

AT A POINT LOCATED:	¼	¼	SECTION	TOWNSHIP N.	RANGE	WRIA	COUNTY.
Well (existing)	SW	SE	25	31	24	49	Okanogan
Well No. 1	NW	SW	30		25		
Well No. 2	NW	SW	30		25		
Well No. 4	NW	SW	30		25		
Well No. 5 (south)	NW	SE	25		24		
Well No. 5 (north)	NW	SE	25		24		
LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED AS APPROVED BY THE BOARD							
Area served by the Brewster Flats Domestic Water Association in its most recent Water System Plan.							
PARCEL NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE,		

DESCRIPTION OF PROPOSED WORKS

Currently BFDWA operate separate potable and irrigation systems. This water right is associated with the irrigation system which consists of the well, pipelines, and sprinkler system. The wells for the potable system operate to maintain the water level in the BFDWA storage tank. A 4-inch waterline transmits water from the well sources to a 100,000-gallon steel water storage tank. From the tank water is distributed to customers. The BFDWA will use existing storage and pipelines to supply water. Additional infrastructure to serve new homes may be added overtime within this authorization.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: December 31, 2013	COMPLETE PROJECT BY THIS DATE: December 31, 2022	COMPLETE CHANGE AND PUT WATER TO FULL USE BY THIS DATE: December 31, 2033
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The Board selected a 20-year development schedule consistent with county GMA Planning and Department of Health Water System Planning guidelines. Actual development is subject to regional economic considerations and these transfers will help ensure BFDWA is ready to serve.

REPORT

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

This application, CG4-GWC358-D@2 (OKAN-12-03), is one of three applications being reviewed concurrently by the Okanogan County Water Conservancy Board. The other two applications include application nos. CS4-23994C@1 (OKAN-12-04) and CG4-27968(A)C@1 (OKAN-13-02).

On November 14, 2012, Brewster Flat Domestic Water Association of Brewster, Washington filed an application for change to change the place of use, purpose of use, period of use, and add wells under GWC358-D. The application was accepted at an open public meeting on November 14, 2012, and the board assigned application number OKAN-12-03. Copies of the change application and water right are provided in Appendix A.

Attributes of the water right as currently documented

Name on certificate, claim, permit: Harleigh E. Farwell

Water right document number: GWC358-D

As modified by certificate of change number: CG4-GWC358-D (Louis H. Shaw) & CG4-GWC358-D@1 (Upper Columbia Mission Society of SDA)

Priority date, first use: June 1919

Water quantities: Qi: 125 gpm Qa: 54 acre ft./ year

Source: well

Point of diversion/withdrawal: SW¹/₄SE¹/₄ of Section 25, T. 31 N., R. 24 E.W.M.

Purpose of use: Irrigation of 12 acres.

Period of use: April 1 through November 1

Place of use: Please refer to the "Existing Right (Tentative Determination)" box on page 1 of this report and Figure 1 attached.

Figure 1 below was taken from Ecology's Water Resources Explorer web man and shows the historic place of use for this water right is outlined in red and the authorized point of withdrawal location is shown as a yellow dot.

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

The following information was obtained from a site inspection conducted by Dennis Buchmann and Darrin Cavadini with Brewster Flat Domestic Water Association, John Hubbard and Mark Miller with the Okanogan County Conservancy Board, and Dan Haller and Breean Zimmerman with Aspect Consulting on Wednesday, November 14, 2012. The Board also reviewed technical reports, research of department records, property records, aerial coverage, and conversations with the applicant and/or other interested parties.

SEPA

The board has reviewed the proposed project in its entirety and finds that the instantaneous quantity of the three water rights is limited to 2,250 gpm. WAC 197-11-800 categorically exempts water right transfers of 2,250 gpm or less. No other specific county or State permit was identified by the Board as necessary for this proposal at this time. Some future SEPA action may be necessary depending on developments that may occur. However, these are speculative at this time. Known water availability through a documented change approval will help Okanogan County Planning better evaluate SEPA and development requirements as specific development proposals occur. Therefore, the Board concludes that SEPA review is not required for this water right transfer.

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

Public notice of the application was given in the Quad City Herald, Brewster, Okanogan County, Washington on December 13, 2012, and December 20, 2012. Protest period ended on January 19, 2013.

There were no protests received during the 30 day protest period. In addition, no oral and written comments were received

