PACIFICORP

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March 26, 2018

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Subject: Salinity Offset Program Proposal for UPDES Permit #UT0023604, Deer Creek Mine

Jeff:

Thank you for your e-mail responses on Feb. 23 and Mar. 13 to our letter of February 22, 2018, concerning salinity program participation options for the recently amended Deer Creek Mine UPDES permit.

Attached to this letter is a proposed Colorado River Salinity Offset Program Participation Plan (Plan) as required by the amended Permit that was renewed on December 1, 2017.

Given that conditions changed drastically (mine shut down and discharge ceased) during the 3-year term (2015 through 2017) of the previous plan, and that only 20.6% of the funds committed were actually used to offset Deer Creek Mine salt loading during the three years, the new plan reflects the current situation at the mine (no discharge) and defers creation of a final offset Plan and funding agreement until discharge resumes from the permitted discharge outfalls 002 and 003. This agreement commits PacifiCorp to immediately notifying DWQ as to the volume and quality of any discharge that occurs from either the Deer Creek or Rilda Canyon portals, and immediate formulation of an offset program and funding agreement if necessary at that time.

If you have any questions concerning this matter, please feel free to call Ken Fleck at (435) 687-4712 or Chuck Semborski at (435) 687-4720.

Sincerely,

Kenneth S. Fleck

Kenneth S. Fleck
Geology and Environmental Affairs Manager

CC: Daron Haddock, Division of Oil, Gas and Mining
Scott Child, Interwest NTO
Dennis Oakley, Interwest Mining Huntington Office

**March 26, 2018**

**Colorado River Salinity Offset Program Participation Plan**

**PacifiCorp, 2018**

**Deer Creek Mine UPDES Permit UT0023604**

## Introduction

PacifiCorp, operates the Deer Creek Mine facility that holds an active Utah Pollutant Discharge Elimination Systems (UPDES) Individual Permit for discharging intercepted groundwater and/or storm water runoff to waters of the State of Utah. This UPDES permit is managed through PacifiCorp's wholly-owned subsidiary Interwest Mining Company (Interwest). The UPDES permit program is operated by the Utah Department of Environmental Quality's Division of Water Quality (DWQ). Because the receiving waters for this facility is ultimately tributary to the Colorado River, the UPDES permits also incorporate Colorado River Basin Salinity Control Forum (CRBSCF) salinity standards and relevant implementation policies.

The PacifiCorp facility is the Deer Creek Mine, including the Deer Creek Canyon portals and Rilda Canyon portals. All mine facilities are owned and operated by PacifiCorp. The UPDES individual permit for these facilities is listed below.

| FACILITY | UPDES PERMIT No. | RECEIVING WATER |
|---|---|---|
| Deer Creek Mine | UT0023604 | Deer Creek/Huntington Creek |

The permit incorporates a CRBSCF requirement that limits salt load to no more than one ton/day. Salt load is a function of the quantity (rate) of water discharged and its total dissolved solids (TDS) concentration.

Water that has been discharged historically at the Deer Creek Mine has been a combination of intercepted groundwater from the Deer Creek Mine main portals (Outfall 002 in Deer Creek Canyon) and surface runoff water from the Deer Creek mine site (Outfall 001 sediment pond in Deer Creek Canyon). Salt loads were determined by the combination of 001 and 002 at a nearby downstream mixing point called "SUM-A." Recently (December, 2017), the Deer Creek Mine Rilda Canyon portals were sealed and the permit was amended to add a third discharge point (Outfall 003). Outfall 003 allows intercepted groundwater from the Rilda Canyon portals to be discharged directly to Huntington Creek.

This document focuses on Deer Creek Mine combined outfalls 001 (sediment pond) and 002 (groundwater discharge) to Deer Creek, and discharge from Rilda Canyon portals to Outfall 003 (groundwater discharge) at Huntington Creek. The sediment pond Outfall 001 is to be reclaimed and will be eliminated from the system in 2019. The intercepted groundwater from 002 and 003 must be allowed to gravity flow out of the mine workings in order to meet the requirement of the Mine Safety and Health Administration and the Utah Division of Oil, Gas, and Mining, which prohibit impoundment of water underground as part of mine closure.

