Official Draft Public Notice Version **March 18, 2026**
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FACT SHEET
PROVO WATER RECLAMATION FACILITY
RENEWAL PERMIT: DISCHARGE & BIOSOLIDS
UPDES PERMIT NUMBER: UT0021717
UPDES BIOSOLIDS PERMIT NUMBER: UTL-021717
MAJOR MUNICIPAL

FACILITY CONTACTS

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Permittee Name:	Provo City
Facility Name:	Provo Water Reclamation Facility
Mailing and Facility Address:	1377 S. 350 E. Provo, Utah 84606
Actual Address:	1685 South East Bay Boulevard Provo, Utah 84606

DESCRIPTION OF FACILITY

The Provo Water Reclamation Facility (Facility) serves the Provo City (Provo) with an average design flow of 21 million gallons a day (MGD), and a design population equivalent of 160,000. The Facility is located at 1685 South East Bay Boulevard in Provo City, Utah County, Utah, at latitude 40° 12’ 45” and longitude 111° 39’ 00”, with STORET Number 499656. The Facility was originally constructed in 1954 and was upgraded in 1978 and 1988, and is currently undergoing an upgrade. The final phase of this upgrade should be completed by the end of 2026.

The final build-out for the current upgrade will include the installation of a membrane bioreactor system, which will encompass new process basins, associated piping and equipment, and the repurposing of the four existing aeration basins for equalization and surge storage. The existing trickling filters and the existing secondary clarifiers are to be demolished. The existing final clarifiers, filter building, and backwash tank would be decommissioned. The majority of the Facility’s influent would flow to the existing influent junction structure, where the flow would be directed to the existing headworks facilities. A new, in-plant lift station would be constructed to receive additional sanitary sewer flows from the area southwest of the Facility. Flow received at the new lift stations would be pumped directly to the existing headworks facility.

The existing coarse screening and grit removal facilities would continue to be used. The solids processing facilities would be refurbished as necessary for continued use, including the primary sludge pump station,

primary and secondary digesters, dissolved air flotation thickener (DAFT) tank, and dewatering facility. A biosolids aeration struvite control system would be added to the existing solids stream process to promote the removal of phosphorous from the plant and to prevent struvite scaling.

Solids are handled by the following: one dissolved air flotation sludge thickener tank, two primary anaerobic sludge digesters with linear mixers, one unmixed secondary anaerobic sludge digesters, a final secondary anaerobic sludge digester with a linear mixer, and two centrifuges. After the solids treatment, the solids are land applied and/or composted.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

The QUAL2Kw model was calibrated with data collected by the Division of Water Quality (DWQ). The data is summarized in Appendix A of the 2025 wasteload analysis (WLA). As a result, the monthly average effluent limit for Whole Effluent Toxicity (WET) has changed slightly in both the fall and winter months (October – March) and the spring and summer months (April-September).

The total residual chlorine limit (TRC) in the WLA is based on the acute TRC water quality standard. Since the Facility utilizes ultraviolet (UV) disinfection and no longer has the ability to use chlorine, they have asked that this parameter be removed from the Permit. That request is being granted by DWQ.

A quantitative reasonable potential (RP) analysis was performed on available effluent data for metals. The analysis indicated that cyanide has a reasonable potential to exceed the applicable chronic water quality standard (Outcome A). Therefore, an effluent limitation for cyanide has been included in the Permit to ensure compliance with water quality standards and protection of the receiving water.

DISCHARGE

DESCRIPTION OF DISCHARGE

Provo has been reporting self-monitoring results on Discharge Monitoring Reports (DMRs) on a monthly basis. In the last five years, Provo has had a good compliance history, with one permit exceedance for Total Suspended Solids (TSS) in December 2024. For more information regarding Provo's compliance history see the following website echo.epa.gov/effluent-charts#UT0021717.

Outfall Number	Location of Discharge Point
001	The discharge point is located at latitude 40°12'45", longitude 111°39'00". The effluent is discharged into the Mill Race, thence to Timpanogos Golf Course, then into Utah Lake.

RECEIVING WATERS AND STREAM CLASSIFICATION

The discharge flows into the Mill Race and thence to Utah Lake. Mill Race is Class 2B, 3B, and 4, according to Utah Administrative Code (UAC) R317-2-13.5.c.:

Class 2B - Protected for secondary contact recreation such as boating, wading, or similar uses.

Class 3B - Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.

Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.

TOTAL MAXIMUM DAILY LOAD (TMDL) REQUIREMENTS
This Facility ultimately discharges to Utah Lake, which is listed on Utah's 2006 303(d) list of impaired waterbodies. Utah Lake has been identified as impaired for total phosphorous (TP) and total dissolved solids (TDS). Due to the listing of TDS the Facility will be required to self-monitor for TDS on a monthly basis in order to better quantify loading of this pollutant of concern. The TP listing was based on an indicator of 0.25 mg/L.

Currently, a Utah Lake strategy is in the process of being developed. The process will include time frames for further assessment and decision points for developing a Use Attainability Analysis, TMDL, or site-specific standards for TP. This process may result in pollutant load reductions and wasteload allocations. Wasteload allocations would then be translated to effluent limits in UPDES permits. It is therefore strongly recommended that the Facility's staff participate in the process. The Facility is currently undergoing an upgrade to address nutrients, including TP.

BASIS FOR EFFLUENT LIMITATIONS
In accordance with regulations promulgated in 40 Code of Federal Regulations Part 122.44 and UAC R317-8-4.2, effluent limitations are derived from technology-based effluent limitations guidelines, Utah Secondary Treatment Standards (UAC R317-1-3.2) or Utah Water Quality Standards (UAC R317-2) as applicable. In cases where multiple limits have been developed, those that are more stringent apply. In cases where no limits or multiple limits have been developed, Best Professional Judgment (BPJ) of the permitting authority may be used where applicable. Best Professional Judgment refers to a discretionary, best professional decision made by the permit writer based upon precedent, prevailing regulatory standards, or other relevant information.

Permit limits can also be derived from the WLA, which incorporates Secondary Treatment Standards, Water Quality Standards, including any applicable TMDL impairments as appropriate, Antidegradation Review (ADRs), and designated uses into a water quality model that projects the effects of discharge concentrations on receiving water quality. Effluent limitations are those that the model demonstrates are sufficient to meet State water quality standards in the receiving waters. During this UPDES renewal permit development, a WLA and ADR were completed as appropriate, and it was determined that this discharge will not cause a violation of water quality standards. An Antidegradation Level II review was required in the previous permit due to upgrades to the Facility, which covers upgrades during this Permit renewal. The WLA indicates that the effluent limitations will be sufficiently protective of water quality, in order to meet State water quality standards in the receiving waters. The WLA with ADR information is attached to this Fact Sheet.

Limitations on TSS, biochemical oxygen demand (BOD5), E. coli, pH, and percent removal for BOD_5 and TSS are based on current Utah Secondary Treatment Standards, UAC R317-1-3.2. The oil and grease is based on BPJ. The WET, ammonia, cyanide, and dissolved oxygen (DO) limitations are based on the WLA. The Permittee is expected to be able to comply with these limitations. The TP limit is based on the Utah Technology-Based Phosphorus Effluent Limit (TBPEL) rule, UAC R317-1-3.3

Reasonable Potential Analysis
Since January 1, 2016, DWQ has conducted RP analysis on all new and renewal applications received after that date. RP analysis for this permit renewal was conducted following DWQ's September 10, 2015 Reasonable Potential Analysis Guidance (RP Guidance). There are four outcomes defined in the RP Guidance: Outcome A, B, C, or D. These Outcomes provide a frame work for what routine monitoring or effluent limitations are required.

A quantitative RP analysis was performed on all metals to determine if there was reasonable potential for

the discharge to exceed the applicable water quality standards. Based on the RP analysis, the following parameters exceeded the most stringent chronic water quality standard or were determined to have a reasonable potential to exceed the standard: Cyanide (Outcome A). In addition, the RP analysis for Copper indicates increased monitoring is required (Outcome B). A copy of the RP analysis is included at the end of this Fact Sheet.

The Permit limitations are:

Parameter	Effluent Limitations *a					
	Monthly Average	Weekly Minimum Average	Weekly Average	Yearly Average	Daily Minimum	Daily Maximum
Flow, MGD	21.0	--	--	--	--	--
BOD_5, mg/L	25	--	35	--	--	--
BOD_5 Min. % Removal	85	--	--	--	--	--
TSS, mg/L	25	--	35	--	--	--
TSS Min. % Removal	85	--	--	--	--	--
E-Coli, No./100mL	126	--	157	--	--	--
Ammonia, mg/L						
Summer (July – September)	3.0	--	--	--	--	8.0
Fall (Oct – Dec)	4.0	--	--	--	--	12.0
Winter (Jan – Mar)	5.0	--	--	--	--	14.0
Spring (Apr – Jun)	3.5	--	--	--	--	12.0
WET, Chronic Biomonitoring						
October – March	--	--	--	--	--	Pass, IC25 > 94% effluent
April — September	--	--	--	--	--	Pass, IC25 > 93% effluent
TP, mg/L	--	--	--	1.0	--	--
Cyanide, µg/L	5.4	--	--	--	--	--
Oil & Grease, mg/L	--	--	--	--	--	10
pH, Standard Units	--	--	--	--	6.5	9.0
DO, mg/L	--	6.0	--	--	5.0	--

SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements are the same as in the previous permit, except for the removal of TRC and an increase in monitoring frequency for cyanide. The Permit requires reports to be submitted monthly and annually, as applicable, on DMR forms due 28 days after the end of the monitoring period. Effective January 1, 2017, monitoring results shall be submitted using NetDMR unless the Permittee has successfully petitioned for an exception. Lab sheets for biomonitoring, metals and toxic organics shall be attached to the DMRs.

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units

Total Flow *b, *c	Continuous	Recorder	MGD
BOD_5, Influent *d Effluent	5 x Weekly 5 x Weekly	Composite Composite	mg/L mg/L
TSS, Influent *d Effluent	5 x Weekly 5 x Weekly	Composite Composite	mg/L mg/L
E. Coli	5 x Weekly	Grab	No./100mL
pH	5 x Weekly	Grab	SU
Total Ammonia (as N)	5 x Weekly	Grab	mg/L
DO	5 x Weekly	Grab	mg/L
WET – Biomonitoring *f	Quarterly	Composite	Pass/Fail
Cyanide	Monthly	Grab	mg/L
Copper	Monthly	Composite	mg/L
Oil & Grease *e	When Sheen is Observed	Grab	mg/L
Total Dissolved Solids	Monthly	Composite	mg/L
Total Ammonia	Monthly	Composite	mg/L
Orthophosphate, (as P) Effluent	Monthly	Composite	mg/L
TP Influent Effluent	Monthly Monthly	Composite Composite	mg/L mg/L
TP	Yearly	Average	mg/L
Total Kjeldahl Nitrogen, TKN (as N) Influent Effluent	Monthly Monthly	Composite Composite	mg/L mg/L
Nitrite-Nitrate, NO3	Monthly	Composite	mg/L
Metals, Influent *g Effluent	Quarterly Quarterly	Composite Composite	mg/L mg/L
Organic Toxics, *g	Yearly	Grab	mg/L

*a See Definitions, *Part VIII*, for definition of terms.
*b Flow measurements of influent/effluent volume shall be made in such a manner that the Permittee can affirmatively demonstrate that representative values are being obtained.
*c If the rate of discharge is controlled, the rate and duration of discharge shall be reported.
*d 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.
*e Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.
*f In the even calendar years Ceriodaphnia will be tested during the 1st and 3rd quarters, and fathead minnows will be tested during the 2nd and 4th quarters. In the odd calendar years fathead minnows will be tested during the 1st and 3rd quarters and Ceriodaphnia will be tested during the 2nd and 4th quarters.
*g See Part II of this permit for additional requirements regarding sampling for metals and organic toxics.

All Permit compliance monitoring typically occurs in the UV building, 200 feet from the Outfall location listed in the DESCRIPTION OF DISCHARGE Section above. DWQ has determined this location to be representative of discharge at the Outfall location.

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 Permittee submitted their 2024 annual biosolids report on February 18, 2025. The report states the Permittee produced 1,087 dry metric tons (DMT) of solids.

The solids from the primary settlement and activated sludge aeration basins are thickened by dissolved air flotation then stabilized in primary and secondary anaerobic digesters with a mean cell residence time of at least 15 days with a minimum temperature of at least 95 °F (35 °C).

After stabilization the biosolids are de-watered with a high-speed centrifuge to about twenty one percent solids. The facility still maintains drying beds for storage and back up dewatering when systems are down for maintenance.

The facility has been producing on average 1,049 DMT of Class B biosolids over the last 10 years. But the annual amount is trending upwards with the 10-year average in 2019 being 940 DMT. They will not have to increase the minimum frequency of monitoring until they expect to exceed 1500 DMT annual production. The biosolids met the heavy metals requirements to be considered Exceptional Quality and met Class B pathogen reduction requirements through time and temperature of the anaerobic digesters.

The FACILITY beneficially reuses the biosolids through land application at the Farmland Reserve Incorporated farm in Utah County. They also have the ability to transport the biosolids to the South Utah Valley Solid Waste District (SUVSWD).

SELF-MONITORING REQUIREMENTS

Under 40 C.F.R. § 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 following chart:

Minimum Frequency of Monitoring (40 C.F.R. § Part 503.16, 503.26. and 503.46)		
Amount of Biosolids Produced, Processed, or Disposed of 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
> 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

The FACILITY has been producing on average 1,049 DMT of Class B biosolids over the last 10 years, therefore they shall sample at least four times a year.

Landfill Monitoring

Under 40 C.F.R. § 258, the landfill monitoring requirements include a paint filter test. If the biosolids do

not pass a paint filter test, the biosolids shall not be disposed in the sanitary landfill (40 C.F.R. § 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 C.F.R. § 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 shall 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 shall 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 shall be provided to the public, because the Permittee shall not be 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 shown in the following Table 3 column. If the biosolids do not meet these requirements, the biosolids shall not 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 C.F.R. § 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 shall 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 C.F.R. § 503.13, to any reasonable degree, the Class B biosolids shall 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 shall meet at all times:

> The maximum heavy metals concentration limits listed in 40 C.F.R. § Part 503.13(b) Table 1 and the heavy metals loading rates in 40 C.F.R. § Part 503.13(b) Table 2; or
>
> The maximum heavy metals in 40 C.F.R. § Part 503.13(b) Table 1 and the monthly heavy metals concentration limits in 40 C.F.R. § Part 503.13(b) Table 3.

