STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION
Change of: Point of Diversion
WRTS File No. CS4-069703CL

PRIORITY DATE	CLAIM NO.	PERMIT NO.	CERTIFICATE NO.
October 19, 1903	069703		

NAME

Eleven users of the Detwiler Hannan Knapp Ditch:

Ed Harris, Tonya Banks, Ronald Mullek, Joseph Peter, Peter Dauer, Susan Summerfield, Phil Harrison, Lance Hansen, Martin Petersen, Belvin Gollaher, Conard Petersen

ADDRESS/STREET	CITY/STATE	ZIP CODE
Ed Harris 311 Shady Lane	Wentachee, WA	98801
Tonya Banks P.O. Box 343	Chelan, WA	98816
Ronald Mullek 4942 Deppner Road	Entiat, WA	98822
Joseph Peter 4852 Entiat River Road	Entiat, WA	98822
Peter Dauer 4851 Entiat River Road	Entiat, WA	98822
Susan Summerfield 4984 Mills Canyon Road	Entiat, WA	98822
Phil Harrison 214 Second Street	Wenatchee, WA	98801
Lance Hansen 5167 Entiat River Road	Entiat, WA	98822
Martin Petersen P.O. Box 116	Entiat, WA	98822
Gollaher Family LLC P.O. Box 493	Entiat, WA	98822
Conard Petersen P.O. Box 116	Entiat, WA	98822

PUBLIC WATERS TO BE APPROPRIATED

SOURCE

Entiat River

TRIBUTARY OF (IF SURFACE WATERS)

Columbia River

MAXIMUM CUBIC FEET PER SECOND (cfs)	MAXIMUM GALLONS PER MINUTE (gpm)	MAXIMUM ACRE FEET PER YEAR (ac-ft/yr)
1.49		310.8

QUANTITY, TYPE OF USE, PERIOD OF USE

1.49 cubic-feet per second (cfs), 310.8 acre-feet per year (ac-ft/yr), for the irrigation of 67 acres from April 1 through October 31; all 11 water users are limited to this quantity.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL

2,570 feet west and 75 feet south of the NE corner of Section 10, T. 25 N., R. 20 E.W.M.

SOURCE	PARCEL	LATITUDE	LONGITUDE	QTR/QTR	SECTION	TOWNSHIP	RANGE
Entiat River	252010120100	47.68612	-120.31564	NW¼ NE¼	10	25N	20 E.W.M.

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED
[Attachment 1 shows location of the authorized place of use and point(s) of diversion or withdrawal]

SE¼NW¼, W½W½SW¼NE¼, E½E½SW¼NE¼, NW¼NE¼, NE¼NE¼, SW¼SW¼NW¼NW¼, NE¼SE¼NE¼, W½W½SE¼NE¼; all lying south of the Entiat River, within Section 14, T. 25 N., R. 20 E.W.M.

SW¼SW¼NW¼NW¼ of Section 13, T. 25 N., R. 20 E.W.M.

Lands include portions of the following Chelan County Parcel Nos. 252014240150, 252014240100, 252014240050, 252014130200, 252014120050, 252014110060, 252014110070, 252014110200, 252014110250, 252014130050, 252013220100, 252014110300, 252014140105.

See Appendix A for a detailed description of the place of use.

DESCRIPTION OF PROPOSED WORKS

An 80 foot by 30 foot sediment settling basin with a bifurcation gate located within a fish screen structure that includes a 9.88 foot by 2.50 foot rolling fish screen to be installed ahead of twin 4-foot flashboards to regulate ditch flow and screen submergence. The Knapp-Wham Ditch is comprised of buried PVC pipe in various diameters ranging from 30 inches to 12 inches. The turnouts along the ditch include various sizes of electric pumps to divert water into the individual users' on-farm irrigation systems.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	WATER PUT TO FULL USE BY THIS DATE
Begun	Completed	October 31, 2015

PROVISIONS

1. **Measurements, Monitoring, Metering and Reporting**
   1.1. An approved measuring device shall be installed and maintained for each of the sources authorized by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC. http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html

   1.2. Diversion rates authorized by this report shall be recorded at the Knapp-Wham Ditch POD measuring device. If such a measuring device is not installed or incapable of measuring the diversion authorized by this report at the Knapp-Wham Ditch POD structure, each of the eleven applicants are responsible for installing and maintaining a measuring device at their respective turnout from the Knapp-Wham Ditch.

   1.3. Water use data shall be recorded weekly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to the Department of Ecology by January 31st of each calendar year.

   1.4. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements". http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html Chapter 173-173 WAC 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.

2. **Department of Fish and Wildlife Requirement(s)**
   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:

   Department of Fish and Wildlife
   Attention: Habitat Program
   600 Capitol Way N
   Olympia, WA 98501-1091

   Phone: (360) 902-2534
   Email: habitatprogram@dfw.wa.gov
   Web address:
   http://wdfw.wa.gov/conservation/habitat/planning/screening/

3. **Schedule and Inspections**
   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.

4. **Project Completion**
   The water right holder shall file the notice of proof of appropriation 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 of Change* will reflect the extent of beneficial use within the limitations of the change authorization.

Elements of the project completion inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and compliance with provisions.

5. **Water Use Efficiency**
   Use of water under this authorization shall be contingent upon the water right holder's maintenance of efficient water delivery systems, including the conveyance ditch and individual on-farm irrigation systems, and use of up-to-date water conservation practices consistent with established regulation requirements and facility capabilities.

6. **Easement Right-of-Way**
   The water source and/or water transmission facilities are not wholly located upon land owned by the applicants. 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.

7. **Non-Additive to Confirmed Claims**
   The water use authorized under this filing shall be considered non-additive to any water rights confirmed for said claim as a result of a general adjudication through Superior Court, should adjudication be undertaken.

FINDINGS OF FACT AND ORDER

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

Therefore, I ORDER approval of the recommended change in point of diversion under Change Application No. CS4-069703CL, subject to existing rights and the provisions listed above.

YOUR RIGHT TO APPEAL

You have a right to appeal this Decision to the Pollution Control Hearings 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 all of 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	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia WA 98504-7608
Pollution Control Hearings Board 1111 Israel Road SW, Suite 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 3 day of OCTOBER 2013.

Mark Kemner, LHG, Section Manager
Water Resources Program, Central Region Office

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.

BACKGROUND

Description and Purpose of Proposed Change

On May 23, 2008, eleven users of the Detwiler Hannan Knapp Ditch, locally known as the "Hannan – Detwiler Ditch" (H-D Ditch), submitted to the Department of Ecology (Ecology) an *Application for Change/Transfer of Water Right*. The application was accepted and assigned the identifier Water Right Change Application No. CS4-069703CL. In the application, eleven of the sixteen H-D Ditch users propose a change in point of diversion (POD) to a POD that is constructed approximately 4,200 feet upstream on the Entiat River. The proposed POD is the Knapp-Wham Ditch (K-W Ditch) POD that is currently in operation. The eleven users intend to use the K-W Ditch to convey irrigation water to their parcels.

The proposed change in POD is part of the "Knapp-Wham Hannan-Detwiler Irrigation System Consolidation" project. As stated in the application, "The objectives of the project include:

1) Eliminating the Hannan-Detwiler surface water diversion and associated unlined irrigation ditch to improve instream flow conditions in the lower river, particularly during the late-summer/fall period, and
2) Enhancement of the Knapp-Wham system and surface water diversion to eliminate low flow [fish] passage issues and provide additional large pool habitat complexity within the lower Entiat River."

Decommissioning the H-D Ditch by moving eleven users to the K-W Ditch and installing points of withdrawal (POWs) for the remaining five users of the H-D Ditch is expected to eliminate ditch losses and increase instream flows for a portion the Entiat River.

The change in POD for a portion of Claim No. 069703 as proposed in Change Application No. CS4-069703CL is the subject of this report. The portion of Claim No. 069703 proposed for change is the quantity of water historically beneficially used by the 11 users of H-D Ditch who signed Change Application No. CS4-069703CL. The remaining five users proposed changes from the original POD to POWs and are the subject of separate change applications (Change Application Nos. CS4-069703CL@1 through @5).

Attributes of the Claim and Proposed Change to a Portion of the Claim

Table 1 Summary of Proposed Changes to a Portion of Claim No. 069703

Attributes	*Existing*	*Proposed*
Name	Detwiler, Hannan, Knapp Ditch	Ed Harris Tonya Banks Ronald Mullek Joseph Peter Peter Dauer Susan Summerfield Phil Harrison Lance Hansen Martin Petersen Belvin Gollaher Conard Petersen
Claimed Date of First Use	October 19, 1903	
Date of Application for Change		May 23, 2008
Instantaneous Quantity	900 cubic feet per second (cfs)	Not Specified
Annual Quantity	1300 acre-feet per year (ac-ft/yr)	Not Specified
Source	Entiat River	No Change
Point of Diversion/Withdrawal	Within the NW¼ SE¼ of Section 10, T. 25 N., R 20. E.W.M.	Within the SE¼SW¼ Section 3, T. 25 N., R. 20 E.W.M.
Purpose of Use	Irrigation	No Change
Period of Use	April through October	No Change
Place of Use	Lands within Sections 15, 18, 14, 13 all in T. 25 N., R. 21 E.W.M.	No Change

Legal Requirements for Proposed Change

The following is a list of requirements that must be met prior to authorizing the proposed change in Water Right Application No. CS4-069703CL

- **Public Notice**
  A legal public notice of the proposed change was published in the Wenatchee World newspaper on December 23 and 30, 2008. No comments or protests were submitted to Ecology during the 30-day protest period.

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

  - It is a surface water right application for more than 1 cubic-foot per second (cfs)[1], unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cfs, so long as that irrigation project will not receive public subsidies;

  - It is a groundwater right application for more than 2,250 gallons per minute (gpm);

  - It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;

  - It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);

  - It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

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

Water Resources Statutes and Case Law

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

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.*

The actual extent and validity of a claim can only be determined by a Superior Court in an adjudication. Any tentative determination made on the extent and validity of a claim by Ecology as part of an application for change investigation is not an adjudication of the claim.

INVESTIGATION

Information comprising this investigation was obtained during a site visit conducted on November 20, 2008. Present during the site visit were Ecology representatives Taylor Horne and Kurt Walker and applicant representative Rich Malinowski of Cascadia Conservation District.

