DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
TRUST WATER RIGHT
REPORT OF EXAMINATION

File NR: CS4-07228J(B)
WR DOC ID: 4700991

Change Purpose of Use Change Place of Use

PRIORITY DATE
1896

TRUST TERM
Permanent

WATER RIGHT NUMBER
Beaver Creek Adjudicated Certificate 228

APPLICANT:
Susan Marracci
451 Balky Hill Road
Twisp, WA 98856-9762

FILE NUMBER
CS4-07228J(B)

REMARKS: This change reflects Ecology's purchase of late season water rights from Susan Marracci.

Purpose and Quantity

Instream flows in the following quantities are attributed to the Primary and Secondary Reaches of Beaver Creek.

	PURCHASE (25.5 acres)			
	Primary Reach		Secondary Reach	
	Qa (ac-ft)	Qi (cfs)	Qa (ac-ft)	Qi (cfs)
August 1-31*	31.3	0.51	12.2	0.22
September 1-15*	15.2	0.51	8.2	0.22
Total	**46.5**		**20.4**	

Place of Use (See Map in Attachment 1)

Primary Reach – Approximately 0.9 miles of Beaver Creek beginning at the point of diversion within the NW¼SE¼ of Section 35, T. 34 N., R. 22 E.W.M. at river-mile 6.7, extending downstream to river-mile 5.8.

Secondary Reach – Approximately 5.8 miles of Beaver Creek Beginning at the end of the primary reach at river-mile 5.8, and extending downstream to the confluence of Beaver Creek and the Methow River.

PORTION OF WATER RIGHT
NOT BEING TRANSFERRED TO INSTREAM FLOWS
WRTS File #: S4-07228J(A)

PRIORITY DATE	WATER RIGHT NUMBER
1896	Beaver Creek Adjudicated Certificate 228

Purpose and Quantity

Irrigation of 25.5 acres

0.51 cfs, 92.9 ac-ft/yr from May 1 thru July 31

Source Location

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

POINT OF DIVERSION

NW¼SE¼ of Section 35, T. 34 N., R. 22 E.W.M.

Place of Use

W½SE¼ and the E½SW¼ of Sec. 35 and, T. 34 N., R. 22 E.W.M.

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	Annually, by January 31st of each calendar year.
What volume should be reported?	Total Annual Volume
What rate should be reported?	Monthly Peak Rate of Diversion in cfs.

Provisions Related to the Portion of the Water Right Being Retained

Water Measurement

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.

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

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

Fish Screening Criteria
The intake(s) shall be screened in accordance with Department of Fish and Wildlife screening criteria (pursuant to RCW 77.57.010, RCW 77.57.070, and RCW 77.57.040). If you have questions about screening criteria, contact the Department of Fish and Wildlife at:

Department of Fish and Wildlife	Phone: (360) 902-2534
Attention: Habitat Program	Email: habitatprogram@dfw.wa.gov
600 Capitol Way N	Website:
Olympia, WA 98501-1091	http://wdfw.wa.gov/conservation/habitat/planning/screening/

No dam or weir shall be constructed in connection with this diversion.

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 there will be no impairment of existing rights and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Change Application No. CS4-07228J(B), 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 this 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.

ADDRESS AND LOCATION INFORMATION

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 Road 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://www.leg.wa.gov/CodeReviser

Signed at Yakima, Washington, this 18 day of MARCH, 2014.

Mark Kemner, LHG, Section Manager
Water Resources Program/CRO

If you need this document in an alternate format, please call the Water Resources Program at 509-575-2490. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

INVESTIGATOR'S REPORT

BACKGROUND

On October 14, 2010 Susan Marracci filed 2 applications with the Washington State Department of Ecology (Ecology) to transfer late season irrigation from two Beaver Creek water rights to trust. These applications correspond to the sale of water rights by Susan Marracci to Trout Unlimited (TU), a nonprofit corporation working on behalf of Ecology to increase flows in Beaver Creek during times of critically low flows; the project seeks to eliminate the diversion of water for these rights from August 1 to May 1st of the following irrigation season. TU purchased the late season water from Beaver Creek Adjudicated Certificates 228 and 252.

