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DWQ Portal: DWQ-2016-013038

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Brad T. Johnson
State of Utah Trustee for Natural Resource Damage
Utah Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah 84116

**Subject: Annual Report (2015-16) on Zone A Plant Operations and Acid Plume
Extraction under NRD Consent Decree**

Dear Mr. Johnson:

Pursuant to Paragraph IX.C of the Agreement among the Trustee for Natural Resources for the State of Utah, Jordan Valley Water Conservancy District, and Kennecott Utah Copper Corporation, dated August 31, 2004 (Three-Party Agreement), Rio Tinto Kennecott (RTKC) submits its tenth Annual Report on Zone A Plant Operations. RTKC also operates the plant pursuant to the Project Agreement Between Kennecott Utah Copper Corporation and Jordan Valley Water Conservancy District (Project Agreement).

Additionally, RTKC makes its annual reporting of water extracted from the core of the Zone A acid plume as required by Paragraph V.B of the August 1995 Consent Decree settling the State's Natural Resource Damage Claim against Kennecott Utah Copper Corporation (NRD Consent Decree).

The operating period for this report is June 1, 2015 to May 31, 2016.

Treatment Plant Operation

Table 1 reports monthly and annual operational metrics for the Zone A Plant during the reporting period. These data are discussed below.

Volume of Delivered Water

In the reporting period, RTKC delivered 2,155 acre-feet to Jordan Valley Water Conservancy District (JVWCD; as measured by JVWCD at the Zone A Meter Station and reported to RTKC). Paragraph I.C.1 of the Three-Party Agreement requires the delivery of 3,500 acre-feet per year on a five-year rolling average. For the five year period ending May 31, 2016, the five-year rolling average is 3,283 acre-feet (Table 2 and Figure 1). The deficit of delivered water requirement reflects the shutdown of the Zone A RO Plant on January 7, 2016 due to coloured water complaints from JVWCD customers. A force majeure was accepted by the State Trustee an issued in March 2016. This action is allowed under the Three-Party Agreement.

Table 1 also presents total plant production (JVWCD meter), feed volumes, permeate production, and recovery statistics. The difference between the total plant production and the volume of water delivered reflects in-plant water use and inherent variability in metering flow. There are no specified performance criteria for these metrics and values are reported for information only.

Table 1: Zone A RO Plant Metrics
June 2015 to May 2016 Performance Data for Dashboard

