

# **APPENDIX F**

## **BIOLOGICAL OPINION SPILL**



## BIOLOGICAL OPINION SPILL

### **Introduction:**

Each year, the US Army Corps of Engineers tracks the amount of water spilled over the spill gates of a project for juvenile fish passages, which is referred to as Biological Opinion spill, or BiOp spill for short. BiOp spill does not include involuntary spill that occurs for flood control or spill because of physical problems with the hydropower system. It also does not include other “miscellaneous” passage of water through a project such as through fish ladders, sluiceways, lockages, etc. This appendix provides an overview of how the BiOp spill amounts were calculated, tables of the BiOp spill amounts for COE projects on the Lower Columbia and Snake rivers and graphs of the data.

### **Overview of Spill calculations**

The calculations of BiOp spill for juvenile fish passages are based on methods that have been used over the past several years to monitor how well the projects and BPA are implementing juvenile fish spill based on the instructions given to the projects and BPA by the Corps via teletypes. Excel spreadsheets have been developed that display the actual project spill and calculate the spill specified for juvenile fish passage (BiOp spill). Both of these values are displayed on a graph so that with a quick glance BiOp spill operations can be monitored.

The mathematical functions developed to calculate BiOp spill take into consideration the BiOp spill requirements, the 120/115% gas cap in effect, the minimum generation requirements, any major tests that are going on during the spill season, and in some cases the 1% efficiency unit operating requirements. Each project has its own function. The Corps can make these functions available for review. Each year several of the functions are modified to take into consideration any changes in effect for the current year. These changes are usually due to research ongoing at the project (Like the RSW test at Lower Granite). Sometimes changes are needed due to changing instructions to the project. For example in 2001 there was a minimum spill level of 15 kcfs set at The Dalles. With respect to short tests at projects, like a three-day spill test or other short-term regulation changes, these functions are not always adjusted.

One item to consider when seeing if the projects and BPA are complying with their instructions is to review how the projects operate the spill gates. The spill gates are opened a number of stops. These stops are a set distance. For example, a stop may be 1 foot. The project can open the gate 1 stop (1 foot) or 2 stops (2 feet) but not 1.5 stops. This means that the project can spill certain amounts; lets say for example 98 kcfs or 102 kcfs (each additional stop open increases spill 4 kcfs) but not 100 kcfs. So if the spill cap at the project were 100 kcfs the project would spill 98 kcfs not 102 kcfs, which would be over the spill cap. See the spill patterns in the Fish Passage Plan for examples of this. See notes below for changes in this at TDA and JDA.

Note: Starting this year, the day and night spill times were adjusted to reflect Table Bon-6 in the FPP.

### **Project specific information**

In paragraphs below, spill refers to spill for juvenile fish passage. It is important to note that for all projects, spill was never voluntarily to exceed the 120% TDG cap.

#### **Bonneville:**

Spill started April 12 at a spill level of 50 kcfs 24 hours a day. Spill was at a low level to protect chum redds. The spill level was raised to 75 kcfs April 16. On April 21 nighttime spill level was increased to 125 kcfs, daytime spill was limited to the 75 kcfs adult fallback limit. From April 23 to May 10 the day and nighttime spill level were set according to the amount of outflow from the project. Again this was to protect chum redds. On May 10 the amount spilled was according to the BiOp spill levels, 75 kcfs during the day up to the 120% gas cap at night. From June 20 to August 1 spill alternated between spilling to the BiOp spill levels and spilling 50 kcfs 24 hours a day. On August 1 spill returned to spilling the BiOp spill levels.

In early August it was determined that the gate hoists at Bonneville were not calibrated correctly (they were 0.3 feet to low). In order to correct this starting August 9 the daytime spill level of 75 kcfs was set by using the pattern in the fish plan and adding 0.3 feet to each gate. The spill level reported was based on the incorrect gate hoist setting. This was to keep the reported spill amount the same until data correction details could be worked out. Nighttime spill was left the same because the 120% TDG gas caps were set using the old (incorrect) calibration. Spill ended August 31 at midnight.

#### **The Dalles**

Spill started April 12. The spill level was 40% of the project outflow. Note after discussion at TMT it was decided to spill as close as possible to the 40% level starting May 19. Previously the 40% level was treated as a not to exceed level. The new interpretation was to be as close as possible 40%, either above or below. Spill was shut off for a short period of time June 23 in order to do a spillway inspection. Spill ended August 31 at midnight.

#### **John Day**

Spill started April 12. The spill level was 60% of the project outflow at night. Note after discussion at TMT it was decided to spill as close as possible to the 60% level starting May 19. Previously the 60% level was treated as a not to exceed level. The new interpretation was to be as close as possible to 60%, either above or below. On July 21 the spill amount was changed to as close as possible to 30% 24 hours a day. Spill ended August 31 at midnight.

#### **McNary**

Spill started April 12. The spill amount was spill to the 120% gas cap at night. Spill could be reduced if necessary for safe fish barge operation. There were numerous changes in the spill pattern because of problems with the gate hoists. Due to generation

### **Ice Harbor**

Spill started April 12. The spill amount was 45 kcfs during daytime and spill to the 120% TDG cap at night. Starting April 15 and continuing until July 18 spill alternated between spilling 45 kcfs 24 hours a day and spilling to the 120% TDG cap 24 hours a day. Spilled was stopped for a short period of time May 11 in order to install a fish release pipe. On July 18 the spill amount returned to 45 kcfs during daytime and spill to the 120% TDG cap at night. Spill ended August 31 at midnight.

### **Lower Monumental**

Spill started April 24. The spill amount was either 45% or 50% of the project outflow depending on the project outflow at night. Spill could be reduced if necessary for safe fish barge operation. On April 30 the spill time was changed to 24 hours a day. Due to low forecasted flows in the Snake River spill ended May 14, which is earlier than normal.

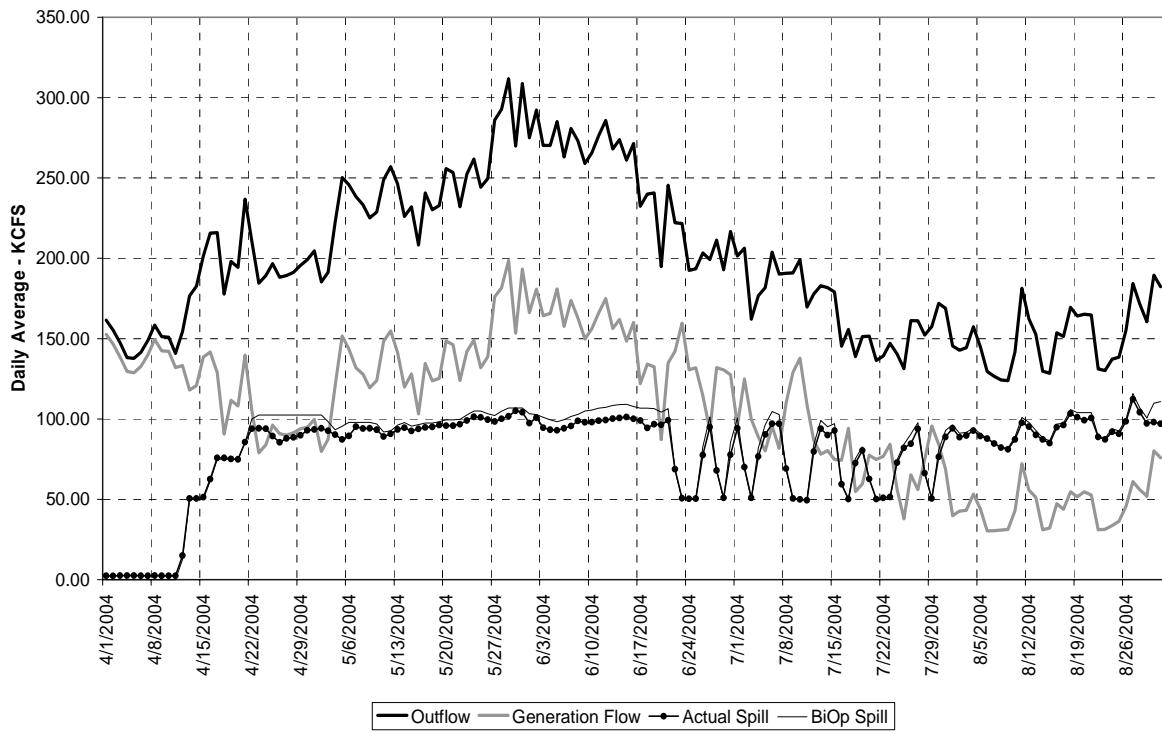
### **Little Goose:**

Spill started April 7. The spill amount was spill to the 120% TDG cap at night. Due to low forecasted flows in the Snake River spill ended May 14, which is earlier than normal.

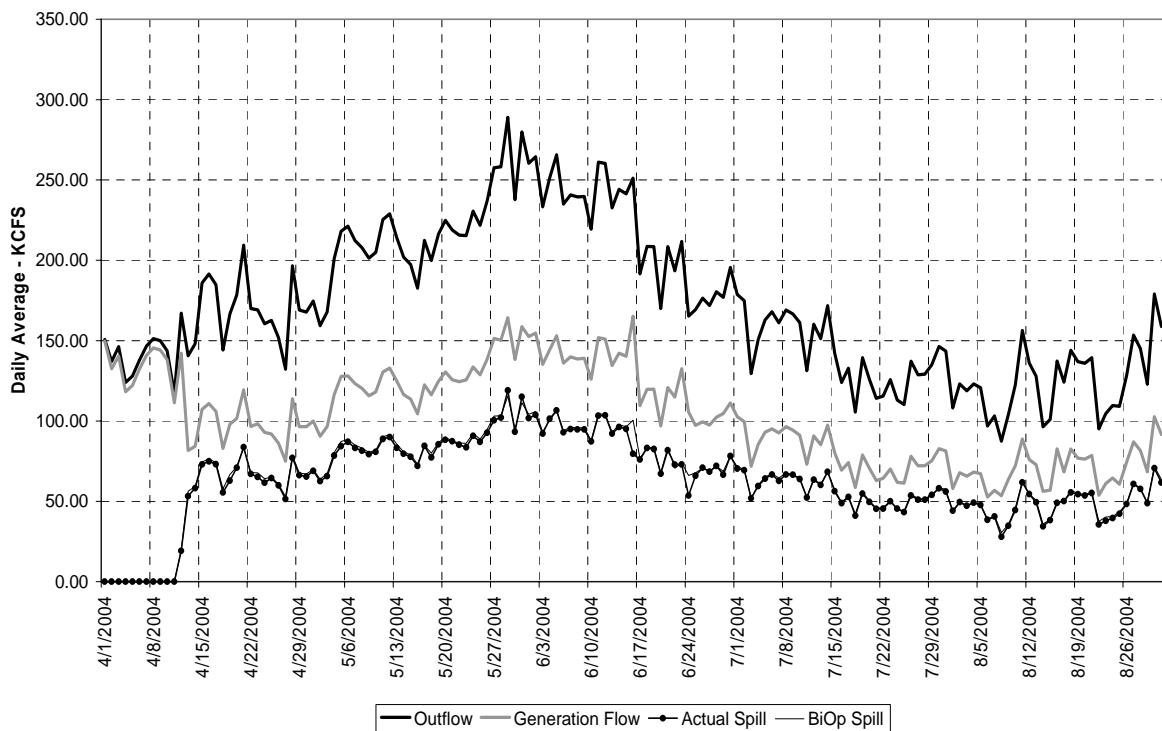
### **Lower Granite:**

Spill started April 3. Spill alternated between spilling to the 120% cap at night and spilling using the RSW 24 hours a day. When spilling using the RSW the total spill amount was approximately 18.7 kcfs. Spill was shut off for short periods of time from April 7 – 9 due to dive work. After April 9 spill was using the RSW 24 hours a day all the time. Due to low forecasted flows in the Snake River spill ended May 14, which is earlier than normal.

