

MEMORANDUM

Date: November 25, 2009
To: Water Right File 47-7991
From: medl
Re: license review

A single Beneficial Use field exam, done by J.U.B. Engineering in October 1986, was intended to confirm beneficial use for two rights: 47-7768 and 47-7991. Unfortunately, beneficial use for this right, 47-7991, was not confirmed by that exam. That deficiency went unrecognized and has complicated the licensing process for this hydro project.

Although the permit holder had until November 1, 1991 to submit proof of beneficial use for both 47-7768 and 47-7991, he chose to submit proof on February 4, 1987. That premature submittal correctly signaled completed development under permit 47-7768, but at that time development under this permit, 47-7991 was incomplete. Permit 47-7991 was tied to the expansion of the Cedar Draw project by the addition of a turbine capable of utilizing 40 cfs. The FERC did not approve the expansion until February 24, 1987, twenty days after proof was submitted.

The field examiner observed that the 4th turbine was in place but not in use during his exam October 7, 1986. However, he recommended that the plant be licensed to its full appropriation of 150 cfs., (110 cfs through right 47-7768, and 40 cfs through right 47-7991). Neither the permit holder nor the Department recognized that the field examiner's recommendations for licensing 47-7991 were not justified by his observations. And unfortunately, the Department reassured the permit holder on at least one occasion that no additional action was needed from his side, in order to perfect either water right.

In my licensing review, I noticed the discrepancy between the field examiners recommendation and his observations. I stated that Department would need to void permit 47-7991 based on no beneficial use found. On March 25, 2008 the Department communicated its intent to void permit 47-7991 in a letter to the permit holder's local representative, Tom McCauley. Mr. McCauley disagreed with the Department's findings and asked for an opportunity to present his clients' perspective.

Mr. McCauley met with IDWR personnel in Boise on April 2, 2008 to discuss options for preserving this water right. He brought several documents with him to our meeting. The documents were focused on establishing beneficial use through permit 47-7991. From a quick review of data selected from Mr. McCauley's documents, I was able to determine that beneficial use had occurred after the field exam but before the original proof due date November 1, 1991. Water Rights Section Manager, Shelley Keen presented Mr. McCauley a solution to re-establish water right 47-7991. And as a consequence, Mr. McCauley signed a new Proof of Beneficial Use statement on April 2, 2008, confirming completed development for 47-7991.

An order reinstating the permit, with no change in priority, was issued on April 7, 2008.

No additional on-site field exam was conducted at the Cedar Draw project. My desk top review of the water data and the file documents for 47-7768 and 47-7991 constitutes the Beneficial Use exam for this water right.

Applicant

This property and the permit may have changed ownership since the permit was approved. According to Twin Falls county tax information, the current owner of the diversion dam property and the current owner of the power house property are not the same and neither property is owned by Crystal Springs Hydroelectric LP.

The permit holder, Crystal Springs Hydroelectric, L.P., had lapsed as a viable business entity in both Idaho and Washington. In the process of licensing the companion water right 47-7768, I requested that Tom McCauley, local agent for the permit holder, reestablish Crystal Springs Hydroelectric as an active business with the Idaho secretary of state. That process was completed on April 30, 2008.

Source, POD

Neither the POD nor the POU shapes had been created prior to my review. I created them based on 2004 NAIP aerial photography and J.U.B.s Beneficial Use field exam for 47-7768. The permit application located the POU in a QQ that differed from where the field examiner and I found them. The powerhouse, (the POU) is located in NWNE Twp 09S, Rge 15E, sec 14. An amendment is needed.

Between April 22, 1985 and October 7, 1991 the USGS maintained stream gauging station #13093550, named Cedar Draw near Filer, Idaho. It was sited on Cedar Draw Creek downstream (north) of the powerhouse and represented the combined flow of Cedar Draw Creek channel and the total turbine discharge from powerhouse. In our April 2, 2008 meeting, Mr. McCauley used flow records from this station to characterize the plant inflow. I used USGS approved daily average flow data from this station in my analysis of flow and volume for both 47-7768 and 47-7991.

Water Use

The Cedar Draw Creek hydro plant has a 35-year, firm energy, co-gen contract with Idaho Power Company beginning May 10, 1984. There a stilling pond at the intake but it does not provide any significant storage. The plant is operated as a run-of-river project.

