

Summary

Alternative Compliance Plan for Water Right (S009302)

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INTRODUCTION

See [Information and Instruction Sheet](#) for assistance in completing this form. The form shall be completed by the water right owner, their agent, or for an Alternative Compliance Plan filed for a group, the designated contact. The vast majority of water right owners should be able to meet the measurement requirements. Participation in an Alternative Compliance Plan does not relieve the participant of the independent obligation to file an online annual Report of Water Diversion and Use.

All sections of the form below must be completed. An incomplete form does not excuse non-compliance with the regulation or release you from the obligation to measure. The Alternative Compliance Plan may not be used to avoid measurement and monitoring, but should be used to describe an alternative method of measurement and monitoring which will provide the information required by the Regulation. Estimated diversion records may not meet the Regulation's accuracy requirements without supporting documentation.

Note: The large text boxes in the form have a character limit of 2,000 characters. Responses requiring more than 2,000 characters for a particular text box should be submitted as an attachment in Section I of this form. Additional information should be attached in Section I.

SECTION A - WATER RIGHT OWNER INFORMATION

This section of the form describes the information that is required for each water right or claimed right covered under the Alternative Compliance Plan.

In Section I, attach a table (in Microsoft Excel .xlsx, comma-separated .csv, or tab-separated .txt format) containing the Application or Statement Number for each water right covered under the Alternative Compliance Plan. For your water right, answer the questions below.

(1) Owner Name(s) *

Foster Brovan

(2) Email Address *

[REDACTED]

(3) Phone Number *

[REDACTED]

(4) Mailing Address Line 1 *

[REDACTED]

(5) Mailing Address Line 2:

(6) City *

Shingletown

(7) State *

CA

(8) Zip Code *

96088



(9) Is the Water Right Owner also the Primary Contact? *

☒ Yes

☐ No



On questions 10 through 13, please tell us what you understand the requirements of the regulation to be for this water right to be.

(9) Installation Deadline *

☒ January 1, 2017

- ☐ July 1, 2017
- ☐ January 1, 2018

(10) Measurement Accuracy *

- ☒ 10%
- ☐ 15%
- ☐ Other, as specified in the Alternative Compliance Plan (if submitted)

(11) Required Monitoring Frequency *

- ☒ Hourly
- ☐ Daily
- ☐ Weekly
- ☐ Monthly

(12) Qualifications of the Individual Installing/Certifying *

- ☒ A California Licensed Professional Engineer (PE), a person working under the supervision of a California PE, a California-licensed contractor authorized by the State License Board for C- 57 well drilling or C- 61 Limited Specialty/D-21 Machinery and Pumps, or a Hydrologist or Engineer employed by a Federal Agency
- ☐ A person trained and experienced in water measurement (for diversions less than 100 acre-feet per year)

SECTION B - INFORMATION ON PRIMARY CONTACT

This section of the form includes the contact information for the primary contact associated with the Alternative Compliance Plan.

(1) Name(s): *

(2) Phone Number: *

(3) Email Address: *

(4) Mailing Address Line 1: *

(5) Mailing Address Line 2:

(6) City: *

(7) State: *

(8) Zip Code: *

(8) The Alternative Compliance Plan Primary Contact is a(n): *

- ☐ Water Right Owner
- ☐ Agent
- ☐ Designated Contact

SECTION C - INFORMATION ON QUALIFIED INDIVIDUAL

This section of the form includes the contact information for the Qualified Individual certifying the Alternative Compliance Plan.

