

State of Idaho
Department of Water Resources
Water Right License
Water Right No. 47-7771

Priority: December 27, 1981

Maximum Diversion Rate: 202.00 CFS

Maximum Diversion Volume: 88,500.0 AF

It is hereby certified that:

BP HYDRO ASSOCIATES 2283 WRIGHT AVE STE D TWIN FALLS ID 83301-6028

has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated November 16, 1981, and has submitted Proof of Beneficial Use on October 12, 1989. An examination confirms water is diverted from:

Source : ROCK CREEK

Tributary: SNAKE RIVER

Beneficial Use

INDUSTRIAL

POWER

Period of Use

1/01 to 12/31

1/01 to 12/31

Rate of Diversion

0.02 CFS

201.98 CFS

Annual Volume

14.5 AF

88,500.0 AF

Location of Point(s) of Diversion

ROCK CREEK SE¼ NW¼, Sec. 25, Twp 09S, Rge 16E, B.M. TWIN FALLS County

Place of Use: INDUSTRIAL

Twp	Rng	Sec	NE				NW				SW				SE				No QQ	Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE		
09S	16E	25						X												

Place of Use: POWER

Twp	Rng	Sec	NE				NW				SW				SE				No QQ	Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE		
09S	16E	25						X												

Conditions of Approval

1. Use of water under this right may be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 470.
2. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
3. Upon specific notification by the Department, the right holder shall install and maintain an acceptable measuring device at the authorized point of diversion, in accordance with Department specifications. When notified by the Department, the right holder shall report the amount of water diverted in connection with this right. The report shall be submitted in the manner and frequency specified by the watermaster.
4. This right does not constitute Idaho Public Utilities Commission or Federal Energy Regulatory Commission approval that may be required.

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5. The water right confirmed in this license for hydropower purposes shall be junior and subordinate to all rights to the use of water, other than hydropower, within the State of Idaho that are initiated later in time than the priority of this license and shall not give rise to any right or claim against any future rights to the use of water, other than hydropower, within the State of Idaho initiated later in time than the priority of this license.
6. This right does not grant any right-of-way or easement across the land of another.
7. The term of this water right shall run concurrently with FERC Rock Creek 2 Project license 6015 issued by the Federal Energy Regulatory Commission (FERC), which expires on July 31, 2036. The term shall automatically extend to run concurrently with any annual renewals of the project's FERC license. Prior to the issuance of a subsequent or new FERC license for the project, the Director may review the water right license and may issue an order canceling all or any part of the use, establishing a new term, or revising, adding or deleting conditions under which the water right may be exercised. The order shall take effect on the date the current term, as may be extended through annual renewals, expires. If the Director does not issue such an order, the term shall automatically extend to a length equal to the project's subsequent or new FERC license and any prior conditions on the water right license shall remain in effect.
8. The right holder shall not divert unless a continuous flow of 41 cubic feet per second (cfs) in October, November, February, and March, 31 cfs in December and January, and 82 cfs from April 1 through September 30, is retained in Rock Creek between the diversion structure and the tailrace, as measured immediately downstream from the diversion dam, or the inflow at the diversion, whichever is less.
9. To insure the required instream flows are being provided, the right holder shall maintain a measuring device or recorder as specified by the Department.
10. Power generation is at the Rock Creek 2 Power Plant.
11. Use of water under this right shall be non-consumptive.

This license is issued pursuant to the provisions of Idaho Code § 42-219. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

Signed this 2nd day of October, 2019.



SHELLEY KEEN
Water Allocation Bureau Chief



State of Idaho

DEPARTMENT OF WATER RESOURCES

322 E FRONT ST STE 648 PO BOX 83720 • BOISE, ID 83720-0098

Phone: (208)287-4800 • Fax: (208)287-6700 • Website: www.idwr.idaho.gov

Brad Little
Governor

Gary Spackman
Director

October 03, 2019

BP HYDRO ASSOCIATES
2283 WRIGHT AVE STE D
TWIN FALLS ID 83301-6028

RE: License No. 47-7771

Issuance of License

Dear Water Right Holder(s):

The Department of Water Resources ("Department") has issued the enclosed Water Right License confirming that a water right has been established in accordance with your permit. Please be sure to thoroughly review all the conditions of approval listed on your license. The conditions may include ongoing requirements, such as maintenance of a measuring device or implementation of mitigation, as well as information about how your water use may be administered, such as regulation by a watermaster in a water district.

The license is a PRELIMINARY ORDER issued by the Department pursuant to Rule 730 of the Department's Rules of Procedure (IDAPA 37.01.01.730). It can and will become a final order without further action by the Department unless a party petitions for reconsideration, files exceptions, or requests a hearing as described in the enclosed information sheet.

Also, please note that water right owners are required to report any change of water right ownership and/or mailing address to the Department within 120 days of the change. Failure to report these changes could result in a \$100 late filing fee. Water right forms are available from any office of the Department or on the Department's website at idwr.idaho.gov

If you have any questions concerning the enclosed information, please contact me at (208) 287-4947.

Sincerely,

for Shelley Keen
Water Allocation Bureau Chief

Enclosure(s)

CERTIFICATE OF SERVICE

I hereby certify that on October 03, 2019, I served a true and correct copy of Water Right License No. 47-7771 by U.S. Mail, postage prepaid, to the following:

BP HYDRO ASSOCIATES (Current Owner)
2283 WRIGHT AVE STE D
TWIN FALLS ID 83301-6028

WATER DISTRICT #470
AMIE FRANKLIN (Watermaster)
2754 ROCK CREEK RD
HANSEN ID 83334



Jean Hersley
Technical Records Specialist 2

EXPLANATORY INFORMATION TO ACCOMPANY A PRELIMINARY ORDER

(To be used in connection with actions when a hearing was **not** held)

(Required by Rule of Procedure 730.02)

The accompanying order or approved document is a "Preliminary Order" issued by the department pursuant to section 67-5243, Idaho Code. **It can and will become a final order without further action of the Department of Water Resources ("department") unless a party petitions for reconsideration, files an exception and brief, or requests a hearing as further described below:**

PETITION FOR RECONSIDERATION

Any party may file a petition for reconsideration of a preliminary order with the department within fourteen (14) days of the service date of this order. **Note: the petition must be received by the department within this fourteen (14) day period.** The department will act on a petition for reconsideration within twenty-one (21) days of its receipt, or the petition will be considered denied by operation of law. See Section 67-5243(3) Idaho Code.

EXCEPTIONS AND BRIEFS

Within fourteen (14) days after: (a) the service date of a preliminary order, (b) the service date of a denial of a petition for reconsideration from this preliminary order, or (c) the failure within twenty-one (21) days to grant or deny a petition for reconsideration from this preliminary order, any party may in writing support or take exceptions to any part of a preliminary order and may file briefs in support of the party's position on any issue in the proceeding with the Director. Otherwise, this preliminary order will become a final order of the agency.

REQUEST FOR HEARING

Unless a right to a hearing before the Department or the Water Resource Board is otherwise provided by statute, any person aggrieved by any final decision, determination, order or action of the Director of the Department and who has not previously been afforded an opportunity for a hearing on the matter may request a hearing pursuant to section 42-1701A(3), Idaho Code. A written petition contesting the action of the Director and requesting a hearing shall be filed within fifteen (15) days after receipt of the denial or conditional approval.

ORAL ARGUMENT

If the Director grants a petition to review the preliminary order, the Director shall allow all parties an opportunity to file briefs in support of or taking exceptions to the preliminary order and may schedule oral argument in the matter before issuing a final order. If oral arguments are to be heard, the Director will within a reasonable time period notify each party of the place, date and hour for the argument of the case. Unless the Director orders otherwise, all oral arguments will be heard in Boise, Idaho.

MEMORANDUM

Date: August 27, 2019
To: Water Right File 47-7771
From: Michele Edl
Re: license review

Introduction

Jim Stanton from IDWR's Southern Region office visited the project site on July 21, 1998 and confirmed the beneficial uses. The Beneficial Use Field Report documenting his exam was left incomplete and unsigned when Mr. Stanton retired, but it contained much of the information required for issuing a license. This memo is a review and interpretation of the incomplete report, the examination notes and photos. I did not make another visit to the site. When needed, I requested additional information from the current operator of the project.

Applicant

Permit 47-7771 was issued on September 15, 1982 to Charles D. Howard. A series of assignments of the permit takes us to BP Hydro Associates. BP Hydro Associates has been reformed more than once and is now a subsidiary of ENEL North America, Inc. which is registered with IDSOS as #0000593778. ENEL North America, Inc. is itself a subsidiary of ENEL Green Power North America, Inc. BP Hydro Associates completed an Affidavit for Water Rights to be Used for Power Purposes when the permit was assigned to them in April 21, 1989.

The Rock Creek 2 Project is currently operated and managed by ENEL Mountain States personnel who are based in Twin Falls ID (site manager) and Reno NV (regional manager).

Both the Idaho Public Utilities Commission (IPUC) and the Federal Energy Regulatory Commission (FERC) have jurisdiction over this hydroelectric project. The FERC project name is the Rock Creek 2 Project and the FERC project number is #6015. On August 29, 1986, FERC issued a major license for this project to Charles D. Howard. The FERC licensing order 6015-007 can be seen in the water right back file. The FERC license was transferred to BP Hydro Associates in 1990.

The original 35-year power purchase agreement (IPUC Case No. U-1006-297, Order No. 21361) between Charles D. Howard and Idaho Power Company expires July 13, 2022. A copy of the agreement was cited as an attachment to various assignments of the project assets, but an actual copy of the agreement doesn't appear anywhere in the water right back file. I assume that the sales agreement was also transferred or assigned to the current owner/operator.

POU/POD ownership

Available Twin Falls County parcel information shows that the project lands are not owned by the right holder. The point-of-diversion is located within property on the bank of Rock Creek owned by William C. Fitzhugh. The powerhouse, the switchyard and the lower portion of the project land in the NWNW of sec 25 are within property owned by Shorock Hydro, Inc. And a portion of the project land in the SWNW of sec 25 is owned by Charles D. Howard.

In correspondence dated October 18, 2016 from FERC to the Bureau of Land Management, federal lands which include the Rock Creek 2 project lands located in Township 9S Range 16E will remain in the Power Site Reserve 565. The power site withdrawal was extended on those lands rather than allowed to expire.

I found no record of GPS coordinates for either the penstock intake (the POD) or the powerhouse (the POU). I created the POD and POU shapes based on a comparison of aerial photography with the field examiner's photos.

Source & Point of Diversion

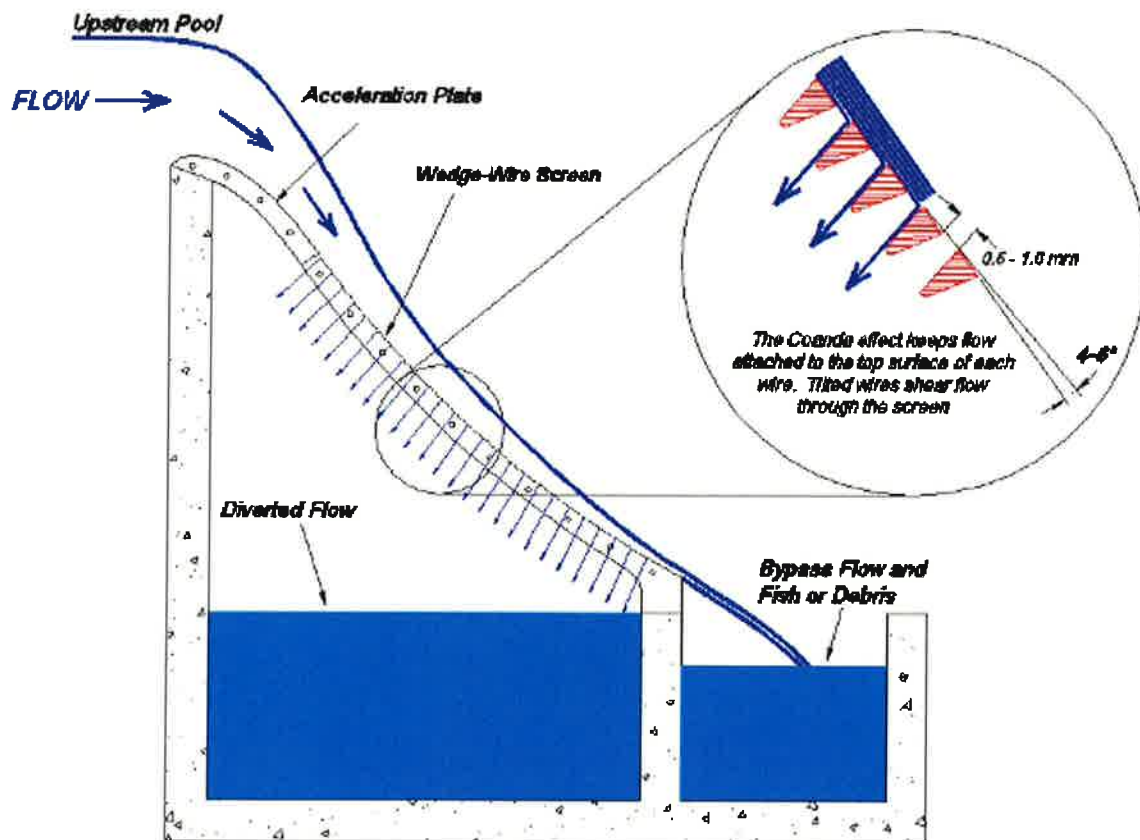
The source of the water is Rock Creek. The point-of-diversion is located near the west bank (the left bank) of the creek at approximate river mile 1.5, as estimated from available topographic maps.¹ The diversion from Rock Creek into the power penstock is only one component of the multipurpose intake structure.

The field examiner's report is missing a system diagram. A remark in the diversion and delivery system section of the report refers to engineering drawings, but none were found attached to the report. In an email exchange on June 25, 2019, I requested and received engineering drawings from the current operator of the project. Among the drawings are plan and section views of the intake structure and the powerhouse. Please refer to copies of those views in Attachment 1 to this memo. Also included in Attachment 1 are overviews of the project as seen in copies of the easement surveys for the penstock and for the transmission line. Those surveys were obtained from correspondence on the FERC website.

Diversion description

The most upstream component of the intake structure is a diversion weir or impoundment wall which spans Rock Creek. The downstream side of that weir wall is a Coanda type screen which allows debris, fish passage (in the downstream direction) and the required minimum stream flow to pass by the intake to the penstock.

Schematic of a Coanda Screen²



Features and Typical Arrangement of a Coanda-Effect Screen

¹ U.S. Geological Survey. *Filer BB72 quadrangle, Idaho*. Photorevised 1993. Reston, Va: United States Department of the Interior, USGS.

² <https://www.usbr.gov/tsc/techreferences/computer%20software/software/coanda/index.html>

Directly beneath the Coanda screen is a chamber which collects water for power use. On the west wall of that chamber is the gated entrance to a single, 6-foot diameter steel penstock. Water destined for power use is directed off of the main channel of Rock Creek and into an enclosed off-stream system. The penstock is above ground most of its approximate 2700 foot length from the intake to the powerhouse.

At the toe of the Coanda screen is a plunge pool which is bounded on the downstream side by a broad crested overflow weir. This weir is the measuring device for the minimum stream flows which both the IDWR permit and the FERC license require be maintained in the Rock Creek channel.

The broad crested overflow weir and the plunge pool are bounded on the west by a fish ladder which allows fish passage in the upstream direction.

Water measurement

There are no active USGS stream gaging stations on Rock Creek below this project. However, archive records for USGS station #13093095, Rock Creek near Mouth near Twin Falls ID and statistics derived from the period-of-record data from that station were used in the design of this project. Station #13093095 was located approximately 1000 feet downstream from the current location of the Rock Creek 2 powerhouse. Construction of the Rock Creek 2 project changed the channel character and contributed to the elimination of this USGS station.

The nearest active USGS stream gaging station on Rock Creek is above US Highway 30/93 approximately 6.5 miles upstream from the Rock Creek 2 project. This station could be useful in understanding or predicting contemporary flows in Rock Creek, but it was not constructed until March 1993 which is three years after proof was submitted for this permit.

An inactive USGS stream gaging station (#13093000 Rock Creek below Poleline Rd near Twin Falls ID) was located approximately 2 miles above the project. The period-of-record for this station extends through the development period of this permit. I analyzed this station's published daily data from 1989 and 1990 to confirm that sufficient quantities of water were available and could have been used for power generation at the Rock Creek 2 project during the development period. In general, 1989 was an above average year for water availability in Rock Creek.

Bypass Flow

A broad crested overflow weir is constructed as a part of the diversion structure and is the measurement device for the 'bypassed' reach of Rock Creek. A pressure transducer and level control system are located at that weir. The white standpipe which houses the transducer and acts as a small stilling well, can be seen in one of Jim Stanton's exam photos. Once a day, the plant operator reads a staff gage which is mounted on a nearby wall and compares that reading against the transducer reading and calculates the main channel flow based on a rating curve.

A small SCADA (supervisory control and data acquisition) system has been installed in the project. A pressure transducer and level control system are located at the broad crested weir. The SCADA system monitors and archives stage readings. Reports of hourly readings from an earlier version of the system were printed and provided to Jim Stanton in 1998. Readings from the contemporary system are routinely provided to the FERC and they have been viewable as public data from the FERC website.

Power Flow

In his field report, Jim Stanton stated that the measuring device installed at the penstock intake was not functioning at the time of his visit. And according to the current operator of this project, there are no direct measurements of the power flow either in the penstock or at the turbine discharge.

A printout of 5/12/1998 data was provided to Mr. Stanton after his site visit. Those data sheets show plant kW, the stage measurement at the weir and other readings, but no flow rates. The peak generation that day was 1998 kW. (When 1998 kW is used in a general calculation of the flow rate required to

produce that power, the calculated flow rate exceeds the flow rate authorized by the permit.)

To conform to Article 403 of their FERC license, the owner-operator of the Rock Creek 2 project submits reports of bypass flow issues accompanied by related data, to FERC. These documents can be viewed from the FERC website and show that for the most part, the project has been in compliance with the minimum stream flow requirements of its license. Instances of non-compliance have been timely reported and often not considered a violation of the article.

POU/POD overlap

There are no other rights diverted from the POD and no other rights are appurtenant to the POU.

No water rights divert from the main channel of Rock Creek between the diversion to the penstock and the powerhouse. The steep, fractured and unstable canyon walls above this reach of Rock Creek makes other diversions from the creek impractical. Land on both sides of Rock Creek are within the service territory of the Twin Falls Canal Company and irrigation water and irrigation return flows pass the hydropower project to satisfy requirements of that delivery company's downstream customers.

The Rock Creek 2 project should not be confused with another hydropower project, Rock Creek (FERC project #6450) which is sited downstream from Rock Creek 2. The Rock Creek (aka Rock Creek 1) powerhouse is located nearer the confluence of Rock Creek with the Snake River. The elements of the two projects are quite different but they interface where they have overlapping uses of the same real property. The owner/operators of the two Rock Creek projects have cooperated in the construction and maintenance of a shared transmission line and access road and in the ownership of overlapping project lands.

Water Use

Important Dates

The processing of this permit bridges the Swan Falls controversy. The right began its life in 1981 and Permit 47-7771 was issued in 1982 (two years before the Swan Falls settlement). An early version of the subsequently required subordination condition was applied to the permit at that time.

In February 1985, IDWR submitted a motion to intervene in the FERC licensing process for this project. IDWR requested that FERC condition their license to insure that the project would not interfere with developments on the Snake River and its tributaries pursuant to the Idaho State Water Plan. The relief requested by IDWR was denied.