This hydroelectric plant was licensed by FERC as Cedar Draw Creek, FERC project #8278 on May 24, 1985. The facilities licensed in 1985 included a powerhouse and three generating units with a total design capacity of 110 cfs. At the time J.U.B. Engineering completed the field exam in October 1986, an application requesting approval for an expansion to the plant capacity had been submitted to the FERC. FERC approved the amendment and plant expansion on February 27, 1987. A fourth turbine provides an additional 40 cfs to the Cedar Draw plant capacity. This water right, 47-7991 authorizes appropriation of additional flow and volume associated with the 4th turbine.

To satisfy IDF&G requirements, FERCs license for the Cedar Draw Creek Hydroelectric Project stipulates that a minimum flow be maintained in the Cedar Draw Creek channel. At the time that proof of beneficial use was due, that minimum was 25 cfs. I found no evidence in the FERC document library that Crystal Springs Hydroelectric Plant (aka Cedar Draw Creek Hydroelectric Project) has failed to comply with that FERC requirement.

1988 was the first full calendar year that the 4th unit was available and approved for power generation. According to Idaho Power Company's summaries of small power production for calendar year 1988, the Cedar Draw Creek plant was online, generated electricity every month and therefore beneficially used available water from Cedar Draw Creek the entire year. However, sufficient water to bring the 4th unit online was only available for a portion of the year.

I used approved USGS daily average flow data for 1988 from station 13093550 to establish the volume of water beneficially used through the 4th unit. I subtracted 25 cfs for minimum bypass flow from the daily average flow to get daily average flow through the plant or total turbine discharge. In 1988, the plant flow would have been above 110 cfs, (the combined capacity of the other 3 turbines), for several days. That extra water warranted bringing the 4th unit online. I considered any flow above 150 cfs, as spill and not contributing additional volume. For my volume calculation, I summed the daily average flow between 110-150 cfs, converted that to acre-feet and rounded to three significant figures. NOTE The volume provided on the amendment document is different and incorrect. I had failed to account for the minimum flow requirement at that time. Please refer to the attached Excel spreadsheet for my data set. The volume calculation becomes:

A sum of day average flows greater than 110 cfs and less than or equal to 150 cfs for calendar year 1988 which is 1654 cfs, That sum multiplied by 1.9835 to convert to acre-feet = 3280.709 AF and finally rounded to three significant figures = 3280 AFA.

# retrieved: 2008-02-14 20:00:51 CST								
#								
# Data for the following site(s) are contained in this file								
# USGS 13093550 CEDAR DRAW NR FILER ID								
# -----								
#								
# Data provided for site 13093550								
# DD parameter statistic Description								
# 01 00060 00003 Discharge, cubic feet per second (Mean)								
M Edl - Approved day mean Q greater than 175 cfs streamflow or 150 cfs plantflow is spill								
Q available for power								
	Station #	date	Q (cfs)	QA/QC flag	Bypass (cfs)	Q-Bypass	Usable Q units 1-3	Usable Q unit 4
USGS	13093550	1/1/1988	49	Ae	25	24	0	
USGS	13093550	1/2/1988	48	Ae	25	23	0	
USGS	13093550	1/3/1988	48	Ae	25	23	0	
USGS	13093550	1/4/1988	47	Ae	25	22	0	
USGS	13093550	1/5/1988	48	A	25	23	0	
USGS	13093550	1/6/1988	49	A	25	24	0	
USGS	13093550	1/7/1988	48	A	25	23	0	
USGS	13093550	1/8/1988	48	A	25	23	0	
USGS	13093550	1/9/1988	48	A	25	23	0	
USGS	13093550	1/10/1988	57	A	25	32	32	
USGS	13093550	1/11/1988	56	A	25	31	31	
USGS	13093550	1/12/1988	47	A	25	22	0	
USGS	13093550	1/13/1988	47	A	25	22	0	
USGS	13093550	1/14/1988	46	A	25	21	0	
USGS	13093550	1/15/1988	51	A	25	26	0	
USGS	13093550	1/16/1988	48	A	25	23	0	
USGS	13093550	1/17/1988	46	A	25	21	0	
USGS	13093550	1/18/1988	45	A	25	20	0	
USGS	13093550	1/19/1988	40	A	25	15	0	
USGS	13093550	1/20/1988	38	A	25	13	0	
USGS	13093550	1/21/1988	39	A	25	14	0	
USGS	13093550	1/22/1988	39	A	25	14	0	
USGS	13093550	1/23/1988	40	A	25	15	0	
USGS	13093550	1/24/1988	39	A	25	14	0	
USGS	13093550	1/25/1988	39	A	25	14	0	
USGS	13093550	1/26/1988	39	A	25	14	0	
USGS	13093550	1/27/1988	40	A	25	15	0	
USGS	13093550	1/28/1988	41	A	25	16	0	
USGS	13093550	1/29/1988	41	A	25	16	0	
USGS	13093550	1/30/1988	46	A	25	21	0	
USGS	13093550	1/31/1988	41	A	25	16	0	
USGS	13093550	2/1/1988	41	A	25	16	0	
USGS	13093550	2/2/1988	38	A	25	13	0	
USGS	13093550	2/3/1988	39	A	25	14	0	
USGS	13093550	2/4/1988	38	A	25	13	0	
USGS	13093550	2/5/1988	38	A	25	13	0	
USGS	13093550	2/6/1988	39	A	25	14	0	
USGS	13093550	2/7/1988	38	A	25	13	0	
USGS	13093550	2/8/1988	39	A	25	14	0	
USGS	13093550	2/9/1988	39	A	25	14	0	
USGS	13093550	2/10/1988	39	A	25	14	0	
USGS	13093550	2/11/1988	38	A	25	13	0	
USGS	13093550	2/12/1988	38	A	25	13	0	
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USGS	13093550	2/14/1988	38	A	25	13	0	

