

WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

March 28, 2019

TO: Internal File

FROM: Steve Christensen, Environmental Scientist



RE: 2018 3rd Quarter Water Monitoring, Price River Terminal, LLC. Wellington
Preparation Plant, C/007/0012, Task ID #5802

Water-monitoring requirements are in Sections 7.23 and 7.31.2 through 7.31.22, and Tables 7.24-2 and 7.24-5 of the MRP.

1. On what date does the MRP require a five-year re-sampling of baseline water data.

Baseline parameters are collected in the year preceding permit renewal. The next baseline collection event will be the 3rd quarter of 2019.

2. Were data submitted for all of the MRP required sites?

All required monitoring sites were sampled and requisite data obtained.

Streams and Ponds

YES NO

The surface water monitoring plan requires sampling of nine surface water sites (SW-1, SW-2, SW-2A, SW-3, SW-4, SW-5, SW-6, SW-7 and SW-8). The required water quality parameters are provided in Table 7.24.5 with the exception of SW-2. Flow is the only data collected at monitoring site SW-2. Surface water monitoring sites are no longer monitored for BTEX-N. The reduction in monitoring at these sites was the result of inactivity at the site (Task ID #4253). Four of the sites are retention ponds (SW-5, SW-6, SW-7 and SW-8).

Data was submitted for all surface water monitoring sites that produced a measurable flow. Of the nine surface water monitoring sites, SW-1 and SW-2A produced a measurable flow.

Wells

YES NO

The Permittee is required to monitor 16 well sites. GW-12 is no longer required for monitoring (since 1st quarter 2012 mid-term). GW-1, GW-3, GW-4, GW-6, GW-7, GW-8, GW-9, GW-9B, GW-10, GW-13, GW-14, GW-15A, GW-15B, GW-16, and GW-17 for the parameters in Table 7.24-2, and to measure depth only at GW-2.

Data was submitted for all of the required monitoring well sites. Monitoring wells GW-3, GW-13 and GW-17 did not have enough water to be sampled.

UPDES

YES NO

Six UPDES permitted outfalls at the Wellington Preparation Plant are monitored monthly: #UTG040010-003, 004, 005, 006, 007, and 008. None of the UPDES discharge points reported a discharge this quarter.

3. Were all required parameters reported for each site?

Streams and Ponds

YES NO

Wells

YES NO

UPDES

YES NO

4. Were any irregularities found in the data?

Elevated total selenium concentrations (T-Se) were reported in 3rd and 4th quarters for 2017. Upon discussions with the Permittee, the lab that receives the Wellington Prep Plant samples has undergone a significant amount of turnover in recent months. The Permittee was directed to have the lab re-analyze the samples for 4th quarter 2017. However; the lab had already discarded the samples and was unable to do so. The Permittee indicated that the samples obtained for 1st quarter 2018 were also showing elevated concentrations of T-Se. In the case of the 1st quarter 2018 samples, the lab was able to re-run the samples.

The Permittee reported to the Division that the results of which indicated non-detect levels for T-Se. The Permittee has since changed laboratories for the water quality analysis and indicated that the results for 2nd quarter 2018 also produced T-Se concentrations below the detection limit. Ground water monitoring site GW-10 produced an elevated T-Se concentration for 1st quarter 2018. The concentration of 100 ug/l was 2.56 standard deviations from the mean of 32.5 ug/l.

No elevated T-Se concentrations were reported from any (i.e. ground and surface water) of the water monitoring sites for 2nd and 3rd quarter 2018.

Surface Water Monitoring Sites:

SW-1 reported elevated total selenium (T-Se) during the 1st quarter of 2016 (2.15 standard deviations from the mean). The T-Se concentration for 2nd quarter 2017 was within historic

ranges as were all other reported parameters. The total selenium concentrations were reported below the detection limit (<20 ppm) for both the 2nd, 3rd and 4th quarters of 2016. However; an elevated T-Se concentration was reported for 3rd and 4th quarters for 2017. (See T-Se discussion above). All reported concentrations (including T-Se) were within historic ranges for 1st, 2nd and 3rd quarter 2018.

