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FACT SHEET AND STATEMENT OF BASIS
COMPASS MINERALS CORPORATION
RENEWAL/MINOR INDUSTRIAL
UPDES PERMIT NO. UT0000647

FACILITY CONTACT:

Responsible Official: Denise Hubbard
Vice President of Operations - Ogden
765 North 10500 West
Ogden, Utah 84404
Phone: (801) 732-3319

Facility Contact: Rod Smith
Environmental Engineer
Phone: (801) 732-3251

DESCRIPTION OF FACILITY:

Compass Minerals Ogden Inc (CMP) removes water from the Great Salt Lake (GSL), and by the process of evaporation, concentrates and removes sodium chloride, potash, and magnesium chloride (Salt(s)). During this process, more sodium chloride is produced than any other product, but the potash and magnesium chloride are many times more valuable per ton than sodium chloride. The recovery of these minerals from lake water is a function of the degree of evaporation that occurs, with sodium chloride crystallizing before either potash or magnesium chloride. Bitterns that remain after the initial precipitation of salt from the west side ponds are transported across the lake to the east side, via the Behrens Trench, where they are further evaporated to produce additional salt, potash (fertilizer) and magnesium chloride (dust control and de-icing agents). Compass Minerals was authorized to construct the trench in the lake bed in 1991, pursuant to a Clean Water Act Section 404 permit issued by the U. S. Army Corps of Engineers. Due to the higher density of the bitterns compared to the lake water, the bitterns remain in the trench, with nominal mixing with receiving waters. The vast majority of bitterns that are pumped into the trench are removed from the trench at its eastern terminus and pumped into the east solar evaporation ponds.

Since sodium chloride precipitates at a higher rate than potash or magnesium chloride, large amounts of sodium chloride remain in certain ponds after evaporation. These ponds are located on Bear River Bay, on the east side of the Lake. In accordance with the Royalty Agreement with the Department of Natural Resources, this excess sodium chloride must be returned to the GSL. This is accomplished by pumping water from the Bear River Bay of GSL, dissolving the unprocessed salt found in the evaporation ponds and returning the brines to Bear River Bay. These ponds are used exclusively for solar evaporation, and there is no other physical or chemical processing activity in these ponds, other than the possible use of mobile equipment to scrape the deposited salt into windrows or to slurry it, so that it will dissolve more easily. These ponds simply contain the remnant sodium chloride that was left behind when the bitterns were transferred to other ponds for extraction of potash and magnesium chloride. Only materials native to and originally withdrawn from GSL are discharged with these flows. This mineral return activity takes place during the "non-solar season" from October through March. These mineral return flows are relatively slow in velocity and take place when the flows from Bear River Bay into GSL are the greatest. This leads to decreased residence times and rapid mixing. Sampling done by Compass Minerals and the Division of Water Quality (DWQ) has revealed that constituent levels are

at Gilbert Bay background levels by the time the flows pass through the railroad causeway into the open waters of the GSL. This return flow activity will be limited to Outfalls 002-008, and not all of these outfalls will discharge during each mineral return season.

Outfall 009 comprises a discharge from the concentration ponds on the west side of Gunnison Bay. This is the initial concentration of bitterns in the facility's process. These bitterns are discharged to the Behrens Trench which transports them to the east side ponds for further concentration and mineral separation.

This permit was modified in 2012 to add a new discharge location from a steam plant to an internal outfall and eventually to the GSL. The discharge consists of boiler blow down water. The source of this boiler blow down water is the culinary water supplied to the site by Weber Basin Water. The flow averages around 53,000 gal/day (0.05 MGD) with a daily maximum of 90,000 gal/day (0.09 mgd). This discharges to an existing drainage ditch on the facility that leads to Outfall 001. Since the daily average flow from Outfall 001 is 3.8 MGD, Outfall 001-B will be monitored internally before it enters the drainage ditch.

In addition to boiler blow down water, Outfall 001 generally includes re-dissolved salts from washout of the buildings, the rinsing of railcars previously used for shipping Sulfate of Potash (SOP) product or MgCl2 brine, the washing of mobile equipment and vehicles, and the washing of impurities from salts; air scrubber discharges from the sodium chloride processing; and the return of bitterns from mineral return activities. The Outfall 001 discharges specifically includes effluent from the rinsing of railcars that were previously used to ship SOP fertilizer or MgCl2 brine, effluent from the use of steam to clean the SOP railcar and truck loading chute, effluent from housekeeping activities, and effluent from the washing of salts off from mobile equipment and vehicles. No detergents or other chemicals are used in any of these cleaning activities. Nevertheless, these effluents many contain traces of oil. Any oil released from these activities will be captured by oil skimmers positioned in the drainage ditch downstream from where these activities occur.