	Station #	date	Q (cfs)	QA/QC flag	Bypass (cfs)	Q-Bypass	Usable Q units 1-3	Usable Q unit 4
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USGS	13093550	2/17/1988	38	A	25	13	0	
USGS	13093550	2/18/1988	38	A	25	13	0	
USGS	13093550	2/19/1988	37	A	25	12	0	
USGS	13093550	2/20/1988	37	A	25	12	0	
USGS	13093550	2/21/1988	37	A	25	12	0	
USGS	13093550	2/22/1988	38	A	25	13	0	
USGS	13093550	2/23/1988	38	A	25	13	0	
USGS	13093550	2/24/1988	37	A	25	12	0	
USGS	13093550	2/25/1988	37	A	25	12	0	
USGS	13093550	2/26/1988	37	A	25	12	0	
USGS	13093550	2/27/1988	37	A	25	12	0	
USGS	13093550	2/28/1988	37	A	25	12	0	
USGS	13093550	2/29/1988	38	A	25	13	0	
USGS	13093550	3/1/1988	38	A	25	13	0	
USGS	13093550	3/2/1988	37	A	25	12	0	
USGS	13093550	3/3/1988	38	A	25	13	0	
USGS	13093550	3/4/1988	36	A	25	11	0	
USGS	13093550	3/5/1988	36	A	25	11	0	
USGS	13093550	3/6/1988	37	A	25	12	0	
USGS	13093550	3/7/1988	36	A	25	11	0	
USGS	13093550	3/8/1988	35	A	25	10	0	
USGS	13093550	3/9/1988	36	A	25	11	0	
USGS	13093550	3/10/1988	36	A	25	11	0	
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USGS	13093550	3/12/1988	34	A	25	9	0	
USGS	13093550	3/13/1988	34	A	25	9	0	
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USGS	13093550	3/26/1988	33	A	25	8	0	
USGS	13093550	3/27/1988	32	A	25	7	0	
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USGS	13093550	3/29/1988	33	A	25	8	0	
USGS	13093550	3/30/1988	32	A	25	7	0	
USGS	13093550	3/31/1988	32	A	25	7	0	
USGS	13093550	4/1/1988	32	A	25	7	0	
USGS	13093550	4/2/1988	33	A	25	8	0	
USGS	13093550	4/3/1988	35	A	25	10	0	
USGS	13093550	4/4/1988	34	A	25	9	0	
USGS	13093550	4/5/1988	34	A	25	9	0	
USGS	13093550	4/6/1988	34	A	25	9	0	
USGS	13093550	4/7/1988	33	A	25	8	0	
USGS	13093550	4/8/1988	31	A	25	6	0	
USGS	13093550	4/9/1988	31	A	25	6	0	
USGS	13093550	4/10/1988	55	A	25	30	30	
USGS	13093550	4/11/1988	66	A	25	41	41	