UDWQ and the CRBSCF recognize that neither the quantity nor quality of intercepted groundwater discharged by mines can be easily controlled. They also recognize that discharging intercepted groundwater is a different situation than discharging many other industrial wastewaters. One of the CRBSCF implementation policies that apply to intercepted groundwater is to allow salt offset credit. The Utah DWQ administers a Colorado River Salinity Offset Program wherein salinity credits can be purchased as offsets against UPDES-permitted discharges when salt loading exceeds 1 ton / day. This program enables operations to continue when salt load limits cannot be met. The individual UPDES permits for the facilities stipulate that if the TDS load limit cannot be met, treatment of the water or participation in the offset program must be pursued.

PacifiCorp plans to participate in the program by purchasing salinity offset credits if necessary to permit mine discharge to continue. The following information describes how PacifiCorp proposes to participate in the program. There is a significant possibility that PacifiCorp may not need to participate in the program based on current projections of discharge quantity (GPM) and quality (TDS).

The Salinity Offset Program operates on a ton-for-ton basis. This means that offset needs (over the above and allowable one ton/day) must be estimated for each facility using existing or projected discharge rate and TDS concentration data. Each of the facilities and their discharge history is briefly described below.

The Deer Creek Mine began operation in the 1970's. The mine is covered by an individual UPDES Permit with two outfalls (#UT0023604-001, issued in 1980 and #UT0023604-002, issued in 1991). Prior to 1991, the flow from Outfall 002 was diverted to the nearby Huntington Power Plant. The previous permit term expired on November 30, 2012 and a letter extending the permit indefinitely was issued on October 14, 2012. Deer Creek Mine permanently ceased mining operations on January 7, 2015. The new permit was approved effective February 1, 2015. Under this permit, there were two permitted discharge outfalls for this facility: Outfall 001, located immediately downstream from the sediment pond that collects all surface runoff from the mine surface facilities; and Outfall 002, discharging intercepted groundwater from several underground sumps in various locations of the underground mine. Outfall 001 discharged sporadically as needed to maintain storm capacity as required by the mine permit. Outfall 001 discharge was known to spike during winter weather due to road salt application and exceed the permit limit of 1200 mg/L TDS on occasion. Both outfalls are arranged to discharge into Deer Creek Canyon, which is a tributary to Huntington Creek in the San Rafael River Basin. TDS of the combined flows is measured at point SUM-A, about 730 feet downstream of the confluence of 001 and 002. Outfall 002 had essentially discharged continuously from 1977 to 2015. The Deer Creek portals were sealed in April, 2015 and flow from Discharge 002 ceased.

Outfall 001 is the discharge from the Deer Creek Mine sediment pond to Deer Creek drainage. While the mine was in operation, the sediment pond took in natural surface drainage from the mine yard and water from washdown of equipment. The pond is scheduled to be reclaimed, and Outfall 001 eliminated, during 2019. Outfall 001 will not be a factor in the long-term discharge situation at Deer Creek Mine.

From January 2009 to April, 2015, the average monthly discharge from the Deer Creek portals Outfall 002 discharge ranged from about 700 gallons per minute (gpm) to about 1450 gpm, with an average of about 1,060 gpm. Over that time period there were some fluctuations in flow, related to the pumping rate from the mine, as expressed by the range but there was no clear trend toward either increasing or decreasing flows.

TDS of the groundwater intercepted by the Deer Creek Mine 002 discharge has averaged about 507 mg/L since January 2004.

The Deer Creek Mine portals have been sealed since April, 2015. Original estimates made for the 2014 agreement at the time of closure based on fill rates, workings volumes, etc. were that the discharge flow would resume from the portals within 1.5 to 2 years at a rate of about 350 gpm. After nearly 3 years without discharge, the rate of discharge to Deer Creek, if it were to resume immediately, is projected at about 250 gpm.