The permit lapsed and was reinstated by an order dated October 23, 1989. The priority date was advanced from 11/16/1981 to 12/27/1981.

Operation strategy

The Rock Creek 2 Project is an off-stream project. Its FERC license requires the licensee to operate the project in an instantaneous run-of-river mode and to continuously pass at least 31 cfs of water over the diversion weir-spillway. (See FERC license Articles 402 and 403 page 147 of the Water Right Back File 47-7771.³)

The minimum stream flow values listed in Article 403 were set in consultation with the Idaho Department of Fish and Game (IDFG). As a result, Rock Creek is not dewatered between the diversion to the Rock Creek 2 project and the discharge from that project.

A condition added to the permit in 1989 by Glen Saxton (then Operations Bureau Chief) mimics the FERC license Article 403 requirements. See permit condition discussion below.

The design hydraulic capacity of the turbine is 230 cfs. Both the turbine performance curves and commissioning test data were provided to the field examiner. The turbine can use flows ranging from

³ \\dwrboifs01\DocsData\$\WATERRIGHTS\47\SMERRITT\17br01 .PDF

approximately 55 cfs to 230 cfs. So it's unlikely that this project can generate power when the flow drops as low as the lowest of the minimum stream flow requirements. Specifically, when the total flow in Rock Creek is less than 86 cfs (31 cfs minimum stream flow + 55 cfs minimum turbine flow) power generation is unlikely and all available water will remain in the Rock Creek channel.

The turbine nameplate data shows that it is rated for 2648 hp (~1975 kW) at 119 feet of head and a flow of 230 cfs. (Refer to the nameplate photo provided via email on May 2, 2019, by the project operator.) The turbine can utilize more water than can be authorized by this water right, but it is paired with a generator that is somewhat undersized for the turbine. The generator would 'overcharge' if the turbine was operated at its full potential. In this case, the beneficial use developed under this water right was limited by the rotation speed of the generator, not the hydraulic capacity of the turbine.

Storage Use

A small pool is impounded behind the diversion structure and extends approximately 200 feet upstream. At the permit-authorized diversion rate, the pool contains less than a days-worth of stored water for the project. Storage use is not authorized by the permit and is not required.

The maximum height of the diversion-impoundment wall is 9.5 feet which puts the project outside of the jurisdiction of IDWR's Dam Safety section. The project is not included in the National Inventory of Dams and it is classified as low hazard by FERC's Portland Regional Office.

Fire Protection Use

The permit authorized year-round fire protection use. The examiner found that a pipeline off of the turbine would provide water for that use but the use itself had never occurred. In case of fire, the powerhouse would be shut down and abandoned so the examiner does not recommend the fire protection use for the license. I agree with the examiner and no fire protection use will appear on the license.

Industrial Use

This water right also authorizes a year-round industrial use of water. The examiner confirmed industrial use as the water used for the cooling the generator and he recommended a rate but not a volume. I concur with the field examiner's recommendation for the rate and that the amount for industrial use be included in the total maximum diversion rate.

Power Use

When the Proof-of-Beneficial-Use statement for this right was received at IDWR's state office on October 10, 1989, the project had been online only seven months which meant that the development period was cut very short. I was able to confirm beneficial use of water for power generation during the development period by locating and reviewing power generation records.

A firm energy sales agreement had been entered into by Charles D. Howard and Idaho Power Company and is identified as IPUC Case Number U1006-297, order 21361. The agreement was executed on July 13, 1987 and the first energy was expected to be produced by the end of December 1988. Record keeping and reporting are commonly required by the sales agreements and this project was not an exception.

Rate

The power use for the water right license was confirmed by records of power generation in 1989 which were obtained from the document archive of the IPUC. Please refer to Attachment 2 which is an excerpt (pages 42 and 43) from Idaho Power Company's 1993 Second Quarterly Update report to the IPUC. The quarterly report is a summary of all the monthly generation records that the various power plant operators were required to keep and to provide to Idaho Power Company. Idaho Power Company identifies the Rock Creek 2 project as 31615104. The project was online and generating power beginning sometime in March 1989. The maximum average monthly generation during the development period was 1879 kW and occurred in September 1989. A diversion rate derived from that maximum generation supports setting the maximum diversion rate for the license at the full permitted rate of 202

cfs. The general equation to calculate flow from power is: $(P \times 11.81)/(H \times e) = Q$; where Q is flow in cfs, P is power in kW, H is elevation head in feet, e is efficiency in decimal format and 11.81 is a conversion factor. In this case the equation is: $(1879 \times 11.81) / (119 \times 0.88) = 211.9$ cfs.

Volume

Effective March 29, 2012, the Beneficial Use Examination Rules⁴ exempt on-stream, run-of-the-river power generation from the volume reporting requirement. FERC requires that this facility be operated in instantaneous run-of-river mode (see Article 202 of the FERC license). But it is an off-stream project and by a strict interpretation of the Rule 35 requires a volume. I recommend a volume based on 12 months of daily average flow data (April 1, 1989 to March 31, 1990) from USGS stream gaging station (#13093000 Rock Creek below Poleline Rd near Twin Falls ID). Please refer to the spreadsheet attached to this memo (Attachment 3). Before calculating a volume, the power flow was limited to the water available after subtraction of the bypass flows. It was further limited to the permitted flow rate on the upper end and to the estimated lowest functional flow for the turbine on the lower end. The power flow was converted from cfs to af and summed to yield 88547.41 afa which rounds to 88,500 afa.

Place of Use

The place-of-use is a powerhouse which contains a horizontal Francis turbine manufactured by Voith, a synchronous generator and control and auxiliary works.

The both the switchyard and the POU are constructed on land currently owned by Shorrock Hydro, Inc.

Point of Discharge

The turbine discharges into a short tailrace which conveys the water approximately 90 feet from the powerhouse back into Rock Creek. The water that was diverted near river mile 1.5⁵, then used for generating power in the Rock Creek 2 powerhouse, rejoins the Rock Creek channel near river mile 1. There it becomes the headwater pool for a downstream hydroelectric project named Rock Creek (aka Rock Creek 1).

Compliance with permit conditions

I found that the right holder has been operating the project in compliance with the conditions on the permit.

Permit Condition d Other:

"An access port or other device as specified by the Department shall be installed by the permit holder to provide for the installation of measuring equipment and the determination of the rate of diversion by the Department."

The examiner stated that a device was installed but that it was not functioning at the time of his site visit. The current operator stated that there is no measurement of turbine flow at this time. The license rate has been determined by other means.

Added conditions

Two more conditions of approval were attached to the permit on August 31, 1987, by Glen Saxton in conjunction with his approval of a Request for Extension of Time. Those conditions are:

1. The permit holder shall maintain in Rock Creek between the diversion structure and the tailrace, a continuous minimum flow of 41 cubic feet per second (cfs) in October, November, February, and March, 31 cfs in December and January, and 82 cfs from April 1 through September 30, as measured immediately downstream from the diversion dam, or the inflow at the diversion, whichever is less.
2. Upon the future finding and order of the Director that measuring devices are required to insure the minimum flow is being provided, the permit holder shall install and maintain the devices or recorders as specified by the Department.

⁴ <https://adminrules.idaho.gov/rules/current/37/370302.pdf>

⁵ U.S. Geological Survey. *Filer BB72 quadrangle, Idaho*. Photorevised 1993. Reston, Va: United States Department of the Interior, USGS.

Condition 1 above duplicates Article 403 of the FERC license for this project. (For comparison, see page 147 of the water right backfile.⁶) It requires that minimum stream flows be maintained in the main channel of Rock Creek but there was no companion condition requiring the permit holder keep or submit records verifying compliance. Without a record keeping and reporting requirement, it would be very difficult to know that the condition was met. Fortunately, information obtained from queries of FERC's website demonstrates compliance with license Article 403 and incidental compliance with the added permit condition 1, as well as regular recalibration of the rating curve for the weir.

A broad crested overflow weir was integrated into the diversion structure of this project and remains the measuring device for minimum flows in Rock Creek. Added condition 2 above is not needed.

License conditions

Term review

The term of 35-year power sales agreement with Idaho Power Company is shorter than the term of the FERC license. The 50-year FERC license was issued August 29, 1986 and was made effective retroactively to August 1, 1986. (See pages 1 and 2 of the FERC license which can be seen beginning at page 145 of the water right backfile⁷.) It will come up for renewal July 31, 2036. I am recommending the FERC license renewal date for the director's review condition on the water right license.

Subordination

An updated subordination condition will be applied to the license.

Trust Water

This hydroelectric project is a non-consumptive water use in the Trust Water Right Area and the authorizing right has a priority date which predates the Swan Falls Agreement so the right is not subject to Trust Water analysis or conditions.

Water district

The POD for this right is located within the boundary of water district 470 - Rock Creek. Until recently 470 was inactive district. But in January 2019 a new watermaster was elected. A review of the definition for water district 470 indicates that the watermaster doesn't administer diversions from Rock Creek that are below the Stricker Store and Homesite. The Stricker cabin is located in NWNW of section 23 Township 11S, Range 18E. The diversion to the Rock Creek 2 project is 20 river miles below that site so this right does not appear to be administered by the watermaster. However, a condition will be placed on the license to notify the right holder that watermaster control may be required.

Recommendations

Rate

I am recommending the full permitted rate of 202 cfs which includes 0.02 cfs for the industrial use, as the maximum diversion rate for the license.

Volume

I am recommending a maximum annual volume of 88,500.00 AFA which also includes the industrial use.

The field examiner and I agree that the fire protection use authorized by the permit, will not be licensed.

⁶ \\dwrboifs01\DocsData\$\WATERRIGHTS\47\SMERRITT\17br01 .PDF

⁷ ibid

47-7771

Attachment 1 to license review memo

Edl, Michele

From: Brown, Kyle (EGP North America) <Kyle.Brown@enel.com>
Sent: Tuesday, June 25, 2019 11:31 AM
To: Edl, Michele
Subject: RE: request for information Rock Creek 2
Attachments: JUB Rock Creek Idaho Penstock Drawings.pdf; JUB RC Penstock Drawing Page 15.pdf

Hi Michele,

Yes, I could schedule a call with you this week. Attached are some drawings of the Rock Creek intake. In the set it is the second page. Between 11 and 2 tomorrow would work for me for a call.

Kyle

Kyle Brown

Hydro-West Idaho Site Manager



Enel Green Power North America, Inc.

Mountain States Office

2283 Wright Ave., Suite D. – Twin Falls, ID 83301 – USA

T 1-978-447-2216 – M 1-208-734-0551

kyle.brown@enel.com

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From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Tuesday, June 25, 2019 10:57 AM
To: Brown, Kyle (EGP North America) <Kyle.Brown@enel.com>
Subject: request for information Rock Creek 2

Kyle Brown,

I am drafting a memo summarizing my recommendations for licensing the Rock Creek 2 project. My recommendations are largely based on an IDWR field examiner's report from 1998. That report is not as complete as I would like. The examiner didn't include a system diagram and there are no engineering drawings of either the intake structure or the powerhouse in the file. The examiner did provide photos and I believe that the information gaps could be filled in without making another site visit.

In particular, I am struggling to describe the headworks and the flow measuring system. The day that examiner visited, the silt load in Rock Creek was high. He stated that the transducer mechanism was plugged by silt and a measurement couldn't be taken. Rock Creek is still silty, so I need help understanding how you work through, around, past... that problem.

- Do you have a few as-built engineering drawings of the Rock Creek 2 Project that you could share with me and which could be placed in the water right file?
- In 1998, a transducer-based mechanism measured the flow and was responsible for adjusting the penstock inlet. Has it been replaced or updated?
- You have already shared the rating table for the broadcrested weir but I don't understand how flow reading at the weir changes the penstock intake. I would welcome a phone conversation with you, at your convenience which will help me understand and describe this project for the record.

I am working on the memo this week. So it would be great if in the next couple of days, you could break away from your regular tasks to fill me in. And please let me know if you need clarification of any items in this request.

Sincerely,

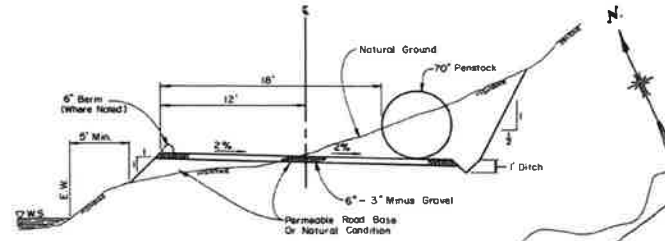
Michele Edl

208-287-4946

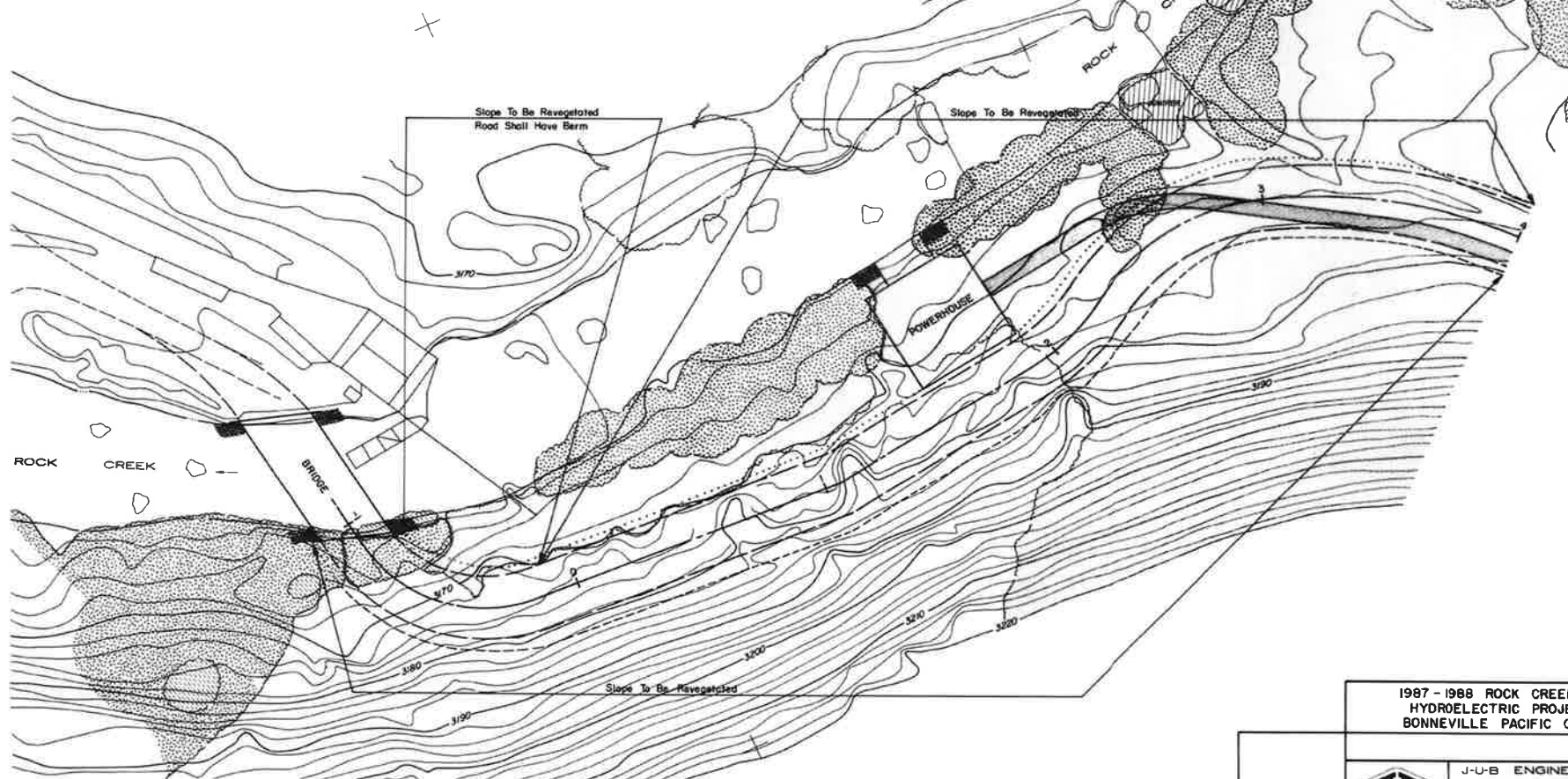
LEGEND

- Dogwood / Golden Currant Canopy (10-25% Tolus)
- Golden Currant / Wildrose Canopy (10-25% Tolus)
- Skunkbrush Canopy (10-25% Tolus)
- Mesic Herbaceous Species (10-40% Tolus)
- Xeric Shrub (10-40% Tolus)
- Willow Canopy
- Caliche Scape
- Trees (Species Indicated)

- Existing Contour (2' Interval)
- Cut Slope Limit
- Fill Slope Limit
- Edge Of New Road
- Penstock
- 12" Pipe Culvert
- Straw Bale Barrier
- Riprap



TYPICAL ROAD SECTION
N.T.S.