This report specifically addresses the proposed changes to Beaver Creek Adjudicated Certificate 228. TU permanently acquired (purchased) the late season water associated with 25.2 acres covered by Certificate 228. It is the task of this investigator to recommend whether this water may be transferred to instream flows.

Significant efforts are being made to restore flows in Beaver Creek because it was historically a steelhead stream and could produce up to 10% of the Methow River run if fully functional (Mark Cookson, WDFW), with spawning and rearing as the major biological function. In the 2001 Methow Subbasin Plan, Beaver Creek is listed as a critical tributary and instream flow is identified as a limiting factor. In addition, this project will address several of the strategies identified in the 2004 Methow Subbasin Plan:

- Increase the survival of summer steelhead and bull trout at all juvenile summer and winter rearing life stages.
- Support resident and anadromous fishes similar to an undisturbed watershed of similar size, geology and geography.
- Protect key habitat and channel conditions by restoring and maintaining habitat processes.
- Protect healthy areas and restore degraded riparian zones to a more natural condition.

Increasing flows will lower stream temperatures in summer months, which is especially needed in the lower reaches of the Methow River. Higher flows also dilute toxic materials or other contaminants entrained in the stream.

Table 1: Attributes of Certificate No. 228 and the Proposed Changes

Attributes	Existing	Proposed
Name	X. Cordelier	Trust Portion: Department of Ecology Retained Portion: Susan Marracci
Priority Date/Change Application Date	Priority Date – 1896 (Class 9)	Application Date – October 14, 2010
Instantaneous Quantity	0.58 cfs	Trust Portion: 0.52 cfs in the late season

Table 1 - continued

Attributes	Existing	Proposed
Purpose of Use	Irrigation	Trust Water Portion: Instream Flow Retained Portion: Crop Irrigation
Period of Use	May 1 through September 15	Trust Portion: Instream Flow (Aug 1 through Sep 15) Remained Portion: May 1 through July 31
Place of Use	W½SE¼ and the E½SW¼ of Sec. 35 and, T. 34 N., R. 22E.W.M.	Trust Water Portion: Instream flow in Beaver Creek Remained Portion: Same
Point of Diversion	NW¼SE¼ of Section 35, T. 34 N., R. 22 E.W.M.	Trust Water Portion: no diversion Remained Portion: Same

Legal Requirements for Proposed Change
The following is a list of requirements that must be met prior to authorizing any change to a water right.

- **Public Notice**
  Notice of the proposed appropriation was published in the Methow Valley News of Twisp, Washington, on November 16th and November 23rd, 2011. The protest period ended on December 24, 2011. One protest letter was received; see the *Protests and Comments* section below.

- **State Environmental Policy Act (SEPA)**
  This project required a SEPA review under WAC-197-11-800(4). Ecology, acting as the SEPA lead agency, determined that this project will not have a probable significant adverse impact on the environment and issued a Determination of Non-significance (DNS) on January 17, 2012. No comments were received.

- **Water Resources Statutes and Case Law**
  Transferring a water right to the Trust Water Right Program is governed by RCW 90.42.

  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.

  This application qualifies for expedited processing under WAC 173-152-050(3)(a) whereby water right change applications may be processed prior to applications submitted at an earlier date when the proposed water use, if approved, would substantially enhance or protect the quality of the natural environment.

INVESTIGATION

History of Water Use
Beaver Creek and its tributaries were adjudicated in Okanogan Superior Court. Final Decree No. 3935 was issued on September 20, 1921. Beaver Creek Adjudicated Certificate No. 228 was issued to X.