SW-2A reported elevated concentrations for Cl during the 3rd and 4th quarters of 2016. An elevated D-K concentration was reported the 3rd quarter of 2016; however, the D-K was markedly lower than the historical average for 4th quarter 2016. T-Se was outside of two standard deviations (2.74) for first quarter 2017. All reported concentrations (including T-Se) were within established ranges for 2nd quarter 2017. However, an elevated T-Se concentration was reported for the 3rd quarter of 2017. The reported concentration of 120 ug/l is 3.12 standard deviations from the mean of 37.64 ug/l. The T-Se concentration for 4th quarter 2017 as well as the 1st and 2nd quarter 2018 were within two standard deviations from the mean. An elevated carbonate concentration was reported for SW-2A 2nd quarter 2018. All reported concentrations were within normal ranges for 3rd quarter 2018.

SW-2 reported T-Se concentrations below the detection limit during the period in question (i.e. 3rd and 4th quarter 2015). All required parameters were within historical ranges for all of 2015 and 2016. All four quarters of 2017 as well as the first and second quarters of 2018 followed the same pattern of reported concentrations within normal ranges (i.e. within 2 standard deviations from the mean). No observable flow was reported for 3rd quarter 2018.

Ground Water Monitoring Sites:

GW-1 reported significantly reduced concentrations for D-Ca, D-Mg and D-Na 1st quarter 2017. Oddly, elevated concentrations for D-K and D-Ca were reported 2nd quarter 2017. It's unclear what is causing these dramatic swings in concentrations. The depth to water increased fairly significantly the 2nd quarter of 2017. A depth of 21.15' was reported (average depth to water is 13.45'). A significant elevation in T-Se concentration was reported for 3rd quarter 2017. The reported concentration of 310 ug/l is 7.90 standard deviations from the mean of 50.43 ug/l. Additionally, an elevated D-K concentration was reported as well as Total-cations. Elevated concentrations for D-K and TDS were reported for 4th quarter 2017, as well as elevated T-Se. (See T-Se discussion above). The T-Se concentration was within two standard deviations from the mean for 1st quarter 2018. A slightly elevated D-K concentration was reported for 1st quarter 2018. D-K returned to historic ranges 2nd quarter 2018. A slightly elevated total cation concentration was reported for 2nd and 3rd quarter 2018. D-Na was elevated for 3rd quarter 2018.

Monitoring well GW-13 reported elevated concentrations for D-K and D-Ca the 2nd quarter of 2017 (97.51 ppm and 483.5 ppm respectively). Elevated concentrations were reported for D-K and T-Se for 3rd quarter 2017. The T-Se concentration was 370 ug/l which is 2.07 standard deviations from the mean of 138.95 ug/l. All reported concentrations were within established ranges for 4th quarter 2017. GW-13 did not have enough water to sample in 2nd quarter 2018.

GW-14 reported an elevated concentration for D-K the 2nd quarter of 2016. The well could not be accessed during the 3rd quarter of 2016 due to the area being inundated with Price River water. A reduction in bicarbonate (CaCO₃) was reported for the 4th quarter 2016. GW-14 also reported elevated concentrations for D-K and T-Se. The reported T-Se concentration was 360 ug/l which is 7.42 standard deviations from the mean of 50.28. An elevated concentration for D-K was reported for 4th quarter 2017, as well as elevated T-Se. (See T-Se discussion above). Only a slightly elevated D-K concentration was reported for 1st quarter 2018. T-Se for 1st and 2nd quarter 2018 was within the normal range. Additionally all reported parameters for 2nd and 3rd quarter 2018 were within historic ranges.

GW-15A reported elevated TDS and D-Mg concentrations the 2nd quarter of 2016. During the 3rd quarter, GW-15A reported elevated concentrations for Cl, SO₄, TDS, T-cations and T-anions. Elevated concentrations were reported for D-Ca, D-Mg, D-Na, Cl, SO₄, total hardness, TDS, total cations, total anions and field conductivity for 4th quarter 2016. First quarter 2017 again reported a slew of elevated concentrations outside two standard deviations from the mean. Elevated concentrations for conductivity, D-Mg, D-K, D-Na, Cl, SO₄, T-Alk, T-Hardness, TDS, Total Cations and Total Anions were reported 1st quarter 2017. Concentrations appeared to stabilize for 2nd quarter 2017. D-K was the elevated concentration reported. The aforementioned parameters returned to normal ranges. The depth to water did increase to 17.25' (average depth to water 10.07'). The third quarter for 2017 reported elevated D-K and T-Se. T-Se was reported at 240 ug/l (5.60 standard deviations from the mean of 45.17 ug/l). All reported concentrations were within established ranges for 4th quarter 2017 as well as 1st, 2nd and 3rd quarter 2018.