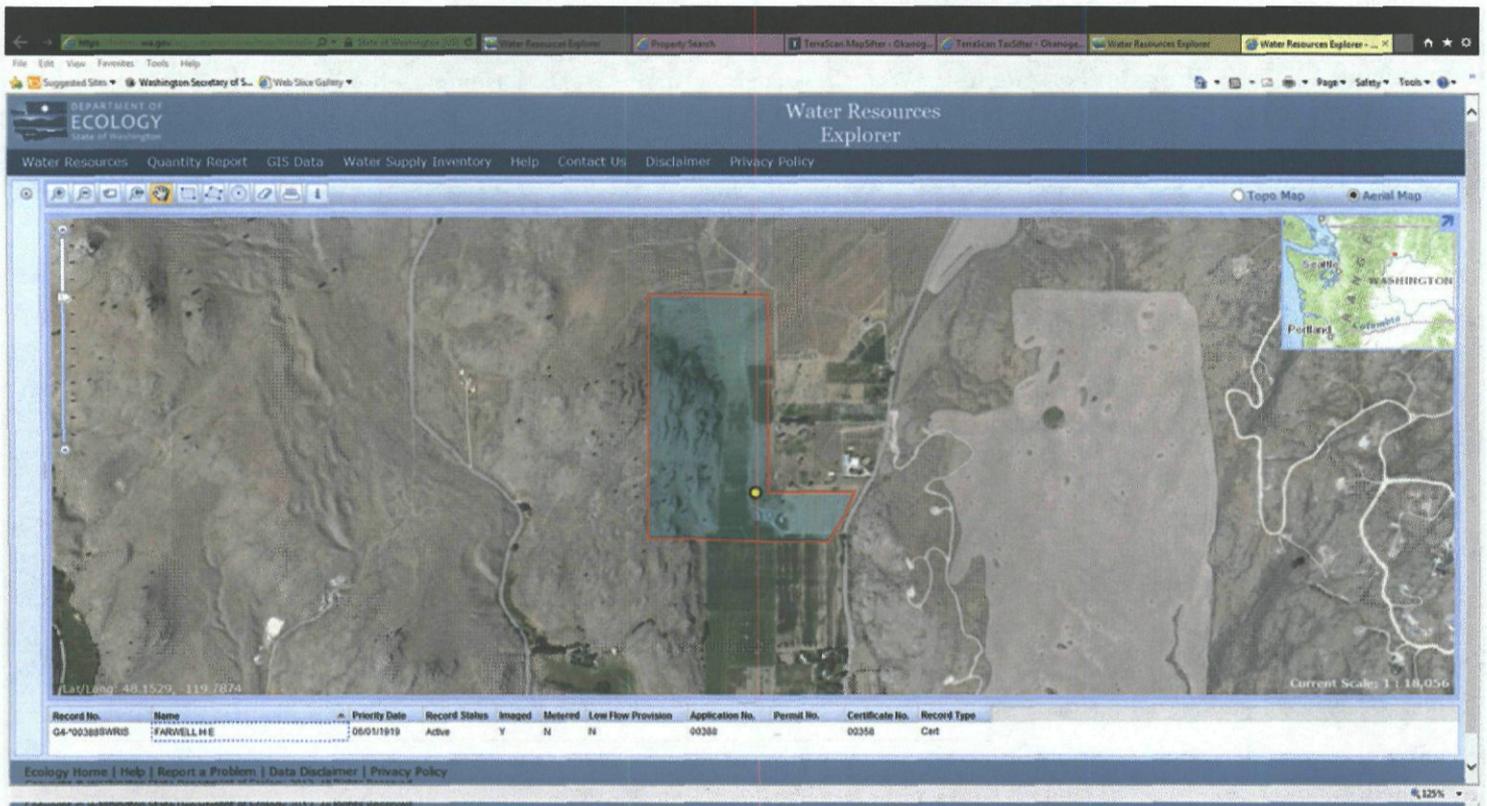
at an open public meeting of the board or other means as designated by the board.

History of water use

This is a groundwater declaration originally claimed by Harleigh E. Farwell, having a priority date of June 1919, authorizing 125 gpm up to 54 acre-feet per year for the irrigation of 12 acres located on or portions of present day Okanogan parcel nos. 3124250019, -0030, -0031, 0032 (please see flight images for 1940-47, 1954, 1964, and 1974 below).

In the early 90s this water right was divided by property sale and deed transfers by the owner at that time (Richard Downey) to three parties: Upper Columbia Mission Society of Seventh Day Adventists (Upper Columbia Mission), Louis H. Shaw, and BFDWA. On 12/20/1990, Upper Columbia Mission filed water right change application no. CG4-GWC358-D@1. The purpose of that change application was to change their portion of GWC358-D to irrigate 5 acres with 52 gpm with up to 22.5 afy located on land owned (parcel nos. 3124250030 and 3124250031) by Upper Columbia Mission. On 8/28/1991, Louis H. Shaw filed change application no. CG4-GWC358-D to change a portion of GWC358-D to irrigate 3.19 acres with 33 gpm, up to 14.4 afy located on land owned (parcel no. 8884500010) by Louis Shaw. Please refer to the approximate parcel locations on Figure 2 below. As described in the following sections, actual irrigation has also occurred on other parcels, either via authorized transfers or through defacto changes.

Figure 1: Ecology Water Resources Explorer Map



A portion of water right nos. S4-23994C and G4-27968(A) overlap with water right no. GWC358-D. Please see Figure 1-1 and Figure 1-2 for the place of use and point of diversion/withdrawal associated with each water right and as mapped by Ecology’s Water Resources Explorer.