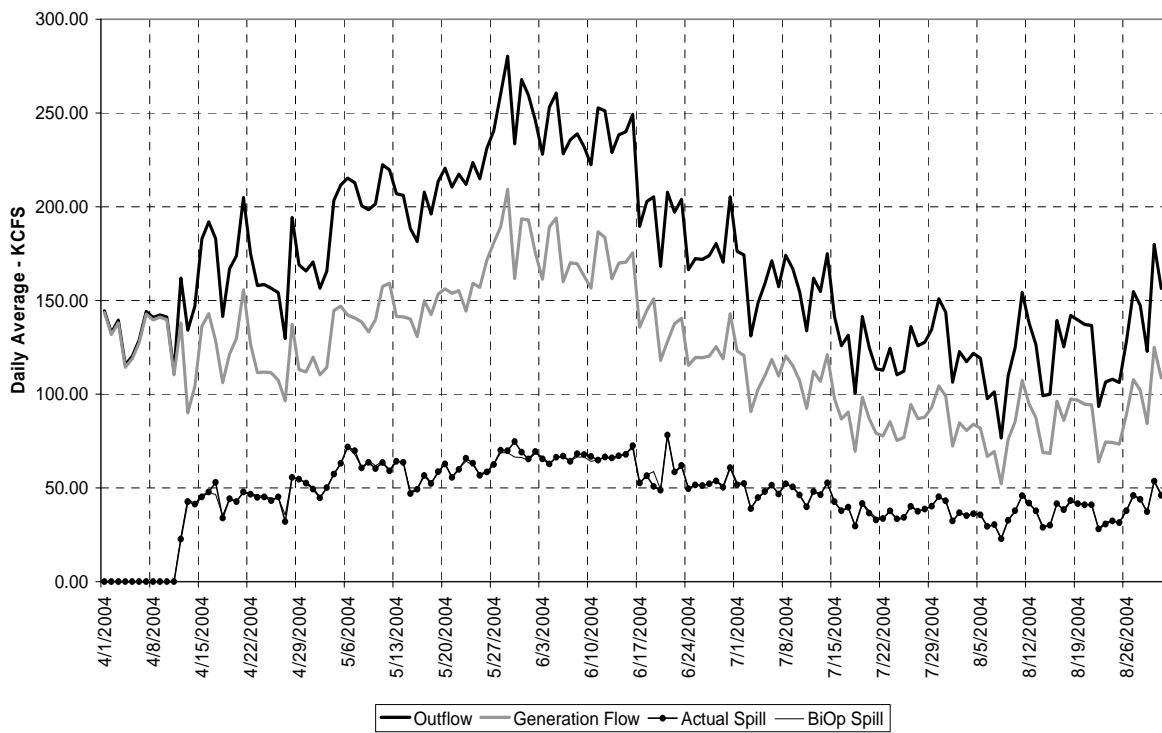
**FIGURE F-1**  
**BiOp Spill at Bonneville**



**FIGURE F-2**  
**BiOp Spill at The Dalles**



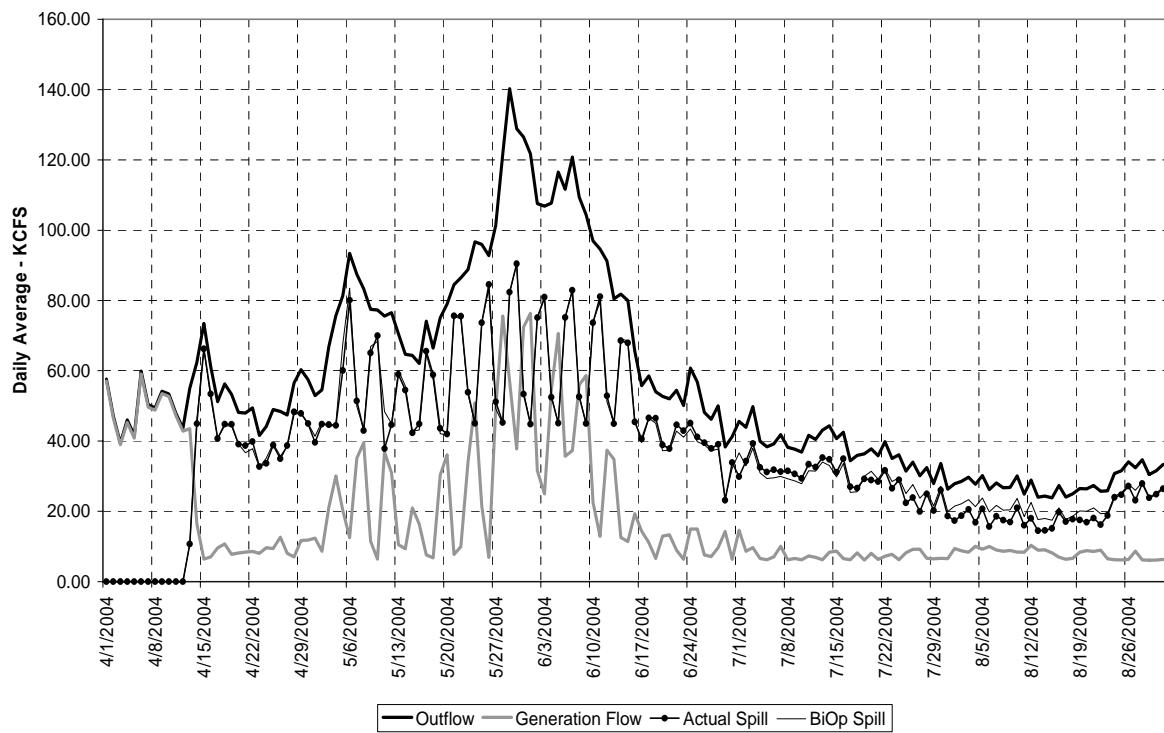
**FIGURE F-3**  
**BiOp Spill at John Day**



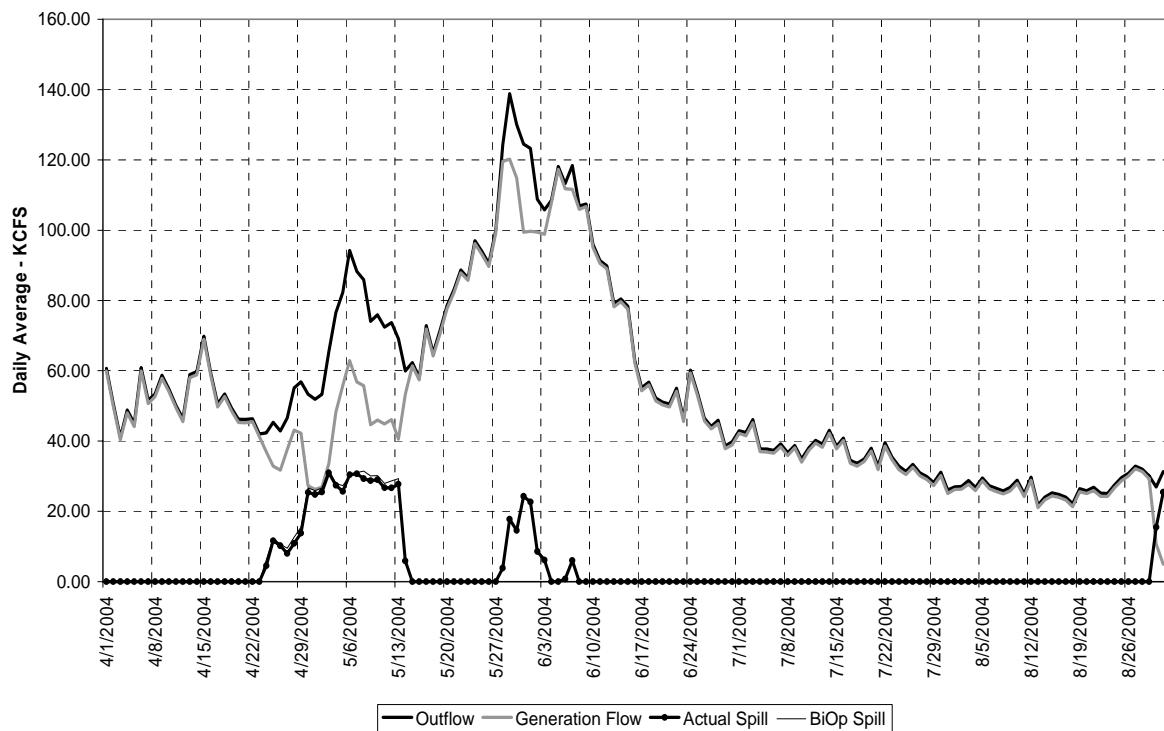
**FIGURE F-4**  
**BiOp Spill at McNary**



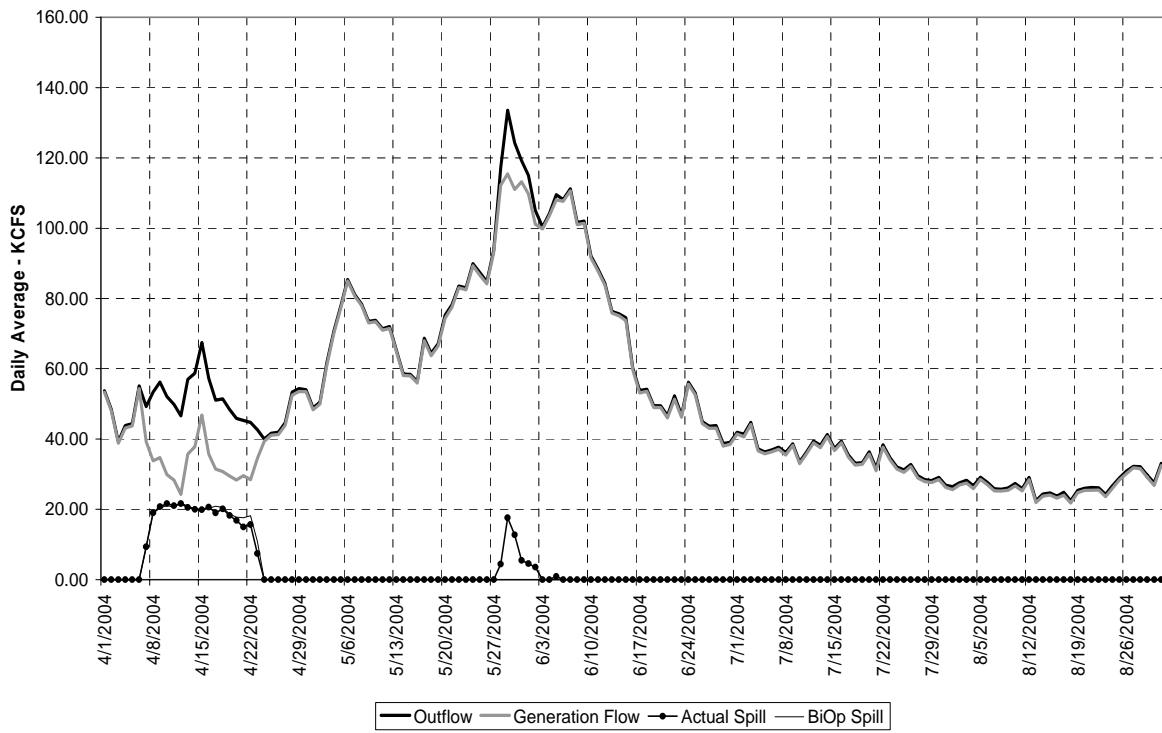
**FIGURE F-5**  
**BiOp Spill at Ice Harbor**



