lying south of the state highway and the SE¼NE¼ of Section 7, T. 31 N., R. 22 E.W.M., Okanogan County, Washington.

Report by: _____ 7/10/2012
Andrew B. Dunn Date
RH2 Engineering, Inc., Project Hydrogeologist

Reviewed by: Kelsey Collins 7/10/2012
Kelsey Collins, Water Resources Program Date

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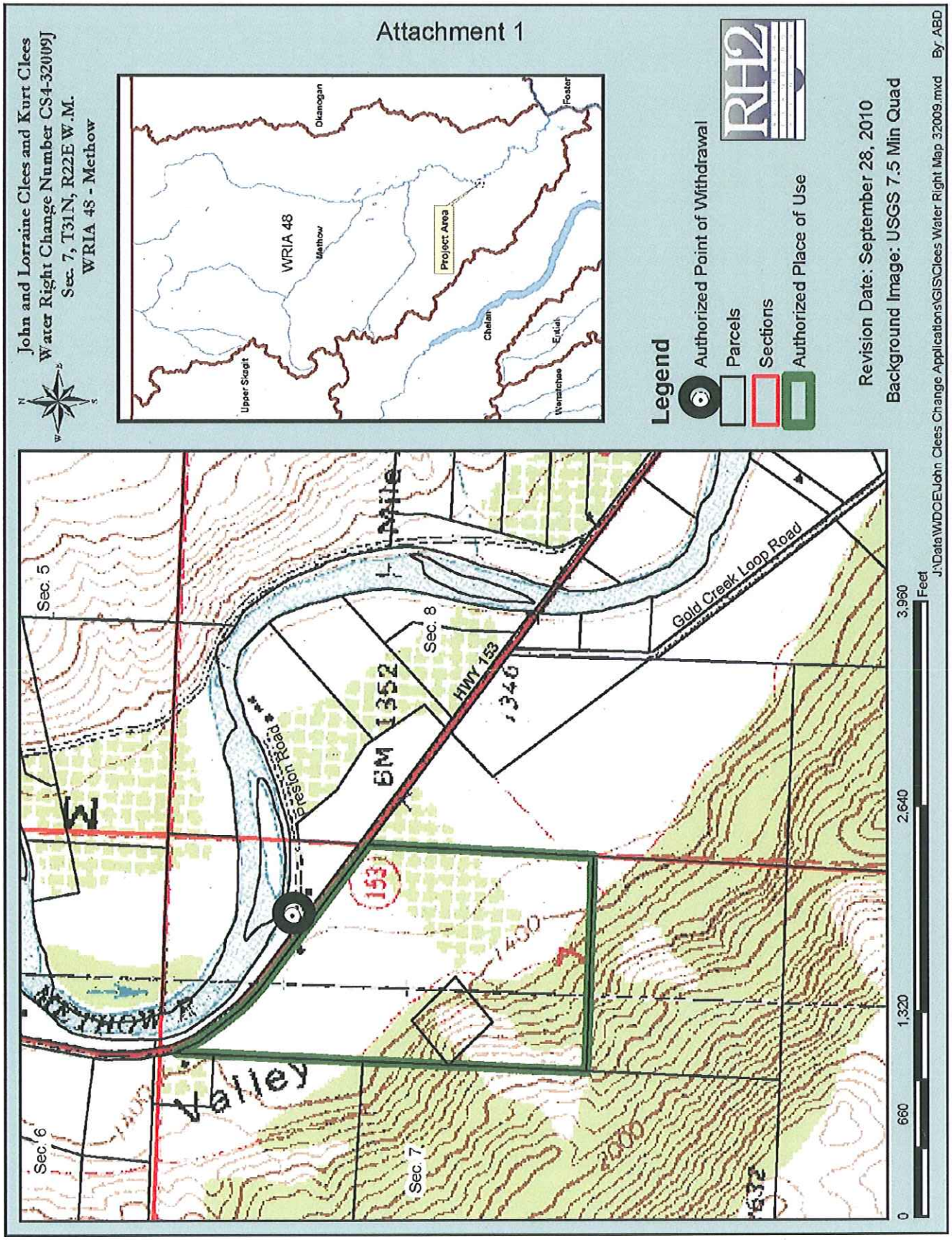
Attachment 1
John and Lorraine Clees and Kurt Clees
Water Right Change Number CS4-32009J
Sec. 7, T31N, R22E W.M.
WRIA 48 - Methow
WRIA 48
Methow
Project Area
Okanogan
Foster
Upper Skagit
Chelan
Entiat
Wenatchee
Legend
Authorized Point of Withdrawal
Parcels
Sections
Authorized Place of Use
RH2
Revision Date: September 28, 2010
Background Image: USGS 7.5 Min Quad
J:\Data\WDOE\John Clees Change Applications\GIS\Clees Water Right Map 32009.mxd By: ABD
Sec. 5
Sec. 6
Sec. 7
Sec. 8
Preston Road
HWY 153
Gold Creek Loop Road
Valley
153
1400
2000
0
660
1,320
2,640
3,960
Feet