Tables 1, 2, 3 and 4 of Heavy Metal Limitations:

Pollutant Limits, (40 C.F.R. § Part 503.13(b)) Dry Mass Basis				
Heavy Metals	Table 1	Table 2	Table 3	Table 4
	Ceiling Conc. Limits [1], (mg/kg)	CPLR [2], (kg/ha)	Pollutant Conc. Limits [3] (mg/kg)	APLR [4], (kg/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
1, If the concentration of any 1 (one) of these parameters exceeds the Table 1 limit, the biosolids shall not be land applied or beneficially reused in any way.				
2, CPLR - Cumulative Pollutant Loading Rate - The maximum loading for any 1 (one) of the parameters listed that may be applied to land when biosolids are land applied or beneficially used on agricultural, forestry, or reclamation site.				
3, If the concentration of any 1 (one) of these parameters exceeds the Table 3 limit, the biosolids shall not be land applied or beneficially used in on a lawn, home garden, or other high potential public contact site (40 C.F.R. § Part 503.31(d)). If any 1 (one) of these parameters exceeds the Table 3 limit, the biosolids may be land applied or beneficially reused on an agricultural, forestry, reclamation site, or other high potential public contact site, as long as it meets the requirements of Table 1, Table 2, and Table 4.				
4, APLR - Annual Pollutant Loading Rate - The maximum annual loading for any 1 (one) of the parameters listed that may be applied to land when biosolids are land applied or beneficially reused on agricultural, forestry, or a reclamation site, when they do not meet Table 3, but do meet Table 1.				

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 shall not be land applied.

Pathogens

The following table presents Pathogen Control Class limitations that 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[1] per four (4) grams total solids (DWB)[2] or Fecal Coliforms – less than 1,000 MPN per gram total solids (DWB).	Fecal Coliforms – less than 2,000,000 MPN or CFU[3] per gram total solids (DWB).
503.32 (a)(6) Class A—Alternative 4	

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 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)	
1 - MPN – Most Probable Number	
2 - DWB – Dry Weight Basis	
3 - CFU – Colony Forming Units	

Class A Requirements for Home Lawn and Garden Use

If biosolids are land applied to home lawns and gardens, the biosolids shall 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 (40 C.F.R. § 503.32(a)(7)(i)). At this time FACILITY does not intend to distribute biosolids to the public for use on the lawn and garden and thus is not required meet Class A Biosolids requirements currently.

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 shall not 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 shall be treated by a specific process to significantly reduce pathogens (PSRP). FACILITY has chosen to achieve PSRP through Anaerobic Digestion .

1. Under 40 C.F.R. § 503.32 (b)(3) Appendix (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).

Vector Attraction Reduction (VAR)

If the biosolids are land applied FACILITY shall be required to meet VAR through the use of a method of listed under 40 C.F.R. § 503.33. FACILITY intends to meet the vector attraction reduction requirements through one of the methods listed below.

1. Under 40 C.F.R. § 503.33(b)(1), the solids shall be treated through anaerobic digestion for at least 15 days at a temperature of a least 35° C (95° F) with a 38% reduction of volatile solids.

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

If the Permittee intends to use another one of the listed alternatives in 40 C.F.R. § 503.33, the Director and the EPA shall be informed at least thirty (30) days prior to its use. This change may be made without

additional public notice

Landfill Monitoring
Under 40 C.F.R. § 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 shall not be disposed in the sanitary landfill (40 C.F.R. § 258.28(c)(1)).

Record Keeping
The record keeping requirements from 40 C.F.R. § 503.17 are included under Part III.G. of the permit. The amount of time the records shall 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 C.F.R. § 503.13, and are sold or given away the records shall be retained for a minimum of five years. If the biosolids are disposed in a landfill the records shall retained for a minimum of five years.

Reporting
For calendar years during which biosolids are produced and/or processed the FACILITY shall report annually as required in 40 C.F.R. § 503.18. This report shall 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 FACILITY is required to sample for metals at least four times annually. All biosolids land applied over the last decade have met Table 3 of 40 CFR 503.13, therefore the FACILITY biosolids qualify as EQ with regards to metals. The monitoring data is summarized below.

FACILITY Metals Monitoring Data

Provo Monitoring Data, 2016 – 2024 (Land Application)			
Parameter	Table 3, mg/kg (Exceptional Quality)	Average, mg/kg	Maximum, mg/kg
Arsenic	41	5.9	11
Cadmium	39	1.6	5
Copper	1,500	672	1260
Lead	300	15.3	28
Mercury	17	0.7	2
Molybdenum	NA	9.0	20
Nickel	420	31	287
Selenium	100	18	53
Zinc	2,800	884	1450

STORM WATER

Separate storm water permits may be required based on the types of activities occurring on site.

Permit coverage under the Multi Sector General Permit (MSGP) for Storm Water Discharges from Industrial Activities may be required based on the Standard Industrial Classification (SIC) code for the facility and the types of industrial activities occurring. MSGP coverage is required for Treatment Works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 million gallons per day (MGD) or more, or required to have an approved pretreatment program under 40 C.F.R. § Part 403. If the facility is not already covered, it has 30 days from when this permit is issued to submit the appropriate Notice of Intent (NOI) for the MSGP or exclusion documentation

Permit coverage under the Construction General Storm Water Permit (CGP) is required for any construction at the facility which disturb an acre or more, or is part of a common plan of development or sale that is an acre or greater. A Notice of Intent (NOI) is required to obtain a construction storm water permit prior to the period of construction.

Information on storm water permit requirements can be found at http://stormwater.utah.gov

PRETREATMENT REQUIREMENTS

Provo owns, maintains and operates the Publicly Owned Treatment Works (POTW) within the Provo service area. The water reclamation facility has a design flow of greater than 5.0 MGD and has Significant Industrial Users discharging to the POTW; therefore, Provo is required to implement an Approved POTW Pretreatment Program (Program). The authority to require a Program is provided in 19-5-108 UCA, 1953 ann. and UAC R317-8-8.

The pretreatment requirements for administering the Program remain the same in the permit. Provo should review the Program and make changes as needed. Any substantial or non-substantial changes to the Program, as defined in 40 CFR 403.18, must be submitted to the Division of Water Quality for approval.

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 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 in Part II of the permit have been added. One requirement is to ensure that if the allowable headworks loading is above the value calculated for the local limit development, then notification must occur and additional monitoring may need to occur. The other change is a requirement to notify the Director of any new pollutants or increased pollutants by an Industrial User.

Provo will be required to annually evaluate 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 must be revised. The initial evaluation is due twelve months after the effective date of the permit. The permittee should utilize the EPA Local Limits Development Guidance when evaluating the local limits. Information is provided in Chapter

7 of the EPA Local Limits Development Guidance 2004 to assist with 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 State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring). 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 WET testing. A review of the past three years of WET testing results indicates that no toxicity has been reported. Therefore, the Permittee will continue Chronic WET testing using one species quarterly, alternating between *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnow). The permit will contain the standard requirements for re-testing upon failure of a WET test, and for a Toxicity Reduction Evaluation (TRE) as appropriate.

Chronic toxicity occurs when the survival, growth, or reproduction for either test species, when exposed to a dilution of 94% from October through March and 93% from April through September or lower, is significantly less (at 95% confidence level) than that of the control specimens. The 95% effluent dilution criterion is based upon the waste load analysis and is consistent with previous permit conditions. The permit will also contain a toxicity limitation re-opener provision. This provision allows for modification of the permit at any time to include WET limitations and/or increased WET monitoring, should additional information indicate the presence of toxicity in the discharge.

PERMIT DURATION

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

Drafted and Reviewed by
Lonnie Shull, Biomonitoring, Discharge Permit Writer,
Reasonable Potential Analysis
Daniel Griffin, Biosolids
Jennifer Robinson, Pretreatment
Jordan Bryant, Storm Water
Scot Daly, TMDL/Watershed Protection
Chris Shope, Wasteload Analysis/ADR
Utah Division of Water Quality, (801) 536-4300

PUBLIC NOTICE INFORMATION (to be updated after)

Began: Month Day, Year
Ended: Month Day, Year

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

The Public Notice of the draft permit was published on State of Utah and/or DWQ's website for at least 30 days as required.

During the public notice and comment period provided under UAC R317-8-6.5, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments will be considered in making the final decision and shall be answered as provided in UAC R317-8-6.12.

ADDENDUM TO FACT SHEET

During finalization of the Permit certain dates, spelling edits and minor language corrections were completed. Due to the nature of these changes, they are considered minor changes and the permit is not required to be re Public Noticed as provided in UAC R317-8-5.6(3).

Responsiveness Summary

(Explain any comments received and response sent. Actual letters can be referenced, but not required to be included).

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ATTACHMENT 1

Effluent Monitoring Data

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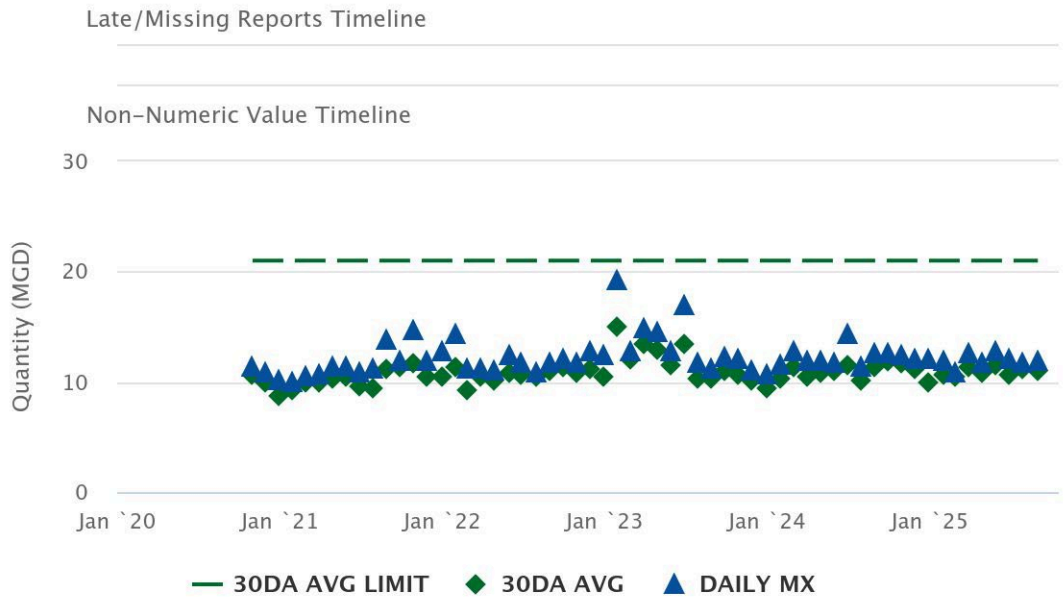
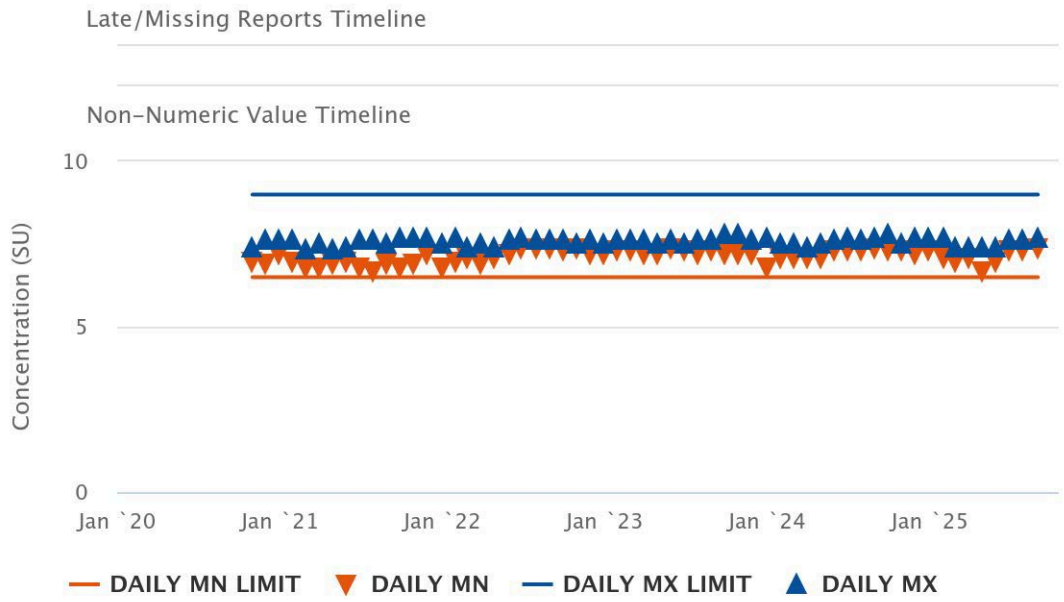
Effluent Monitoring Data.