Under the approved UPDES permit terms there would be no TDS load limit in effect during months when the average monthly TDS of the combined outflows at SUM-A is less than 500 mg/L, but based on historical data and future projections, Deer Creek will not be under the 500 mg/L, but slightly above. TDS of 507 mg/l will be used for calculations in this document. When TDS is 507 mg/L, the one ton/day salt load limit may be exceeded depending on the volume of Deer Creek's discharge (if the discharge exceeds 328 gpm).

PacifiCorp was notified by MSHA and DOGM in April 2016 that retention of intercepted groundwater using bulkheads underground would not be allowed by the regulatory agencies, and that the water must be allowed to free-flow from the portals. State of Utah and Forest Service regulations (1994) prevent new point-source discharges of water within the Manti-LaSal National Forest boundary, in which the Rilda Canyon portals are located. Therefore, a plan was developed to transfer the Rilda Canyon discharge outside of the Forest boundary via a buried pipeline to Huntington Plant, where it will be consumed, or discharged at a new outfall (003) on rare occasions. The pipeline, completed in November 2017, follows Rilda Canyon downhill from the portals to the confluence with Huntington Canyon, then down Huntington Canyon to the Huntington Power Plant (total distance 5.6 miles). At the Huntington Plant, there are two options to discharge the intercepted groundwater conveyed by the pipeline:

1. Divert the intercepted groundwater to the power plant Raw Water Pond, where the mine water will be blended with Huntington Creek water to provide feed water to the plant, and the water will be consumed.
2. Discharge directly to Huntington Creek (Outfall 003) in the event that the Plant cannot accept water (plant shutdown, work on pond, etc.), but only if the mine discharge meets the compliance standards outlined in the amended discharge permit.

Option 1, discharging to the Huntington Plant Raw Water Pond, is the preferred option because it consumes the water completely and no discharge into Huntington Creek is necessary. The Huntington Creek outfall 003 is to be used only on a contingency basis as needed.

The pipeline was completed in November of 2017, and all underground pumps were turned off and the mine was permanently sealed in December. Based on volumetric estimates and water monitoring observations underground conducted for several years ahead of the mine sealing, water should begin flowing through the pipeline within 6 – 9 months of the mine closure, (June to September of 2018). At the time of the final mine closure, water was accumulating in the underground mine workings at lower rates than expected, so the eventual date of discharge may be months or years later. Based on the current circumstances, if the flow resumes later in 2018, the flow rate should be around 250 gpm.

Based on samples of the intercepted groundwater taken from the areas of inflow underground before the mine was sealed, the average TDS of the water to be discharged from this part of the mine will be slightly less than 500 mg/L and will not require salt credits.

PacifiCorp's plan is to transfer the intercepted groundwater from the Rilda Canyon portal to the Huntington Power Plant where it will be completely consumed during the remaining life of the Plant (estimated life is at least through 2043), and only discharged into Huntington Creek on rare occasions for short periods of time. Huntington Plant has amended its Groundwater Discharge Permit #UG150002 to allow use of the full volume of Rilda Canyon discharge as a feed water source. During the time when the discharge is directed to the Raw Water Pond, the discharge water will be sampled and analyzed for TDS on a monthly basis.

## Offset Plan Elements

PacifiCorp, after discussions with DWQ staff, proposes to participate in the Salinity Offset Program by committing to contribute monies to the state's special revenue Salinity Offset Fund if and when circumstances occur that justify contributions. This alternative has been chosen over the other potential mechanisms for achieving compliance with the limit, i.e., treatment of the discharge water or for obtaining salt offset credits – that of designing, constructing, and implementing an offset project (refer to Anti-Degradation Review in permit). Now that the mine is completely abandoned, sealed and reclamation of the sites is underway, there is no practical way of constructing or operating treatment facilities, if deemed necessary, at the remote sites. The commitment for future funding (this document) provided by PacifiCorp, will be used to finance available salinity reduction projects that will be provided to result in a ton-for-ton salt reduction.