Figure 1-1: Ecology Water Resources Explorer Map (S4-23994)

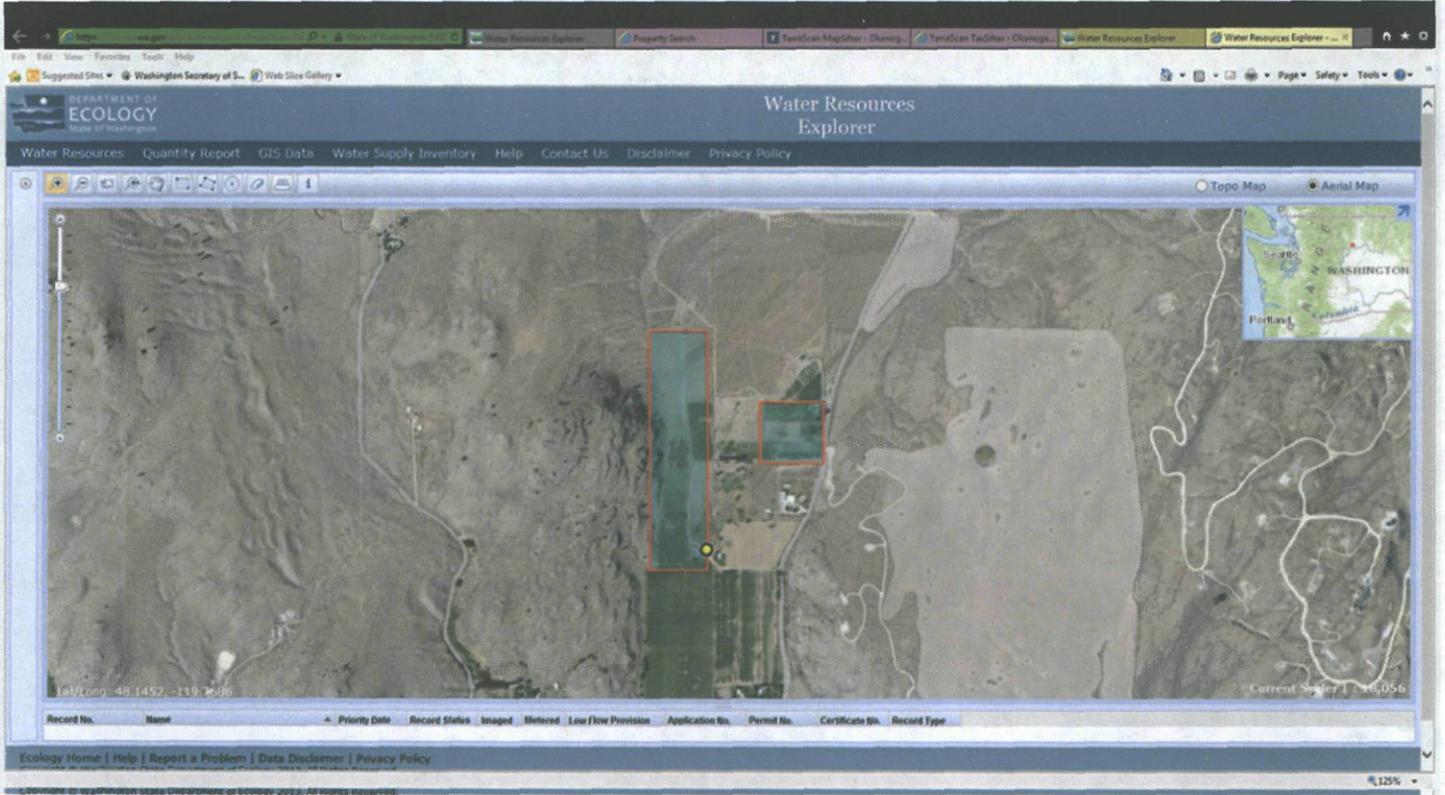


Figure 1-2: Ecology Water Resources Explorer Map (G4-27968(A))



Figure 2: Parcel Map



The remainder of GWC358-D is what is owned by BFDWA to irrigate 3.81 acres with 40 gpm up to 17.1 acre-feet per year. Documented in an Earnest Money Agreement, BFDWA purchased approximately four acres of land and Water Right No. GWC358-D from Richard Downey and Miriam Downey on August 19, 1994 (see Appendix B). It is this portion that is the subject of this report. Ecology determined this portion was valid in its decisions two change decisions for Upper Columbia Mission and Shaw in the 1990s. This report provides a complete summary of this portion of the water right, but the focus of the tentative determination is from 1990 forward following the last time Ecology reviewed the extent and validity of the right.