(1) Name(s): *	<input type="text" value="Shawn Pike"/>
(2) Phone Number: *	<input type="text" value="REDACTED"/>
(3) Email Address: *	<input type="text" value="REDACTED"/>
(4) Mailing Address Line 1: *	<input type="text" value="REDACTED"/>
(5) Mailing Address Line 2:	<input type="text"/>
(6) City: *	<input type="text" value="Los Molinos"/>
(7) State: *	<input type="text" value="CA"/>
(8) Zip Code: *	<input type="text" value="96055"/>
(9) The qualifications of the individual certifying the Alternative Compliance Plan are: *	<div><div><input checked="" type="radio"/> California Licensed Professional Engineer (PE)</div><div><input type="radio"/> Person working under the supervision of a California Professional Engineer</div><div><input type="radio"/> California-licensed contractor authorized by the State License Board for C- 57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps</div><div><input type="radio"/> Hydrologist or Engineer employed by a Federal Agency</div><div><input type="radio"/> Person trained and experienced in water measurement (for diversions of less than 100 acre-feet per year)</div></div>
(10) Qualifying Individual's PE or Contractor license number, if applicable:	<input type="text" value="49577"/>

SECTION D - REQUEST FOR ALTERNATIVE COMPLIANCE

Water right holders who divert more than 10 acre-feet of water per year are required to measure the water they divert. A diverter may choose any measuring device, or combination of devices, that meet the measurement and monitoring requirements of the regulation. The measurement requirements are summarized on the [Reporting and Measurement Webpage](#).

For each box checked in questions 1a through 3 below, submit a detailed explanation and attach substantiating documentation.



(1a) Diverter is seeking alternative compliance from the requirement(s) checked below. *

- ☒ Measuring Device Location
- ☐ Required Accuracy
- ☐ Certification of Accuracy
- ☒ Installation and Maintenance
- ☐ Monitoring Frequency
- ☐ Telemetry
- ☒ Other (describe in Section 1b)

(1b) Provide additional information for each of the reasons selected in question 1a: *

The diversion from North Buckskin Creek is into a penstock to a hydroelectric plant, which powers the Brovan house and ranch. A smaller pipe leaves the penstock and irrigates pasture through pressurized sprinkler lines. The pressure and nozzle sizes are known, and therefore the measurement device location is at the hydroelectric plant and sprinkler nozzles. A separate measurement device would have to be installed in the penstock. Installation and maintenance would cause an unnecessary burden, because the hydroelectric plant and sprinkler nozzles already serve as measurement devices. Power is continuously metered and recorded at the house, so hourly data can already be supplied from flow calculated from nozzle sizes and pressure. Any potential inline measurement device would have to be maintained, and possibly sent back to the manufacturer in the case of malfunctions, which could unreasonably interrupt the only power supply to the house and ranch. The ranch has freezing weather every winter, which could freeze the parts of any attached device which are not inside the penstock.

(5000 character max.)



(2a) Alternative compliance is being pursued because strict compliance with one or more of the requirements for measuring and monitoring (check all that apply): *

- ☒ Is not feasible.
- ☐ Would unreasonably affect public trust resources.*
- ☐ Is unreasonably expensive.**
- ☐ Would result in the waste or unreasonable use of water.

* Including fish, wildlife, recreation, navigation, and aesthetic values.

** Plans claiming that strict compliance is unreasonably expensive shall be accompanied by an attached supporting cost analysis. The cost analysis should compare the cost of the proposed alternate measuring devices to the cost of the measurement devices required by the Regulation. All Plans shall include a budget and shall identify sources of financing. The budget should provide sufficient detail to show the cost of the proposed alternate measuring devices, the cost of obtaining any necessary permits, and the cost of installation.

(2b) Provide additional information for each justification selected in question 2a: *

The "is not feasible" box is checked in lieu of "is not necessary" - no business or individual would unnecessarily duplicate an expensive means of complying with a regulatory requirement. Nozzles under pressure are themselves flow measurement devices. The pressure and nozzle sizes are known, and very likely provide flow measurement within the required accuracy of +/- 10%. The owner relied on the information and advice of the designer and installer of the hydroelectric plant, Devon Tassen at Hydrostock, Inc. in Millville, CA (<https://bizstanding.com/directory/CA/HY/232/>). Mr. Tassen was an engineer in a local fire department, with an expert understanding of pressures and nozzle sizes to produce accurate flows necessary to fight fires. Similarly, the sprinkler nozzles are the same type of smooth brass nozzles, and flows can be calculated for each sprinkler.

