

**FACT SHEET AND STATEMENT OF BASIS  
CENTRAL DAVIS SEWER DISTRICT  
RENEWAL PERMIT: DISCHARGE, BIOSOLIDS & STORM WATER  
UPDES PERMIT NUMBER: UT0020974  
UPDES BIOSOLIDS PERMIT NUMBER: UTL-020974  
UPDES MULTI-SECTOR STORM WATER GENERAL PERMIT PROVISIONS (UTR000000)  
MAJOR MUNICIPAL**

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**DESCRIPTION OF FACILITY**

The Central Davis Sewer District (CDSD) wastewater treatment facility was originally placed in service in 1961. The plant was constructed with one trickling filter, two rectangular clarifiers and an anaerobic digester.

The plant was upgraded in the 1970's with an additional secondary trickling filter, two circular clarifiers and additional digestion. In the 1980's a major upgrade was made which included a new headworks, the addition of an oxidation ditch and two final clarifiers, new chlorination equipment, contact basin and additional solids handling facilities including gravity belt thickeners and presses. In the 1990's CDSD expanded to meet the maximum population of the service area. This expansion included a second oxidation ditch, two clarifiers, additional chlorine equipment, a second contact basin and additional solids handling equipment.

The effluent from the wastewater treatment facility is discharged from outfall 001 to the Great Salt Lake. The design flow of the facility is 9.9 million gallons a day (MGD), with a design population equivalent of 65,000 people and an allowance for industrial waste. The discharge, Outfall 001, is located at latitude 40°59'54" and longitude 111°57'01". The CDSD serves the cities of Farmington, Fruit Heights, and Kaysville. The facility is located in Kaysville, Davis County, Utah.

## **SUMMARY OF CHANGES FROM PREVIOUS PERMIT**

On December 16, 2014, the Utah Water Quality Board adopted *Utah Administrative Code (UAC) R317-1-3.3, Technology-Based Limits for Controlling Phosphorous Pollution*. The Technology-Based Phosphorous Effluent Limits (TBPEL) establishes new regulations for the discharge of phosphorus to surface waters and is self-implementing. The TBPEL rule includes the following requirements for non-lagoon wastewater treatment plants:

The TBPEL requires that all non-lagoon wastewater treatment works discharging wastewater to surface waters of the state shall provide treatment processes which will produce effluent less than or equal to an annual mean of 1.0 mg/L for total phosphorus. This TBPEL shall be achieved by January 1, 2020 unless a variance has been granted by DWQ.

Whole Effluent Toxicity (WET) monitoring requirements are based from the WET policy adopted January 2018.

## **DISCHARGE**

### **DESCRIPTION OF DISCHARGE**

CDSD has been reporting self-monitoring results on Discharge Monitoring Reports on a monthly basis. There have been no significant violations during the last permit cycle.

#### **Outfall** 001

#### **Description of Discharge Point**

Located at latitude 40°59'54" and longitude 111°57'01", the discharge enters an unnamed channel on the permittee's property and proceeds northwest continuing on the permittee's property in said unnamed channel into wetlands on the permittee's property and from there to the Great Salt Lake Transitional Waters then into Farmington Bay.

### **RECEIVING WATERS AND STREAM CLASSIFICATION**

At current and anticipated Lake elevations for the duration of this permit, the discharge is to the Transitional Waters of Great Salt Lake and then to Farmington Bay, Great Salt Lake. According to the *Utah Administrative Code (UAC) R317-2-13*, the designated uses are 5E and 5D:

- |          |  |
|----------|--|
| Class 5E | Transitional Waters of Great Salt Lake. Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain |
| Class 5D | Farmington Bay of the Great Salt Lake. Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain. |

### **BASIS FOR EFFLUENT LIMITATIONS**

Limitations on total suspended solids (TSS), biochemical oxygen demand (BOD<sub>5</sub>), E. coli and pH are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*. The percent removal for BOD<sub>5</sub> and TSS are 80 percent due to the Inflow and Infiltration in the Collections System. The Division of Water Quality has determined that this discharge does not have reasonable potential to cause or contribute to a violation of water quality standards. An

Antidegradation Level II review is not required because the permit is being renewed with no changes and water quality will not be further lowered by the proposed activity, *UAC R317-2-3.5.b.1.(b)*.

No numeric criteria are available for the recreation or aquatic life uses in the Transitional Waters or Farmington Bay. The Level I anti-degradation review, protection of existing uses, was conducted in accordance with the *Interim Methods for Evaluating Use Support for Great Salt Lake Utah Pollution Discharge Elimination System (UPDES) Permits* (v. 1.0 January 4, 2016) (*Interim Methods*). No existing uses are identified that require more stringent protection than the designated uses.

As described in the *Interim Methods*, effluent pollutant concentrations were screened against Class 3D aquatic life numeric criteria to determine reasonable potential and the protection of the uses in accordance with the Narrative Standards. No dilution was assumed for the discharge to the Transitional Waters.

The source of the effluent data and parameters was the permit application. A reasonable potential analysis was conducted assuming no dilution. No pollutants demonstrated reasonable potential to cause or contribute to an exceedance of a water quality standard. Pollutants that required further evaluation are discussed in the following section.

#### **Updates from the 2014 permit.**

##### **Ammonia.**

In 2013, the USEPA published updated water quality criteria for ammonia. The applicability of these criteria for Farmington Bay were evaluated. The evaluation concluded that these are appropriate screening values for determining effluent limits for the discharge. Ammonia is generally toxic to aquatic life but species vary widely in their sensitivity. Ammonia is also a nutrient that is taken up rapidly by plants and bacteria when present at sub-toxic concentrations. Farmington Bay includes freshwater taxa such as daphnids and mayflies<sup>1</sup>. Fish can be sensitive to ammonia and fish have been observed in Farmington Bay and surrounding wetlands. Fish are observed in similar freshwater habitats at Great Salt Lake and fish presence in nearby waters such as waterfowl management areas and observations of fish-eating birds support that fish may be considered residents for the comparison criteria. Studies are ongoing to better characterize the distribution of fish populations in Farmington Bay. Ammonia criteria are more stringent when early life stages of fish may be present. Early life stages of fish are not considered for this permit cycle because of the lack of specific data regarding the potential fish species present in the immediate receiving waters. The 2013 USEPA ammonia criteria based on a presumed absence of unionid mussels and no salmonids was applied.

Consistent with Utah Wasteload Allocation procedures, acute limits are based on the maximum observed pH and temperature of the effluent [note: ammonia limits are very sensitive to pH and to a lesser extent temperature]. Chronic limits are based on the average pH and temperature of the effluent. Effluent pH data are available but effluent temperature data are not. The maximum

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<sup>1</sup> <https://documents.deq.utah.gov/water-quality/standards-technical-services/gsl-website-docs/alu-standards-development/DWQ-2019-000534.pdf>

and average effluent ammonia concentrations reported in the permit application are 6.1 and 3.1 mg/L, respectively. These concentrations are unlikely to trigger reasonable potential at the expected effluent temperatures. Effluent temperature will be added as a monitoring requirement for this permit cycle to confirm this conclusion.

### **Copper**

The projected maximum effluent concentration is 0.042 mg/L and the copper criterion at 400 mg/L CaCO<sub>3</sub> hardness is 0.030 mg/L. The hardness adjustment to the criterion is limited to 400 mg/L which the effluent can exceed and the receiving waters do exceed. This suggests that the Class 3D criterion may be unnecessarily stringent. The EPA copper biotic ligand model provides more refined estimates of a protective copper criterion. For this permit cycle, monthly monitoring for parameters to support application of the copper biotic ligand model were added. The new parameter is dissolved organic carbon that is added to monitoring requirements for copper, pH and temperature monitoring. These parameters must be measured on the same day. The copper criterion can be further refined if the CDSO chooses to also simultaneously measure alkalinity, major cations (calcium, magnesium, sodium, and potassium), and major anions (sulfate, chloride). Default values will be used for these optional parameters if site-specific data are unavailable.