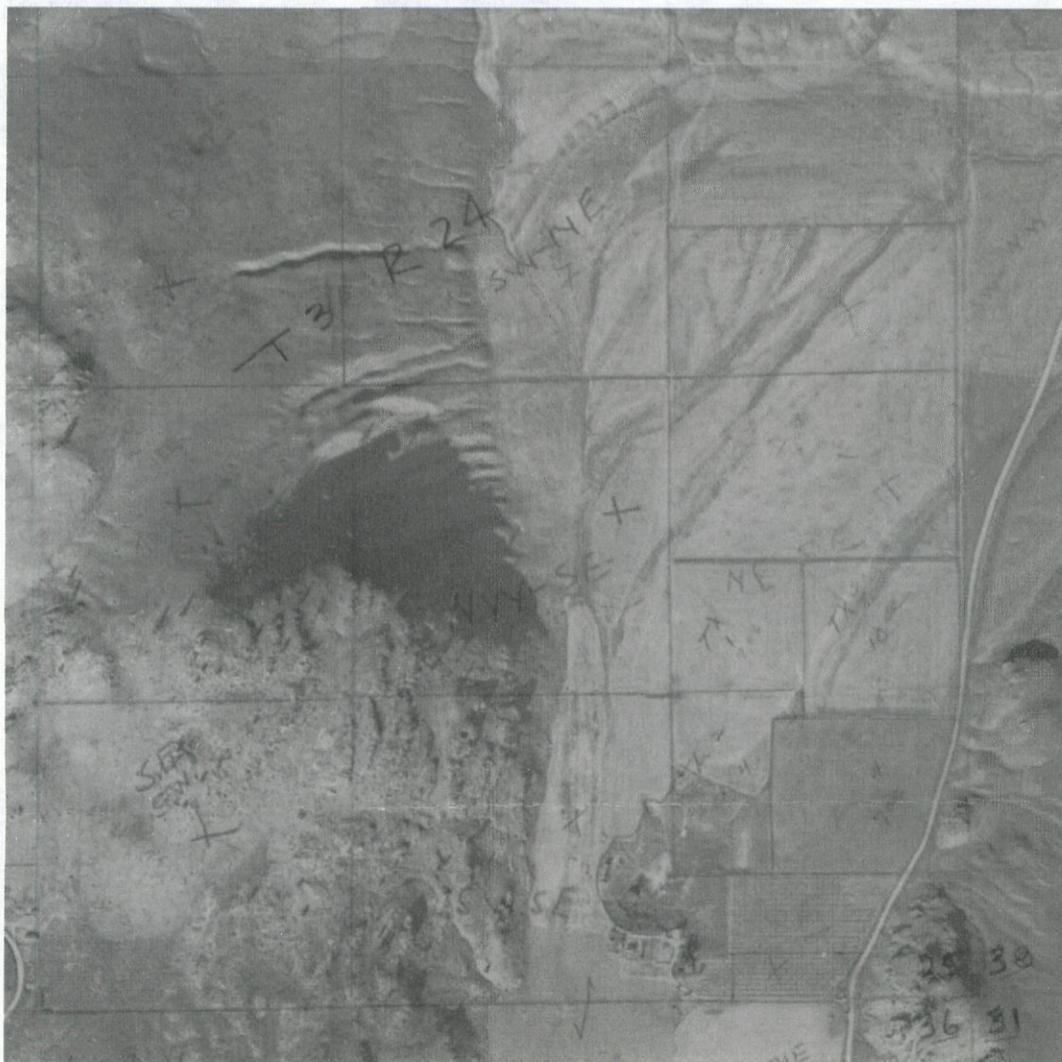
This water right has been used to irrigate 3.81 acres located within the original place of use as authorized in GWC358-D. More specifically, the 3.81 acres of irrigation is located within the S $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 25, T. 31 N., R. 24 E.W.M. Below is aerial imagery from google earth for the years of 1995, 1996, 1998, 2005, 2006, 2009, and 2011, providing evidence of irrigation (outlined in yellow) of BFDWA's irrigation authorized under their portion of GWC358-D.

In the earlier days (see 1940 – 1947 flight image on Figure 3 below) this water right was used to irrigate lands entirely within parcel no. 3124250032 (refer to Google Earth image below with approximate parcel locations). Over time the irrigation place of use moved through defacto change on to parcels and portions of parcel nos. 3124250019, -0030, -0031, -0032 (see 1954 flight, 1964 flight, and 1974 flight on Figures 4, 5 and 6 below).

Figure 3: 1940 – 1947 flight (Aerial provided by Okanogan County Planning Department)



Figure 4: 1954 flight (Aerial provided by Okanogan County Planning Department)



and G4-27968(A) has been put to beneficial use within the large place of use for GWC358-D.

More specifically, water right nos. S4-23994C and G4-27968(A) have been used to irrigate land adjacent to 3.81 acres of irrigated land authorized under BFDWA's portion of GWC358-D. Outlined in yellow below is the area in which this combined (defacto) irrigation has taken place. This area encompasses 9 acres of irrigation.

Figure 7: Aerial Photo from 2009 Showing Defacto Irrigation



Figure 8: Aerial Photo from July 16, 1995 Showing Defacto Irrigation



Figure 9: Aerial Photo from July 9, 1996 Showing Defacto Irrigation



Figure 10: Aerial Photo from August 1, 1998 Showing Defacto Irrigation



Figure 11: Aerial Photo from July 31, 2005 Showeing Defacto Irrigation



Figure 12: Aerial Photo from July 30, 2006 Showing Defacto Irrigation



Figure 13: Aerial Photo from September 10, 2009 Showing Defacto Irrigation



Figure 14: Aerial Photo from November 3, 2011 Showing Defacto Irrigation



Table 1: Summary of Aerial Photo Review

Year	GWC 358-D (acres)	G4-27968(A) (acres)	S4-23994 (acres)	Total (acres)
Authorized Acres	3.81	26.5	34	64.31
1996	3.81	3.5	34	41.31
1998	3.81	5	34	42.81
2005	3.81	26.5	*	30.31
2006	3.81	26.5	*	30.31
2009	3.81	26.5	*	30.31
2011	3.81	26.5	*	30.31

*During this time period, S4-23994 was used to supplement the lower water duty authorized under G4-27968(A).