There are three steps to determine the funding amount that PacifiCorp must commit to provide:

1) Pacificorp will notify DWQ immediately when discharge resumes from Outfalls 002 (Deer Creek Canyon), and at the Huntington Plant Raw Water Pond or Outfall 003, and begin monthly sampling. Once discharge flow has stabilized at Outfall 002 and Raw Water Pond or Outfall 003, PacifiCorp must **estimate the salt load** it will add to receiving waters in excess of the allowable one ton/day, if any, during a specified time period.
2) DWQ will use numeric formulas and published figures (including basin-specific efficiency ratios of leaching fractions), factoring in amortization, engineering uncertainty,

and administrative costs, to **determine a current, project-specific salinity removal cost.**

3) Calculations generated during the first two steps will then dictate the **total sum** for the time period specified that PacifiCorp will need to contribute to the Offset Fund.

In deriving the estimate for the first step, PacifiCorp has assumed the following:

- The historical discharge rates and TDS concentrations at the facilities are a reasonable predictor of future load needs if the mine discharge resumes. It is likely that the mine discharge volumes will decrease significantly after the mine is shut down and is no longer actively pumping water from underground. The future salt load estimates will consider the historical averages, but place more emphasis on more recent post-shutdown trends.

- PacifiCorp will purchase, if indicated, a sufficient amount of salt credits to cover one-year increments starting in that year that includes the resumption of flow from either Outfall 002 or Outfall 003. The flow from Outfall 002 will discharge directly into Deer Creek. Outfall 003 will not be used, except in emergency circumstances, until the end of Huntington Power Plant life (projected to be 2043). Although the power plant may have sufficient remaining economic life at this time to last until 2043, future coal power generation is subject to many variables and uncertainties. PacifiCorp will review with the Division of Water Quality the hydrologic discharge characteristics of the mine discharges and power plant life status on at least a yearly basis. Since the mine is now closed, there is a high likelihood that discharge from Outfall 002 and Outfall 003 will not occur for a significant number of months or years. PacifiCorp will anticipate the need for renewal and will initiate ongoing participation in the Offset Program.

- Current hydrologic projections show that, now that the mine is closed and sealed, permanent discharges are likely to occur in the future at the location of the Deer Creek portals (Outfall 002) and at the Huntington Power Plant (Outfall 003). The anticipated future permanent discharge flow rates may be low enough to be below the 1 ton/day threshold for TDS, and the TDS from Outfall 003 may be lower than 500.

The following tables show the predicted salt load derivation at each facility. The tables show that if current projections of water quantity and quality are correct, that neither facility will need to be liable for salinity offset credit purchases.

Now that Deer Creek Mine is permanently shut down, the discharge volume from 002 has ceased for some months or years. The eventual flow rate from outfall 002 is projected to drop to about 250 gpm. The salt load table will change from the previous salinity agreement table:

| Facility Outfall | ASSUMED FUTURE AVERAGE FLOW RATE (gpm) | ASSUMED FUTURE AVERAGE TDS CONCENTRATION (mg/L) | CALCULATED AVERAGE DAILY SALT LOAD (tons/day) |
|---|---|---|---|
| Deer Creek 002 | 250 | 507 | 0.76 |
| | | | |
| | | **Total Salt Load Per Day** | 0.76 |
| | | **Net Total of Salt Offset Needed Per Day*** | 0 |

*(after subtraction of allowable one ton/day/facility)

As of the date of this letter, flow from the Rilda Canyon portals has not been detected. Based on sampling of quantity and quality of intercepted groundwater in the underground area that will feed the Rilda Canyon portals, and if the flow were diverted away from the consumption at Huntington Plant before 2043, the salt load would be projected as follows:

| Facility Outfall | ASSUMED FUTURE AVERAGE FLOW RATE (gpm) | ASSUMED FUTURE AVERAGE TDS CONCENTRATION (mg/L) | CALCULATED AVERAGE DAILY SALT LOAD (tons/day) |
|---|---|---|---|
| Deer Creek 003 | 250 | 490 | 0.74 |
| | | | |
| | | **Total Salt Load Per Day** | 0.74 |
| | | **Net Total of Salt Offset Needed Per Day*** | 0 |

*(after subtraction of allowable one ton/day/facility)

Any unit costs that DWQ will assess to PacifiCorp will depend on the salinity-control unit in which the discharge is located. The Deer Creek Mine is in the Upper Colorado River Basin's Price-San Rafael Unit.