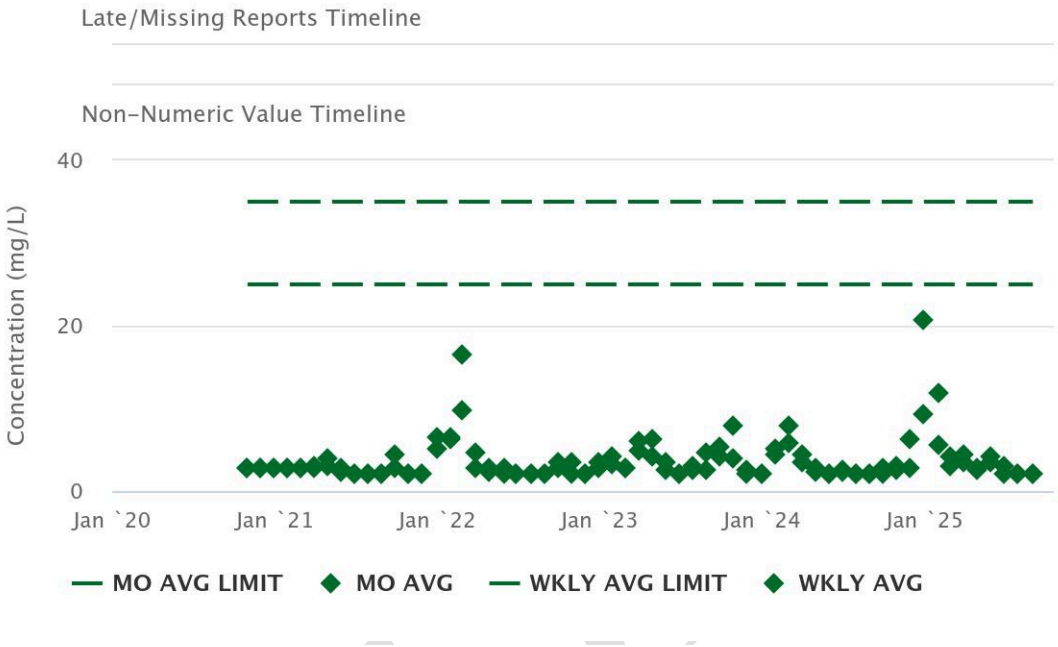
PROVO CITY CORPORATION (UT0021717) 001 – Flow, in conduit or thru treatment plant – Effluent Gross – Quantity



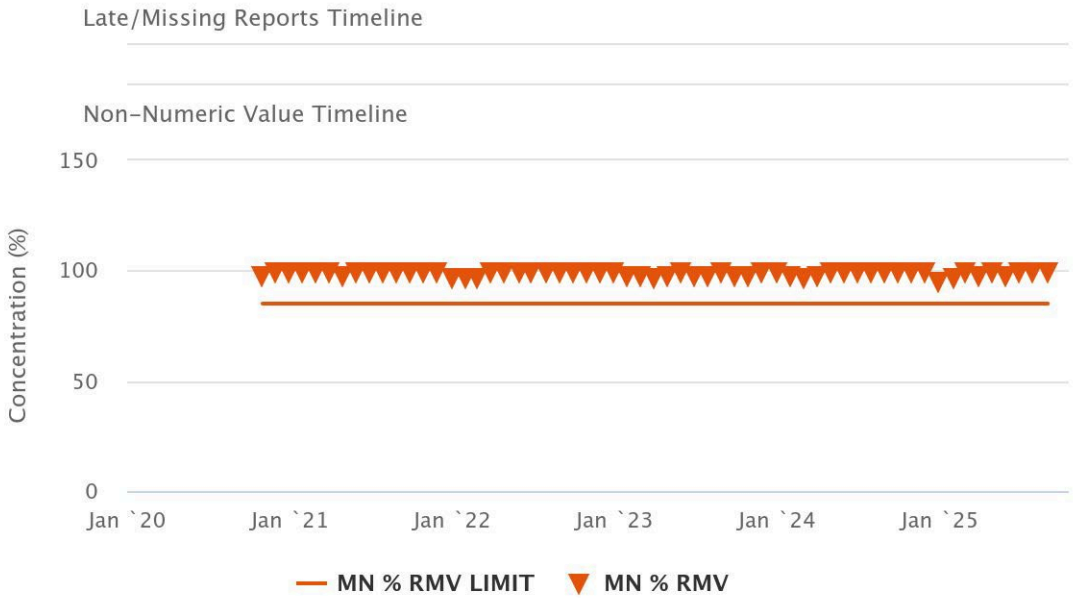
PROVO CITY CORPORATION (UT0021717) 001 – pH – Effluent Gross – Concentration



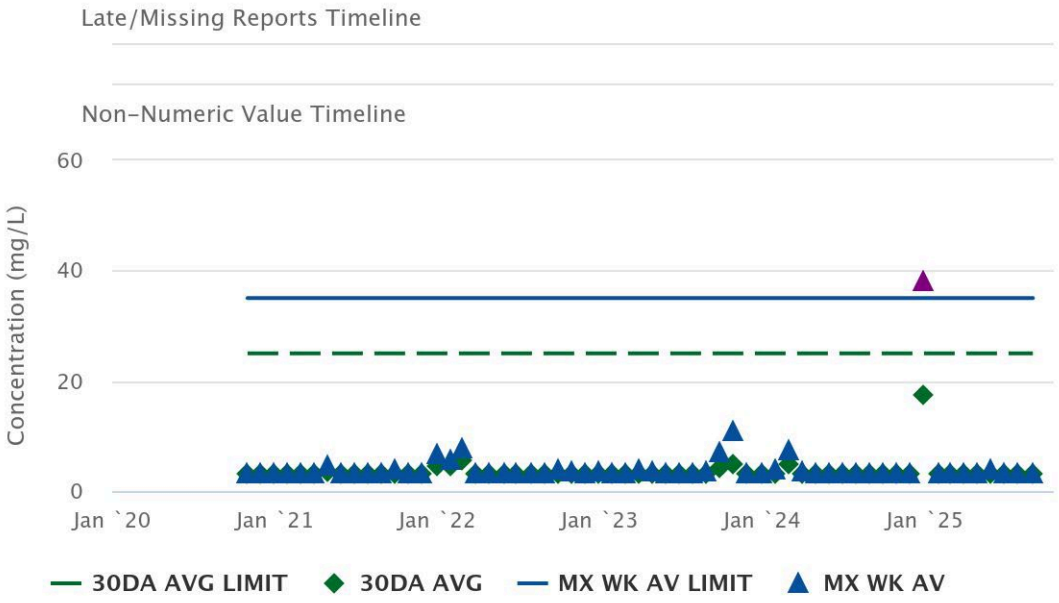
PROVO CITY CORPORATION (UT0021717) 001 - BOD, 5-day, 20 deg. C - Effluent Gross - Concentration



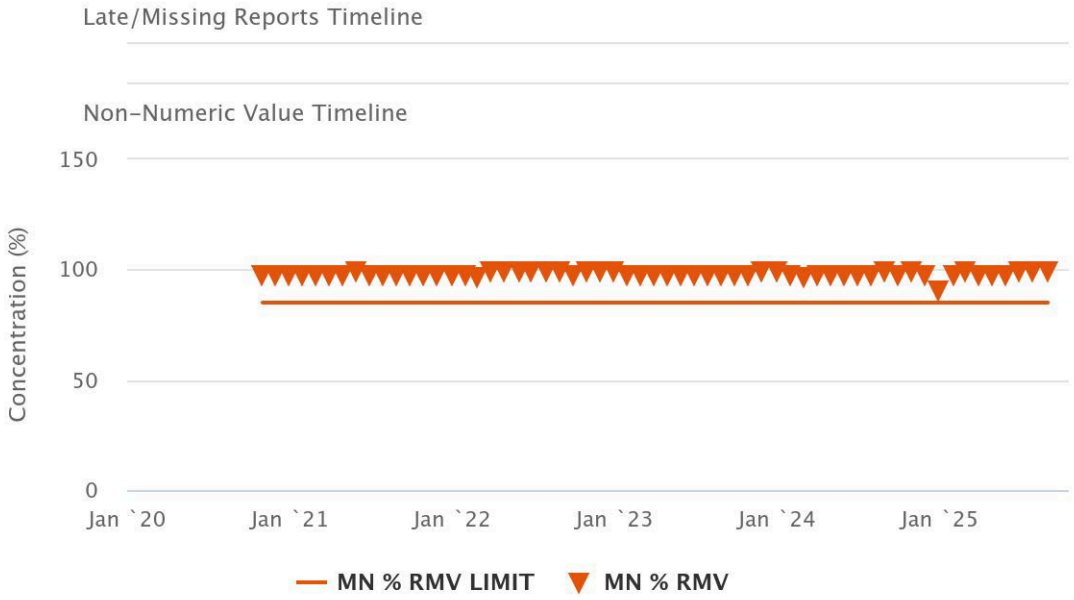
PROVO CITY CORPORATION (UT0021717) 001 - BOD, 5-day, percent removal - Percent Removal - Concentration



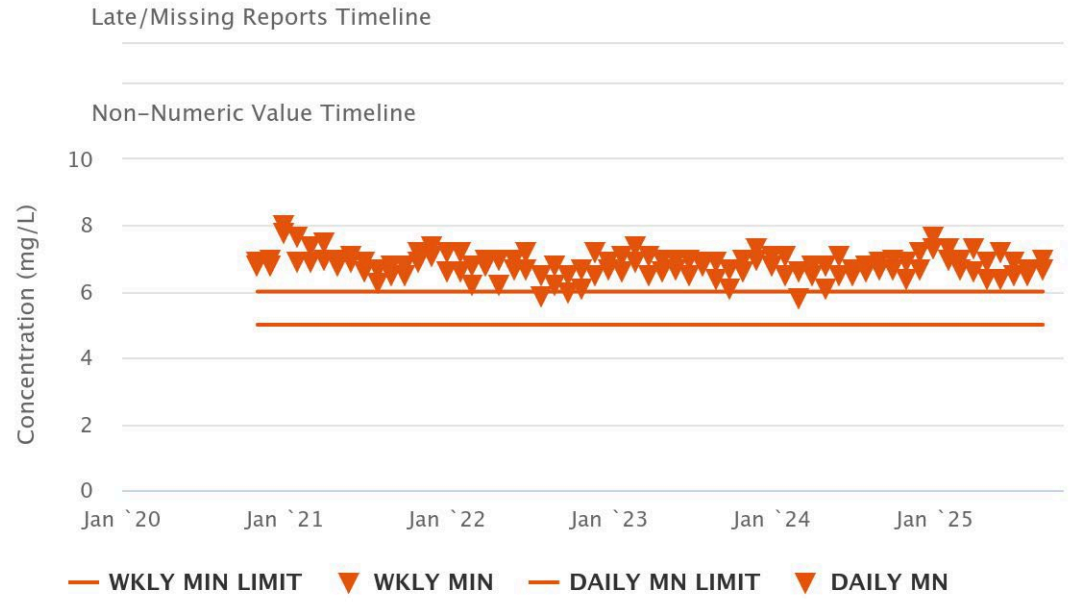
PROVO CITY CORPORATION (UT0021717) 001 – Solids, total suspended – Effluent Gross – Concentration



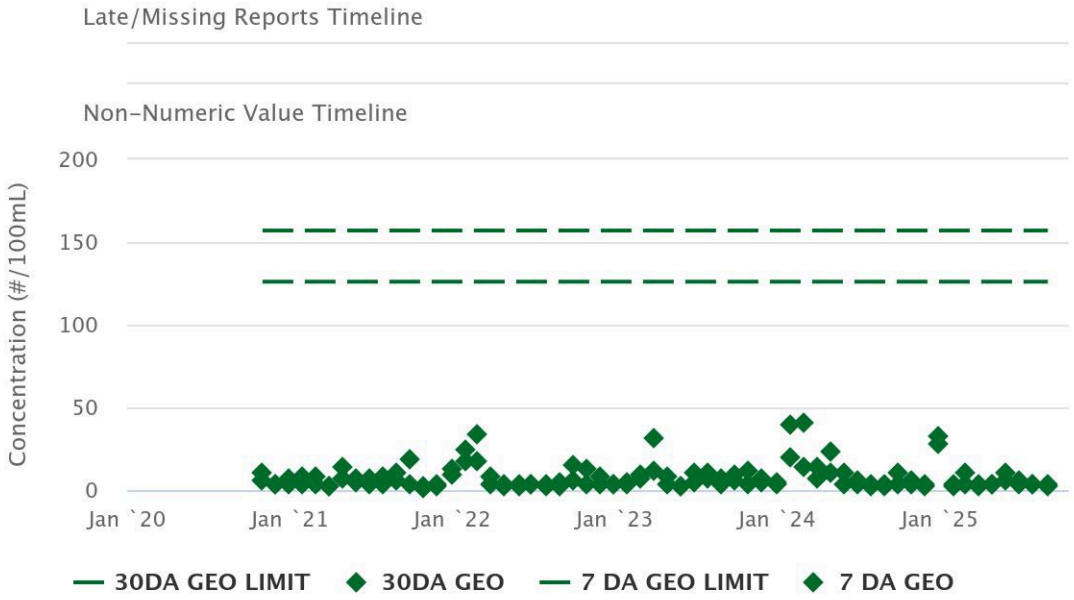
PROVO CITY CORPORATION (UT0021717) 001 – Solids, suspended percent removal – Percent Removal – Concentration



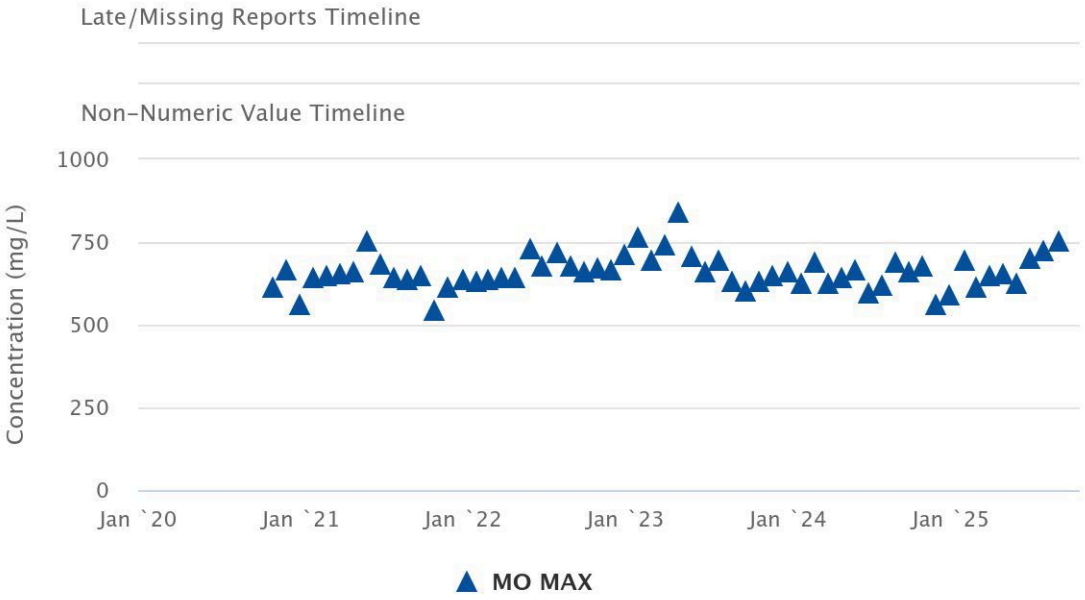
PROVO CITY CORPORATION (UT0021717) 001 - Oxygen, dissolved [DO] - Effluent Gross - Concentration



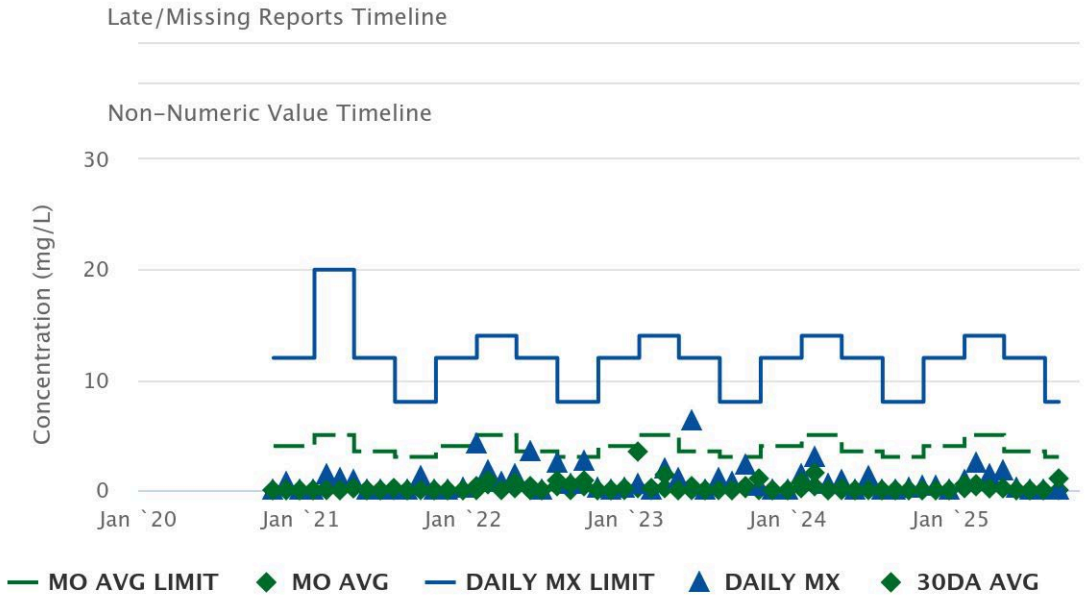
PROVO CITY CORPORATION (UT0021717) 001 - E. coli - Effluent Gross - Concentration