The boiler water undergoes a 3 stage pretreatment process,that includes water softening, carbon filtration, and reverse osmosis (RO). These three stages shall provide demineralization, solids removal and purification of the water. After input of the pre-treated water to the boiler, the boiler recycle/condensate steam shall be treated with conventional buffering agents for scale control and corrosion inhibition within the boiler. The RO system is anticipated to have about a 10% reject rate and this flow will be combined with the backwash water. This water will either be consumed in the SOP production process by the SOP plant or discharged from Outfall 001-B.

The geographical location of the new outfall is listed below.

Outfall Number	Location of Discharge Point
001	Discharge to the Great Salt Lake, Bear River Bay Latitude 41° 16' 09" and Longitude 112° 14' 39",
001-B	Internal discharge from the Steam plant to onsite storm water system to the Great Salt Lake, Bear River Bay. Latitude 41°16'43" and Longitude 112°13'59"

002	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°15'54" and Longitude 112°15'03"
003	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°15'33" and Longitude 112°16'39"
004	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°14'42" and Longitude 112°16'38"
005	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°14'18" and Longitude 112°19'13"
006	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°16'10" and Longitude 112°20'11"
007	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°16'15" and Longitude 112°21'26"
008	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°13'54" and Longitude 112°21'42"
009	Discharge to the Great Salt Lake, Gunnison Bay. Latitude 41°15'44" and Longitude 112°53'29"

RECEIVING WATER CLASSIFICATION:

The Facility discharges to Great Salt Lake through Outfall 001, Outfall 001-B, Outfall 002, Outfall 003, Outfall 004, Outfall 005, Outfall 006, Outfall 007, Outfall 008 and Outfall 009. GSL is classified as Class 5. Outfalls 001-008 discharge to the Bear River Bay, a sub-classification of the Great Salt Lake which is protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain. Outfall 009, the outfall to the Behrens Trench, discharges to Gunnison Bay, a sub-classification of the Great Salt Lake which is also protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

The location of outfall 006 and timing of the discharge, when the majority of Bear River Bay discharges through the bay where outfall 006 discharges, minimizes the risk of the mineral return operations to Great Salt Lake's uses. Outfall 006 is located in the bay between CMP's causeway to the north and the railroad causeway to the south. Flow through each of these causeways is constricted. Water backs up behind the north causeway, which causes the water depth to be considerably greater (50-80 cm) upstream. The head created by these conditions increases the flow through the bay between the causeways and facilitates rapid mixing of the effluent with first Bear River Bay water and then Gilbert Bay. This downstream head, coupled with the relatively small size and shallow depth of the bay between the causeways also greatly reduces the possibility that wind events could push the discharge upstream, into areas of Bear River Bay that are less saline and potentially sensitive to increases in salinity from the mineral return flows.

BASIS FOR EFFLUENT LIMITS:

No numeric water quality standards have been established for the Great Salt Lake with the exception of Selenium in Gilbert Bay. (Since this facility does not discharge to Gilbert Bay, the Selenium standard does not apply directly to this discharge but the discharge must be protective of downstream uses in accordance with R317-2-8.)

Regulations contained in *40 CFR 436 Subpart L* (Mineral, Mining and Processing Point Source Category - Subpart L - Salines from Brine lake Subcategory) and *40 CFR 415 Subpart P* (Inorganic Chemicals Manufacturing Point Source Category – Subpart P – Sodium Chloride Production Subcategory) are applicable to discharges from the salt evaporation, washing and mineral return activities of the facility. *40 CFR 436 Subpart L* directs that there should be no discharge of process waste water pollutants into navigable waters, and that this shall be applied on a net basis if the source of the permittees water supply is the same body of water into which the discharge is made. *40 CFR 415 Subpart P* directs that there should be no discharge of process wastewater pollutants into navigable waters, except that unused bitterns may be returned to the body of water from which the process brine solution was originally withdrawn, provided that no additional pollutants are added to the bitterns during the production of sodium chloride. The mineral return flows from various evaporation ponds are allowed and unused bitterns are being returned to the body of water from which the process brine solution was originally withdrawn and no additional pollutants are added to the bitterns.