Additional information was obtained from:

- applicable RCW and WAC chapters,
- conversations with Rich Malinowski of Cascadia Conservation District,
- Ecology records,
- historical land and aerial photographs,
- historical maps,
- Ecology's Geographic Information System (GIS) data,
- Chelan County records,
- USGS streamflow records,
- documents listed in the References section of this report.

[1] Refer to the "Water Quantities" section of this report for a discussion of the actual, rather than claimed, instantaneous quantity of water diverted under Claim No. 069703.

History of Water Use

The H-D Ditch is located in the Entiat River valley in Water Resource Inventory Area (WRIA) 46. The ditch runs from a POD at river mile five for about three miles paralleling the Entiat River in a southeasterly direction. Water from the H-D Ditch is used to irrigate orchards and turf south of the Entiat River from river mile four to river mile one.

In 1974, in accordance with Chapter 90.14 RCW, a representative of the H-D Ditch users submitted to Ecology a claim to 900 cubic-feet per second (cfs), 1300 acre-feet per year (ac-ft/yr), for the irrigation of 325 acres from April through October from the Entiat River. Claim No. 069703 asserts that water was first put to use on October 19, 1903 from a POD 1350 feet north and 1500 feet west from the southeast corner of Section 10, within the NW¼SE¼ of Section 10, T. 25 N., 20 E.W.M. This point is approximately 850 feet south and 250 feet east of the currently used H-D Ditch POD. The claimed POD location may have been inaccurately described on the claim form submitted in 1974. The claimed place of use (POU) includes numerous parcels south of the Entiat River within Sections 13, 14, 15, and 18, all in T. 23 N., R. 21 E.W.M., Chelan County.

The "Notice of Appropriation of Water" No. 6836 dated October 19, 1903 in Chelan County Auditor's General Records Volume 41 Page 240 states that S. R. Hannan, D. C. Wolf, and Frank E. Knapp:

> "...have appropriated nine hundred (900) cubic-feet of water per second of time, the same to be taken out of the Entiat River by ditch, ditches, flumes and other means at a point where the present ditch known as the Ditwyller and Hanna [sic] Ditch is now taken out of the Entiat River, said point being near the north-west corner of the southeast corner of Section 10, Township 25, North of Range 20 E.W.M., which ditch runs and has been constructed in a southeasterly direction running across the south-east quarter of Section 10, and a portion of the north-east quarter of the north east quarter of Section 15 and crossing Section 14 and 13 in Township 25, North of Range 20, E.W.M. and ending on the north-west quarter of the south-west quarter of Section 19, Township 25, North of Range 21, E.W.M. Chelan County State of Washington. Said water if [sic] appropriated for irrigation, stock and domestic purposes, and for mining and milling purposes and for the purposes of creating power. Notice is further given that said ditch was constructed by the undersigned and by their grantors and said water has been diverted and used upon the land belonging to the undersigned and their grantors since 1894, and has become appurtenant to said land."

A separate "Agreement" document dated May 9, 1906, defines the shares of each member of the "Detwiler & Hannan Irrigation Ditch" as "S. R. Hannan 2/9; D. C. Wolf 2/9; Frank Knapp 5/9". The "Agreement" also specifies that each user is responsible to maintain a portion of the ditch proportionate to each user's share.

A review of aerial photographs from 1945, 1962, 1979, 1998, 2004, 2005, and 2006 indicates that approximately 184.5 acres of irrigation has occurred within the POU during each of those years. A detailed discussion of each user's historic irrigation practices is included in the "Hannan-Detwiler Ditch Users" section of this report.

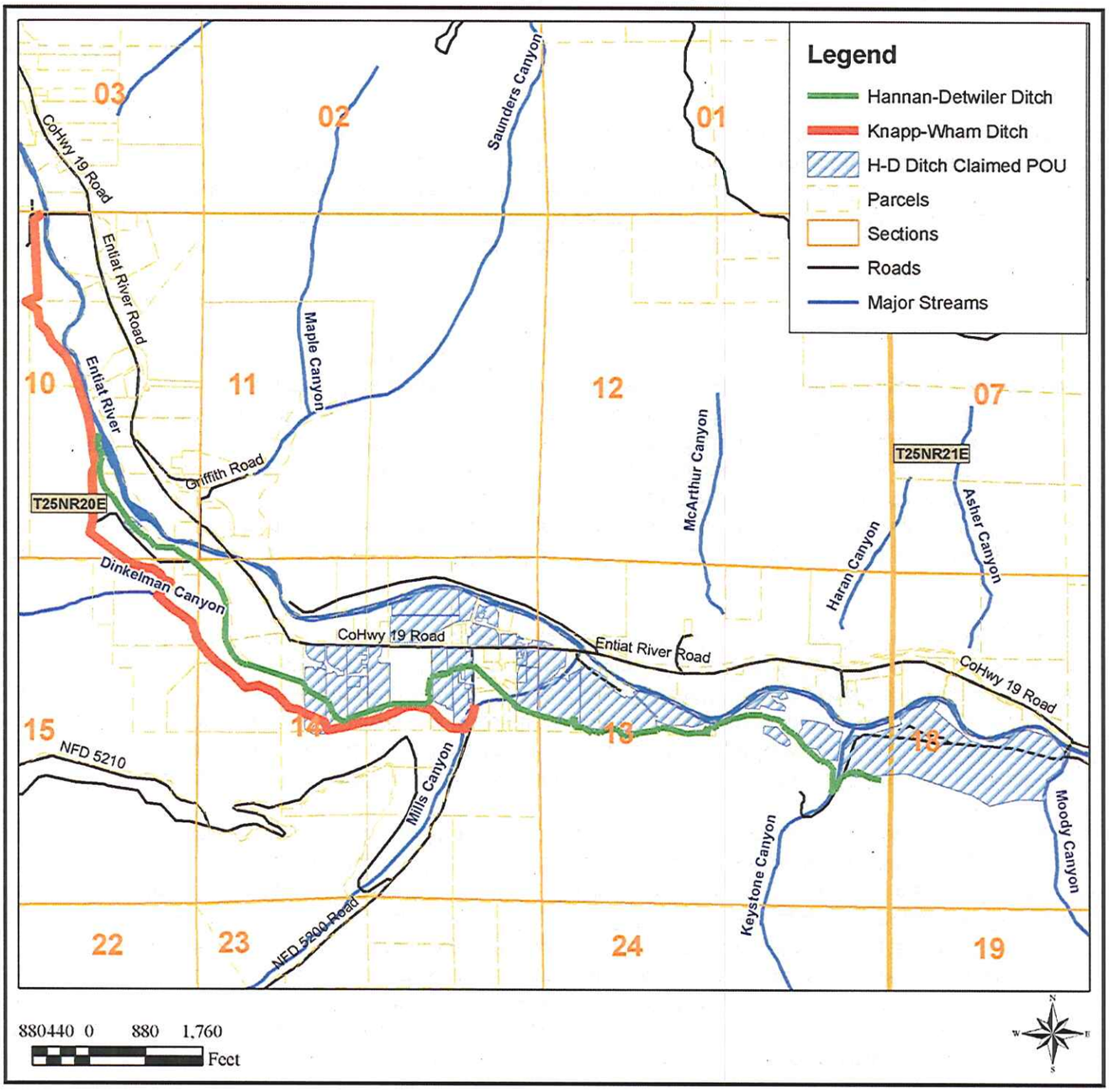

Figure 1: H-D Ditch and K-W Ditch Locations and H-D Ditch Claimed Place of Use

Hannan-Detwiler (H-D) Ditch Description

A rock weir is constructed from the west bank of the Entiat River to convey water flow into a side channel at approximately Entiat River mile five. The H-D Ditch POD headworks are immediately downstream of a wooden bifurcation structure that splits side channel flows between the bypass side channel and the H-D Ditch. The approximately 1700-foot long bypass side channel functions to dampen canal flow and provide fish habitat. A rotary drum fish screen is installed at the H-D Ditch headworks along with a fish bypass that discharges directly to the bypass side channel (Reclamation 2006).

The H-D Ditch is approximately three miles long, running in a southeasterly direction for the first mile and turning eastward for the remaining length. The H-D Ditch is predominately an open, unlined earthen ditch; several short piped sections exist where the ditch crosses roads and traverses residential parcels. There are sixteen users that have historically used water from the H-D Ditch, listed in the "Hannan–Detwiler Ditch Users" section of this report. The H-D Ditch crosses multiple parcels owned by both ditch users and non-users, terminating on the Keystone Ranch, owned by Gale and Dale Foreman. Excess water is released into a spillway that crosses the Keystone Ranch (Chelan Co. Parcel No.252118230050) and converges with the Entiat River at approximate river-mile 1.5, in the NW¼ of the SE¼ of Section 18, T. 25 N., R. 21 E.W.M.

At a point approximately 1.6 miles down the H-D Ditch on the Summerfield property (Chelan Co. Parcel No. 252014130050), a natural spring named Crystal Spring enters the ditch. Flow monitoring during the 2008 irrigation season indicated that flow into the H-D Ditch varies, ranging from approximately 1.1 cfs in mid-April to 0.5 cfs in July to no flow in October (CCD 2008). Crystal Spring has historically contributed to flows in the H-D Ditch since construction, and the flows are released into the Entiat River along with excess water from the H-D Ditch. Crystal Spring is not claimed as a source of water on Claim No. 069703.

Proposed POD and Knapp-Wham (K-W) Ditch Description

The K-W Ditch POD, the proposed POD in Change Application No. CS4-069703CL, is constructed approximately 4,200 feet upstream on the Entiat River from the H-D Ditch POD. The proposed POD is located within the NW¼NE¼ of Section 10, T. 25 N., R. 20 E.W.M., Chelan County.