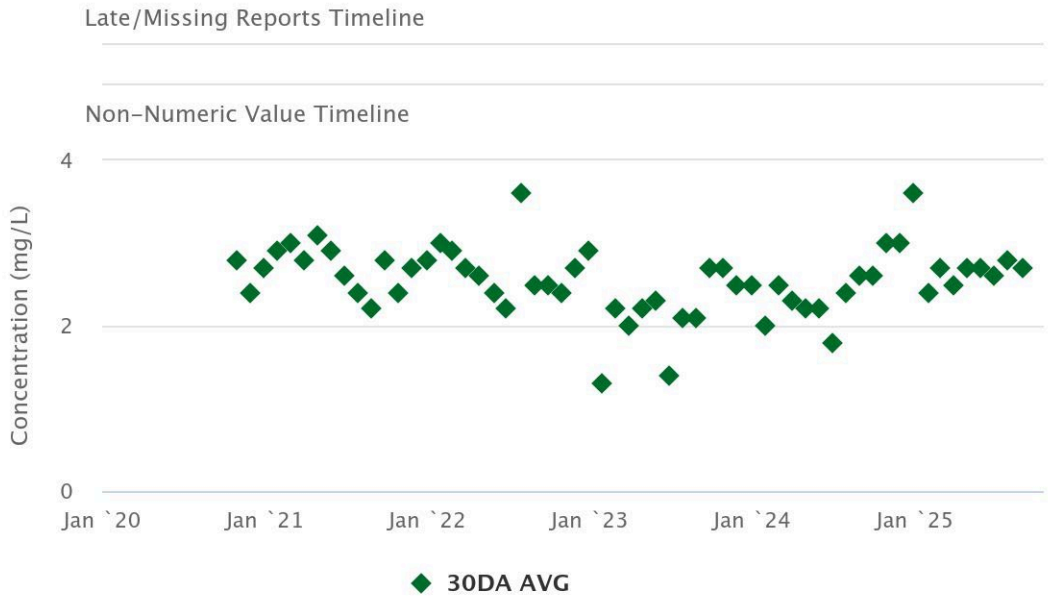
PROVO CITY CORPORATION (UT0021717) 001 - Solids, total dissolved - Effluent Gross - Concentration



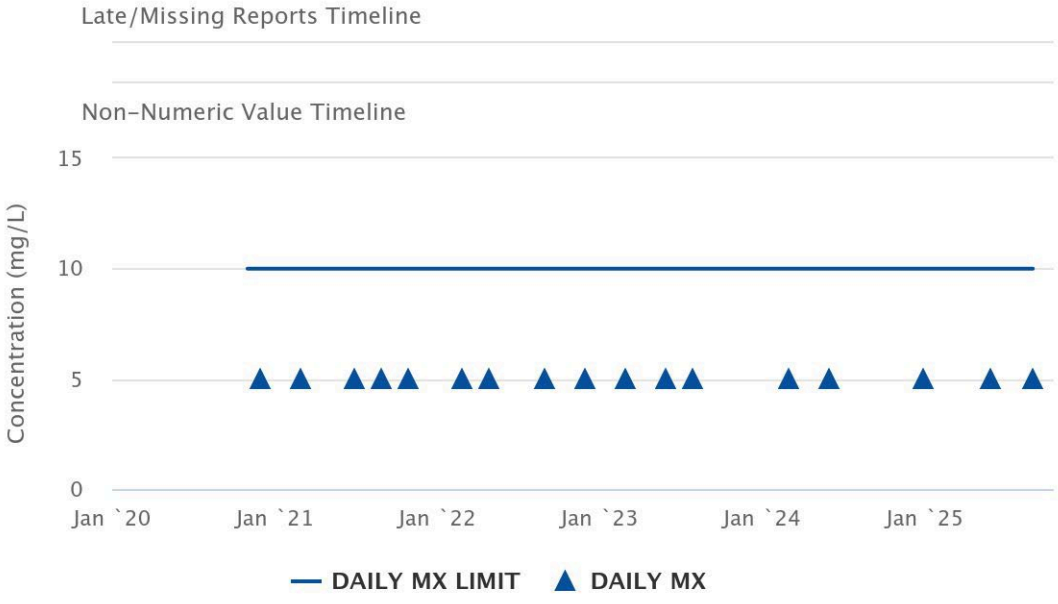
PROVO CITY CORPORATION (UT0021717) 001 - Nitrogen, ammonia total [as N] - Effluent Gross - Concentration



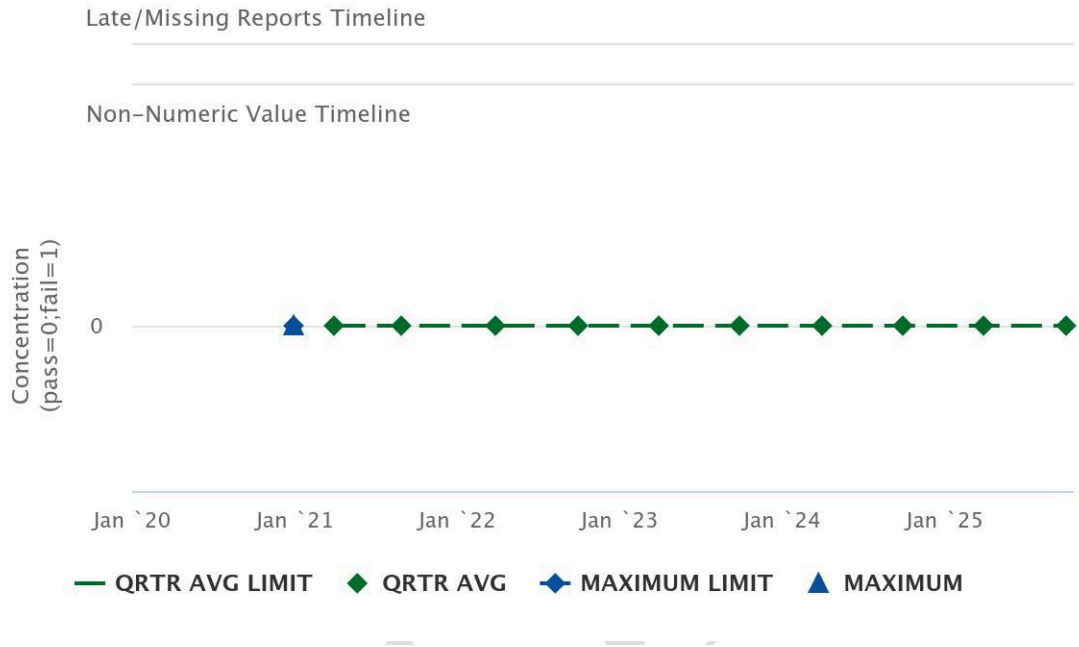
PROVO CITY CORPORATION (UT0021717) 001 – Phosphorus, total [as P] – Effluent Gross – Concentration



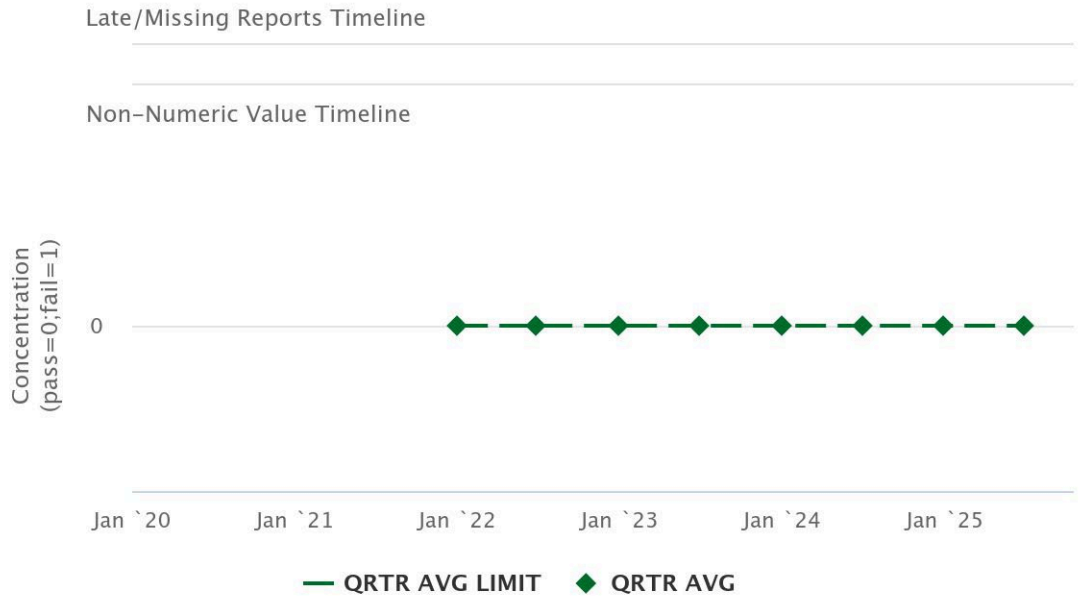
PROVO CITY CORPORATION (UT0021717) 001 – Oil & Grease – Effluent Gross – Concentration



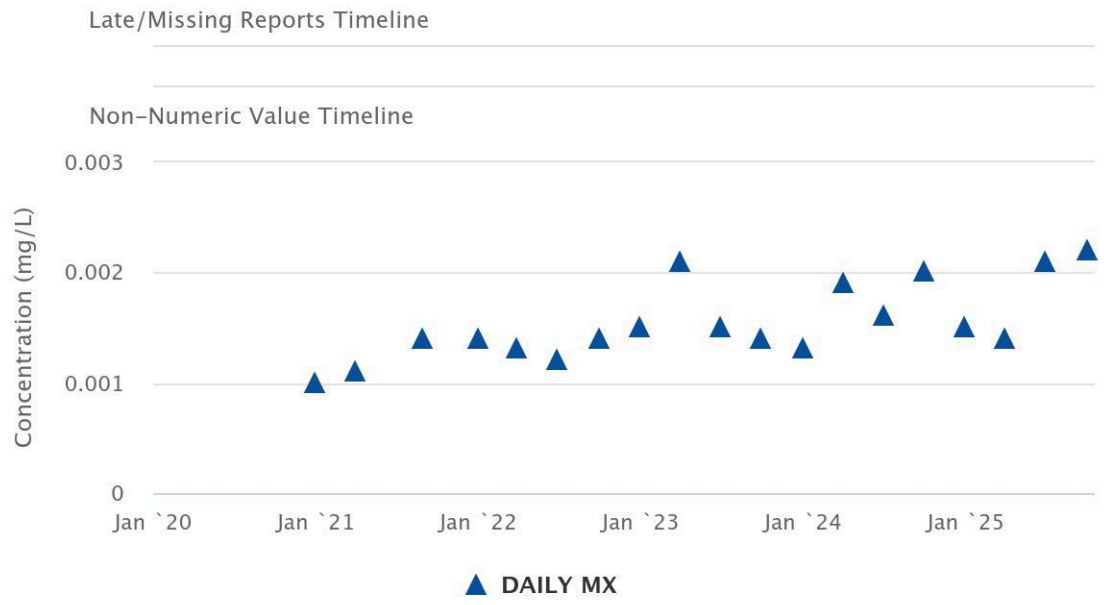
PROVO CITY CORPORATION (UT0021717) 001 - Pass/Fail Static Renewal 7Day Chronic Pimephales promelas - Effluent Gross - Concentration



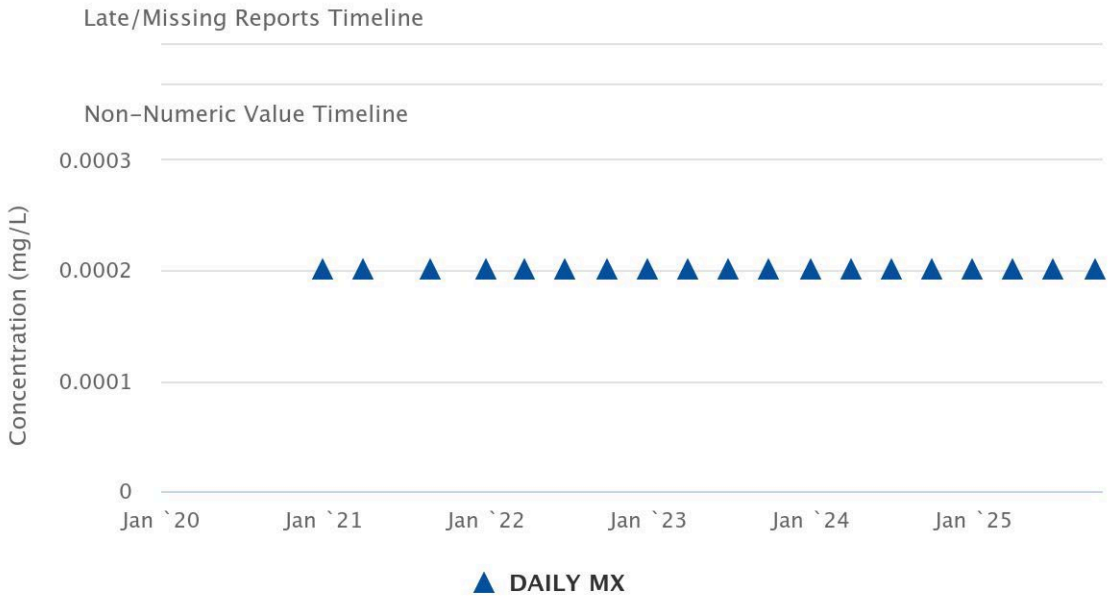
PROVO CITY CORPORATION (UT0021717) 001 - Pass/Fail Static Renewal 7 Day Chronic Ceriodaphnia dubia - Effluent Gross - Concentration