The steam generation plant at the facility replaced steam electric generating plant previously owned and operated by PacifiCorp. However, Compass Minerals will only be generating steam for use in Sulfate of Potash plant and the magnesium chloride plant operations. Compass Minerals will not operate an electric generation turbine, will not generate electric power and will not distribute electricity internally or to the external power grid. There are no Effluent Limitation Guidelines for Steam Generating facilities that do not generate electricity. As such, this facility will be regulated using Best Professional Judgment (BPJ), with the effluent limitations based upon the effluent limitations and guidelines found under *40 CFR 423 – Steam Electric Power Generations Point Source Category*. Since the steam generation facility was constructed in 2012, the steam plant is subject to the New Source Performance Standards as found in *40 CFR 423.15*. These parameters are pH, Oil and Grease, TSS and Total Residual Chlorine. In addition,*40 CFR 423.15 (j)(1)* also identifies Total Chromium and Total Zinc as pollutants on the priority pollutant list that should monitored and limited in the discharge.

This facility has open channels of process water that run through portions of facility grounds where truck maintenance, and other activities, increase the potential for Oil and Grease contamination through the final discharge. Therefore, based on BPJ, the permit will require Oil and Grease to be monitored on a monthly basis at all outfalls. A grab sample for Oil and Grease will only be required if a visible sheen is observed in the effluent at these outfalls. Oil and Grease concentrations will be limited to 10 mg/L.

No sanitary waste will be discharged through Outfall 001. Therefore no fecal or total coliform limits will be necessary.

Based on *UAC R317-1-3.2C*, pH must remain in the range of 6.5 to 9.0 standard units.

Based on a review of the Level II Anti Degradation Review document submitted with the previous permit modification in 2012 to add the steam generation plant, Total Dissolved Oxygen is being

monitored at Outfall 001-B and subjected to the following effluent limitations. This parameter was added because the facility is adding an oxygen scavenger as part of the treatment process.

SUBSTANTIVE CHANGES:

Outfall's 002 – 008 are located within the bay between the two causeways and utilized for mineral return flows. This area of the bay is commonly referred to as the "trapezoid" and is located in the southern most portion of the bay. The facility and DWQ agreed to implement best management practices with regards to these mineral return flow until the supplemental monitoring required as part of this permit are complete. The facility has agreed to engage in the mineral return discharges only during the fall and winter months and further limit such discharges to the trapezoid area.

Monitoring has been conducted for the mineral return flows in 2012 and 2013 for the active outfalls of which only 006 was active. This permit includes a requirement to contemplate further characterization of the return flows. The characterization of the minerals return flows is currently incomplete because the evaporation ponds are rotated and the rotation is incomplete. Based on the limited available data, the mineral return discharges are not a threat to the uses of Great Salt Lake because the mineral concentrations generally dissipate quickly and fall within background concentration levels. Freshwater criteria are considered by the DWQ to be screening criteria. As screening criteria, concentrations less than the screening criteria are unlikely to harm Great Salt Lake's aquatic life. Concentrations exceeding the criteria are not indicative of a threat to the aquatic life but further evaluation is necessary to make a determination.

Selenium concentrations were elevated for short durations at the initiation of the mineral return flows in the immediate receiving waters located between the two railroad bridges in Bear River Bay. This area is commonly referred to as the "trapezoid." Based on the observed short duration of the elevated concentrations, the time of year when the mineral return operations are conducted, and the results of other biological monitoring at the lake with similar concentrations, selenium is unlikely to adversely affect birds. Limited observations during the sampling events also suggest that bird use of the trapezoid is limited. The limited use is suspected to be due to the fluctuating salinity and water levels in the trapezoid that limits the development of forage for birds.

SUMMARY OF LIMITATIONS:
All outfalls with the exception of Outfall 001-B shall also be subject to the following numeric effluent limitations. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Effluent Limitations			
	Maximum Monthly Average	Maximum Weekly Average	Daily Minimum	Daily Maximum
Oil & Grease, mg/L	NA	NA	NA	10.0
pH, Standard Units	NA	NA	6.5	9.0

NA – Not Applicable

Outfall 001-B shall subject to the following effluent limitations.

