



Chelan County Water Conservancy Board
C/O 1205 Ormiston Street, Wenatchee, Washington 98801
Phone (509) 860-7466

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SEP 12 2011

DEPARTMENT OF ECOLOGY - CENTRAL REGIONAL OFFICE

Water Conservancy Board

Don Phelps, P.E.
Waikale Hampton
Chris Snapp

Alternate: Karin Whitehall

September 9, 2011

Department of Ecology
Central Regional Office
Attention: Ingrid Ekstrom
15 W. Yakima Street, Suite 200
Yakima, WA 98902

Greetings Ingrid,

Enclosed please find the following:

1. James Cannon ROE's/ROD's for CHEL-10-02 through CHEL-10-05

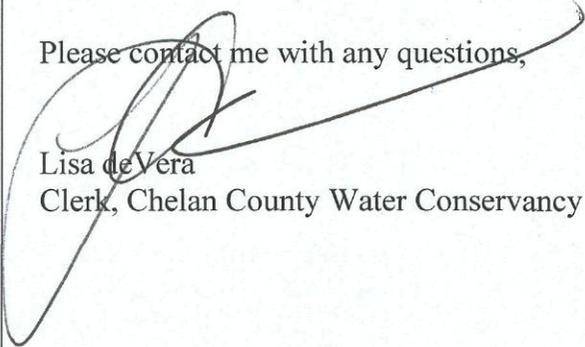
PLEASE NOTE:

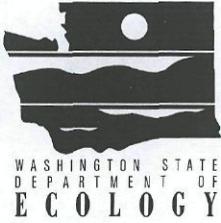
As per previous discussion and e-mails please reference the original ROE packages(notebooks) with all of the attachments in your review process.

2. Bear Mountain Water District CHEL-08-11 ROE/ROD

3. United States CHEL-09-17 ROE/ROD

Please contact me with any questions,


Lisa de Vera
Clerk, Chelan County Water Conservancy Board



Chelan County
WATER CONSERVANCY BOARD
Application for Change/Transfer
Record of Decision

For Ecology Use Only

Received:
RECEIVED
 (Date Stamp)
SEP 12 2011

DEPARTMENT OF ECOLOGY - CENTRAL REGIONAL OFFICE
 Reviewed by: _____
 Date Reviewed: _____

Applicant: James R. Cannon

Application Number: CHEL-10-02

This record of decision was made by a majority of the board at an open public meeting of the Chelan County Water Conservancy Board held **September 8, 2011**.

Approval: The Chelan County Water Conservancy Board hereby **grants** conditional approval for the water right transfer described and conditioned within the report of examination on **September 8, 2011** and submits this record of decision and report of examination to the Department of Ecology for final review.

Denial: The Chelan County Water Conservancy Board hereby **denies** conditional approval for the water right transfer as described within the report of examination on **September 8, 2011** and submits this record of decision to the Department of Ecology for final review.

Signed:

Don Phelps
 Don Phelps, Chair
 Chelan County Water Conservancy Board

Date: 9-8-11

- Approve
- Deny
- Abstain
- Recuse
- Other

Waikale Hampton
 Waikale Hampton, Member
 Chelan County Water Conservancy Board

Date: 8 Sept 11

- Approve
- Deny
- Abstain
- Recuse
- Other

Chris Snapp
 Chris Snapp, Member
 Chelan County Water Conservancy Board

Date: 9-8-11

- Approve
- Deny
- Abstain
- Recuse
- Other

 Karin Whitehall, Alternate Member
 Chelan County Water Conservancy Board

Date: _____

- Approve
- Deny
- Abstain
- Recuse
- Other

 (Name), (Title)
 (Board Name) Water Conservancy Board

Date: _____

- Approve
- Deny
- Abstain
- Recuse
- Other

Mailed to the Department of Ecology Central Regional Office of Ecology, via certified mail, and other interested parties on _____.

If you have special accommodation needs or require this form in alternate format, please contact 360-407-6607 (Voice) or 711 (TTY) or 1-800-833-6388 (TTY).

Ecology is an equal opportunity employer

Board's Decision on the Application

MAXIMUM CUB FT/ SECOND	MAXIMUM GAL/MINUTE	MAXIMUM ACRE-FT/YR	TYPE OF USE, PERIOD OF USE				
	82.18 gpm	26	Irrigation 4/15 – 10/15				
SOURCE			TRIBUTARY OF (IF SURFACE WATER)				
Well No. 1: 1,650 feet west and 2,400 feet north from the southeast corner of Section 33, T. 26 N., R. 20 E.W.M. Well No. 2: 2,657 west and 1,032 feet south from the northeast corner of Section 33, T. 26 N., R. E.W.M.							
AT A POINT LOCATED:							
PARCEL NO.	Well No. 1		SECTION	TOWNSHIP N.	RANGE	WRIA	COUNTY.
Parcel No. 262033420050	NW1/4	SE1/4	Both in 33	26 N.	20 E.W.M.	46	Chelan
Parcel No. 262033120100	Well No. 2 NW1/4	NE1/4					
LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED AS APPROVED BY THE BOARD							
NE1/4 NW1/4; NE1/4 NE1/4 SE1/4 NW1/4; SE1/4SE1/4NW1/4; W1/2 NE1/4; N1/2 SE1/4, west of the Entiat; and E2/3 N2/3 SW1/4SE1/4, west of the Entiat River. Parcel numbers: 262033120050, 262033210010, 262033120100, 262033130100, 262033420050, 262033430050, and a portion of parcel numbers 262033210050 and 262033300050.							
PARCEL NO.	1/4	1/4	SECTION	TOWNSHIP N.	RANGE,		
			33	26 N.	20 E.W.M.		

DESCRIPTION OF PROPOSED WORKS

Well No. 1: A well 10 inches in diameter, 73 feet deep, with a 60 horsepower Aurora turbine pump connected to undertree sprinklers, handlines, and micro sprinklers throughout the farm.

Well No. 2: A well 10 inches in diameter, 58 feet deep, with a 30 horsepower Berkeley submersible pump connected to a 6 inch mainline running to handlines, micro sprinklers, and solidset undertree sprinklers throughout the farm.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: Begun	COMPLETE PROJECT BY THIS DATE: October 31, 2012	COMPLETE CHANGE AND PUT WATER TO FULL USE BY THIS DATE: October 31, 2012
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REPORT

BACKGROUND [See WAC 173-153-130(6)(a)]

On July 2, 2010, James Cannon of Entiat, Washington filed an application for change to S4-29646P to change the point of diversion, add points of withdrawal, change the place of use to include all the lands irrigated under the Cannon water rights, and extend the season of use by 30 days to be consistent with the two water rights with priority dates of 1890 and 1902. The application also requested removal of the provision that “[n]o diversion of water under this authorization shall take place when the flow of the Entiat River falls below 116 cubic feet per second during November 1 through August 31, and 77 cubic feet per second during September 1 to November 1 as measured at the Ardenvoir gage.” The application was accepted at an open public meeting on July 8, 2010, and the board assigned application number CHEL-10-02. At the Board’s meeting on July 14, 2011, Mr. Cannon withdrew his requests to extend the irrigation season and to remove the provision regarding interruption of the right.

The application was filed with three other change applications, which are being considered by the Board concurrently with this change request. The goal is to integrate all of the Cannon water rights into a single system withdrawing from Well No. 1 and Well No. 2 and sharing a common place of use.