A Copper Criterion Study (Study) shall be conducted by CDSO to gather data to support application of the copper biotic ligand model. The Study is requirements are outlined in Part I.C.3 of this permit.

### **Total Residual Chlorine**

The average effluent concentrations of total chlorine were 1.4 mg/L. The 4-day criterion is 0.011 mg/L. The difference between these values is potentially overstated. Total residual chlorine is challenging to measure accurately and the available analytical methods have insufficient sensitivity. A monitoring requirement for total residual chlorine will be added as a monitoring requirement for this permit cycle with the goal of determining the sensitivity of the existing methods and supporting future reasonable potential analyses.

### **Selenium**

The reasonable potential analyses projected a maximum effluent concentration of 0.0047 mg/L and the 4-day average criterion is 0.0046 mg/L. Although the maximum potential effluent concentration exceeds the criterion, selenium is concluded to not have reasonable potential because the presence of fish in the immediate receiving waters is uncertain. The criterion is based on primarily on protecting fish and other forms of aquatic life are much less sensitive. Waterfowl and shorebirds are likely present in the immediate receiving waters but the data regarding selenium concentrations in bird eggs from Farmington Bay support that adverse effects are unlikely (see Ackerman et al. 2015 <https://pubs.er.usgs.gov/publication/ofr20151020>).

### **Whole Effluent Toxicity (WET) Testing**

The requirements for WET testing are unchanged from the last permit cycle with acute testing quarterly and chronic testing as an indicator. Both tests are conducted with 100 percent effluent. The CDSO passed all of the acute WET testing during the last permit cycle. One chronic WET

test was repeated after the first one did not meet the IC<sub>25</sub>. The dose-response observed suggests the results of the first test were anomalous and the toxicity was not verified for the follow-up test and a pattern of toxicity was not demonstrated. The WET permit language was updated consistent with Utah’s 2018 WET Implementation Guidance.

The permit limitations are:

<b>Table 1</b>					
<b>Parameter</b>	<b>Effluent Limitations <sup>a</sup></b>				
	<b>Maximum Monthly Avg</b>	<b>Maximum Weekly Avg</b>	<b>Yearly Average</b>	<b>Daily Minimum</b>	<b>Daily Maximum</b>
BOD <sub>5</sub> , mg/L	25	35	--	--	--
BOD <sub>5</sub> Min. % Removal	80	--	--	--	--
TSS, mg/L	25	35	--	--	--
TSS Min. % Removal	80	--	--	--	--
<i>E. coli</i> , No./100mL	126	157	--	--	--
pH, Standard Units	--	--	--	6.5	9
Oil & Grease, mg/L	--	--	--	--	10.0
Total Phosphorus, mg/L <sup>h</sup>	--	--	1	--	--
WET, Acute Biomonitoring	--	--	--	--	TUc ≤ 1.6

**SELF-MONITORING AND REPORTING REQUIREMENTS**

The following self-monitoring requirements are the same as in the previous permit with the addition of Temperature, Ammonia, TRC and Copper monthly monitoring. The permit will require reports to be submitted monthly, quarterly and annually, as applicable, on NetDMR due 28 days after the end of the monitoring period. Lab sheets for biomonitoring, metals and toxic organics must be attached to the applicable monitoring report.

<b>Table 2</b>				
<b>Self-Monitoring and Reporting Requirements <sup>a, b</sup></b>				
<b>Parameter</b>	<b>Frequency</b>	<b>Sample Type</b>	<b>Units</b>	
Total Flow <sup>c, d</sup>				
Effluent	Continuous	Recorder	MGD	
BOD <sub>5</sub>				
Influent <sup>e</sup>	3 x weekly	Composite	mg/L	
Effluent	3 x weekly	Composite	mg/L	
TSS				
Influent <sup>e</sup>	3 x weekly	Composite	mg/L	
Effluent	3 x weekly	Composite	mg/L	
<i>E. coli</i>				
Effluent	3 x weekly	Grab	No./100mL	
Total Ammonia (as N)				
Effluent	3 x weekly	Grab	mg/L	
pH				
Effluent	3 x weekly	Grab	SU	
Temperature, mg/L				
Effluent	3 x weekly	Recorder	Fahrenheit	
Oil & Grease <sup>f, g</sup>				
Effluent	When Sheen Observed	Grab	mg/L	
TRC, mg/L				
Effluent	3 x weekly	Grab	mg/L	
Orthophosphate (as P) <sup>h</sup>				
Effluent	Monthly	Composite	mg/L	
Total Phosphorus (as P)				
Influent <sup>h</sup>	Monthly	Grab	mg/L	
Effluent <sup>h</sup>	Monthly	Grab	mg/L	
Total Phosphorus (as P)				
Effluent	Monthly	Calculated	lbs	
Total Kjeldahl Nitrogen (TKN (as N))				
Influent <sup>h</sup>	Monthly	Composite	mg/L	
Effluent <sup>h</sup>	Monthly	Composite	mg/L	
Nitrate, NO <sub>3</sub>				
Effluent	Monthly	Composite	mg/L	
Nitrite, NO <sub>2</sub>				
Effluent	Monthly	Composite	mg/L	

Table 2 continued on page 7

<b>Table 2 continued</b>			
<b>Self-Monitoring and Reporting Requirements<sup>a, b</sup></b>			
<b>Parameter</b>	<b>Frequency</b>	<b>Sample Type</b>	<b>Units</b>
WET – Biomonitoring <sup>j, k</sup>			
<i>Ceriodaphnia</i> - Acute	1 <sup>st</sup> & 3 <sup>rd</sup> Quarter	Composite	Pass/Fail
Fathead Minnows - Acute	2 <sup>nd</sup> & 4 <sup>th</sup> Quarter	Composite	Pass/Fail
<i>Ceriodaphnia</i> – Chronic I	1 <sup>st</sup> & 3 <sup>rd</sup> Quarter	Composite	Pass/Fail
Fathead Minnows – Chronic <sup>l</sup>	2 <sup>nd</sup> & 4 <sup>th</sup> Quarter	Composite	Pass/Fail
Metals			
Influent <sup>m, n, o</sup>	Quarterly	Composite	mg/L
Effluent <sup>m, n, o</sup>	Quarterly	Composite	mg/L
Organic Toxics			
Effluent	Annually	Grab	mg/L

**Table References**

- a. See Definitions, *Part VIII*, for definition of terms.
- b. All parameters in this table will be reported on the monthly Discharge Monitoring Report.
- c. Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- d. If the rate of discharge is controlled, the rate and duration of discharge shall be reported.
- e. In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.
- f. There shall be no visible sheen or floating solids or visible foam in other than trace amounts.
- g. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report 9 under “NODI” in NetDMR.
- h. These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.
- i. The permittee shall calculate phosphorus load in pounds each month and show a cumulative total of the yearly pounds for each monthly report until December. January 1, of each year, the permittee will start at zero so that the phosphorus load is totalized from January to December on the monthly reports each year. Phosphorus load shall be calculated using the total volume from a monthly flow and the average of the monthly phosphorus concentrations.
- j. The acute and chronic *Ceriodaphnia* will be tested during the 1<sup>st</sup> and 3<sup>rd</sup>, and the acute and chronic fathead minnows will be tested during the 2<sup>nd</sup> and 4<sup>th</sup> quarters.
- k. TUC is calculated by dividing the receiving water effluent concentration determined in accordance with R317-2-5 by the chronic test IC<sub>25</sub>. The TUC is an indicator and an exceedance is not used for determining compliance.
- l. Chronic WET tests will be considered an indicator for Class 5 waters of the Great Salt Lake because of uncertainties regarding the representativeness of the standard test species for the Great Salt Lake.
- m. Metals samples should be analyzed using a method that meets MDL requirements. If a test method is not available the permittee must submit documentation to the Director regarding the method that will be used. The sample type (composite or grab) should be performed according to the methods requirements.
- n. Metals are being sampled in support of the work being done for the Reasonable Potential Analysis. The Metal parameters will be monitored and reported on an annual basis by the facility on Discharge Monitoring Report, but will not have a limit associated with them, if CDSO decides to sample more frequently for these parameters, the additional data will be welcome.