The first use of the K-W Ditch is asserted to have occurred on April 20, 1903, operated by Frank E. Knapp and Gilbert T. L. Wham. Currently, seventeen users irrigate with water from the K-W Ditch by using fifteen turnouts installed along the 2.35 mile length of the ditch. The number of K-W Ditch users has increased over time as the original POU has been subdivided. Diversion of water from the Entiat River by the K-W Ditch is asserted under Claim No. 300062 in the amount of 300 cfs, 2000 ac-ft/yr, for the irrigation of 320 acres, from April 1 to October 15. The claim states the purposes of use as domestic water for 27 units, stockwatering, milling, mining, and power purposes. The ditch system cannot physically convey the claimed instantaneous quantity of water; no studies have been conducted to determine the maximum instantaneous quantity of water the K-W Ditch is capable of conveying. An August 2005 Bureau of Reclamation study indicates that 3.78 cfs was diverted by the K-W Ditch at the time of measurement (Reclamation 2006). This quantity is representative of the normal instantaneous flow of water during the high-use portion of the irrigation season.

No changes are proposed for water use asserted under Claim No. 300062; therefore, no tentative determination of the extent and validity of the K-W Ditch claim is required for this report.

The gravity-fed K-W Ditch POD diverts water from a side channel of the Entiat River. The side channel splits from the Entiat River 110 feet north of the POD, at approximately river mile six, where a rock weir extends from the west bank of the Entiat River to direct water into the side channel. The K-W Ditch POD is located 2,570 feet west and 75 feet south of the NE corner of Section 10, within the NW¼NE¼ of Section 10, T. 25 N., R. 20 E.W.M.

At the time of the November 2008 site visit, construction was underway on a new POD structure for the K-W Ditch. Immediately upstream of the headworks bifurcation structure, an 80 foot by 30 foot sediment settling basin will be constructed to minimize the amount of fine suspended bedload entering the fish screen. The basin will be designed to accommodate 16.5 cfs maximum during non-storm event conditions. The fish screen and K-W Ditch inflow will be controlled by the bifurcation gate structure with two legs: one leg located with a screen structure that will be constructed to accommodate a maximum of 8.61 cfs at 100 percent flow into the K-W Ditch, and the other leg to direct water into a side channel of the Entiat River at a maximum of 8.61 cfs. A 12-inch diameter PVC fish bypass pipe will accommodate 0.75 cfs within the screen structure. A 9.88 foot by 2.50 foot rolling drum fish screen designed by the Department of Fish and Wildlife will be installed (Reclamation 2006).

The K-W Ditch is comprised of buried PVC pipe in various diameters from 30 inches to 12 inches. The turnouts along the ditch include various sizes of electric pumps to divert water from the K-W Ditch pipe into each user's on-farm irrigation system. The K-W Ditch terminates at the Mills Canyon residential development on a parcel owned by Grant and Tammy Giacomazzi (Chelan Co. Parcel No.252014695070). Excess water is released into Mills Creek, which crosses several parcels running in a northeasterly direction. Mills Creek converges with the Entiat River at the Entiat River Road bridge, at approximate river mile 3.2, in the SW¼ NW¼ of Section 13, T. 25 N., R. 20 E.W.M.

If the proposed POD change is approved, the K-W Ditch POD that is under construction and the existing conveyance system would be able to accommodate the increased diversion rate from the eleven H-D Ditch users who propose to move to the K-W Ditch. Several new turnouts are proposed for construction to enable the eleven H-D Ditch users to divert water solely from the K-W Ditch. H-D Ditch headworks would be decommissioned and all diversions would cease from this ditch. Cascadia Conservation District is currently coordinating with landowners to ensure the side channel of the Entiat River near the headworks is maintained as wildlife habitat. After the H-D Ditch is no longer used for irrigation purposes, Crystal Spring water will be directed to permanently flow directly into Mills Creek, a tributary of the Entiat River.

Measuring and Reporting Water Use

RCW 90.03.360 requires that the owner of any water diversion maintain substantial controlling works and a measuring device. It must be constructed and maintained to permit accurate measurement and practical regulation of the flow of water diverted. Technical requirements for the measuring and reporting of water use are described in Chapter 173-173 WAC. If approved, this decision would contain provisions requiring the measuring and reporting of the quantities of water diverted at the K-W Ditch POD. A measuring device is planned to be installed at the new K-W Ditch POD.

Hannan-Detwiler Ditch Users

There are sixteen users on the system that have historically used water from the H-D Ditch. A tentative determination of all historical water use asserted under Claim No. 069703 is a required part of this investigation.

The history of water use and the quantity of water put to beneficial use on each H-D Ditch user's land is identified in the following section.

Eleven of the sixteen H-D Ditch users propose a change in POD to the K-W Ditch POD for a portion of Claim No. 069703, the subject of this investigation. In the section below, approximate acres irrigated by the H-D Ditch are asserted under Claim No. 069703; those acres irrigated by the K-W Ditch are asserted under Claim No. 300062:

Conard Petersen

Mr. Petersen uses water from both the H-D Ditch and the K-W Ditch to irrigate approximately 9.3 acres of pears (Chelan Co. Parcel No. 252014240150). The Petersen irrigation system is set up so that water from both ditches can be used throughout the property. Evidence suggests that the lands down-gradient of the H-D Ditch were historically served by that ditch, while lands up-gradient were served by the K-W Ditch. Approximately 4.8 acres of pear orchard are down-gradient of the H-D Ditch, leaving approximately 4.5 acres irrigated by the K-W Ditch.

The H-D Ditch turnout consists of a 5 horsepower (hp) Sterling electric motor with a Pacific pump. Mr. Petersen operates irrigation cycles seven days a week with 12 hour sets. Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Belvin Gollaher

Mr. Gollaher historically has used water from the K-W Ditch and the H-D Ditch to irrigate approximately 8.8 acres of orchard on his parcel (Chelan Co. Parcel No. 252014240100). Historical evidence suggests that the lands down-gradient of the H-D Ditch were historically served by that ditch, while lands up-gradient were served by the K-W Ditch. Approximately 7.2 acres of orchard are down-gradient of the H-D Ditch, leaving approximately 1.6 acres irrigated by the K-W Ditch.

A Quit Claim Deed for the parcel dated August 28, 2006, listing the Grantor as Entiat Valley Orchards and the Grantee as Gollaher Family, LLC, references "a one-thirtieth share and interest in the Knapp-Wham Irrigation ditch, subject to the proportionate annual maintenance fees and other conditions of said water right; together with an undivided one-seventy-second share and interest in the Detweller-Hannan Irrigation Ditch and water right." The reference to the two ditches in the Quit Claim Deed suggests that water from both the K-W Ditch and the H-D Ditch has been beneficially used on the orchard land.

The H-D Ditch turnout consisted of a 7.5 hp Baldor electric motor and pump. Recently, Mr. Gollaher has upgraded his irrigation system and began diverting water from the K-W Ditch. Five-days a week, 12 hour sets are used to irrigate. Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Martin Petersen

Mr. Petersen uses water from both the H-D Ditch and the K-W Ditch to irrigate approximately 7.9 acres of orchard on the parcel (Chelan Co. Parcel No. 252014240050). The Petersen irrigation system is set up so that water from both ditches can be used throughout the property. The H-D Ditch turnout consists of a 15 hp motor and pump. Seven days a week, 12 hour irrigation sets are used. Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Lance Hansen

Mr. Hansen historically has used water from the H-D Ditch to irrigate approximately 7.6 acres of orchard on his parcel (Chelan Co. Parcel No. 252014130200). Recently, he has modified his irrigation system to divert water solely from the K-W Ditch. Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Phil Harrison

Mr. Harrison historically used water from both the H-D Ditch and the K-W Ditch to irrigate his parcels (Chelan Co. Parcel Nos. 252014120050 and 252014110060). Recently Mr. Harrison modified his irrigation system to divert water solely from the K-W Ditch. A signed statement from Conard Peterson, owner of the parcel until 2005 and current manager of the orchard, indicates that the Harrison parcel was originally part of the Frank Knapp homestead:

> "The Knapp Homestead cleared the parcel in 1906 to provide pasture for its stock (cattle, sheep and horses) operation. This prompted irrigation of the property using impact sprinklers. The clearing left islands of trees in the pasture to provide shade to the animals. In 1906 there were several apple trees planted on the upstream side of the property that did not fair well due to amount of sand in the soil.

The pasture transitioned into the Kellogg Mill Pond in 1914 and continued to operate as the mill pond until 1915. I have provided a historic photo depicting the cleared area and the Mill Dam. In 1921 Frank Knapp passed and the property was sold to Davenport Realtors. I purchased the property in 1975 and planted 14 pear trees which are depicted in the attached picture. The property has since been actively planted with pear trees."

Historical aerial photographs taken in 1945, 1962, and 1979 show what appear to be a mixture of vegetative cover and uncovered land. It is possible these photos depict the pasture and "islands of trees" mentioned in Conard Petersen's statement. Historical aerial photographs taken in 1998, 2004, 2005, and 2006 indicate the parcel was planted with rows of orchard. The apparent irrigated lands on the Harrison property include approximately 15.9 acres of orchard and 2.3 acres of turf.

Susan Summerfield

An April 6, 2009 affidavit signed by Michael Summerfield asserts that water from the H-D Ditch has historically been used to irrigate approximately 7.5 acres of orchard and approximately 6.6 acres of pasture and turf on the Summerfield parcel (Parcel No. 252014130050):

> "The following letter is to clarify your questions regarding my 18.5 acre Parcel (252014130050). The Knapp Homestead cleared the parcel in 1906 to provide pasture for its stock (cattle, sheep and horses) operation. This prompted irrigation of the property using impact sprinklers and small trenches. The Hannan-Detwiler Ditch was used for irrigation of the fields. The fields above the ditch were provided water through the use of RAM Pumps, a type of suction pump that initiated flow. Several of the long-time landowners in the valley will attest to this method of irrigation."