	Station #	date	Q (cfs)	QA/QC flag	Bypass (cfs)	Q-Bypass	Usable Q units 1-3	Usable Q unit 4
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USGS	13093550	4/15/1988	126	A	25	101	101	
USGS	13093550	4/16/1988	125	A	25	100	100	
USGS	13093550	4/17/1988	119	A	25	94	94	
USGS	13093550	4/18/1988	88	A	25	63	63	
USGS	13093550	4/19/1988	65	A	25	40	40	
USGS	13093550	4/20/1988	93	A	25	68	68	
USGS	13093550	4/21/1988	140	A	25	115	110	5
USGS	13093550	4/22/1988	141	A	25	116	110	6
USGS	13093550	4/23/1988	140	A	25	115	110	5
USGS	13093550	4/24/1988	140	A	25	115	110	5
USGS	13093550	4/25/1988	123	A	25	98	98	
USGS	13093550	4/26/1988	104	A	25	79	79	
USGS	13093550	4/27/1988	91	A	25	66	66	
USGS	13093550	4/28/1988	98	A	25	73	73	
USGS	13093550	4/29/1988	90	A	25	65	65	
USGS	13093550	4/30/1988	71	A	25	46	46	
USGS	13093550	5/1/1988	89	A	25	64	64	
USGS	13093550	5/2/1988	131	A	25	106	106	
USGS	13093550	5/3/1988	125	A	25	100	100	
USGS	13093550	5/4/1988	133	A	25	108	108	
USGS	13093550	5/5/1988	122	A	25	97	97	
USGS	13093550	5/6/1988	225	A	25	200	110	40
USGS	13093550	5/7/1988	329	A	25	304	110	40
USGS	13093550	5/8/1988	277	A	25	252	110	40
USGS	13093550	5/9/1988	253	A	25	228	110	40
USGS	13093550	5/10/1988	211	A	25	186	110	40
USGS	13093550	5/11/1988	152	A	25	127	110	17
USGS	13093550	5/12/1988	134	A	25	109	109	
USGS	13093550	5/13/1988	89	A	25	64	64	
USGS	13093550	5/14/1988	87	A	25	62	62	
USGS	13093550	5/15/1988	80	A	25	55	55	
USGS	13093550	5/16/1988	75	A	25	50	50	
USGS	13093550	5/17/1988	77	A	25	52	52	
USGS	13093550	5/18/1988	74	A	25	49	49	
USGS	13093550	5/19/1988	75	A	25	50	50	
USGS	13093550	5/20/1988	70	A	25	45	45	
USGS	13093550	5/21/1988	65	A	25	40	40	
USGS	13093550	5/22/1988	60	A	25	35	35	
USGS	13093550	5/23/1988	61	A	25	36	36	
USGS	13093550	5/24/1988	58	A	25	33	33	
USGS	13093550	5/25/1988	66	A	25	41	41	
USGS	13093550	5/26/1988	76	A	25	51	51	
USGS	13093550	5/27/1988	80	A	25	55	55	
USGS	13093550	5/28/1988	78	A	25	53	53	
USGS	13093550	5/29/1988	111	A	25	86	86	
USGS	13093550	5/30/1988	179	A	25	154	110	40
USGS	13093550	5/31/1988	248	A	25	223	110	40
USGS	13093550	6/1/1988	233	A	25	208	110	40
USGS	13093550	6/2/1988	229	A	25	204	110	40
USGS	13093550	6/3/1988	194	A	25	169	110	40
USGS	13093550	6/4/1988	186	A	25	161	110	40
USGS	13093550	6/5/1988	174	A	25	149	110	39
USGS	13093550	6/6/1988	157	A	25	132	110	22
USGS	13093550	6/7/1988	127	A	25	102	102	