Cordelier and authorizes the use of 0.58 cfs to irrigate 28.97 acres of irrigation. The authorized point of diversion is in the NW¼SE¼ of Section 35, T. 34 N., R. 22 E.W.M., which is the start of the Beaver Creek Canal. The place of use for Certificate 228 is W½SE¼ and the E½SW¼ of Sec. 35, T. 34 N., R. 22 E.W.M. There are two other property owners within the place of use (the hillside east of Beaver Creek), but Susan Marracci owns all the irrigated land within the place of use (See Figure 1 and 2 below).

Figure 1: Places of use for Certificates 228 and 252

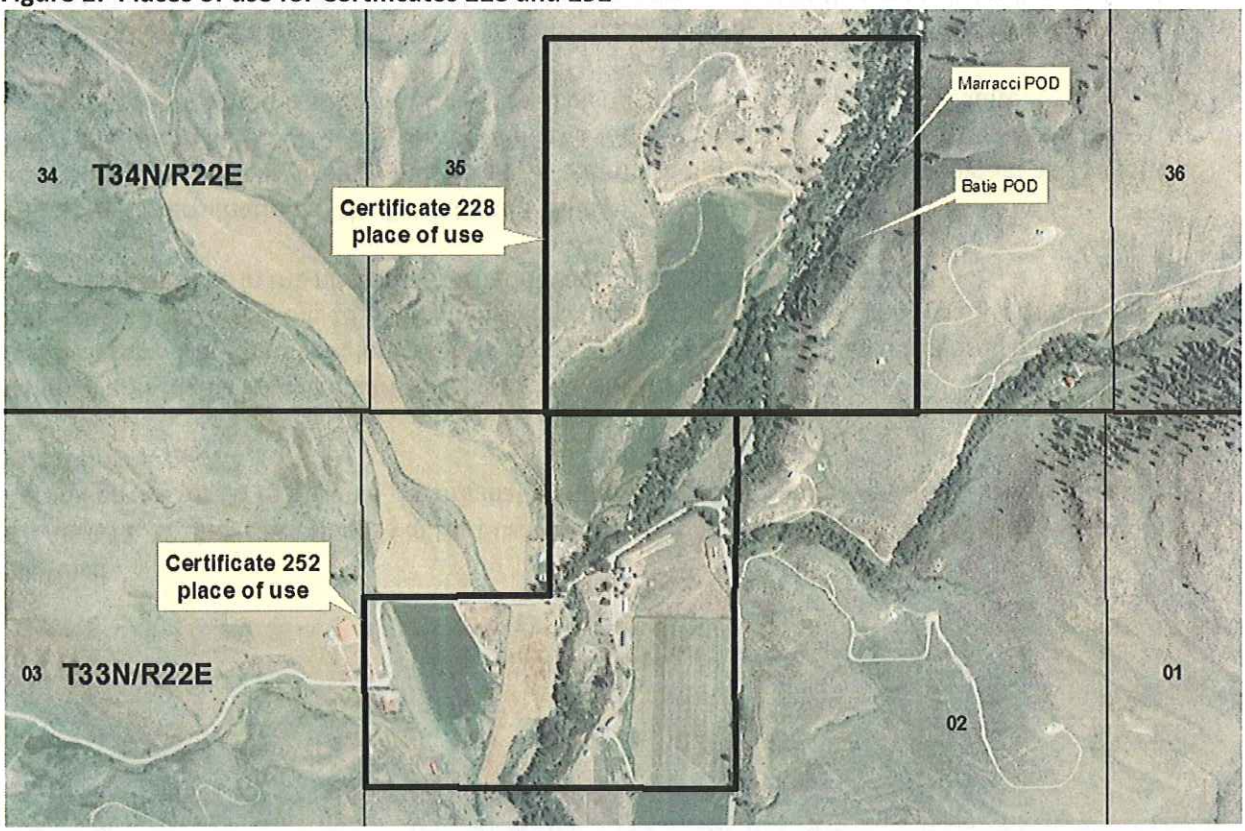
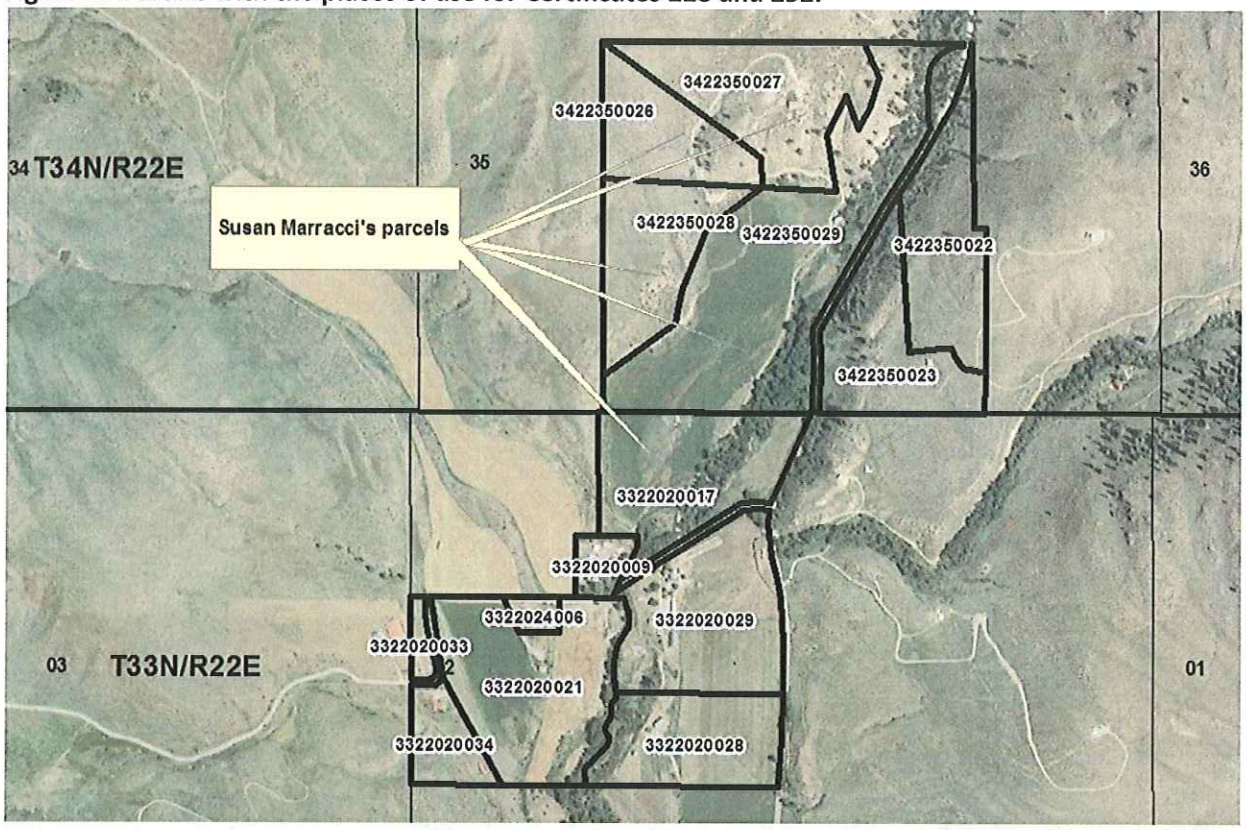