**Plan Monitoring Schedule**

If participation in a Salinity Offset Program becomes necessary, in addition to the routine monitoring and reporting via Discharge Monitoring Reports (DMRs) that is currently required for each of the UPDES permits, PacifiCorp will also closely track levels and trends of TDS as they relate to the salinity offset issue, as it has done in the past. The basis for this tracking will be the average daily TDS load for each month. In addition to both of the facilities submitting their individual DMRs each month, PacifiCorp will submit a tracking spreadsheet to DWQ each month. It will include an accounting of the salt credits used by the facility for the current month; a cumulative, running total of salt credits depleted up to and including the current month; and a record of the remaining available salt credits.

The tracking spreadsheet will be evaluated regularly by PacifiCorp and by DWQ as it will be an attachment to the monthly DMR forms for each facility, which are to be submitted by the 28th of

each month. PacifiCorp and DWQ will review on at least an annual basis beginning in the fourth quarter of the first year of any program that is instituted, the salt credits used to date versus the remaining salt credits available. When and if remaining available salt credits trend toward shortfall, a renewed assessment of future salt credit needed by PacifiCorp will be undertaken. This will be done in a timely manner to ensure that there is sufficient time to prepare and obtain approval for a new or updated Salinity Offset Program Participation Plan prior to complete depletion of the available credits. PacifiCorp understands that the cost of any additional needed credits will be based upon cost data in effect at the time, which is likely to be greater than the cost basis for credits purchased under this current plan. Further, implicit in the current plan is the assumption that, while the best possible estimates were used to derive the credit need, actual use of the purchased salt credits cannot be predicted exactly. Credits may be depleted at a faster or slower rate than has been assumed. PacifiCorp understands that any credits that are purchased, but remain unused, will not be reimbursed.

**Program Costs and Payment Schedule**

The total cost for PacifiCorp to participate in the Salinity Offset Program will be determined when and if conditions warrant at the time of the resumption of discharge flows from the mine.

PacifiCorp will contribute this dollar amount to the state's special revenue Salinity Offset Fund based upon the terms set forth in a Funding Agreement to be developed by PacifiCorp and DWQ.

"Salt" Loading Calculations Outfalls 002 & 003 21-Mar-18

(EFFLUENT LIMITATIONS, I.D.1.c. & I.D.2.d., UPDES Permit UT0023604, PacifiCorp Deer Creek Mine)

Constants:

| | | |
|---|---|---|
| 1 day = | 1440 | minutes |
| 1 gallon= | 3.78541 | liters |
| 1 pound= | 453592 | milligrams |

Outfall 002:

Assumptions:

| | | | |
|---|---|---|---|
| Discharge TDS | 507 | mg/l | Total Dissolved Solids |
| Discharge Vol | 250 | gpm | after flow resumes |
| Cost per Credit | ??? | | Cost Calculated by DWQ |

At 250 gpm, salt load per day will be:

| | | |
|---|---|---|
| Discharge per day = | 360,000 | gallons per day |
| | 1,362,747.6 | liters per day |
| | 690,913,033 | milligrams of salt per day |
| | 1,523.2 | pounds of salt per day |
| | 0.76 | tons of salt per day |

Outfall 003:

Assumptions:

| | | | |
|---|---|---|---|
| Discharge TDS | 490 | mg/l | Total Dissolved Solids |
| Discharge Vol | 250 | gpm | after flow resumes |
| Cost per Credit | ??? | | Cost Calculated by DWQ |

At 250 gpm, salt load per day will be:

| | | |
|---|---|---|
| Discharge per day = | 360,000 | gallons per day |
| | 1,362,747.6 | liters per day |
| | 667,746,324 | milligrams of salt per day |
| | 1,472.1 | pounds of salt per day |
| | 0.74 | tons of salt per day |