On June 30, 2010, Ecology issued Reports of Examination approving changes to WRC No. 130056 and WRC No. 130057, two other water rights owned by the Cannons. Information contained in Reports of Examination WRTS Files No. CS4-130056 and CS4-130057 is used in this Report of Examination (ROE).

Attributes of Water Rights as Currently Documented and Proposed Changes

<u>Attributes</u>	<u>Existing</u>	<u>Proposed</u>
Water Right Document No.	S4-29646P	
Name on certificate, claim, permit:	Randolph N. Cannon and James R. Cannon	Estate of Randolph N. Cannon and James R. Cannon
As modified by Certificate of Change number:	NA	
Priority Date, First Use:	March 1, 1988	
Date of Application:		July 2, 2010
Instantaneous Quantity:	0.22 cfs	98.8
Annual Quantity:	26 afy	No change
Source:	Entiat River	Well No. 1 Well No. 2
Point of Diversion or Withdrawal:	SW1/4SW1/4 of Section 28, T. 26 N., R. 20 E.W.M. (Cannon-Anderson Ditch)	Well No. 1: NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M. Well No. 2: NW1/4NE1/4 of Section 33, T. 26 N., R. 20 E.W.M.
Purpose of Use:	Irrigation of 10 acres	No change
Period of Use:	April 15- October 15	No change.
Place of Use:	SE1/4SE1/4NW1/4; NE1/4NE1/4SW1/4; SW1/4SW1/4NE1/4; W1/2NW1/4SE1/4; SW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M.	NE1/4 NW1/4; NE1/4 NE1/4 SE1/4 NW1/4; SE1/4SE1/4NW1/4; W1/2 NE1/4; N1/2 SE1/4, west of the Entiat River; and E2/3 N2/3 SW1/4SE1/4, west of the Entiat River.

Continued
Existing Provisions:

Family Farm Act water right	No change
Maximum combined diversion under Water Right Claims 130056 and 130057 (1.74 cfs), Certificate No. S4-28582C (0.1 cfs), Water Right Claim No. 095511 (0.13 cfs) and this permit shall not exceed 2.19 cfs. Any portion of the defined quantity withdrawn from the well will be proportionately reduced from the diversion.	Maximum combined diversion under Water Right Claims 130056 and 130057 (650 gpm), Certificate No. S4-28582C, Water Right Claim No. 095511 and this permit shall not exceed 852.05 gpm.
Exercise of this right is interruptible based on instream flows in the Entiat River as measured at the Ardenvoir gage: April 15-August 31, 116 cfs; September 1-October 15, 77 cfs.	No change.

Attributes

Existing

Proposed

Water Right Document No.	S4-28582C	
Name on certificate, claim, permit:	Randolph N. Cannon and James R. Cannon	Estate of Randolph N. Cannon and James R. Cannon
As modified by Certificate of Change number:	NA	
Priority Date, First Use:	December 27, 1984	
Date of Application:		July 2, 2010
Instantaneous Quantity:	44.9 gpm (0.1 cfs)	No change
Annual Quantity:	20 afy	No change
Source:	Entiat River	Well No. 1 Well No. 2
Point of Diversion or Withdrawal:	SW1/4SW1/4 of Section 28, T. 26 N., R. 20 E.W.M. (Cannon-Anderson Ditch)	Well No. 1: NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M. Well No. 2: NW1/4NE1/4 of Section 33, T. 26 N., R. 20 E.W.M.
Purpose of Use:	Irrigation of 5 acres	No change
Period of Use:	April 15 – October 15	No change.
Place of Use:	SW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M.	NE1/4 NW1/4; NE1/4 NE1/4 SE1/4 NW1/4; SE1/4SE1/4NW1/4; W1/2 NE1/4; N1/2 SE1/4, west of the Entiat River; and E2/3 N2/3 SW1/4SE1/4, west of the Entiat River.
Existing Provisions:	Family Farm Act water right	No change

Attributes

Existing

Proposed

Water Right Document No.	GWC-26270C	
Name on certificate, claim, permit:	Randolph N. Cannon	Estate of Randolph N. Cannon
As modified by Certificate of Change number:	NA	

Continued Priority Date, First Use:	June 27, 1979	
Date of Application:		July 2, 2010
Instantaneous Quantity:	600 gpm	No change
Annual Quantity:	120 afy irrigation 10.6 afy frost control 2 afy group domestic	No change
Source:	Well No. 1 Well No. 3	Well No. 1 Well No. 2 Well No. 3
Point of Diversion or Withdrawal:	Well No. 1: NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M. Well No. 3: NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M.	Well No. 1: NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M. Well No. 2: NW1/4NE1/4 of Section 33, T. 26 N., R. 20 E.W.M. Well No. 3: NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M.
Purpose of Use:	Frost control Irrigation of 30 acres Group domestic supply	No change
Period of Use:	March 15- June 1 (Frost) April 15- Oct 15 (Irrigation)	No change
Place of Use:	SW1/4NE1/4 and NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M., all lying west of the Entiat River	NE1/4 NW1/4; NE1/4 NE1/4 SE1/4 NW1/4; SE1/4SE1/4NW1/4; W1/2 NE1/4; N1/2 SE1/4, west of the Entiat River; and E2/3 N2/3 SW1/4SE1/4, west of the Entiat River.
Existing Provisions:	Any water withdrawn from the well under this groundwater right for irrigation is supplemental to existing surface water rights for the place of use.	No provisions.

<u>Attributes</u>	<u>Existing</u>	<u>Proposed</u>
Water Right Document No.	S4-28583C	
Name on certificate, claim, permit:	Randolph N. Cannon and James R. Cannon	Estate of Randolph N. Cannon and James R. Cannon
As modified by Certificate of Change number:	NA	
Priority Date, First Use:	December 27, 1984	
Date of Application:		July 2, 2010
Instantaneous Quantity:	700.44 gpm (1.56 cfs)	No change
Annual Quantity:	12.4 afy	No change
Source:	Entiat River	Entiat River Well No. 1 Well No. 2
Point of Diversion or Withdrawal:	SW1/4NE1/4 of Section 33, T. 26 N., R. 20 E.W.M.	SW1/4NE1/4 of Section 33, T. 26 N., R. 20 E.W.M. Well No. 1: NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M. Well No. 2: NW1/4NE1/4 of Section 33, T. 26 N., R. 20 E.W.M.

Continued
Purpose of Use:

Frost Control

No change

Period of Use:

As required

March 15- June 1

Place of Use:

NE1/4NW1/4, W1/2NE1/4
southwest of Entiat River and
NE1/4SE1/4NW1/4 and
NW1/4SE1/4 west of Entiat River
all in T. 26 N., R. 20 E.W.M.

NE1/4 NW1/4;
NE1/4 NE1/4 SE1/4 NW1/4;
SE1/4SE1/4NW1/4;
W1/2 NE1/4; N1/2 SE1/4, west of
the Entiat River;
and E2/3 N2/3 SW1/4SE1/4, west of
the Entiat River.

Existing Provisions:

None

Continued

Existing provisions: Exercise of this right is interruptible based on instream flows in the Entiat River as measured at the Ardenvoir gage. Family Farm Act water right. Maximum combined diversion under Water Right Claims 130056 and 130057 (1.74 cfs), Certificate No. S4-28582C (0.1 cfs), Water Right Claim No. 095511 (0.13 cfs) and this permit shall not exceed 2.19 cfs. Any portion of the defined quantity withdrawn from the well will be proportionately reduced from the diversion.

Tentative determination of the water right

The tentative determination is provided on the front page of this report.