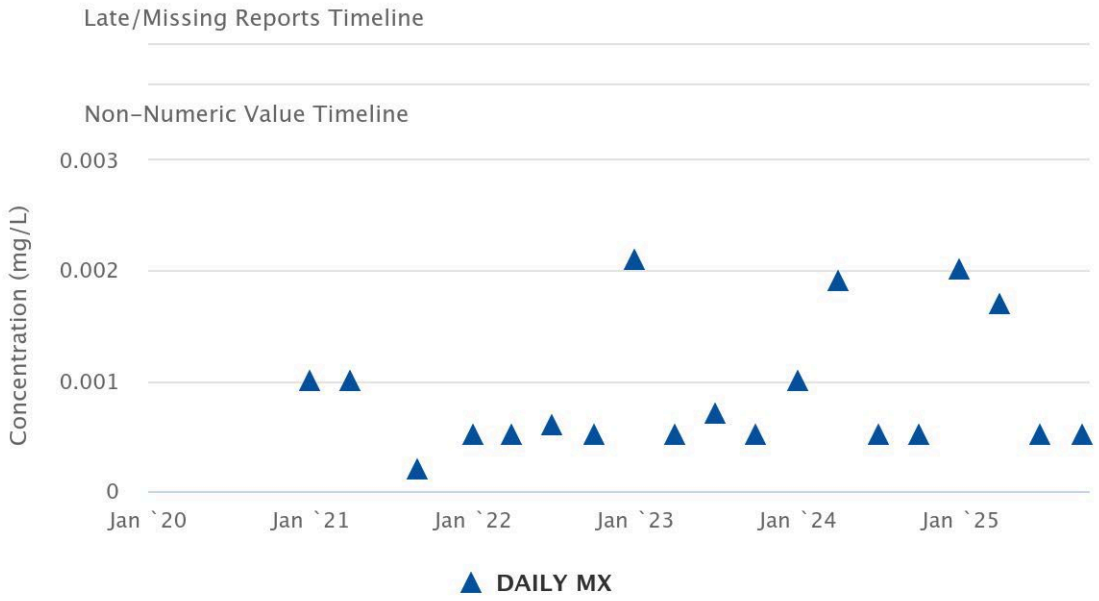
PROVO CITY CORPORATION (UT0021717) 001 – Arsenic, total [as As] – Effluent Gross – Concentration



PROVO CITY CORPORATION (UT0021717) 001 – Cadmium, total [as Cd] – Effluent Gross – Concentration

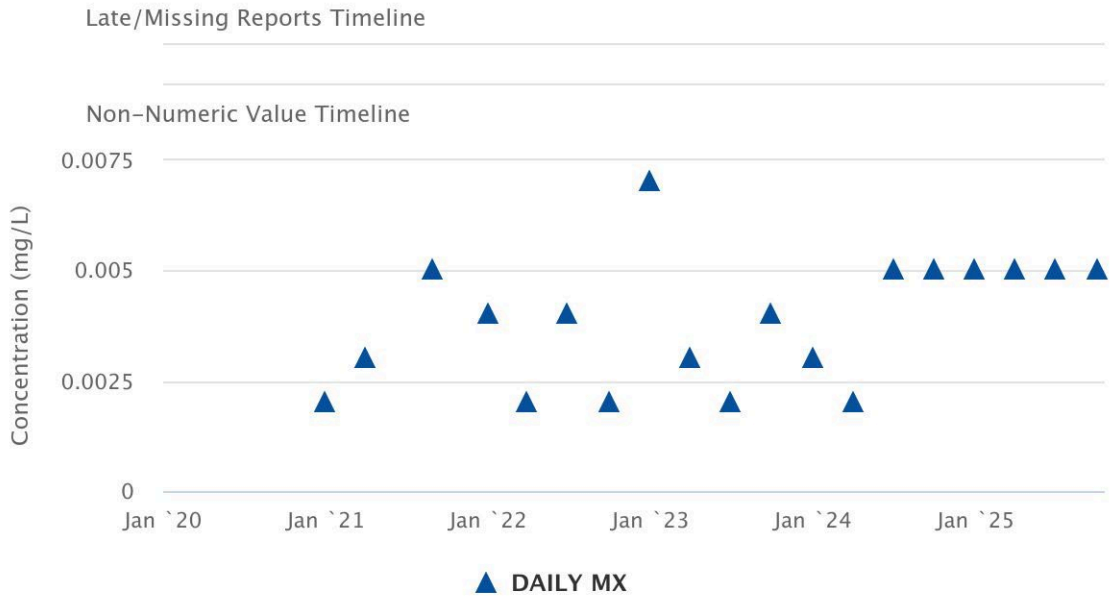


PROVO CITY CORPORATION (UT0021717) 001 – Chromium, total [as Cr] – Effluent Gross – Concentration

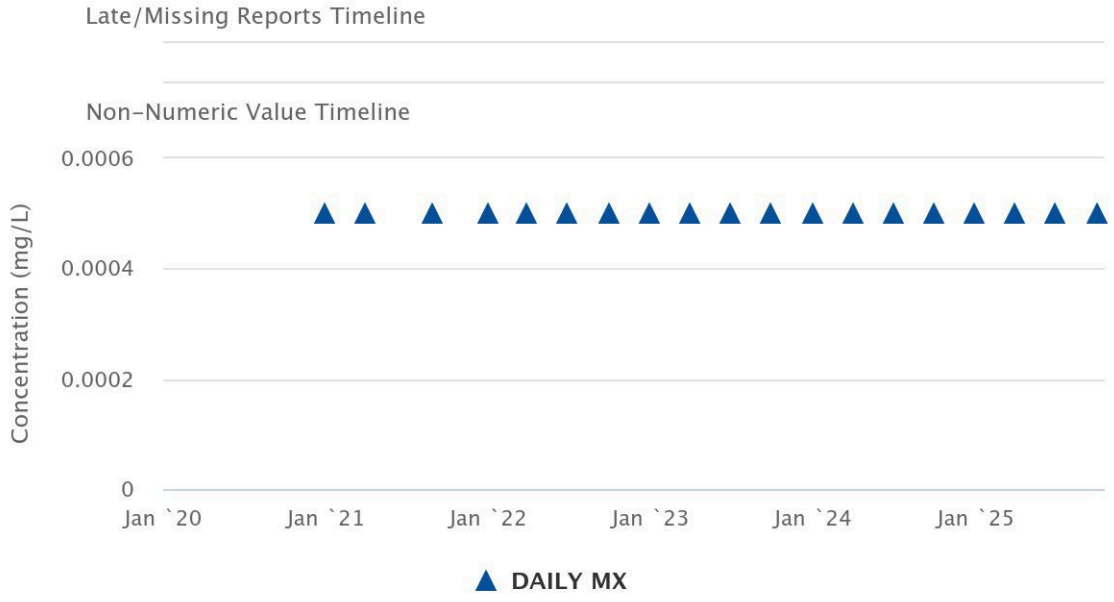


PROVO CITY CORPORATION (UT0021717) 001 – Copper, total [as Cu] – Effluent Gross – Concentration

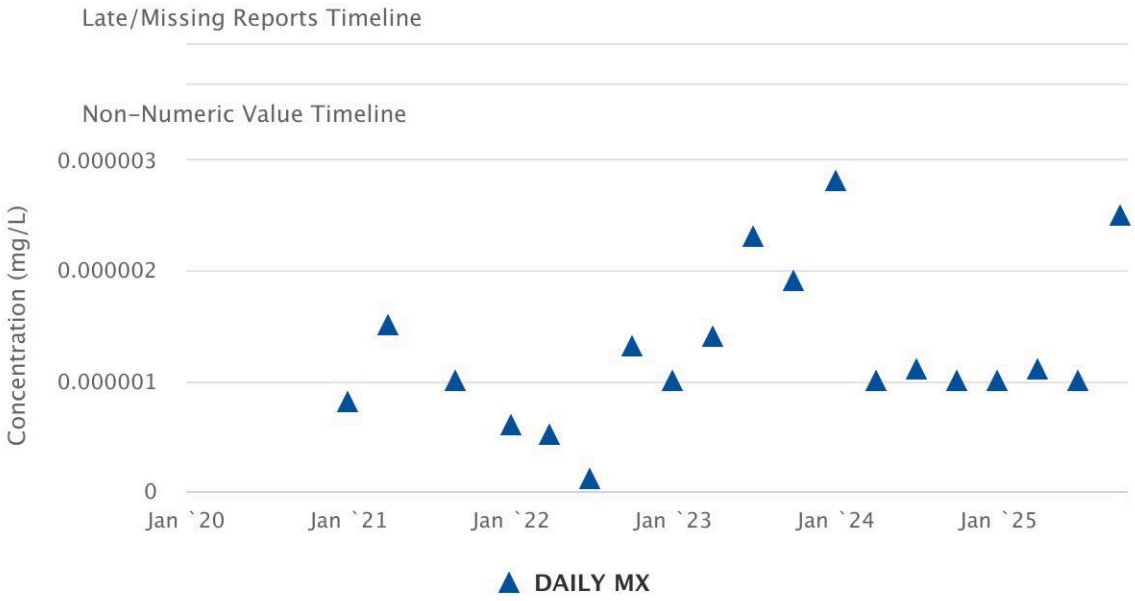
PROVO CITY CORPORATION (UT0021717) 001 – Cyanide, total [as CN] – Effluent Gross – Concentration



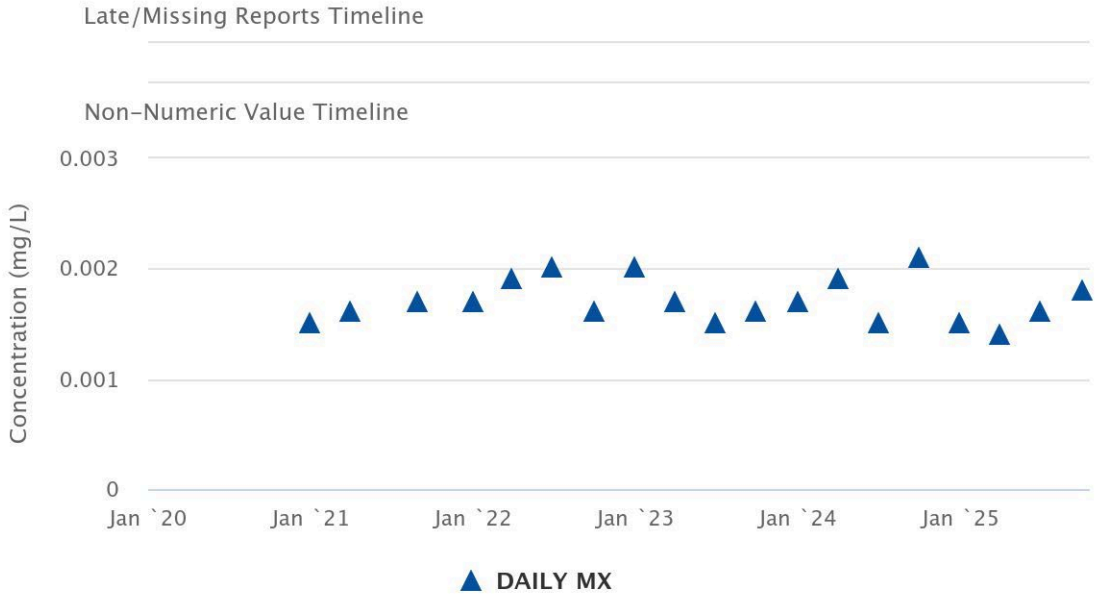
PROVO CITY CORPORATION (UT0021717) 001 – Lead, total [as Pb] – Effluent Gross – Concentration



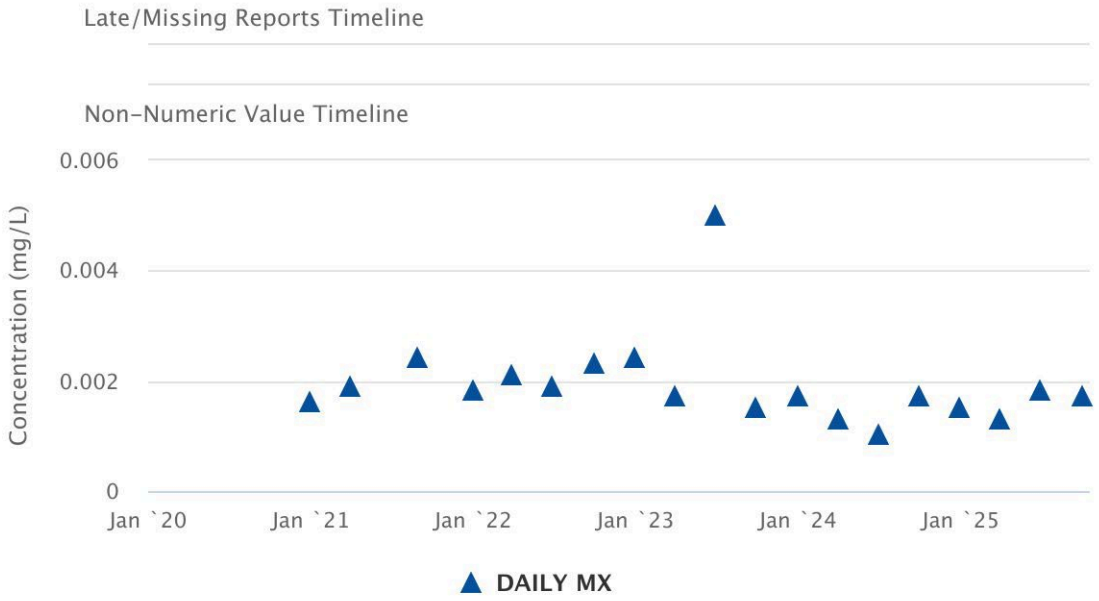
PROVO CITY CORPORATION (UT0021717) 001 – Mercury, total [as Hg] – Effluent Gross – Concentration