The well currently used to irrigate water authorized under BFDWA's portion of GWC358-D is located in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 25, T. 31 N., R. 24 E. W.M (see Figure 1). This well also provides water authorized under water right no. G4-27968(A) held by BFDWA, Washington State Department of Natural Resources water right no. G4-27905, and water right no. S4-23994C held by BFDWA. Only water right nos. G4-27968(A) and S4-23994C overlap with the place of use with GWC358-D. Water right no. G4-27905 does not overlap with GWC358-D.

A showing of compliance has been subsequently filed with this change application to correct the well currently serving BFDWA's portion of water right no. GWC358-D. Please refer to Appendix C.

Previous changes

On 12/20/1990, Upper Columbia Mission Society of Seventh Day Adventists (Upper Columbia Mission) filed water right change application no. CG4-GWC358-D@1. The purpose of this change application is to change a portion of GWC358-D to irrigate 5 acres with 52 gpm, up to 22.5 afy located on land owned (parcel nos. 3124250030 and 3124250031) by Upper Columbia Mission.

On 8/28/1991, Louis H. Shaw filed change application no. CG4-GWC358-D to change a portion of GWC358-D to irrigate 3.19 acres with 33 gpm, up to 14.4 afy located on land owned (parcel no. 8884500010) by Louis Shaw.

The remaining acreage belonging to BFDWA (12 acres original less 5 acres less 3.19 acres = 3.81 acres) was not changed until now, but continued to be irrigated.

Proposed project plans and specifications

The changes detailed in this report are proposed to meet future needs for the population within the BFDWA service area. According to the BFDWA 2007 Water System Plan (WSP), the water system serves 144 existing connections, 144 equivalent residential units (ERU), and a current population of 414 full-time residents. It is projected that by the year 2027, the BFDWA service area will have a population of approximately 1,056 for a total of 367 ERUs (see Table 2-5 from the 2007 Water System Plan below). Based on water right self-assessment provided in BFDWA's 2007 WSP, Table 2-5 provided below, and an average daily demand of 400 gallons per day per ERU (2007 WSP), by the year 2027 there will be a Qi deficit of 95 gpm and a Qa surplus of 14 acre-feet. This application, CG4-GWC358-D@2 (OKAN-12-03) and the two applications being reviewed concurrently (application nos. CS4-23994C@1 (OKAN-12-04) and CG4-27968(A)C@1 (OKAN-13-02)) will solve the Qi deficit and provide for additional growth.

Table 2-5
Projected Population and ERUs

Year	Okanogan County Population ¹	Percent Change From 2000 Population	Average Annual Percent Change	Households (Census Tract 9708) ²	BFDWA Population ³	BFDWA Households (ERUs) ³
2000	39,564	-	-	1,526	-	-
2007	42,712	8.0	1.1	1,647	414	144
2010	44,061	11.4	1.0	1,699	534	186
2013	45,426	14.8	1.0	1,752	655	228
2015	46,315	17.1	1.0	1,786	734	255
2020	47,920	21.1	0.7	1,848	876	305
2025	49,410	24.9	0.6	1,906	1,008	351
2027	49,954	26.3	0.5	1,927	1,056	367

Notes:

1. The projection is the intermediate growth projection for Okanogan County generated by the OFM for the GMA. The 2000 population is from the 2000 census. The 2007 population was estimated through interpolation. The 2027 population was projected based on the trend in population growth projected by the OFM through 2025.
2. The number of households shown in 2000 is from the 2000 census. Households were projected assuming the same growth rate as the projected population growth rate shown for Okanogan County.
3. The 2007 BFDWA households and population are from the current WFL. Future households were projected assuming that 80 percent of the new households in census tract 9708 would be developed in the BFDWA service area. The BFDWA population was projected based on an average household size equal to the existing household size.

Other water rights appurtenant to the property (if applicable)

- **G3-00038C**, Brewster Flat Domestic Water Association, having a priority date of August 26, 1967, authorized for 150 gpm up to 179 acre-feet per year for continuous community domestic supply. This water right is primary to non-additive water right no. G3-0032C.
- **G3-00032C**, Brewster Flat Domestic Water Association, having a priority date of July 25, 1969, authorized for 150 gpm up to 179 acre-feet per year for continuous community domestic supply. This water right and water right no. G3-00038C, in combination, cannot exceed 150 gpm, up to 179 acre-feet per year.
- **S4-23994C**, Dick Downey, having a priority date of May 23, 1975, authorized for 0.56 cfs up to 136 acre-feet per year for the irrigation of 34 acres from April 1 to October 1. A provision in this water right states that rights authorized under groundwater declaration No. 358-D for a portion of the same described lands as water right no. S4-23994C shall not exceed the recommend amount of 136 acre-feet per year. Although, from review of aerial images and the water right history, the two water rights (358-D and S4-23994C) historically irrigated different lands and were initially issued as primary and additive in nature. This issue will be discussed in greater detail in the ROE for S4-23994C.
- **G4-27968(A)**, Brewster Flat Domestic Water Association, having a priority date of June 29, 1982, authorized for 217 gpm up to 53 acre-feet per year for the irrigation of 26.5 acres from April 1 to October 31. This water right is an additive water right to the above described water right, Water Right No. S4-23994C.
- **G4-27905**, Department of Natural Resources, having a priority date of April 23, 1982, authorized for 200 gpm up to 70 acre-feet per year for the irrigation of 21 acres from April 1 to October 31.