0. Metals

- Arsenic
- Cadmium
- Total Chromium
- Copper

- Cyanide
- Lead
- Mercury
- Nickel

- Selenium
- Silver
- Zinc

**Table References End**

## **BIOSOLIDS**

For clarification purposes, sewage sludge is considered solids, until treatment or testing shows that the solids are safe, and meet beneficial use standards. After the solids are tested or treated, the solids are then known as biosolids. Class A biosolids, may be used for high public contact sites, such as home lawns and gardens, parks, or playing fields, etc. Class B biosolids may be used for low public contact sites, such as farms, rangeland, or reclamation sites, etc.

### **DESCRIPTION OF TREATMENT AND DISPOSAL**

The CDSO has two wastewater process streams that generate biosolids at the plant. One is the oxidation ditches train which produces the aerobic biosolids, and the other is the trickling filters train that produces anaerobic biosolids. The aerobic solids are further processed to meet the requirement for beneficial use. The anaerobic biosolids qualify as Class B biosolids off of the belt presses. Separate descriptions of treatment and beneficial use methods are described below.

#### **Beneficial Use - Anaerobic Biosolids**

Waste activated sludge from the trickling filter process is used in the anaerobic biosolids process. The solids are stabilized in primary anaerobic digester with a mean cell residence time that fluctuates from 33 to 47 days and is operated at a temperature of at least 35°C (95°F). The solids then go to a secondary digester with a Duo-Sphere Cover system. After stabilization, the biosolids are wasted to belt filter presses and de-watered to between 5-10% solids. The biosolids are then land applied on property around the treatment plant. The gas collected in the Duo-Sphere system is currently flared off.

#### **Beneficial Use - Aerobic Biosolids**

The mean cell residence time for the solids in the oxidation ditches fluctuates from 26-28 days. After the biosolids are stabilized in the oxidation ditches, the biosolids are dewatered to about 10-15% percent solids, then mixed with wood chips and green waste and composted using the windrow method or the aerated static pile method composting to meet Class A standards, then sold or given away to the public.

#### **Inspection Results**

The last inspection conducted at the CDSO of the compost operation and land application site was December 9, 2013. The inspections showed that the CDSO was in compliance with all aspects of the biosolids management program.

### **SUBSTANTIVE PERMIT CHANGES**

CDSO has started hauling biosolids to a landfill for disposal during the winter to reduce odor issues, and evaluating their process in advance of a highway project that will take away some of the historic land application area and bring the public closer to the facility.

### **SELF-MONITORING REQUIREMENTS**

Under *40 CFR 503.16(a)(1)*, the self-monitoring requirements are based upon the amount of biosolids disposed per year and shall be monitored according to the chart below.

Minimum Frequency of Monitoring (40 CFR Part 503.16, 503.26. and 503.46)		
Amount of Biosolids Disposed Per Year		Monitoring Frequency
Dry US Tons	Dry Metric Tons	Per Year or Batch
> 0 to < 320	> 0 to < 290	Once Per Year or Batch

Minimum Frequency of Monitoring (40 CFR Part 503.16, 503.26. and 503.46)		
Amount of Biosolids Disposed Per Year		Monitoring Frequency
Dry US Tons	Dry Metric Tons	Per Year or Batch
> 320 to < 1650	> 290 to < 1,500	Once a Quarter or Four Times
> 1,650 to < 16,500	> 1,500 to < 15,000	Bi-Monthly or Six Times
> 16,500	> 15,000	Monthly or Twelve Times

Since 2010 CDSO produced on average 700 DMT of biosolids annually for land application or composting, and 2,000 DMT of compost from biosolids for distribution to the public; therefore they need to sample at least six times a year.

Landfill Monitoring

Under 40 CFR 258, the landfill monitoring requirements include a paint filter test. If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill (40 CFR 258.28(c)(1)).

**BIOSOLIDS LIMITATIONS**

Heavy Metals

Class A Biosolids for Home Lawn and Garden Use

The intent of the heavy metals regulations of Table 3, 40 CFR 503.13 is to ensure the heavy metals do not build up in the soil in home lawn and gardens to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet (see Part III. C. of the permit) to made available to all people who are receiving and land applying Class A biosolids to their lawns and gardens. If the instructions of the information sheet are followed to any reasonable degree, the Class A biosolids will be able to be land applied year after year, to the same lawns and garden plots without any deleterious effects to the environment. The information sheet must be provided to the public, because the permittee is not required, nor able to track the quantity of Class A biosolids that are land applied to home lawns and gardens.

Class A Requirements With Regards to Heavy Metals

If the biosolids are to be applied to a lawn or home garden, the biosolids shall not exceed the maximum heavy metals in Table 1 and the monthly average pollutant concentrations in Table 3 (see Table 1 and Table 3 below). If the biosolids do not meet these requirements, the biosolids cannot be sold or given away for applications to home lawns and gardens.

Class B Requirements for Agriculture and Reclamation Sites

The intent of the heavy metals regulations of Tables 1, 2 and 3, of 40 CFR 503.13 is to ensure that heavy metals do not build up in the soil at farms, forest land, and land reclamation sites to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet (see Part III. C. of the permit) to be handed out to all people who are receiving and land applying Class B biosolids to farms, ranches, and land reclamation sites (if biosolids are only applied to land owned by the permittee, the information sheet requirements are waived). If the biosolids are land applied according to the regulations of 40 CFR 503.13, to any reasonable degree, the Class B biosolids will be able to be land applied year after year, to the same farms, ranches, and land reclamation sites without any deleterious effects to the environment.

Class B Requirements With Regards to Heavy Metals

If the biosolids are to be land applied to agricultural land, forest land, a public contact site or a reclamation site it must meet at all times:

The maximum heavy metals listed in *40 CFR Part 503.13(b) Table 1* and the heavy metals loading rates in *40 CFR Part 503.13(b) Table 2*; or

The maximum heavy metals in *40 CFR Part 503.13(b) Table 1* and the monthly heavy metals concentrations in *40 CFR Part 503.13(b) Table 3*.

Tables 1, 2, and 3 of Heavy Metal Limitations

Pollutant Limits, (40 CFR Part 503.13(b)) Dry Mass Basis				
Heavy Metals	Table 1	Table 2	Table 3	Table 4
	Ceiling Conc. Limits <sup>2, 3</sup> (mg/kg)	CPLR <sup>4</sup> (mg/ha)	Pollutant Conc. Limits <sup>1, 2</sup> (mg/kg)	APLR <sup>5</sup> (mg/ha-yr)
Total Arsenic	75	41	41	2.0
Total Cadmium	85	39	39	1.9
Total Copper	4300	1500	1500	75
Total Lead	840	300	300	15
Total Mercury	57	17	17	0.85
Total Molybdenum	75	N/A	N/A	N/A
Total Nickel	420	420	420	21
Total Selenium	100	100	100	5.0
Total Zinc	7500	2800	2800	140

Any violation of these limitations shall be reported in accordance with the requirements of Part III.F.1. of the permit .If the biosolids do not meet these requirements they cannot be land applied.

Pathogens

The Pathogen Control class listed in the table below must be met;

Pathogen Control Class	
503.32 (a)(1) - (5), (7),-(8), Class A	503.32 (b)(1) - (5), Class B
B Salmonella species –less than three (3) MPN <sup>6</sup> per four (4) grams total solids (DWB) <sup>7</sup> or Fecal Coliforms – less than 1,000 MPN per gram total solids (DWB).	Fecal Coliforms – less than 2,000,000 MPN or CFU <sup>8</sup> per gram total solids (DWB).
503.32 (a)(6) Class A—Alternative 4	

<sup>2</sup> The limitations represent the maximum allowable levels of heavy metals in any biosolids intended for land application

<sup>3</sup> These limitations represent the maximum allowable levels of heavy metals based on an average of all samples taken during a 30-day period.