Figure 2: Parcels with the places of use for Certificates 228 and 252.



Site Visit

On April 12, 2012, Steven Hughes of Hart Crowser Consulting (hired on behalf of Ecology) met with Aaron Penvose of TU to observe the original point of diversion from Beaver Creek, irrigated lands, and irrigation methods.

Other Water Rights Appurtenant to Existing Place of Use

A search for water rights that intersect the place of use for Certificate 228 uncovered only a short form claim submitted during the 1997-98 open claims registration. Claim No. S4-144812CL documents a single domestic use in the northeast corner of Section 35, T. 34 N., R. 22 E.W.M.

Tentative Determination of the Extent and Validity

To change a water right, Ecology must make a tentative determination as to the extent and validity of the right. Under RCW 90.14.160, any portion of a water right not exercised for a period of five successive years, without sufficient cause, shall be relinquished and revert to the state.

To assess the extent and validity of Certificate No. 228, past irrigation practices and water use were evaluated. Susan Burgdorff-Beery, Ecology's Watermaster, indicated that records for Beaver Creek were not kept after 2006. Due to limited water use records, aerial photographs of the site provided a better indicator of extent and validity of the right. Aerial photographs from 1964, 1974, 1989, 2000, 2005, 2006, 2009, and 2011 were reviewed to identify the extent of irrigated lands within the authorized place of use. A total of approximately 25.5 acres appear to have been historically irrigated within the authorized place of use under Certificate 228.

The instantaneous diversion rate (Qi) awarded in the Beaver Creek Adjudication is 0.02 cfs per acre. Therefore the maximum diversion rate associated with 25.5 acres is 0.51 cfs. The total volume authorized under Certificate 228 is estimated to be a maximum of 139.35 ac-ft/yr. This calculation is based on 0.02 cfs per acre:

0.51 cfs × 1.98 ac-ft/day per cfs × 138 days of irrigation = 139.35 ac-ft/yr per acre

Annual Consumptive Quantity Test (ACQ)

RCW 90.03.380(1) requires that Ecology perform an annual consumptive quantity test (ACQ) when investigating a water right change proposing additional uses. New uses may be permitted if the change results in no increase in the annual consumptive quantity of water to be used under the water right. The test states that the future consumptive use cannot exceed the average of the two highest years of the last 5 years of continuous use. Based on recent air photos, approximately 25.5 acres have been consistently irrigated. The water duty associated with those acres is considered the average use for this test.

To estimate the consumptive use portion (%CU), Ecology relies on the Washington Irrigation Guide (WIG). The WIG data provides the estimated Crop Irrigation Requirement (CIR), which is the amount of water a crop needs in excess of rainfall. The CIR for alfalfa near the Methow Station is 25 inches (2.08 ft) from May to October. The total irrigation requirement (TIR) is the CIR divided by the application efficiency (Ea%), see calculations below. Consumptive use can be estimated using Ecology's Guidance 1210: Table 1 in which Ea% and evaporation (Evap%) are listed by irrigation method.

The following calculations are based on hand-line sprinklers that are assumed to be 75% efficient (Ea%). The estimated consumptive water use under Certificate 228 is 59.93 ac-ft/yr (see calculation below). If the proposed changes are approved, consumptive use cannot exceed this quantity.

TIR = CIR ÷ Ea
TIR = 2.08 ft/acre ÷ 0.75
TIR = 2.77 ft/acre
%CU = Ea + Evap
%CU = 75% + 10% = 85%
CU = TIR x %CU
CU = 2.77 ft/acre × 85%
CU = 2.35 ft/acre
CU = 2.35 ft/acre × 25.5 acres
CU = 59.93 ac-ft/yr

Water Right Change

As part of the agreement with TU, Ms. Marracci she applied to transfer 25.8 acres of late season irrigation water to instream flows in Beaver Creek. However, during the tentative determination analysis described above, it was noted that 25.5 acres of irrigation could be identified within Ms. Marracci's property that is covered by Certificate 228. Therefore the late season water for 25.5 acres of irrigation is available to be transferred to instream flows.

The following sections describe the primary and secondary stream reaches that benefit from water being transferred to instream flows. Each reach is assigned a volume of water based on late season fallowing of 25.5 acres.

Primary Reach

The primary reach is the portion of the stream that benefits from return flows and what would otherwise be consumed by growing crops. The primary reach extends from the historic point of diversion to the point where return flows historically rejoined the stream adjacent to the southern-most field. The length of the primary reach in Beaver Creek is approximately 0.9 miles; from river-mile 6.7 to river-mile 5.8 (see Attachment 1).