Public Interest (groundwater only)

The proposed transfer is subject to RCW 90.44.100 and therefore, cannot be detrimental to the public interest, including impacts on any watershed planning activities.

Water, subject of this transfer, was authorized under groundwater declaration 358-D having a priority date of June 1919 and has consistently been since that time. The approval of this water right transfer would provide current and future growth needs allowing BFDWA to provide potable water to its customers and future customers, and therefore, is not detrimental to the public interest. Providing reliable water supply for regional water purveyors is in the public interest. This water right transfer will support additional job and tax growth for the county, which is in the public interest. No party has raised any claims of detriment to the public interest.

Well Capacity and Water System Information

Adjudications and Ecology generally base an instantaneous quantity using 0.02 cfs per acre, which is equivalent to approximately 9 gpm. BFDWA's portion of this water right has an instantaneous quantity of approximately 10.5 gpm. Based on this information, the instantaneous quantity for this water right is reasonable.

The well used to withdraw water authorized under this water right through defacto change is currently metered, but is combined with other water rights and is difficult to separate the instantaneous and annual quantities by this water right alone.

In the future, as BFDWA expands and connects new houses it will evaluate which wells should have increased capacity under these change applications through its water system planning process. This determination will be made based on the location growth within the water system service area, fire flow demands of the structures constructed, and peak water needs. BFDWA's Water Facilities Inventory (WFI) Form contains current capacity information for wells being added under this change authorization. This information will be updated in future water system plans. See Appendix C.

Washington Irrigation Guide and Water Duty Calculations

Based on the extent of acres irrigated in Table 1, the Board considered a reasonable annual quantity for BFDWA portion of Certificate GWC358-D. The Board first considered the original water duty of 4.5 acre-feet per acre awarded by Ecology for the water right.

According to the most recent Washington State Irrigation Guide, irrigation crop requirement for alfalfa at the nearest station (Malott) was 26.1 inches per year. This confirms that the original 4.5 acre-feet per acre authorized under this water right is reasonable. At 26.1 inches per year, this equates to an efficiency of 48.3%. According to GUID 1210, this is lower than the average sprinkler efficiency, but still reasonable based on water rights Ecology issued at the time.

Based on this information, it is reasonable to assume that 4.5 acre-feet per acre times 12 acres, or 53 acre-feet was beneficially used.

Hydraulic analysis

The hydrogeology of the region is dominated by recent alluvium and glacial deposits, over metamorphic and igneous bedrock. These units are described in multiple studies, including regional geologic maps (Gulick and Korosec 1990) and in small-scale watershed assessments, including the Starzman Lake drainage groundwater study (Ecology 1986). Information from these documents is summarized below.

Brewster Flats is a large glacial terrace, extending down the Okanogan River valley, then contours west to parallel the Columbia River. The terrace was formed when a large amount of sediment, was released from the Okanogan Lobe of the Cordilleran Ice Sheet, then subsequently eroded by high flows during glacial retreat into the multi-level terrace structure.

The uplands above Brewster Flats are predominately comprised of north-south trending bedrock ridges. The ridges delineate several small drainages, including the Starzman Lake drainage – a 17-square mile basin which originates from the flanks of Dent

Mountain to the north. Unconsolidated sediments occupy the floor of the bedrock-lined Starzman Lake drainage, characterized as undifferentiated glacial drift, including till, outwash, and glaciolacustrine deposits. These glacial deposits vary in thickness and permeability, which give rise to contrasting surface conditions.

The majority of valley deposits include relative high permeability glacial outwash, which allows for high infiltration capacity, resulting in little surface water drainage. However, near surface lower permeability till or glaciolacustrine deposits support perched surface water, as evidenced by several small ponds located within the drainage.

The applicant seeks to add additional points of withdrawal, including wells Nos. 1, 2, 3, 4, 5 (south), and 5 (north), which comprise BFDWA's existing well field to three water rights, including Nos. S4-23994C, GWC-358D, and G4-27968(A). The existing point(s) of withdrawal are located in close proximity on the Brewster Flat terrace, in the lower Strazman Lake drainage. The wells are completed across sand and gravel units, similar in elevation and thickness to BDFWA's existing well field. The wells are all hydraulically connected, and share a common recharge (catchment) area and have a common flow regime. Therefore, the existing points of withdrawal and the BFDWA's existing well field are considered to be in hydraulic continuity and within the same source of water. Please refer to the attached Hydrogeologic Investigation produced by Aspect Consulting for additional information.

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

Tentative determination (validity and extent of the right)

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: based on the investigation provided in this report, approximately 3.81 acres has continuously been irrigated under the portion of GWC358-D held by BFDWA on parcel nos. 3124250032 and 3124250019.

Relinquishment or abandonment concerns

There is no relinquishment or abandonment concerns for this water right based on aerial coverage as provided in this report.

Geologic, Hydrogeologic, or other scientific investigations

Tyson Carlson, LHG, Aspect Consulting has performed an analysis of this transfer application and has determined the proposed points of withdrawal are in the same body of groundwater and the proposed changes can be made without impairment to other rights. (see attached Hydrogeologic Investigation in Appendix C.