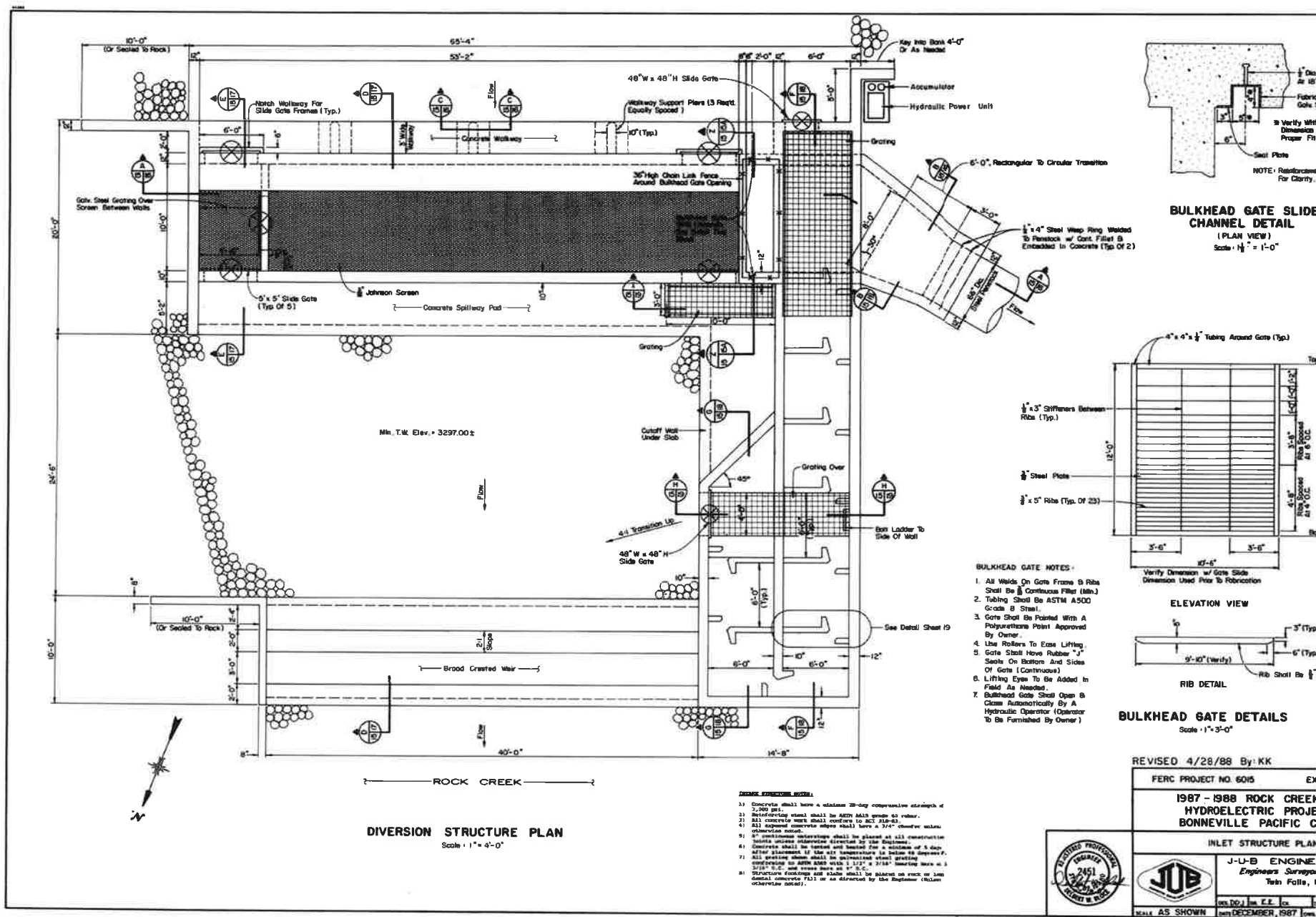


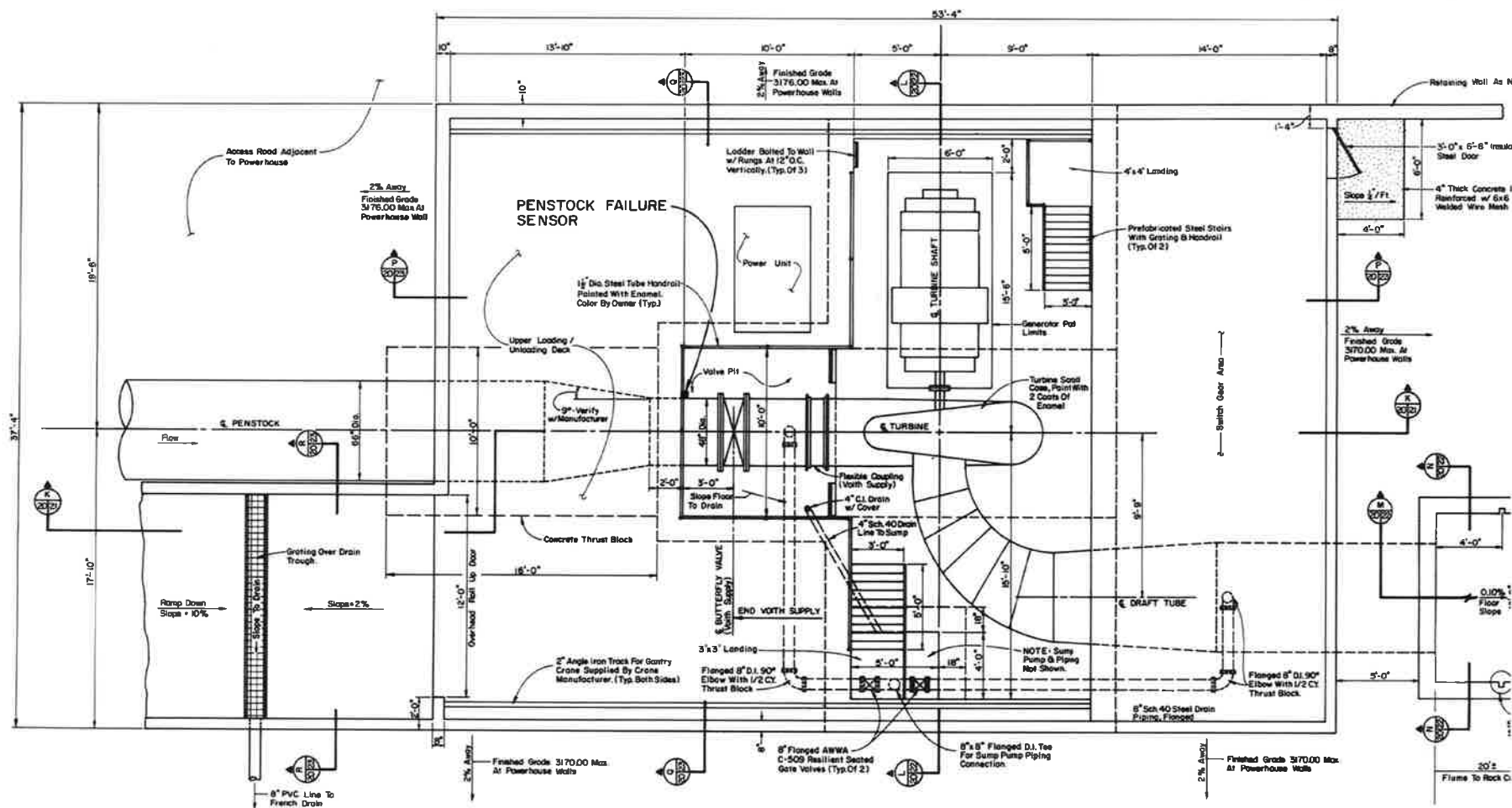
1987 - 1988 ROCK CREEK
HYDROELECTRIC PROJECT
BONNEVILLE PACIFIC COMPANY



J-U-B ENGINE
Engineers Surveyors
Twin Falls, ID

SCALE: 1" = 20'





- NOTES - POWERHOUSE**
- Minimum 28 day concrete compressive strength shall be 3000 psi.
 - Reinforcing steel shall be ASTM A615 Grade 60 rebar.
 - All concrete work shall conform to ACI 318-83.
 - All building construction shall conform to the 1985 edition of the Uniform Building Code.
 - Gantry crane shall have a 15 ton capacity. Gantry crane shall be a Model #15T10-JSD as manufactured by B.E. Wallace Products Corp. of Ertan, Pa. A substitution of another crane may result in modifications of the powerhouse dimensions.
 - Misc. wood framing shall be Douglas Fir No. 2 grade or better.
 - Concrete masonry units shall be Hollow Load Bearing Masonry Units, Grade A, conforming to ASTM C90 with a compressive strength of 1350 psi.
 - In all vertical walls with 2 mats of rebar, the vertical rebar in each mat shall be positioned such that it has 2 inches of concrete cover to the outside of the wall (unless otherwise noted on the plans).
 - 6" continuous understop shall be placed in all construction joints unless waived by the Engineer.
 - All backfill adjacent to the powerhouse shall be thoroughly compacted to 98% max. std. density (ASTM T-99) in 6" lifts.
 - All anchor bolts shall conform to ASTM A307 unless otherwise noted.
 - Mechanical contractor shall verify size and locations of all required drain and venting piping prior to all concrete placements. Piping shown on the plans may be incomplete and subject to change.
 - Groundwater is expected to be encountered during excavation and construction of the powerhouse. Expected groundwater table is at approximately elevation 3162.00. If groundwater table is above elevation 3164.00, work shall stop and the Engineer should be contacted immediately. Powerhouse is designed to resist uplift forces corresponding to a groundwater table elevation of 3164.00.
 - Contractor shall include all dewatering costs in his bid.
 - Contractor shall keep powerhouse excavation thoroughly dewatered during placement of concrete floor slabs and walls which are below the groundwater table. If this is not done, a floating problem may occur.

REVISED 4/28/88 By: KK

FERC PROJECT NO. 6005 E)

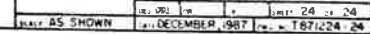
1987 - 1988 ROCK CREEK
HYDROELECTRIC PROJECT
BONNEVILLE PACIFIC CO.

POWERHOUSE PLAN

JUB ENGINEERS
JUB ENGINEERS
Twin Falls, ID

DES. DDJ, JES, R.E., JR.
CHK. DDJ
DATE: DECEMBER, 1987

SCALE: 1" = 3'-0"



47-7771

Attachment 2 to license review memo

IDAHO POWER COMPANY
PRODUCTION GRAPHS AND STATISTICS OF
COGENERATION PROJECTS

RECEIVED ☒
FILED ☐

88 AUG 25 AM 8 52

1993 SECOND QUARTERLY UPDATE

TOTAL GENERATION
HYDRO GENERATION
STEAM GENERATION
INTERCONNECTION GRAPH

PAGE IDAHO PUBLIC
1 UTILITIES COMMISSION
2
3
4

AFTON	20
BARBER DAM	30
B.C. EMMETT	6
BIRCH CREEK	6
BLACK CANYON #3	33
BLIND CANYON	11
BOX CANYON	13
BRIGGS CREEK	22
BYPASS	28
CANYON SPRINGS	13
CEDAR DRAW	19
CLEAR SPRINGS	15
CRYSTAL SPRINGS	23
CURRY CATTLE	11
DIETRICH DROP	29
ELK CREEK	24
FAULKNER RANCH	27
FISHERIES DEV. CO.	33
GEOBON #2	26
HAILEY CSPP	8
HAZELTON A	32
HAZELTON B	34
JIM KNIGHT	12
KASEL & WITHERSPOON	17
KOYLE	17
LATERAL #10	16
LEMOYNE	8
LITTLE WOOD / ARKOOSH	26
LITTLE WOOD RIVER RESERVOIR	18
LOWLINE CANAL	19
LOWLINE #2	29
MAGIC RESERVOIR	32
MALAD RIVER	14
MARCOS RANCHES	20
MITCHELL BUTTE	31
MUD CREEK/S & S	14
MUD CREEK/WHITE	23
NORTHSIDE CANAL Y-8	10
OWYHEE DAM	21
PIGEON COVE	18
POCATELLO WASTE	22
REYNOLDS IRRIGATION	25
ROCK CREEK #1	16
ROCK CREEK #2	31
SAGEBRUSH	15
SCHAFFNER	25
SHINGLE CREEK	5
SHOSHONE	12
SIMPLIT	24
SLAUGHTERHOUSE CREEK	7
SNAKE RIVER POTTERY	7
SNEDIGAR RANCH	10
STEVENSON #1	9
STEVENSON #2	9
SUNSHINE POWER #2	28
TAMARACK	5
TROUT-CO	27
TUNNEL #1	34
WEST BOISE WASTEWATER	30
WILSON LAKE HYDRO	35
WHITE WATER RANCH	21
HYDRO AND STEAM PERCENTAGES BY MONTH	36-37
ACTUAL GENERATION	38-52

IDAHO POWER COMPANY
COGENERATION AND SMALL POWER PRODUCTION
MONTHLY GENERATION BY PLANT (AVERAGE KW)

PAGE 43

1989		JAN89	FEB89	MAR89	APR89	MAY89	JUN89	JUL89	AUG89	SEP89	OCT89	NOV89	DEC89
31515004	MUD CREEK/S&S	91	60	60	29	46	76	47	88	223	259	207	138
31416001	SHOSHONE	0	0	165	299	315	313	286	306	300	160	188	109
11766002	TAMARACK	5090	4384	4115	3671	4637	4507	4885	4729	4522	4476	3855	4571
31415017	NORTHSIDE CANAL Y-8	0	2	25	25	33	32	30	32	29	10	0	10
31415023	CURRY CATTLE CO.	0	0	0	46	194	292	97	212	151	53	0	0
11415009	SHINGLE CREEK	72	65	85	133	186	193	172	136	118	108	102	89
31615003	ROCK CREEK #1	797	576	1149	1536	1402	1691	1864	1957	1936	1968	1524	1041
31515009	MALAD RIVER	2	133	462	484	496	179	133	407	582	383	228	116
31516014	CLEAR SPRINGS TROUT	442	444	444	439	418	418	417	410	407	400	413	435
31416013	BOX CANYON	249	214	237	237	233	144	124	196	210	197	206	224
31615030	KOYLE	0	13	562	467	629	443	306	625	780	443	212	42
31615031	KASEL & WITHERSPOON	346	282	199	231	496	535	657	719	917	865	556	463
44767012	AFTON	4970	5015	3862	5202	5085	5179	5046	2800	5425	5562	1483	4828
31214058	BIRCH CREEK	45	44	44	38	36	41	44	49	53	56	51	46
31316010	STEVENSON #1	18	1	0	0	0	0	0	0	20	32	29	26
31415065	BLACK CANYON NO.3	0	0	0	0	105	97	104	85	82	66	77	0
31616001	CEDAR DRAW	295	267	212	661	885	879	590	1236	1434	1427	586	378
31316011	STEVENSON #2	0	0	0	2	0	0	0	0	0	30	31	35
31415094	JIM KNIGHT	0	0	0	80	58	290	247	259	263	77	58	0
31416020	CANYON SPRINGS	118	118	109	112	118	125	119	116	55	106	98	123
31615067	PIGEON COVE	586	457	423	490	1224	1395	1352	1465	1629	1549	861	775
31315021	SNAKE RIVER POTTERY	57	58	44	44	32	34	10	26	27	0	35	59
31316015	LEMOYNE	22	19	17	24	23	18	26	19	22	21	23	24
31414075	SNEDIGAR RANCH	130	101	104	126	229	140	150	162	230	228	146	141
31715099	LOWLINE CANAL	-3	-6	0	1231	7193	7911	7507	8004	6532	4300	220	-4
31315093	HAILEY CSPP	21	20	20	19	20	16	20	19	19	18	18	17
31615105	LITTLE WOOD RIV. RES.	-5	-7	-8	1638	1716	2199	1707	269	-2	-2	-6	-6
31615056	LATERAL #10	1043	492	10	447	857	909	720	1561	1759	1661	1627	1321
11866066	B.C. EMMETT	9211	8525	7750	4271	6234	10904	9564	9595	3194	8165	9123	9467
31515103	SAGEBRUSH	-6	-5	-4	129	288	297	293	288	296	90	70	-4
31315029	WHITE WATER RANCH	67	95	122	73	37	47	36	39	44	97	114	129
31615117	MARCOS RANCHES	0	0	0	283	555	485	413	673	883	795	47	0
12616071	OMYHEE DAM	-21	-16	2575	1962	5058	4711	4806	4669	4660	4453	-46	-45
31315008	H.E.E.D. CO.	7	7	8	5	15	22	19	28	0	0	0	21
31515100	BRIGGS CREEK	474	457	436	482	347	420	432	412	439	417	412	378
31615057	CRYSTAL SPRINGS	-31	-24	-11	638	1277	1444	787	1828	2295	2161	357	0
41455091	POCATELLO WASTE	159	197	169	188	154	155	139	152	149	149	136	170
31414111	MUD CREEK/WHITE	41	35	31	3	10	15	17	43	63	26	98	62
11615077	ELK CREEK	-11	-12	366	1225	1753	1748	641	-2	-1	51	133	-12
21415119	REYNOLDS IRRIGATION	182	175	184	132	60	200	202	167	247	228	219	238
31515107	LITTLEWOOD/ARKOOSH	68	65	324	455	730	770	621	509	429	299	195	226
41515122	SCHAFFNER	41	36	30	156	283	389	241	132	88	84	58	55
31615098	GEOBON 2	-21	-12	345	507	772	787	815	878	648	15	173	225
31415027	TROUT CO.	139	133	139	97	50	52	50	74	107	116	144	149
31615121	FAULKNER RANCH	26	19	136	354	631	647	601	672	560	269	166	148
41415124	SUNSHINE POWER #2	2	1	6	8	18	37	35	24	10	0	3	10
31615125	LOWLINE #2	-22	-18	-13	278	2431	2534	2471	2522	2350	1697	56	0
31715126	BYPASS	-35	-36	-28	2158	6572	7744	8351	7192	5793	2841	-22	-31
31615106	DIETRICH DROP	-6	-7	-6	259	3866	4641	4078	4444	3832	1028	-4	-7

IDAHO POWER COMPANY
COGENERATION AND SMALL POWER PRODUCTION
MONTHLY GENERATION BY PLANT (AVERAGE KW)

PAGE 44

21615078	BARBER DAM	0	0	0	1174	2280	2222	2308	2090	1579	332	87	-29
31615104	ROCK CREEK #2	0	0	11	1253	850	1093	1464	1620	1879	1253	442	662
12614070	MITCHELL BUTTE	0	0	0	0	671	1461	1154	1671	1414	530	-10	-32
31715123	MAGIC RESERVOIR	0	0	0	0	2344	5951	5547	2827	-35	-26	-47	-36
22314133	WEST BOISE WASTE	0	0	0	0	0	0	189	184	177	185	175	193
TOTAL		24652	22367	24905	33802	63952	76831	71934	68618	58819	49708	24906	26939

47-7771

Attachment 3 to license review memo

# ----- WARNING -----									
# Some of the data that you have obtained from this U.S. Geological Survey database									
# may not have received Director's approval. Any such data values are qualified									
# as provisional and are subject to revision. Provisional data are released on the									
# condition that neither the USGS nor the United States Government may be held liable									
# for any damages resulting from its use.									
#									
# Additional info: https://help.waterdata.usgs.gov/policies/provisional-data-statement									
#									
# File-format description: https://help.waterdata.usgs.gov/faq/about-tab-delimited-output									
# Automated-retrieval info: https://help.waterdata.usgs.gov/faq/automated-retrievals									
#									
# Contact: gs-w_support_nwisweb@usgs.gov									
# retrieved: 2019-07-08 16:25:07 EDT (vaww02)									
#									
# Data for the following 1 site(s) are contained in this file									
# USGS 13093000 ROCK CREEK BELOW POLELINE ROAD NR TWIN FALLS ID									
# -----									
#									
# Data provided for site 13093000									
# TS parameter statistic Description									
# 45536 00060 00003 Discharge, cubic feet per second (Mean)									
#									
# Data-value qualification codes included in this output:									
# A Approved for publication -- Processing and review completed,									
# e Value has been estimated.									
#									
agency_cd site_no datetime 45536_00060_00003 45536_00060_00003_cd									
	Site number	Date	Daily average flow (cfs)	Data review field	FERC required minimum streamflow (cfs)	Flow available for power (cfs)	Flow used for power (cfs)	Check column for AF calc	Comment
USGS	13093000	12/1/1988	149	A	31	118	0		offline
USGS	13093000	12/2/1988	149	A	31	118	0		
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USGS	13093000	12/4/1988	144	A	31	113	0		
USGS	13093000	12/5/1988	144	A	31	113	0		
USGS	13093000	12/6/1988	145	A	31	114	0		
USGS	13093000	12/7/1988	143	A	31	112	0		
USGS	13093000	12/8/1988	140	A	31	109	0		
USGS	13093000	12/9/1988	141	A	31	110	0		
USGS	13093000	12/10/1988	141	A	31	110	0		
USGS	13093000	12/11/1988	139	A	31	108	0		
USGS	13093000	12/12/1988	137	A	31	106	0		
USGS	13093000	12/13/1988	138	A	31	107	0		
USGS	13093000	12/14/1988	137	A	31	106	0		
USGS	13093000	12/15/1988	132	A	31	101	0		
USGS	13093000	12/16/1988	126	A	31	95	0		
USGS	13093000	12/17/1988	126	A	31	95	0		
USGS	13093000	12/18/1988	128	A	31	97	0		
USGS	13093000	12/19/1988	134	A	31	103	0		
USGS	13093000	12/20/1988	132	A	31	101	0		
USGS	13093000	12/21/1988	134	A	31	103	0		
USGS	13093000	12/22/1988	130	A	31	99	0		
USGS	13093000	12/23/1988	128	A	31	97	0		
USGS	13093000	12/24/1988	129	A	31	98	0		
USGS	13093000	12/25/1988	131	A	31	100	0		
USGS	13093000	12/26/1988	123	A	31	92	0		
USGS	13093000	12/27/1988	118	A	31	87	0		
USGS	13093000	12/28/1988	117	A	31	86	0		
USGS	13093000	12/29/1988	116	A	31	85	0		
USGS	13093000	12/30/1988	119	A	31	88	0		
USGS	13093000	12/31/1988	122	A	31	91	0		expected online date
USGS	13093000	1/1/1989	119	A	31	88	0		
USGS	13093000	1/2/1989	117	A	31	86	0		
USGS	13093000	1/3/1989	115	A	31	84	0		
USGS	13093000	1/4/1989	118	A	31	87	0		
USGS	13093000	1/5/1989	120	A	31	89	0		
USGS	13093000	1/6/1989	121	A	31	90	0		
USGS	13093000	1/7/1989	116	A	31	85	0		