**FIGURE F-6**  
**BiOp Spill at Lower Monumental**



**FIGURE F-7**  
**BiOp Spill at Little Goose**



**FIGURE F-8**  
**BiOp Spill at Lower Granite**

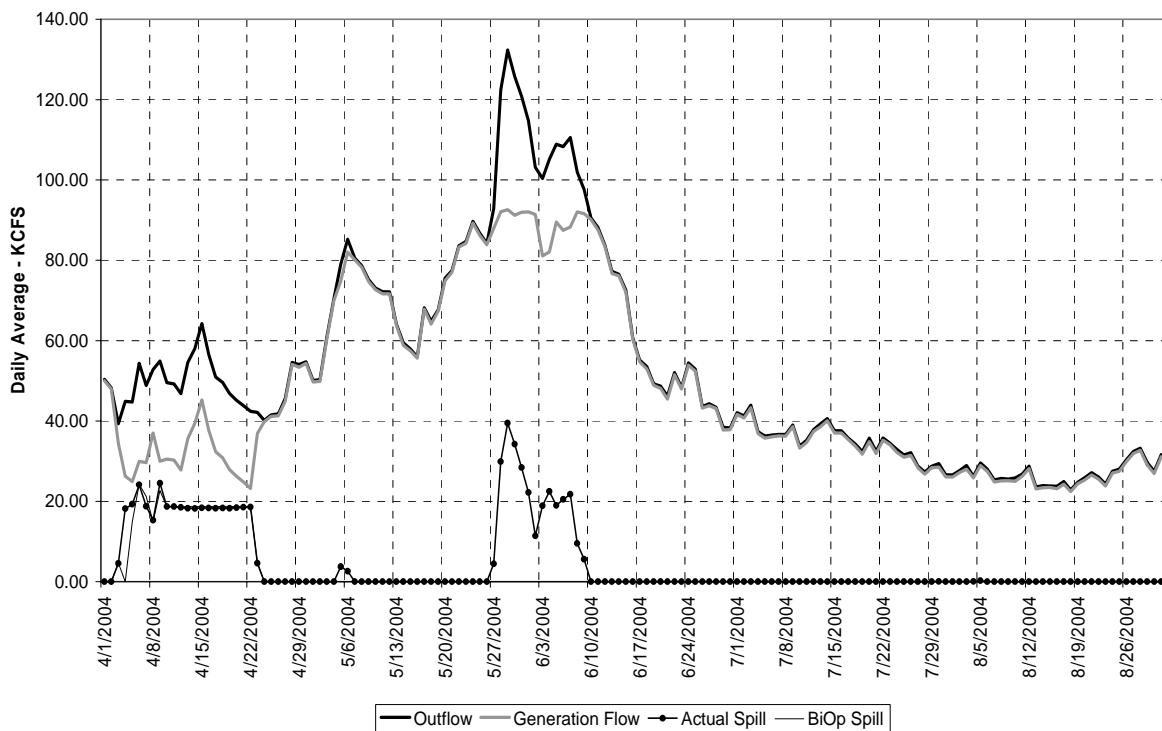


TABLE F-1

## BiOp Spill at Bonneville

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
04/01/2004	161.51	152.68	2.43	0.00	05/22/2004	232.18	124.04	96.71	99.88	07/12/2004	177.80	86.70	79.69	83.78
04/02/2004	155.38	146.62	2.36	0.00	05/23/2004	252.38	141.92	99.07	102.50	07/13/2004	182.90	78.06	93.87	99.02
04/03/2004	147.39	138.45	2.53	0.00	05/24/2004	261.86	149.11	101.34	105.00	07/14/2004	181.66	80.35	89.93	95.22
04/04/2004	138.18	129.60	2.60	0.00	05/25/2004	244.35	131.97	100.98	105.00	07/15/2004	178.98	74.74	92.83	97.10
04/05/2004	137.72	128.80	2.53	0.00	05/26/2004	249.62	138.78	99.51	103.33	07/16/2004	145.20	74.40	59.42	59.56
04/06/2004	141.59	132.73	2.44	0.00	05/27/2004	285.96	176.07	98.44	102.08	07/17/2004	155.73	94.16	50.15	50.00
04/07/2004	148.93	140.06	2.44	0.00	05/28/2004	292.85	181.60	100.05	104.79	07/18/2004	138.80	54.94	72.57	75.36
04/08/2004	158.48	149.53	2.55	0.00	05/29/2004	311.71	198.60	101.73	106.88	07/19/2004	151.24	59.51	80.34	82.68
04/09/2004	151.26	142.44	2.42	0.00	05/30/2004	269.95	153.39	105.06	106.88	07/20/2004	151.50	77.44	62.68	62.77
04/10/2004	150.85	142.05	2.41	0.00	05/31/2004	308.85	193.25	104.17	106.88	07/21/2004	136.40	74.74	50.23	50.00
04/11/2004	140.81	132.01	2.40	0.00	06/01/2004	275.02	166.25	97.39	103.33	07/22/2004	139.25	76.84	50.99	50.00
04/12/2004	154.49	133.16	14.93	12.50	06/02/2004	292.32	180.85	100.81	102.71	07/23/2004	147.04	84.16	51.48	50.00
04/13/2004	176.60	117.94	50.52	50.00	06/03/2004	270.31	164.36	94.53	101.04	07/24/2004	140.49	56.28	72.84	74.59
04/14/2004	182.58	120.86	50.50	50.00	06/04/2004	270.32	165.68	93.25	99.38	07/25/2004	131.32	37.88	82.03	84.16
04/15/2004	201.27	138.52	51.33	50.00	06/05/2004	285.18	180.93	92.85	98.33	07/26/2004	161.20	65.28	84.55	90.62
04/16/2004	215.68	141.71	62.55	61.46	06/06/2004	263.09	157.69	94.19	99.58	07/27/2004	161.17	56.00	93.77	97.65
04/17/2004	216.02	128.85	75.77	75.00	06/07/2004	280.78	173.78	95.58	101.67	07/28/2004	152.28	75.05	66.30	66.18
04/18/2004	177.72	90.65	75.70	75.00	06/08/2004	273.05	162.85	98.81	102.92	07/29/2004	157.55	95.58	50.56	50.00
04/19/2004	198.06	111.60	75.08	75.00	06/09/2004	259.05	149.74	97.91	105.00	07/30/2004	172.04	84.27	76.38	80.59
04/20/2004	194.44	108.13	74.92	75.00	06/10/2004	265.51	156.08	98.04	105.63	07/31/2004	168.86	68.65	88.83	92.88
04/21/2004	236.76	139.79	85.57	85.42	06/11/2004	276.31	166.02	98.89	106.67	08/01/2004	145.46	39.86	94.20	96.30
04/22/2004	210.81	105.48	93.92	99.95	06/12/2004	285.77	174.91	99.30	107.29	08/02/2004	142.80	42.68	88.71	91.17
04/23/2004	184.52	78.98	94.15	102.50	06/13/2004	268.06	156.39	100.25	108.33	08/03/2004	144.36	43.24	89.73	91.77
04/24/2004	189.27	83.91	93.95	102.50	06/14/2004	273.81	161.83	100.60	108.96	08/04/2004	157.41	53.22	92.81	94.42
04/25/2004	196.75	96.17	89.34	102.50	06/15/2004	261.10	148.43	101.26	109.19	08/05/2004	144.72	43.96	89.34	90.82
04/26/2004	188.24	90.91	85.53	102.50	06/16/2004	271.47	160.06	100.03	107.71	08/06/2004	129.51	30.37	87.75	87.98
04/27/2004	189.27	89.93	87.94	102.50	06/17/2004	232.46	121.98	99.05	106.67	08/07/2004	126.62	30.51	84.71	84.91
04/28/2004	191.38	91.39	88.56	102.50	06/18/2004	239.92	134.08	94.45	106.67	08/08/2004	124.32	30.81	82.11	82.26
04/29/2004	195.56	93.93	89.79	102.50	06/19/2004	240.68	132.51	96.76	106.43	08/09/2004	123.84	31.24	81.18	81.84
04/30/2004	199.10	94.76	92.93	102.50	06/20/2004	194.95	87.13	96.42	104.25	08/10/2004	141.77	42.93	87.24	88.99
05/01/2004	204.58	99.79	93.41	102.50	06/21/2004	245.45	134.85	99.21	106.46	08/11/2004	181.33	72.16	97.61	100.99
05/02/2004	185.36	79.75	94.20	102.50	06/22/2004	222.17	142.03	68.73	68.33	08/12/2004	162.23	55.82	95.18	97.94
05/03/2004	191.26	87.37	92.63	98.33	06/23/2004	221.62	159.58	50.65	50.00	08/13/2004	152.85	51.32	90.13	92.89
05/04/2004	222.40	120.82	90.20	93.33	06/24/2004	192.41	130.66	50.35	50.00	08/14/2004	129.82	31.09	87.27	88.27
05/05/2004	250.23	151.61	87.22	95.42	06/25/2004	193.55	131.75	50.41	50.00	08/15/2004	128.48	32.14	84.94	86.40
05/06/2004	245.66	143.46	89.44	97.92	06/26/2004	203.38	114.47	77.52	82.81	08/16/2004	153.65	47.41	94.83	96.80
05/07/2004	238.47	131.86	95.20	97.92	06/27/2004	199.21	92.89	94.91	101.25	08/17/2004	151.39	43.81	96.19	97.35
05/08/2004	233.33	127.86	94.07	97.92	06/28/2004	211.24	131.88	67.95	68.33	08/18/2004	169.45	54.67	103.38	105.84
05/09/2004	225.06	119.46	94.19	97.92	06/29/2004	192.88	130.59	50.88	50.00	08/19/2004	164.04	51.53	101.12	103.90
05/10/2004	228.78	124.02	93.34	96.88	06/30/2004	216.63	127.60	77.62	85.54	08/20/2004	165.21	54.70	99.13	103.89
05/11/2004	248.89	148.38	89.07	91.88	07/01/2004	201.46	95.93	94.14	100.57	08/21/2004	164.75	52.77	100.57	103.97
05/12/2004	257.00	154.86	90.74	92.71	07/02/2004	206.35	124.93	70.02	69.17	08/22/2004	131.16	31.10	88.75	89.30
05/13/2004	246.30	141.45	93.44	96.25	07/03/2004	162.12	99.80	50.92	50.00	08/23/2004	130.14	31.41	87.33	87.99
05/14/2004	225.94	119.92	94.61	97.71	07/04/2004	176.78	88.78	76.60	81.97	08/24/2004	137.13	33.67	92.07	93.97
05/15/2004	232.03	128.11	92.53	95.63	07/05/2004	181.74	80.05	90.32	96.46	08/25/2004	138.48	36.38	90.70	92.69
05/16/2004	208.28	103.10	93.78	96.46	07/06/2004	203.81	95.43	96.98	104.63	08/26/2004	155.38	45.66	98.54	99.90
05/17/2004	240.71	134.56	94.73	97.50	07/07/2004	190.18	81.82	96.98	102.75	08/27/2004	184.25	61.03	112.25	115.83
05/18/2004	230.18	123.73	95.07	97.50	07/08/2004	190.65	110.20	69.07	68.35	08/28/2004	171.51	55.92	104.21	107.04
05/19/2004	232.90	125.33	96.19	98.33	07/09/2004	190.91	128.98	50.53	50.00	08/29/2004	160.67	52.06	97.21	100.65
05/20/2004	255.81	148.53	95.86	99.38	07/10/2004	199.13	137.76	49.96	50.00	08/30/2004	189.55	80.12	98.04	109.79
05/21/2004	253.38	146.15	95.83	99.38	07/11/2004	169.65	108.93	49.34	50.00	08/31/2004	182.34	75.93	97.04	110.83