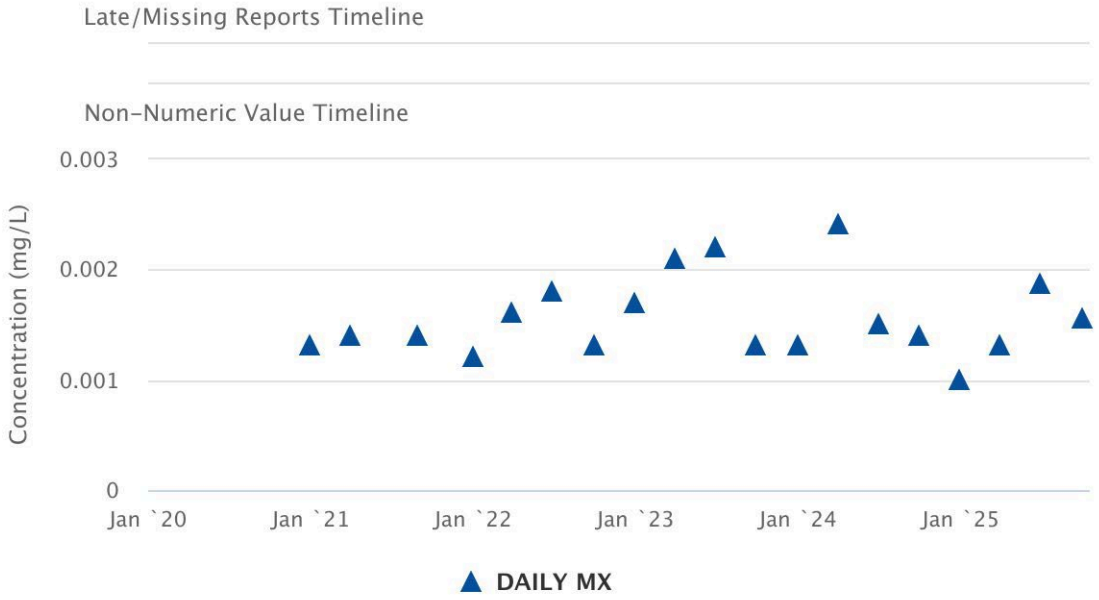
PROVO CITY CORPORATION (UT0021717) 001 – Molybdenum, total [as Mo] – Effluent Gross – Concentration



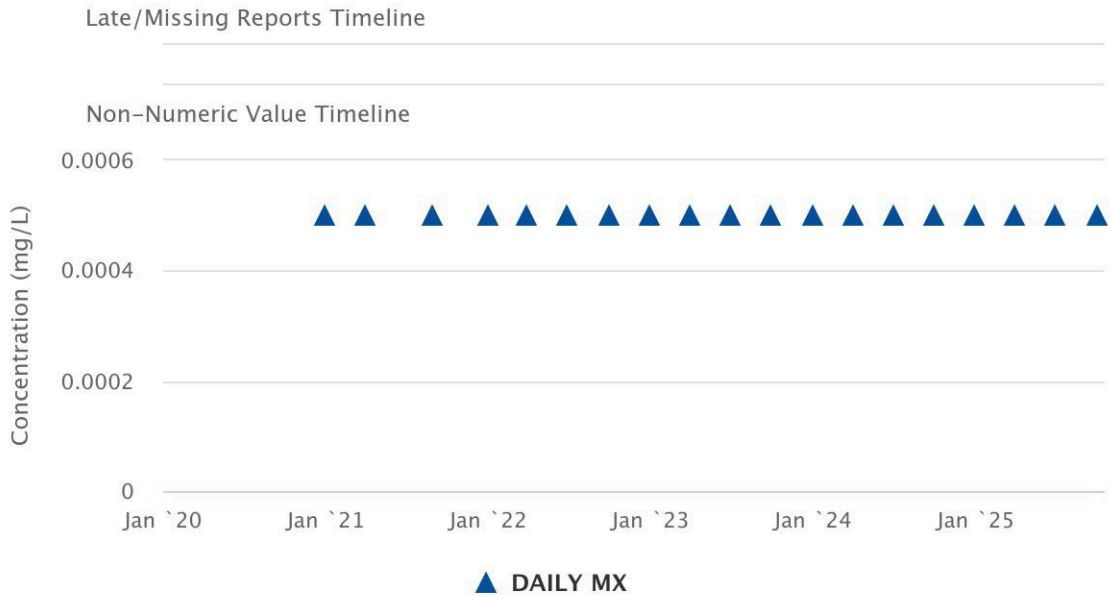
PROVO CITY CORPORATION (UT0021717) 001 – Nickel, total [as Ni] – Effluent Gross – Concentration



PROVO CITY CORPORATION (UT0021717) 001 – Selenium, total [as Se] – Effluent Gross – Concentration



PROVO CITY CORPORATION (UT0021717) 001 - Silver, total [as Ag] - Effluent Gross - Concentration



PROVO CITY CORPORATION (UT0021717) 001 - Zinc, total [as Zn] - Effluent Gross - Concentration

ATTACHMENT 2

Wasteload Analysis

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State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Tim Davis
Executive Director

DIVISION OF WATER QUALITY
John K. Mackey, P.E.
Director

Utah Division of Water Quality
Statement of Basis ADDENDUM
Wasteload Analysis and Antidegradation Level I Review

Date: **October 17, 2025**

Prepared by: **Christopher L. Shope, PhD**
Standards and Technical Services

Facility: **Provo City Water Reclamation Facility**
UPDES Permit No. UT-0021717

This addendum summarizes the wasteload analysis that was performed to determine water quality based effluent limits (WQBEL) for this discharge. Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also considers downstream designated uses (UAC R317-2-8). Projected concentrations are compared to numeric water quality standards to determine acceptability. The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

DISCHARGE

There is a single discharge point listed in the permit renewal application (Figure 1).

- Outfall 001 will discharge treated effluent to Mill Race which flows into East Bay Golf Course to an unnamed pond. Flow continues to Provo Bay and into Utah Lake. Consistent with previous wasteload, the maximum daily design discharge is 28.0 MGD and the maximum monthly design discharge is 21.0 MGD.

RECEIVING WATER

The effluent from Outfall 001 discharges directly into Mill Race, which is tributary to Provo Bay in Utah Lake.

Per UAC R317-2-13.5.c, the designated beneficial uses *Mill Race from Interstate Highway 15 to the Provo City wastewater treatment plant discharge:* are *2B, 3B, 4*.

- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*

- *Class 3B - Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.*

- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

Per UAC R317-2-8 Protection of Downstream Uses, all actions to control waste discharges under these rules shall be modified as necessary to protect downstream designated uses. The effluent limits for the discharge to Mill Race must be protective of downstream uses in Provo Bay and Utah Lake.

WATER QUALITY STANDARDS

Numeric criteria based on designated beneficial uses are specified in UAC R317-2-14. In addition, narrative water quality standards must not be violated per UAC R317-2-7.2:

> *It shall be unlawful, and a violation of these rules, for any person to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste; or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by bioassay or other tests performed in accordance with standard procedures; or determined by biological assessments in Subsection R317-2-7.3.*

CRITICAL LOW FLOW

Typically, the critical flow for the receiving water in a wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten-year return frequency (7Q10). Because there are no continuously monitored flow gauges on Mill Race, the 20th percentile flow (UDWQ, 2021) was calculated using monitoring location DWQ 4996570 MILLRACE CK AB PROVO WWTP (Table 1).

Table 1: Seasonal critical low flows

Season	Mill Race flow (ft3/s)
Summer	2.3
Fall	2.2
Winter	2.2
Spring	2.4

Upstream receiving water quality concentration for the parameters of interest were also estimated from monitoring location DWQ 4996570 MILLRACE CK AB PROVO WWTP. Effluent water quality concentrations were evaluated using seasonal concentrations supplied by Provo City WRF

in the application package. For model parameters not supplied in the aforementioned effluent discharge data, monitoring location DWQ 4996560 PROVO WWTP, was used as needed.

TOTAL MAXIMUM DAILY LOAD (TMDL)

According to the Utah's Final 2024 Integrated Report on Water Quality dated April 30, 2024 (UDWQ, 2024), the receiving water for Outfall 003 discharge "*Mill Race from Interstate 15to the Provo City wastewater treatment plant discharge* (AU name: *Mill Race Creek-1*, AU ID: *UT16020201-012_00*)" was listed as "Not Supporting" for Benthic Macroinvertebrates Bioassessments and E. coli.

Provo Bay portion of Utah Lake (AU name: *Provo Bay portion of Utah Lake*, AU ID: *UT-L-16020201-004_02*) was listed as "Not Supporting" for Eutrophication, Harmful Algal Blooms, PCBs in Fish Tissue, Total Ammonia as N, Total Phosphorus as P, and pH. Utah Lake (AU name: *Utah Lake other than Provo Bay*, AU ID: *UT-L-16020201-004_01*) was listed as "Not Supporting" for E. coli, Eutrophication, Harmful Algal Blooms, PCBs in Fish Tissue, Total Dissolved Solids, and Total Phosphorus as P.

The Utah Lake Water Quality Study is ongoing with the objective to develop nutrient-related water quality endpoints for Utah Lake and Provo Bay.

MIXING ZONE

Per UAC R317-2-5, the maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions. Water quality standards must be met at the end of the regulatory mixing zone.

Per UAC 317-2-5, the discharge is considered instantaneously fully mixed since the effluent discharge is more than twice the background receiving water flow. Therefore, no mixing zone is allowed.

PARAMETERS OF CONCERN

The potential parameters of concern identified for the discharge/receiving water were determined in consultation with the UPDES Permit Writer, the Utah Water Quality Assessment Reports, and the industry SIC codes from https://www.osha.gov/data/sic-search. The potential parameters of concern for this facility include: total suspended solids (TSS), dissolved oxygen (DO), biochemical oxygen demand (BOD_5), total phosphorus (TP), total nitrogen (TN), total ammonia (TAN), and pH.

WET LIMITS

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in a not fully mixed condition are calculated in the WLA in order to generate WET limits. The LC_{50} (lethal concentration, 50%) percent effluent for acute toxicity and the IC_{25} (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. The WET limit for LC_{50} is typically 100% effluent and does not need to be determined by the WLA. The IC_{25} WET limits are provided in Table 2.

Table 2: Percent effluent WET Limits for IC_{25}

Season	Outfall 003
Summer	93%
Fall	94%
Winter	94%
Spring	93%

WASTELOAD ALLOCATION METHODS

A QUAL2Kw model of the receiving water was built and calibrated to synoptic survey data collected in October and November of 2014. The model development is documented in the QUAL2Kw Calibration Report for Mill Race (DWQ 2019). The model of Mill Race extends 4.2 kilometers downstream from the treatment facility outfall across I-15 and into Provo Bay.

The QUAL2Kw model was used for determining the WQBELs for parameters related to eutrophication and in-stream DO criteria. Effluent concentrations were adjusted so that water quality standards were not exceeded in the receiving water. Where WQBELs exceeded secondary standards or technology based effluent limits (TBEL), the concentration in the model was set at the secondary standard or TBEL.

The QUAL2Kw model was also used to determine the limits for ammonia. The water quality standard for chronic ammonia toxicity is dependent on temperature and pH, and the water quality standard for acute ammonia toxicity is dependent on pH. QUAL2Kw rates, input and output for DO and eutrophication related constituents are summarized in Appendix A.

A mass balance mixing analysis was conducted for conservative constituents such as dissolved metals. The WQBELs for conservative constituents are summarized in Appendix B.

The calibration model and the wasteload model are available for review by request.

ANTIDEGRADATION LEVEL I REVIEW

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water. Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

A Level II Antidegradation Review (ADR) is not required for this discharge, as neither pollutant concentration nor load is being increased under this permit renewal.

LOCATION MAP

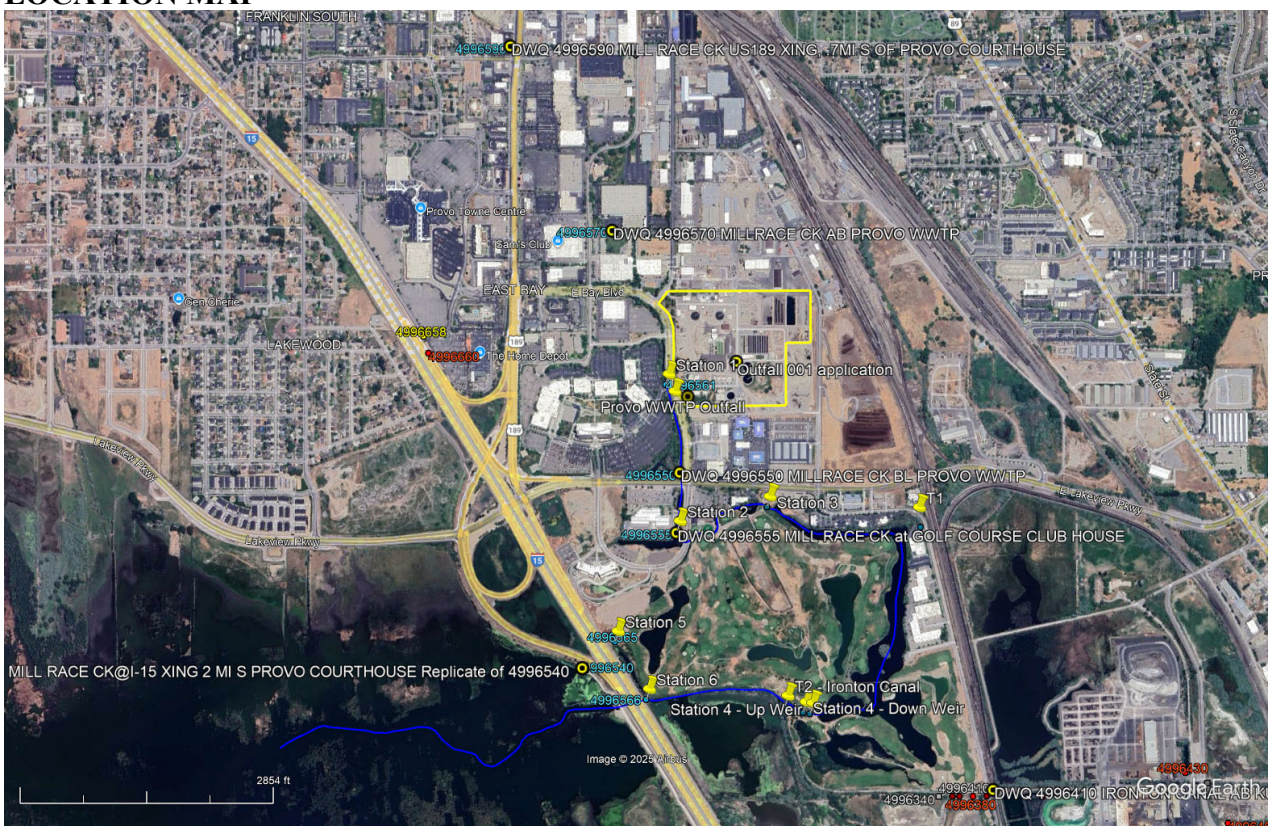

Figure 1: Location map of outfalls, monitoring locations, and surface water channels.