<sup>4</sup> CPLR -- Cumulative Pollutant Loading Rate

<sup>5</sup> APLR – Annual Pollutant Loading Rate

<sup>6</sup> MPN – Most Probable Number

<sup>7</sup> DWB – Dry Weight Basis.

<sup>8</sup> CFU – Colony Forming Units

Pathogen Control Class	
B <i>Salmonella</i> species –less than three (3) MPN per four (4) grams total solids (DWB) or less than 1,000 MPN Fecal Coliforms per gram total solids (DWB),	
And - Enteric viruses –less than one (1) plaque forming unit per four (4) grams total solids (DWB)	
And - Viable helminth ova –less than one (1) per four (4) grams total solids (DWB)	

Class A Requirements for Home Lawn and Garden Use

If biosolids are land applied to home lawns and gardens, the biosolids need to be treated by a specific process to further reduce pathogens (PFRP), and meet a microbiological limit of less than less than 3 most probable number (MPN) of *Salmonella* per 4 grams of total solids (or less than 1,000 most probable number (MPN/g) of fecal coliform per gram of total solids) to be considered Class A biosolids. The CDS has chosen to achieve PFRP through a method of Composting.

1. Windrow Method- Using the windrow method of composting, the temperature needs to be maintained at 55°C (131°F) or higher for fifteen days, with a minimum of five turnings during those fifteen days,
2. Static Aerated Pile Method - Composting using the static aerated pile method, the temperature of the biosolids is maintained at 55°C (131°F) or higher for at least 3 days.

Both of these composting methods are found under (40 CFR 503.32(a)(7)(ii)), (Appendix B, B.1.).

The practice of sale or giveaway to the public is an acceptable use of biosolids of this quality as long as the biosolids continue to meet Class A standards with respect to pathogens. If the biosolids do not meet Class A pathogen standards the biosolids cannot be sold or given away to the public, and the permittee will need find another method of beneficial use or disposal.

Pathogens Class B

If biosolids are to be land applied for agriculture or land reclamation the solids need to be treated by a specific process to significantly reduce pathogens (PSRP), and meet a microbiological limit with the geometric mean of the density of fecal coliform in the samples collected shall be less than either 2,000,000 most probable number per gram of total solids (dry weight basis) or 2,000,000 colony forming units per gram of total solids (dry weight basis) to be considered Class B biosolids. The CDS has chosen to achieve PSRP through the following approved methods:

1. Anaerobic Digestion - Under 40 CFR 503.32 (b)(3) The PSRP may be accomplished through anaerobic digesters that have a minimum retention time of 15 days at 95° F (35° C) or 60 days at 68° F (20°C).
2. Composting - Under 40 CFR 503.32 (b)(3) the PSRP may be accomplished through composting. To achieve this, the temperature must be above 40° C (104° F) or higher, and remain at 40° C or higher for a minimum of five days. For four hours, during the five days, the temperature needs to exceed 55° C (113° F).

Vector Attraction Reduction (VAR)

If the biosolids are land applied CDSO will be required to meet VAR through the use of a method of listed under *40 CFR 503.33*. The CDSO intends to meet the vector attraction reduction requirements through one of the methods listed below.

1. 38% VSS Reduction - Under *40 CFR 503.33(b)(1)*, the solids need to be treated through anaerobic digestion for at least 15 days at a temperature of at least 35° C (95° F) with a 38% reduction of volatile solids.
2. Composting - Under *40 CFR 503.33(b)(5)* the solids need treated through composting with a temperature of 40° C (104° F) or higher for at least 14 days with an average temperature of over 45° C (113° F).

If the biosolids do not meet a method of VAR, the biosolids cannot be land applied.

If the permittee intends to use another one of the listed alternatives in *40 CFR 503.33*, the Director must be informed at least thirty (30) days prior to its use. This change may be made without additional public notice

Landfill Monitoring

Under *40 CFR 258*, the landfill monitoring requirements include a paint filter test to determine if the biosolids exhibit free liquid. If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill (*40 CFR 258.28(c)(1)*).

Record Keeping

The record keeping requirements from *40 CFR 503.17* are included under *Part III.G.* of the permit. The amount of time the records must be maintained are dependent on the quality of the biosolids in regards to the metals concentrations. If the biosolids continue to meet the metals limits of *Table 3* of *40 CFR 503.13*, and are sold or given away the records must be retained for a minimum of five years. If the biosolids are disposed in a landfill the records must retained for a minimum of five years.

Reporting

The CDSO must report annually as required in *40 CFR 503.18*. This report is to include the results of all monitoring performed in accordance with *Part III.B* of the permit, information on management practices, biosolids treatment, and certifications. This report is due no later than February 19 of each year. Each report is for the previous calendar year.

**MONITORING DATA**

**METALS MONITORING DATA**

The CDSO has sampled at least six times a year since in 2010. A summary of the monitoring data is below.

CDSO Land Application Metals Monitoring Data 2010 through 2018.

CDS Land Application Metals Monitoring Data (2010 – 2018)				
Parameter	Table 4, mg/kg Ceiling Concentration	Table 3, mg/kg (Exceptional Quality)	Average, mg/kg	Maximum, mg/kg
Arsenic	75	41	18.7	36
Cadmium	85	39	1	2
Copper	4300	1,500	1077	1430
Lead	840	300	14.5	35
Mercury	57	17	1.5	4
Molybdenum	75	75	13	25
Nickel	420	400	11.9	19
Selenium	100	36	10.6	52
Zinc	7500	2,800	786	1080

The biosolids met *Table 3* of *40 CFR 503.13*, limits for metals; therefore the biosolids met the requirements to be considered Exceptional Quality in regards to metals for land application.

CDS Compost Metals Monitoring Data 2010 through 2018.

CDS Compost Metals Monitoring Data (2010 – 2018)				
Parameter	Table 4, mg/kg Ceiling Concentration	Table 3, mg/kg (Exceptional Quality)	Average, mg/kg	Maximum, mg/kg
Arsenic	75	41	9.3	27.3
Cadmium	85	39	0.6	1.4
Copper	4300	1,500	342	533
Lead	840	300	8.8	25.4
Mercury	57	17	0.5	1.1
Molybdenum	75	75	3.5	6.7
Nickel	420	400	6.3	10.9
Selenium	100	36	5.7	15.8
Zinc	7500	2,800	237	379

The biosolids met *Table 3* of *40 CFR 503.13*, limits for metals; therefore the biosolids met the requirements to be considered Exceptional Quality in regards to metals for land application.

**PATHOGEN MONITORING DATA**

The CDS has been required to monitor the composted biosolids for pathogens at least six times a year. The CDS had the choice to sample for *fecal coliform* or *salmonella*, and the CDS chose *salmonella*. Each monitoring episode needs to consist of seven samples, for a total 42 samples. All compost sold or given away since 2010 met the Class A pathogen standards for compost. A summary of the monitoring data is below.

**CDS *Salmonella* Monitoring Data 2010 to 2018**

<i>Salmonella</i> Monitoring Results, 2010 – 2018 Summary	
Average, MPN/gram	Maximum, MPN/gram
1.63	3.9

## **STORM WATER**

### **STORMWATER REQUIREMENTS**

Storm water provisions are included in this combined UPDES permit.

The storm water requirements are based on the UPDES Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity, General Permit No. UTR000000 (MSGP). All sections of the MSGP that pertain to discharges from wastewater treatment plants have been included and sections which are redundant or do not pertain have been deleted.