Historical aerial photography suggests irrigation of orchard and turf occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Ronald Mullek

Mr. Mullek has historically used water from the H-D Ditch to irrigate approximately 1.8 acres of turf on his parcel (Chelan Co. Parcel No. 252014110070). Mr. Mullek shares a turnout from the H-D Ditch with Mr. Harris, consisting of a 3 hp Century motor and pump. Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Ed Harris

Mr. Harris has historically used water from the H-D Ditch to irrigate approximately 3 acres of orchard on his parcel (Chelan Co. Parcel No. 252014110200). Mr. Harris shares a turnout with Mr. Mullek. Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Peter Dauer

Mr. Dauer historically has used water from the H-D Ditch to irrigate approximately 0.7 acres of turf on his parcel (Chelan Co. Parcel No. 252014140105). Mr. Dauer, Mr. Peter, Bill Small and Ms. Banks share the same turnout from the H-D Ditch, consisting of a 10 hp motor and pump. Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Joseph Peter

Mr. Peter has historically used water from the H-D Ditch to irrigated approximately 1.2 acres of turf on his parcel (Chelan Co. Parcel No. 252014110250). Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

A Warranty Deed for the parcel dated August 20, 1963 contains language regarding the use of H-D Ditch water on the parcel: "TOGETHER with five-sixteenths of one share in the Knapp-Hannan Irrigation Ditch, reserving to grantors the right to use of existing pipeline across sold premises (not exclusive) for the carrying of one-eighth of one share of water for irrigation purposes of other lands of grantors for which grantors are to pay their pro rata share of all costs of maintenance of said pipeline, repair or replacement of the same." The "Knapp-Hannan Irrigation Ditch" is another name by which historical documents reference the H-D Ditch. The Warranty Deed language suggests that water from the H-D Ditch has been beneficially used on the parcel.

Tonya Banks

Ms. Banks has historically used water from the H-D Ditch to irrigate approximately 0.5 acres of turf on her parcels (Chelan Co. Parcel Nos. 252013220100 and 252014110300). Historical aerial photography suggests irrigation of orchard occurred on the parcel in 1945, 1962, 1979, 1998, 2004, 2005, and 2006.

Five of the sixteen H-D Ditch users have submitted separate applications for change to Ecology, each proposing to change from the H-D Ditch POD to POWs, as described below. The proposed changes are the subject of separate reports of examination.

Small Brothers Orchards, Inc.

Small Brothers Orchards Inc., represented by Jim Small, has historically used water from the H-D Ditch to irrigate approximately 23 acres of orchard on three parcels (Chelan Co. Parcel Nos. 252013230150, 252013230100, and 252013240100). In Change Application No. CS4-WRC069703CL@1, Small Brothers Orchards, Inc. proposes changing from the H-D Ditch POD to two wells on the Small Brothers Orchards, Inc. land, eliminating all diversions from the H-D Ditch.

Betty Tyler

Ms. Tyler has historically used H-D Ditch water for the irrigation of approximately 0.7 acres of turf on her property (Chelan Co. Parcel No.252010440100). In Change Application No. CS4-WRC069703CL@2, Ms. Tyler proposes changing from the H-D Ditch POD to a well on her property, eliminating her diversion from the H-D Ditch and allowing her to withdraw water for irrigation purposes from the POW.

Michael Grubbs

Mr. Grubbs has historically used H-D Ditch water to irrigated approximately 13.6 acres of orchard on his property (Chelan Co. Parcel No.252013230200). In Change Application No. CS4-WRC069703CL@3, Mr. Grubbs proposes changing from the H-D Ditch POD to a well on his parcel, eliminating all diversions from the H-D Ditch.

Keystone Ranch

Keystone Ranch, represented by Gail and Dale Foreman, has historically used H-D Ditch water to irrigate approximately 73.9 acres of orchard on the property (Chelan Co. Parcel No.252118230050). In Change Application No. CS4-WRC069703@4, Keystone Ranch proposes changing from the H-D Ditch POD to an existing downstream POD and two wells in the orchard, eliminating all diversions from the H-D Ditch POD.

William Small

Mr. Small has historically used H-D Ditch water to irrigate approximately 6.3 acres of orchard on his farm (Chelan Co. Parcel Nos.252014140100, 252014140115, and 252014140110). In Change Application No. CS4-WRC069703@5, Mr. Small proposes changing from the H-D Ditch to a well to eliminate all diversions from the H-D Ditch POD and allowing Mr. Small to withdraw water for irrigation purposes from the well.

Proposed Use

Claim No. 069703 asserts a water right used for irrigation purposes. The Notice of Appropriation dated October 19, 1903 states the water is used for "irrigation, stock and domestic purposes, and for mining and milling purposes and for the purpose of creating power." The site investigation and conversations with applicants indicate that over recent history water has been used for irrigation purposes exclusively. No power generating facilities exist within the place of use, nor do any of the users conduct mining, milling, or stockwatering with the water provided by the H-D Ditch. All residences within the place of use withdraw domestic water from wells, rather than the H-D Ditch.

Reasonable Use and Efficiency

The Washington State Supreme Court in *Ecology v. Grimes* has previously ruled on "reasonable" use of water. The question of reasonable use of water is germane to this application as the request is to change from an historic and relatively inefficient irrigation system to a new, far more efficient irrigation system. For example, the amounts of water reasonable for irrigating lands by way of an unlined earthen ditch and flood irrigation are greater than the amounts of water reasonably necessary for irrigating lands by pumping water through an enclosed pipe and then distributing it on a field with a center pivot sprinkler system. The use of water in excess of what is reasonable for the proposed beneficial use would constitute waste, which is prohibited by RCW 90.03.005.

During the late 19th century, lands were first irrigated in the Entiat River basin through the use of gravity-fed irrigation systems. Flood and rill irrigation were the primary methods of on-farm irrigation during this time period. As the availability of electricity spread in the 20th century, an increasing number of electric pumps were used to provide irrigation water. Today, the customary form of on-farm irrigation in the Entiat River consists of electric pumps delivering water to a combination of under-tree or over-tree impact sprinklers, or micro-spray undertree sprinklers. During the site visit, the applicants' were observed using a combination of these types of on-farm

irrigation systems. The age of applicants' irrigation systems varies, depending on how recently new fruit trees were planted and irrigation upgrades occurred. Ecology Water Resources Guidance 1210 lists the range of efficiencies for the irrigation systems used by the applicants. A discussion of on-farm irrigation efficiency is included in *Annual Quantity (Qa)* section of this report.

Water Quantities

No records of the annual quantity (Qa) or instantaneous quantity (Qi) of water diverted are available for the H-D Ditch POD. Additionally, turnouts from the H-D Ditch have never been metered; therefore, there is limited historical record of the instantaneous or annual quantities of water beneficially used by individual users.

The H-D Ditch is physically incapable of diverting the instantaneous diversion rate of 900 cfs as asserted by Claim No. 069703 and the 1903 Notice of Appropriation of Water. Flow measurements taken at Ardinvoir (USGS Gauge No. 12452800) indicate that flows in the Entiat River at the H-D Ditch POD do not exceed 900 cfs for a portion of the irrigation season.

As part of the change investigation process, a tentative determination of the extent and validity of the entire claim must be conducted to ensure the water right is not enlarged by the proposed change.[2] First, the instantaneous quantity and the annual quantity of water diverted under the entire claim must be established; these are the total water quantities used by all users of the H-D Ditch. Then, the quantities for each of the eleven users switching to the K-W POD must be identified; these are the water quantities proposed for change in Change Application No. CS4-069703CL – the subject of this report. Lastly, the remaining quantities of water must be identified that are appurtenant to the parcels owned by the H-D Ditch users that propose changing to POWs; these changes are proposed in Change Application Nos. CS4-069703CL@1 through @5 – the subject of other investigations.

Instantaneous Quantity (Qi)

Several studies were conducted on the H-D Ditch during the design of the project:

- *2003 Entiat River Gain Loss Study* –Measurements were conducted on September 25-28, 2002, at various locations on the Entiat River and the Mad River, a tributary of the Entiat River. The objective of the study was to determine the surface water contributions and losses to the mainstems of both rivers and to identify reaches where surface-water/ground-water interchanges were taking place. A measurement taken at the H-D Ditch POD indicated that 2.51 cfs was diverted; a measurement of the H-D Ditch fish bypass indicated that 0.29 cfs was used for bypass flow. Diversions into the H-D Ditch system were calculated as 2.22 cfs at the time of measurement.

- *2006 Predesign Memorandum* – In September 2006, the United State Bureau of Reclamation released a Predesign Memorandum for the Knapp-Wham/ Hannan-Detwiler Consolidation Project. As part of that memorandum, the total amount of water turned out from the H-D Ditch system was calculated at 3.36 cfs, based on acreage and use. It is not clear in the memorandum whether this calculation was based on physical gauging or a paper calculation using water duty and irrigated acreage. Two "system measurements" are included in the report; however, the H-D POD diversion rate was not measured.

- *2008 Cascadia Conservation District (CCD) data* – CCD Field staff conducted several measurements of the H-D Ditch throughout the 2008 irrigation season to estimate ditch losses due to in-ground seepage. During the five measurements all turnouts from the H-D Ditch were stopped. Ditch flow at H-D Ditch fish screen was recorded during each measurement; flows varied throughout the season between a low of 1.41 cfs and a high of 2.09 cfs.

At the time of the 2008 H-D Ditch measurement, several of the H-D Ditch users had modified their irrigation systems and begun diverting water solely from the K-W Ditch. In effect, theses users (Conard Petersen, Mark Petersen, Belvin Gollaher, and Michael Hansen) conducted unauthorized, or *de facto*, changes from the H-D Ditch POD to the K-W Ditch POD. The 2008 H-D Ditch measurements underestimated the maximum rate of instantaneous diversion because these four users were irrigating their combined 26.7 acres of orchard with water diverted at the K-W Ditch POD.

Ecology Water Resources Program Policy No. 1120 states that in situations where *de facto* water right changes have occurred Ecology considers whether the unauthorized use of water is considered a beneficial use of water. The tentative determination of the validity and extent of a water right may find the portion, or entirety, of a right put to unauthorized use eligible for change if the water has been put to beneficial use, and other statutory requirements have been fulfilled. Irrigation is defined in statute as a beneficial use of water (RCW 90.54.020(1)).

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[2] RCW 90.03.380; Okanogan Wilderness v. Town of Twisp, 133 Wn.2d 769, 947 P.2d 732 (1997); R.D. Merrill Co. v. Pollution Bd., 137 Wn.2d 118, 969 P.2d 459 (1999).

The H-D Ditch flow data listed above does not adequately represent the total maximum instantaneous rate of diversion of the H-D Ditch; flow data was not continuously collected over multiple irrigation seasons and several users have conducted *de facto* changes in POD. Thus the instantaneous rate of diversion of the H-D Ditch POD is assumed to be significantly less than 900 cfs.