DOCUMENTS

WLA Document*: 251017-Provo_WWTP_Q2Kw_WLA_2025.docx*
Wasteload Analysis and Addendums: *251017-Provo_WWTP_Q2Kw_WLA_2025.xlsm*
QUAL2Kw Calibration Model: *provo_potw_q2kw_cal_2019.xlsm*

REFERENCES

Utah Division of Water Quality. 2024. Final 2024 Integrated Report on Water Quality. https://lf-public.deq.utah.gov/WebLink/DocView.aspx?id=87957&repo=Public&searchid=fcd9ea4c-51e1-4227-aa29-fb1921c2cc19&cr=1

Utah Division of Water Quality. 2021. Utah Wasteload Analysis Procedures Version 2.0. https://documents.deq.utah.gov/water-quality/standards-technical-services/DWQ-2021-000684.pdf

Utah Division of Water Quality. 2019. QUAL2Kw Model Calibration Report for Mill Race.

WASTELOAD ANALYSIS [WLA] Date: 10/23/2025

Appendix A: QUAL2Kw Analysis for Eutrophication

Discharging Facility:	Provo WWTP		
UPDES No:	UT-0021717		
Permit Flow [MGD]:	28.00	Maximum Monthly Flow	
	43.20	Maximum Daily Flow	
Receiving Water:	Mill Race		
Stream Classification:	2B, 3B, 4		
Stream Flows [cfs]:	2.3	Summer (July-Sept)	Critical Low Flow
	2.2	Fall (Oct-Dec)	
	2.2	Winter (Jan-Mar)	
	2.4	Spring (Apr-June)	
Acute River Width:	100.0%		
Chronic River Width:	100.0%		

Modeling Information

A QUAL2Kw model was used to determine these effluent limits.

Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis.
Dry washes are considered to have an upstream flow equal to the flow of the discharge.

Headwater/Upstream Information	Summer	Fall	Winter	Spring
Flow (cfs)	2.3	2.2	2.2	2.4
Temperature (deg C)	18.7	12.5	8.9	13.2
Specific Conductance (µmhos)	843	896	932	791
Inorganic Suspended Solids (mg/L)	5.0	6.5	15.9	5.4
Dissolved Oxygen (mg/L)	10.2	10.0	12.4	11.6
$CBOD_5$ (mg/L)	2.5	2.3	1.9	2.1
Organic Nitrogen (mg/L)	10.500	2.800	18.200	10.500
NH4-Nitrogen (mg/L)	0.063	0.135	0.157	0.084
NO3-Nitrogen (mg/L)	2.197	2.580	3.640	1.926
Organic Phosphorus (mg/L)	0.000	0.000	0.000	0.000
Inorganic Ortho-Phosphorus (mg/L)	0.059	0.152	0.084	0.254
Phytoplankton (µg/L)	0.0	0.0	0.0	0.0
Detritus [POM] (mg/L)	0.6	0.7	1.8	0.6
Alkalinity (mg/L)	299	296	300	261
pH	8.2	8.3	8.4	8.5

Discharge Information Chronic	Summer	Fall	Winter	Spring
Flow (cfs)	28.0	28.0	28.0	28.0
Temperature (deg C)	20.3	15.4	12.6	15.6
Inorganic Suspended Solids (mg/L)	2.0	2.0	2.0	2.0
Organic Nitrogen (mg/L)	19.700	24.700	22.200	22.200
NO3-Nitrogen (mg/L)	21.500	23.950	25.311	20.064
Organic Phosphorus (mg/L)	0.100	0.100	0.100	0.100
Inorganic Phosphorus (mg/L)	0.900	0.900	0.900	0.900
Alkalinity (mg/L)	158	132	134	161
pH	7.5	7.3	7.1	8.4

Acute	Summer	Fall	Winter	Spring
Flow (cfs)	43.2	43.2	43.2	43.2
Temperature (deg C)	22.1	18.6	13.6	18.3
Inorganic Suspended Solids (mg/L)	2.2	2.0	3.0	2.1
Organic Nitrogen (mg/L)	19.700	25.480	22.590	22.590
NO3-Nitrogen (mg/L)	23.360	25.160	26.920	24.740
Organic Phosphorus (mg/L)	0.100	0.100	0.100	0.100
Inorganic Phosphorus (mg/L)	0.900	0.900	0.900	0.900
Alkalinity (mg/L)	174	145	151	184
pH	7.7	7.6	7.5	8.0

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

Effluent Limitations based upon Water Quality Standards for DO and Ammonia Toxicity

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent limitation as follows:

Chronic	Time Period	Standard	Summer	Fall	Winter	Spring
Flow (MGD)	Monthly	N/A	21.0	21.0	21.0	21.0
NH4-Nitrogen (mg/L)	30 day	Varies	3.0	4.0	5.0	3.5
$CBOD_5$ (mg/L)	7 day	N/A	35.0	35.0	35.0	35.0
$CBOD_5$ (mg/L)	30 day	N/A	25.0	25.0	25.0	25.0
Dissolved Oxygen [Minimum] (mg/L)	30 day	5.5	6.0	6.0	6.0	6.0

Acute	Time Period	Standard	Summer	Fall	Winter	Spring
Flow (MGD)	Daily	N/A	28.0	28.0	28.0	28.0
NH4-Nitrogen (mg/L)	1 hour	Varies	8.0	12.0	14.0	12.0
Dissolved Oxygen [Minimum] (mg/L)	Instantaneous	5.0	5.0	5.0	5.0	5.0

2013 EPA Ammonia Criteria with Mussels Present	Time Period	Standard	Summer	Fall	Winter	Spring
NH4-Nitrogen (mg/L)	1 hour	Varies	5.0	7.5	11.0	8.0
NH4-Nitrogen (mg/L)	30 day	Varies	1.5	2.0	2.5	2.0

Summary Comments

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

Coefficients and Other Model Information

Parameter	*Value*	*Units*
Stoichiometry:		
Carbon	40	gC
Nitrogen	7.2	gN
Phosphorus	1	gP
Dry weight	100	gD
Chlorophyll	1	gA
Inorganic suspended solids:		
Settling velocity	0.001	m/d
Oxygen:		
Reaeration model	Tsivoglou-Neal	
Temp correction	1.024	
Reaeration wind effect	None	
O2 for carbon oxidation	2.69	gO2/gC
O2 for NH4 nitrification	4.57	gO2/gN
Oxygen inhib model CBOD oxidation	Exponential	
Oxygen inhib parameter CBOD oxidation	0.60	L/mgO2
Oxygen inhib model nitrification	Exponential	
Oxygen inhib parameter nitrification	0.60	L/mgO2
Oxygen enhance model denitrification	Exponential	
Oxygen enhance parameter denitrification	0.60	L/mgO2
Oxygen inhib model phyto resp	Exponential	
Oxygen inhib parameter phyto resp	0.60	L/mgO2
Oxygen enhance model bot alg resp	Exponential	
Oxygen enhance parameter bot alg resp	0.60	L/mgO2
Slow CBOD:		
Hydrolysis rate	0	/d
Temp correction	1.047	
Oxidation rate	0.103	/d
Temp correction	1.047	
Fast CBOD:		
Oxidation rate	10	/d
Temp correction	1.047	
Organic N:		
Hydrolysis	0.95792212	/d
Temp correction	1.07	
Settling velocity	0.069088	m/d
Ammonium:		
Nitrification	0.9821269	/d
Temp correction	1.07	
Nitrate:		
Denitrification	0.85318796	/d
Temp correction	1.07	
Sed denitrification transfer coeff	0.01274	m/d
Temp correction	1.07	
Organic P:		
Hydrolysis	0.45860194	/d
Temp correction	1.07	
Settling velocity	0.006892	m/d
Inorganic P:		
Settling velocity	0.064225	m/d
Sed P oxygen attenuation half sat constant	0.58451	mgO2/L

Phytoplankton:		
Max Growth rate	2.8944	/d
Temp correction	1.07	
Respiration rate	0.480803	/d
Temp correction	1.07	
Death rate	0.86518	/d
Temp correction	1	
Nitrogen half sat constant	15	ugN/L
Phosphorus half sat constant	2	ugP/L
Inorganic carbon half sat constant	1.30E-05	moles/L
Phytoplankton use HCO3- as substrate	Yes	
Light model	Smith	
Light constant	57.6	langleys/d
Ammonia preference	25.4151	ugN/L
Settling velocity	0.468545	m/d
Bottom Plants:		
Growth model	Zero-order	
Max Growth rate	11.11173	gD/m2/d or /d
Temp correction	1.07	
First-order model carrying capacity	100	gD/m2
Basal respiration rate	0.1667726	/d
Photo-respiration rate parameter	0.01	unitless
Temp correction	1.07	
Excretion rate	0.186706	/d
Temp correction	1.07	
Death rate	0.687408	/d
Temp correction	1.07	
External nitrogen half sat constant	205.8336	ugN/L
External phosphorus half sat constant	161.0464	ugP/L
Inorganic carbon half sat constant	3.30E-05	moles/L
Bottom algae use HCO3- as substrate	Yes	
Light model	Smith	
Light constant	82.9662	mgO^2/L
Ammonia preference	25.72375	ugN/L
Subsistence quota for nitrogen	28.8914	mgN/gD
Subsistence quota for phosphorus	2.53193	mgP/gD
Maximum uptake rate for nitrogen	76.144	mgN/gD/d
Maximum uptake rate for phosphorus	117.8042	mgP/gD/d
Internal nitrogen half sat ratio	1.1499745	
Internal phosphorus half sat ratio	3.396379	
Nitrogen uptake water column fraction	1	
Phosphorus uptake water column fraction	1	
Detritus (POM):		
Dissolution rate	2.196361	/d
Temp correction	1.07	
Settling velocity	0.89671	m/d
pH:		
Partial pressure of carbon dioxide	370	ppm

Atmospheric Inputs:	Summer	Fall	Winter	Spring
Min. Air Temperature, F	89.5	49.4	42.5	74.1
Max. Air Temperature, F	61.6	31.4	24.5	48.4
Dew Point, Temp., F	58.6	35.0	30.3	48.5
Wind, ft./sec. @ 21 ft.	6.6	5.2	6.0	7.4
Cloud Cover, %	10%	10%	10%	10%

Other Inputs:	
Bottom Algae Coverage	100%
Bottom SOD Coverage	100%
Prescribed SOD, $gO_2/m^2/day$	0

WASTELOAD ANALYSIS [WLA] Date: 10/23/2025

Appendix B: Mass Balance Mixing Analysis for Conservative Constituents

Discharging Facility:	Provo WWTP		
UPDES No:	UT-0021717		
Permit Flow [MGD]:	28.00	Maximum Monthly Flow	
	43.20	Maximum Daily Flow	
Receiving Water:	Mill Race		
Stream Classification:	2B, 3B, 4		
Stream Flows [cfs]:	2.3	Summer (July-Sept)	Critical Low Flow
	2.2	Fall (Oct-Dec)	
	2.2	Winter (Jan-Mar)	
	2.4	Spring (Apr-June)	
Acute River Width:	100.0%		
Chronic River Width:	100.0%		

Modeling Information

A simple mixing analysis was used to determine these effluent limits.

Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

Headwater/Upstream Information

	7Q10 Flow
	cfs
Summer	2.3
Fall	2.2
Winter	2.2
Spring	2.4

Discharge Information

	Flow
	MGD
Maximum Daily	43.2
Maximum Monthly	28.0

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

Effluent Limitations for Protection of Recreation (Class 2B Waters)

Parameter	Maximum Concentration
Physical	
pH Minimum	6.5
pH Maximum	9.0
Bacteriological	
E. coli (30 Day Geometric Mean)	206 (#/100 mL)
E. coli (Maximum)	668 (#/100 mL)

Effluent Limitations for Protection of Aquatic Wildlife (Class 3B Waters)

Parameter	Maximum Concentration			
Physical				
Inorganics	**Chronic Standard (4 Day Average)**		**Acute Standard (1 Hour Average)**	
	Standard	**Limit**	**Standard**	**Limit**
Phenol			0.010	0.010 mg/L
Hydrogen Sulfide (Undissociated)			0.002	0.002 mg/L

Total Recoverable Metals

	Chronic Standard (4 Day Average)			Acute Standard (1 Hour Average)		
Parameter (µg/L)	**Standard[1]**	**Background[2]**	**Limit**	**Standard[1]**	**Background[2]**	**Limit**
Aluminum	N/A[3]	20.6	N/A	750	20.6	810
Arsenic	150	2.8	166	340	2.8	368
Cadmium	0.5	0.2	0.6	5.9	0.2	6.4
Chromium VI	11.0	2.9	11.9	16.0	2.9	17.1
Chromium III	184	2.9	204	1,415	2.9	1,531
Copper	23.1	3.4	25.3	38.3	3.4	41.1
Cyanide	5.2	3.5	5.4	22.0	3.5	23.5
Iron				1,000	19.3	1,081
Lead	8.2	0.6	9.1	211.2	0.6	229
Mercury	0.012	0.008	0.012	2.4	0.008	2.6
Nickel	133	3.7	147	1,198	3.7	1,296
Selenium	4.6	2.0	4.9	18.4	2.0	19.7
Silver				21.7	10.9	22.6
Tributylin	0.072	0.048	0.075	0.46	0.048	0.49
Zinc	303	13.0	334	300	13.0	324

1: Based upon a Hardness of 303.6 mg/l as CaCO3

2: Background concentration assumed 67% of chronic standard

3: Where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as CaC_3 in the receiving water after mixing, the 87 ug/L chronic criterion (expressed as total recoverable) will not apply, and aluminum will be regulated based on compliance with the 750 ug/L acute aluminum criterion (expressed as total recoverable).