	Site number	Date	Daily average flow (cfs)	Data review field	FERC required minimum streamflow (cfs)	Flow available for power (cfs)	Flow used for power (cfs)	Check column for AF calc	Comment
USGS	13093000	1/8/1989	112	A	31	81	0		
USGS	13093000	1/9/1989	117	A	31	86	0		
USGS	13093000	1/10/1989	134	A	31	103	0		
USGS	13093000	1/11/1989	116	A	31	85	0		
USGS	13093000	1/12/1989	111	A	31	80	0		
USGS	13093000	1/13/1989	114	A	31	83	0		
USGS	13093000	1/14/1989	113	A	31	82	0		
USGS	13093000	1/15/1989	109	A	31	78	0		
USGS	13093000	1/16/1989	109	A	31	78	0		
USGS	13093000	1/17/1989	112	A	31	81	0		
USGS	13093000	1/18/1989	110	A	31	79	0		
USGS	13093000	1/19/1989	109	A	31	78	0		
USGS	13093000	1/20/1989	110	A	31	79	0		
USGS	13093000	1/21/1989	113	A	31	82	0		
USGS	13093000	1/22/1989	117	A	31	86	0		
USGS	13093000	1/23/1989	112	A	31	81	0		
USGS	13093000	1/24/1989	107	A	31	76	0		
USGS	13093000	1/25/1989	102	A	31	71	0		
USGS	13093000	1/26/1989	102	A	31	71	0		
USGS	13093000	1/27/1989	102	A	31	71	0		
USGS	13093000	1/28/1989	100	A	31	69	0		
USGS	13093000	1/29/1989	99	A	31	68	0		
USGS	13093000	1/30/1989	102	A	31	71	0		
USGS	13093000	1/31/1989	110	A	31	79	0		
USGS	13093000	2/1/1989	115	A	41	74	0		
USGS	13093000	2/2/1989	108	A	41	67	0		
USGS	13093000	2/3/1989	103	A	41	62	0		
USGS	13093000	2/4/1989	100	A	41	59	0		
USGS	13093000	2/5/1989	95	A	41	54	0		
USGS	13093000	2/6/1989	91	A	41	50	0		
USGS	13093000	2/7/1989	92	A	41	51	0		
USGS	13093000	2/8/1989	92	A	41	51	0		
USGS	13093000	2/9/1989	93	A	41	52	0		
USGS	13093000	2/10/1989	96	A	41	55	0		
USGS	13093000	2/11/1989	97	A	41	56	0		
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USGS	13093000	2/13/1989	101	A	41	60	0		
USGS	13093000	2/14/1989	100	A	41	59	0		
USGS	13093000	2/15/1989	98	A	41	57	0		
USGS	13093000	2/16/1989	97	A	41	56	0		
USGS	13093000	2/17/1989	99	A	41	58	0		
USGS	13093000	2/18/1989	106	A	41	65	0		
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USGS	13093000	3/2/1989	148	A	41	107	107		but date unknown
USGS	13093000	3/3/1989	130	A	41	89	89		
USGS	13093000	3/4/1989	117	A	41	76	76		
USGS	13093000	3/5/1989	122	A	41	81	81		
USGS	13093000	3/6/1989	125	A	41	84	84		
USGS	13093000	3/7/1989	128	A	41	87	87		
USGS	13093000	3/8/1989	147	A	41	106	106		
USGS	13093000	3/9/1989	174	A	41	133	133		
USGS	13093000	3/10/1989	211	A	41	170	170		
USGS	13093000	3/11/1989	223	A	41	182	182		
USGS	13093000	3/12/1989	213	A	41	172	172		
USGS	13093000	3/13/1989	209	A	41	168	168		
USGS	13093000	3/14/1989	201	A	41	160	160		

			Daily		FERC required	Flow				
	Site number	Date	average	Data review	minimum	available	Flow used	Check column		
			flow (cfs)	field	streamflow (cfs)	for power (cfs)	for power (cfs)	for AF calc	Comment	
USGS	13093000	3/15/1989	185	A	41	144	144			
USGS	13093000	3/16/1989	176	A	41	135	135			
USGS	13093000	3/17/1989	162	A	41	121	121			
USGS	13093000	3/18/1989	155	A	41	114	114			
USGS	13093000	3/19/1989	151	A	41	110	110			
USGS	13093000	3/20/1989	143	A	41	102	102			
USGS	13093000	3/21/1989	137	A	41	96	96			
USGS	13093000	3/22/1989	138	A	41	97	97			
USGS	13093000	3/23/1989	138	A	41	97	97			
USGS	13093000	3/24/1989	141	A	41	100	100			
USGS	13093000	3/25/1989	151	A	41	110	110			
USGS	13093000	3/26/1989	163	A	41	122	122			
USGS	13093000	3/27/1989	161	A	41	120	120			
USGS	13093000	3/28/1989	163	A	41	122	122			
USGS	13093000	3/29/1989	165	A	41	124	124			
USGS	13093000	3/30/1989	167	A	41	126	126			
USGS	13093000	3/31/1989	169	A	41	128	128			
USGS	13093000	4/1/1989	176	A	82	94	94	186.45	start of volume calc	
USGS	13093000	4/2/1989	176	A	82	94	94	186.45		
USGS	13093000	4/3/1989	175	A	82	93	93	184.47		
USGS	13093000	4/4/1989	167	A	82	85	85	168.60		
USGS	13093000	4/5/1989	187	A	82	105	105	208.27		
USGS	13093000	4/6/1989	179	A	82	97	97	192.40		
USGS	13093000	4/7/1989	180	A	82	98	98	194.38		
USGS	13093000	4/8/1989	198	A	82	116	116	230.09		
USGS	13093000	4/9/1989	212	A	82	130	130	257.86		
USGS	13093000	4/10/1989	215	A	82	133	133	263.81		
USGS	13093000	4/11/1989	207	A	82	125	125	247.94		
USGS	13093000	4/12/1989	205	A	82	123	123	243.97		
USGS	13093000	4/13/1989	193	A	82	111	111	220.17		
USGS	13093000	4/14/1989	194	A	82	112	112	222.15		
USGS	13093000	4/15/1989	199	A	82	117	117	232.07		
USGS	13093000	4/16/1989	211	A	82	129	129	255.87		
USGS	13093000	4/17/1989	220	A	82	138	138	273.72		
USGS	13093000	4/18/1989	230	A	82	148	148	293.56		
USGS	13093000	4/19/1989	240	A	82	158	158	313.39		
USGS	13093000	4/20/1989	244	A	82	162	162	321.33		
USGS	13093000	4/21/1989	243	A	82	161	161	319.34		
USGS	13093000	4/22/1989	249	A	82	167	167	331.24		
USGS	13093000	4/23/1989	246	A	82	164	164	325.29		
USGS	13093000	4/24/1989	236	A	82	154	154	305.46		
USGS	13093000	4/25/1989	216	A	82	134	134	265.79		
USGS	13093000	4/26/1989	186	A	82	104	104	206.28		
USGS	13093000	4/27/1989	166	A	82	84	84	166.61		
USGS	13093000	4/28/1989	175	A	82	93	93	184.47		
USGS	13093000	4/29/1989	173	A	82	91	91	180.50		
USGS	13093000	4/30/1989	173	A	82	91	91	180.50		
USGS	13093000	5/1/1989	176	A	82	94	94	186.45		
USGS	13093000	5/2/1989	180	A	82	98	98	194.38		
USGS	13093000	5/3/1989	172	A	82	90	90	178.52		
USGS	13093000	5/4/1989	169	A	82	87	87	172.56		
USGS	13093000	5/5/1989	178	A:e	82	96	96	190.42		
USGS	13093000	5/6/1989	163	A:e	82	81	81	160.66		
USGS	13093000	5/7/1989	164	A:e	82	82	82	162.65		
USGS	13093000	5/8/1989	166	A:e	82	84	84	166.61		
USGS	13093000	5/9/1989	170	A:e	82	88	88	174.55		
USGS	13093000	5/10/1989	175	A:e	82	93	93	184.47		
USGS	13093000	5/11/1989	183	A:e	82	101	101	200.33		
USGS	13093000	5/12/1989	183	A	82	101	101	200.33		
USGS	13093000	5/13/1989	190	A	82	108	108	214.22		
USGS	13093000	5/14/1989	220	A	82	138	138	273.72		
USGS	13093000	5/15/1989	226	A	82	144	144	285.62		
USGS	13093000	5/16/1989	206	A	82	124	124	245.95		
USGS	13093000	5/17/1989	169	A	82	87	87	172.56		
USGS	13093000	5/18/1989	156	A	82	74	74	146.78		
USGS	13093000	5/19/1989	160	A	82	78	78	154.71		

	Site number	Date	Daily average flow (cfs)	Data review field	FERC required minimum streamflow (cfs)	Flow available for power (cfs)	Flow used for power (cfs)	Check column for AF calc	Comment		
USGS	13093000	5/20/1989	159	A	82	77	77	152.73			
USGS	13093000	5/21/1989	158	A	82	76	76	150.75			
USGS	13093000	5/22/1989	164	A	82	82	82	162.65			
USGS	13093000	5/23/1989	152	A	82	70	70	138.85			
USGS	13093000	5/24/1989	156	A	82	74	74	146.78			
USGS	13093000	5/25/1989	160	A	82	78	78	154.71			
USGS	13093000	5/26/1989	165	A	82	83	83	164.63			
USGS	13093000	5/27/1989	172	A	82	90	90	178.52			
USGS	13093000	5/28/1989	175	A	82	93	93	184.47			
USGS	13093000	5/29/1989	176	A	82	94	94	186.45			
USGS	13093000	5/30/1989	173	A	82	91	91	180.50			
USGS	13093000	5/31/1989	176	A	82	94	94	186.45			
USGS	13093000	6/1/1989	170	A	82	88	88	174.55			
USGS	13093000	6/2/1989	163	A	82	81	81	160.66			
USGS	13093000	6/3/1989	174	A	82	92	92	182.48			
USGS	13093000	6/4/1989	188	A	82	106	106	210.25			
USGS	13093000	6/5/1989	196	A	82	114	114	226.12			
USGS	13093000	6/6/1989	191	A	82	109	109	216.20			
USGS	13093000	6/7/1989	189	A	82	107	107	212.23			
USGS	13093000	6/8/1989	188	A	82	106	106	210.25			
USGS	13093000	6/9/1989	189	A	82	107	107	212.23			
USGS	13093000	6/10/1989	196	A	82	114	114	226.12			
USGS	13093000	6/11/1989	201	A	82	119	119	236.04			
USGS	13093000	6/12/1989	204	A	82	122	122	241.99			
USGS	13093000	6/13/1989	207	A	82	125	125	247.94			
USGS	13093000	6/14/1989	219	A	82	137	137	271.74			
USGS	13093000	6/15/1989	216	A	82	134	134	265.79			
USGS	13093000	6/16/1989	220	A	82	138	138	273.72			
USGS	13093000	6/17/1989	219	A	82	137	137	271.74			
USGS	13093000	6/18/1989	224	A	82	142	142	281.66			
USGS	13093000	6/19/1989	225	A	82	143	143	283.64			
USGS	13093000	6/20/1989	213	A	82	131	131	259.84			
USGS	13093000	6/21/1989	222	A	82	140	140	277.69			
USGS	13093000	6/22/1989	234	A	82	152	152	301.49			
USGS	13093000	6/23/1989	241	A	82	159	159	315.38			
USGS	13093000	6/24/1989	247	A	82	165	165	327.28			
USGS	13093000	6/25/1989	240	A	82	158	158	313.39			
USGS	13093000	6/26/1989	240	A	82	158	158	313.39			
USGS	13093000	6/27/1989	235	A	82	153	153	303.48			
USGS	13093000	6/28/1989	237	A	82	155	155	307.44			
USGS	13093000	6/29/1989	225	A	82	143	143	283.64			
USGS	13093000	6/30/1989	221	A	82	139	139	275.71			
USGS	13093000	7/1/1989	233	A	82	151	151	299.51			
USGS	13093000	7/2/1989	235	A	82	153	153	303.48			
USGS	13093000	7/3/1989	235	A	82	153	153	303.48			
USGS	13093000	7/4/1989	222	A	82	140	140	277.69			
USGS	13093000	7/5/1989	213	A	82	131	131	259.84			
USGS	13093000	7/6/1989	213	A	82	131	131	259.84			
USGS	13093000	7/7/1989	213	A	82	131	131	259.84			
USGS	13093000	7/8/1989	205	A	82	123	123	243.97			
USGS	13093000	7/9/1989	213	A	82	131	131	259.84			
USGS	13093000	7/10/1989	214	A	82	132	132	261.82			
USGS	13093000	7/11/1989	216	A	82	134	134	265.79			
USGS	13093000	7/12/1989	229	A	82	147	147	291.57			
USGS	13093000	7/13/1989	237	A	82	155	155	307.44			
USGS	13093000	7/14/1989	240	A	82	158	158	313.39			
USGS	13093000	7/15/1989	243	A	82	161	161	319.34			
USGS	13093000	7/16/1989	247	A	82	165	165	327.28			
USGS	13093000	7/17/1989	247	A	82	165	165	327.28			
USGS	13093000	7/18/1989	269	A	82	187	187	370.91			
USGS	13093000	7/19/1989	272	A	82	190	190	376.87			
USGS	13093000	7/20/1989	258	A	82	176	176	349.10			
USGS	13093000	7/21/1989	261	A	82	179	179	355.05			
USGS	13093000	7/22/1989	252	A	82	170	170	337.20			
USGS	13093000	7/23/1989	250	A	82	168	168	333.23			
USGS	13093000	7/24/1989	255	A	82	173	173	343.15			

	Site number	Date	Daily average flow (cfs)	Data review field	FERC required minimum streamflow (cfs)	Flow available for power (cfs)	Flow used for power (cfs)	Check column for AF calc	Comment
USGS	13093000	7/25/1989	240	A	82	158	158	313.39	
USGS	13093000	7/26/1989	244	A	82	162	162	321.33	
USGS	13093000	7/27/1989	266	A	82	184	184	364.96	
USGS	13093000	7/28/1989	273	A	82	191	191	378.85	
USGS	13093000	7/29/1989	254	A	82	172	172	341.16	
USGS	13093000	7/30/1989	256	A	82	174	174	345.13	
USGS	13093000	7/31/1989	253	A	82	171	171	339.18	
USGS	13093000	8/1/1989	266	A	82	184	184	364.96	
USGS	13093000	8/2/1989	264	A	82	182	182	361.00	
USGS	13093000	8/3/1989	256	A	82	174	174	345.13	
USGS	13093000	8/4/1989	255	A	82	173	173	343.15	
USGS	13093000	8/5/1989	255	A	82	173	173	343.15	
USGS	13093000	8/6/1989	264	A	82	182	182	361.00	
USGS	13093000	8/7/1989	264	A	82	182	182	361.00	
USGS	13093000	8/8/1989	269	A	82	187	187	370.91	
USGS	13093000	8/9/1989	286	A	82	204	202	400.67	flow limited to permit rate
USGS	13093000	8/10/1989	265	A	82	183	183	362.98	
USGS	13093000	8/11/1989	267	A	82	185	185	366.95	
USGS	13093000	8/12/1989	271	A	82	189	189	374.88	
USGS	13093000	8/13/1989	288	A	82	206	202	400.67	
USGS	13093000	8/14/1989	289	A	82	207	202	400.67	
USGS	13093000	8/15/1989	289	A	82	207	202	400.67	
USGS	13093000	8/16/1989	289	A	82	207	202	400.67	
USGS	13093000	8/17/1989	294	A	82	212	202	400.67	
USGS	13093000	8/18/1989	291	A	82	209	202	400.67	
USGS	13093000	8/19/1989	291	A	82	209	202	400.67	
USGS	13093000	8/20/1989	308	A	82	226	202	400.67	
USGS	13093000	8/21/1989	314	A	82	232	202	400.67	
USGS	13093000	8/22/1989	313	A	82	231	202	400.67	
USGS	13093000	8/23/1989	319	A	82	237	202	400.67	
USGS	13093000	8/24/1989	328	A	82	246	202	400.67	
USGS	13093000	8/25/1989	330	A	82	248	202	400.67	
USGS	13093000	8/26/1989	330	A	82	248	202	400.67	
USGS	13093000	8/27/1989	328	A	82	246	202	400.67	
USGS	13093000	8/28/1989	318	A	82	236	202	400.67	
USGS	13093000	8/29/1989	316	A	82	234	202	400.67	
USGS	13093000	8/30/1989	317	A	82	235	202	400.67	
USGS	13093000	8/31/1989	320	A	82	238	202	400.67	
USGS	13093000	9/1/1989	314	A	82	232	202	400.67	proof due
USGS	13093000	9/2/1989	307	A	82	225	202	400.67	
USGS	13093000	9/3/1989	313	A	82	231	202	400.67	
USGS	13093000	9/4/1989	318	A	82	236	202	400.67	
USGS	13093000	9/5/1989	328	A	82	246	202	400.67	
USGS	13093000	9/6/1989	324	A	82	242	202	400.67	
USGS	13093000	9/7/1989	326	A	82	244	202	400.67	
USGS	13093000	9/8/1989	328	A	82	246	202	400.67	
USGS	13093000	9/9/1989	324	A	82	242	202	400.67	
USGS	13093000	9/10/1989	326	A	82	244	202	400.67	
USGS	13093000	9/11/1989	333	A	82	251	202	400.67	
USGS	13093000	9/12/1989	339	A	82	257	202	400.67	
USGS	13093000	9/13/1989	328	A	82	246	202	400.67	
USGS	13093000	9/14/1989	328	A	82	246	202	400.67	
USGS	13093000	9/15/1989	324	A	82	242	202	400.67	
USGS	13093000	9/16/1989	331	A	82	249	202	400.67	
USGS	13093000	9/17/1989	348	A	82	266	202	400.67	
USGS	13093000	9/18/1989	370	A	82	288	202	400.67	
USGS	13093000	9/19/1989	404	A	82	322	202	400.67	
USGS	13093000	9/20/1989	422	A	82	340	202	400.67	
USGS	13093000	9/21/1989	414	A	82	332	202	400.67	
USGS	13093000	9/22/1989	417	A	82	335	202	400.67	
USGS	13093000	9/23/1989	411	A	82	329	202	400.67	
USGS	13093000	9/24/1989	408	A	82	326	202	400.67	
USGS	13093000	9/25/1989	407	A	82	325	202	400.67	
USGS	13093000	9/26/1989	402	A	82	320	202	400.67	
USGS	13093000	9/27/1989	409	A	82	327	202	400.67	
USGS	13093000	9/28/1989	416	A	82	334	202	400.67	