Based on historical data listed above and an evaluation of customary irrigation practices in the Entiat River valley[3], a reasonable maximum Qi at the H-D POD is 4.1 cfs; this is an estimate of the maximum instantaneous diversion of water during peak irrigation season based on the total irrigated acreage and crop type irrigated by the users of the H-D Ditch. The 4.1 cfs Qi corresponds to an instantaneous water duty of 10 gallons per minute per acre.

For this investigation, it is necessary to quantify the Qi each user has historically put to beneficial use, to ensure the future use will not exceed the historical use. Proportionally dividing the maximum Qi based on the two user groups, based on irrigated acreage, results in use of 1.49 cfs by the eleven users proposing to change to the K-W POD and 2.61 cfs by the proposed POW users. Within the K-W Ditch system, the Qi would be divided among the eleven applicants at their respective turnouts. The division of the Qi amongst users would be the responsibility of the ditch users.

Annual Quantity (Qa)

Part of this investigation includes quantifying the historical annual beneficial use of the water right proposed for change. In the absence of water meter records, an investigator may use aerial photographs, irrigation system capacity, and crop irrigation requirements (CIRs) from the Washington Irrigation Guide to make a tentative determination of beneficial use of the water right, based on types of activities for which the water was used and limited by reasonable use of water.[4] CIR data from Chapter 173-546 WAC is often used to make a tentative determination of the annual quantity of water used. The per-acre CIR for fruit trees in the Entiat region is 37.27 acre-inches per year (ac-in/yr), or 3.11 ac-ft/yr; the CIR for turf grass is 31.68 ac-in/yr, or 2.64 ac-ft/yr.

All sixteen historic H-D Ditch users irrigate a total of approximately 170.7 acres of orchard and 13.8 acres of turf, a total of 184.5 acres of irrigation. Solid-set undertree and overtree sprinklers predominantly are used to irrigate the parcels. A 65-percent application efficiency rate is reasonable based on the age and condition of this type of irrigation system, and this rate is included in the calculation of the total irrigation requirement (TIR). The TIR for the orchard is calculated by dividing the CIR by the 65-percent application efficiency of the irrigation systems. The TIR for the H-D Ditch orchards calculates to be 4.78 acre-feet per acre (ac-ft/ac), or 815.9 ac-ft/yr for 170.7 acres of orchard. The TIR for the turf calculates to be 4.06 ac-ft/ac, or 56.0 ac-ft/yr for 13.8 acres of turf. The total TIR for the sixteen H-D Ditch users sums to be 872.0 ac-ft/yr (acreage and Qa quantities are rounded up to one decimal place to represent a practically measureable quantity).

The following tables show the historical beneficial use of water among the H-D users; Table 1 shows the eleven users that propose changing to the K-W POD (the subject of this investigation) and Table 2 shows the five users that propose changing to separate POWs (the subject of five separate ROEs), and a total of all irrigation under Claim No. 069703.

Table 2: H-D POD to K-W POD Changes

H-D User	*Crop*	*Acres*	*Qa (ac-ft/yr)*	*Qi (cfs)*
Banks	Turf	0.5	2.0	*
Conard Petersen	Orchard	4.8	22.9	*
Dauer	Turf	0.7	2.8	*
Gollaher Family	Orchard	7.2	34.4	*
Hansen	Orchard	7.6	36.3	*
Harris	Orchard	3.0	14.3	*
Harrison	Orchard	15.9	76.0	*
	Turf	2.3	9.3	*
Martin Petersen	Orchard	7.9	37.8	*
Mullek	Turf	1.8	7.3	*
Peter	Turf	1.2	4.9	*
Summerfield	Orchard	7.5	35.9	*
	Turf	6.6	26.8	*
Sum		**67.0**	**310.8**	**1.49 cfs[5]**

[3] Described in the Reasonable Use and Efficiency section of this report.

[4] Ecology Water Resource Program Policies 1210, 1120, and 1200; see Ecology v. Grimes, 121 Wn.2d 459, 852 P.2d 1044 (1993)

[5] Table 2 – The eleven H-D Ditch users propose s combined diversion at the K-W Ditch POD. If approved, Ecology would likely regulate the instantaneous rate of diversion for all eleven users at the K-W Ditch POD, rather than each user's turnout from the K-W Ditch.

Table 3 H-D POD to POW Changes

H-D User	*Crop*	*Acres*	*Qa (ac-ft/yr)*	*Qi (cfs)*
Michael Grubbs	Orchard	13.6	65.0	133
Keystone Ranch [6]	Orchard	73.9	353.2	700
Small Bros Orchards, Inc.	Orchard	23.0	109.9	216
William Small	Orchard	6.3	30.1	63
Tyler	Turf	0.7	2.8	7
Sum		**117.5**	**561.2**	**1156.4 gpm**
Table 1 & 2 Sum[7]		***184.5***	***872***	***4.07 cfs***

As detailed in Table 1, the annual quantity and total acreage that is proposed for change in Change Application No. CS4-069703CL is 310.8 ac-ft/yr for the irrigation of 67.0 acres.

Development Scheduling

The new K-W Ditch POD and headworks were constructed in 2009. The H-D Ditch was used through the 2009 irrigation season to accommodate construction of new turnouts. The H-D Ditch has not been in operation since 2010. The development schedule listed on the first page of this report accommodates the planned construction schedule.

Other Rights Appurtenant to and Near the Place of Use

One water right certificate, one water right permit, and fifteen claims appear also to be appurtenant to the POU of Claim No. 069703. The following is a list of the water rights and associated POUs. Narrative descriptions of each right are included in Appendix B of this report.

Table 4: Other Rights Appurtenant to POU

Document No.	Name	Filing or Priority Date	¼ ¼	Sec.	Twp.	Rge. E.W.M
WRC069699	*Keystone Fruit Company, Inc*	6/30/1974	SW NW	18	25	21
WRC069700	*Keystone Fruit Company, Inc*	6/30/1974		18	25	21
WRC069701	*Keystone Fruit Company, Inc*	6/30/1974		18	25	21
WRC069702	*Keystone Fruit Company, Inc*	6/30/1974		13	25	20
WRC117524	*Donald J. Deppner and Beryle*	6/25/1974	NE NE	14	25	20
WRC117525	*Donald J. Deppner and Beryle*	6/25/1974	NE NE	14	25	20
WRC117526	*Donald J. Deppner and Beryle*	6/25/1974	NE NE	14	25	20
WRC160189	*Robert W. Hannan*	6/30/1974	NE NE	14	25	20
WRC117798	*Davenport Inc Realtors & Preview Homes, Inc.*	6/24/1974	NW NE	14	25	20
WRC097212	*Oscar O. Auvil*	6/6/1974	NE NE	14	25	20
WRC136616	*Belvin E. Gollaher*	6/26/1974	NW	14	25	20
WRC148901	*Jane Small*	UNK	UNK	UNK	UNK	UNK
WRC98003494	*Michael Summerfield*	6/29/1974	SE	14	25	20
WRC082487	*George R. Small Orchard Inc.*	4/16/1974	NE	13	25	20
WRC082486	*George R. Small Orchard Inc.*	4/16/1974		13	25	20
WRC149003	*Small Brothers Inc.*	6/30/1974	NW	13	25	20
WRC151348	*Small Brothers Inc.*	6/30/1974	NW	13	25	20
WRC129912	*Conard Petersen*	2/25/1975		14	25	20
GWC25856	*J. K. McArthur and Son, Inc.*	4/18/1978	SW NE	14	25	20
SWC31206P	*Michael Summerfield*	3/30/1992		14	25	20

Hydrologic/Hydrogeologic Evaluation

Located in Chelan County, the Entiat Basin (WRIA 46) encompasses both the Entiat River and the Mad River watersheds and other tributaries, consisting of approximately 305,650 acres. The Entiat River flows 43-miles in a southeasterly direction from its headwaters in glaciated basins 4.5 miles east of the Cascade crest to its confluence with the Columbia River near the city of Entiat. Numerous tributaries flow into the Entiat River during its course

[6] Change Application No. CS4-069703CL@4 was amended to propose a change to two POWs and a POD.

[7] Table 3- Acreage and Qa quantities are rounded up to one decimal place to represent a measureable quantity.

to the confluence at Columbia River mile 483, approximately 20 miles north of Wenatchee. The topography of the area varies between rolling hills near the river mouth to steep uplifted mountains near the headwaters, with glaciated features most evident in the upper half of the Entiat Basin. Alluvial fans are present where tributaries transported eroded soil and bedrock downhill to the Entiat River floodplain. Mean annual runoff for the Entiat Basin varies widely throughout the period of measurement, indicating a snowmelt dominated system that relies on the alluvial and glacially derived sediments in the valley bottoms as primary storage for groundwater in the Entiat Basin (EWPU 2004).

No significant streams flow into the Entiat River in the 4,200-foot reach between the H-D Ditch POD and the K-W Ditch POD (between river mile 5 and 6), nor does the reach significantly gain or lose flow, according to a gain/loss study conducted in 2002 (CCD 2002). The proposed POD is located at approximate river mile 6 of the Entiat River, about 1,600 feet southeast of the confluence of Roaring Creek into the Entiat River. The river is approximately 100 feet wide at the proposed POD, flowing from the northwest to the southeast. The place of use is located within the Entiat River valley, which is 700 to 1,800 feet wide in the vicinity.

Impairment Considerations

RCW 90.03.380 provides that a perfected water right may be changed in several ways, provided that the change will not impair the right of another water right holder. This change request would move the POD upstream. When investigating a change in POD to an upstream POD location, the potential for impairment of water users in the intervening reach must be considered including the potential of impairment of instream flow rights.

Impairment may result from an action that:

- adversely impacts the physical availability of water for a beneficial use that is entitled to protection, including earlier filed applications, or
- prevents the beneficial use of the water to which a water right holder is entitled, or
- adversely affects the flow of a surface water course at a time when the flows are at or below instream flows levels established by rule, or
- degrades the quality of a groundwater source such that an existing user of that source is prevented from the beneficial use of water groundwater.[8]

Instream Flows in the Entiat River

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).

Adopted on September 3, 2005, Chapter 173-546 WAC established a minimum instream flow for the three stream management units in the Entiat River Basin WRIA 46. Both the historic H-D Ditch POD and proposed POD are located within the Lower Entiat stream management unit that extends from the confluence of the Entiat and Columbia Rivers to Entiat river mile 16.2. The October 19, 1903 claimed date of first water use of Claim No. 069703 predates the September 3, 2005 priority date of the minimum instream flow; therefore, the diversion asserted under the claim is not subject to curtailment when minimum instream flow levels are not met.