	Station #	date	Q (cfs)	QA/QC flag	Bypass (cfs)	Q-Bypass	Usable Q units 1-3	Usable Q unit 4
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USGS	13093550	6/10/1988	80	A	25	55	55	
USGS	13093550	6/11/1988	80	A	25	55	55	
USGS	13093550	6/12/1988	84	A	25	59	59	
USGS	13093550	6/13/1988	88	A	25	63	63	
USGS	13093550	6/14/1988	86	A	25	61	61	
USGS	13093550	6/15/1988	86	A	25	61	61	
USGS	13093550	6/16/1988	85	A	25	60	60	
USGS	13093550	6/17/1988	83	A	25	58	58	
USGS	13093550	6/18/1988	76	A	25	51	51	
USGS	13093550	6/19/1988	79	A	25	54	54	
USGS	13093550	6/20/1988	80	A	25	55	55	
USGS	13093550	6/21/1988	72	A	25	47	47	
USGS	13093550	6/22/1988	70	A	25	45	45	
USGS	13093550	6/23/1988	68	A	25	43	43	
USGS	13093550	6/24/1988	63	A	25	38	38	
USGS	13093550	6/25/1988	64	A	25	39	39	
USGS	13093550	6/26/1988	83	A	25	58	58	
USGS	13093550	6/27/1988	81	A	25	56	56	
USGS	13093550	6/28/1988	78	A	25	53	53	
USGS	13093550	6/29/1988	81	A	25	56	56	
USGS	13093550	6/30/1988	86	A	25	61	61	
USGS	13093550	7/1/1988	83	A	25	58	58	
USGS	13093550	7/2/1988	81	A	25	56	56	
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USGS	13093550	7/4/1988	76	A	25	51	51	
USGS	13093550	7/5/1988	76	A	25	51	51	
USGS	13093550	7/6/1988	71	A	25	46	46	
USGS	13093550	7/7/1988	72	A	25	47	47	
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USGS	13093550	7/9/1988	73	A	25	48	48	
USGS	13093550	7/10/1988	77	A	25	52	52	
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USGS	13093550	7/12/1988	71	A	25	46	46	
USGS	13093550	7/13/1988	70	A	25	45	45	
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USGS	13093550	7/15/1988	81	A	25	56	56	
USGS	13093550	7/16/1988	79	A	25	54	54	
USGS	13093550	7/17/1988	78	A	25	53	53	
USGS	13093550	7/18/1988	79	A	25	54	54	
USGS	13093550	7/19/1988	79	A	25	54	54	
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USGS	13093550	7/21/1988	81	A	25	56	56	
USGS	13093550	7/22/1988	79	A	25	54	54	
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USGS	13093550	7/24/1988	82	A	25	57	57	
USGS	13093550	7/25/1988	83	A	25	58	58	
USGS	13093550	7/26/1988	81	A	25	56	56	
USGS	13093550	7/27/1988	84	A	25	59	59	
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USGS	13093550	7/30/1988	75	A	25	50	50	
USGS	13093550	7/31/1988	74	A	25	49	49	
USGS	13093550	8/1/1988	74	A	25	49	49	
USGS	13093550	8/2/1988	72	A	25	47	47	
USGS	13093550	8/3/1988	73	A	25	48	48	