History of water use

The Cannon farm as shown on Attachment A is located in the Entiat River valley approximately 8 river miles upstream of the Entiat River's confluence with the Columbia River, about 7 miles northwest of the city of Entiat, Washington. The Cannons own land on both sides of the river totaling approximately 154 acres within Water Resource Inventory Area (WRIA) 46. The change applications, if approved, will authorize these Cannon water rights to have Well No. 1 and Well No. 2 as points of withdrawal and the water to be used within the entire place of use as shown on Attachment A.

Surface Water Permit No. S4-29646P was issued to the Cannons with a priority date of March 1, 1988. The permit authorizes the maximum diversion from the Entiat River of 0.22cfs, 26 ac-ft/yr, for irrigation of 10 acres from April 15 to October 15. The authorized POD is the Cannon-Anderson Ditch. The place of use includes pasturelands southwest of the Entiat River within Parcels No. 262033130100; 262033420050; 262033430050; and a portion of 262033300050. The Cannon-Anderson Ditch is no longer in operation and water used within the POU is withdrawn from Well No. 1 as described in this report.

Historic Points of Diversion and Withdrawal

Commencing operation in 1890, the Cannon Ditch historically served the Cannon orchard and pasturelands west of the Entiat River approximately 1,400 feet southeast of the historic POD. Put into operation by 1902, the Cannon-Anderson Ditch historically served the Cannon's orchard and pasturelands lying east of the Entiat River approximately 2,300 feet southeast of the historic POD. In the early 1960's, the Cannons abandoned the use of the Cannon Ditch, switching solely to the Cannon-Anderson Ditch.

Proposed Points of Withdrawal

The Cannons put the water under S4-29646 to beneficial use by September 1, 1996 and filed a Proof of Appropriation with Ecology. However, they had not yet applied to change the point of diversion to a point of withdrawal from the well they were using. In response to the filing of the POA, Ecology informed Mr. Cannon in a letter dated September 12, 2006 that he could stay with the point of diversion from the Entiat River or file a change application with the Chelan County Conservancy Board or Ecology. Mr. Cannon has chosen to file this request for change to withdraw water from two wells as part of the integrated system.

Well No. 1 was drilled in 1980. The well was not assigned a unique well identification number, although a well driller's log was submitted to Ecology in 1980. The well is 10 inches in diameter, 73 feet deep with a static water level of 12 feet at the time of drilling. A 60 horsepower Aurora turbine pump rated at 600 gpm is connected to the well. The well penetrates sands and gravels and is located within the NW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 33, T. 26 N., R. 20 E.W.M. In addition to waters withdrawn from this well under Water Right Claim No. 130056 and Water Right Claim No 130057, water is also withdrawn under Ground Water Certificate No. G4-26270C. (Refer to the **Other Rights Appurtenant to the Place of Use** section of this report for more details). A water meter is installed on Well No. 1.

Well No. 2, drilled in 1995, is located within the NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 33, T. 26 N., R. 20 E.W.M., approximately 20 feet from the left bank of the Entiat River. A water meter is installed on the well. A well log was submitted to Ecology in 1995 and the well was assigned unique well identification number ABX237. The well is 10 inches in diameter, 58 feet deep with a static water level of 10.5 feet at the time of drilling. A 30 horsepower Berkeley submersible pump rated at 350 gpm is connected to the well. The well penetrates clay, boulders, gravel, and sands. A detailed description of the hydrogeologic setting of the proposed POW is included in the **Hydrologic/Hydrogeologic Evaluation** section of this report.

The Cannon-Anderson Ditch, the POD authorized in Permit S4-29646P, is no longer in use. Wells No. 1 and 2 supply all the irrigation water associated with the water right. Diversions from the POD previously associated with the water right have been discontinued.

Water is delivered to the Cannon orchard and pastures via two independent irrigation systems; orchard irrigation water is primarily withdrawn from Well No. 1 and pasture irrigation water is withdrawn from Well No. 2. The irrigation system connected to Well No. 1 consists of a 60 horsepower Aurora turbine pump and two six-inch mainlines used to convey water across the property. A buried undertree system is installed to irrigate the orchards using Rainbird 20A sprinklers with 7/64th inch nozzles. The irrigation system connected to Well No. 2 consists of a 30 horsepower Berkeley submersible pump connected to a six inch mainline. The majority of the system used to irrigate the pastures consists of solid set with a few handlines in use on the smaller fields. Rainbird 20AH sprinklers with 1/8th inch nozzles are used for permanent irrigation in the pastures and Rainbird 30A sprinklers with 9/64th inch nozzles are used for the handlines.

According to Mr. Cannon, withdrawal rates from the two wells are controlled by a valve at each well. Well No. 1 is typically operated at 500 gpm and Well No. 2 is operated at 300-350 gpm. Both wells can also be run up to their rated capacities.

With this and concurrently proposed changes, Mr. Cannon intends to modify his water rights to enable the integrated management and use of his water rights throughout the Cannon farm. Historical aerial photographs and testimony from Mr. Cannon indicate that water under water right permit S4-29646P has been used to irrigate 10 acres of pasturelands on the Cannon farm within the SE1/4SE1/4NW1/4, west of the Entiat River. The land is within the proposed combined place of use as shown on Attachment A.

Purpose of Use

No change in purpose of use is proposed in this application.

Season of Use

The irrigation season stated on Permit S4-29646P is April 15 through October 15. The earliest water rights on the Cannon land dating from 1890 and 1902 have an irrigation season of April 1 through October 31. Because the irrigation system is to become integrated, Mr. Cannon requested that the season of use for S4-28582C be modified to be consistent with the primary rights on the Cannon property. Mr. Cannon withdrew this request at the Board's meeting on July 14, 2011.

No change in season of use is proposed in this application.

Water Quantities

Permit S4-29646P authorizes up to 0.22 cfs (98.8 gpm) instantaneous diversion (Qi) and 26 ac-ft/yr from the Cannon-Anderson Ditch for the irrigation of 10 acres. Mr. Cannon intends to use both Well No 1 and the proposed Well No. 2 to irrigate lands on both sides of the Entiat River, within the combined place of use of all of the Cannon water rights.

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 authorization would contain provisions requiring the measuring and reporting of the quantities of water withdrawn or diverted.

Water use meters are installed on both Well No. 1 and Well No. 2.

Previous changes

There have been no changes to the water right since the permit was issued.

SEPA

- The board has reviewed the proposed project in its entirety. 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 is met.
 - It is a surface water right application for more than one cubic feet per second (cfs), 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.

The information or conclusions in this section were authored and/or developed by Don Phelps, Waikele Hampton and Mary McCrea.

COMMENT AND PROTESTS [See WAC 173-153-130(6)(b)]

Public notice of the application was given in the Wenatchee World on July 22 and 29, 2010. Protest period ended on August 30, 2010.

There were no protests received during the 30-day protest period. In addition, no oral and written comments were received at an open public meeting of the board or other means as designated by the board.

INVESTIGATION [See WAC 173-153-130(6)(c)]

Continued

The following information was obtained from a site inspection conducted by Don Phelps and Waikele Hampton on July 15, 2010, technical reports, research of department records, and conversations with the applicant and/or other interested parties.

Proposed project plans and specifications

Changes proposed to this right include:

1. changing the point of diversion from the Entiat River to two wells in the NW1/4 SE1/4 and the NW1/4 NE1/4 of Section 33, T. 26 N., R. 20 E.W.M.; and
2. adding to the place of use to include all land authorized for irrigation under other water rights owned by James Cannon and the estate of Randolph Cannon in Section 33, T. 26N., R. 20 E.W.M., Parcel Nos. 262033120050, 262033210010, 262033120100, 262033130100, 262033420050, 262033430050, and a portion of parcel numbers 262033210050 and 262033300050.