A surface water right conditioned with instream flows may be impaired if a proposed water right 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 at the instream flow gauging station. No instream flow gauging station exists in the 4,200 foot reach between the historic POD and the proposed POD; therefore, a reduction of streamflow of 1.49 cfs in the reach would not affect an instream flow gauging station or water rights conditioned with instream flows.

Existing Water Rights

The proposed POD is approximately 4,200 feet upstream from the historic H-D Ditch POD. Information from Cascadia Conservation District, the Department of Fish and Wildlife, and Ecology indicates that no surface water diversions are in operation in the 4,200 foot reach between the historic H-D Ditch POD and the proposed POD. The water users in the reach appear to be utilizing wells for irrigation, stockwater, and domestic use purposes.

[8] See Water Resource Program Policy 1200 (POL-1200) and Chapter 173-150 WAC

There is no history of curtailment of water rights due to unavailability of water in the Entiat Basin. As there are no PODs in the 4,200 foot reach, groundwater wells are the source of water for right holders in the reach. If the proposed change in POD was approved, it is highly unlikely that a reduction of streamflow of 1.49 cfs in the Entiat River would alter the hydrogeologic regime in the surrounding area sufficiently to interrupt or interfere with the physical availability of water for an adequately constructed groundwater withdrawal facility of an existing right.

Any diversion asserted under Claim No. 069703 is subject to future adjudication based on the priority system, whereby senior rights must be satisfied before a junior right may divert water. In order to preserve the integrity of the priority system when a POD is changed to an upstream POD, water use at the upstream POD must be managed in the same manner as the originally claimed POD. If a situation occurs in which the priority system mandates that the diversions under Claim No. 069703 must be curtailed, the portion of Claim No. 069703 being diverted at the newly authorized POD must be curtailed until all senior water rights are fulfilled.

Fisheries and Habitat Impacts

In a letter to Ecology dated March 4, 2008, Washington Department of Fish and Wildlife (WDFW) Instream Flow Biologist Paul La Riviere describes the impacts and benefits of the proposed change in POD:

> "The project will consolidate two major irrigation systems in the lower Entiat River. Despite an upstream POD move (0.8 miles) the loss of flow in the mainstem will be offset by an increase in flow in the 1,200-ft side channel, non-consumptive (NCU) water savings in the primary reach (estimate is between two and six cfs for 3.26 miles), and additional instream habitat structures (rock weirs, [large woody debris] placed along the mainstem and in the side channel) that will improve some habitat and the hydro-geologic conditions of the stream" (Page 2).
>
> "The WDFW Water Team supports the funding of the POD consolidation project provided that the [maintenance of] the side channel habitat features is a long-term priority for the cooperating landowner and project managers. We feel this is essential. [...] Flow restoration and maintenance, especially during the winter period, may be the most productive outcome for fish life of the project. The restoration of floodplain functions by operating and maintaining the H-D side channel as a natural habitat helps to address major deficiencies that were consequences of the 1948 and 1970 stream re-alignment activities" (Page 4).

WDFW identified an additional benefit of the proposed change in POD as the elimination of annual instream POD maintenance and the associated habitat disturbance; resulting in a likely reduction in juvenile fish mortality, redd disturbance, and sediment impacts. WDFW did not identify any adverse impacts to fish rearing or recreational activities associated with the proposed change in POD.

CONCLUSIONS

Based on careful consideration of the information presented in this report, the author makes the following conclusions regarding the proposed changes in Change Application No. CS4-069703CL:

- The portion of Claim No. 069703 that has been put to beneficial use by the applicants and is available for change is 1.49 cfs, 310.9 acre-feet per year, for the irrigation of approximately 67 acres from April 1 to October 31.
- The subject claim will not be enlarged by approving a change in point of diversion. The quantity of water diverted at the authorized POD is limited to the quantity of water historically put to beneficial use, as listed on the cover page of this report.
- A change in POD is allowed by law under RCW 90.03.380.
- The proposed POD diverts water from the same source of water as the originally claimed POD.
- The proposed change will not impair existing water rights.

RECOMMENDATIONS

Based on the above investigation and conclusions, the author recommends that the request for change to a portion of Claim No. 069703 be approved in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2, et seq.

Purpose of Use and Authorized Quantities

The author recommends that 1.49 cfs, 310.9 acre-feet per year, for the irrigation of approximately 67 acres April 1 through October 31 are available for change in point of diversion. The amount of water recommended is a maximum limit and the water users may only use that amount of water within the specified limit that is reasonable and beneficial.

Point of Diversion

The author recommends that the point of diversion for Claim No. 069703 be changed to a point on the Entiat River 2,570 feet west and 75 feet south of the NE corner of Section 10, within the NW¼, NE¼ of Section 10, Township 25 North, Range 20 E.W.M.

Place of Use

As described on Page 1 and Appendix A of this Report of Examination.

Kelsey J Collins
Report Writer

9/23/13
Date

REFERENCES

Bureau of Reclamation (Reclamation). "Predesign Memorandum: Knapp-Wham/ Hannan-Detwiler Consolidation Project". September 2006.

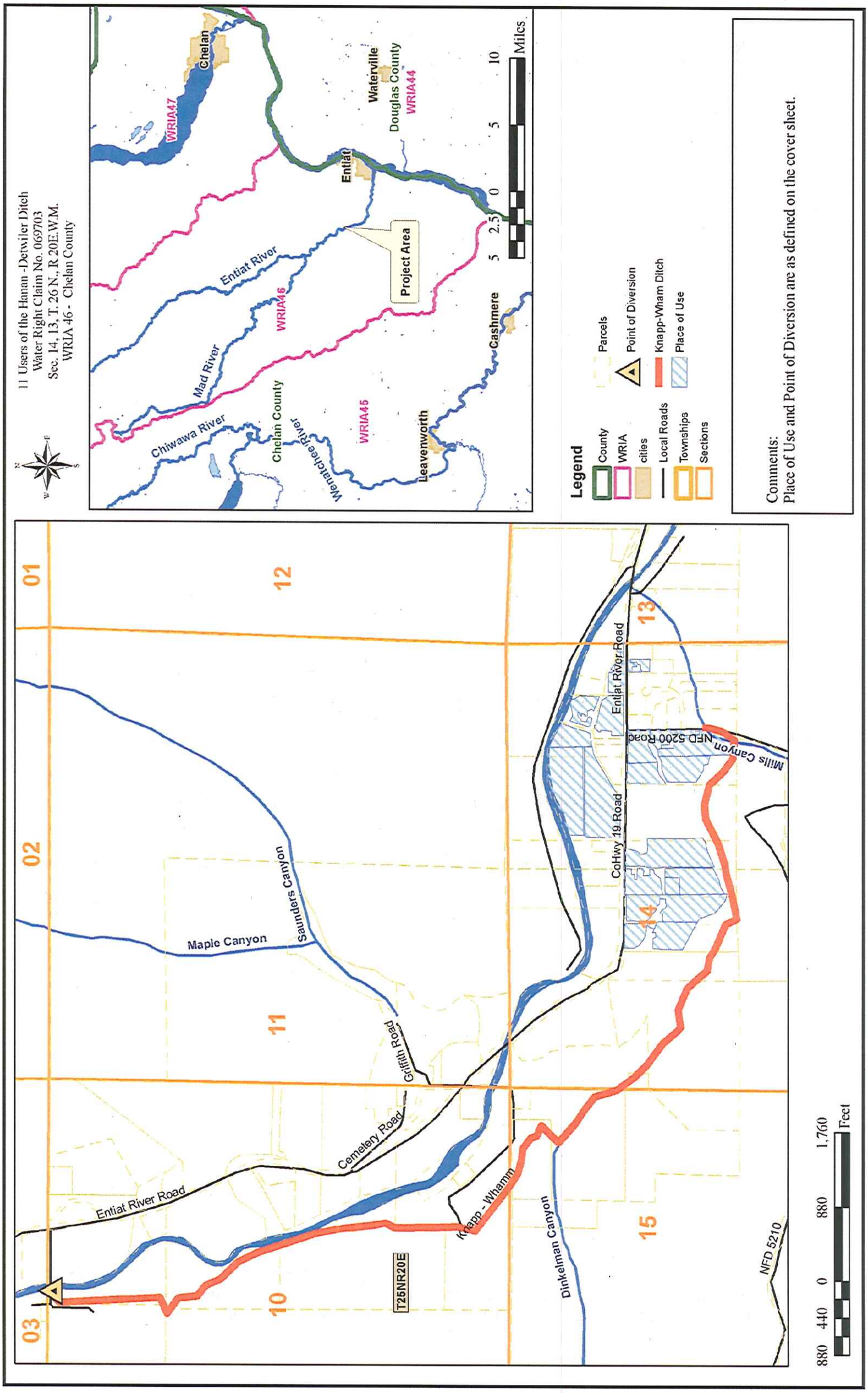
Cascadia Conservation District. *Entiat Subbasin Gain-Loss Analysis*. January 2003. http://www.cascadiacd.org/index.php?page_id=257.

Cascadia Conservation District. "Flow measurement data for Crystal Spring." October 2008. Digital database file.

Entiat Watershed Planning Unit. *Entiat WRIA 46 Plan & Appendices*. October 2004. http://www.cascadiacd.org/index.php?page_id=255.

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.

Attachment 1



APPENDIX A

The following are detailed descriptions of the parcels to which portions of Claim No. 069703 are appurtenant:

Harris

Chelan Co. Parcel No. 252014110200:

Part of the Northeast quarter of the Northeast quarter of Section 14, Township 25 North, Range 20, E.W.M., Chelan County, Washington, described as follows:

> Beginning at a point on the South line of said subdivision 1098.4 feet West of the Southeast corner of the North half of the Northeast quarter of said section; thence running North 327 feet to a stone monument; thence turning to the right and run Northeasterly along the brow of a hill 87.5 feet to a concrete cylinder; thence Southeasterly along the brow of the hill approximately 440 feet to a stone monument; being in the Northwest corner of the McCoy tract as described in Book 244, Page 341, Chelan County records; thence South along the West line of the said McCoy tract to a point in the South line of the North half of the Northeast quarter of said Section 14; thence West on the South line to the point of beginning. Less that portion of the above described tract taken for county highway purposes.