The permit requires the preparation and implementation of a storm water pollution prevention plan for all areas within the confines of the plant. Elements of this plan are required to include:

1. The development of a pollution prevention team,
2. Development of drainage maps and materials stockpiles,
3. An inventory of exposed materials,
4. Spill reporting and response procedures,
5. A preventative maintenance program,
6. Employee training,
7. Certification that storm water discharges are not mixed with non-storm water discharges,
8. Compliance site evaluations and potential pollutant source identification, and
9. Visual examinations of storm water discharges.

### **PRETREATMENT REQUIREMENTS**

The pretreatment requirements, regarding administering an approved pretreatment program, remain the same as in the current permit. Any substantial and/or non-substantial changes to the program as defined in *40 CFR 403.18*, must be submitted for approval to the Division of Water Quality. Authority to require a pretreatment program is provided for in *19-5-108 UCA, 1953 ann.* and *UAC R317-8-8*.

The sampling of metals will be conducted quarterly and the sampling of organic toxics yearly, see Part II of the UPDES Permit. This is consistent with the UPDES Pretreatment Guidance for Sampling of POTWs, which is based on the design flow of the wastewater treatment plant. Additional requirements have been added to the permit to ensure that if the allowable headworks loading is above the value calculated for the local limit development that additional monitoring and notification must occur.

The permittee will be required to perform an annual evaluation of the need to revise or develop technically based local limits to implement the general and specific prohibitions of *40 CFR, Part 403.5(a)* and *Part 403.5(b)*. This evaluation may indicate that present local limits are sufficiently protective, or that they must be revised. The initial evaluation is due twelve months after the effective date of the permit. As part of this evaluation, the permit requires influent and effluent monitoring for metals and organic toxics as stated in the permit the most sensitive method should be used for analyzing pollutants of concern as determined by the local limit development. The permittee should utilize EPA's Local Limits Development Guidance to justify the re-evaluation of the local limits. Information is provided in Chapter 7 of the EPA Local Limits Development Guidance 2004 to assist with the development of revising the local limits.

### **BIOMONITORING REQUIREMENTS**

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the Utah Pollutant Discharge Elimination System Permit and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring), dated February 2018. Authority to require effluent biomonitoring is provided in Permit Conditions, UAC R317-8-4.2, Permit Provisions, UAC R317-8-5.3 and Water Quality Standards, UAC R317-2-5 and R317 -2-7.2.

Since the permittee is a major municipal discharger, the renewal permit will again require whole effluent toxicity (WET) testing. The requirements for WET testing are unchanged from the last permit cycle with acute testing quarterly and chronic testing as an indicator. Both tests are conducted with 100 percent effluent. The CDSO passed all of the acute WET testing during the last permit cycle. One chronic WET test was repeated after the first one did not meet the  $IC_{25}$ . The dose-response observed suggests the results of the first test were anomalous and the toxicity was not verified for the follow-up test and a pattern of toxicity was not demonstrated. The WET permit language was updated consistent with Utah's 2018 WET Implementation Guidance.

The permit will also contain the standard requirements for accelerated testing upon failure of a WET test and a Preliminary Toxicity Investigation (PTI) and Toxicity Reduction Evaluation (TRE) as necessary.

**PERMIT DURATION**

It is recommended that this permit be effective for a duration of five (5) years.

Drafted by  
Sarah Leavitt Ward, Discharge  
Daniel Griffin, Biosolids  
Jennifer Robinson, Pretreatment  
Lonnie Shull, Biomonitoring  
Lisa Stevens, Storm Water  
Sarah Leavitt Ward, Reasonable Potential Analysis  
Nick von Stackelberg/Dave Wham, Wasteload Analysis  
Utah Division of Water Quality, (801) 536-4300

**PUBLIC NOTICE**

Began: March 17, 2020  
Ended: April 16, 2020

Comments will be received at: 195 North 1950 West  
PO Box 144870  
Salt Lake City, UT 84114-4870

The Public Noticed of the draft permit was published in the Salt Lake Tribune.

**ADDENDUM TO FSSOB**

During finalization of the Permit certain dates, spelling edits and minor language corrections were completed. Due to the nature of these changes they were not considered Major and the permit is not required to be re Public Noticed.

**Responsiveness Summary**

No comments were received.

DWQ-2019-019715

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# **ATTACHMENT 1**

## *Industrial Waste Survey*

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# Industrial Pretreatment Wastewater Survey



Do you periodically experience any of the following treatment works problems:

- foam, floaties or unusual colors
- plugged collection lines caused by grease, sand, flour, etc.
- discharging excessive suspended solids, even in the winter
- smells unusually bad
- waste treatment facility doesn't seem to be treating the waste right

Perhaps the solution to a problem like one of these may lie in investigating the types and amounts of wastewater entering the sewer system from industrial users.

An industrial user (IU) is defined as a non-domestic user discharging to the waste treatment facility which meets any of the following criteria:

1. **has a lot of process wastewater (5% of the flow at the waste treatment facility or more than 25,000 gallons per work day.)**

Examples: Food processor, dairy, slaughterhouse, industrial laundry.

2. **is subject to Federal Categorical Pretreatment Standards;**

Examples: metal plating, cleaning or coating of metals, blueing of metals, aluminum extruding, circuit board manufacturing, tanning animal skins, pesticide formulating or packaging, and pharmaceutical manufacturing or packaging,

3. **is a concern to the POTW.**

Examples: septage hauler, restaurant and food service, car wash, hospital, photo lab, carpet cleaner, commercial laundry.

All users of the water treatment facility are **prohibited** from making the following types of discharges:

1. A discharge which creates a fire or explosion hazard in the collection system.
2. A discharge which creates toxic gases, vapor or fumes in the collection system.
3. A discharge of solids or thick liquids which creates flow obstructions in the collection system.
4. An acidic discharge (low pH) which causes corrosive damage to the collection system.
5. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause problems in the collection system or at the waste treatment facility.
6. Waste haulers are prohibited from discharging without permission. (No midnight dumping!)

When the solution to a sewer system problem may be found by investigating the types and amounts of wastewater entering the sewer system discharged from IUs, it's appropriate to conduct an Industrial Waste Survey.

## An Industrial Waste Survey consists of:

### Step 1: Identify Industrial Users

Make a list of all the commercial and industrial sewer connections.

Sources for the list:

business license, building permits, water and wastewater billing, Chamber of Commerce, newspaper, telephone book, yellow pages.

Split the list into two groups:

domestic wastewater only--no further information needed  
everyone else (IUs)

### Step 2: Preliminary Inspection

Go visit each IU identified on the "everybody else" list.

Fill out the **Preliminary Inspection Form** during the site visit.

### Step 3: Informing the State

Please fax or send a copy of the Preliminary inspection form (both sides) to:

Jennifer Robinson

Division of Water Quality  
288 North 1460 West  
PO Box 144870  
Salt Lake City, UT 84114-4870

Phone: (801) 536-4383  
Fax: (801) 536-4301  
E-mail: [jenrobinson@utah.gov](mailto:jenrobinson@utah.gov)

**PRELIMINARY INSPECTION FORM**

INSPECTION DATE \_\_\_ / \_\_\_ /

Name of Business \_\_\_\_\_ Person Contacted \_\_\_\_\_  
Address \_\_\_\_\_ Phone Number \_\_\_\_\_

Description of Business \_\_\_\_\_

Principal product or service: \_\_\_\_\_

Raw Materials used: \_\_\_\_\_

Production process is:  Batch  Continuous  Both

Is production subject to seasonal variation?  yes  no

If yes, briefly describe seasonal production cycle.