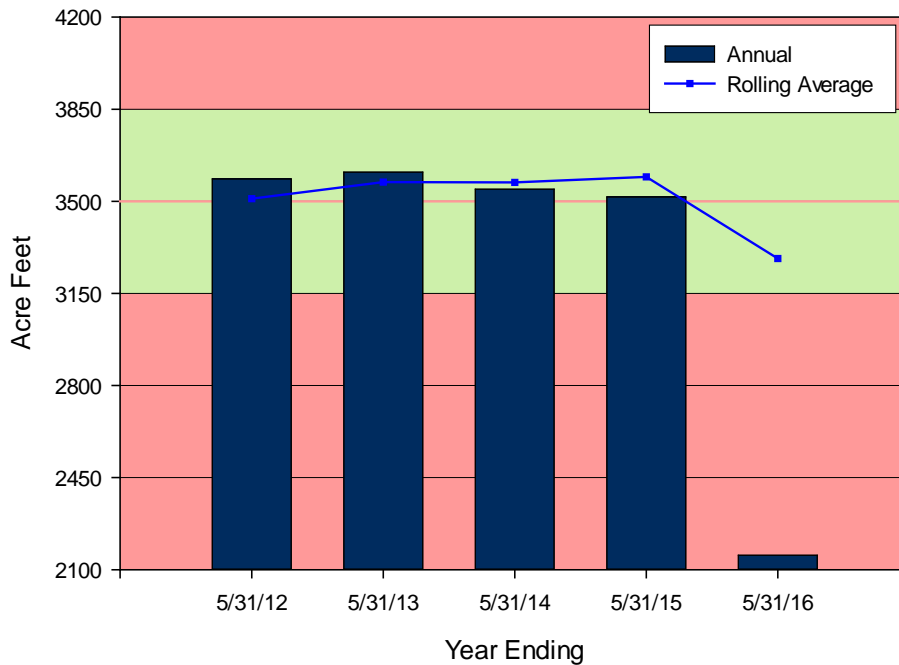
	Units	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Year
Drinking Water Production														
Delivered (JWVCD Meter)	acre-feet	323.5	336.9	318.9	318.1	332.3	237.7	243.8	44.2	N/A	N/A	N/A	N/A	2,155.3
Total Plant (KUC Meter)	acre-feet	320	334	316	315	330	234	236	43	N/A	N/A	N/A	N/A	2,128
Feed Water														
Rack 3 Feed	acre-feet	191.8	191.8	184.4	178.3	190.0	145.9	152.9	17.8	N/A	N/A	N/A	N/A	1,252.9
Rack 4 Feed	acre-feet	183.8	191.7	181.0	184.8	190.0	145.2	149.6	36.9	N/A	N/A	N/A	N/A	1,263.0
Blend Water Feed	acre-feet	40.5	41.9	39.9	39.4	40.7	24.9	24.0	4.2	N/A	N/A	N/A	N/A	255.5
Total Feed Water	acre-feet	416.1	425.4	405.3	402.5	420.7	316.0	326.5	58.9	0.0	0.0	0.0	0.0	2,771.4
Permeate Production														
Rack 3 Permeate	acre-feet	147.1	147.1	141.1	137.6	146.4	105.8	108.2	12.8	N/A	N/A	N/A	N/A	946.2
Rack 4 Permeate	acre-feet	140.4	146.4	138.5	141.0	144.9	104.2	104.9	26.3	N/A	N/A	N/A	N/A	946.6
Total Permeate	acre-feet	287.5	293.5	279.6	278.6	291.3	210.0	213.1	39.1	0.0	0.0	0.0	0.0	1,892.8
Recovery														
Permeate	%	76.9%	77.0%	77.1%	77.0%	76.8%	72.0%	70.6%	71.2%	N/A	N/A	N/A	N/A	74.8%
Plant (KUC Meter/Feed)	%	77.0%	78.5%	78.0%	78.3%	78.4%	74.1%	72.3%	72.6%	N/A	N/A	N/A	N/A	76.1%
Overall (JWVCD Meter/Feed)	%	77.7%	79.2%	78.7%	79.0%	79.0%	75.2%	74.7%	75.0%	N/A	N/A	N/A	N/A	77.3%
Availability														
Rack 3 Downtime	Hours	0.0	0.0	28.5	28.2	0.0	54.1	0.0	656.7	N/A	N/A	N/A	N/A	767.5
Rack 4 Downtime	Hours	3.0	0.5	41.8	4.6	0.0	58.7	12.2	585.0	N/A	N/A	N/A	N/A	705.8
Rack 3 Availability	%	98.6%	100.0%	96.2%	96.1%	100.0%	92.2%	100.0%	11.7%	N/A	N/A	N/A	N/A	86.9%
Rack 4 Availability	%	100.0%	99.9%	94.4%	99.4%	100.0%	91.6%	98.4%	21.4%	N/A	N/A	N/A	N/A	88.1%
Combined Availability	%	99.3%	100.0%	95.3%	97.8%	100.0%	91.9%	99.2%	16.6%	N/A	N/A	N/A	N/A	87.5%
Specific Conductance														
Feed Water	uS/cm	2201	2199	2202	2203	2228	2481	2562	2582	N/A	N/A	N/A	N/A	2331
Permeate	uS/cm	30	28	27	32	29	31	34	31	N/A	N/A	N/A	N/A	30
Product Water	uS/cm	374	375	375	377	375	374	375	375	N/A	N/A	N/A	N/A	375

N/A: On January 7, 2016 JWVCD requested KUC to shut down Zone A RO Plant due to coloured water complaints. Plant did not resume operations through reporting period (5/31/2016).