Banks

Parcel A (Chelan Co. Parcel No. 252013220100):

A Tract of land situate in the Northwest quarter of the Northwest quarter of Section 13, Township 25 North, Range 20 E.W.M, Chelan County, Washington, described as follows:

> Beginning at the Southwest corner of said Northwest quarter of the Northwest quarter; thence North along the West section line, 63.4 feet; thence South 85°7' East, 120.9 feet; thence South 66°37' East, 112.2 feet to an intersection with the South line of said subdivision; thence West along said South line, 219.3 feet to the point of beginning, except therefrom that portion conveyed to Chelan County for road purposes by deed recorded under auditor's file no. 440097.

Parcel B (Chelan Co. Parcel No. 252014110300):

A portion of Section 14, Township 25 N., R. 20 E.W.M., Chelan County, Washington, described as follows:

> Beginning at a point on the East line of said section 14, a distance of 1284.4 feet South of the corner common to Sections 11, 12, 13, 14, T. 25 N., R. 20 E.W.M.; thence North 79°50' West 185.5 feet to a stone monument; thence South along the East line of a tract conveyed to Joseph B. Peter, et ux., to a point on the South line of the Northeast quarter of the Northeast quarter of section 14; thence East on the said South line to the East line of said Section 14; thence North along said East line to the point of beginning, except therefrom that portion conveyed to Chelan County for road purposes by deed recorded under auditor's file no. 440097.

Mullek

Chelan Co. Parcel No. 252014110070:

Lot 2, as described in and delineated on Deppner Short Plat No. 797, Chelan County, Washington, recorded August 21, 1981, under Auditor's No. 828237, being a portion of the Northeast quarter of the Northeast quarter of Section 14, Township 25 North, Range 20 E.W.M., Chelan County, Washington.

Peter

Chelan Co. Parcel No. 252014110250:

Part of the Northeast quarter of the Northeast quarter of Section 14, Township 25 North, Range 20 E.W.M., Chelan County, Washington, described as follows:

> Beginning at a point on the South line of said subdivision 600 feet West of the Southeast corner of the North half of the Northeast quarter of said section; thence north along the east line of Chelan Co. Parcel No. 252014110200 for a distance of 230 feet; thence S82°20'E 267 feet; thence S56°4'20" E 180 feet; thence South 94 feet to the south line of said subdivision; thence west to the point of beginning.

Dauer

Chelan Co. Parcel No. 252014140105:

Lot 1 of Ed Harris Short Plat No. 1360, according to the Short Plat thereof recorded March 17, 1986, in Book SP-3, Page 81, Chelan County, Washington.

Summerfield

Chelan Co. Parcel No. 252014130050:

The West half of the West half of the Southeast quarter of the Northeast quarter and the East half of the East half of the Southwest quarter of the Northeast quarter of Section 14, Township 25 North, Range 20 E.W.M., Chelan County EXCEPT that portion thereof conveyed to Chelan County for highway purposes by instrument recorded October 23, 1950, under Auditor's No. 440107.

Harrison

Parcel A (Chelan Co. Parcel No. 252014120050):

That portion of the East half of the West half of the Northwest quarter of the Northeast quarter and of the East half of the Northwest quarter of the Northeast quarter of Section 14, Township 25 North, Range 20 E.W.M., Chelan County Washington, laying South of the following described line:

> BEGINNING at a point on the West line of said East half of the West half of the Northwest quarter of the Northeast quarter which is located 616.6 feet North of the Southwest corner of said Subdivision; thence North 72°58' East a distance of 767 feet; thence North 79°37'30" East a distance of 274 feet, more or less, to a point of the East line of said East half of the Northwest quarter of the Northeast quarter of said Section 14 and the terminus of said line,
>
> EXCEPT the Westerly 30 feet of said East half of the West half of the Northwest quarter of the Northeast quarter of said Section,
>
> AND EXCEPT that portion of the East half of the Northwest quarter of the Northeast quarter of said Section, described as follows:
>
> > COMMENCING at the Southeast corner of the Northwest quarter of the Northeast quarter and run North along the East line thereof, 281.7 feet to a stone monument; thence S62°37'W left and run 609 feet to the South line of the North half of the Northeast quarter of said Section 14; thence East along the South line 540 feet, more or less, to the point of beginning.

Parcel B (Chelan Co. Parcel No. 252014110060):

That portion of the Northeast quarter of the Northeast quarter of Section 14, Township 25 North, Range 20 E.W.M., which lies Southerly of the centerline of the Entiat River,

EXCEPT that portion lying Southerly of the following described line:

> COMMENCING at the Southwest corner of said Subdivision; thence running North for 281.7 feet, more or less, to a stone monument of the West line of said Subdivision and the true point of beginning; thence North 81°42' East for 222.9 feet, more or less, to a stone monument, which is North 327 feet and West 1098.4 feet from the Southeast corner of said Subdivision; thence running Northeasterly along the brow of a hill for 87.5 feet to a concrete cylinder hereinafter designated as Point "A"; thence continuing Easterly along the brow of the hill for approximately 235 to another concrete cylinder; thence running Southeasterly along the brow of the hill for approximately 223 feet to a stone monument; thence South 81°14' East for 250 feet to a stone monument; thence South 58°56' East for 176.6 feet to a stone monument; thence South 79°50' East for 185.5 feet, more or less, to a point of the East line of said Section 14, which is 1284.4 feet South of the corner common to Sections 11, 12, 13, 14 said Township and Range.

Also EXCEPT that portion of said Subdivision lying Easterly of the following described line:

> BEGINNING at the previously designated Point "A"; thence running North 15°41'11" East to the centerline of the Entiat River.

Hansen

Chelan Co. Parcel No. 252014130200:

The West half of the West half of the Southwest quarter of the Northeast quarter of Section 14, T. 25 N., R. 20 E.W.M., Chelan County, Washington.

Martin Petersen

Chelan Co. Parcel No. 252014240050:

The East half of the East half of the Southeast quarter of the Northwest quarter of Section 14, T. 25 N., R. 20 E.W.M.

Gollaher	Chelan Co. Parcel No. 252014240100: The West half of the East half of the Southeast quarter of the Northwest quarter of Section 14, Township 25 North, Range 20 E.W.M., containing 10 acres, more or less.
Conard Petersen	Chelan Co. Parcel No. 252014240150: The East half of the West half of the Southeast quarter of the Northwest quarter of Section 14, T. 25 N., R. 20 E.W.M., Chelan County, Washington, EXCEPT that portion conveyed to Chelan County for road right of way by deed recorded December 31, 1951, under Auditor's No. 453976.

APPENDIX B

Claim No. 069698– Keystone Fruit Company, Inc.

On June 30, 1974, Ecology assigned the above control number to a claim submitted by Keystone Fruit Company asserting a ground water right to 10 gpm, no stated annual quantity, for continuous domestic use and lawn irrigation for one home. The claimed date of first putting water to use is 1910. This claim is likely associated with a residence on the Keystone Ranch.

Claim No. 069699 – Keystone Fruit Company, Inc.

On June 30, 1974, Ecology assigned the above control number to a claim submitted by Keystone Fruit Company asserting a ground water right for 15 gpm, 1.5 ac-ft/yr, for continuous domestic, stock water, and the irrigation of 1 acre. The date of first putting water to use is 1940. The location of the POW is within SW¼NW¼ of Section 18, T. 25 N., R. 21 E.W.M. This claim may cover groundwater withdrawals for the residences on the Keystone Ranch.

Claim No. 069700 – Keystone Fruit Company Inc.

On June 30, 1974, Ecology assigned the above control number to a claim submitted by Keystone Fruit Company asserting a ground water right to 10 gpm, no stated annual quantity, for continuous domestic use and lawn irrigation for one home. The claimed date of first putting water to use is 1907. This claim likely is associated with the residence on the Keystone Ranch.

Claim No. 069701 – Keystone Fruit Company Inc.

On June 30, 1974, Ecology assigned the above control number to a claim submitted by Keystone Fruit Company asserting a surface water right to 300 gpm, 120 ac-ft/yr, for the irrigation of 30 acres and stock watering April through October. The claim states that 300 gpm, 76 ac-ft/yr, and 19 acres were currently irrigated at the time of filing. The claimed date of first putting water to use is 1956. It appears that the right asserted under Claim No. 069701 may not be valid, since the date of first use is later than the enactment of the 1917 Water Code. Authorization through the state permit application process is required for all new appropriations of surface water after the enactment of the Water Code.

Claim No. 069702 – Keystone Fruit Company, Inc.

On June 30, 1974, Ecology assigned the above control number to a claim submitted by Keystone Fruit Company asserting a surface water right to 2 cfs, no stated annual quantity, for the irrigation of 10 acres, domestic, stock watering, and a labor camp, continuously from springs and natural drainages in the Hannan – Keystone Canyon. A water right is asserted based on the riparian doctrine.

A "Notice of Appropriation of Water" No. 6837 dated October 19, 1903 in Chelan County Auditor's General Records Volume 41 Page 241 states S. R. Hannan "pled for record at request of Frank E. Knapp":

> "Notice is hereby given that the undersigned has appropriated, two (2) cubic-feet of Water per second of time, the same water to be taken out of the Hannan Canyon by ditch. Ditches or flumes, and other means, at a point where the present ditch known as the Hannan Ditch, is now taken out of the Hannan Canyon. Said point being near the Northwest corner of the Northeast quarter, of the Southeast quarter of Section Thirteen (13), Township Twenty five (25) North of Range twenty (20) E.W.M. which ditch runs and has been constructed in a North Easterly direction Running Across the North East quarter of Section thirteen (13), Township Twenty five (25) North of Range Twenty (20) E.W.M. And ending on the North West quarter of the Southwest quarter of Section Eighteen (18), Township Twenty five (25) North of Range Twenty one (21) Chelan Co. State of Washington.
>
> "Said water is to be appropriated for Irrigation Stock and Domestic purposes. And for Mining and Milling and for the purpose of creating Power.

"Notice is furthermore given that said ditch was constructed by the undersigned and by their grantors And said water has been diverted And used on the land belonging to the undersigned and the grantors Since Eighteen Ninety (1890) and has become Appurtenant to said land."