	Site number	Date	Daily average flow (cfs)	Data review field	FERC required minimum streamflow (cfs)	Flow available for power (cfs)	Flow used for power (cfs)	Check column for AF calc	Comment		
USGS	13093000	9/29/1989	408	A	82	326	202	400.67			
USGS	13093000	9/30/1989	411	A	82	329	202	400.67			
USGS	13093000	10/1/1989	415	A	41	374	202	400.67			
USGS	13093000	10/2/1989	420	A	41	379	202	400.67			
USGS	13093000	10/3/1989	440	A	41	399	202	400.67	max QD		
USGS	13093000	10/4/1989	415	A	41	374	202	400.67			
USGS	13093000	10/5/1989	402	A	41	361	202	400.67			
USGS	13093000	10/6/1989	398	A	41	357	202	400.67			
USGS	13093000	10/7/1989	389	A	41	348	202	400.67			
USGS	13093000	10/8/1989	385	A	41	344	202	400.67			
USGS	13093000	10/9/1989	380	A	41	339	202	400.67			
USGS	13093000	10/10/1989	383	A	41	342	202	400.67	proof received		
USGS	13093000	10/11/1989	380	A	41	339	202	400.67			
USGS	13093000	10/12/1989	375	A	41	334	202	400.67			
USGS	13093000	10/13/1989	368	A	41	327	202	400.67			
USGS	13093000	10/14/1989	366	A	41	325	202	400.67			
USGS	13093000	10/15/1989	362	A	41	321	202	400.67			
USGS	13093000	10/16/1989	357	A	41	316	202	400.67			
USGS	13093000	10/17/1989	354	A	41	313	202	400.67			
USGS	13093000	10/18/1989	354	A	41	313	202	400.67			
USGS	13093000	10/19/1989	355	A	41	314	202	400.67			
USGS	13093000	10/20/1989	352	A	41	311	202	400.67			
USGS	13093000	10/21/1989	346	A	41	305	202	400.67			
USGS	13093000	10/22/1989	342	A	41	301	202	400.67			
USGS	13093000	10/23/1989	340	A	41	299	202	400.67			
USGS	13093000	10/24/1989	340	A	41	299	202	400.67			
USGS	13093000	10/25/1989	370	A	41	329	202	400.67			
USGS	13093000	10/26/1989	335	A	41	294	202	400.67			
USGS	13093000	10/27/1989	321	A	41	280	202	400.67			
USGS	13093000	10/28/1989	307	A	41	266	202	400.67			
USGS	13093000	10/29/1989	301	A	41	260	202	400.67			
USGS	13093000	10/30/1989	299	A	41	258	202	400.67			
USGS	13093000	10/31/1989	299	A	41	258	202	400.67			
USGS	13093000	11/1/1989	296	A	41	255	202	400.67			
USGS	13093000	11/2/1989	296	A	41	255	202	400.67			
USGS	13093000	11/3/1989	293	A	41	252	202	400.67			
USGS	13093000	11/4/1989	265	A	41	224	202	400.67			
USGS	13093000	11/5/1989	223	A	41	182	182	361.00			
USGS	13093000	11/6/1989	198	A	41	157	157	311.41			
USGS	13093000	11/7/1989	211	A	41	170	170	337.20			
USGS	13093000	11/8/1989	211	A	41	170	170	337.20			
USGS	13093000	11/9/1989	184	A	41	143	143	283.64			
USGS	13093000	11/10/1989	178	A	41	137	137	271.74			
USGS	13093000	11/11/1989	177	A	41	136	136	269.76			
USGS	13093000	11/12/1989	177	A	41	136	136	269.76			
USGS	13093000	11/13/1989	172	A	41	131	131	259.84			
USGS	13093000	11/14/1989	170	A	41	129	129	255.87			
USGS	13093000	11/15/1989	166	A	41	125	125	247.94			
USGS	13093000	11/16/1989	168	A	41	127	127	251.90			
USGS	13093000	11/17/1989	168	A	41	127	127	251.90			
USGS	13093000	11/18/1989	163	A	41	122	122	241.99			
USGS	13093000	11/19/1989	161	A	41	120	120	238.02			
USGS	13093000	11/20/1989	161	A	41	120	120	238.02			
USGS	13093000	11/21/1989	160	A	41	119	119	236.04			
USGS	13093000	11/22/1989	158	A	41	117	117	232.07			
USGS	13093000	11/23/1989	161	A	41	120	120	238.02			
USGS	13093000	11/24/1989	172	A	41	131	131	259.84			
USGS	13093000	11/25/1989	169	A	41	128	128	253.89			
USGS	13093000	11/26/1989	171	A	41	130	130	257.86			
USGS	13093000	11/27/1989	157	A	41	116	116	230.09			
USGS	13093000	11/28/1989	150	A	41	109	109	216.20			
USGS	13093000	11/29/1989	148	A	41	107	107	212.23			
USGS	13093000	11/30/1989	148	A	41	107	107	212.23			
USGS	13093000	12/1/1989	145	A	31	114	114	226.12			
USGS	13093000	12/2/1989	143	A	31	112	112	222.15			
USGS	13093000	12/3/1989	144	A	31	113	113	224.14			

	Site number	Date	Daily average flow (cfs)	Data review field	FERC required minimum streamflow (cfs)	Flow available for power (cfs)	Flow used for power (cfs)	Check column for AF calc	Comment
USGS	13093000	12/4/1989	146	A	31	115	115	228.10	
USGS	13093000	12/5/1989	147	A	31	116	116	230.09	
USGS	13093000	12/6/1989	145	A	31	114	114	226.12	
USGS	13093000	12/7/1989	142	A	31	111	111	220.17	
USGS	13093000	12/8/1989	143	A	31	112	112	222.15	
USGS	13093000	12/9/1989	143	A	31	112	112	222.15	
USGS	13093000	12/10/1989	140	A	31	109	109	216.20	
USGS	13093000	12/11/1989	136	A	31	105	105	208.27	
USGS	13093000	12/12/1989	136	A	31	105	105	208.27	
USGS	13093000	12/13/1989	136	A	31	105	105	208.27	
USGS	13093000	12/14/1989	137	A	31	106	106	210.25	
USGS	13093000	12/15/1989	137	A	31	106	106	210.25	
USGS	13093000	12/16/1989	135	A	31	104	104	206.28	
USGS	13093000	12/17/1989	139	A	31	108	108	214.22	
USGS	13093000	12/18/1989	134	A	31	103	103	204.30	
USGS	13093000	12/19/1989	130	A	31	99	99	196.37	
USGS	13093000	12/20/1989	130	A	31	99	99	196.37	
USGS	13093000	12/21/1989	128	A	31	97	97	192.40	
USGS	13093000	12/22/1989	125	A	31	94	94	186.45	
USGS	13093000	12/23/1989	123	A	31	92	92	182.48	
USGS	13093000	12/24/1989	121	A	31	90	90	178.52	
USGS	13093000	12/25/1989	120	A	31	89	89	176.53	
USGS	13093000	12/26/1989	120	A	31	89	89	176.53	
USGS	13093000	12/27/1989	121	A	31	90	90	178.52	
USGS	13093000	12/28/1989	121	A	31	90	90	178.52	
USGS	13093000	12/29/1989	121	A	31	90	90	178.52	
USGS	13093000	12/30/1989	118	A	31	87	87	172.56	
USGS	13093000	12/31/1989	117	A	31	86	86	170.58	
USGS	13093000	1/1/1990	120	A	31	89	89	176.53	
USGS	13093000	1/2/1990	120	A	31	89	89	176.53	
USGS	13093000	1/3/1990	112	A	31	81	81	160.66	
USGS	13093000	1/4/1990	109	A	31	78	78	154.71	
USGS	13093000	1/5/1990	111	A	31	80	80	158.68	
USGS	13093000	1/6/1990	112	A	31	81	81	160.66	
USGS	13093000	1/7/1990	115	A	31	84	84	166.61	
USGS	13093000	1/8/1990	125	A	31	94	94	186.45	
USGS	13093000	1/9/1990	123	A	31	92	92	182.48	
USGS	13093000	1/10/1990	118	A	31	87	87	172.56	
USGS	13093000	1/11/1990	114	A	31	83	83	164.63	
USGS	13093000	1/12/1990	115	A	31	84	84	166.61	
USGS	13093000	1/13/1990	120	A	31	89	89	176.53	
USGS	13093000	1/14/1990	128	A	31	97	97	192.40	
USGS	13093000	1/15/1990	124	A	31	93	93	184.47	
USGS	13093000	1/16/1990	118	A	31	87	87	172.56	
USGS	13093000	1/17/1990	113	A	31	82	82	162.65	
USGS	13093000	1/18/1990	107	A	31	76	76	150.75	
USGS	13093000	1/19/1990	105	A	31	74	74	146.78	
USGS	13093000	1/20/1990	102	A	31	71	71	140.83	
USGS	13093000	1/21/1990	100	A	31	69	69	136.86	
USGS	13093000	1/22/1990	103	A	31	72	72	142.81	
USGS	13093000	1/23/1990	106	A	31	75	75	148.76	
USGS	13093000	1/24/1990	99	A	31	68	68	134.88	
USGS	13093000	1/25/1990	101	A	31	70	70	138.85	
USGS	13093000	1/26/1990	105	A	31	74	74	146.78	
USGS	13093000	1/27/1990	97	A	31	66	66	130.91	
USGS	13093000	1/28/1990	99	A	31	68	68	134.88	
USGS	13093000	1/29/1990	102	A	31	71	71	140.83	
USGS	13093000	1/30/1990	104	A	31	73	73	144.80	
USGS	13093000	1/31/1990	101	A	31	70	70	138.85	
USGS	13093000	2/1/1990	102	A	41	61	61	120.99	
USGS	13093000	2/2/1990	96	A	41	55	55	0.00	below turbine capability
USGS	13093000	2/3/1990	95	A	41	54	54	0.00	
USGS	13093000	2/4/1990	97	A	41	56	56	111.08	
USGS	13093000	2/5/1990	93	A	41	52	52	0.00	
USGS	13093000	2/6/1990	96	A	41	55	55	0.00	
USGS	13093000	2/7/1990	95	A	41	54	54	0.00	

			Daily		FERC required	Flow	Flow			
	Site number	Date	average	Data review	minimum	available	used	Check column	Comment	
			flow (cfs)	field	streamflow (cfs)	for power (cfs)	for power (cfs)	for AF calc		
USGS	13093000	2/8/1990	93	A	41	52	52	0.00		
USGS	13093000	2/9/1990	93	A	41	52	52	0.00		
USGS	13093000	2/10/1990	95	A	41	54	54	0.00		
USGS	13093000	2/11/1990	96	A	41	55	55	0.00		
USGS	13093000	2/12/1990	98	A	41	57	57	113.06		
USGS	13093000	2/13/1990	97	A	41	56	56	111.08		
USGS	13093000	2/14/1990	93	A	41	52	52	0.00		
USGS	13093000	2/15/1990	90	A	41	49	49	0.00		
USGS	13093000	2/16/1990	96	A	41	55	55	0.00		
USGS	13093000	2/17/1990	95	A	41	54	54	0.00		
USGS	13093000	2/18/1990	92	A	41	51	51	0.00		
USGS	13093000	2/19/1990	89	A	41	48	48	0.00		
USGS	13093000	2/20/1990	89	A	41	48	48	0.00		
USGS	13093000	2/21/1990	92	A	41	51	51	0.00		
USGS	13093000	2/22/1990	92	A	41	51	51	0.00		
USGS	13093000	2/23/1990	90	A	41	49	49	0.00		
USGS	13093000	2/24/1990	91	A	41	50	50	0.00		
USGS	13093000	2/25/1990	91	A	41	50	50	0.00		
USGS	13093000	2/26/1990	91	A	41	50	50	0.00		
USGS	13093000	2/27/1990	91	A	41	50	50	0.00		
USGS	13093000	2/28/1990	91	A	41	50	50	0.00		
USGS	13093000	3/1/1990	95	A	41	54	54	0.00		
USGS	13093000	3/2/1990	95	A	41	54	54	0.00		
USGS	13093000	3/3/1990	101	A	41	60	60	119.01		
USGS	13093000	3/4/1990	101	A	41	60	60	119.01		
USGS	13093000	3/5/1990	114	A	41	73	73	144.80		
USGS	13093000	3/6/1990	102	A	41	61	61	120.99		
USGS	13093000	3/7/1990	100	A	41	59	59	117.03		
USGS	13093000	3/8/1990	100	A	41	59	59	117.03		
USGS	13093000	3/9/1990	98	A	41	57	57	113.06		
USGS	13093000	3/10/1990	101	A	41	60	60	119.01		
USGS	13093000	3/11/1990	102	A	41	61	61	120.99		
USGS	13093000	3/12/1990	98	A	41	57	57	113.06		
USGS	13093000	3/13/1990	95	A	41	54	54	0.00		
USGS	13093000	3/14/1990	94	A	41	53	53	0.00		
USGS	13093000	3/15/1990	93	A	41	52	52	0.00		
USGS	13093000	3/16/1990	91	A	41	50	50	0.00		
USGS	13093000	3/17/1990	91	A	41	50	50	0.00		
USGS	13093000	3/18/1990	89	A	41	48	48	0.00		
USGS	13093000	3/19/1990	89	A	41	48	48	0.00		
USGS	13093000	3/20/1990	89	A	41	48	48	0.00		
USGS	13093000	3/21/1990	89	A	41	48	48	0.00		
USGS	13093000	3/22/1990	90	A	41	49	49	0.00		
USGS	13093000	3/23/1990	90	A	41	49	49	0.00		
USGS	13093000	3/24/1990	95	A	41	54	54	0.00		
USGS	13093000	3/25/1990	97	A	41	56	56	111.08		
USGS	13093000	3/26/1990	97	A	41	56	56	111.08		
USGS	13093000	3/27/1990	97	A	41	56	56	111.08		
USGS	13093000	3/28/1990	100	A	41	59	59	117.03		
USGS	13093000	3/29/1990	101	A:e	41	60	60	119.01		
USGS	13093000	3/30/1990	99	A:e	41	58	58	115.04		
USGS	13093000	3/31/1990	96	A:e	41	55	55	0.00	end of volume calc	88547.41 AF
data retrieved from USGS website on 7/8/2019 by Michele Edl										

21424.wp

/orders/21496

4/21/1994 6k 1 hits

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

CHARLES D. HOWARD,)

(ROCK CREEK #2),) CASE NO. U-1006-261

)

Complainant,)

) ORDER NO. 21424

v.)

)

IDAHO POWER COMPANY,)

)

Respondent.)

_____)

A firm energy sales agreement having been entered into by the above parties, and said contract having been approved by the Idaho Public Utilities Commission (Case No. U-1006-297, Order No. 21361), and it appearing to the Commission, having reviewed the filings of record, that the matter at issue has been fully compromised and settled,

IT IS HEREBY ORDERED that the Complaint filed in Case No. U-1006-261 be dismissed.

IT IS FURTHER ORDERED that all hearings and scheduling in this matter be vacated.

THIS IS A FINAL ORDER. Any person interested in this Order (or in issues finally decided by this Order) or in interlocutory Orders previously issued in this Case No. U-1006-261 may petition for reconsideration within twenty-one (21) days of the service date of this Order with regard to any matter decided in this Order or in interlocutory Orders previously issued in this Case No. U-1006-261. Within seven (7) days after any person has petitioned for reconsideration, any other person may cross-petition for reconsideration. See Idaho Code §61-626.

////

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Edl, Michele

From: Brown, Kyle (EGP North America) <Kyle.Brown@enel.com>
Sent: Thursday, May 02, 2019 6:38 AM
To: Edl, Michele
Subject: FW: Rock creek turbine nameplate
Attachments: IMG_5435.JPG; ATT00001.txt

Michele,

Attached is the photo of the name plate for the turbine at Rock Creek.

Kyle

Kyle Brown
Hydro-West Idaho Site Manager

Enel Green Power North America, Inc.
Mountain States Office
2283 Wright Ave., Suite D. - Twin Falls, ID 83301 - USA T 1-978-447-2216 - M 1-208-734-0551 kyle.brown@enel.com

This message is intended for the following use only: PUBLIC - INTERNAL - CONFIDENTIAL - STRICTLY CONFIDENTIAL

This e-mail is confidential and may well also contain information privileged by law. If you have received it in error, you are on notice of its status. Please notify us immediately by reply e-mail and then delete this message from your system. Please do not copy it or use it for any purposes, or disclose its contents to any other person, unless authorised. Any misuse could be a breach of confidence.

-----Original Message-----

From: Kyle Brown [mailto:knkbrown5@icloud.com]
Sent: Thursday, May 2, 2019 4:50 AM
To: Brown, Kyle (EGP North America) <Kyle.Brown@enel.com>
Subject: Rock creek turbine nameplate

VOITH

Francis Turbine

H = 119 ft Q = 230 cfs

N = 600 rpm P = 2648 hp

Mach. no. 45360 Year built 1988

Voith Hydro, Inc. York, PA USA

WR#47-7771
turbine nameplate

Edl, Michele

From: Brown, Kyle (EGP North America) <Kyle.Brown@enel.com>
Sent: Monday, April 29, 2019 2:38 PM
To: Edl, Michele
Subject: Rock Creek Discharge Rating Curve
Attachments: RCII_BypassFlowWeirCurve.pdf

Michele,

Please see the attached weir rating curve for Rock Creek II.