Other water rights appurtenant to the property (if applicable)

One surface water certificate, one groundwater certificate, two surface water permits, Water Right Claim No. 130056 and Water Right Claim No 130057 as changed by Certificate of Change No. CV1-4P276 and approved for a subsequent change by Reports of Examination WRTS File Nos. CS4-WRC130056 and CS4-130057, and five additional water right claims are appurtenant to the proposed place of use of S4-29646P. Mr. Cannon has concurrently with this change application, filed applications for change for the surface water certificate, groundwater certificate and surface water permit. The applications request that both Well No. 1 and Well No. 2 be authorized as points of withdrawal under each right and that the place of use include the combined place of use under all of the Cannon water rights.

S4-28582C – Randolph N. Cannon and James R. Cannon

Surface Water Certificate No. S4-28582C, a Family Farm Act water right, was issued to the Cannons with a priority date of December 27, 1984. The certificate authorizes the diversion from the Entiat River of a maximum of 0.1 cfs, 20 ac-ft/yr, for irrigation of 5 acres from April 15 to October 15. The POU includes a portion of the Cannon's pasturelands on the southwest (river right) side of the Entiat River.

S4-28583C – Randolph N. Cannon and James R. Cannon

Surface Water Certificate No. S4-28583C was issued to the Cannons with a priority date of December 27, 1984. The certificate authorizes the diversion from the Entiat River a maximum of 1.56 cfs, 12.4 ac-ft/yr, for frost control as required. The POU includes the Cannon's orchards on the southwest (river right) side of the Entiat River. During the site investigation the pump in the Entiat River appeared to be maintained and Mr. Cannon stated he uses the pump for frost protection as weather conditions demand.

G4-26270C – Randolph N. Cannon

Superseding Ground Water Certificate No. G4-26270C was issued to Mr. Cannon with a priority date of June 23, 1979. The certificate authorizes the withdrawal from a well of 600 gpm, 10.6 ac-ft/yr, for frost protection as required from March 15 to June 1; 120 ac-ft/yr for the irrigation of 30 acres from April 15 to October 15; and 2 ac-ft/yr for continuous group domestic supply. All water withdrawals for irrigation are considered "supplemental to existing surface water rights for the described place of use". The term "supplemental" in this case is used to describe the irrigation portion of G4-26270C as a non-additive supply of water; meaning the instantaneous and annual quantities of water withdrawn under G4-26270C for irrigation shall be debited against maximum instantaneous and annual quantities authorized and claimed from existing surface water rights and claims appurtenant to the POU. Existing water rights for irrigation as of the priority date of the certificate were WRC 130056 and WRC 130057.

The Cannons have filed four water right claims for domestic supply: WRC 130053 is for a portion of the Cannon farm on the east side of the river. WRC 130054, 150162, and 150163 are for land west of the Entiat River within the same place of use as G4-26270C. These claims are for single domestic while the groundwater certificate is for "continuous group domestic supply." The groundwater right was historically used for group domestic supply for farm workers. Certificate G4-26270C includes a provision that any water used for irrigation under the certificate is supplemental to any existing water rights. There is no provision that the right for domestic supply is supplemental to any existing water rights. The water right claims for single domestic supply are not under consideration by this Board. The validity of the claims can be determined only by a court through an adjudication.

On February 4, 2009, Mr. Cannon submitted to Ecology a Showing of Compliance GWC-26270C to add a well as an authorized point of withdrawal under the groundwater certificate. See, Supp. Ex. 1. The well, referred to in this Report of Examination as Well No. 3, is located approximately 10 feet from Well No. 1 in the NW1/4SE1/4 of Section 33, T. 26 N., R. 20 E.W.M. The well is a shallow well that the Cannon's have used to supply domestic water under G4-26270C.

S4-29352P – Randolph N. Cannon and James R. Cannon

Surface Water Permit No. S4-29352P was issued to the Cannons with a priority date of August 4, 1987. The permit authorizes the diversion of up to 1.56 cfs, 5 ac-ft/yr, for frost protection from April 1 to May 31. The place of use includes the Cannon's orchard on both sides of the Entiat River. The point of diversion and pump are the same as that used for frost protection under Surface Water Certificate No. S4-28583. During the site investigation the pump in the Entiat River appeared to be maintained and Mr. Cannon stated he uses the pump for frost protection as weather conditions demand.

WRC 130056

On February 25, 1975, Ecology assigned Water Right Claim No. 130056 to a claim filed by Randolph N. Cannon. The claim asserts a right to 2.2 cfs, 320 acre-feet per year (ac-ft/yr), for the irrigation of 80 acres and stock watering from April through September from a POD on the Entiat River. The claimed date of first putting water to use is 1890. The claimed POD location corresponds to the historical location of the Cannon Ditch, within the SW¼ of the SW¼ of Section 28, T. 26 N., R. 040-106(0505)

Continued

20 E.W.M. The claimed place of use (POU) is the NW¼ of the SE¼ and the SW¼ of the NE¼ of Section 33, T. 26 N., R. 20 E.W.M. The claimed POU corresponds to lands that are currently irrigated by the Cannons on the west side of the Entiat River.

WRC 130057

Also on February 25, 1975, Ecology assigned Water Right Claim No. 130057 to a claim filed by Randolph N. Cannon. The claim asserts a right to 1.1 cfs, 128 ac-ft/yr, for the irrigation of 45 acres, from April 15 to October 1 from a POD on the Entiat River. The claimed date of first putting water to use is 1902. The claimed POD location corresponds to the historical location of the Cannon-Anderson Ditch, within the SW¼ of the SW¼ of Section 28, T. 26 N., R. 20 E.W.M. The claimed POU corresponds to lands that are currently irrigated by the Cannons on the east side of the Entiat River. A total of 65 acres of irrigation on the Cannon farm are claimed under Water Right Claim No. 130056 and Water Right Claim No. 130057.

Historical documents and statements by James Cannon evidence 65 acres of mixed orchard and pasture have been irrigated continuously since the claimed dates of first putting water to use under Water Right Claim No. 130056 and Water Right Claim No. 130057.

In 1986, Ecology authorized the addition of Well No. 1 as a POW to Water Right Claim No. 130056 and Water Right Claim No. 130057 with the Report of Findings of Fact and Decision for CV1-4P276. The following provision describing the management of the claims was included in the report:

The 1.74 cfs herein authorized for diversion under Water Right Claims No. 130056 and No. 130057 shall be allowed only when the Cannon-Anderson ditch is the sole source utilized. If the well is the sole source, then the maximum instantaneous withdrawal shall be 1.34 cfs for irrigation of 65 acres. If the ditch and the well are used in combination, then authorized pumping rate shall be determined (within the range from 1.34 cfs to 1.74 cfs) in proportion to the rate diverted at each point.

Certificate of Change No. CV1-4P276 consolidated the management of Water Right Claim No. 130056 and Water Right Claim No. 130057 allowing the combined usage of the Cannon-Anderson Ditch and a POW. The change also merged the POU's of the claims to include 65 acres of the Cannon farm on both sides of the Entiat River.

In 2010, Ecology authorized the addition of Well No. 2 as a POW under Water Right Claim Nos. 130056 and 130057 in Reports of Examination WRTS File Nos. CS4-WRC 130056 and CS4-WRC 130057. The ROEs authorize a combined withdrawal from Wells No. 1 and No. 2 under these two water rights not to exceed 650 gpm for the irrigation of 65 acres.