Table 2: Annual Water Deliveries (JWCD Meter)

Year Ending	Annual Delivery	Five Year Rolling Average
31-May-12	3,585	3,510
31-May-13	3,611	3,573
31-May-14	3,546	3,572
31-May-15	3,517	3,593
31-May-16	2,155	3,283

Figure 1 Zone A Plant Operation Production



Quality of Delivered Water

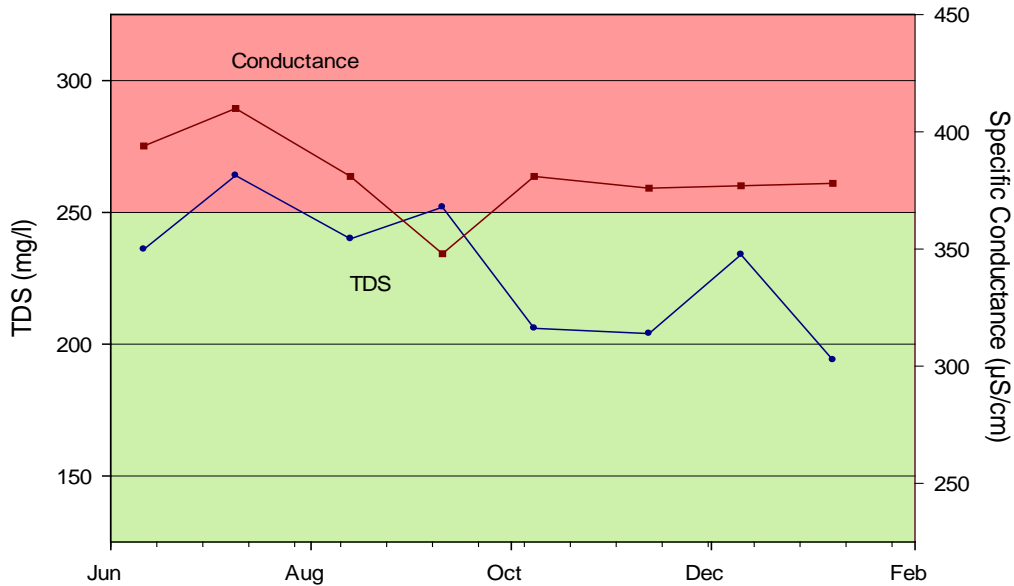
Paragraph 4.5 of the Project Agreement requires that RTKC provide Treated Water, defined in Paragraph 1.39 as water with concentrations of sulfate less than 250 mg/l and total dissolved solids (TDS) less than 250 mg/l. Table 3 and Figure 2 present laboratory results of TDS in periodic grab samples during the reporting period. (It is chemically impossible for the sulfate concentration to exceed the TDS concentration; thus, compliance with the TDS criterion assures compliance with the sulfate criterion.)

Monthly grab sample results are at or below 250 mg/l TDS except for the 7/9/2015 and 9/10/2015 samples with both slightly above the 250 mg/l. Table 3 also reports laboratory specific conductance measurements corresponding to each TDS measurement. Table 3 reports average monthly specific conductance based on these readings. These monthly averages vary little over the reporting period, indicating a consistent quality of water delivered to JWWCD. However, the Zone A RO Plant was shut down on January 7, 2016 due to coloured water complaints and not restarted before 5/31/2016.

Table 3: Zone A Plant Product Water Quality

Sample Date	TDS (mg/l)	Specific Conductance (µS/cm)
6/11/2015	236	394
7/9/2015	264	410
8/13/2015	240	381
9/10/2015	252	348
10/8/2015	206	381
11/12/2015	204	376
12/10/2015	234	377
1/7/2016	194	378
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA	NA	NA
NA= No sample collected because Plant was down		

Figure 2: TDS and Specific Conductance of Delivered Water



Period of Operation

The Zone A Plant operated at 97.6% availability from June 1, 2015 until January 7, 2016. For the June 1, 2015 through May 31, 2016 time period, the plant operated 57% availability.

RTKC did invoke *force majeure* in March 2016 after discussions with the State Trustee and JWCD due to customer complaints of colour in the drinking water supply.

Division of Drinking Water Permit Compliance

RTKC maintained full compliance with its permit issued by the Division of Drinking Water for the Zone A Plant up to and when Zone A Plant was shut down on January 7, 2016.

Modifications and Repairs

No modifications were made to the plant in the reporting period however current planning efforts are underway to address the coloured water and the corrosive nature of the Zone A product water.

Jordan Valley Water Conservancy District Relations

RTKC received negative reports from JWCD regarding Zone A RO Plant water quality in early January 2016. The residential complaint locations were centered in the western portion of West Jordan and were received by West Jordan City and JWCD in December 2015. Communications of the complaints were made with the Zone A Plant management and operators and the Zone A RO Plant was then shut down on January 7, 2016.