Late season fallowing will occur for a total of 46 days (August 1 to September 15). The total volume authorized under Certificate 228 is estimated to be a maximum of 46.5 ac-ft/yr, 0.51 cfs. This calculation is based on 0.02 cfs per acre:

0.02 cfs × 25.5 acres × 1.98 ac-ft/day per cfs × 31 days of irrigation in August = 31.3 ac-ft

0.02 cfs × 25.5 acres × 1.98 ac-ft/day per cfs × 15 days of irrigation in September = 15.2 ac-ft

Secondary Reach

The secondary reach is the portion of the stream that benefits only from what would otherwise have been consumed by growing crops (consumptive use). The secondary reach extends from the end of the primary reach to the confluence of the next major tributary, the Methow River. The secondary reach in Beaver Creek is approximately 5.8 miles long beginning at the end of the primary reach at river-mile 5.8, and extending downstream to the confluence of Beaver Creek and the Methow River.

Late season fallowing will occur for a total of 46 days (August 1 to September 15). The WIG states that alfalfa near the Methow Station requires 5.0 inches per acre in August and 3.36 inches per acre in September (or 0.42 ft and 0.28 ft respectively). The consumptive use associated with 25.5 acres of late season irrigation is 20.4 ac-ft/yr, 0.22 cfs based on the following calculations:

August 1-31	**September 1-15**
TIR = CIR ÷ Ea	TIR = CIR ÷ Ea
TIR = 0.42 ft/acre ÷ 0.75 = 0.56 ft/acre	TIR = 0.28 ft/acre ÷ 0.75 = 0.37 ft/acre
%CU = Ea + Evap	%CU = Ea + Evap
%CU = 75% + 10% = 85%	%CU = 75% + 10% = 85%
CU = TIR x %CU	CU = TIR x %CU
CU = 0.56 ft/acre × 85%	CU = 0.37 ft/acre × 85%
CU = 0.48 ft/acre	CU = 0.32 ft/acre
CU = 0.48 ft/acre × 25.5 acres	CU = 0.32 ft/acre × 25.5 acres
CU = 12.2 ac-ft/yr	CU = 8.2 ac-ft/yr

Instantaneous Quantity equals: 20.4 ac-ft/yr ÷ 46 days in the late season ÷ 1.98 ac-ft/day per = 0.22 cfs

Table 2: Summary of the quantities available for transfer by month.

	PURCHASE (25.5 acres)			
	Primary Reach		Secondary Reach	
	Qa (ac-ft)	Qi (cfs)	Qa (ac-ft)	Qi (cfs)
August 1-31*	31.3	0.51	12.2	0.22
September 1-15*	15.2	0.51	8.2	0.22
Total	**46.5**		**20.4**	

Impairment Considerations

Ms. Marracci has agreed to cease diverting water after July 31st of each year and will not begin diverting until May 1st of the following year. Changing the purpose of these late season water rights to instream flows would not result in any increase in consumptive use of water. The proposed action is intended to decreases future consumptive use. After July 31st, water that would otherwise have been used for irrigation under Certificate 228 will remain instream to benefit flows. Increased flows should not impair or injure other water rights on Beaver Creek.

Public Interest Considerations

The acquisition of water for instream flows in Beaver Creek is anticipated to improve habitat and survival of listed species in the Upper Columbia ESU.

Consideration of Protests and Comments

A protest letter was received on December 14, 2011 from Bernard and Dianne Thurlow. Their concerns are outlined and discussed below:

1) *There is no way to measure the amount of water diverted from the creek because of the large variation in evaporation loses.*

Response: Only the portion of the water right that has been historically used can be transferred to instream flows. Ecology uses the Washington Irrigation Guide (WIG) to approximate water use based on irrigation practices, soils, and crop irrigation requirements. Extensive work has been done by the NRCS to develop specific station data (Methow Station for Beaver Creek crop irrigation requirements) with average monthly precipitation and irrigation requirements by crop type. The WIG data is coupled with GUID-1210, which provides information to evaluate application efficiency ranges, consumptive use, and return flows for crops. These documents allow Ecology to reasonably estimate water usage, including evaporation losses.