WRC130053 – Randolph N. Cannon

A short-form claim was signed by Mr. Cannon on June 25, 1974 and was assigned Water Right Claim No. 130053 on February 25, 1975. The claim asserts a domestic and stock watering right from a well. The POU is the W½NE¼ of Section 33, T. 26 N., R. 20 E.W.M. The POU corresponds to the location of a home and a stock pen on the Cannon's farm east (river left) of the Entiat River.

WRC130054 – Randolph N. Cannon

A short-form claim was signed by Mr. Cannon on March 15, 1974 and was assigned Water Right Claim No. 130054 on February 25, 1975. The claim asserts a domestic right from a well. The place of use is the same as Water Right Claim No. 130053: W½NE¼ of Section 33, T. 26 N., R. 20 E.W.M. Water Right Claim No. 130054 may assert the right to domestic water supply for a home located on the southwest (river right) side of Entiat River within the claimed POU.

WRC150162 – Randolph N. Cannon

Water Right Claim No. 150162 was filed by Mr. Cannon on June 30, 1974 and was assigned Water Right Claim No. 150162 on March 21, 1975. The claim asserts a continuous domestic supply water right from a well in the amount of 10 gpm, one ac-ft/yr. The claimed date of first putting the water to use is March 1904. The POU claimed is within the NW¼ of SE¼ of Section 33, T. 26 N., R. 20 E.W.M. This claim may assert a right to domestic water supply for a home located within the claimed POU.

WRC150163 – Randolph N. Cannon

Water Right Claim No. 150163 was filed by Mr. Cannon on June 30, 1974 and was assigned Water Right Claim No. 150163 on March 21, 1975. The claim asserts a continuous domestic supply water right from a well in the amount of three gpm, ¼ ac-ft/yr. The claimed date of first putting water to use is June 1938. The place of use claimed is within the NW¼ of the SE¼ of Section 33, T. 26 N., R. 20 E.W.M. This claim may assert a right to domestic water supply for a home located within the claimed POU.

WRC095511 – Rowena G. Minkiewitz

Water Right Claim No. 095511 was filed by Rowena G. Minkiewitz on April 11, 1974. The claim asserts a right to 200 miner's inches under a six-inch pressure, 140 ac-ft/yr, for the irrigation of 35 acres from April 1 to October 15 from a surface water source. Included with the claim is a notice of appropriation of water dated January 3, 1914 for the Cannon-Anderson ditch. The Report of Examination for Change Application No. S4CV1-4P276 states that "it appears that approximately 6 acres had been irrigated" under Water Right Claim No. 95511 north of the Cannon property. It appears that water diverted under this claim has been used to irrigate the homestead lands north of the Cannon farm and Entiat River Road, which is now owned by Mr. Cannon.

Public Interest (groundwater only)

The proposed change is subject to RCW 90.44.100 and therefore, cannot be detrimental to the public interest, including impacts on any watershed planning activities. The change to a point of withdrawal to a water right must not have a detrimental effect upon the public interest (RCW 90.44.100(2)). A public interest investigation includes analyzing harm to fish and wildlife, effects on endangered or threatened species, impacts to wetlands, recreation, water quality, and any other concerns expressed by commenting and protesting parties.

In general, removing PODs and instream structures from a river has a positive impact on aquatic habitat. Diversions and instream pumps require frequent servicing that involves entering the river to repair structures, remove silt and debris from screens, and maintain pushup dams. Replacing a POD with a POW alleviates the need for repeated construction in the river and the associated disturbances from increased silt loading and stream bank modifications.

This change is consistent with the Entiat WRIA 46 Management Plan. The rule adopted to implement the Entiat Basin Watershed Plan confirms the existence of hydraulic continuity between surface water and groundwater sources with both the Lower and Upper Entiat River [.]” WAC 173-546-090(2)(b). The Recommendations chapter of the Watershed Management Plan includes the following: “the Planning Unit recommends that water users in the Entiat River watershed continue conversion of surface water diversions to groundwater/well withdrawals when/where feasible.” Plan at page 9-7.

Tentative Determination

In order to make a water right change decision, the Board must make a tentative determination on the validity and extent of the right. The Board has made the tentative determination as displayed upon the first page of this report. There are several circumstances that can cause the board’s tentative determination to differ from the stated extent of the water right within water right documentation. Water right documents attempt to define a maximum limitation to a water right, rather than the actual extent to which a water right has been developed and maintained through historic beneficial use. Additionally, except for a sufficient cause pursuant to RCW 90.14.140, water rights, in whole or in part, not put to a beneficial use for five consecutive years since 1967 may be subject to relinquishment under Chapter 90.14.130 through 90.14.180 RCW. Water rights may additionally be lost through abandonment. The Board’s tentative determination was based upon the following findings: historical evidence, power records, statements by Mr. Cannon, aerial photographs, the Reports of Examination for WRC 130056 and WRC 130057 issued by Ecology in 2010, historical documents, and observations during the site visits establish that there has been no relinquishment or abandonment of the water right.

Water Use

Permit S4-29646P authorizes up to 26 ac-ft/yr for the irrigation of 10 acres, equating to a water duty of 2.6 acre-feet per acre. The site investigation indicated that 10 acres of pasture continue to be irrigated on the Cannon farm under this water right. Mr. Cannon has testified that 2.6 acre-feet per acre is insufficient to provide adequate water on the porous valley lands where the Cannon farm is located. A 2009 analysis by Aspect Consulting, *Estimated Water Use*, confirms Mr. Cannon’s observations. Given the soil types and meteorological data for the Entiat, Aspect concluded that an appropriate water duty is 6.0 acre-feet per acre for alfalfa and 7.0 acre-feet per acre for orchard. Mr. Cannon has filed an application for a new water right to increase the water duty and associated instantaneous withdrawal accordingly.

The power records submitted by Mr. Cannon, Ex. 8, and the analysis of the records conducted by Aspect Consulting, Ex. 9, support the full use of all of the Cannon water rights and the need for an additional water right to meet the crop requirements. Aspect Consulting analyzed power records for Well No. 1 from 2001-2008, and for Well No. 2 from 2004-2008. Mr. Cannon provided additional information regarding Aspect Consultant’s calculation of water usage from power records in Supp. Ex. 2. The power records for 2009 are consistent with the earlier records. The 2010 records show a reduction in water use that may be attributed to the cooler, wetter spring weather.

Based upon the power records this Board concludes that the Cannons have been using the full quantity of water authorized for beneficial use under the combined water rights.

Place of Use

With this and subsequent proposed changes, Mr. Cannon intends to modify his water rights to enable the integrated management and use of his water rights throughout the Cannon farm. In Reports of Examination WRTS File Nos. CS4-WRC 130056 and CS4-WRC 130057, Ecology combined the places of use under the two water right claims, WRC 130056 and 130057 to include 65 irrigated acres. The place of use for S4-28582C includes 5 additional irrigated acres within the SW1/4SE1/4 of Section 33. Water right S4-29646P, which is also included in the requested changes, authorized the irrigation of an additional 10 acres within the SE1/4NW1/4 and the NE1/4SW1/4. WRC 0095511 authorizes irrigation of the property acquired by Mr. Cannon in the NE1/4NW1/4, which is the location of his residence. The combined place of use for all Cannon water rights is shown on Attachment A to this report. The map mirrors the place of use map for WRC 130056 and WRC 130057, with the additions of the place of use for S4-29646P, in the SE1/4NW1/4, and WRC 0095511 in the NE1/4NW1/4 northeast of the Entiat River.