Kyle

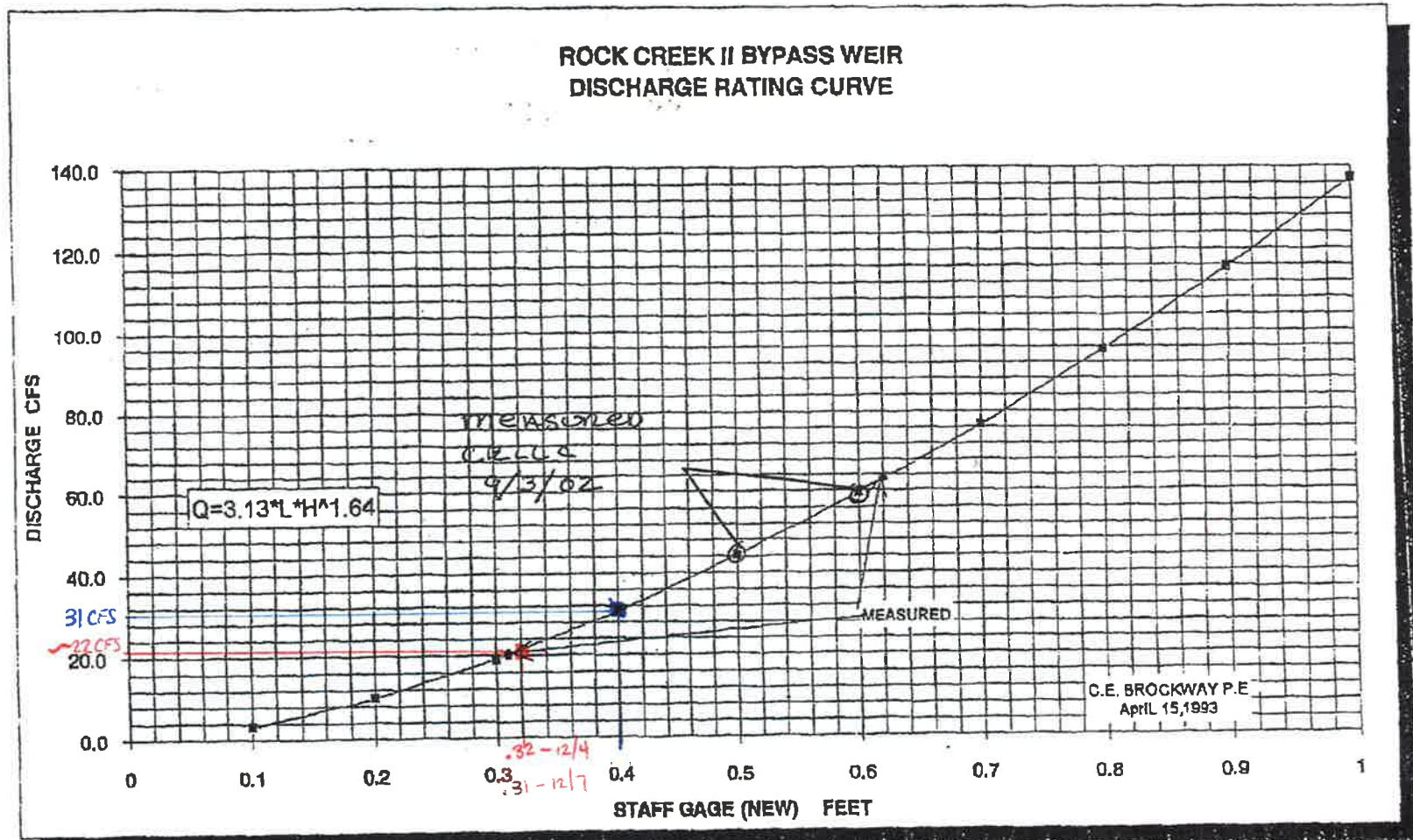
Kyle Brown
Hydro-West Idaho Site Manager



Enel Green Power North America, Inc.
Mountain States Office
2283 Wright Ave., Suite D. – Twin Falls, ID 83301 – USA
T 1-978-447-2216 – M 1-208-734-0551
kyle.brown@enel.com

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WR#47-7771



ENA-SAF-EP-447-026

Rev 06 date 12/8/2018

Organizational Area
NORTH AMERICA AREA

Subject: Rock Creek Emergency Response Plan

RENEWABLE ENERGY

Rock Creek II #6015-ID**Site Address**

Canyon Spring Road to the mouth of Rock
Creek
Site Office Latitude 42.836046 and Longitude -
114.267952
Site Phone (208) 734-9968

Emergency Contacts

Kyle Brown (978) 447-2216
Andy Thompson (978) 989-4612
Jason Folsom (978) 560-7812

IN AN EMERGENCY, DIAL 911

Agency / Name	Contact	Agency / Name	Contact
Emergency (police, fire, medical)	911	Hospital	St. Luke's Magic Valley 801 Pole Line RD W. Twin Falls, ID 83301 (208) 814-8100
Fire & Emergency Services:	Twin Falls Fire Dept. 345 2 nd Ave. E. Twin Falls, Id. 83303 (208) 735-7231	Ambulance Service	Magic Valley Ambulance 801 Pole Line Rd W Ste. 3880, Twin Falls, ID (208) 814-9025
Local Law Enforcement:	Twin Falls Police Dept. 356 Third Ave. E. Twin Falls, ID 83303 (208) 735-4357	Helicopter Service Landing zone	n/a
Local Emergency Planning Com (LEPC)	Jacqueline Frey P.O. Box 126 Twin Falls, 83303 (208) 736-4234	Spill Response Contractor	Specialty Environmental Services Inc. (208) 863-4667
Building Security (if applicable):	n/a	National Response Center	800-424-8802
Poison Control Center:	1 (800) 222-1222	Electric Utility: Idaho Power Company	(208) 388-2050 (208) 388-5175 (208) 388-6127 (208) 388-2826
Occupation Medical Clinic:	St. Luke's Clinic 775 Pole Line Road W Suite 101 Twin Falls, Id (208) 814-8100	Idaho Department of Environmental Quality	(800) 270-1663
Wildlife Contact	Idaho Fish and Game 324 S. 417 E., Suite #1 Jerome, ID 83338 (208) 324-4359	FERC Regional Engineer	PRO Regional Engineer Douglas Johnson, PE Off: (503) 552-2715 Cell: (253) 691-6908 Home: (503) 206-5037



0003343708

**STATE OF IDAHO***Office of the secretary of state, Lawrence Denney***ANNUAL REPORT**

Idaho Secretary of State
PO Box 83720
Boise, ID 83720-0080
(208) 334-2301
Filing Fee: \$0.00

*For Office Use Only***-FILED-**

File #: 0003343708

Date Filed: 11/5/2018 5:08:28 PM

B0088-5993 11/05/2018 5:08 PM Received by ID Secretary of State Lawrence Denney

Entity Name and Mailing Address:

ENEL GREEN POWER NORTH AMERICA, INC.

The file number of this entity on the records of the Idaho Secretary of State is: 0000593778

Address 100 BRICKSTONE SQ
STE 300
ANDOVER, MA 01810-1456

Entity Details:

Entity Status Active - Good Standing

This entity is organized under the laws of: DELAWARE

The file number of this entity on the records of the Idaho Secretary of State is: 0000593778

If applicable, the old file number of this entity on the records of the Idaho Secretary of State was: C196795

Registered Agent Name and Address

Current Registered Agent

C T CORPORATION SYSTEM
Commercial Registered Agent

Physical Address

921 S ORCHARD ST STE G
BOISE, ID 83705

Mailing Address

921 S ORCHARD ST STE G
BOISE, ID 83705

Corporate Officers and Directors:

Name of individual or organization	Title	Address
RAFAEL GONZALEZ	President	100 BRICKSTONE SQUARE, SUITE 300 ANDOVER, MA 01810
Megan Beauregard	Secretary	100 BRICKSTONE SQUARE, SUITE 300 ANDOVER, MA 01810
RAFAEL GONZALEZ	Director	100 BRICKSTONE SQUARE, SUITE 300 ANDOVER, MA 01810
Antonio Cammisecra	Director	100 BRICKSTONE SQUARE, SUITE 300 ANDOVER, MA 01810
Giuseppe Perna	Director	100 BRICKSTONE SQUARE, SUITE 300 ANDOVER, MA 01810
Michele Calderoni	Director	100 BRICKSTONE SQUARE, SUITE 300 ANDOVER, MA 01810

The annual report must be signed by an authorized signer of the entity.

Kelly Lettmann

Sign Here

Signer's Capacity POA

11/05/2018

Date



**STATEMENT OF CHANGE OF REGISTERED AGENT,
REGISTERED OFFICE,
OR BOTH**

Filing fee: \$20.00 for manual processing (form must be typed).

File #: 593778

The undersigned entity submits the following statement for the purpose of changing its registered agent, its registered office, or both, in the State of Idaho.

1. The name of the entity is:

ENEL GREEN POWER NORTH AMERICA, INC.

2. The name and street address of the old registered agent and office is:

C T CORPORATION SYSTEM

921 S ORCHARD ST STE G

BOISE, ID 83705

3. The name and street address of the new registered agent and office in Idaho is:

COGENCY GLOBAL INC.

921 South Orchard Street, Suite G

(not a PO box or PMB)

Boise, ID 83705

I consent to serve as registered agent for the above-named entity.

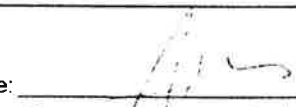


(Signature of new registered agent)

1/22/2019

(Date)

Dated: 12/18/18

Signature: 

Printed: Jose Manuel Astudillo

Capacity: Assistant Secretary

Secretary of State use only

B0079-2775 01/28/2019 11:15 AM Received by ID Secretary of State Lawrence Denney

Permit No. 47-07771

Current Address: 7283 Wright Ave, Suite D, Twin Falls 83301

Address: Same Phone No. 734-0551

Relationship to Permit Holder: Operations supervisor

3. Source: Rock Creek tributary to Snake River

1. Other water rights with the same place of use: _____

2. Other water rights with the same point of diversion: _____

1. Point(s) of Diversion:

2. Place(s) of Use: Indicate Method of Determination Engineering Jot

[illegible]

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe i.d. as applicable.

Scale: 1" = _____.

_____ Copy of USGS Quadrange Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

_____ Aerial Photo Attached (required for irrigation of 10+ acres)

_____ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements: Not measured due to siltation of measuring device.

E. NARRATIVE/REMARKS/COMMENTS

Concrete & steel diversion dam on Rock Creek. Broad-crested weir below diversion measures bypass flow; inlet is adjusted to maintain required bypass flows. There is a transducer measuring device at the diversion pipeline, but the silt load is so high that the transducer mechanism plugs up in one day. So diversion rates will have to be determined by other means.

A 6' diameter steel pipeline carries water about 1/2 mile downstream to the generator. Outflow runs back into Rock Creek. Another diversion about 50 yards downstream again diverts water to a power plant at the mouth of Rock Creek, but that is unrelated to this permit.

70

Generator produces 1900 kW = ~~65~~ 65% of turbine capacity of 230 cfs. So ~~70~~ 70% of 230 cfs = ~~149.5~~ 161 cfs. Per Mr. Higbee.

A 1 1/2" pipeline comes off the penstock above the turbine to provide water for cooling, so this is in addition to the ~~149.5~~ 161 cfs mentioned above.

161

A 2" pipeline comes off the penstock above the turbine to provide water for a fire hose, but this has never been used. Plant would shut down in case of fire, so this would be part of the ~~149.5~~ 161 cfs.

The Francis turbine by Voith Hydro runs at 600 rpm under 119' of head to produce 2648 hp with 230 cfs. Serial #45360.

The generator is by Ideal Electric Co, Serial #342306. = 1975 kW. Per Mr. Higbee, cooling use is 7-8 gpm in summer, 2-3 gpm in winter.

Have conditions of permit approval been met? ☒ yes ☐ no

F. FLOW CALCULATIONS

Additional Computation Sheets Attached

Measured Method:

$P = 1700$ kw maximum

$H = 119'$

$e = 88.83$ maximum

$$\text{Flow} = \frac{P \times 11.8}{H e} = \frac{1700 \times 11.8}{119 \times 88.83} = \frac{22420}{105.67} = 212.2 \text{ cfs}$$

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$$

2. Volume Calculations for Other Uses:

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Power	1-1	12-31	190.7	
Industrial	"	"	0.02	
Totals:				

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

Field Examiner's Name

unsigned where received 2/28/2012

Reviewer

Date

(Jim retired)
SEAL
S.H.



Controlling Mechanism At POD; Pipeline Inlet ↗



Pipeline From POD To Power Plant

47-7771
7-21-98
JE Stanton



Power House

47-7771
7-21-98
JE Stanton



Power Plant



Generator

47-7771

7-21-98

JE Stanton



Interior of Power Plant

47-7771
7-21-98
JE Stanton



~~Head of Pipeline~~ Looking Downstream from POD



Diverting Works Looking Upstream

47-7771
7-21-98
JE Stanton



Rock Creek Looking Upstream From POD



Diverting Works Looking East Across Rock Cr.

47-7771

7-21-98

JE Stanton

Questions On Rock Gr. Power Plant

1. Exam says head = 119' but written data says 138' head, which is correct? 119'
2. Exam says 1900 kW & 1975 kW, but written data says 1978 kW maximum. Which is correct? 88.88 eff. at 1900 kW 230 cfs maximum turbine capacity run at 70%
3. Bypass required $\approx$ 40-80 cfs. Gauge reads of 0.3-0.73' equate to these flows. Your data shows heads of 1.51-1.61', however - doesn't make sense. Explain. OK
4. What about water for cooling generator - what is design flow & how much of the year is this needed? Are there times when this is not needed so all water goes thru turbines?
estimate 2-3⁷⁻⁸ gpm max. all year use ext 101 or Pat at Ext 102
Shirley 425-747-7650 CHI Energy Inc.
5. Record shows lienholders as Idaho Power Co. & Fidelity Bank Ltd, & Stewart Title of Boise as trustee. Are these entities still involved?
6. We show your address as c/o Bonneville Pacific in Salt Lake City. Is this correct?
not involved anymore - bankrupt
- 2" hose at 60 psi for fire fighting

7.5 MINUTE SERIES (TOPOGRAPHIC)

SE/4 JEROME 15' QUADRANGLE

3069 II NE
(JEROME)

701

32'30"

702

R. 16 E. 360 000 FEET

704

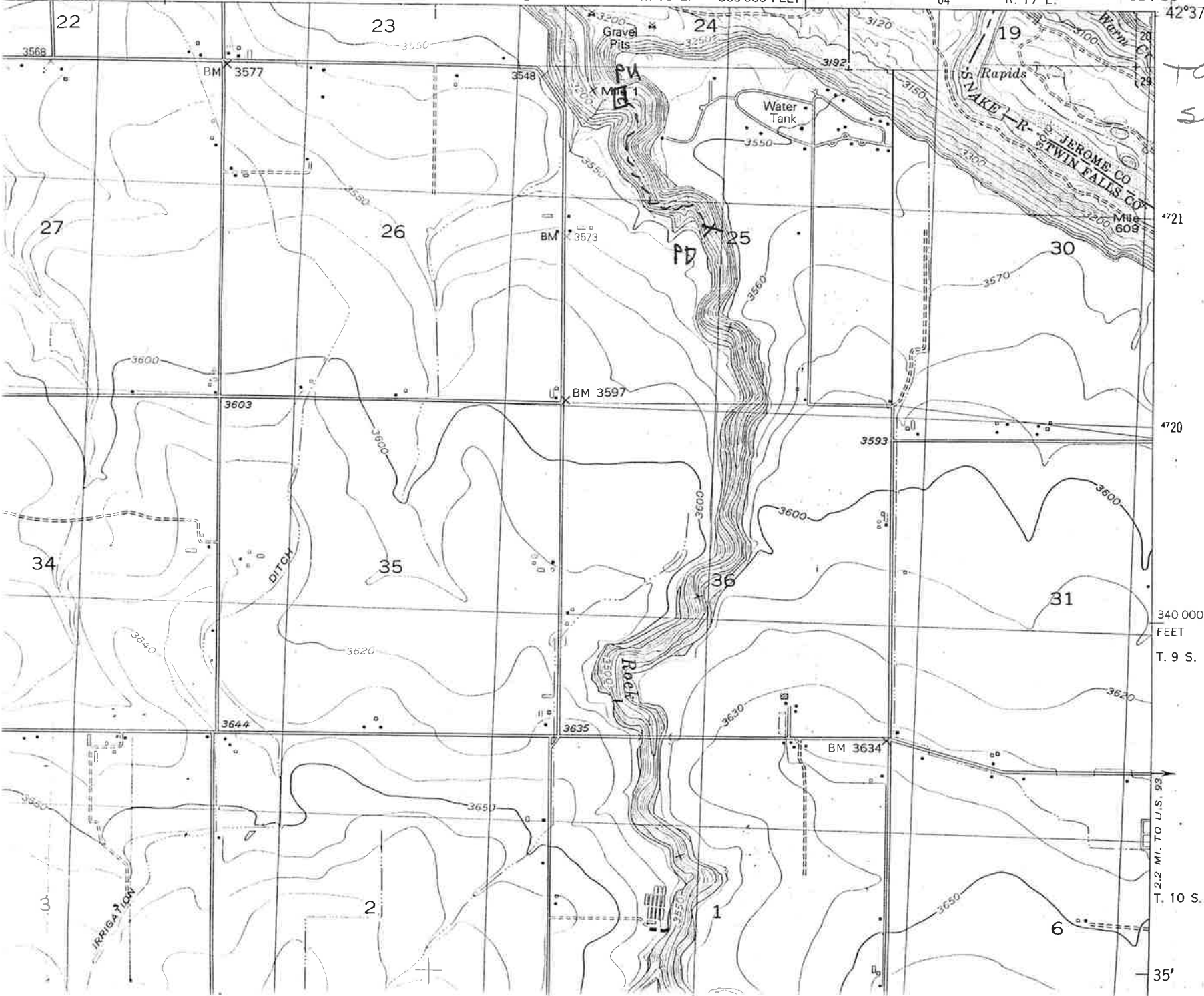
R. 17 E.

114°30'

42°37'30"

3188 M. M.
(FALLS CITY)

T9S R16 E
Sec. 25



340 000
FEET
T. 9 S.

2.2 MI. TO U.S. 93
T. 10 S.

35'

205 — meter still not connected

207 — 167/27050 gal

208 — 3116.81

239 — 495.27

US Motors 75 hp motor #1078067

Fairbanks-Morse pump PM 7687

re-lift pump info not readable

a headgate & 20" pipe take water from the Oakley West canal under the road to the open ditch along the south side of the property, a headgate in the ditch allows water into the pond for pressurizing into sprinklers.

north farm

headgate & weir (30" contr. rect weir, 7" head on high-water mark

^{roughly the}	H	N	P
Voith Francis turbine	112' head	Q = 230 cfs	600 rpm 2,648
SN 45360			hp

^{elec. to}
ideal generator 342306



IDAHO DEPARTMENT OF WATER RESOURCES
SOUTHERN REGION
1341 FILLMORE ST STE 200
TWIN FALLS ID 83301-3380
(208) 736-3033

RECEIVED
FEB 12 2002

updated
DIRK KEMPTHORNE
GOVERNOR

KARL J DREHER
DIRECTOR

Department of Water Resources

CHANGE IN ADDRESS

RECEIVED

FEB 11 2002

Department of Water Resources
Southern Region

☐ Water Right Number(s): 47-7771

☐ Old Mailing Address:

BP Hydro Associates

c/o Bonneville Pacific Corp

257 E 200 S, Salt Lake City UT

☐ New Mailing Address:

BP Hydro Associates

c/o CHI Energy

13400 NE 20TH ST, SUITE 30*

BELLEVUE, WA 98005

☐ New Telephone Number: (425) 747 - 7650

☐ Signature of Claimant(s):

[Signature]

Vice President

Date:

2/7/02

FOR IDWR USE ONLY
Initial Review and Data Entry
Date: By:
Further Action Needed:

Further Action Taken
Date: By:
Final Review and Data Entry
Date: By:

* Regional Office

CHI Headquarters

680 Washington Blvd, Suite 500

Stamford, CT 06901

203-425-8850



State of Idaho

DEPARTMENT OF WATER RESOURCES

1341 Fillmore Street, Suite 200, Twin Falls ID 83301-3380

Phone: (208) 736-3033 FAX: (208) 736-3037

SOUTHERN REGION

DIRK KEMPTHORNE
Governor

KARL J. DREHER
Director

February 1, 2002

BP Hydro Associates
ATTN: Don Jarrett
13400 NE 20th St #30
Bellevue, WA
98005

RE: Water Permit 47-7771, Rock Creek Hydro Plant

Dear Mr. Jarrett;

Enclosed is a Change of Address form for the above-referenced permit. Please return the completed form to this office for processing. A printout of the permit is enclosed for your information. While the license will be issued in the name of BP Hydro, the other entities may still be on the record. If necessary, the other entities can be removed from the record after licensing by filing a Change of Ownership of Water Right form. My licensing examination will indicate if any of the listed parties are no longer involved with this permit, however.

Regards,

James E. Stanton
Sr. Water Resource Agent



CHI MOUNTAIN STATES OPERATIONS, INC.

RECEIVED

JUL 22 1998

Department of Water Resources
Southern Region

FAX:

TO: James Stanton DATE: 7/22/98
COMPANY: Idaho Department of PAGES: 17
Water Resources (including this cover sheet)
PHONE: 736-3033 FOR REVIEW ☒
FAX: 736-3037 URGENT ☐
FROM: Dale Higbee PLEASE COMMENT ☐
SUBJECT: Rock Creek II - efficiency curves,
Daily print out at max. production,
original wire rating & current rating

MESSAGE:

It looks to me like we are
taking 200 cfs to reach maximum
production according to the charts
so the 202 cfs number you had
is probably correct. If you have
any questions please give me a call.