TABLE F-2

## BiOp Spill at The Dalles

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
04/01/2004	150.76	149.68	0.00	0.00	05/22/2004	215.69	124.56	85.17	86.28	07/12/2004	160.19	90.79	63.42	64.08
04/02/2004	137.00	132.60	0.00	0.00	05/23/2004	215.37	125.49	83.54	86.15	07/13/2004	151.21	85.25	60.08	60.48
04/03/2004	146.30	140.40	0.00	0.00	05/24/2004	230.60	133.63	90.75	92.24	07/14/2004	171.72	97.38	68.33	68.69
04/04/2004	124.04	118.26	0.00	0.00	05/25/2004	221.73	128.68	87.00	88.69	07/15/2004	142.33	80.29	56.29	56.93
04/05/2004	127.93	122.09	0.00	0.00	05/26/2004	237.01	138.46	92.63	94.80	07/16/2004	123.94	69.35	48.88	49.58
04/06/2004	137.98	132.33	0.00	0.00	05/27/2004	257.67	151.35	100.42	103.07	07/17/2004	132.80	74.11	52.75	53.12
04/07/2004	146.64	140.93	0.00	0.00	05/28/2004	258.28	150.18	102.08	103.31	07/18/2004	105.62	58.55	41.13	42.25
04/08/2004	151.26	145.49	0.00	0.00	05/29/2004	288.97	164.36	118.96	115.59	07/19/2004	139.32	78.77	54.83	55.73
04/09/2004	149.98	144.27	0.00	0.00	05/30/2004	237.71	138.31	93.29	95.09	07/20/2004	125.97	70.70	49.63	50.39
04/10/2004	143.76	138.05	0.00	0.00	05/31/2004	279.87	158.72	115.00	111.27	07/21/2004	114.14	63.01	45.29	45.66
04/11/2004	117.13	111.29	0.00	0.00	06/01/2004	260.43	152.53	101.75	104.17	07/22/2004	115.59	64.40	45.42	46.22
04/12/2004	167.15	142.20	19.24	19.80	06/02/2004	264.58	154.65	103.83	105.83	07/23/2004	125.85	70.10	50.04	50.18
04/13/2004	140.68	81.70	53.21	56.27	06/03/2004	233.30	135.28	92.08	93.32	07/24/2004	113.00	61.81	45.42	45.20
04/14/2004	148.09	84.25	58.25	59.24	06/04/2004	251.30	144.36	101.42	100.52	07/25/2004	110.15	61.25	43.25	44.06
04/15/2004	185.95	107.23	73.00	74.38	06/05/2004	265.72	153.09	106.58	106.29	07/26/2004	137.20	78.10	53.58	54.63
04/16/2004	191.45	110.84	74.83	76.58	06/06/2004	234.93	136.07	92.92	93.97	07/27/2004	128.80	72.00	51.08	51.52
04/17/2004	184.83	105.97	73.08	73.93	06/07/2004	240.71	139.81	94.92	96.28	07/28/2004	129.06	72.16	51.00	51.63
04/18/2004	144.25	82.91	55.56	57.70	06/08/2004	239.42	138.65	94.75	95.77	07/29/2004	135.06	75.25	54.04	54.03
04/19/2004	166.57	98.00	62.79	66.63	06/09/2004	239.68	139.01	94.67	95.87	07/30/2004	146.42	82.79	58.04	58.57
04/20/2004	178.41	101.59	70.83	71.36	06/10/2004	219.37	126.05	87.33	87.75	07/31/2004	143.42	81.37	56.08	57.37
04/21/2004	209.38	119.39	83.71	83.75	06/11/2004	261.02	151.93	103.33	104.41	08/01/2004	108.17	57.94	44.21	43.27
04/22/2004	169.97	96.65	67.00	67.99	06/12/2004	260.35	151.01	103.50	104.14	08/02/2004	123.08	67.81	49.50	49.23
04/23/2004	169.22	98.34	65.17	67.69	06/13/2004	232.60	134.52	92.13	93.04	08/03/2004	118.70	65.71	47.21	47.48
04/24/2004	160.43	92.92	61.50	64.17	06/14/2004	244.20	142.20	96.29	97.68	08/04/2004	123.08	68.23	49.08	49.23
04/25/2004	162.62	91.90	64.54	65.05	06/15/2004	241.36	140.23	95.08	96.34	08/05/2004	120.71	67.13	47.75	48.29
04/26/2004	151.84	86.07	59.83	60.74	06/16/2004	251.09	165.19	79.63	100.44	08/06/2004	96.87	52.72	38.50	38.75
04/27/2004	132.21	75.02	51.42	52.88	06/17/2004	191.58	109.70	75.96	76.63	08/07/2004	103.08	56.87	40.63	41.14
04/28/2004	196.54	113.75	77.08	78.62	06/18/2004	208.58	119.64	83.17	83.43	08/08/2004	87.40	53.48	27.96	30.55
04/29/2004	169.02	96.49	66.25	67.61	06/19/2004	208.45	119.84	82.50	83.38	08/09/2004	104.20	63.71	34.83	35.52
04/30/2004	167.73	96.52	65.33	67.09	06/20/2004	169.92	96.94	67.17	67.97	08/10/2004	122.45	72.07	44.54	45.81
05/01/2004	174.73	99.95	69.00	69.89	06/21/2004	208.49	120.76	81.75	83.40	08/11/2004	156.35	88.83	61.75	62.54
05/02/2004	159.35	90.50	62.63	63.74	06/22/2004	193.53	114.85	72.79	70.68	08/12/2004	136.20	76.03	54.46	54.48
05/03/2004	167.89	96.53	65.67	67.16	06/23/2004	211.61	132.54	72.92	73.79	08/13/2004	127.84	72.86	49.46	50.72
05/04/2004	201.00	116.45	78.50	80.40	06/24/2004	165.28	105.61	53.67	66.11	08/14/2004	96.40	56.33	34.42	35.84
05/05/2004	218.04	127.77	84.33	87.22	06/25/2004	169.34	97.22	65.92	67.74	08/15/2004	101.03	57.00	38.25	38.81
05/06/2004	221.28	128.15	87.08	88.51	06/26/2004	176.46	99.46	70.92	70.59	08/16/2004	137.32	82.71	48.96	49.91
05/07/2004	212.33	123.18	83.13	84.93	06/27/2004	171.83	97.49	68.46	68.73	08/17/2004	124.15	68.33	50.17	49.66
05/08/2004	207.81	120.33	81.50	83.13	06/28/2004	180.48	102.43	72.00	71.81	08/18/2004	143.98	82.48	55.58	57.25
05/09/2004	201.35	115.74	79.33	80.54	06/29/2004	176.98	104.70	66.58	68.70	08/19/2004	136.92	76.91	54.42	54.77
05/10/2004	204.86	118.13	80.79	81.94	06/30/2004	195.51	111.17	78.17	78.20	08/20/2004	135.85	76.28	53.67	54.34
05/11/2004	225.34	130.38	88.88	90.14	07/01/2004	178.72	102.57	70.33	71.49	08/21/2004	139.36	78.55	55.17	55.75
05/12/2004	228.93	133.01	89.92	91.57	07/02/2004	174.81	99.51	69.38	69.92	08/22/2004	95.07	53.71	35.58	37.54
05/13/2004	214.38	125.08	83.25	85.75	07/03/2004	129.53	71.80	51.92	51.81	08/23/2004	104.58	61.01	37.92	40.22
05/14/2004	201.89	116.49	79.58	80.76	07/04/2004	150.61	85.53	59.50	60.25	08/24/2004	109.66	64.49	39.58	40.63
05/15/2004	197.30	113.67	77.71	78.92	07/05/2004	162.97	92.98	64.17	65.19	08/25/2004	109.10	60.68	42.29	43.38
05/16/2004	182.58	104.45	72.00	73.03	07/06/2004	168.00	95.14	66.71	67.20	08/26/2004	128.50	74.45	48.33	48.72
05/17/2004	212.49	122.44	84.46	85.00	07/07/2004	161.10	92.70	62.71	64.44	08/27/2004	153.45	87.03	60.83	61.38
05/18/2004	199.86	116.34	77.29	79.95	07/08/2004	169.05	96.53	66.63	67.62	08/28/2004	144.95	81.53	57.71	57.98
05/19/2004	216.40	124.80	85.46	86.56	07/09/2004	166.65	94.31	66.54	66.66	08/29/2004	123.10	68.52	48.88	49.24
05/20/2004	224.91	130.53	88.25	89.96	07/10/2004	161.18	91.13	63.83	64.47	08/30/2004	179.04	102.63	70.70	71.62
05/21/2004	218.84	125.65	87.42	87.54	07/11/2004	131.33	73.03	52.29	52.53	08/31/2004	158.88	91.62	61.67	63.55