Consideration of comments and protests

No comments or protests were received during the 30-day protest period of the public notice.

Impairment

The Hydrogeologic Analysis in Appendix B evaluated both local and regional impacts associated with adding wells and changing the season of use for all three transfers.

RCW 90.03.290 and RCW 90.44.060 require a determination that the change will not impair existing rights. There are numerous water right certificates, permits, and claims located on the Brewster Flat terrace. The proposed change requests an equivalent volume of groundwater to be withdrawn from the same aquifer located short distance away. BFDWA's well field, including Wells Nos. 1, 2, 3, 4, 5 (south), and 5 (north), will withdraw water from aquifer storage, over a longer period of use, having a more diffuse impact on local groundwater than the seasonal groundwater withdrawal with a higher average instantaneous rate.

To illustrate this, using the same aquifer parameters for Well No. 5 as presented in Appendix A of the Hydrogeologic Analysis (Appendix B of this report), the governing Theis equation (Theis 1935) was used to estimate the interference drawdown from pumping the proposed point of withdrawal on the closest water supply well completed in the Brewster Flat terrace – BFDWA's irrigation well authorized under No. G4-27968(A), located approximately 270 feet southwest. Based on this analysis, the interference drawdown from continuously pumping Well No. 5 at the average annual rate is estimated to *reduce* the amount of interference drawdown by 1, to as much as 12 feet. Additionally, based on the pump test data presented in BFDWA's Water System Plan, the aquifer appears to be highly conductive and authorizing additional instantaneous capacity from each source does not appear to create conditions that would impair other water rights. For example, pumping test data from Well No. 5 indicate that pumping a constant discharge of 280 gpm for 24 hours produced zero drawdown at an observation well located 37 feet away (Water System Plan, Appendix E, Page E-22). We therefore conclude that although pumping interference effects are still likely, they will be reduced, and no impairment of existing rights on the Brewster Flat terrace is anticipated with full use of the requested quantities.

Turning next to regional issues, the Hydrogeologic Analysis evaluated impacts on the Columbia River due to the proposed season of use by evaluated how the current water rights impacts the Columbia River, and how the proposed changes will alter that impact.

The upland aquifer may not be in direct geologic contact with the Columbia River, but drawdown effects from pumping of the wells may reduce horizontal flow which, in turn, may reduce baseflow contribution to regulated surface water bodies. Therefore, the existing points of withdrawal and BFDWA's well field are considered to be in hydraulic continuity and competing for water with the Columbia River. However, this competition is regional in nature as the Columbia River is over 3 miles away, and does not qualify as "significant and direct" under the Columbia River Rule, WAC 173-563-020. For example, for management of impacts associated with the Office of Columbia River's (OCR) Lake Roosevelt Incremental Storage Release Project, OCR used a surrogate of 1 mile in determining significant and direct impacts.

Seasonal impacts to the Columbia River for the existing authorizations were first evaluated with use of an analytical river depletion model using the well functions developed by Hunt (2012). Input to the model was based on the pumping test data from Well No. 5 (north) presented in BFDWA's water system plan using the empirical method for calculating transmissivity presented in Driscoll (1995), resulting in a value of $0.56 \text{ ft}^2/\text{min}$ (6,034 gpd/ft). In addition, based on the pumping testing data, a storativity value equal to 5×10^{-4} was assumed representative of the confined Brewster Terrace aquifer.

Based on the measured distance between the No. S4-23994C point of withdrawal and the Columbia River (17,200 feet), a typical 1-year river depletion curve was calculated for the specified period of use. The analysis assumed an average pumping rate over the seasonal period of use equal to the Q_a (167.3 gpm). Results of the analysis indicate that, at the end of the 184-day period of use, the withdrawal from the well will reduce groundwater discharge to the Columbia River by approximately 80 gpm. These impacts asymptotically decline through the off season until the start of the next irrigation cycle, at which time approximately 23 gpm of residual pumping impacts remain.

This analysis was advanced to predict the cumulative annual residual impact from irrigation since authorization of the water right. The analysis indicates that since authorization of the permit, residual pumping impacts on the Columbia River total about 47 gpm (Figure 1). Moreover, peak cumulative impacts near the end of the irrigation season approach 112 gpm. These represent the original impacts authorized by the water rights when issued.

Assuming the period of use of the water right is changed from seasonal (184 days) to year round (365 days), the average annual pumping rate would decrease from 167.3 gpm to 84.3 gpm. In the long-term, it is reasonable to assume that impact on the Columbia River would approach the average steady state pumping rate of 84.3 gpm. The change in period of use would therefore reduce impacts to the Columbia River during the mid to late portion of the irrigation season (day 78 to 240) from 112 gpm to a maximum of 84.3 gpm. In addition, cumulative residual impacts from the previous year would not continue to accumulate, thus reducing future impacts to the Columbia River.

An increase in impacts to the Columbia River would occur during much of the off season (day 240 to 365) through the early portion of the irrigation season (day 0 to 78). The maximum impact occurs near the start of the seasonal period of use at a rate of approximately 38 gpm; however, the off-season impact averages to only 22 gpm.