2) *By leaving water in Beaver Creek and not using it for irrigation you reduce the volume of irrigation water that would eventually infiltrate and be stored in the stream banks. Doing this reduces the volume of water available to discharge from the banks back into the stream during periods of low flow. These actions violate the Referee's Report. The lack of recharge could affect*

the water availability to the Beaver Creek water users when the creek is normally low, including the fish.

Response: The proposed project is intended to leave water in Beaver Creek during the lowest flow periods. Fluvial recharge occurs primarily when stream flows are high and the water infiltrates to relatively lower ground water through the stream bed and banks. During the base flows periods (late in the summer and fall), groundwater tends to discharge to the stream.

Applying irrigation water heavily in the early and mid-portions of the irrigation season can store water that flows back to Beaver Creek later in the irrigation season. Applying irrigation water late in the season, during Beaver Creek's base flow period, is less effective in supporting Beaver Creek's streamflow than leaving water in Beaver Creek.

Lastly, Ecology lacks the authority to require a water right holder to use its water right to irrigate its lands (PCHB No. 00-189).

3) Our existing water rights shall not be impaired.

Response: A water right cannot be changed if the change would impair any other users. Leaving water instream would not harm another water user's ability to access water (see the Impairment Considerations section above).

CONCLUSIONS

It is the conclusion of this examiner that a total of 0.51 cfs, 46.5 ac-ft/yr may be transferred to instream flows under Certificate 228 and that doing so would not impair existing rights in accordance with RCW 90.42.

RECOMMENDATIONS

Based on the information presented above, the author recommends that CS4-07228J(B) be approved in the amounts, and subject to the provisions described in the Order for Report of Examination on pages 1-3 in the following quantities:

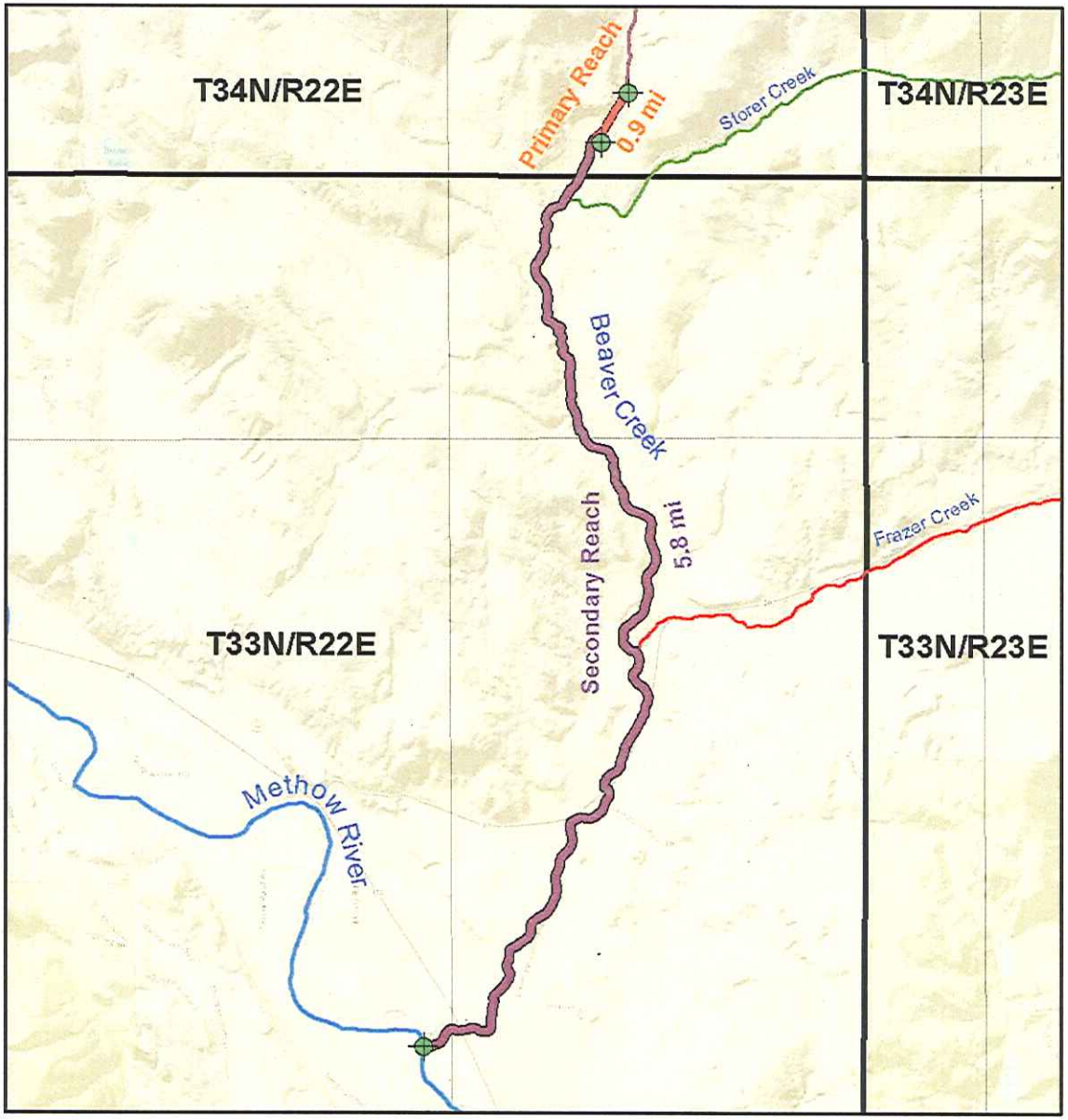
	PURCHASE (25.5 acres)			
	Primary Reach		Secondary Reach	
	Qa (ac-ft)	Qi (cfs)	Qa (ac-ft)	Qi (cfs)
August 1-31*	31.3	0.51	12.2	0.22
September 1-15*	15.2	0.51	8.2	0.22
Total	**46.5**		**20.4**	

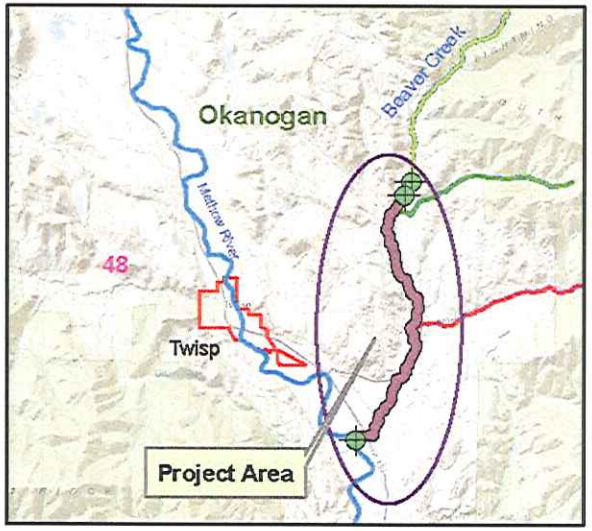
Report by: Kelsey L Collins 3/13/14

Kelsey Collins Date

Beaver Creek Restoration Project

WRIA 48 -Okanogan County





Basemap - ESRI Topographic Map

0 1.75 3.5 7 Miles

Legend

- Point of Diversion
- Primary Reach
- Secondary Reach

DEPARTMENT OF ECOLOGY State of Washington

Basemap - ESRI Topographic Map

Map Date: 8/12/2013

Comment:
Place of use and source locations are as defined according to the Application. This map is to show location of POU and POD's only, not to use in ROE.