TABLE F-3

## BiOp Spill at John Day

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
04/01/2004	144.49	143.53	0.00	0.00	05/22/2004	217.40	155.18	59.85	60.45	07/12/2004	161.88	112.26	48.09	48.57
04/02/2004	132.80	131.80	0.00	0.00	05/23/2004	211.95	144.38	65.80	64.15	07/13/2004	154.73	106.87	46.40	46.42
04/03/2004	139.53	138.00	0.00	0.00	05/24/2004	223.68	159.13	63.23	62.20	07/14/2004	174.99	121.05	52.64	52.50
04/04/2004	115.74	114.37	0.00	0.00	05/25/2004	214.86	156.98	56.70	57.26	07/15/2004	141.43	97.47	42.70	42.43
04/05/2004	120.18	118.95	0.00	0.00	05/26/2004	231.16	171.44	58.48	58.98	07/16/2004	125.93	86.76	37.86	37.78
04/06/2004	128.93	127.48	0.00	0.00	05/27/2004	240.44	180.80	62.58	62.55	07/17/2004	131.41	90.47	39.72	39.42
04/07/2004	144.10	142.65	0.00	0.00	05/28/2004	260.44	189.41	70.10	68.73	07/18/2004	100.60	69.50	29.67	30.18
04/08/2004	140.93	139.63	0.00	0.00	05/29/2004	280.30	209.25	69.83	68.75	07/19/2004	141.40	98.42	41.69	42.42
04/09/2004	142.28	141.06	0.00	0.00	05/30/2004	233.68	161.65	74.73	66.51	07/20/2004	124.93	86.99	36.49	37.48
04/10/2004	141.15	139.77	0.00	0.00	05/31/2004	267.85	193.48	69.07	66.20	07/21/2004	113.53	79.05	32.94	34.06
04/11/2004	112.11	110.40	0.00	0.00	06/01/2004	259.54	192.91	65.39	64.76	07/22/2004	112.92	77.80	33.72	33.88
04/12/2004	161.95	138.04	22.69	23.75	06/02/2004	246.15	175.54	69.38	68.51	07/23/2004	124.48	85.33	37.78	37.34
04/13/2004	134.18	90.06	42.67	44.24	06/03/2004	228.07	161.39	65.54	66.44	07/24/2004	110.34	75.33	33.48	33.10
04/14/2004	146.89	104.14	41.37	41.51	06/04/2004	253.20	189.18	62.78	63.17	07/25/2004	112.28	76.85	34.26	33.68
04/15/2004	182.82	136.21	45.23	46.41	06/05/2004	260.63	194.08	66.35	66.46	07/26/2004	136.06	94.44	40.20	40.82
04/16/2004	191.96	142.91	47.84	47.50	06/06/2004	228.25	159.91	66.87	66.46	07/27/2004	125.84	86.96	37.48	37.75
04/17/2004	183.01	128.54	53.02	46.53	06/07/2004	235.68	170.13	64.17	64.45	07/28/2004	127.80	87.72	38.70	38.34
04/18/2004	141.51	106.15	33.93	35.30	06/08/2004	238.90	169.53	68.23	66.46	07/29/2004	134.49	92.92	40.30	40.35
04/19/2004	166.93	121.45	44.23	44.17	06/09/2004	231.96	162.98	67.75	66.44	07/30/2004	150.88	104.40	45.30	45.26
04/20/2004	173.71	129.77	42.67	43.09	06/10/2004	222.49	156.58	66.84	64.13	07/31/2004	143.71	99.08	43.13	43.11
04/21/2004	204.89	155.69	47.83	47.50	06/11/2004	252.73	186.64	64.87	64.99	08/01/2004	106.44	72.43	32.33	31.93
04/22/2004	175.12	126.75	46.64	47.41	06/12/2004	251.18	183.57	66.48	66.46	08/02/2004	122.73	84.75	36.78	36.82
04/23/2004	157.99	111.51	45.02	45.83	06/13/2004	228.98	161.60	65.99	65.22	08/03/2004	117.38	80.65	35.26	35.21
04/24/2004	158.49	111.81	45.17	45.72	06/14/2004	238.32	169.90	67.15	66.61	08/04/2004	121.71	84.02	36.24	36.51
04/25/2004	156.48	111.44	43.27	44.44	06/15/2004	240.02	170.50	67.93	69.01	08/05/2004	119.07	81.86	35.69	35.72
04/26/2004	154.12	107.43	45.24	44.59	06/16/2004	249.35	175.49	72.55	71.02	08/06/2004	97.62	66.81	29.52	29.29
04/27/2004	129.76	96.44	32.00	35.68	06/17/2004	189.52	135.65	52.65	52.63	08/07/2004	101.24	69.39	30.33	30.37
04/28/2004	194.27	137.20	55.61	55.65	06/18/2004	202.83	144.73	56.50	57.07	08/08/2004	76.65	52.20	22.93	22.92
04/29/2004	169.05	113.09	54.59	54.49	06/19/2004	205.23	150.93	50.73	58.73	08/09/2004	109.73	75.80	32.70	32.92
04/30/2004	165.73	111.92	52.52	53.07	06/20/2004	168.30	118.06	48.80	49.05	08/10/2004	124.79	85.47	37.85	37.44
05/01/2004	170.61	119.73	49.33	50.08	06/21/2004	207.78	128.09	78.15	78.69	08/11/2004	154.38	107.40	45.86	46.31
05/02/2004	156.51	110.37	44.63	45.19	06/22/2004	197.15	137.52	58.49	58.22	08/12/2004	138.01	94.87	41.92	41.40
05/03/2004	165.58	114.25	50.16	49.89	06/23/2004	203.95	140.56	62.03	61.18	08/13/2004	126.33	87.42	37.75	37.90
05/04/2004	203.40	144.65	57.36	57.45	06/24/2004	166.35	115.40	49.60	49.91	08/14/2004	99.19	68.95	28.93	29.76
05/05/2004	211.56	146.99	63.05	62.61	06/25/2004	172.35	119.60	51.53	51.70	08/15/2004	100.00	68.44	30.00	30.00
05/06/2004	215.23	142.20	71.81	71.72	06/26/2004	171.88	119.46	51.23	51.57	08/16/2004	139.28	96.29	41.62	41.78
05/07/2004	212.78	140.59	69.92	67.74	06/27/2004	173.97	120.38	52.16	52.19	08/17/2004	125.31	85.95	38.42	37.59
05/08/2004	200.55	138.49	60.66	60.84	06/28/2004	180.30	125.38	53.70	54.09	08/18/2004	142.00	97.44	43.19	42.60
05/09/2004	198.45	133.23	63.63	64.51	06/29/2004	170.49	118.95	50.38	51.15	08/19/2004	139.67	96.75	41.57	41.90
05/10/2004	201.45	139.78	60.30	61.91	06/30/2004	205.22	142.94	60.75	61.57	08/20/2004	137.22	94.61	41.01	41.17
05/11/2004	222.43	157.56	63.49	64.02	07/01/2004	176.26	123.11	51.68	52.88	08/21/2004	136.67	94.28	41.02	41.00
05/12/2004	219.64	159.12	59.14	59.58	07/02/2004	174.32	120.70	52.36	52.30	08/22/2004	93.44	63.93	28.08	28.03
05/13/2004	207.00	141.54	64.16	64.57	07/03/2004	131.13	90.77	38.98	39.34	08/23/2004	106.51	74.45	30.76	31.95
05/14/2004	205.98	141.25	63.58	63.53	07/04/2004	148.73	102.61	44.90	44.62	08/24/2004	107.93	74.25	32.40	32.38
05/15/2004	188.38	140.17	46.91	48.06	07/05/2004	159.01	109.87	48.01	47.70	08/25/2004	106.25	73.41	31.53	31.88
05/16/2004	181.43	130.72	49.27	49.53	07/06/2004	171.20	118.60	51.42	51.36	08/26/2004	128.44	89.37	37.87	38.21
05/17/2004	207.82	149.85	56.55	57.48	07/07/2004	157.46	109.66	46.75	47.24	08/27/2004	154.81	107.79	45.93	46.44
05/18/2004	196.13	142.46	52.36	52.83	07/08/2004	174.04	120.44	52.21	52.21	08/28/2004	147.34	102.07	43.87	44.20
05/19/2004	213.61	153.50	58.67	57.90	07/09/2004	166.98	115.25	50.56	50.09	08/29/2004	123.10	84.46	37.33	36.93
05/20/2004	220.59	156.23	62.77	63.11	07/10/2004	154.66	107.12	46.16	46.40	08/30/2004	179.88	124.92	53.67	53.72
05/21/2004	210.55	153.83	55.58	55.85	07/11/2004	133.85	92.52	39.95	40.15	08/31/2004	156.37	108.68	46.04	46.91

TABLE F-4

## BiOp Spill at McNary

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
04/01/2004	126.60	121.80	0.10	0.00	05/22/2004	214.89	120.09	90.10	91.71	07/12/2004	155.26	150.56	0.00	0.00
04/02/2004	139.06	133.95	0.41	0.00	05/23/2004	212.64	116.00	91.94	92.50	07/13/2004	164.18	159.48	0.00	0.00
04/03/2004	145.59	140.89	0.00	0.00	05/24/2004	208.98	112.34	91.93	92.42	07/14/2004	168.25	163.55	0.00	0.00
04/04/2004	135.70	131.00	0.00	0.00	05/25/2004	207.34	111.24	91.41	92.12	07/15/2004	152.45	147.75	0.00	0.00
04/05/2004	119.70	115.00	0.00	0.00	05/26/2004	234.28	123.01	106.57	92.34	07/16/2004	125.00	120.30	0.00	0.00
04/06/2004	119.02	114.32	0.00	0.00	05/27/2004	240.04	143.93	91.42	91.25	07/17/2004	126.47	121.77	0.00	0.00
04/07/2004	144.37	139.67	0.00	0.00	05/28/2004	273.72	165.81	103.18	87.50	07/18/2004	106.12	101.42	0.00	0.00
04/08/2004	120.03	115.33	0.00	0.00	05/29/2004	269.83	153.54	111.59	83.75	07/19/2004	146.62	141.92	0.00	0.00
04/09/2004	129.30	124.60	0.00	0.00	05/30/2004	238.44	139.52	94.20	82.50	07/20/2004	119.98	115.28	0.00	0.00
04/10/2004	128.37	123.67	0.00	0.00	05/31/2004	265.58	148.41	112.47	82.50	07/21/2004	121.05	116.35	0.00	0.00
04/11/2004	128.78	124.08	0.00	0.00	06/01/2004	257.87	146.15	107.00	82.50	07/22/2004	111.79	107.09	0.00	0.00
04/12/2004	152.41	118.19	29.52	31.24	06/02/2004	246.90	161.04	81.18	81.25	07/23/2004	126.74	122.04	0.00	0.00
04/13/2004	131.16	86.26	40.20	45.18	06/03/2004	232.80	149.97	78.14	78.75	07/24/2004	115.60	110.90	0.00	0.00
04/14/2004	148.15	96.48	46.97	54.24	06/04/2004	255.54	159.50	91.33	77.50	07/25/2004	117.83	113.13	0.00	0.00
04/15/2004	178.32	109.85	63.76	70.00	06/05/2004	279.86	163.54	111.63	77.50	07/26/2004	129.70	125.00	0.00	0.00
04/16/2004	189.08	119.88	64.49	68.00	06/06/2004	225.43	144.08	76.65	77.50	07/27/2004	116.25	111.55	0.00	0.00
04/17/2004	165.02	123.24	37.08	43.53	06/07/2004	239.86	155.82	79.34	77.50	07/28/2004	142.27	137.57	0.00	0.00
04/18/2004	159.30	112.74	41.87	45.66	06/08/2004	239.05	159.70	74.65	76.25	07/29/2004	137.45	132.75	0.00	0.00
04/19/2004	166.92	106.59	55.62	59.30	06/09/2004	234.01	155.61	73.70	75.00	07/30/2004	149.88	145.18	0.00	0.00
04/20/2004	198.66	127.78	66.16	69.29	06/10/2004	236.92	146.85	85.13	75.00	07/31/2004	144.38	139.68	0.00	0.00
04/21/2004	196.10	123.52	67.88	68.55	06/11/2004	253.33	160.33	88.30	75.00	08/01/2004	114.22	109.52	0.00	0.00
04/22/2004	171.57	110.95	55.91	56.82	06/12/2004	253.63	163.10	85.84	75.00	08/02/2004	118.70	114.00	0.00	0.00
04/23/2004	154.13	103.77	45.65	45.44	06/13/2004	242.11	164.58	72.83	75.00	08/03/2004	117.80	113.10	0.00	0.00
04/24/2004	155.01	111.18	39.14	40.41	06/14/2004	234.15	157.96	71.49	76.25	08/04/2004	116.42	111.72	0.00	0.00
04/25/2004	153.09	114.96	33.43	34.09	06/15/2004	241.23	161.65	74.88	77.50	08/05/2004	120.82	116.12	0.00	0.00
04/26/2004	154.06	112.03	37.33	37.63	06/16/2004	246.95	166.83	75.43	76.25	08/06/2004	105.74	101.04	0.00	0.00
04/27/2004	169.66	111.81	53.15	54.97	06/17/2004	205.25	125.11	75.44	75.00	08/07/2004	100.65	95.95	0.00	0.00
04/28/2004	179.27	119.04	55.53	58.58	06/18/2004	209.14	129.97	74.47	75.00	08/08/2004	74.31	69.61	0.00	0.00
04/29/2004	175.45	112.70	58.04	58.92	06/19/2004	194.00	117.56	71.75	73.01	08/09/2004	113.48	108.78	0.00	0.00
04/30/2004	166.50	106.73	55.06	56.45	06/20/2004	184.85	114.10	66.05	67.66	08/10/2004	125.82	121.12	0.00	0.00
05/01/2004	164.73	107.91	52.12	53.25	06/21/2004	211.33	134.45	72.17	72.26	08/11/2004	155.15	150.45	0.00	0.00
05/02/2004	164.46	106.89	52.90	53.53	06/22/2004	204.08	132.18	67.20	68.75	08/12/2004	136.12	131.42	0.00	0.00
05/03/2004	170.18	108.10	57.39	57.90	06/23/2004	189.87	153.25	31.92	32.50	08/13/2004	126.38	121.68	0.00	0.00
05/04/2004	206.92	114.99	87.24	74.45	06/24/2004	174.23	169.53	0.00	0.00	08/14/2004	115.31	110.61	0.00	0.00
05/05/2004	226.02	122.59	98.73	80.00	06/25/2004	174.74	170.04	0.00	0.00	08/15/2004	100.68	95.98	0.00	0.00
05/06/2004	219.67	123.34	91.64	82.50	06/26/2004	168.26	163.56	0.00	0.00	08/16/2004	135.68	130.98	0.00	0.00
05/07/2004	211.57	125.06	81.82	83.35	06/27/2004	166.55	161.85	0.00	0.00	08/17/2004	125.97	121.27	0.00	0.00
05/08/2004	202.18	110.18	87.30	80.75	06/28/2004	174.68	162.26	7.71	0.00	08/18/2004	135.63	130.93	0.00	0.00
05/09/2004	201.49	114.53	82.25	83.63	06/29/2004	187.57	167.73	15.16	0.00	08/19/2004	148.12	143.42	0.00	0.00
05/10/2004	216.83	115.11	97.02	84.52	06/30/2004	198.71	167.28	26.74	0.00	08/20/2004	146.36	141.66	0.00	0.00
05/11/2004	224.78	124.72	95.35	86.25	07/01/2004	189.81	165.36	19.74	0.00	08/21/2004	137.72	133.02	0.00	0.00
05/12/2004	221.55	118.79	98.06	87.50	07/02/2004	166.89	162.19	0.00	0.00	08/22/2004	91.58	86.88	0.00	0.00
05/13/2004	210.38	119.85	85.81	86.43	07/03/2004	136.88	132.18	0.00	0.00	08/23/2004	102.47	97.77	0.00	0.00
05/14/2004	209.20	118.39	86.11	86.02	07/04/2004	144.91	140.21	0.00	0.00	08/24/2004	110.85	106.15	0.00	0.00
05/15/2004	200.60	109.73	86.16	86.61	07/05/2004	160.74	156.04	0.00	0.00	08/25/2004	102.69	97.99	0.00	0.00
05/16/2004	188.91	103.76	80.44	81.25	07/06/2004	169.06	164.36	0.00	0.00	08/26/2004	136.89	132.19	0.00	0.00
05/17/2004	204.06	110.95	88.41	89.63	07/07/2004	168.73	164.03	0.00	0.00	08/27/2004	155.38	150.68	0.00	0.00
05/18/2004	208.70	114.39	89.61	90.00	07/08/2004	162.98	158.28	0.00	0.00	08/28/2004	146.88	142.18	0.00	0.00
05/19/2004	207.08	112.43	89.96	90.74	07/09/2004	173.83	169.13	0.00	0.00	08/29/2004	136.02	131.32	0.00	0.00
05/20/2004	234.27	129.75	99.83	92.50	07/10/2004	148.97	144.27	0.00	0.00	08/30/2004	152.77	148.07	0.00	0.00
05/21/2004	215.30	117.73	92.22	92.23	07/11/2004	135.38	130.68	0.00	0.00	08/31/2004	149.40	144.70	0.00	0.00