	Station #	date	Q (cfs)	QA/QC flag	Bypass (cfs)	Q-Bypass	Usable Q units 1-3	Usable Q unit 4
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USGS	13093550	8/7/1988	72	A	25	47	47	
USGS	13093550	8/8/1988	70	A	25	45	45	
USGS	13093550	8/9/1988	71	A	25	46	46	
USGS	13093550	8/10/1988	69	A	25	44	44	
USGS	13093550	8/11/1988	68	A	25	43	43	
USGS	13093550	8/12/1988	67	A	25	42	42	
USGS	13093550	8/13/1988	70	A	25	45	45	
USGS	13093550	8/14/1988	70	A	25	45	45	
USGS	13093550	8/15/1988	75	A	25	50	50	
USGS	13093550	8/16/1988	72	A	25	47	47	
USGS	13093550	8/17/1988	68	A	25	43	43	
USGS	13093550	8/18/1988	67	A	25	42	42	
USGS	13093550	8/19/1988	70	A	25	45	45	
USGS	13093550	8/20/1988	82	A	25	57	57	
USGS	13093550	8/21/1988	88	A	25	63	63	
USGS	13093550	8/22/1988	92	A	25	67	67	
USGS	13093550	8/23/1988	89	A	25	64	64	
USGS	13093550	8/24/1988	94	A	25	69	69	
USGS	13093550	8/25/1988	93	A	25	68	68	
USGS	13093550	8/26/1988	75	A	25	50	50	
USGS	13093550	8/27/1988	78	A	25	53	53	
USGS	13093550	8/28/1988	74	A	25	49	49	
USGS	13093550	8/29/1988	78	A	25	53	53	
USGS	13093550	8/30/1988	77	A	25	52	52	
USGS	13093550	8/31/1988	80	A	25	55	55	
USGS	13093550	9/1/1988	83	A	25	58	58	
USGS	13093550	9/2/1988	84	A	25	59	59	
USGS	13093550	9/3/1988	88	A	25	63	63	
USGS	13093550	9/4/1988	90	A	25	65	65	
USGS	13093550	9/5/1988	90	A	25	65	65	
USGS	13093550	9/6/1988	87	A	25	62	62	
USGS	13093550	9/7/1988	93	A	25	68	68	
USGS	13093550	9/8/1988	99	A	25	74	74	
USGS	13093550	9/9/1988	95	A	25	70	70	
USGS	13093550	9/10/1988	97	A	25	72	72	
USGS	13093550	9/11/1988	104	A	25	79	79	
USGS	13093550	9/12/1988	103	A	25	78	78	
USGS	13093550	9/13/1988	104	A	25	79	79	
USGS	13093550	9/14/1988	100	A	25	75	75	
USGS	13093550	9/15/1988	100	A	25	75	75	
USGS	13093550	9/16/1988	105	A	25	80	80	
USGS	13093550	9/17/1988	105	A	25	80	80	
USGS	13093550	9/18/1988	110	A	25	85	85	
USGS	13093550	9/19/1988	121	A	25	96	96	
USGS	13093550	9/20/1988	164	A	25	139	110	29
USGS	13093550	9/21/1988	169	A	25	144	110	34
USGS	13093550	9/22/1988	163	A	25	138	110	28
USGS	13093550	9/23/1988	166	A	25	141	110	31
USGS	13093550	9/24/1988	166	A	25	141	110	31
USGS	13093550	9/25/1988	164	A	25	139	110	29
USGS	13093550	9/26/1988	163	A	25	138	110	28
USGS	13093550	9/27/1988	165	A	25	140	110	30
USGS	13093550	9/28/1988	170	A	25	145	110	35
USGS	13093550	9/29/1988	195	A	25	170	110	40

	Station #	date	Q (cfs)	QA/QC flag	Bypass (cfs)	Q-Bypass	Usable Q units 1-3	Usable Q unit 4
USGS	13093550	9/30/1988	194	A	25	169	110	40
USGS	13093550	10/1/1988	193	A	25	168	110	40
USGS	13093550	10/2/1988	191	A	25	166	110	40
USGS	13093550	10/3/1988	189	A	25	164	110	40
USGS	13093550	10/4/1988	185	A	25	160	110	40
USGS	13093550	10/5/1988	181	A	25	156	110	40
USGS	13093550	10/6/1988	162	A	25	137	110	27
USGS	13093550	10/7/1988	159	A	25	134	110	24
USGS	13093550	10/8/1988	159	A	25	134	110	24
USGS	13093550	10/9/1988	160	A	25	135	110	25
USGS	13093550	10/10/1988	159	A	25	134	110	24
USGS	13093550	10/11/1988	158	A	25	133	110	23
USGS	13093550	10/12/1988	163	A	25	138	110	28
USGS	13093550	10/13/1988	164	A	25	139	110	29
USGS	13093550	10/14/1988	171	A	25	146	110	36
USGS	13093550	10/15/1988	190	A	25	165	110	40
USGS	13093550	10/16/1988	192	A	25	167	110	40
USGS	13093550	10/17/1988	192	A	25	167	110	40
USGS	13093550	10/18/1988	190	A	25	165	110	40
USGS	13093550	10/19/1988	197	A	25	172	110	40
USGS	13093550	10/20/1988	214	A	25	189	110	40
USGS	13093550	10/21/1988	214	A	25	189	110	40
USGS	13093550	10/22/1988	182	A	25	157	110	40
USGS	13093550	10/23/1988	127	A	25	102	102	
USGS	13093550	10/24/1988	74	A	25	49	49	
USGS	13093550	10/25/1988	73	A	25	48	48	
USGS	13093550	10/26/1988	71	A	25	46	46	
USGS	13093550	10/27/1988	69	A	25	44	44	
USGS	13093550	10/28/1988	70	A	25	45	45	
USGS	13093550	10/29/1988	70	A	25	45	45	
USGS	13093550	10/30/1988	68	A	25	43	43	
USGS	13093550	10/31/1988	69	A	25	44	44	
USGS	13093550	11/1/1988	70	A	25	45	45	
USGS	13093550	11/2/1988	70	A	25	45	45	
USGS	13093550	11/3/1988	71	A	25	46	46	
USGS	13093550	11/4/1988	66	A	25	41	41	
USGS	13093550	11/5/1988	66	A	25	41	41	
USGS	13093550	11/6/1988	68	A	25	43	43	
USGS	13093550	11/7/1988	68	A	25	43	43	
USGS	13093550	11/8/1988	68	A	25	43	43	
USGS	13093550	11/9/1988	66	A	25	41	41	
USGS	13093550	11/10/1988	68	A	25	43	43	
USGS	13093550	11/11/1988	72	A	25	47	47	
USGS	13093550	11/12/1988	71	A	25	46	46	
USGS	13093550	11/13/1988	73	A	25	48	48	
USGS	13093550	11/14/1988	72	A	25	47	47	
USGS	13093550	11/15/1988	67	A	25	42	42	
USGS	13093550	11/16/1988	68	A	25	43	43	
USGS	13093550	11/17/1988	69	A	25	44	44	
USGS	13093550	11/18/1988	66	A	25	41	41	
USGS	13093550	11/19/1988	65	A	25	40	40	
USGS	13093550	11/20/1988	66	A	25	41	41	
USGS	13093550	11/21/1988	64	A	25	39	39	
USGS	13093550	11/22/1988	68	A	25	43	43	
USGS	13093550	11/23/1988	70	A	25	45	45	
USGS	13093550	11/24/1988	65	A	25	40	40	
USGS	13093550	11/25/1988	66	A	25	41	41	