The POD in the notice is located on the Keystone Fruit Company land (Chelan Co. Parcel No.252118230050). The Hannan Canyon listed in the notice runs in a southwesterly direction from the NE¼SE¼ of Section 13, T. 25 N., R. 20 E.W.M.

Claim No. 117524 – Donald J. Deppner and Beryle

On February 4, 1975, Ecology assigned the above control number to a claim submitted by Donald J. Deppner and Beryle asserting a surface water right for 30 gpm, 8 ac-ft/yr, for irrigation of 2 acres from the Knapp-Wham Irrigation Ditch from May through September. The place of use of this claim appears to include a portion of the Harrison, Mullek, and Harris properties. The date of first putting water to use is July 1940; this claim may not be valid, since the date of first use is later than the enactment of the 1917 Water Code (Chapter 90.03 RCW). Authorization through the state permit application process is required for all new appropriations of surface water after the enactment of the Water Code.

Claim No. 117524 – Donald J. Deppner and Beryle

On February 4, 1975, Ecology assigned the above control number to a claim submitted by Donald J. Deppner and Beryle asserting a ground water right for 20 gpm, 2.5 ac-ft/yr, for continuous domestic supply. The place of use of this claim appears to include a portion of the Harrison, Mullek, and Harris properties. The date of first putting water to use is 1940. This claim may cover domestic water supply for a residence on one of the properties.

Claim No. 117526 – Donald J. Deppner and Beryle

On February 4, 1975, Ecology assigned the above control number to a claim submitted by Donald J. Deppner and Beryle asserting a surface water right for 40 gpm, 20 ac-ft/yr, for the irrigation of 6 acres from the Entiat River from May through September. The place of use of this claim appears to include a portion of the Harrison, Mullek, and Harris properties. The "presently used" quantities listed on the claim form are 20 gpm, 8 ac-ft/yr, 2 acres of irrigation. The claimed date of first putting water to use is June 1965; this claim may not be valid, since the date of first use is later than the enactment of the 1917 Water Code (Chapter 90.03 RCW). Authorization through the state permit application process is required for all new appropriations of surface water after the enactment of the Water Code.

Claim No. 160189 – Robert W. Hannan

On May 9, 1975, Ecology assigned the above control number to a claim submitted by Robert W. Hannan submitted asserting a surface water right for 0.16 cfs, 32 ac-ft/yr, for the irrigation of 8 acres from April to October. The place of use of this claim appears to include a portion of the Harrison, Mullek, and Harris properties. The date of first putting water to use is listed on the claim as "198"; this is a typographical error. The claimed POD is located within the NE¼NE¼ of Section 14, T. 25 N., R. 20 E.W.M. The place of use is described as "8 acres lying N of the Entiat River and sout (sic) of county rd". This is in clear error, since the county road is south of the river and there have never been irrigated acres north of the Entiat River in the POU area.

Claim No. 117798 – Davenport Inc Realtors & Preview Homes, Inc.

On February 5, 1975, Ecology assigned the above control number to a claim submitted by Davenport Inc. Realtors and Preview Homes, Inc. asserting a ground water right for 150 gpm, 60 ac-ft/yr, for the irrigation of 15 acres April through October. The place of use of this claim appears to include a portion of Mr. Harrison's property. The date of first putting water to use is 1930 and the POW is located within NW¼NE¼ of Section 14, T. 25 N., R. 20 E.W.M. On the claim form, the quantities of water and irrigated acres presently used are listed as none.

Claim No. 097212 – Oscar O. Auvil

On December 20, 1974, Ecology assigned the above control number to a claim submitted by Oscar O. Auvil asserting a ground water right for 3 gpm, 2 ac-ft/yr, for continuous domestic supply. The place of use of this claim appears to include a portion of Mr. Harris's property. The claimed date of first putting water to use is March 1940. The POW is located within the NE¼NE¼ of Section 14, T. 35 N., R. 20 E.W.M. It is not clear whether this claim addresses the domestic supply well for the Harris household or a neighbor.

Claim No. 136616 – Belvin E. Gollaher

On March 6, 1975 Ecology assigned the above control number to a claim submitted by Belvin E. Gollaher asserting a groundwater right for 10 gpm, 2 ac-ft/yr, for continuous domestic supply. The claimed date of first putting water to use is May 1916. The POW is located within the NW¼ of Section 14, T. 25 N., R. 20 E.W.M. The place of use of this claim appears to include a portion of the Gollaher's property. This claim likely addresses the domestic supply well for the Gallaher household.

Claim No. 148901 – Jane Small

Ecology's Water Rights Tracking System indicates that H. Jane Small asserting a groundwater right to 3 gpm, 2 ac-ft/yr, for continuous domestic supply. The POW location and date of first putting water to use are not available. The place of use of this claim appears to include the Small Brothers Orchards, Inc, property. An image of the claim was not available for this investigation to provide additional information.

Claim No. 301952 – Michael Summerfield

On June 29, 1998 Ecology assigned the above control number to a claim submitted by Michael Summerfield asserting a surface water right for 0.5 cfs, 90 ac-ft/yr, for the irrigation of 18 acres from April to October. The claimed source of water is the "Hannan Ditwyller Ditch" and the "Knapp Wham" Ditch. The claimed date of first water use is February 1891. The POD stated on the claim corresponds approximately to a point where the H-D Ditch crosses the Summerfield property. The place of use of this claim appears to include the Summerfield property. This appears to represent the Summerfield's claim to a portion of the H-D Ditch flow and may be duplicative of the Summerfield's portion of Claim No. 069703 that is the subject of this report.

Claim No. 082487 – George R. Small Orchard Inc.

On October 8, 1974 Ecology assigned the above control number to a claim submitted by George Small asserting a ground water right for 18 gpm, 3 ac-ft/yr, for continuous domestic water supply. The date of first water use is 1918 and the POW is located within the NE¼ of Section 13, T. 25 N., R. 20 E.W.M. The place of use of this claim appears to include the Small Brothers Orchards, Inc. property. This claim appears to cover domestic water use for the residence on the Small Brothers Orchards, Inc. property.

Claim No. 082486 – George R. Small Orchard Inc.

On October 8, 1974 Ecology assigned the above control number to a claim submitted by George Small asserting a surface water right for an undetermined amount of stockwater from a spring on the Small Brothers Orchards, Inc. property. The place of use of this claim appears to include the Small Brothers Orchard property. During the site visit, no stock was present on the Small Brothers Orchards, Inc. property. Recent aerial photography corroborates the absence of stock on the parcel.

Claim No. 149003 – Small Brothers Inc.

On March 21, 1975 Ecology assigned the above control number to a claim submitted by a representative of Small Brothers Inc. asserting a ground water right for 200 gpm, 160 ac-ft/yr, for continuous industrial refrigeration from a well located within the NW¼ of Section 13, T. 25 N., R. 20 E.W.M. The claimed date of first putting water to use is "pre 1950". An apple warehouse exists on the property; however, the warehouse appears to be used for dry storage rather than industrial refrigeration. This claim may not be valid if the date of first use is later than the enactment of the 1945 Ground Water Code (Chapter 90.44 RCW). The place of use of this claim appears to include the Small Brothers Orchards, Inc. property. Authorization through the state permit application process is required for all new appropriations of groundwater after the enactment of the Ground Water Code.

Claim No. 151348 – Small Brothers Inc.

On March 25, 1975 Ecology assigned the above control number to a claim submitted by representative of Small Brothers Inc. asserting a ground water right for 30 gpm, 20 ac-ft/yr, for continuous domestic supply for 2 homes and 8 cabins from a well within the NW¼ of Section 13, T. 25 N., R. 20 E.W.M. The claimed date of first putting water to use is "pre 1920". The place of use of this claim appears to include the Small Brothers Orchards, Inc. property.

Claim No. 129912 – Conard Petersen

On February 25, 1975 Ecology assigned the above control number to a claim submitted by Conard Petersen asserting a ground water right for 80 gpm, 30 ac-ft/yr, for the irrigation of 7 acres and continuous domestic irrigation from a well located within the SW¼NW¼ of Section 14, T. 25 N., R. 20 E.W.M. The claimed date of first putting water to use is May 1911. The place of use of this claim appears to include the Hansen property.

Ground Water Claim No. 25856 – J. K. McArthur and Son, Inc.

In 1982, Ecology issued J. K. McArthur and Son, Inc. a ground water certificate for 400 gpm, 160 ac-ft/yr, from March 15 to October 15 for the irrigation of 40 acres and 670 gpm, 15 ac-ft/yr, from March 15 to June 1 for the frost protection of 10 acres. The priority date is April 18, 1978. The POW is located within NW¼NW¼ of Section 14, T. 25 N., R. 20 E.W.M., located on a parcel owned by Naumes of Oregon (Chelan Co. Parcel No. 252014220060). The place of use of this certificate appears to include portions of the Conard Petersen, Belvin Gollaher, and Martin Petersen parcels. The water right is a non-additive "supplemental right" to

> "water made available under primary rights by the Entiat River, the Knapp-Wham Ditch, and the Detwiler Ditch; hence, the only water herein permitted for withdrawal is that required to compensate for any deficit in this supply. This amount shall not exceed 160 acre-feet per year less any water applied to these lands under existing rights."

It is not clear upon which parcels within the place of use this non-additive water right has been used. Flow records indicate that water supplies from the Entiat River sources are rarely insufficient to fulfill the quantities of water authorized by the primary water rights from the K-W Ditch and the H-D Ditch.

Surface Water Claim No. 31206P – Michael Summerfield

In 1995, Ecology issued a surface water right permit to Michael Summerfield with a priority date of March 30, 1992 for 0.4 cfs, 46.8 ac-ft/yr, for the irrigation of 18 acres April 1 through October 31 and 1 ac-ft/yr for continuous group domestic supply for 2 residences and a barn from an unnamed spring. The source is an unnamed spring within SW¼NE¼ of Section 14, T. 25 N., R. 20 E.W.M. Diversions under this permit are required to cease when the Entiat River flow at Ardenvoir falls below 116 cfs during November 1 through August 21, and 77 cfs during September 1 to October 31. The place of use of this permit appears to include the Summerfield property. The irrigation portion of this permit is not a continual supply during the entirety of the irrigation season.