TABLE F-5

## BiOp Spill at Ice Harbor

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
04/01/2004	57.60	57.10	0.00	0.00	05/22/2004	86.44	9.97	75.52	74.95	07/12/2004	40.45	6.88	32.58	31.45
04/02/2004	47.15	46.53	0.00	0.00	05/23/2004	88.83	34.11	53.90	53.32	07/13/2004	43.12	6.23	35.25	34.05
04/03/2004	39.43	38.93	0.00	0.00	05/24/2004	96.70	50.85	45.03	45.00	07/14/2004	44.36	8.37	34.80	33.03
04/04/2004	46.05	45.29	0.00	0.00	05/25/2004	95.95	21.47	73.64	73.83	07/15/2004	40.73	8.70	31.11	29.83
04/05/2004	41.58	40.83	0.00	0.00	05/26/2004	92.78	6.91	84.56	83.23	07/16/2004	42.56	6.58	34.98	33.56
04/06/2004	59.89	59.08	0.00	0.00	05/27/2004	101.31	49.27	51.18	49.17	07/17/2004	34.39	6.28	27.05	25.39
04/07/2004	50.29	49.60	0.00	0.00	05/28/2004	121.70	75.60	45.29	45.00	07/18/2004	35.92	8.17	26.60	25.57
04/08/2004	49.45	48.76	0.00	0.00	05/29/2004	140.25	56.95	82.38	82.21	07/19/2004	36.41	6.15	29.25	30.03
04/09/2004	54.17	53.48	0.00	0.00	05/30/2004	128.87	37.77	90.47	90.33	07/20/2004	37.81	8.09	28.91	31.44
04/10/2004	53.39	52.70	0.00	0.00	05/31/2004	126.50	72.42	53.33	53.96	07/21/2004	35.78	6.30	28.47	29.18
04/11/2004	47.77	47.15	0.00	0.00	06/01/2004	121.75	76.33	44.80	45.00	07/22/2004	39.85	7.27	31.65	32.14
04/12/2004	43.64	42.83	0.00	0.00	06/02/2004	107.58	31.61	75.09	75.08	07/23/2004	35.06	7.76	26.55	28.51
04/13/2004	55.05	43.53	10.71	10.85	06/03/2004	106.84	24.96	80.99	80.56	07/24/2004	36.08	6.25	28.97	29.55
04/14/2004	62.37	16.50	44.93	46.20	06/04/2004	107.72	54.64	52.46	52.92	07/25/2004	31.50	8.22	22.40	25.13
04/15/2004	73.45	6.41	66.23	66.33	06/05/2004	116.55	70.63	45.11	45.00	07/26/2004	34.00	9.18	23.95	27.63
04/16/2004	61.13	7.06	53.41	52.13	06/06/2004	111.63	35.68	75.15	75.08	07/27/2004	30.11	9.23	19.95	23.74
04/17/2004	51.16	9.58	40.69	40.86	06/07/2004	120.81	37.28	82.91	83.00	07/28/2004	32.45	6.68	24.95	25.79
04/18/2004	56.30	10.74	44.83	44.37	06/08/2004	109.38	55.96	52.62	52.87	07/29/2004	27.88	6.50	20.23	21.50
04/19/2004	53.30	7.78	44.78	44.30	06/09/2004	104.38	58.64	44.98	45.00	07/30/2004	33.61	6.65	26.03	27.15
04/20/2004	48.15	8.16	39.14	39.15	06/10/2004	96.91	22.59	73.63	73.85	07/31/2004	26.32	6.54	18.67	19.94
04/21/2004	47.97	8.45	38.73	36.68	06/11/2004	94.65	12.85	81.05	79.65	08/01/2004	27.84	9.40	17.37	21.47
04/22/2004	49.41	8.58	39.83	37.87	06/12/2004	91.28	37.44	52.90	51.20	08/02/2004	28.52	8.78	18.80	22.15
04/23/2004	41.61	8.06	32.75	32.61	06/13/2004	80.50	34.80	44.95	45.00	08/03/2004	29.71	8.38	20.55	23.34
04/24/2004	44.16	9.64	33.65	35.16	06/14/2004	81.80	12.57	68.55	69.16	08/04/2004	27.75	10.08	16.88	21.37
04/25/2004	48.98	9.43	38.87	39.29	06/15/2004	79.97	11.39	67.94	68.47	08/05/2004	30.17	9.25	20.70	23.79
04/26/2004	48.46	12.66	35.00	35.74	06/16/2004	65.56	19.35	45.47	46.02	08/06/2004	26.20	10.02	15.68	19.82
04/27/2004	47.46	8.08	38.70	38.46	06/17/2004	55.74	14.36	40.58	39.67	08/07/2004	28.08	9.00	18.59	21.70
04/28/2004	56.58	7.07	48.32	47.57	06/18/2004	58.59	11.13	46.59	46.50	08/08/2004	26.72	8.65	17.48	20.35
04/29/2004	60.33	11.72	47.88	47.96	06/19/2004	54.07	6.63	46.52	45.07	08/09/2004	26.77	8.92	16.94	20.39
04/30/2004	57.49	11.83	44.97	45.00	06/20/2004	52.70	12.98	38.88	37.29	08/10/2004	30.08	8.44	20.99	23.71
05/01/2004	52.92	12.39	39.58	41.36	06/21/2004	51.98	13.33	37.83	37.34	08/11/2004	24.93	8.39	16.04	18.56
05/02/2004	54.56	8.65	44.83	45.56	06/22/2004	54.44	8.93	44.63	42.85	08/12/2004	28.90	10.38	18.03	22.53
05/03/2004	66.85	21.20	44.72	43.82	06/23/2004	50.15	6.39	42.95	41.15	08/13/2004	24.05	8.98	14.50	17.67
05/04/2004	75.68	30.07	44.47	45.00	06/24/2004	60.78	14.95	45.09	43.48	08/14/2004	24.35	9.07	14.56	17.97
05/05/2004	81.31	20.35	60.09	67.55	06/25/2004	56.80	15.00	41.17	39.86	08/15/2004	23.85	8.20	15.13	17.47
05/06/2004	93.41	12.54	80.06	83.47	06/26/2004	48.15	7.61	39.55	38.88	08/16/2004	27.37	6.99	19.79	20.99
05/07/2004	87.48	35.13	51.42	49.80	06/27/2004	46.19	7.15	37.90	37.19	08/17/2004	24.12	6.40	17.06	17.75
05/08/2004	83.33	39.55	42.98	43.39	06/28/2004	50.00	9.68	39.08	37.75	08/18/2004	25.00	6.65	17.79	18.62
05/09/2004	77.48	11.53	65.08	66.95	06/29/2004	38.29	14.25	23.17	23.73	08/19/2004	26.50	8.34	17.53	20.12
05/10/2004	77.30	6.45	69.98	68.30	06/30/2004	41.29	6.35	33.88	32.29	08/20/2004	26.40	8.82	16.90	20.02
05/11/2004	75.57	36.90	37.86	48.38	07/01/2004	45.63	14.60	29.90	36.63	08/21/2004	27.36	8.60	18.09	20.99
05/12/2004	76.52	30.96	44.63	45.00	07/02/2004	43.92	8.68	34.29	33.00	08/22/2004	25.75	8.98	16.21	19.37
05/13/2004	70.51	10.55	58.95	60.05	07/03/2004	49.80	9.70	39.30	37.97	08/23/2004	25.86	6.50	18.86	19.49
05/14/2004	64.71	9.34	54.50	55.71	07/04/2004	39.97	6.63	32.55	30.97	08/24/2004	30.75	6.27	23.97	24.37
05/15/2004	64.35	21.00	42.36	42.80	07/05/2004	38.38	6.27	31.18	29.38	08/25/2004	31.55	6.20	24.78	25.17
05/16/2004	62.09	16.39	44.89	43.16	07/06/2004	39.18	7.05	31.83	29.52	08/26/2004	34.09	6.31	27.21	27.72
05/17/2004	74.14	7.59	65.60	64.68	07/07/2004	41.82	10.03	31.31	29.93	08/27/2004	32.39	8.74	23.15	25.95
05/18/2004	66.45	6.79	58.83	57.45	07/08/2004	38.28	6.26	31.53	29.28	08/28/2004	34.69	6.20	27.92	28.31
05/19/2004	75.04	30.29	43.64	42.14	07/09/2004	37.65	6.64	30.63	28.65	08/29/2004	30.45	6.09	23.85	24.08
05/20/2004	78.98	36.08	42.02	41.68	07/10/2004	36.88	6.28	29.34	27.88	08/30/2004	31.55	6.16	24.89	25.18
05/21/2004	84.47	7.72	75.64	75.31	07/11/2004	41.66	7.30	33.43	31.56	08/31/2004	33.33	6.33	26.44	26.96