JUN-12-1996 10:46

VOITH HYDRO INC

717 792 7264 P:01/04

VOITH HYDRO ** TELEFAX**DATE:** June 12, 1996**FROM:** VOITH HYDRO, INC.

East Berlin Road

P. O. Box 712

York, PA 17405

TO:

Tel: (717) 792-7000

Tlx: (717) 792-7263

Tlx: 4764013

ATTENTION: Dale Higbee**SUBJECT:** Rock Creek Performance**TELEFAX NO:** 208-734-0553

Number of Pages: 4

(including cover

page)

SENT BY: Sue Wagner

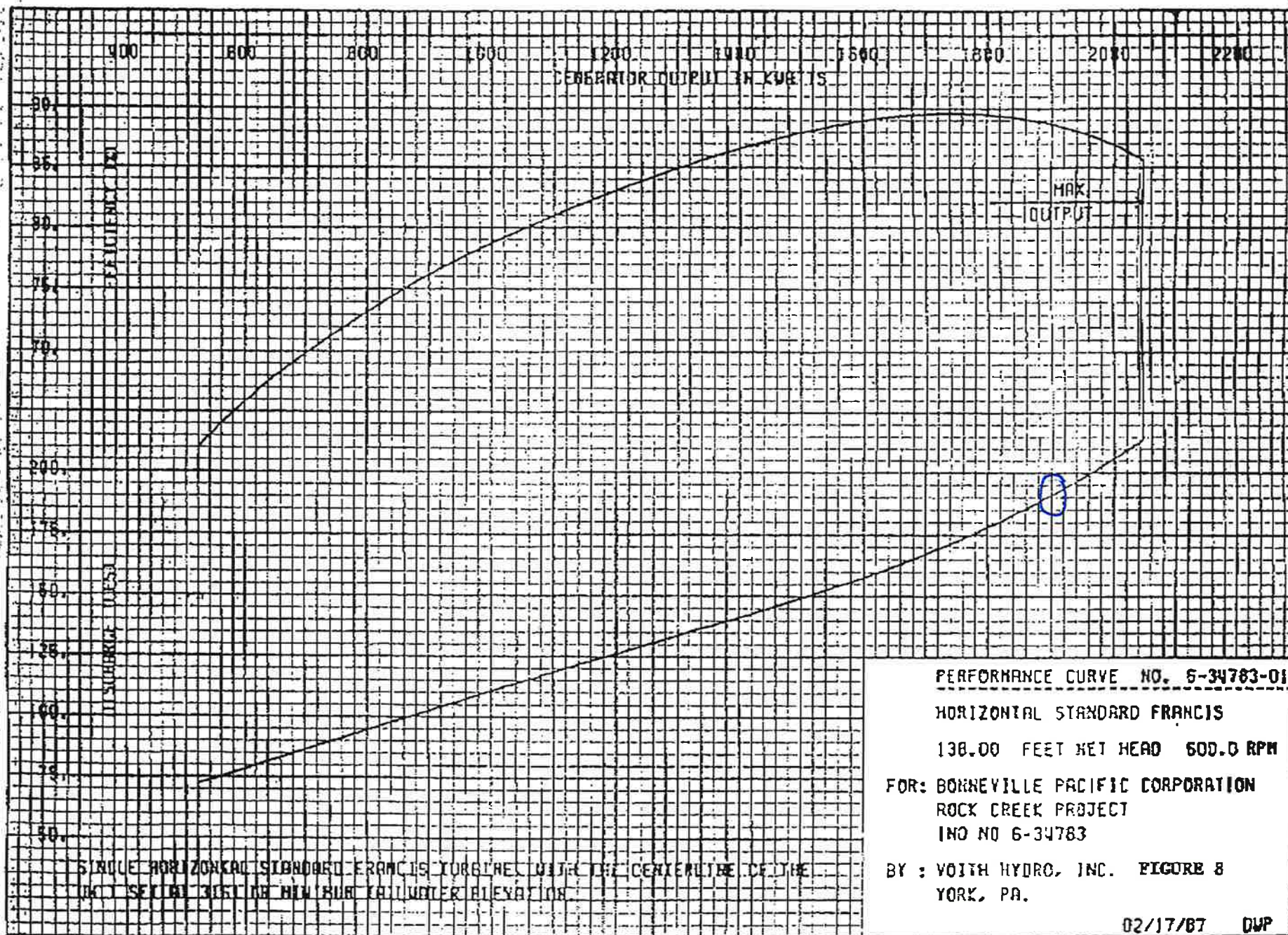
Hello Mr. Higbee,

Attached are curves for the efficiency and flow vs. generator output for the Rock Creek plant. Performance Curve No. G-34783-01 is the Expected Performance. Figures 5 and 6 are curves from the Field Test. As Figure 5 shows good correlation between the expected and actual performance, you could use either curve for the unit's performance.

If I can be of any further assistance, please do not hesitate to contact me.

Best Regards,





SINGLE HORIZONTAL STANDARD FRANCIS TURBINE WITH THE CENTERLINE OF THE
 UNIT SET AT 3151.00 HIGHER THAN THE WATER ELEVATION

SET EFFICIENCY VS MW

ROCK CREEK 36 INCH DIAMETER HORIZONTAL FRANCIS INDEX TEST RESULTS

CORRECTED NET HEAD

138.00

TEST DATE

MAY 26, 1989

EFF. (%)

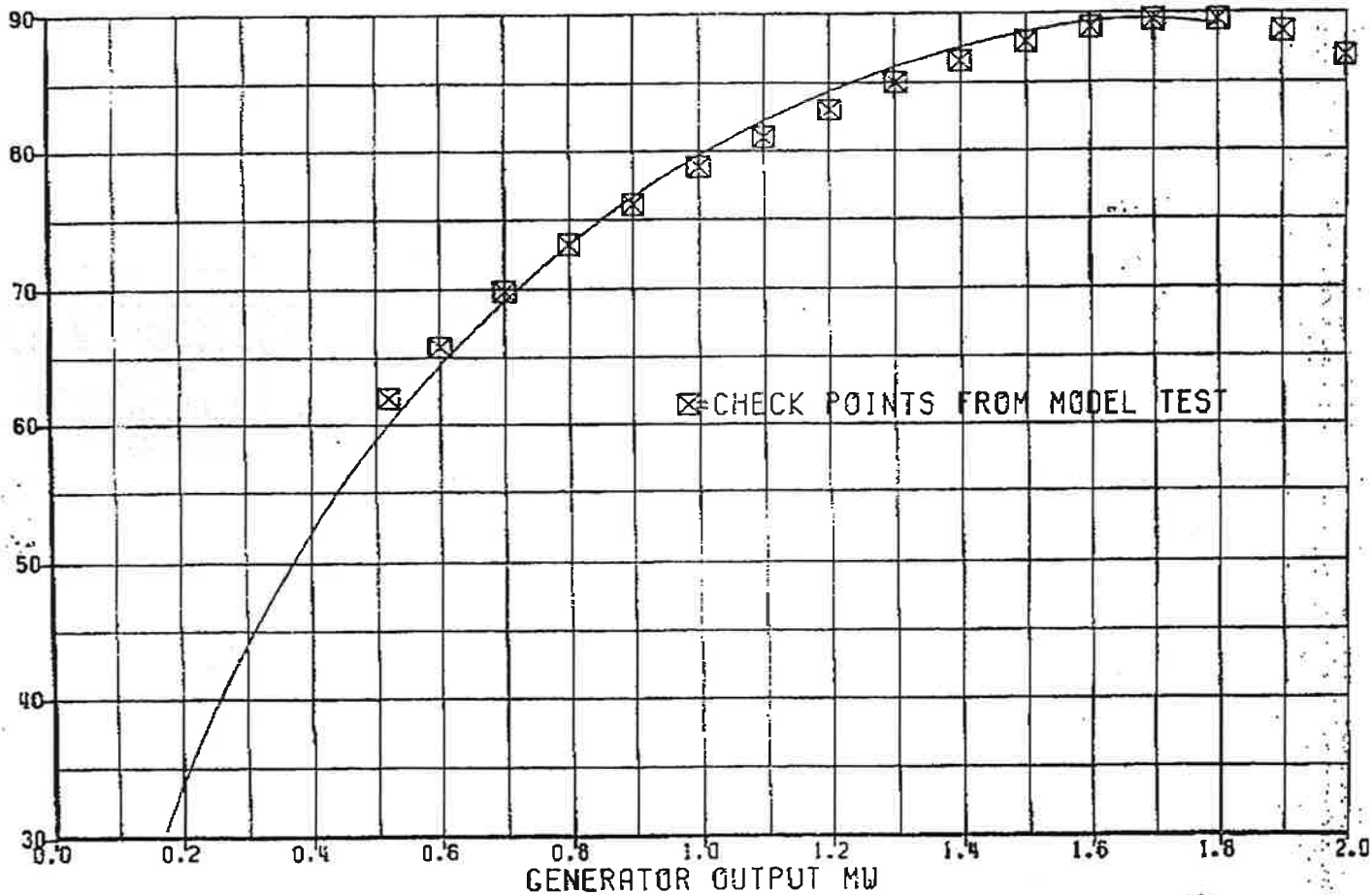
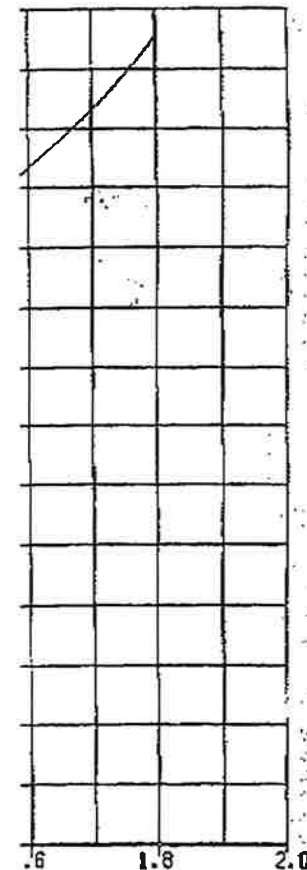


FIGURE 5

RESULTS
1989

Daily Print out
At Max. Production.
See sheet 5 for

5-12-98
28

Average bypass L-1.51
Flows AND
Average Production H-1.61
for the 24 hr.
period.

High Water

TIME	GEN YW	GEN FVA	GEN ANP	WHE12	WHE13	WHE14	WATER	TRASH	TRASH	WHE15	GEN S1	GEN S2	GEN S3	GEN S4	GEN S5	GEN S6	SPARE	SPARE
00:00	1905	-34	228	59.8	-0	1.51	4.47	0.74	169	172	170	163	170	173	32	32		
00:15	1909	-19	223	59.8	-0	1.51	4.48	0.74	169	175	173	166	170	176	32	32		
00:30	1911	1	226	59.8	-0	1.51	4.46	0.74	172	175	170	165	169	174	32	32		
00:45	1914	-55	223	59.8	-0	1.51	4.50	0.74	170	171	171	164	174	169	32	32		
01:00	1910	-59	224	59.8	-0	1.51	4.51	0.74	170	173	171	170	167	174	32	32		
01:15	1903	-144	232	59.9	-0	1.51	4.51	0.74	164	171	170	163	172	172	32	32		
01:30	1908	-34	211	59.8	-0	1.51	4.52	0.74	167	174	171	164	167	169	32	32		
01:45	1903	-30	231	59.9	0	1.51	4.49	0.74	175	170	169	167	170	165	32	32		
02:00	1903	-29	230	59.9	-0	1.53	4.22	0.74	172	173	171	164	170	170	32	32		
02:15	1905	-2	228	59.8	-0	1.53	4.20	0.74	172	170	170	165	170	170	32	32		
02:30	1900	-13	230	59.9	-0	1.52	4.22	0.74	166	169	169	167	170	165	32	32		
02:45	1900	-25	230	59.8	-0	1.51	4.19	0.74	167	170	169	166	166	172	32	32		
03:00	1903	-57	232	59.8	-0	1.51	4.21	0.74	168	174	170	163	170	168	32	32		
03:15	1908	-107	217	59.8	-0	1.51	4.21	0.74	170	172	169	163	171	163	32	32		
03:30	1897	-52	229	59.8	-0	1.51	4.30	0.74	168	172	172	164	173	172	32	32		
03:45	1906	-68	232	59.8	-0	1.52	4.46	0.74	171	170	170	165	166	166	32	32		
04:00	1906	-170	213	59.8	-0	1.51	4.47	0.74	170	170	170	172	170	170	32	32		

04:15	1910	-47	234	59.8	-0	1.52	4.46	0.74	170	168	169	166	167	176	32	31
04:30	1912	-85	218	59.8	-0	1.51	4.45	0.74	168	171	170	166	169	166	32	31
04:45	1916	-10	223	59.8	-0	1.53	4.49	0.74	166	168	172	164	169	170	32	31
05:00	1907	-98	209	59.8	-0	1.53	4.46	0.74	168	169	168	168	172	173	32	31
05:15	1913	-71	219	59.8	-0	1.53	4.47	0.74	166	169	168	169	169	168	32	31
05:30	1909	-35	221	59.8	-0	1.53	4.50	0.74	168	171	168	170	172	163	32	31
05:45	1911	-11	234	59.8	-0	1.53	4.51	0.74	169	172	170	164	168	173	32	31
06:00	1912	-30	228	59.8	-0	1.53	4.50	0.74	169	172	167	164	169	172	32	31
06:15	1913	-27	227	59.8	-0	1.53	4.50	0.74	168	172	171	166	169	169	32	31

06:30	1907	-61	220	59.8	-0	1.54	4.50	0.74	165	172	170	162	171	168	32	31
06:45	1915	-63	225	59.8	-0	1.54	4.49	0.74	168	173	166	165	168	169	32	31
07:00	1916	-75	237	59.8	-0	1.54	4.44	0.74	169	171	170	164	167	164	32	31
07:15	1917	-48	224	59.9	-0	1.54	4.47	0.74	169	172	169	163	166	175	32	31
07:30	1914	-5	229	59.8	-0	1.54	4.48	0.74	170	172	170	160	172	169	32	31
07:45	1911	-11	232	59.8	-0	1.54	4.51	0.74	171	171	167	163	168	169	32	31
08:00	1908	-87	236	59.8	-0	1.55	4.52	0.74	171	172	168	164	167	172	32	31
08:15	1924	-5	232	60.3	-0	1.56	4.52	0.74	169	173	171	161	169	170	32	31
08:30	1998	-77	242	62.9	-0	1.53	4.42	0.74	174	175	172	168	175	171	32	31
08:45	1974	-23	245	61.8	-0	1.53	4.37	0.74	172	177	176	168	172	177	32	31
09:00	1974	10	225	61.8	-0	1.53	4.41	0.74	174	180	177	175	173	171	32	31
09:15	1973	-13	241	61.8	-0	1.53	4.38	0.74	172	178	175	166	170	168	32	31
09:30	1960	0	242	61.8	0	1.54	4.31	0.74	174	176	170	166	173	177	32	31
09:45	1970	10	240	61.8	-0	1.54	4.44	0.74	173	180	176	168	177	174	32	31
10:00	1974	-45	245	61.8	-0	1.54	4.43	0.74	175	178	175	174	172	175	32	31
10:15	1971	-121	242	61.8	-0	1.53	4.46	0.74	176	179	176	175	177	174	32	31
10:30	1968	-44	239	61.8	-0	1.54	4.45	0.74	173	177	176	171	177	175	32	31
10:45	1971	-14	230	61.8	-0	1.54	4.49	0.74	177	179	176	173	176	171	32	31
11:00	1968	-15	240	61.8	-0	1.54	4.47	0.74	179	183	178	169	172	181	32	31
11:15	1968	-11	243	61.8	-0	1.54	4.56	0.74	175	179	178	172	178	179	32	31
11:30	1968	11	243	61.8	0	1.54	4.56	0.74	175	179	178	172	178	179	32	31

11:45 1958 2 240 61.8 -0 1.56 4.14 0.74 177 176 177 178 179 180 181 32 32

WEEK END REPORT FOR JUL 22 1998
 01-11-1998 PAGE 02

TIME	GEN KW	GEN KVA	GEN AMP	WBSATL P	TUR D	H-HA/R	TRASHRA/H	H2O D	GEN S1	GEN S2	GEN S3	GEN S4	GEN S5	GEN S6	APARE	SPARE
12:00	1963	-49	234	61.9	-0	1.55	4.17	0.74	176	175	177	175	178	182	32	32
12:15	1959	-4	242	61.9	-0	1.54	4.17	0.74	176	179	180	176	180	177	32	32
12:30	1962	-7	240	61.8	-0	1.54	4.17	0.74	179	181	180	171	181	179	32	32
12:45	1958	-19	240	61.8	-0	1.54	4.16	0.74	180	181	177	177	176	183	32	32
13:00	1958	-52	238	61.8	-0	1.52	4.12	0.74	173	179	179	173	178	182	32	32
13:15	1955	-10	244	61.8	-0	1.53	4.08	0.74	179	180	179	180	178	183	32	32
13:30	1960	5	235	61.8	-0	1.54	4.22	0.74	180	185	181	173	183	185	32	32
13:45	1960	-8	241	61.8	-0	1.56	4.24	0.74	178	182	181	177	175	181	32	32
14:00	1960	-94	226	61.8	-0	1.55	4.20	0.74	177	181	179	174	184	179	32	32
14:15	1960	4	243	61.8	-0	1.53	4.19	0.74	177	187	182	174	181	182	32	32
14:30	1960	-14	227	61.8	-0	1.56	4.13	0.74	176	179	180	176	181	186	32	32
14:45	1938	-36	241	61.8	-0	1.56	4.11	0.74	176	182	180	176	176	181	32	32
15:00	1960	-68	244	61.8	-0	1.55	4.08	0.74	175	182	181	169	177	183	32	32
15:15	1958	-23	235	61.8	-0	1.56	4.06	0.74	179	182	178	174	179	178	32	32
15:30	1955	-14	239	61.8	-0	1.54	3.93	0.74	175	180	178	174	173	174	32	32
15:45	1955	8	237	61.8	-0	1.54	3.91	0.74	177	181	179	169	181	178	32	32
15:45	1955					1.54	3.89	0.74	175	178	177	175	174	172	32	32

16:15	1953	5	243	61.1	-0	1.54	3.92	0.74	175	176	174	175	177	177	32	31
16:30	1953	11	241	61.8	-0	1.54	3.92	0.74	175	182	177	169	176	175	32	31
16:45	1956	-34	228	61.8	-0	1.54	3.92	0.74	173	180	174	171	178	176	32	31
17:00	1951	-38	241	61.8	-0	1.54	3.91	0.74	174	181	176	176	174	181	32	31
17:15	1953	-7	226	61.8	-0	1.54	3.94	0.74	179	178	176	173	176	180	32	31
17:30	1955	-42	230	61.8	-0	1.54	3.96	0.74	176	180	179	167	176	177	32	31
17:45	1954	3	235	61.8	-0	1.54	3.99	0.74	177	181	179	170	178	174	32	32
18:00	1958	8	238	61.8	-0	1.55	4.00	0.74	178	180	178	170	180	171	32	31
18:15	1937	-56	234	61.3	-0	1.55	3.88	0.74	173	179	177	169	177	177	32	31