This facility generates the following types of wastes (check all that apply):

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Domestic wastes              | (Restrooms, employee showers, etc.)                    |
| 2. <input type="checkbox"/> Cooling water, non-contact   | 3. <input type="checkbox"/> Boiler/Tower blowdown      |
| 4. <input type="checkbox"/> Cooling water, contact       | 5. <input type="checkbox"/> Process                    |
| 6. <input type="checkbox"/> Equipment/Facility wash-down | 7. <input type="checkbox"/> Air Pollution Control Unit |
| 8. <input type="checkbox"/> Storm water runoff to sewer  | 9. <input type="checkbox"/> Other describe             |

Wastes are discharged to (check all that apply):

- |   |                                       |
|---|---------------------------------------|
| <input type="checkbox"/> Sanitary sewer   | <input type="checkbox"/> Storm sewer  |
| <input type="checkbox"/> Surface water    | <input type="checkbox"/> Ground water |
| <input type="checkbox"/> Waste haulers    | <input type="checkbox"/> Evaporation  |
| <input type="checkbox"/> Other (describe) |                                       |

Name of waste hauler(s), if used

Is a grease trap installed? Yes No

Is it operational? Yes No

Does the business discharge a lot of process wastewater?

- More than 5% of the flow to the waste treatment facility? Yes No
- More than 25,000 gallons per work day? Yes No

**Does the business do any of the following:**

- |   |  |
|---|--|
| <input type="checkbox"/> Adhesives                                    | <input type="checkbox"/> Car Wash                  |
| <input type="checkbox"/> Aluminum Forming                             | <input type="checkbox"/> Carpet Cleaner            |
| <input type="checkbox"/> Battery Manufacturing                        | <input type="checkbox"/> Dairy                     |
| <input type="checkbox"/> Copper Forming                               | <input type="checkbox"/> Food Processor            |
| <input type="checkbox"/> Electric & Electronic Components             | <input type="checkbox"/> Hospital                  |
| <input type="checkbox"/> Explosives Manufacturing                     | <input type="checkbox"/> Laundries                 |
| <input type="checkbox"/> Foundries                                    | <input type="checkbox"/> Photo Lab                 |
| <input type="checkbox"/> Inorganic Chemicals Mfg. or Packaging        | <input type="checkbox"/> Restaurant & Food Service |
| <input type="checkbox"/> Industrial Porcelain Ceramic Manufacturing   | <input type="checkbox"/> Septage Hauler            |
| <input type="checkbox"/> Iron & Steel                                 | <input type="checkbox"/> Slaughter House           |
| <input type="checkbox"/> Metal Finishing, Coating or Cleaning         |  |
| <input type="checkbox"/> Mining                                       |  |
| <input type="checkbox"/> Nonferrous Metals Manufacturing              |  |
| <input type="checkbox"/> Organic Chemicals Manufacturing or Packaging |  |
| <input type="checkbox"/> Paint & Ink Manufacturing                    |  |
| <input type="checkbox"/> Pesticides Formulating or Packaging          |  |
| <input type="checkbox"/> Petroleum Refining                           |  |
| <input type="checkbox"/> Pharmaceuticals Manufacturing or Packaging   |  |
| <input type="checkbox"/> Plastics Manufacturing                       |  |
| <input type="checkbox"/> Rubber Manufacturing                         |  |
| <input type="checkbox"/> Soaps & Detergents Manufacturing             |  |
| <input type="checkbox"/> Steam Electric Generation                    |  |
| <input type="checkbox"/> Tanning Animal Skins                         |  |
| <input type="checkbox"/> Textile Mills                                |  |

**Are any process changes or expansions planned during the next three years? Yes No**  
If yes, attach a separate sheet to this form describing the nature of planned changes or expansions.

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Inspector

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Waste Treatment Facility

**Please send a copy of the preliminary inspection form (both sides) to:**

**Jennifer Robinson  
Division of Water Quality  
PO Box 144870  
Salt Lake City, Utah 84114-4870**

**Phone: (801) 536-4383  
Fax: (801) 536-4301  
E-Mail: [jenrobinson@utah.gov](mailto:jenrobinson@utah.gov)**

	<b>Industrial User</b>	<b>Jurisdiction</b>	<b>SIC Codes</b>	<b>Categorical Standard Number</b>	<b>Total Average Process Flow (gpd)</b>	<b>Total Average Facility Flow (gpd)</b>	<b>Facility Description</b>
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

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## **ATTACHMENT 2**

### *Wasteload Analysis*

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State of Utah

GARY R. HERBERT  
Governor

SPENCER J. COX  
Lieutenant Governor

Department of  
Environmental Quality

L. Scott Baird  
Executive Director

DIVISION OF WATER QUALITY  
Erica Brown Gaddis, PhD  
Director

**MEMORANDUM**

TO: Sarah Leavitt, UPDES Permit Writer

FROM: Chris Bittner, Standards Coordinator

DATE: November 26, 2019

SUBJECT: Antidegradation Reviews for the Central Davis Sewer District (CDS),  
UDPES Permit UT0020974

**RECEIVING WATERS AND STREAM CLASSIFICATION**

At current and anticipated Lake elevations for the duration of this permit, the discharge is to the Transitional Waters of Great Salt Lake and then to Farmington Bay, Great Salt Lake. According to the *Utah Administrative Code (UAC) R317-2-13*, the designated uses are:

- Class 5E Transitional Waters of Great Salt Lake. Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain
- Class 5D Farmington Bay of the Great Salt Lake. Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

**BASIS FOR EFFLUENT LIMITATIONS**

Limitations on total suspended solids (TSS), biochemical oxygen demand (BOD<sub>5</sub>), E. coli, pH and percent removal for BOD<sub>5</sub> and TSS are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*. The Division of Water Quality has determined that this discharge does not have reasonable potential to cause or contribute to a violation of water quality standards. An Antidegradation Level II review is not required because the permit is being renewed with no changes and water quality will not be further lowered by the proposed activity, *UAC R317-2-3.5.b.1.(b)*.

No numeric criteria are available for the recreation or aquatic life uses in the Transitional Waters or Farmington Bay. The Level I anti-degradation review, protection of existing uses, was conducted in accordance with the *Interim Methods for Evaluating Use Support for Great Salt Lake Utah*

*Pollution Discharge Elimination System (UPDES) Permits* (v. 1.0 January 4, 2016) (*Interim Methods*). No existing uses are identified that require more stringent protection than the designated uses.

As described in the *Interim Methods*, effluent pollutant concentrations were screened against Class 3D aquatic life numeric criteria to determine reasonable potential and the protection of the uses in accordance with the Narrative Standards. No dilution was assumed for the discharge to the Transitional Waters.

The source of the effluent data and parameters was the permit application. A reasonable potential analysis was conducted assuming no dilution. No pollutants demonstrated reasonable potential to cause or contribute to an exceedance of a water quality standard. Pollutants that required further evaluation are discussed in the following section.

### **Updates from the 2014 permit.**

#### **Ammonia.**

In 2013, the USEPA published updated water quality criteria for ammonia. The applicability of these criteria for Farmington Bay were evaluated. The evaluation concluded that these are appropriate screening values for determining effluent limits for the discharge. Ammonia is generally toxic to aquatic life but species vary widely in their sensitivity. Ammonia is also a nutrient that is taken up rapidly by plants and bacteria when present at sub-toxic concentrations. Farmington Bay includes freshwater taxa such as daphnids and mayflies<sup>1</sup>. Fish can be sensitive to ammonia and fish have been observed in Farmington Bay and surrounding wetlands. Fish are observed in similar freshwater habitats at Great Salt Lake and fish presence in nearby waters such as waterfowl management areas and observations of fish-eating birds support that fish may be considered residents for the comparison criteria. Studies are ongoing to better characterize the distribution of fish populations in Farmington Bay. Ammonia criteria are more stringent when early life stages of fish may be present. Early life stages of fish are not considered for this permit cycle because of the lack of specific data regarding the potential fish species present in the immediate receiving waters. The 2013 USEPA ammonia criteria based on a presumed absence of unionid mussels and no salmonids was applied.

Consistent with Utah Wasteload Allocation procedures, acute limits are based on the maximum observed pH and temperature of the effluent [note: ammonia limits are very sensitive to pH and to a lesser extent temperature]. Chronic limits are based on the average pH and temperature of the effluent. Effluent pH data are available but effluent temperature data are not. The maximum and average effluent ammonia concentrations reported in the permit application are 6.1 and 3.1 mg/L, respectively. These concentrations are unlikely to trigger reasonable at the expected effluent temperatures. Effluent temperature will be added as a monitoring requirement for this permit cycle to confirm this conclusion.