The place of use is complicated by the fact there have been three surveys in the Entiat. According to information provided by Mr. Cannon, the first or original survey was the Federal Survey of 1883 conducted by Benson and Associates. The location of the 160-acre land patent issued to N.M. Cannon, Jim Cannon’s grandfather, in 1901, and the place of use of the water rights represented by WRC 130056 (water right filed in 1890) and 130057 (water right filed in 1902), were based upon the 1883 survey. Because the 1883 survey was incomplete and inaccurate, the federal government initiated a “dependent resurvey” in 1915 (Adams). Section 33, T. 26N., R. 20 E.W.M. was

resurveyed, including the Cannon homestead. However, unlike properties upriver from the Cannon homestead, the lands in Section 33 were not put into tracts.

According to a written statement from Rebecca J. Cate, Washington Professional Land Surveyor, Ex. 10, supplemental plats are on record and additional Federal surveys were done in the 1980's. The result is "[t]he locations of property lines for parcels based on the original 1883 survey are often different when compared to the locations of property lines for the same parcel based on Dependent Resurveys that began in 1915." Mr. Cannon has provided documents that show the 1915 Dependent Resurvey differs from the 1883 survey upon which the patent and original water rights were based and that the original 1883 survey established lines lying to the north and west of the lines from the 1915 Dependent Resurvey. See Ex. 11.

Based upon the documents provided by Mr. Cannon, the Board concludes that the place of use is as described in the Board's decision on page 2 and as shown on Attachment A.

Landowner Signature

The legal description of the place of use for S4-29646P includes an area of pastureland in the SE1/4SE1/4NW1/4 of Section 33, T. 26 N., R. 20 E.W.M., which is owned by Longview Timber. This land is also within the combined place of use as shown on Attachment A. Mr. Cannon is obtaining the signature of Longview Timber.

Permit Extension

At Ecology's request, Mr. Cannon filed for an extension of the permit. The request was sent to Ecology on June 14, 2011. The request to extend the time for submitting the Proof of Appropriation was approved by a letter dated July 7, 2011. The new deadline is October 31, 2012. A copy of the permit extension is Supp. Ex. 4.

Water Right Provisions

Mr. Cannon initially requested the Board remove a provision on the water right requiring interruption of use based on outdated base flows in the Entiat River. This Board has the authority to make recommendations to Ecology whether to grant or deny a change application. RCW 90.80.070. Therefore, it also has the authority to make recommendations to impose conditions on a water right. Ecology v. Theodoratus, 135 Wn.2d 582, 597 (1998) ("Where the department is vested with the discretion to grant or deny a change application, it is vested with the authority to impose reasonable conditions."). Since the Board can make recommendations to impose conditions, it follows the Board can also make recommendations to remove conditions.

The relevant timeline is as follows:

- March 1, 1988- Mr. Cannon filed Application No. S4-29646.
- 1992- Ecology and Fish and Wildlife began a study of instream flow requirements in the Entiat River.
- March 5, 1993- Permit S4-29646 issued subject to base flows in Entiat River.
- March 1995- Ecology and DFW present instream flow recommendations that were never codified.
- September 3, 2005- instream flows adopted by rule in Chapter 173-546.

Mr. Cannon filed an Application to Appropriate Public Waters, which resulted in issuance of Permit No. S4-29646 with a priority date of March 1, 1988. At the time the application was filed there were no instream flows or base flows set for the Entiat River. By the time Ecology approved the application by letter dated March 5, 1993, Ecology and DFW had conducted instream flow studies but the base flows were never adopted as a rule. *Entiat WRIA 46 Management Plan October 2004* 5-2. However, Ecology included a provision in the permit that calls for interruption of the right when flows in the river fall to a specified level during certain times of the year. This provision was based on the recommendations of minimum flows submitted by the Department of Wildlife. Report of Examination for Application No. S4-29646, p.4, March 4, 1993.

In 2005, Ecology adopted a rule to implement the Entiat River Watershed Management Plan, Chapter 173-546 WAC. The rule established instream flows with a priority date of September 3, 2005; the date the rule was adopted. Permit S4-29646 has a priority date of March 1, 1988 and is thus senior to these instream flows. Yet according to conditions on the permit the right is still interruptible based on older base flows that were never adopted by rule and have been replaced by the flows established by rule in 2005. The Cannons requested a change in their water right to remove the provision requiring interruption in use of the right determined by base flows no longer in effect. This request is supported by other provisions in the Entiat rule.

Based on the Entiat Watershed Plan, Ecology determined there is water available for allocation in the Entiat Watershed and established a reservation of up to 5 cfs for specific future beneficial uses. The rule allocates up to 3 cfs of the reservation for commercial agriculture for appropriation in the Lower Entiat below river mile 16.2. The Entiat rule provides that new non-interruptible surface and ground water permits may be issued if "the water use qualifies for the reservation established in WAC 173-546-070." WAC 173-546-090(1)(b) (Emphasis added). The Cannon property is irrigated for commercial agriculture on property located at approximately river mile 8 of the Entiat River and would thus qualify as a new non-interruptible water right permit from the reserve.

Mr. Cannon subsequently withdrew his request that the permit be considered uninterruptible based upon water available from the reservation based upon the following analysis. Mr. Cannon's March 1, 1988 priority date water right is senior to both new rights that will be issued from the reservation and instream flows in the current rule. The instream flows have a priority date of September 3, 2005, the date the rule was adopted. New rights issued from the reservation will have the same priority date but will be considered to be senior to the instream flows. WAC 173-546-050(5); 173-546-070(1)(a). Rights from the reservation and the instream flows are both *junior* to Mr. Cannon's water right with a priority date of 1988. WAC 173-546-010(3): "This chapter shall not affect existing water rights, including ... appropriative rights existing on the date of this

Mr. Cannon's water right is not subject to instream flows in the rule. Additionally, rights issued from the reservation, and any other junior rights, must be regulated before Mr. Cannon's senior right with a priority date of 1988, is interrupted per the base flows in his water right. Based upon this analysis, Mr. Cannon withdrew his request to remove the interruptibility provision. The Board agrees with Mr. Cannon's analysis.

Mr. Cannon also requests that a provision of the water right be modified to reflect that water under all rights for irrigation will now be withdrawn from wells and none from the Entiat River. A provision on S4-29646P limits the diversion under the permit (0.22 cfs) in combination with WRC No. 130056 and WRC No. 130057 (1.74 cfs), S4-28582C (0.1 cfs), and WRC No. 095511 (0.13 cfs) to 2.19 cfs. It also provides that "Any portion of the defined quantity withdrawn from the well for irrigation will be proportionately reduced from the diversion."

In 2010, Ecology authorized the addition of Well No. 2 as a POW under Water Right Claim Nos. 130056 and 130057 in Reports of Examination WRTS File Nos. CS4-WRC 130056 and CS4-WRC 130057. The ROEs authorize a combined withdrawal from Wells No. 1 and No. 2 under these two water rights not to exceed 650 gpm, which was the capacity of the pump for the Cannon-Anderson Ditch and reflected historical quantities diverted under the two rights. The authorized Qi under S4-29646P, S4-28582C and WRC No. 09551 totals 202.05 gpm. The total rate of withdrawal under the five water rights should thus be 852.02 gpm.

The Board agrees that the provision should be updated to read: "The maximum combined withdrawal (Wells 1 and 2) under Water Right Claim No. 130056 and No. 130057 (650 gpm), Certificate of Water Right No. S4-28582C (44.9 gpm), Water Right Claim No. 095511 (58.4 gpm), and Surface Water No. S4-29646P shall be 852.05 gpm."