	Station #	date	Q (cfs)	QA/QC flag	Bypass (cfs)	Q-Bypass	Usable Q units 1-3	Usable Q unit 4
USGS	13093550	11/26/1988	62	A	25	37	37	
USGS	13093550	11/27/1988	59	A	25	34	34	
USGS	13093550	11/28/1988	63	A	25	38	38	
USGS	13093550	11/29/1988	58	A	25	33	33	
USGS	13093550	11/30/1988	56	A	25	31	31	
USGS	13093550	12/1/1988	56	A	25	31	31	
USGS	13093550	12/2/1988	56	A	25	31	31	
USGS	13093550	12/3/1988	54	A	25	29	29	
USGS	13093550	12/4/1988	53	A	25	28	28	
USGS	13093550	12/5/1988	54	A	25	29	29	
USGS	13093550	12/6/1988	54	A	25	29	29	
USGS	13093550	12/7/1988	54	A	25	29	29	
USGS	13093550	12/8/1988	53	A	25	28	28	
USGS	13093550	12/9/1988	54	A	25	29	29	
USGS	13093550	12/10/1988	54	A	25	29	29	
USGS	13093550	12/11/1988	53	A	25	28	28	
USGS	13093550	12/12/1988	54	A	25	29	29	
USGS	13093550	12/13/1988	54	A	25	29	29	
USGS	13093550	12/14/1988	54	A	25	29	29	
USGS	13093550	12/15/1988	51	A	25	26	0	
USGS	13093550	12/16/1988	51	A	25	26	0	
USGS	13093550	12/17/1988	51	A	25	26	0	
USGS	13093550	12/18/1988	54	A	25	29	29	
USGS	13093550	12/19/1988	54	A	25	29	29	
USGS	13093550	12/20/1988	53	A	25	28	28	
USGS	13093550	12/21/1988	54	A	25	29	29	
USGS	13093550	12/22/1988	53	A	25	28	28	
USGS	13093550	12/23/1988	51	A	25	26	0	
USGS	13093550	12/24/1988	52	A	25	27	0	
USGS	13093550	12/25/1988	52	A	25	27	0	
USGS	13093550	12/26/1988	50	A	25	25	0	
USGS	13093550	12/27/1988	49	Ae	25	24	0	
USGS	13093550	12/28/1988	49	Ae	25	24	0	
USGS	13093550	12/29/1988	48	Ae	25	23	0	
USGS	13093550	12/30/1988	49	Ae	25	24	0	
USGS	13093550	12/31/1988	50	A	25	25	0	
sum cfs					9150	20674	16506	1654
convert factor =		1.9835						
sum AF							32739.65	3280.709
rounded to 3 sig fig								3280