GW-15B reported reduced concentrations for T-alkalinity and bicarbonate for the 3rd quarter of 2016. For 4th quarter 2016, all required parameters reported concentrations within established historical ranges. Monitoring well GW-15B reported elevated D-Mn, T-Mn, T-Fe and D-K concentrations 1st quarter 2017. Only D-K was reported to be elevated the 2nd quarter of 2017. Elevated concentrations for D-K, Cl, T-Mn and T-Se were reported the 3rd quarter of 2017. The T-Se concentration of 230 ug/l is 8.09 standard deviations from the mean of 36.60 ug/l. The T-Se concentration for 4th quarter 2017 was 20 ppb (within two standard deviations from the mean). A slightly elevated D-K concentration was reported for 4th quarter 2017. All concentrations reported for 1st quarter 2018 were within normal range. Slightly elevated concentrations for T-Fe and T-Mn were reported 2nd quarter 2018. T-Fe was again high for 3rd quarter for 2018 (reported value of 16.6 mg/l, average 1.96 mg/l).

GW-16 reported reduced concentrations of D-Mg, D-Na, T-Alkalinity, T-hardness, TDS, bicarbonate, T-cations and T-anions for 3rd quarter 2016. The reduction in concentration continued for D-Mg the 4th quarter 2016. Reduced concentrations for D-Mg, T-Hardness, Total Cations were reported 1st quarter 2017. A slightly elevated D-K concentration was reported 1st quarter 2017 as well. During the 2nd quarter 2017, the depth to water greatly reduced with a reported depth of 18' (average depth to water is 41.79'). Slightly elevated D-Ca and D-K

concentrations were reported. During the 3rd quarter for 2017, elevated concentrations were reported for D-Mg, D-K and T-Se. The reported concentration of 240 ug/l was 7.68 standard deviations from the mean of 45.36 ug/l. An elevated concentration for D-K and Cl was reported for 4th quarter 2017 along with decreases in SO₄ and TDS. The T-Se concentrations for 4th quarter 2017 and 1st quarter 2018 were within normal range. A reduced D-Mg concentration and slightly elevated D-K concentration were also reported for 1st quarter 2018. Reduced concentrations for D-Mg, D-Na, SO₄, TDS, total cations and total anions were reported for 2nd quarter 2018. Reduced concentrations for D-Mg and TDS were reported 3rd quarter 2018.

GW-4 reported reduced concentrations for T-alkalinity, bicarbonate and T-anions the 3rd quarter of 2016. Reduced concentrations for D-Mg and bicarbonate (CaCO₃) were reported for 4th quarter 2016. An elevated D-K concentration was reported 1st quarter 2017 and again in 2nd quarter 2017. Third quarter 2017 reported elevated concentrations for D-K as well as T-Se. The T-Se concentration was 280 ug/l which is 7.71 standard deviations from the mean concentration of 38.71 ug/l. Fourth quarter 2017 reported a decrease in D-Mg concentration with elevated concentrations for both D-K and T-Se (See T-Se discussion above). Only an elevated D-K concentration was reported for 1st quarter 2018. All reported parameters were within historic ranges for 2nd and 3rd quarter 2018.

GW-6 reported a slightly elevated concentration for bicarbonate 2nd quarter 2016. However; bicarbonate was reported slightly lower than the mean for the 3rd quarter 2016. GW-8 produced an elevated concentration for D-K 2nd quarter of 2016. As with GW-6, the bicarbonate concentration reported for 3rd quarter 2016 was well below the mean of 959.76 ppm (reported concentration of 784 ppm). GW-9 reported an elevated D-K concentration the 2nd quarter of 2016. During the 3rd quarter GW-9 reported a reduction in bicarbonate and D-Na concentrations. The D-K concentration for GW-9 returned to historical range the 3rd quarter of 2016. A reduced bicarbonate value was reported for the 4th quarter of 2016. It was the only parameter outside of two standard deviations from the mean that quarter. Slightly elevated concentrations of D-K and CaCO₃ were reported 1st quarter 2017. Only D-K was reported outside of two standard deviations for 2nd quarter 2017. A reported concentration of 13.28 ppm was reported (8.58 standard deviations outside the mean). GW-6 reported elevated concentrations for D-Mg, D-K and T-Se for 3rd quarter 2017. The T-Se concentration was 300 ug/l which is 8.66 standard deviations from the mean of 39.40 ug/l. An elevated D-K concentration was reported for 4th quarter 2017. The T-Se concentration was within two standard deviations of the mean for 4th quarter 2017 as well as 1st quarter 2018. Elevated bicarbonate and D-K concentrations were reported 1st quarter 2018. An elevated bicarbonate concentration and a reduced concentration for D-Mg was reported for 2nd and 3rd quarter 2018.