Community and Media Relations

RTKC did receive the negative reports through JVVCD regarding colour in the product water but no matters were referred to the informal independent review process.

RTKC received no media inquiries about the plant during the reporting period.

Outlook for Next Reporting Year

RTKC anticipates resolution of the coloured water issues regarding the Zone A Plant water in 2016.

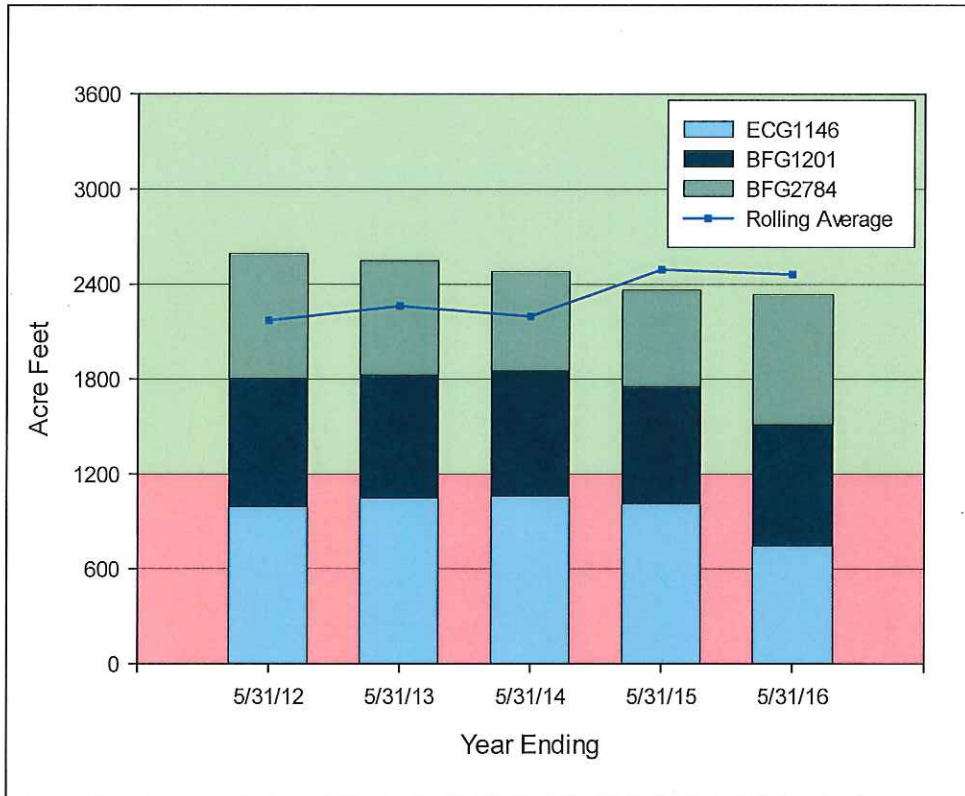
Acid Plume Core Extraction

Paragraph V.B of the NRD Consent Decree requires that RTKC extract a minimum of 400 acre-feet per year on a five-year rolling average from the acid plume. The annual, cumulative, and 5-year rolling average acid plume extraction is reported in Table 4 and shown on Figure 3. RTKC is in full compliance with extraction requirements of the NRD Consent Decree.

Table 4: Acid Plume Extraction (acre-feet)

Year Ending	Well ECG1146	Well BSG1201	Well BSG2784	Total Extracted	Cumulative Extracted	5-Year Rolling Average Extracted
5/31/2012	993	811	789	2,593	23,862	2,173
5/31/2013	1046	782	722	2,550	26,411	2,264
5/31/2014	1,060	793	628	2,481	28,892	2,199
5/31/2015	1,015	746	739	2,500	31,392	2,494
5/31/2016	746	768	820	2,334	33,726	2,464

Figure 3 Acid Plume Extractions



If you should have any questions regarding the content of this report, do not hesitate to contact me at 569-7887.

Regards,

Brian Vinton, P.G.
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cc: Doug Bacon, DERR (via email)
 Kerri Fiedler, US EPA (via email)
 Alan Packard, JWCD (via email)