TABLE F-6

## BiOp Spill at Lower Monumental

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
04/01/2004	60.65	59.93	0.00	0.00	05/22/2004	88.66	87.88	0.00	0.00	07/12/2004	40.21	39.42	0.00	0.00
04/02/2004	50.60	49.87	0.00	0.00	05/23/2004	86.36	85.70	0.00	0.00	07/13/2004	39.12	38.27	0.00	0.00
04/03/2004	41.00	40.34	0.00	0.00	05/24/2004	96.97	96.18	0.00	0.00	07/14/2004	43.04	42.19	0.00	0.00
04/04/2004	48.87	48.01	0.00	0.00	05/25/2004	94.03	93.11	0.00	0.00	07/15/2004	38.49	37.76	0.00	0.00
04/05/2004	44.99	44.14	0.00	0.00	05/26/2004	90.55	89.70	0.00	0.00	07/16/2004	40.82	40.15	0.00	0.00
04/06/2004	60.90	59.98	0.00	0.00	05/27/2004	99.87	99.08	0.00	0.00	07/17/2004	34.51	33.72	0.00	0.00
04/07/2004	51.60	50.69	0.00	0.00	05/28/2004	124.25	119.59	3.87	0.00	07/18/2004	33.62	32.90	0.00	0.00
04/08/2004	53.39	52.66	0.00	0.00	05/29/2004	138.83	120.21	17.79	0.00	07/19/2004	34.95	34.22	0.00	0.00
04/09/2004	58.71	57.86	0.00	0.00	05/30/2004	130.06	114.82	14.59	0.00	07/20/2004	37.95	37.17	0.00	0.00
04/10/2004	54.88	54.09	0.00	0.00	05/31/2004	124.51	99.41	24.27	0.00	07/21/2004	32.73	31.88	0.00	0.00
04/11/2004	50.10	49.44	0.00	0.00	06/01/2004	123.23	99.67	22.71	0.00	07/22/2004	39.54	38.57	0.00	0.00
04/12/2004	46.40	45.49	0.00	0.00	06/02/2004	108.78	99.43	8.63	0.00	07/23/2004	35.39	34.67	0.00	0.00
04/13/2004	58.89	58.04	0.00	0.00	06/03/2004	105.80	98.82	6.12	0.00	07/24/2004	32.88	31.90	0.00	0.00
04/14/2004	59.79	58.88	0.00	0.00	06/04/2004	108.44	107.78	0.00	0.00	07/25/2004	31.35	30.50	0.00	0.00
04/15/2004	69.84	68.99	0.00	0.00	06/05/2004	118.12	117.27	0.00	0.00	07/26/2004	33.36	32.51	0.00	0.00
04/16/2004	59.36	58.63	0.00	0.00	06/06/2004	113.25	111.77	0.76	0.00	07/27/2004	30.96	30.11	0.00	0.00
04/17/2004	50.60	49.75	0.00	0.00	06/07/2004	118.41	111.59	6.03	0.00	07/28/2004	29.89	29.10	0.00	0.00
04/18/2004	53.43	52.65	0.00	0.00	06/08/2004	106.88	105.96	0.00	0.00	07/29/2004	28.22	27.31	0.00	0.00
04/19/2004	49.35	48.56	0.00	0.00	06/09/2004	107.43	106.70	0.00	0.00	07/30/2004	31.10	30.19	0.00	0.00
04/20/2004	46.21	45.30	0.00	0.00	06/10/2004	95.93	95.08	0.00	0.00	07/31/2004	26.08	25.10	0.00	0.00
04/21/2004	46.16	45.25	0.00	0.00	06/11/2004	91.31	90.59	0.00	0.00	08/01/2004	26.99	26.20	0.00	0.00
04/22/2004	46.34	45.49	0.00	0.00	06/12/2004	89.79	89.00	0.00	0.00	08/02/2004	27.09	26.30	0.00	0.00
04/23/2004	41.99	41.26	0.00	0.00	06/13/2004	79.01	78.23	0.00	0.00	08/03/2004	28.76	27.72	0.00	0.00
04/24/2004	42.33	36.99	4.48	6.21	06/14/2004	80.45	79.66	0.00	0.00	08/04/2004	26.81	25.90	0.00	0.00
04/25/2004	45.33	32.88	11.65	12.41	06/15/2004	78.31	77.46	0.00	0.00	08/05/2004	29.50	28.71	0.00	0.00
04/26/2004	42.86	31.73	10.22	10.65	06/16/2004	63.01	62.28	0.00	0.00	08/06/2004	27.25	26.46	0.00	0.00
04/27/2004	46.54	37.59	8.03	9.51	06/17/2004	55.18	54.26	0.00	0.00	08/07/2004	26.54	25.63	0.00	0.00
04/28/2004	55.12	43.13	10.89	12.63	06/18/2004	56.72	56.00	0.00	0.00	08/08/2004	25.83	24.98	0.00	0.00
04/29/2004	56.88	42.25	13.79	15.52	06/19/2004	52.22	51.43	0.00	0.00	08/09/2004	26.79	25.82	0.00	0.00
04/30/2004	53.36	27.24	25.38	26.68	06/20/2004	51.09	50.30	0.00	0.00	08/10/2004	28.85	27.94	0.00	0.00
05/01/2004	51.88	26.22	24.80	25.94	06/21/2004	50.57	49.72	0.00	0.00	08/11/2004	25.02	24.23	0.00	0.00
05/02/2004	53.30	26.94	25.52	26.65	06/22/2004	55.07	54.15	0.00	0.00	08/12/2004	29.71	28.86	0.00	0.00
05/03/2004	65.39	33.59	30.94	31.70	06/23/2004	46.43	45.58	0.00	0.00	08/13/2004	21.79	21.06	0.00	0.00
05/04/2004	76.55	48.26	27.42	27.96	06/24/2004	60.21	59.36	0.00	0.00	08/14/2004	24.07	23.28	0.00	0.00
05/05/2004	82.25	55.75	25.70	27.29	06/25/2004	53.86	53.13	0.00	0.00	08/15/2004	25.27	24.42	0.00	0.00
05/06/2004	94.23	62.90	30.44	30.00	06/26/2004	46.49	45.77	0.00	0.00	08/16/2004	24.79	24.00	0.00	0.00
05/07/2004	88.30	56.82	30.70	31.08	06/27/2004	44.16	43.44	0.00	0.00	08/17/2004	24.04	23.25	0.00	0.00
05/08/2004	85.88	55.76	29.32	31.47	06/28/2004	45.92	45.01	0.00	0.00	08/18/2004	22.22	21.37	0.00	0.00
05/09/2004	74.08	44.63	28.73	30.09	06/29/2004	38.63	37.84	0.00	0.00	08/19/2004	26.43	25.58	0.00	0.00
05/10/2004	75.92	46.00	28.99	30.17	06/30/2004	39.81	38.90	0.00	0.00	08/20/2004	25.88	25.10	0.00	0.00
05/11/2004	72.43	44.85	26.73	27.95	07/01/2004	42.95	42.16	0.00	0.00	08/21/2004	26.85	25.93	0.00	0.00
05/12/2004	73.71	46.10	26.68	28.67	07/02/2004	42.42	41.51	0.00	0.00	08/22/2004	25.15	24.30	0.00	0.00
05/13/2004	69.10	40.54	27.72	29.29	07/03/2004	46.10	45.25	0.00	0.00	08/23/2004	25.11	24.26	0.00	0.00
05/14/2004	59.97	53.32	5.92	6.07	07/04/2004	37.74	37.01	0.00	0.00	08/24/2004	27.49	26.70	0.00	0.00
05/15/2004	62.28	61.43	0.00	0.00	07/05/2004	37.72	36.87	0.00	0.00	08/25/2004	29.55	28.65	0.00	0.00
05/16/2004	58.18	57.39	0.00	0.00	07/06/2004	37.34	36.55	0.00	0.00	08/26/2004	30.82	30.10	0.00	0.00
05/17/2004	72.81	71.90	0.00	0.00	07/07/2004	39.20	38.35	0.00	0.00	08/27/2004	32.90	32.11	0.00	0.00
05/18/2004	65.07	64.22	0.00	0.00	07/08/2004	36.69	35.84	0.00	0.00	08/28/2004	32.00	31.28	0.00	0.00
05/19/2004	71.67	70.70	0.00	0.00	07/09/2004	38.75	38.08	0.00	0.00	08/29/2004	30.08	29.23	0.00	0.00
05/20/2004	78.58	77.66	0.00	0.00	07/10/2004	34.91	34.00	0.00	0.00	08/30/2004	26.98	10.72	15.53	0.00
05/21/2004	83.05	82.20	0.00	0.00	07/11/2004	38.05	37.27	0.00	0.00	08/31/2004	31.30	5.00	25.45	0.00

TABLE F-7

## BiOp Spill at Little Goose

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
04/01/2004	53.73	53.33	0.00	0.00	05/22/2004	83.52	83.00	0.00	0.00	07/12/2004	39.42	38.90	0.00	0.00
04/02/2004	48.45	48.05	0.00	0.00	05/23/2004	83.04	82.46	0.00	0.00	07/13/2004	38.23	37.54	0.00	0.00
04/03/2004	39.25	38.85	0.00	0.00	05/24/2004	89.94	89.30	0.00	0.00	07/14/2004	41.32	40.69	0.00	0.00
04/04/2004	43.81	43.17	0.00	0.00	05/25/2004	87.39	86.64	0.00	0.00	07/15/2004	37.31	36.74	0.00	0.00
04/05/2004	44.38	43.74	0.00	0.00	05/26/2004	84.75	84.18	0.00	0.00	07/16/2004	39.38	38.92	0.00	0.00
04/06/2004	55.08	54.33	0.00	0.00	05/27/2004	93.73	93.04	0.00	0.00	07/17/2004	35.51	34.93	0.00	0.00
04/07/2004	49.28	39.27	9.37	9.23	05/28/2004	117.27	112.26	4.44	0.00	07/18/2004	33.10	32.58	0.00	0.00
04/08/2004	53.33	33.79	19.02	18.98	05/29/2004	133.54	115.40	17.58	0.00	07/19/2004	33.26	32.80	0.00	0.00
04/09/2004	56.25	34.75	20.80	20.37	05/30/2004	124.27	111.06	12.75	0.00	07/20/2004	36.40	35.77	0.00	0.00
04/10/2004	52.11	29.88	21.66	21.11	05/31/2004	119.20	113.20	5.48	0.00	07/21/2004	31.71	31.02	0.00	0.00
04/11/2004	49.84	28.34	21.04	20.61	06/01/2004	115.04	109.75	4.55	0.00	07/22/2004	38.39	37.70	0.00	0.00
04/12/2004	46.62	24.28	21.65	21.80	06/02/2004	105.09	101.09	3.55	0.00	07/23/2004	34.69	34.12	0.00	0.00
04/13/2004	56.99	35.76	20.56	20.96	06/03/2004	100.34	99.82	0.00	0.00	07/24/2004	32.06	31.48	0.00	0.00
04/14/2004	58.73	37.84	20.01	20.20	06/04/2004	104.15	103.57	0.00	0.00	07/25/2004	31.23	30.54	0.00	0.00
04/15/2004	67.48	46.85	19.92	19.74	06/05/2004	109.51	108.07	0.92	0.00	07/26/2004	32.74	32.17	0.00	0.00
04/16/2004	57.25	35.75	20.63	20.31	06/06/2004	108.18	107.66	0.00	0.00	07/27/2004	29.56	28.87	0.00	0.00
04/17/2004	51.07	31.49	19.00	20.90	06/07/2004	111.22	110.64	0.00	0.00	07/28/2004	28.43	27.91	0.00	0.00
04/18/2004	51.42	30.77	20.14	20.57	06/08/2004	101.62	101.04	0.00	0.00	07/29/2004	28.20	27.63	0.00	0.00
04/19/2004	48.43	29.47	18.27	18.65	06/09/2004	102.02	101.39	0.00	0.00	07/30/2004	29.10	28.47	0.00	0.00
04/20/2004	45.85	28.36	16.85	17.79	06/10/2004	92.10	91.52	0.00	0.00	07/31/2004	26.86	26.28	0.00	0.00
04/21/2004	45.28	29.60	14.98	17.60	06/11/2004	88.35	87.78	0.00	0.00	08/01/2004	26.42	25.61	0.00	0.00
04/22/2004	44.73	28.44	15.66	18.18	06/12/2004	84.28	83.76	0.00	0.00	08/02/2004	27.55	26.97	0.00	0.00
04/23/2004	42.65	34.50	7.40	10.90	06/13/2004	76.31	75.79	0.00	0.00	08/03/2004	28.24	27.49	0.00	0.00
04/24/2004	40.02	39.38	0.00	0.00	06/14/2004	75.66	75.09	0.00	0.00	08/04/2004	26.71	25.90	0.00	0.00
04/25/2004	41.68	41.10	0.00	0.00	06/15/2004	74.54	73.73	0.00	0.00	08/05/2004	29.13	28.56	0.00	0.00
04/26/2004	41.93	41.30	0.00	0.00	06/16/2004	60.28	59.70	0.00	0.00	08/06/2004	27.67	27.03	0.00	0.00
04/27/2004	44.64	43.95	0.00	0.00	06/17/2004	53.82	53.13	0.00	0.00	08/07/2004	25.85	25.28	0.00	0.00
04/28/2004	53.37	52.50	0.00	0.00	06/18/2004	54.18	53.60	0.00	0.00	08/08/2004	25.73	25.21	0.00	0.00
04/29/2004	54.38	53.51	0.00	0.00	06/19/2004	49.47	48.95	0.00	0.00	08/09/2004	26.06	25.43	0.00	0.00
04/30/2004	54.05	53.48	0.00	0.00	06/20/2004	49.49	48.98	0.00	0.00	08/10/2004	27.37	26.68	0.00	0.00
05/01/2004	48.90	48.33	0.00	0.00	06/21/2004	46.70	46.07	0.00	0.00	08/11/2004	25.93	25.30	0.00	0.00
05/02/2004	50.49	49.98	0.00	0.00	06/22/2004	52.32	51.34	0.00	0.00	08/12/2004	29.06	28.43	0.00	0.00
05/03/2004	61.71	60.96	0.00	0.00	06/23/2004	46.78	46.21	0.00	0.00	08/13/2004	22.45	21.93	0.00	0.00
05/04/2004	70.72	70.08	0.00	0.00	06/24/2004	56.18	55.66	0.00	0.00	08/14/2004	24.31	23.73	0.00	0.00
05/05/2004	77.83	77.20	0.00	0.00	06/25/2004	53.07	52.55	0.00	0.00	08/15/2004	24.68	24.10	0.00	0.00
05/06/2004	85.38	84.98	0.00	0.00	06/26/2004	44.95	44.38	0.00	0.00	08/16/2004	23.75	23.24	0.00	0.00
05/07/2004	81.07	80.67	0.00	0.00	06/27/2004	43.63	43.05	0.00	0.00	08/17/2004	24.88	24.07	0.00	0.00
05/08/2004	78.34	77.94	0.00	0.00	06/28/2004	43.84	43.14	0.00	0.00	08/18/2004	22.46	21.83	0.00	0.00
05/09/2004	73.46	73.06	0.00	0.00	06/29/2004	38.72	38.03	0.00	0.00	08/19/2004	25.42	24.73	0.00	0.00
05/10/2004	73.78	73.38	0.00	0.00	06/30/2004	39.09	38.49	0.00	0.00	08/20/2004	25.99	25.42	0.00	0.00
05/11/2004	71.38	70.98	0.00	0.00	07/01/2004	41.93	41.42	0.00	0.00	08/21/2004	26.18	25.43	0.00	0.00
05/12/2004	72.02	71.50	0.00	0.00	07/02/2004	41.38	40.68	0.00	0.00	08/22/2004	26.13	25.49	0.00	0.00
05/13/2004	65.24	64.84	0.00	0.00	07/03/2004	44.78	44.14	0.00	0.00	08/23/2004	24.30	23.66	0.00	0.00
05/14/2004	58.49	58.09	0.00	0.00	07/04/2004	37.23	36.60	0.00	0.00	08/24/2004	26.76	25.95	0.00	0.00
05/15/2004	58.40	58.00	0.00	0.00	07/05/2004	36.35	35.83	0.00	0.00	08/25/2004	28.91	28.39	0.00	0.00
05/16/2004	56.32	55.92	0.00	0.00	07/06/2004	36.94	36.37	0.00	0.00	08/26/2004	30.91	30.16	0.00	0.00
05/17/2004	68.71	67.96	0.00	0.00	07/07/2004	37.65	37.07	0.00	0.00	08/27/2004	32.25	31.80	0.00	0.00
05/18/2004	64.43	63.68	0.00	0.00	07/08/2004	36.16	35.47	0.00	0.00	08/28/2004	32.10	31.58	0.00	0.00
05/19/2004	67.15	66.52	0.00	0.00	07/09/2004	38.70	38.18	0.00	0.00	08/29/2004	29.78	29.15	0.00	0.00
05/20/2004	75.21	74.35	0.00	0.00	07/10/2004	33.50	32.98	0.00	0.00	08/30/2004	27.55	26.80	0.00	0.00
05/21/2004	78.23	77.53	0.00	0.00	07/11/2004	36.41	35.83	0.00	0.00	08/31/2004	33.11	32.48	0.00	0.00