GW-7 reported a T-Se concentration 2.41 standard deviations from the mean of 35.62 ppm for 1st quarter 2017. The reported concentration was 80 ppm. Additionally a D-K concentration was reported that was 3.51 standard deviations from the mean. The T-Se concentration for GW-7 was within established ranges for the 2nd quarter of 2017. The D-K concentration remained elevated.

GW-7 reported elevated D-K and T-Se concentrations for 3rd quarter 2017. The T-Se concentration was 280 ug/l which is 9.99 standard deviations from the mean of 35.62 ug/l. Increased concentrations for D-Ca, D-Mg, and T-Se were reported for 4th quarter 2017. T-Se concentrations were within historic ranges for 4th quarter 2017 and 1st quarter 2018. Elevated values for D-Ca, D-Mg and D-K were reported for 1st, 2nd and 3rd quarter 2018.

GW-8 reported a reduced bicarbonate concentration 3rd quarter 2016. A reduced bicarbonate concentration was again reported for 4th quarter 2016 and 1st quarter 2017. The bicarbonate concentration was within normal ranges for 2nd quarter 2017. However; an elevated D-K concentration was reported (5.23 standard deviations from the mean). As with the other monitoring wells, GW-8 reported elevated concentrations for D-K, T-Se as well as total alkalinity and bicarbonate for 3rd quarter 2017. The T-Se concentration reported was 410 ug/l which is 6.91 standard deviations from the mean of 46.35 ug/l. An elevated D-K concentration was reported for 4th quarter 2017. The T-Se concentration was within two standard deviations of the mean for 4th quarter 2017 as well as 1st quarter of 2018. An elevated concentration for D-K was reported 1st quarter 2018. All reported parameters for 2nd and 3rd quarter 2018 were within historic ranges.

Monitoring well GW-9 reported reductions in D-Mg and CaCO₃ 1st quarter 2017. The concentrations returned to normal ranges the 2nd quarter of 2017. An elevated D-K concentration was reported 2nd quarter 2017. GW-9 reported elevated concentrations for D-K and T-Se for 3rd quarter 2017. An elevated D-K concentration was reported for 4th quarter 2017. The T-Se concentration was within two standard deviations of the mean for 4th quarter 2017 as well as 1st and 2nd quarter 2018. All reported parameters for 1st, 2nd and 3rd quarter 2018 were within historic ranges.

GW-9B reported a spike in D-Mg for 1st quarter 2017. A reported value of 1,494 ppm was 7.35 standard deviations from the mean of 609.77 ppm. The D-Mg concentration was within normal ranges for 2nd quarter 2017; however, an elevated D-K concentration was reported for 2nd quarter 2017. Additionally, TSS was reported as 25 ppm for 2nd quarter. The mean for TSS is 8,685.71 ppm. GW-9B also reported elevated D-K and T-Se concentrations for 3rd quarter 2017. The T-Se concentration was 360 ug/l which is 8.51 standard deviations from the mean of 45.30 ug/l. A reduction in D-Na was reported for 4th quarter 2017. The T-Se concentration was within two standard deviations of the mean for 4th quarter 2017 as well as 1st and 2nd quarter 2018. All reported parameters for 1st, 2nd and 3rd quarter 2018 were within historic ranges.

5. Does the Mine Permittee need to submit more information to fulfill this quarter's monitoring requirements?

YES NO

6. Follow-up from last quarter, if necessary.

NA

7. Based on your review, what further actions, if any, do you recommend?

As the Permittee has changed the laboratories for water quality analysis, continued monitoring and evaluation of T-Se concentrations will fortify the hypothesis that lab error produced the elevated readings in previous quarters. As indicated previously, no samples reported elevated T-Se concentrations for 2nd and 3rd quarter 2018.