#### **Copper**

The projected maximum effluent concentration is 0.042 mg/L and the copper criterion at 400 mg/L CaCO<sub>3</sub> hardness is 0.030 mg/L. The hardness adjustment to the criterion is limited to 400

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<sup>1</sup> <https://documents.deq.utah.gov/water-quality/standards-technical-services/gsl-website-docs/alu-standards-development/DWQ-2019-000534.pdf>

mg/L which the effluent can exceed and the receiving waters do exceed. This suggests that the Class 3D criterion may be unnecessarily stringent. The EPA copper biotic ligand model provides more refined estimates of a protective copper criterion. For this permit cycle, monthly monitoring for parameters to support application of the copper biotic ligand model were added. The new parameter is dissolved organic carbon that is added to monitoring requirements for copper, pH and temperature monitoring. These parameters must be measured on the same day. The copper criterion can be further refined if the CDSO chooses to also simultaneously measure alkalinity, major cations (calcium, magnesium, sodium, and potassium), and major anions (sulfate, chloride). Default values will be used for these optional parameters if site-specific data are unavailable.

### **Total Residual Chlorine**

The average effluent concentrations of total chlorine were 1.4 mg/L. The 4-day criterion is 0.011 mg/L. The difference between these values is potentially overstated. Total residual chlorine is challenging to measure accurately and the available analytical methods have insufficient sensitivity. A monitoring requirement for total residual chlorine will be added as a monitoring requirement for this permit cycle with the goal of determining the sensitivity of the existing methods and supporting future reasonable potential analyses.

### **Selenium**

The reasonable potential analyses projected a maximum effluent concentration of 0.0047 mg/L and the 4-day average criterion is 0.0046 mg/L. Although the maximum potential effluent concentration exceeds the criterion, selenium is concluded to not have reasonable potential because the presence of fish in the immediate receiving waters is uncertain. The criterion is based on primarily on protecting fish and other forms of aquatic life are much less sensitive. Waterfowl and shorebirds are likely present in the immediate receiving waters but the data regarding selenium concentrations in bird eggs from Farmington Bay support that adverse effects are unlikely (see Ackerman et al. 2015 <https://pubs.er.usgs.gov/publication/ofr20151020>).

### **Whole Effluent Toxicity (WET) Testing**

The requirements for WET testing are unchanged from the last permit cycle with acute testing quarterly and chronic testing as an indicator. Both tests are conducted with 100 percent effluent. The CDSO passed all of the acute WET testing during the last permit cycle. One chronic WET test was repeated after the first one did not meet the IC<sub>25</sub>. The dose-response observed suggests the results of the first test were anomalous and the toxicity was not verified for the follow-up test and a pattern of toxicity was not demonstrated. The WET permit language was updated consistent with Utah's 2018 WET Implementation Guidance.

## **ATTACHMENT 3**

*Reasonable Potential Analysis*

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## **REASONABLE POTENTIAL ANALYSIS**

Water Quality has worked to improve our reasonable potential analysis (RP) for the inclusion of limits for parameters in the permit by using an EPA provided model. As a result of the model, more parameters may be included in the renewal permit. A Copy of the Reasonable Potential Analysis Guidance (RP Guide) is available at water Quality. There are four outcomes for the RP Analysis<sup>9</sup>. They are;

- Outcome A: A new effluent limitation will be placed in the permit.
- Outcome B: No new effluent limitation. Routine monitoring requirements will be placed or increased from what they are in the permit,
- Outcome C: No new effluent limitation. Routine monitoring requirements maintained as they are in the permit,
- Outcome D: No limitation or routine monitoring requirements are in the permit.

Initial screening for metals values that were submitted through the renewal application and discharge monitoring reports. A copy of the initial screening is included in the “Effluent Metals and RP Screening Results” table in this attachment.

A Summary of the RP Model inputs and outputs are included in the tables below.

Initial screening for metals values that were submitted through the discharge monitoring reports showed that a closer look at some of the metals is not needed.

A Summary of the RP Model inputs and outputs are included in the table below.

The Metals Initial Screening Table and RP Outputs Table are included in this attachment.

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<sup>9</sup> See Reasonable Potential Analysis Guidance for definitions of terms

RP Procedure Output					
Facility Name:	Central Davis				
Permit Number:	UT0020974				
Outfall Number:	Outfall 001				
Parameter	Arsenic				
Distribution	Delta-Lognormal				
Data Units	mg/L	Maximum Reported Effluent Conc.	0.0072	mg/L	
Reporting Limit	0.0005	Coefficient of Variation (CV)	0.1566		
Significant Figures	4	RP Multiplier	1.102		
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.007933	mg/L	
Acute Criterion	0.01	mg/L	RP for Acute?		NO
Chronic Criterion	0.15	mg/L	RP for Chronic?		NO
Human Health Criterion	0	mg/L	RP for Human Health?		N/A
Effluent Data					
#		#		#	
1	0.0072	7	0.0054	13	0.006
2	0.0064	8	0.0071	14	0.0052
3	0.0049	9	0.005	15	0.0054
4	0.0061	10	0.0048	16	0.006
5	0.005	11	0.0043	17	0.0049
6	0.0054	12	0.004	18	0.0055

RP Procedure Output					
Facility Name:	Central Davis				
Permit Number:	UT0020974				
Outfall Number:	Outfall 001				
Parameter	Cadmium				
Distribution	Delta-Lognormal				
Data Units	mg/L	Maximum Reported Effluent Conc.	0	mg/L	
Reporting Limit	0.0002	Coefficient of Variation (CV)	0		
Significant Figures	4	RP Multiplier	0		
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0	mg/L	
Acute Criterion	0.0077	mg/L	RP for Acute?		NO
Chronic Criterion	0.0008	mg/L	RP for Chronic?		NO
Human Health Criterion	0	mg/L	RP for Human Health?		N/A
Effluent Data					
#		#		#	
1	ND	7	ND	13	ND
2	ND	8	ND	14	ND
3	ND	9	ND	15	ND
4	ND	10	ND	16	ND
5	ND	11	ND	17	ND
6	ND	12	ND	18	ND

RP Procedure Output				
Facility Name:	Central Davis			
Permit Number:	UT0020974			
Outfall Number:	Outfall 001			
Parameter	Chromium (Total)			
Distribution	Delta-Lognormal			
Data Units	mg/L	Maximum Reported Effluent Conc.	0.0008	mg/L
Reporting Limit	0.0005	Coefficient of Variation (CV)	0.1472	
Significant Figures	4	RP Multiplier	1.096	
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.0008764	mg/L
Acute Criterion	0.05	mg/L	RP for Acute?	NO
Chronic Criterion	0	mg/L	RP for Chronic?	N/A
Human Health Criterion	0	mg/L	RP for Human Health?	N/A
Effluent Data				
#		#		#
1	ND	7	0.0006	13
2	ND	8	ND	14
3	0.0008	9	ND	15
4	ND	10	ND	16
5	ND	11	ND	17
6	ND	12	ND	18

RP Procedure Output				
Facility Name:	Central Davis			
Permit Number:	UT0020974			
Outfall Number:	Outfall 001			
Parameter	Copper			
Distribution	Delta-Lognormal			
Data Units	mg/L	Maximum Reported Effluent Conc.	0.027	mg/L
Reporting Limit	0.001	Coefficient of Variation (CV)	0.8173	
Significant Figures	4	RP Multiplier	1.561	
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.04215	mg/L
Acute Criterion	0.05	mg/L	RP for Acute?	NO
Chronic Criterion	0.03	mg/L	RP for Chronic?	YES
Human Health Criterion	0	mg/L	RP for Human Health?	N/A
Effluent Data				
#		#		#
1	0.014	7	0.019	13
2	0.018	8	0.015	14
3	0.0193	9	0.013	15
4	0.018	10	0.009	16
5	0.022	11	0.027	17
6	0.022	12	0.022	18