The analysis described above was duplicated for the proposed change(s) to S4-23994C and G4-27968(A), as illustrated in Figure 2 and 3 and summarized in Table 1 of the Hydrogeologic Analysis in Appendix C. The results indicate that the proposed change in period of use reduces impacts to the Columbia River during the irrigation season, with a modest increase in impacts during the balance of the year.

In other words, pre-change and post-change impacts both impact the Columbia River year-round due to the 3+ mile distance of the wells from the river, but the change in season of use will slightly alter the summer/winter balance of impacts long-term. This change tends to move the impact on the Columbia from periods of high demand (summer) to low demand (winter) which is in the public interest. These alterations in impact are not impairment from either a procedural or substantive standpoint. Procedurally, tributary groundwater falls outside the regulatory scheme of the Columbia River rule, WAC 173-563. Substantively, no private water right would be curtailed more often as a result of this change nor would the Columbia River instream flow rule values be adversely impacted. In fact, this change moves the hydrograph in the same direction that OCR is actively investing in water infrastructure projects to create.

In addition, this analysis conservatively assumes 100 percent consumptive use, and does not account for irrigation return flow. In addition, the analysis does not account for the change in consumptive use from irrigation (approximately 80 percent) to the municipal (approximately 60 percent) use.

Public Interest

The approval of this water right transfer would provide current and future growth needs allowing BFDWA to provide potable water to its customers and future customers, and therefore, is not detrimental to the public interest. It also benefits Columbia River flows by shifting impacts of withdrawals from periods of high use to low use.

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

The proposed appropriation for municipal use is a beneficial use of water, the 40 gpm, 17.1 acre-ft/year is available for appropriation, this transfer will not impair existing water rights, and will not be detrimental to the public interest.

Based on the information presented above, the author recommends that the request to appropriate 40 gallons per minute up to 17.1 acre-feet per year be approved in the amounts described, limited, and provisioned on page 1 through 3 of this report.

PROVISIONS [See WAC 173-153-130(6)(f)]*Wells, Well Logs and Well Construction Standards*

All wells constructed in the state shall meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard shall be decommissioned.

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.

Required installation and maintenance of an access port as described in WAC 173-160-291(3).

Measurements, Monitoring, Metering and Reporting

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

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.

Water use data shall be recorded weekly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year. Reported water use data shall be submitted via the Internet or by using forms available at the Central Regional Office of the Department of Ecology in Yakima. To set up an Internet reporting account, access <https://fortress.wa.gov/ecy/wrx/wrx/Meteringx/>. If you have questions or need forms, contact the Central Regional office.

Department of Health Requirements

Prior to any new construction or alterations of a public water supply system, the State Board of Health rules require public water supply owners to obtain written approval from the Office of Drinking Water of the Washington State Department of Health. Please contact the Office of Drinking Water prior to beginning (or modifying) your project at DOH/Division of Environmental Health, 16201 E. Indiana Avenue, Suite 1500, Spokane Valley, WA 99216, (509) 329-2100.

Construction Schedule

The water right holder shall file the notice of Proof of Appropriation of water (under which the Certificate of Water Right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The Certificate will reflect the extent of the project perfected within the limitations of the water right. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

Other

Perfection of the instantaneous quantity authorized under this change for each well will be determined during the proof of appropriation stage.

If the criteria in RCW 90.03.386(2) are not met and a Water System Plan/Small Water System Management Program was approved after September 9, 2003, the place of use of this water right reverts to the service area described in that document. If the criteria in RCW 90.03.386(2) are not met and no Water System Plan/Small Water System Management Program has been approved after September 9, 2003, the place of use reverts to the last place of use described by the Department of Ecology in a water right authorization.

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.

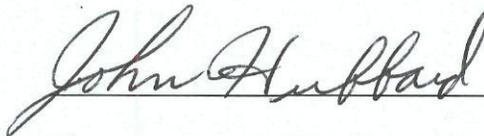
This decision may indicate a Real Estate Excise Tax liability for the seller of water rights. The Department of Revenue has requested notification of potentially taxable water right related actions, and therefore will be given notice of this decision, including document copies. Please contact the state Department of Revenue to obtain specific requirements for your project. Phone: (360) 570-3265. The mailing address is: Department of Revenue, Real Estate Excise Tax, PO Box 47477, Olympia WA 98504-7477 Internet: <http://dor.wa.gov/> E-mail: REETSP@DOR.WA.GOV.

The undersigned board commissioner certifies that he/she understands the board is responsible "to ensure that all relevant issues identified during its evaluation of the application, or which are raised by any commenting party during the board's evaluation process, are thoroughly evaluated and discussed in the board's deliberations. These discussions must be fully documented in

the report of examination.” [WAC 173-153-130(5)] The undersigned therefore, certifies that he/she, having reviewed the report of examination, knows and understands the content of this report and concurs with the report’s conclusions.

The undersigned board commissioner certifies that he/she understands the board is responsible “to ensure that all relevant issues identified during its evaluation of the application, or which are raised by any commenting party during the board's evaluation process, are thoroughly evaluated and discussed in the board's deliberations. These discussions must be fully documented in the report of examination.” [WAC 173-153-130(5)] The undersigned therefore, certifies that he/she, having reviewed the report of examination, knows and understands the content of this report and concurs with the report’s conclusions.

Signed at Okanogan, Washington
This 5th day of June, 2013



_____, Board Representative
Okanogan 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