Geologic, Hydrogeologic, or other scientific investigations (if applicable)

Hydrologic/Hydrogeologic Evaluation

The following statements are excerpted from the Report of Examination WRTS File No. CS4-WRC 130056, which included excerpts from an October 29, 2008 "Technical Memorandum, Re: Technical analysis for Water Right Change Application Nos. CS4-WRC130056 and CS4-WRC130057, Randolph Cannon" written by Ingrid Ekstrom, LHD, Ecology staff Hydrogeologist. The complete memorandum and list of references is available at the Department of Ecology, Central Region Office, upon request. Additional information regarding Well No. 1 is from excerpts taken from the July 13, 2011 memorandum by Aspect Consulting "Re: Cannon Water Right Change Applications, Hydrogeologic Evaluation of Surface Water to Groundwater Right Changes," Supp. Ex. 3.

Site Area Geology

A description of the site-specific geology in the vicinity of the Cannon property is based on area well logs, topographic maps, aerial photographs, geologic maps, and site observations.

Well No. 1 is located on a flat, low bench on the Entiat River valley floor with ground surface elevation about 10 feet above river level. This well taps the coarse-grained valley fill deposits. Ground surface rises steeply from the valley floor to the southwest and northwest. Bedrock underlying these steep slopes forms a relatively impermeable boundary along the margin of the valley fill aquifer. The Entiat River flows adjacent to the northeast and southeast sides of the Cannon's property, coming within about 500 feet of Well No. 1.

Well No. 2 is located approximately 20 feet (ft) east of the Entiat River along a narrow reach of the river valley. Directly downstream the river valley becomes slightly wider, where two canyons with intermittent streams, Ringstead Canyon and Crum Canyon, enter the valley. In the subject area, small terraces and alluvial fans are found on either side of the valley floor along the bedrock walls. Well No. 2 was drilled on the main valley floor at an elevation of approximately 10 to 15 ft above the river. Well No. 1 is located downstream in the slightly wider section of the valley. The well is located approximately 420 feet west of the Entiat River and was drilled on the main valley floor about 8 to 10 feet above the river.

Area well logs record sand, gravel, and cobbles with occasional silt and clay. The gravel and sand compose the majority of the unconsolidated material, and clays and silts appear to form discontinuous lenses closer to ground surface, typically within the upper 20 to 30 ft below ground surface (bgs). For example, the driller's log for Well No. 1 records clay and gravel to 22 feet bgs and gravel and sand between 23 and 73 feet. The driller's log for Well No. 2 records clay and gravel to 28 ft bgs and sand, gravel, and cobbles between 29 and 58 ft bgs. The nature of the unconsolidated material penetrated by Well No. 2 and its proximity to the Entiat River suggest that the well is completed into the recent fluvial deposits left behind by the Entiat River and/or sand and gravel glaciofluvial deposits from the alpine glaciers.

Well logs were also used to approximate the thickness of the unconsolidated sands and gravels that overlie the crystalline bedrock. Wells completed in the vicinity of Wells No. 1 and 2 range in depth from 30 to 120 ft below ground surface (bgs). Two of the well logs reviewed recorded encountering bedrock at depths of 64 and 82 ft bgs. However, these wells appear to be located (based on general well log location descriptions) near the bedrock valley wall, where the underlying bedrock slopes from the upland area toward the valley center. Well No. 1 was drilled to 73 feet and completed in unconsolidated sediments. Well No. 2 was drilled to 58 feet and completed in the unconsolidated sediments. As a result, the thickness of the unconsolidated deposits near Well Nos. 1 and 2 is greater than 73 ft, and may be as thick as 120 ft (the deepest area well cited above) or greater, with actual thicknesses depending on local bedrock topography.

Site Area Hydrogeology

Continued

In order to analyze the proposal to add Wells No. 1 and 2 as POWs, it is important to consider the ground water flow system in the subject area and its relationship to the river system. A characterization of the hydrogeology for the site area included an analysis of the following: saturated thickness of the aquifer, ground water – surface water interaction, area well yields, aquifer parameters, and ground water recharge and discharge relationships.

Ground water levels provide an estimate of the aquifer's saturated thickness when considered with the thickness of valley fill deposits. In the subject area, ground water levels recorded on well logs for the unconsolidated deposits range from 8 to 81 ft bgs, with most between 8 and 30 ft bgs. Some of the deeper water levels are associated with wells at higher elevations and closer to the bedrock valley walls. Based on static water levels and well depths, the known saturated thicknesses for area wells range from 13 to 68 ft. The aquifer at Wells No. 1 and 2 has a known saturated thickness of at least 47.5 ft. Because the wells in Ecology's database that are directly adjacent to Wells No. 1 and 2 do not encounter bedrock, the saturated thickness of the unconsolidated sediments at the proposed well site is recognized to be greater than 47.5 ft. Actual aquifer saturated thickness will vary with the elevation of the underlying bedrock surface.

Ground water and surface water elevations and the nature of aquifer and riverbed sediments suggest good hydraulic communication between the Entiat River and the valley fill aquifer in the subject area. Static water level elevations in wells adjacent to the river are typically similar (within 5 to 10 ft) to the elevation of the Entiat River. Additionally, the applicant indicated that he has observed water level fluctuations in his stock water well that appear to correlate with changes in river level. The stock water well is located approximately 600 ft to the southeast of Well No. 2 and about 40 ft east of the river. During times of low river flow, the applicant reports that in the past, the water level in the well would drop below the pump intake. The presence of coarse sands and gravels that dominate the valley fill aquifer and the Entiat River bed also supports a system in which water is able to flow easily between the aquifer and the river. The above information and the proximity of Wells No. 1 and 2 to the river suggest a high degree of ground water - surface water interaction between the aquifer near Wells No. 1 and 2 and the Entiat River.

Area wells completed in the unconsolidated sediment aquifer are estimated by drillers to yield between 20 and 800 gpm, with most in the 20 to 100 gpm range. Many of the reported well yields depend on well efficiencies, well design, intended use, and test method, rather than a maximum aquifer yield. Sediment type, available saturated thickness, and well yields suggest the subject aquifer in the vicinity of Wells No. 1 and 2 has a transmissivity (T) in the range of 15,000 gallons per day per foot (gpd/ft) to 40,000 gpd/ft and a specific yield typical of unconfined sand and gravel aquifers. The above estimated T range falls within the basin wide range of 12,000 to 60,000 gpd/ft presented for Entiat valley fill deposits by Kirk et al (1995). Ground water recharge to the subject aquifer is from precipitation, irrigation return flows, and ground water – surface water interaction with the Entiat River. Ground water discharges to pumping wells and as seepage to the river, where head relationships and aquifer geometries facilitate.

Hydrogeologic Analysis of the Site

Change Application No. CHEL-10-02 proposes to change from a surface water diversion to Well No. 1 and Well No. 2. The driller's log for Well No. 1 indicates it is completed to a total depth of 73 feet and encountered about 22 feet of clay and gravel overlying a water bearing sand and gravel. The well casing is slotted between depths of 25 and 71 feet. Depth to water at the time of drilling was 12 feet, or approximately the same elevation as the nearby river. The well was initially tested at a rate of 800 gpm, with water level drawdown of 35 feet.