(5000 character max.)



(3a) Alternative compliance is requested under the following categories (check all that apply): *

- ☐ Highly variable flow rate at point of diversion.
- ☒ Point of diversion is inaccessible a portion of the year due to weather or other on-site conditions.
- ☐ Point of diversion is under tidal influence
- ☒ There is an existing measuring device or measurement method in use.
- ☐ Water is corrosive to measurement equipment.
- ☐ The diversion is measured by another entity (identify entity and method of measurement used).
- ☐ Other (provide complete description in section 3b)

(3b) Provide additional information for each of the categories selected in question 3a: *

Snow can be deep at this elevation, making it difficult or impossible to access the point of diversion from North Buckskin Creek. If unforeseen considerations make installation of a measurement device near the hydroelectric plant difficult or risky, then a device up near the penstock entrance could be inaccessible during times of freezing, and device malfunctions or data loss might not be found until weeks afterward. The device could freeze and break, or otherwise stop working until it thawed. However, the existing hydro plant and sprinkler nozzles under pressure are themselves flow measurement devices. The pressure and nozzle sizes are known, and very likely provide flow measurement within the required accuracy of +/- 10%.

(5000 character max.)

(4) Alternative Compliance Plans shall include alternative, objective measurement and performance standards that achieve the closest attainable compliance. Describe the measurement or alternative to measurement that will be used at each point of diversion in the plan to achieve closest attainable compliance. *

Technical Table T-9 in the document

<http://www.elkharbrass.com/files/aa/downloads/catalog/catalog-f7-T.pdf> lists flows from smooth brass nozzles for various pressures and diameters. The hydroelectric plant uses a 2" nozzle, and usually runs at 80 psi. From the table, the flow is 1,063 gallons per minute, or 2.368 cubic feet per second. As the pressure drops, or if the nozzle is swapped out for a smaller size, the flow can be accurately recalculated. Rain Bird has tables for the irrigation sprinklers listed below, at http://www.rainbird.com/documents/ag/chart_70CH_70CHM.pdf http://www.rainbird.com/documents/ag/chart_30H_30WH.pdf The flow exiting the hydro plant is returned to North Buckskin Creek, and thence to the South Fork of Bear Creek. The sprinkler nozzles are as follows: 1 Rain Gun with Nozzle size of .70 At 80 PSI (0.285 cfs each) 3 Seventy Sprinklers with Nozzle size of 1/4 at 80 PSI (0.037 cfs each) 10 Sprinklers with Nozzle size of 5/32 at 80 PSI (0.014 cfs each) The aggregate maximum flow through the sprinklers is 0.66 cfs at 80 psi. The sprinklers are run continuously through the irrigation season to irrigate pasture and hay. The total maximum flow through the hydro plant and sprinklers is 3.03 cfs. The supporting documentation of flow rates through these nozzles is attached.

(5000 character max.)

SECTION E - AREA COVERED BY THE ALTERNATIVE COMPLIANCE PLAN

Summarize the following for each water right covered by the Alternative Compliance Plan. In Section I, attach maps, aerial photographs, or other renderings showing the area covered by the Alternative Compliance Plan and delineating the acreage of each place of use served. For the area covered by the Alternative Compliance Plan, include a list of assessor's parcel numbers and the current owner of each parcel.

(1) Provide a general description of the area covered by the Alternative Compliance Plan. *

Please refer to the attached map and Supplemental Statement of Diversion and Use. North Buckskin Creek is a tributary of the South Fork of Bear Creek in Shasta County, in Sections 20 and 21, Township 31 North, Range 1 East, about 2-1/4 miles North of Shingletown, CA. The Brovan Ranch and the hydroelectric plant is in the SE 1/4 of Section 20, Township 31 North, Range 1 East. The penstock to the plant starts at the East edge of the SW corner of Section 21, and ends at the east edge of the SE corner of Section 20. The area is mountainous with small valleys and relatively steep mountain streams. The ranch is at about 3,170 feet elevation, and the penstock starts at about 3,480 feet elevation.