Parameter	Effluent Limitations			
	Maximum Monthly Average	Maximum Weekly Average	Daily Minimum	Daily Maximum
Oil & Grease, mg/L	NA	NA	NA	10.0
pH, Standard Units	NA	NA	6.5	9.0
Total Suspended Solids, mg/L	25.0	NA	NA	35.0
Total Residual Chlorine, mg/L	0.2	NA	NA	0.5
Total Dissolved Oxygen, mg/L	NA	NA	4.5	NA
Total Chromium, mg/L	0.2	NA	NA	0.2
Total Zinc, mg/L	1.0	NA	NA	1.0

NA – Not Applicable

SELF MONITORING AND REPORTING REQUIREMENTS:

All outfalls with the exception of Outfall 001-B shall also be subject to the following Self-Monitoring and Reporting requirements. Such discharges shall be limited and monitored by the permittee as specified below:

Self-Monitoring and Reporting Requirements a/ d/			
Parameter	Frequency	Sample Type	Units
Total Flow a/ b/	Monthly	Measured	MGD
Oil & Grease	Monthly	Visual c/	mg/L
pH	Monthly	Grab	SU

a/ Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

b/ If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

c/ A grab sample for Oil and Grease will be required when a visible sheen is observed in the effluent.

Outfall 001-B shall subject to the following self-monitoring, and reporting requirements.

Self-Monitoring and Reporting Requirements a/			
Parameter	Frequency	Sample Type	Units
Total Flow a/ b/	Monthly	Measured	MGD
Oil & Grease	Monthly	Visual c/	mg/L
pH	Monthly	Grab	SU
Total Suspended Solids	Monthly	Grab	mg/L
Total Residual Chlorine	Monthly	Grab	mg/L
Total Dissolved Oxygen, mg/L	Monthly	Measured	mg/L
Total Chromium	Monthly	Grab	mg/L
Total Zinc	Monthly	Grab	mg/L

a/ Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

b/ If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

c/ A grab sample for Oil and Grease will be required when a visible sheen is observed in the effluent.

MONITORING SCHEDULE:

The permittee shall complete the listed items below by the indicated dates.

a) Before April 15, 2015 or within three weeks after the mineral return activities are completed at the facility (whichever date is later), DWQ shall transmit to Compass all data acquired pursuant to the Sampling and Analysis Plan developed in conjunction with the 2012 Settlement Agreement. Once the data have been received, by July 1, 2015, or within 75 days after receipt of the data, whichever is later, Compass shall submit to DWQ a final report that summarizes the data. At a minimum, this report will contain: a brief narrative that describes the mineral return operations (i.e., ponds that were involved, start date, end date), a narrative describing unforeseen monitoring logistics, the background concentrations and loads of constituents and concentrations in the discharge leaving mineral return ponds, a summary of comparisons with water quality benchmarks, associated conclusions, and best management practices that have been identified.

b) By August 31, 2015 Compass shall submit a new sampling and analysis plan that outlines any future sampling or monitoring needs. This plan should include sampling locations, sampling frequency, and water quality constituents of concern.

LEVEL I AND LEVEL II ANTI-DEGRADATION

The facility submitted a Draft Level I and Level II Anti Degradation Review (ADR) Document on July 17, 2012 for the 2012 permit modification. This document was reviewed by the DWQ and comments were supplied to the facility. As a result of this review an amended Level I and Level II ADR was submitted on October 2, 2012. The Level II ADR was public noticed with the permit modification in 2012. An updated ADR is not required for this permit because the proposed effluent limits and loading limits are equal to less than the concentration and loading limits in the previous permit (R317-2-3.5.b.1.b.).

PRETREATMENT REQUIREMENTS

Any process wastewater that the facility may discharge to a publically owned sanitary sewer, either as direct discharge or as a hauled waste, is subject to federal, state and local pretreatment regulations. Pursuant to section 307 of the Clean Water Act, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in 40 CFR Section 403, the State Pretreatment Requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.

PERMIT DURATION:

It is recommended that this permit be effective for a period of five years upon re-issuance.

Drafted by Lonnie Shull
Environmental Scientist
Utah Division of Water Quality
Date December 9, 2014

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