RP Procedure Output					
Facility Name:	Central Davis				
Permit Number:	UT0020974				
Outfall Number:	Outfall 001				
Parameter	Lead				
Distribution	Delta-Lognormal				
Data Units	mg/L	Maximum Reported Effluent Conc.	0	mg/L	
Reporting Limit	0.0005	Coefficient of Variation (CV)	0		
Significant Figures	4	RP Multiplier	0		
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0	mg/L	
Acute Criterion	0.015	mg/L	RP for Acute?		NO
Chronic Criterion	0.019	mg/L	RP for Chronic?		NO
Human Health Criterion	0	mg/L	RP for Human Health?		N/A
Effluent Data					
#		#		#	
1	ND	7	ND	13	ND
2	ND	8	ND	14	ND
3	ND	9	ND	15	ND
4	ND	10	ND	16	ND
5	ND	11	ND	17	ND
6	ND	12	ND	18	ND

RP Procedure Output					
Facility Name:	Central Davis				
Permit Number:	UT0020974				
Outfall Number:	Outfall 001				
Parameter	Mercury				
Distribution	Delta-Lognormal				
Data Units	mg/L	Maximum Reported Effluent Conc.	0.0000051	mg/L	
Reporting Limit	0.0000005	Coefficient of Variation (CV)	0.5505		
Significant Figures	4	RP Multiplier	1.528		
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.000007793	mg/L	
Acute Criterion	0.002	mg/L	RP for Acute?		NO
Chronic Criterion	0.000012	mg/L	RP for Chronic?		NO
Human Health Criterion	0	mg/L	RP for Human Health?		N/A
Effluent Data					
#		#		#	
1	0.0000037	7	0.0000041	13	0.0000029
2	0.0000018	8	0.0000019	14	
3	0.0000032	9	0.0000051	15	
4	0.0000012	10	0.0000017	16	
5	0.0000011	11	0.0000039	17	
6	0.0000018	12	0.0000013	18	

RP Procedure Output				
Facility Name:	Central Davis			
Permit Number:	UT0020974			
Outfall Number:	Outfall 001			
Parameter	Nickel			
Distribution	Delta-Lognormal			
Data Units	mg/L	Maximum Reported Effluent Conc.	0.0079	mg/L
Reporting Limit	0.0005	Coefficient of Variation (CV)	0.2525	
Significant Figures	4	RP Multiplier	1.167	
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.009223	mg/L
Acute Criterion	0.61	mg/L	RP for Acute?	NO
Chronic Criterion	0.1685	mg/L	RP for Chronic?	NO
Human Health Criterion	0	mg/L	RP for Human Health?	N/A
Effluent Data				
#		#		#
1	0.0071	7	0.0038	13
2	0.0055	8	0.0079	14
3	0.0038	9	0.0046	15
4	0.006	10	0.0056	16
5	0.0054	11	0.0039	17
6	0.0047	12	0.0055	18

RP Procedure Output				
Facility Name:	Central Davis			
Permit Number:	UT0020974			
Outfall Number:	Outfall 001			
Parameter	Selenium			
Distribution	Delta-Lognormal			
Data Units	mg/L	Maximum Reported Effluent Conc.	0.0037	mg/L
Reporting Limit	0.0005	Coefficient of Variation (CV)	0.3923	
Significant Figures	4	RP Multiplier	1.266	
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.004683	mg/L
Acute Criterion	0.018	mg/L	RP for Acute?	NO
Chronic Criterion	0.0046	mg/L	RP for Chronic?	YES
Human Health Criterion	0	mg/L	RP for Human Health?	N/A
Effluent Data				
#		#		#
1	0.0017	7	0.001	13
2	0.0017	8	0.0026	14
3	0.0015	9	0.002	15
4	0.002	10	0.0013	16
5	0.0016	11	0.001	17
6	0.001	12	0.0015	18

RP Procedure Output					
Facility Name:	Central Davis				
Permit Number:	UT0020974				
Outfall Number:	Outfall 001				
Parameter	Silver				
Distribution	Delta-Lognormal				
Data Units	mg/L	Maximum Reported Effluent Conc.	0	mg/L	
Reporting Limit	0.0005	Coefficient of Variation (CV)	0		
Significant Figures	4	RP Multiplier	0		
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0	mg/L	
Acute Criterion	0.035	mg/L	RP for Acute?	NO	
Chronic Criterion	0	mg/L	RP for Chronic?	N/A	
Human Health Criterion	0	mg/L	RP for Human Health?	N/A	
Effluent Data					
#		#		#	
1	ND	7	ND	13	ND
2	ND	8	ND	14	ND
3	ND	9	ND	15	ND
4	ND	10	ND	16	ND
5	ND	11	ND	17	ND
6	ND	12	ND	18	ND

RP Procedure Output					
Facility Name:	Central Davis				
Permit Number:	UT0020974				
Outfall Number:	Outfall 001				
Parameter	Molybdenum				
Distribution	Delta-Lognormal				
Data Units	mg/L	Maximum Reported Effluent Conc.	0.0061	mg/L	
Reporting Limit	0.0005	Coefficient of Variation (CV)	0.1279		
Significant Figures	4	RP Multiplier	1.083		
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.006603	mg/L	
Acute Criterion	0	mg/L	RP for Acute?	N/A	
Chronic Criterion	0	mg/L	RP for Chronic?	N/A	
Human Health Criterion	0	mg/L	RP for Human Health?	N/A	
Effluent Data					
#		#		#	
1	0.0059	7	0.0048	13	0.0045
2	0.0061	8	0.005	14	0.005
3	0.0039	9	0.0045	15	0.0055
4	0.0046	10	0.0058	16	0.0051
5	0.0047	11	0.0055	17	0.0041
6	0.0058	12	0.0046	18	0.0053

RP Procedure Output					
Facility Name:	Central Davis				
Permit Number:	UT0020974				
Outfall Number:	Outfall 001				
Parameter	Zinc				
Distribution	Delta-Lognormal				
Data Units	mg/L	Maximum Reported Effluent Conc.	0.04	mg/L	
Reporting Limit	0.01	Coefficient of Variation (CV)	0.4008		
Significant Figures	4	RP Multiplier	1.272		
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.05087	mg/L	
Acute Criterion	0.379	mg/L	RP for Acute?	NO	
Chronic Criterion	0.388	mg/L	RP for Chronic?	NO	
Human Health Criterion	0	mg/L	RP for Human Health?	N/A	
Effluent Data					
#		#		#	
1	0.02	7	0.03	13	0.04
2	0.02	8	0.02	14	0.03
3	0.02	9	0.04	15	ND
4	0.04	10	0.02	16	0.02
5	0.03	11	0.03	17	0.02
6	0.03	12	0.03	18	0.01

RP Procedure Output					
Facility Name:	Central Davis				
Permit Number:	UT0020974				
Outfall Number:	Outfall 001				
Parameter	Cyanide				
Distribution	Delta-Lognormal				
Data Units	mg/L	Maximum Reported Effluent Conc.	0.04	mg/L	
Reporting Limit	0.002	Coefficient of Variation (CV)	0.4008		
Significant Figures	4	RP Multiplier	1.272		
Confidence Interval	95	Projected Maximum Effluent Conc. (MEC)	0.05087	mg/L	
Acute Criterion	0.379	mg/L	RP for Acute?	NO	
Chronic Criterion	0.388	mg/L	RP for Chronic?	NO	
Human Health Criterion	0	mg/L	RP for Human Health?	N/A	
Effluent Data					
#		#		#	
1	0.02	7	0.03	13	0.04
2	0.02	8	0.02	14	0.03
3	0.02	9	0.04	15	ND
4	0.04	10	0.02	16	0.02
5	0.03	11	0.03	17	0.02
6	0.03	12	0.03	18	0.01