(5000 character max.)

(2) Describe all diversion and conveyance works covered by the Alternative Compliance Plan. *

Mr. Brovan diverts a maximum flow of 2.37 cfs from North Buckskin Creek, through a penstock, through his hydroelectric plant. A maximum pressure of 80 psi is achieved just before the power turbine. The water exiting the power turbine returns to North Buckskin Creek. The owner contends that because the pipeline never leaves North Buckskin Creek, this is not actually a diversion from the creek. Just above the hydro plant, a smaller pipe leaves the penstock, and runs water through pipelines and hoses to 14 sprinklers: 1 Rain Gun with Nozzle size of .70 At 80 PSI (0.285 cfs each) 3 Seventy Sprinklers with Nozzle size of 1/4 at 80 PSI (0.037 cfs each) 10 Sprinklers with Nozzle size of 5/32 at 80 PSI (0.014 cfs each) The sprinklers irrigate pasture for cattle and hay.

(5000 character max.)

(3) Describe the type(s) of Beneficial Use(s). *

1. Power generation for the house and ranch. There is no other power source - this is the only source of power. 2. 55 acres of pasture and hay. 3. 20 cattle

(5000 character max.)

(4) Have you attached a list of assessor's parcel numbers and the current owner of each parcel covered by the Alternative Compliance Plan? (Attachments may be made under Section I of this form.) *

☒ Yes | ☐ No

SECTION F - MEASUREMENT AND MONITORING

(1) For each Point of Diversion listed in the Alternative Compliance Plan, describe how the water is measured. *

The North Buckskin Creek diversion is a pressurized pipe, discharging the flow back to North Buckskin Creek after generating power in a hydroelectric plant. A pipeline branches off the penstock just above the hydro plant, and distributes the flow through other pipes to sprinklers of known sizes. The maximum flows in this plan are based on a maximum pipe pressure of 80 psi. the nozzle flows are as follows: 1 Rain Gun with Nozzle size of .70 At 80 PSI (0.285 cfs each) 3 Seventy Sprinklers with Nozzle size of 1/4 at 80 PSI (0.037 cfs each) 10 Sprinklers with Nozzle size of 5/32 at 80 PSI (0.014 cfs each)

(5000 character max.)

(2) Identify the measurement accuracy associated with the measurement devices. *

The measurement accuracy of the hydroelectric plant discharge nozzle has not been checked. However, I have visited other hydroelectric plants of this general type in the past. Engineers and designers have given accuracy values of +/- 5%, to +/- 10%, for well-maintained plants. The measurement accuracy of the sprinkler nozzles has not been checked. However, in my capacity as a Watermaster for the California Department of Water Resources, I had the opportunity to compare irrigation sprinkler discharges to flows measured in the upstream ditch. My experience showed that, if the irrigation pipes were well sealed, that the discharges compared within +/- 10% of the flow measured in the ditch.

(5000 character max.)

(3) Describe how the accuracy of the Alternative Compliance Plan was calculated. *

The accuracy was not calculated, it was estimated based on my past engineering and watermaster experience with the California Department of Water Resources.

(5000 character max.)

SECTION G - IMPLEMENTATION SCHEDULE (IF NECESSARY)

(1) If applicable, describe the implementation schedule for the Alternative Compliance Plan, including objective milestones from date of filing through final implementation. Milestones should include date of completion for construction and testing, expected dates of issuance of required permits, and expected date for compliance with the California Environmental Quality Act:

There are no milestones for the flow diverted from North Buckskin Creek. The nozzles through which pressurized flow is discharged are themselves serving as measurement devices.

(5000 character max.)

An Alternative Compliance Plan shall be submitted and implemented by the established regulatory deadlines (see form instructions for additional information) unless a Request for Additional Time has been granted.