19:00	1904	-99	231	59.9	-0	1.56	4.15	0.74	172	174	172	172	173	178	32	31
19:15	1902	-59	232	59.8	-0	1.56	4.18	0.71	169	174	172	171	173	171	32	31
19:30	1905	-47	234	59.8	-0	1.56	4.24	0.74	175	173	174	167	173	171	32	31
19:45	1905	-83	234	59.8	-0	1.59	4.22	0.74	172	170	170	163	175	173	32	32
19:30	1901	-100	232	59.8	-0	1.58	4.24	0.74	170	174	173	171	172	174	32	32
19:45	1898	-2	229	59.8	-0	1.59	4.22	0.74	170	172	173	169	175	174	32	32
20:00	1900	-74	232	59.8	-0	1.58	4.24	0.74	172	175	175	172	177	169	32	31
20:15	1903	-10	210	59.8	-0	1.59	4.24	0.74	172	174	172	169	175	170	32	32
20:30	1897	-58	233	59.8	-0	1.57	4.18	0.74	173	175	170	169	173	174	32	32
20:45	1906	-40	233	59.8	-0	1.56	4.16	0.74	169	173	172	166	173	176	32	32
21:00	1898	-12	230	59.7	-0	1.56	4.16	0.74	169	175	173	167	171	175	32	32
21:15	1902	7	231	59.8	-0	1.57	4.16	0.74	168	172	172	165	172	174	32	32
21:30	1901	-29	235	59.9	-0	1.57	4.14	0.74	169	172	171	168	171	163	32	32
21:45	1899	-58	231	59.9	-0	1.57	4.15	0.74	170	175	172	171	173	166	32	32
22:00	1902	-39	220	59.8	-0	1.58	4.13	0.74	173	174	172	162	171	175	32	32
22:15	1899	-3	224	59.9	-0	1.58	4.15	0.74	171	174	171	161	168	167	32	32
22:30	1897	-4	234	59.8	-0	1.58	4.13	0.74	171	175	171	163	174	171	32	32
22:45	1899	-40	228	59.9	-0	1.58	4.16	0.74	168	174	172	166	168	169	32	32
23:00	1899	5	232	59.9	-0	1.58	4.17	0.74	166	172	172	168	171	170	32	32
23:15	1897	-58	227	59.8	-0	1.59	4.19	0.74	173	173	170	171	170	171	32	32
23:30	1900	-70	225	59.8	-0	1.58	4.18	0.74	172	173	172	168	171	171	32	32

23.43	1894	-2	218	59.8	-0	1.60	4.18	0.74	166	166	170	162	168	173	32	32
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ROCK FURNACE PRODUCTION LOG ON 12-19-91 PAGE 3

TIME	GEN KW	GEN KVA	GEN AMP	WDAH	PYOR	B	H-WATER	TRASHWA	H-H2O S	GEN S1	GEN S2	GEN S3	GEN S4	GEN S5	GEN S6	SPARE	SPARE
MINIMUM	1894	-144	209	59.8	-0	1.51	3.88	0.74	164	166	167	160	166	163	32	32	
MAXIMUM	1998	11	245	62.9	-0	1.61	4.27	0.74	180	185	182	180	184	186	32	32	
AVERAGE	1929	-36	231	60.7	-0	1.54	4.27	0.74	172	175	173	169	173	173	32	32	

Generator
Production
in KW

BYPASS Flows

TOTAL MWH 6319.075



BROCKWAY
ENGINEERING

PL.L.C.

Hydraulics

Hydrology

Water Resources

April 16, 1998

Mr. Dale Higbee, Manager
CHI Mountain States Operations, Inc.
2283 Wright Avenue, Suite D
Twin Falls, ID 83301

Re: Rock Creek II plant bypass weir - rating verification

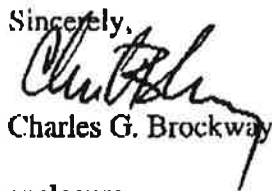
Dear Dale:

Enclosed are the current meter calculations for the rating curve verification performed on March 18, 1998 for the bypass weir.

Field inspection indicated that the weir is in substantially the same condition as it was during the 1993 field calibration. The flow passing over the weir was measured using a current meter along the crest of the weir. No other nearby locations in the stream channel of Rock Creek were suitable for accurate current meter measurements. During the measurement, the staff gauge reading ("new" staff gauge upstream of the weir) was constant at 0.50 feet. The discharge was measured at 44.8 cfs. The corresponding discharge from the 1993 rating curve is 44.1 cfs. This is a difference of 1.6%, and is within the accuracy of the current meter. Therefore, no rating curve shift or re-calibration is justified, and you should continue to use the same rating table or curve.

Please call if you have any questions.

Sincerely,


Charles G. Brockway

enclosure

CHARLES E.
BROCKWAY,
PH.D., P.E.

CHARLES G.
BROCKWAY,
PH.D.

706 SUNRISE
BOULEVARD
NORTH

TWIN FALLS,
IDAHO 83301

208•733•0938
208•734•2580

FAX: 736•1746

CURRENT METER CALCULATIONS

LOCATION: CHI - Rock Creek plant bypass
 DATE: 3/18/98
 HYDROGRAPHER: C. G. Brockway
 METER: OTT 4966
 MEASUREMENT NO.: 1

TIME START: 10:00
 TIME END: 10:40
 GAUGE START: 0.50 (new gauge)
 GAUGE END: 0.50
 Old gauge = 0.30

SECT.	DIST.	DEPTH	REV 6-2	REV .8	TIME SEC	ANG. CORR.	V1	V2	V SECT.	DELTA AREA	DELTA Q	SUM Q
1	0.6	0.00	0		50	1.000	0.00	NM	0.00	0.00	0.00	0.00
2	1.5	0.42	185		50	1.000	3.16	NM	3.16	0.19	0.60	0.60
3	3.0	0.44	164		50	1.000	2.81	NM	2.81	0.65	1.81	2.41
4	5.0	0.49	133		50	1.000	2.28	NM	2.28	0.93	2.12	4.53
5	7.0	0.50	114		50	1.000	1.96	NM	1.96	0.99	1.94	6.47
6	9.0	0.48	131		50	1.000	2.25	NM	2.25	0.98	2.20	8.67
7	11.0	0.43	173		50	1.000	2.96	NM	2.96	0.91	2.69	11.36
8	13.0	0.42	179		50	1.000	3.06	NM	3.06	0.85	2.60	13.96
9	15.0	0.47	168		50	1.000	2.87	NM	2.87	0.89	2.56	16.52
10	17.0	0.47	138		50	1.000	2.36	NM	2.36	0.94	2.22	18.74
11	19.0	0.46	124		50	1.000	2.13	NM	2.13	0.93	1.98	20.72
12	21.0	0.40	171		50	1.000	2.93	NM	2.93	0.86	2.52	23.24
13	23.0	0.38	180		50	1.000	3.08	NM	3.08	0.78	2.40	25.64
14	25.0	0.38	178		50	1.000	3.04	NM	3.04	0.76	2.31	27.95
15	27.0	0.43	145		50	1.000	2.48	NM	2.48	0.81	2.01	29.97
16	29.0	0.42	113		50	1.000	1.94	NM	1.94	0.85	1.65	31.61
17	31.0	0.43	115		50	1.000	1.97	NM	1.97	0.85	1.68	33.29
18	33.0	0.45	49		50	1.000	0.85	NM	0.85	0.88	0.75	34.04
19	34.0	0.43	94		50	1.000	1.62	NM	1.62	0.44	0.71	34.75
20	35.0	0.41	156		50	1.000	2.67	NM	2.67	0.42	1.12	35.88
21	37.0	0.34	208		50	1.000	3.55	NM	3.55	0.75	2.67	38.54
22	39.0	0.39	175		50	1.000	2.99	NM	2.99	0.73	2.19	40.73
23	41.0	0.42	149		50	1.000	2.55	NM	2.55	0.81	2.07	42.79
24	43.0	0.40	139		50	1.000	2.38	NM	2.38	0.82	1.95	44.75
25	44.0	0.42	0		50	1.000	0.00	NM	0.00	0.41	0.00	44.75

AVG. VEL. 2.43 FPS
 AREA 18.42 SQ FT
 DISCHARGE 44.75 CFS

***CALIBRATION**

FOR N(REV/T)<
 FOR N(REV/T)>

0.68 V=
 0.68 V=

0.79 *N+ 0.062
 0.85 *N+ 0.02

CURRENT METER CALCULATIONS

LOCATION: CHI - Rock Creek plant bypass
 DATE: 3/18/98
 HYDROGRAPHER: C. G. Brockway
 METER: OTT 4966
 MEASUREMENT NO.: 1

TIME START: 10:00
 TIME END: 10:40
 GAUGE START: 0.50 (new gauge)
 GAUGE END: 0.50
 Old gauge = 0.30

SECT.	DIST.	DEPTH	REV .6-.2	REV .8	TIME SEC	ANG. CORR.	V1	V2	V SECT.	DELTA AREA	DELTA Q	SUM Q
1	0.6	0.00	0		50	1.000	0.00	NM	0.00	0.00	0.00	0.00
2	1.5	0.42	185		50	1.000	3.16	NM	3.16	0.19	0.60	0.60
3	3.0	0.44	164		50	1.000	2.81	NM	2.81	0.65	1.81	2.41
4	5.0	0.49	133		50	1.000	2.28	NM	2.28	0.93	2.12	4.53
5	7.0	0.50	114		50	1.000	1.96	NM	1.96	0.99	1.94	6.47
6	9.0	0.48	131		50	1.000	2.25	NM	2.25	0.98	2.20	8.67
7	11.0	0.43	173		50	1.000	2.96	NM	2.96	0.91	2.69	11.36
8	13.0	0.42	179		50	1.000	3.06	NM	3.06	0.85	2.60	13.96
9	15.0	0.47	168		50	1.000	2.87	NM	2.87	0.89	2.56	16.52
10	17.0	0.47	138		50	1.000	2.36	NM	2.36	0.94	2.22	18.74
11	19.0	0.46	124		50	1.000	2.13	NM	2.13	0.93	1.98	20.72
12	21.0	0.40	171		50	1.000	2.93	NM	2.93	0.86	2.52	23.24
13	23.0	0.38	180		50	1.000	3.08	NM	3.08	0.78	2.40	25.64
14	25.0	0.38	178		50	1.000	3.04	NM	3.04	0.76	2.31	27.95
15	27.0	0.43	145		50	1.000	2.48	NM	2.48	0.81	2.01	29.97
16	29.0	0.42	113		50	1.000	1.94	NM	1.94	0.85	1.65	31.61
17	31.0	0.43	115		50	1.000	1.97	NM	1.97	0.85	1.68	33.29
18	33.0	0.45	49		50	1.000	0.85	NM	0.85	0.88	0.75	34.04
19	34.0	0.43	94		50	1.000	1.62	NM	1.62	0.44	0.71	34.75
20	35.0	0.41	156		50	1.000	2.67	NM	2.67	0.42	1.12	35.88
21	37.0	0.34	208		50	1.000	3.55	NM	3.55	0.75	2.67	38.54
22	39.0	0.39	175		50	1.000	2.99	NM	2.99	0.73	2.19	40.73
23	41.0	0.42	149		50	1.000	2.55	NM	2.55	0.81	2.07	42.79
24	43.0	0.40	139		50	1.000	2.38	NM	2.38	0.82	1.95	44.75
25	44.0	0.42	0		50	1.000	0.00	NM	0.00	0.41	0.00	44.75

AVG. VEL. 2.43 FPS
 AREA 18.42 SQ FT
 DISCHARGE 44.75 CFS

*CALIBRATION
 FOR N(REV/T)<
 FOR N(REV/T)>

0.68 V= 0.79 *N+ 0.062
 0.68 V= 0.85 *N+ 0.02



April 18, 1993

Mr. Dale Higbee, Manager
CHI Mountain States Operations Inc.
2022 4th Avenue East
Twin Falls, Idaho 83301

Subject: Rating Table-Rock Creek II Project- Bypass Weir

Dear Dale :

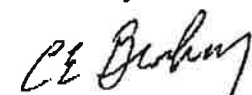
Enclosed are the current meter measurement sheets, the rating curve, and rating table for the Rock Creek II project bypass weir.

The rating curve is fitted to a standard broad crested weir formula but calibrated to the two discharge measurements made on April 15, 1993. The equation for the curve is shown on the rating curve plot of discharge versus the new staff gage reading. I checked the calibration against a computer program calibration for a standard broad crested weir with an open pool upstream and the measured curve is considerably different indicating the rocks do make a difference in the calibration.

I have highlighted the discharges on the rating table corresponding as close as possible to the bypass flows, namely 30, 42 and 82 cfs. These correspond to gage readings of 0.40, 0.48 and 0.73 feet.

Let me know if you have any questions

Sincerely,



C. E. Brockway, P.E.

CHARLES E.
BROCKWAY,
PhD., P.E.

706 SUNRISE
BOULEVARD
NORTH

TWIN FALLS,
IDAHO 83301

208•733•0938

CM93-1.XLS

CURRENT METER CALCULATIONS**CONSOLIDATED HYDRO ROCK CREEK II BYPASS WEIR****CURRENT METER ON CREST OF BROAD CRESTED WEIR**

APRIL 15, 1993

C.E. BROCKWAY, L. SCHMITT(CHI)

IDWR PYGMY METER

GAGE READING(NEW)= 0.31 FT

GAGE READING(OLD)= 0.17 FT

SECT.	DIST.	DEPT	REV .6-.2	REV .8	TIME SEC	ANGL CORR.	VEL	DELTA AREA	DELTA Q	SUM Q
1	0.0	0.25	0		0	1	0.00	0.00	0.00	0.00
2	0.5	0.30	100		40.5	1	2.47	0.14	0.17	0.17
3	2.0	0.20	100		43	1	2.33	0.38	0.90	1.07
4	4.0	0.20	100		42	1	2.38	0.40	0.94	2.01
5	6.0	0.18	100		39	1	2.56	0.38	0.94	2.95
6	8.0	0.23	100		42	1	2.38	0.41	1.01	3.96
7	10.0	0.25	100		105	1	0.95	0.48	0.80	4.76
8	12.0	0.23	100		58	1	1.72	0.48	0.64	5.41
9	14.0	0.23	120		58	1	2.07	0.46	0.87	6.28
10	16.0	0.22	100		57	1	1.75	0.45	0.86	7.14
11	18.0	0.20	100		47	1	2.13	0.42	0.82	7.95
12	20.0	0.20	100		43	1	2.33	0.40	0.89	8.84
13	22.0	0.19	100		41	1	2.44	0.39	0.93	9.77
14	24.0	0.20	100		41	1	2.44	0.39	0.95	10.72
15	26.0	0.21	100		44	1	2.27	0.41	0.97	11.69
16	28.0	0.21	100		42	1	2.38	0.42	0.98	12.67
17	30.0	0.20	100		40	1	2.50	0.41	1.00	13.67
18	32.0	0.20	100		39	1	2.56	0.40	1.01	14.68
19	34.0	0.22	100		39	1	2.56	0.42	1.08	15.76
20	36.0	0.24	100		47	1	2.13	0.46	1.08	16.84
21	38.0	0.23	100		44	1	2.27	0.47	1.03	17.87
22	40.0	0.23	100		48	1	2.08	0.46	1.00	18.87
23	42.0	0.21	100		43	1	2.33	0.44	0.97	19.84
24	42.6	0.20	100		46	1	2.17	0.12	0.28	20.12
25	43.0	0.18	0		0	1	0.00	0.08	0.08	20.20

PYGMY METER CALIBRATION
VEL IN FT/SEC=REV/SEC

AVG. VEL 2.18 FPS
AREA 9.26 SQ FT
DISCHARGE 20.20 CFS

CM93-1.XLS

CURRENT METER CALCULATIONS**CONSOLIDATED HYDRO ROCK CREEK II BYPASS WEIR****CURRENT METER ON CREST OF BROAD CRESTED WEIR**

APRIL 15, 1993

C.E. BROCKWAY, L. SCHMITT(CHI)

OTT METE 47966*

GAGE READING(NEW)= 0.62 FT

GAGE READING(OLD)= 0.38 FT

SECT.	DIST.	DEPT	REV .6-.2	REV .8	TIME SEC	ANGL CORR.	VEL	DELTA AREA	DELTA Q	SUM Q
1	0.0	0.51	0		50	1	0.00	0.00	0.00	0.00
2	0.5	0.52	198		50	1	3.38	0.26	0.44	0.44
3	2.0	0.52	197		50	1	3.37	0.78	2.63	3.07
4	4.0	0.43	231		50	1	3.94	0.95	3.47	6.54
5	6.0	0.38	245		50	1	4.18	0.81	3.29	9.83
6	8.0	0.36	240		50	1	4.10	0.74	3.06	12.90
7	10.0	0.46	176		50	1	3.01	0.82	2.91	15.81
8	12.0	0.50	119		50	1	2.04	0.96	2.42	18.24
9	14.0	0.46	156		50	1	2.67	0.96	2.26	20.50
10	16.0	0.44	166		50	1	2.84	0.90	2.48	22.98
11	18.0	0.40	192		50	1	3.28	0.84	2.57	25.55
12	20.0	0.38	222		50	1	3.79	0.78	2.76	28.31
13	22.0	0.37	226		50	1	3.86	0.75	2.87	31.18
14	24.0	0.40	203		50	1	3.47	0.77	2.82	34.00
15	26.0	0.46	162		50	1	2.77	0.86	2.68	36.68
16	28.0	0.44	206		50	1	3.50	0.90	2.82	39.51
17	30.0	0.40	214		50	1	3.66	0.84	3.01	42.51
18	32.0	0.40	219		50	1	3.74	0.80	2.96	45.47
19	34.0	0.44	197		50	1	3.37	0.84	2.99	48.46
20	36.0	0.47	191		50	1	3.27	0.91	3.02	51.47
21	38.0	0.50	168		50	1	2.87	0.97	2.98	54.45
22	40.0	0.45	211		50	1	3.60	0.95	3.08	57.53
23	42.0	0.42	230		50	1	3.93	0.87	3.28	60.81
24	43.0	0.40	234		50	1	4.00	0.41	1.62	62.43
25	43.8	0.00	0		50	1	0.00	0.16	0.32	62.75

* CALIBRATION $V=C1*(REV/SEC)+C2$ FT/SEC
SEE LOOKUP TABLE L10:M13

AVG. VEL 3.33 FPS
AREA 18.83 SQ FT
DISCHARGE 62.75 CFS

TABLE.XLS

RATING TABLE CONSOLIDATED HYDRO INC. ROCK CREEK II BYPASS WEIR										
NEW GAGE FT	DISCHARGE CFS									
	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.1	3.2	3.7	4.3	4.9	5.5	6.2	6.8	7.6	8.3	9.1
0.2	9.9	10.7	11.5	12.4	13.3	14.2	15.2	16.1	17.1	18.1
0.3	19.1	20.2	21.3	22.4	23.5	24.6	25.8	27.0	28.2	29.4
0.4	30.6	31.9	33.2	34.5	35.8	37.2	38.5	39.9	41.3	42.7
0.5	44.1	45.6	47.1	48.6	50.1	51.6	53.1	54.7	56.3	57.9
0.6	59.5	61.1	62.8	64.4	66.1	67.8	69.5	71.2	73.0	74.7
0.7	76.5	78.3	80.1	82.0	83.8	85.7	87.5	89.4	91.3	93.3
0.8	95.2	97.2	99.1	101.1	103.1	105.1	107.2	109.2	111.3	113.3
0.9	115.4	117.5	119.6	121.8	123.9	126.1	128.3	130.5	132.7	134.9
1.0	137.1	139.4	141.6	143.9	146.2	148.5	150.8	153.2	155.5	157.9

ROCK CREEK II BYPASS WEIR DISCHARGE RATING CURVE