Well No. 2 is 10 inches in diameter and was drilled to a depth of 58 ft in 1995. The well was completed with a 9-inch diameter 50-slot stainless steel well screen extending from 42 to 57 ft bgs. The driller conducted an air test on April 12, 1995, and recorded a discharge rate greater than 230 gpm after 1.5 hours. The well is currently equipped with a 30 horsepower submersible pump, and the applicant indicated that normal operational pumping rates are typically between 250 and 350 gpm. The well log records that a bentonite surface seal was installed to a depth of 19 ft bgs.

The above well information is based on the 2008 site visit for WRTS File Nos. CS4-WRC130056 and CS4-WRC130057 and the July 2, 2010 site visit, conversations with the applicant, and the well logs on file with Ecology.

In order to add or change to a groundwater point of withdrawal, the original surface water source and proposed groundwater source must be in hydraulic continuity with each other. The original source water for each of the rights considered for change is the Entiat River. Based upon high transmissivity of the aquifer, similar water level elevations in the river and well, and the proximity of the well to the river, Aspect and Ecology determined that Wells No. 1 and No. 2 are in hydraulic continuity with the Entiat River.

The information or conclusions in this section were authored and/or developed by Don Phelps, Waikele Hampton, the applicant and Mary McCrea.

Impairment

The impairment analysis considers the potential for drawdown impacts at nearby wells by analyzing the local geology, aquifer characteristics, nearby well yields and performance of the well in question. Ecology previously concluded that "pumping from Well No. 2 over the course of the irrigation season is not anticipated to cause adverse effects to any wells in neighboring parcels." Report of Examination WRTS File No. CS4-WRC 130057, page 11.

Aspect analyzed the potential for impairment of existing groundwater rights or permit-exempt wells from Well No. 1, assuming that the full additional 58.4 afy and 72 gpm from the combined water right changes would occur only at Well No. 1 and that the March 15 through June 1 frost protection occurred during the same period. *See*, Supp. Ex. 3. This analysis, which considered the maximum possible impacts, found no indication of impairment. The closest parcels to Well No. 1 not owned by Cannons are located east of the Entiat River, about 600 feet from Well No. 1. Five wells were mapped in the well log database within about ¼ mile of Well No. 1. However, locations are given only at the section or ¼ section scale and accurate

Continued

locations could not be determined. Three groundwater claims and a certificate of change on a groundwater claim are mapped in Ecology's database within about ¼ mile of Well No. 1 and all located east of the Entiat River. Aspect determined that the drawdown from the increased average pumping rate over the irrigation season would be less than 1 foot at the river and east of the river would be significantly less. Aspect concluded there is no indication for potential impairment and the Board concurs with this assessment.

CONCLUSIONS [See WAC 173-153-130(6)(d)]

Tentative determination (validity and extent of the right)

The water right proposed for change exists to the extent set forth on page 1.

Relinquishment or abandonment concerns

The water right has been continuously beneficially used. There are no relinquishment or abandonment concerns regarding this right.

Hydraulic analysis

No hydraulic analysis was required. The new points of withdrawal have been determined to be from the same body of public water as the original point of diversion based upon the hydrologic review summarized above.

Consideration of comments and protests

There were no comments or protests.

Impairment

The proposed changes can be made without injury or detriment to existing water rights.

Public Interest

The proposed change from a surface water diversion to a groundwater withdrawal is in the public interest.

Water Quantities

The authorized instantaneous withdrawals under the water rights by seasons of use are shown on Table 1, attached.

DECISION [See WAC 173-153-130(6)(e)]

Name on Certificate:	James R. Cannon and Estate of Randolph N. Cannon
Priority Date:	03/01/1988
Instantaneous Quantity:	82.18 gpm
Annual Quantity:	26 acre-feet
Source:	two wells
Points of Withdrawal:	Well No. 1: NW1/4 SE1/4, Section 33, T. 26 N., R. 20 E.W.M. and 1,650 feet west and 2,400 feet north from the southeast corner of Section 33, T. 26 N., R. 20 E.W. M. Well No. 2: NW1/4 NE1/4, Section 33, T. 26 N., R. 20 E.W.M. and 2,657 west and 1,032 feet south from the northeast corner of Section 33, T. 26 N., R. E.W.M.
Purpose of Use: (and number of acres irrigated)	26 acre-feet to irrigate 10 acres
Period of Use:	April 15 to October 15
Place of Use:	NE1/4 NW1/4; NE1/4 NE1/4 SE1/4 NW1/4; SE1/4SE1/4NW1/4; W1/2 NE1/4; N1/2 SE1/4, west of the Entiat; and E2/3 N2/3 SW1/4SE1/4, west of the Entiat River. Parcel numbers: 262033120050, 262033210010, 262033120100, 262033130100, 262033420050, 262033430050, and a portion of parcel numbers 262033210050 and 262033300050.

PROVISIONS [See WAC 173-153-130(6)(f)]

Family Farm Act water right.

All withdrawals under this permit, G4-26270C, S4-28582C, S4-29646P, WRC 130056 and WRC 130057, as recommended for change by Reports of Examination WRTS Files No. CS4-WRC 130056 and CS4-WRC 130057, and WRC 0095511 are limited to a combined withdrawal of 852.05 gpm and 306 acre-feet per year for the irrigation of 81 acres within the place of use shown on Attachment A.

Exercise of this right is interruptible based on instream flows in the Entiat River as measured at the Ardenvoir gage: April 15-August 31, 116 cfs; September 1-October 15, 77 cfs.

Farm Plan: If the requested changes to the Cannon water rights are approved, each of the rights will be appurtenant to the entire place of use for the Cannon farm. The Cannons have grown orchard on the lands currently in orchard for the past 100+ years. The Cannons have also grown pasture grass on the lands currently in pasture for the last 100 years. The land in orchard and the land in pasture are identified on Supp. Ex. 5. The two authorized points of withdrawal will be authorized

Continued

to be used under all water rights and will be metered to ensure that the water right limitations are not exceeded. If in the future the Cannons change the crops grown on the currently irrigated acres, they will notify Ecology by February 15th of the year in which the change is proposed to take place, and provide a map that identifies the specific acreage's planted/to be planted in each crop type and identifies which water rights will be used to meet the particular needs of that crop.

Conditions and limitations

1. Well Construction Standards

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

2. Measurements, Monitoring, Metering and Reporting

- 2.1. An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.
- 2.2. 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.
- 2.3. 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 conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.
- 2.4. 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. 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>
- 2.5. Ecology prefers water use data submitted via e-mail in the form on an electronic spreadsheet. However, hard copies are still accepted. In the future, recorded water use data may be submitted via the Internet. Contact the Central Regional Office for forms or information on available options for submittals.

3. Water Use Efficiency

Use of water under this authorization shall be contingent upon the water right holder's maintenance of efficient water delivery systems and use of up-to-date water conservation practices consistent with established regulation requirements and facility capabilities.

4. 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.

Construction Schedule

Begin project and put water to beneficial use by October 31, 2012.

Signed at Wenatchee, Washington

This 8th day of Sept 2011.

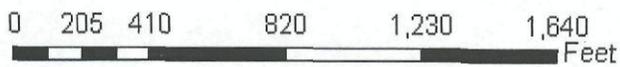


Don Phelps, Chair
Chelan County Water Conservancy Board

If you have special accommodation needs or require this form in alternate format, please contact 360-407-6607 (Voice) or 711 (TTY) or 1-800-833-6388 (TTY).

Ecology is an equal opportunity employer

Randolph & James Cannon Place of Use of Integrated Water System



-  Well
-  Place of Use
-  Parcel Boundary

Prepared by J.E. Caldwell January 27, 2011