SECTION H - OTHER PERMITS

(1) Describe any other permits required to implement the Alternative Compliance Plan. Include information on the agency that will issue the permit, and the expected date of issuance.

No permits are required, since no changes will be made. If any changes were made, they would be on private property, inside the penstock easement.

(5000 character max.)

SECTION I - ATTACHMENTS

?

(1) Attach documents that support the Alternative Compliance Plan.

Choose File No file selected

Upload

(Uploaded files:)

2013 SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE.pdf
BrovanRanch,Creeks,Diversions_20170323.pdf
ElkhartBrass_catalog-f7-T_Page_9_smooth_bore_single_tips.pdf
Hydro Plant Discharge.pdf
Hydro Plant End of Penstock, Pipe to Sprinklers.pdf
Hydro Plant Generator.pdf
Hydro Plant Inlet Pipe.pdf
North Buckskin Creek Above Penstock Inlet.pdf
North Buckskin Creek at Hydro Plant Discharge 1 .pdf
North Buckskin Creek at Hydro Plant Discharge 2.pdf
North_Buckskin_HydroNozzle_and_Sprinkler Calcs.xlsx
Penstock Inlet Box.pdf
Rainbird_Sprinkler_chart_70CH_70CHM.pdf
Rainbird_Sprinkler_chart_30H_30WH.pdf

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(2) Provide a brief description of the attached documents.

BrovanRanch,Creeks,Diversions_20170323.pdf - Map of ranch, diversions, penstock Nozzle Spec
Files with Flows: ElkhartBrass_catalog-f7-T_Page_9_smooth_bore_single_tips.pdf
Rainbird_Sprinkler_chart_70CH_70CHM.pdf Rainbird_Sprinkler_chart_30H_30WH.pdf Photos
Hydro Plant Discharge.pdf Hydro Plant End of Penstock, Pipe to Sprinklers.pdf Hydro Plant
Generator.pdf Hydro Plant Inlet Pipe.pdf North Buckskin Creek Above Penstock Inlet.pdf North
Buckskin Creek at Hydro Plant Discharge 1 .pdf North Buckskin Creek at Hydro Plant Discharge
2.pdf Penstock Inlet Box.pdf Start of Penstock in North Buckskin Creek.pdf 2013 SUPPLEMENTAL
STATEMENT OF WATER DIVERSION AND USE.pdf Shasta County Assessor Parcel Map 095-130,
showing Brovan Ranch - Parcel 2.

(5000 character max.)

SECTION J - IMPORTANT INFORMATION AND SIGNATURES

Each participant in an Alternative Compliance Plan (Plan) must sign this form or an "opt-in" form that must be retained by the Plan manager. Attach a listing of participants, as needed, in Microsoft Excel .xlsx, comma-separated .csv, or tab-separated .txt format. By signing this form or the Plan's "opt-in" form, each Plan participant acknowledges that the Plan will be timely implemented and that the measurement of diversions will substantially comply with the Measurement Regulation. Further, each Plan participant acknowledges that the water rights covered by the Plan will not be exercised outside the scope of the Plan. Each Plan participant is responsible for promptly informing the Division of Water Rights or Delta Watermaster, as appropriate, if the participant withdraws from the Plan. The Plan manager is responsible for promptly informing the Division of Water Rights or the Delta Watermaster, as appropriate, if the Plan is modified or abandoned or if the Implementation Schedule is adjusted.

I hereby certify that the information in this Alternative Compliance Plan is true to the best of my knowledge and belief and that the Alternative Compliance Plan is in compliance with the requirements of Title 23, Division 3, Chapter 2.8, Section 931 through 938 of the California Code of Regulations. *

☒ Yes | ☐ No

Printed Name *

Shawn Pike

Division of Water Rights and Delta Watermaster staff may or may not evaluate the contents of an Alternative Compliance Plan at the time of receipt. Staff will initially determine if all the information has been filled out, and accept the Alternative Compliance Plan as complete or return it as incomplete. An Alternative Compliance Plan may be reviewed for compliance purposes at any time or as part of a