TABLE F-8

## BiOp Spill at Lower Granite

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
04/01/2004	50.39	50.02	0.00	0.00	05/22/2004	83.58	83.28	0.00	0.00	07/12/2004	37.85	37.42	0.00	0.00
04/02/2004	48.24	47.94	0.00	0.00	05/23/2004	84.65	84.28	0.00	0.00	07/13/2004	39.28	38.56	0.00	0.00
04/03/2004	39.33	34.44	4.55	4.68	05/24/2004	89.66	89.28	0.00	0.00	07/14/2004	40.61	40.10	0.00	0.00
04/04/2004	44.88	26.24	18.18		05/25/2004	86.77	86.18	0.00	0.00	07/15/2004	37.59	37.01	0.00	0.00
04/05/2004	44.76	24.91	19.32	14.85	05/26/2004	84.20	83.90	0.00	0.00	07/16/2004	37.59	37.00	0.00	0.00
04/06/2004	54.38	29.93	24.10	24.27	05/27/2004	92.83	87.95	4.44	0.00	07/17/2004	35.74	35.37	0.00	0.00
04/07/2004	48.81	29.66	18.79	21.25	05/28/2004	122.40	92.10	29.88	0.00	07/18/2004	34.31	33.80	0.00	0.00
04/08/2004	52.82	37.01	15.31	14.90	05/29/2004	132.40	92.58	39.46	0.00	07/19/2004	32.41	31.76	0.00	0.00
04/09/2004	54.90	30.01	24.53	22.65	05/30/2004	125.79	91.20	34.23	0.00	07/20/2004	35.75	34.88	0.00	0.00
04/10/2004	49.53	30.53	18.71	18.70	05/31/2004	120.84	92.00	28.41	0.00	07/21/2004	32.45	31.87	0.00	0.00
04/11/2004	49.24	30.25	18.69	18.70	06/01/2004	114.75	92.01	22.23	0.00	07/22/2004	35.79	35.20	0.00	0.00
04/12/2004	46.80	27.78	18.50	18.70	06/02/2004	103.14	91.43	11.41	0.00	07/23/2004	34.43	34.06	0.00	0.00
04/13/2004	54.56	35.63	18.25	18.70	06/03/2004	100.38	81.10	18.90	0.00	07/24/2004	32.92	32.19	0.00	0.00
04/14/2004	58.04	39.43	18.23	18.70	06/04/2004	105.13	82.08	22.46	0.00	07/25/2004	31.55	30.96	0.00	0.00
04/15/2004	64.25	45.28	18.38	18.70	06/05/2004	108.87	89.55	19.01	0.00	07/26/2004	32.08	31.43	0.00	0.00
04/16/2004	56.59	37.70	18.32	18.70	06/06/2004	108.33	87.47	20.48	0.00	07/27/2004	28.78	28.34	0.00	0.00
04/17/2004	50.93	32.37	18.27	18.70	06/07/2004	110.56	88.30	21.74	0.00	07/28/2004	27.29	26.78	0.00	0.00
04/18/2004	49.59	30.84	18.30	18.70	06/08/2004	101.99	92.04	9.52	0.00	07/29/2004	28.71	28.34	0.00	0.00
04/19/2004	46.82	27.88	18.28	18.70	06/09/2004	97.59	91.64	5.57	0.00	07/30/2004	29.37	28.53	0.05	0.00
04/20/2004	45.17	26.26	18.43	18.70	06/10/2004	90.53	90.14	0.00	0.00	07/31/2004	26.62	26.11	0.00	0.00
04/21/2004	43.81	24.83	18.55	18.70	06/11/2004	88.15	87.55	0.00	0.00	08/01/2004	26.56	26.05	0.00	0.00
04/22/2004	42.42	23.24	18.60	18.70	06/12/2004	83.75	83.43	0.00	0.00	08/02/2004	27.63	27.18	0.00	0.00
04/23/2004	42.13	36.92	4.63	4.68	06/13/2004	77.24	76.73	0.00	0.00	08/03/2004	28.92	27.98	0.00	0.00
04/24/2004	40.11	39.80	0.00	0.00	06/14/2004	76.52	76.15	0.00	0.00	08/04/2004	26.25	25.85	0.03	0.00
04/25/2004	41.50	41.17	0.01	0.00	06/15/2004	72.60	72.01	0.00	0.00	08/05/2004	29.53	28.93	0.23	0.00
04/26/2004	41.75	41.30	0.00	0.00	06/16/2004	60.72	60.35	0.00	0.00	08/06/2004	28.01	27.43	0.00	0.00
04/27/2004	45.60	44.94	0.00	0.00	06/17/2004	55.16	54.72	0.00	0.00	08/07/2004	25.34	24.83	0.00	0.00
04/28/2004	54.55	54.10	0.00	0.00	06/18/2004	53.54	52.95	0.00	0.00	08/08/2004	25.68	25.09	0.00	0.00
04/29/2004	54.07	53.39	0.00	0.00	06/19/2004	49.26	48.89	0.00	0.00	08/09/2004	25.53	25.16	0.00	0.00
04/30/2004	54.75	54.37	0.00	0.00	06/20/2004	48.70	48.11	0.00	0.00	08/10/2004	25.80	25.00	0.00	0.00
05/01/2004	50.09	49.71	0.00	0.00	06/21/2004	46.20	45.48	0.00	0.00	08/11/2004	26.75	26.24	0.00	0.00
05/02/2004	50.28	49.84	0.00	0.00	06/22/2004	52.06	51.48	0.00	0.00	08/12/2004	28.79	28.14	0.00	0.00
05/03/2004	60.90	60.38	0.00	0.00	06/23/2004	48.39	47.95	0.00	0.00	08/13/2004	23.60	23.09	0.00	0.00
05/04/2004	70.43	69.92	0.00	0.00	06/24/2004	54.44	53.93	0.00	0.00	08/14/2004	23.93	23.41	0.00	0.00
05/05/2004	79.05	74.80	3.75	0.00	06/25/2004	52.88	52.44	0.00	0.00	08/15/2004	23.80	23.43	0.00	0.00
05/06/2004	85.23	82.05	2.62	0.00	06/26/2004	43.57	43.20	0.00	0.00	08/16/2004	23.77	23.11	0.00	0.00
05/07/2004	80.53	80.09	0.00	0.00	06/27/2004	44.26	43.82	0.00	0.00	08/17/2004	24.92	24.26	0.00	0.00
05/08/2004	78.66	78.29	0.00	0.00	06/28/2004	43.38	43.08	0.00	0.00	08/18/2004	22.81	22.44	0.00	0.00
05/09/2004	75.18	74.74	0.00	0.00	06/29/2004	38.45	37.80	0.00	0.00	08/19/2004	24.73	24.36	0.00	0.00
05/10/2004	73.11	72.67	0.00	0.00	06/30/2004	38.21	37.84	0.00	0.00	08/20/2004	25.83	25.31	0.00	0.00
05/11/2004	72.17	71.66	0.00	0.00	07/01/2004	42.07	41.63	0.00	0.00	08/21/2004	27.15	26.56	0.00	0.00
05/12/2004	72.11	71.67	0.00	0.00	07/02/2004	41.25	40.74	0.00	0.00	08/22/2004	26.00	25.49	0.00	0.00
05/13/2004	64.08	63.78	0.00	0.00	07/03/2004	43.91	43.33	0.00	0.00	08/23/2004	24.34	23.83	0.00	0.00
05/14/2004	59.49	58.84	0.00	0.00	07/04/2004	37.32	36.88	0.00	0.00	08/24/2004	27.47	27.03	0.00	0.00
05/15/2004	57.87	57.50	0.00	0.00	07/05/2004	36.22	35.70	0.00	0.00	08/25/2004	28.01	27.50	0.00	0.00
05/16/2004	55.94	55.64	0.00	0.00	07/06/2004	36.50	36.06	0.00	0.00	08/26/2004	30.43	29.91	0.00	0.00
05/17/2004	68.21	67.84	0.00	0.00	07/07/2004	36.67	36.30	0.00	0.00	08/27/2004	32.38	31.87	0.00	0.00
05/18/2004	64.87	64.15	0.00	0.00	07/08/2004	36.65	36.21	0.00	0.00	08/28/2004	33.23	32.72	0.00	0.00
05/19/2004	67.67	67.37	0.00	0.00	07/09/2004	39.02	38.58	0.00	0.00	08/29/2004	29.67	29.09	0.00	0.00
05/20/2004	75.54	74.96	0.00	0.00	07/10/2004	33.74	33.30	0.00	0.00	08/30/2004	27.42	26.90	0.00	0.00
05/21/2004	77.46	77.02	0.00	0.00	07/11/2004	35.21	34.63	0.00	0.00	08/31/2004	31.64	31.13	0.00	0.00