Organics [Pesticides]

	Chronic Standard (4 Day Average)			Acute Standard (1 Hour Average)		
Parameter (µg/L)	**Standard**	**Background**	**Limit**	**Standard**	**Background**	**Limit**
Aldrin				1.500	1.000	1.541
Chlordane	0.0043	0.0029	0.0045	1.200	0.003	1.298
DDT, DDE	0.001	0.0007	0.0010	0.550	0.001	0.595
Diazinon	0.17	0.1133	0.176	0.17	0.113	0.175
Dieldrin	0.0056	0.0037	0.0058	0.240	0.004	0.259
Endosulfan, a & b	0.056	0.0373	0.058	0.110	0.037	0.116
Endrin	0.036	0.0240	0.037	0.086	0.024	0.091
Heptachlor & H. epoxide	0.0038	0.0025	0.0039	0.260	0.003	0.281
Lindane	0.08	0.0533	0.08	1.000	0.053	1.078
Methoxychlor				0.030	0.020	0.031
Mirex				0.001	0.001	0.001
Nonylphenol	6.6	4.4	6.8	28.0	4.4	29.9
Parathion	0.0130	0.0087	0.0135	0.066	0.009	0.071
PCB's	0.014	0.0093	0.015			
Pentachlorophenol	15.00	10	15.5	19.000	10.0	19.739
Toxephene	0.0002	0.0001	0.0002073	0.730	0.0001	0.790

Radiological

Parameter	**Maximum Concentration**
Gross Alpha	15 pCi/L

Effluent Limitation for Protection of Agriculture (Class 4 Waters)

	Maximum Concentration		
Parameter	**Standard**	**Background**	**Limit**
Total Dissolved Solids (mg/L)	1,200	521	1,256
Boron (µg/L)	750	110	803
Arsenic (µg/L)	100	2.8	108
Cadmium (µg/L)	10	0.2	10.8
Chromium (µg/L)	100	2.9	108
Copper (µg/L)	200	3.4	216
Lead (µg/L)	100	0.6	108
Selenium (µg/L)	50	2.0	53.9
Gross Alpha (pCi/L)	15	10	15.4

WASTELOAD ANALYSIS [WLA]
Appendix C: Total Residual Chlorine

Date: 10/23/2025

Discharging Facility: Provo WWTP
UPDES No: UT-0021717

CHRONIC

	Season	Receiving Water	Standard	Total Effluent	Mixing Zone Boundary	Effluent Limit Without Decay	Temperature (°C)	Decay Rate (/day) @ 20 deg C	Decay Rate (/day) @ T deg C	Travel Time (min)	Decay Coefficient	Effluent Limit
Discharge (cfs)	Summer	2.3		32.5	34.8							
	Fall	2.2		32.5	34.7							
	Winter	2.2		32.5	34.7							
	Spring	2.4		32.5	34.8							
TRC (mg/L)	Summer	0.000	0.011			0.012	20.3	29.86	30.2	5	0.9003	0.013
	Fall	0.000	0.011			0.012	15.4	29.86	24.2	5	0.9193	0.013
	Winter	0.000	0.011			0.012	12.6	29.86	21.3	5	0.9287	0.013
	Spring	0.000	0.011			0.012	15.6	29.86	24.4	5	0.9188	0.013

ACUTE

	Season	Receiving Water	Standard	Total Effluent	Mixing Zone Boundary	Effluent Limit Without Decay	Temperature (°C)	Decay Rate (/day) @ 20 °C	Decay Rate (/day) @ T °C	Travel Time (min)	Decay Coefficient	Effluent Limit
Discharge (cfs)	Summer	2.3		43.3	45.6							
	Fall	2.2		43.3	45.5							
	Winter	2.2		43.3	45.6							
	Spring	2.4		43.3	45.7							
TRC (mg/L)	Summer	0.000	0.019			0.020	22.1	29.86	32.9	5	0.8921	0.022
	Fall	0.000	0.019			0.020	18.6	29.86	28.0	5	0.9074	0.022
	Winter	0.000	0.019			0.020	13.6	29.86	22.2	5	0.9257	0.022
	Spring	0.000	0.019			0.020	18.3	29.86	27.6	5	0.9087	0.022

ATTACHMENT 3

Reasonable Potential Analysis

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REASONABLE POTENTIAL ANALYSIS

DWQ has worked to improve our reasonable potential (RP) analysis 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[1]. 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.

The RP model was run cyanide using the most recent data back through 2020. This resulted in 18 data points, and that there is RP for an exceedance of the acute limit for cyanide. Reviewing the data showed that there were no outliers in the cyanide data. As such, a new effluent limit will be included in the Permit. This is Outcome A from the RP Guide.

The RP model was run on copper using the most recent data back through 2020. This resulted in 18 data points, and that there is RP for exceedance of the chronic limit for copper. The results of the model are that there is chronic RP at 95% and 99% confidence. The Facility did not exceed the chronic limit for copper, but had a high RE (Receiving Environment) multiplier value due to a highly variable dataset. This result indicates that the inclusion of an effluent limit for copper is not required at this time, but routine monitoring requirements will be added or increased in the permit. This is Outcome B from RP Guide.

The RP model was also run on all other metals using the most recent data back through 2020. This resulted in 18 data points. The results of the model are that there is no acute and/or chronic RP for the remaining parameters. This result indicates that effluent limits for these metals are not required at this time. This is Outcome C from the RP Guide.

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

[1] See Reasonable Potential Analysis Guidance for definitions of terms

RP Procedure Output

Facility Name:	**Provo City**	
Permit Number:	**UT0021717**	
Outfall Number:	**1**	
Parameter	**Arsenic**	
Distribution	**Lognormal**	
Data Units	**ug/L**	
Reporting Limit	**10**	
Significant Figures	**3**	
Confidence Interval	**95**	
Maximum Reported Effluent Conc.	**2.1**	**ug/L**
Coefficient of Variation (CV)	**0.211**	
RP Multiplier	**1.14**	
Projected Maximum Effluent Conc. (MEC)	**2.39**	**ug/L**
Acute Criterion	**368**	**0**
Chronic Criterion	**166**	**0**
Human Health Criterion	**150**	**0**
RP for Acute?	**NO**	
RP for Chronic?	**NO**	
RP for Human Health?	**NO**	

Effluent Data Arsenic

#		#		#	
1	**1**	**41**	**0**	**81**	**0**
2	**1.1**	**42**	**0**	**82**	**0**
3	**1.4**	**43**	**0**	**83**	**0**
4	**1.4**	**44**	**0**	**84**	**0**
5	**1.3**	**45**	**0**	**85**	**0**
6	**1.2**	**46**	**0**	**86**	**0**
7	**1.4**	**47**	**0**	**87**	**0**
8	**1.5**	**48**	**0**	**88**	**0**
9	**2.1**	**49**	**0**	**89**	**0**
10	**1.5**	**50**	**0**	**90**	**0**
11	**1.4**	**51**	**0**	**91**	**0**
12	**1.3**	**52**	**0**	**92**	**0**
13	**1.9**	**53**	**0**	**93**	**0**
14	**1.6**	**54**	**0**	**94**	**0**
15	**2**	**55**	**0**	**95**	**0**
16	**1.5**	**56**	**0**	**96**	**0**
17	**1.4**	**57**	**0**	**97**	**0**
18	**2.1**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**	
Permit Number:	**UT0021717**	
Outfall Number:	**1**	
Parameter	**Cadmium**	
Distribution	**Lognormal**	
Data Units	**ug/L**	
Reporting Limit	**10**	
Significant Figures	**3**	
Confidence Interval	**95**	
Maximum Reported Effluent Conc.	**0.2**	**ug/L**
Coefficient of Variation (CV)	**#NUM!**	
RP Multiplier	**1.00**	
Projected Maximum Effluent Conc. (MEC)	**0.2**	**ug/L**
Acute Criterion	**6.4**	**0**
Chronic Criterion	**0.6**	**0**
Human Health Criterion	**0**	**0**
RP for Acute?	**NO**	
RP for Chronic?	**NO**	
RP for Human Health?	**N/A**	

Effluent Data Cadmium

#		#		#	
1	**0.2**	**41**	**0**	**81**	**0**
2	**0.2**	**42**	**0**	**82**	**0**
3	**0.2**	**43**	**0**	**83**	**0**
4	**0.2**	**44**	**0**	**84**	**0**
5	**0.2**	**45**	**0**	**85**	**0**
6	**0.2**	**46**	**0**	**86**	**0**
7	**0.2**	**47**	**0**	**87**	**0**
8	**0.2**	**48**	**0**	**88**	**0**
9	**0.2**	**49**	**0**	**89**	**0**
10	**0.2**	**50**	**0**	**90**	**0**
11	**0.2**	**51**	**0**	**91**	**0**
12	**0.2**	**52**	**0**	**92**	**0**
13	**0.2**	**53**	**0**	**93**	**0**
14	**0.2**	**54**	**0**	**94**	**0**
15	**0.2**	**55**	**0**	**95**	**0**
16	**0.2**	**56**	**0**	**96**	**0**
17	**0.2**	**57**	**0**	**97**	**0**
18	**0.2**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**		
Permit Number:	**UT0021717**		
Outfall Number:	**1**		
Parameter	**Cyanide (Total)**		
Distribution	**Lognormal**		
Data Units	**ug/L**		
Reporting Limit	**10**		
Significant Figures	**3**		
Confidence Interval	**99**		
Maximum Reported Effluent Conc.		**7**	**ug/L**
Coefficient of Variation (CV)		**0.434**	
RP Multiplier		**1.92**	
Projected Maximum Effluent Conc. (MEC)		**13.5**	**ug/L**
Acute Criterion		**23.5**	**0**
Chronic Criterion		**5.4**	**0**
Human Health Criterion		**0**	**0**
RP for Acute?	**NO**		
RP for Chronic?	**YES**		
RP for Human Health?	**N/A**		

Effluent Data Cyanide (Total)

#		#		#	
1	**2**	**41**	**0**	**81**	**0**
2	**3**	**42**	**0**	**82**	**0**
3	**5**	**43**	**0**	**83**	**0**
4	**4**	**44**	**0**	**84**	**0**
5	**2**	**45**	**0**	**85**	**0**
6	**4**	**46**	**0**	**86**	**0**
7	**2**	**47**	**0**	**87**	**0**
8	**7**	**48**	**0**	**88**	**0**
9	**3**	**49**	**0**	**89**	**0**
10	**2**	**50**	**0**	**90**	**0**
11	**4**	**51**	**0**	**91**	**0**
12	**3**	**52**	**0**	**92**	**0**
13	**2**	**53**	**0**	**93**	**0**
14	**5**	**54**	**0**	**94**	**0**
15	**5**	**55**	**0**	**95**	**0**
16	**5**	**56**	**0**	**96**	**0**
17	**5**	**57**	**0**	**97**	**0**
18	**5**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**
Permit Number:	**UT0021717**
Outfall Number:	**1**
Parameter	**Chromium (3+)**
Distribution	**Lognormal**
Data Units	**ug/L**
Reporting Limit	**10**
Significant Figures	**3**
Confidence Interval	**99**

Maximum Reported Effluent Conc.	**2.1**	**ug/L**
Coefficient of Variation (CV)	**0.709**	
RP Multiplier	**2.73**	
Projected Maximum Effluent Conc. (MEC)	**5.73**	**ug/L**

Acute Criterion	**1531**	**0**
Chronic Criterion	**204**	**0**
Human Health Criterion	**0**	**0**

RP for Acute?	**NO**
RP for Chronic?	**NO**
RP for Human Health?	**N/A**

Effluent Data Chromium (3+)

#		#		#	
1	**1**	**41**	**0**	**81**	**0**
2	**1**	**42**	**0**	**82**	**0**
3	**0.2**	**43**	**0**	**83**	**0**
4	**0.5**	**44**	**0**	**84**	**0**
5	**0.5**	**45**	**0**	**85**	**0**
6	**0.6**	**46**	**0**	**86**	**0**
7	**0.5**	**47**	**0**	**87**	**0**
8	**2.1**	**48**	**0**	**88**	**0**
9	**0.5**	**49**	**0**	**89**	**0**
10	**0.7**	**50**	**0**	**90**	**0**
11	**0.5**	**51**	**0**	**91**	**0**
12	**1**	**52**	**0**	**92**	**0**
13	**1.9**	**53**	**0**	**93**	**0**
14	**0.5**	**54**	**0**	**94**	**0**
15	**0.5**	**55**	**0**	**95**	**0**
16	**2**	**56**	**0**	**96**	**0**
17	**1.7**	**57**	**0**	**97**	**0**
18	**0.5**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**	
Permit Number:	**UT0021717**	
Outfall Number:	**1**	
Parameter	**Copper**	
Distribution	**Lognormal**	
Data Units	**ug/L**	
Reporting Limit	**10**	
Significant Figures	**3**	
Confidence Interval	**99**	
Maximum Reported Effluent Conc.	**18.8**	**ug/L**
Coefficient of Variation (CV)	**0.515**	
RP Multiplier	**2.15**	
Projected Maximum Effluent Conc. (MEC)	**40.3**	**ug/L**
Acute Criterion	**41.1**	**0**
Chronic Criterion	**25.3**	**0**
Human Health Criterion	**1300**	**0**
RP for Acute?	**NO**	
RP for Chronic?	**YES**	
RP for Human Health?	**NO**	

Effluent Data Copper

#		#		#	
1	**9.5**	**41**	**0**	**81**	**0**
2	**12.1**	**42**	**0**	**82**	**0**
3	**5.8**	**43**	**0**	**83**	**0**
4	**6.2**	**44**	**0**	**84**	**0**
5	**7.3**	**45**	**0**	**85**	**0**
6	**7.2**	**46**	**0**	**86**	**0**
7	**3**	**47**	**0**	**87**	**0**
8	**6.3**	**48**	**0**	**88**	**0**
9	**6.8**	**49**	**0**	**89**	**0**
10	**6.3**	**50**	**0**	**90**	**0**
11	**8.5**	**51**	**0**	**91**	**0**
12	**8.1**	**52**	**0**	**92**	**0**
13	**18.8**	**53**	**0**	**93**	**0**
14	**12**	**54**	**0**	**94**	**0**
15	**8.6**	**55**	**0**	**95**	**0**
16	**2.7**	**56**	**0**	**96**	**0**
17	**7.2**	**57**	**0**	**97**	**0**
18	**15.8**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**	
Permit Number:	**UT0021717**	
Outfall Number:	**1**	
Parameter	**Lead**	
Distribution	**Lognormal**	
Data Units	**ug/L**	
Reporting Limit	**10**	
Significant Figures	**3**	
Confidence Interval	**99**	
Maximum Reported Effluent Conc.	**0.0005**	**ug/L**
Coefficient of Variation (CV)	**#NUM!**	
RP Multiplier	**1.00**	
Projected Maximum Effluent Conc. (MEC)	**0.0005**	**ug/L**
Acute Criterion	**229**	**0**
Chronic Criterion	**9.1**	**0**
Human Health Criterion	**0**	**0**
RP for Acute?	**NO**	
RP for Chronic?	**NO**	
RP for Human Health?	**N/A**	

Effluent Data Lead

#		#		#	
1	**0.0005**	**41**	**0**	**81**	**0**
2	**0.0005**	**42**	**0**	**82**	**0**
3	**0.0005**	**43**	**0**	**83**	**0**
4	**0.0005**	**44**	**0**	**84**	**0**
5	**0.0005**	**45**	**0**	**85**	**0**
6	**0.0005**	**46**	**0**	**86**	**0**
7	**0.0005**	**47**	**0**	**87**	**0**
8	**0.0005**	**48**	**0**	**88**	**0**
9	**0.0005**	**49**	**0**	**89**	**0**
10	**0.0005**	**50**	**0**	**90**	**0**
11	**0.0005**	**51**	**0**	**91**	**0**
12	**0.0005**	**52**	**0**	**92**	**0**
13	**0.0005**	**53**	**0**	**93**	**0**
14	**0.0005**	**54**	**0**	**94**	**0**
15	**0.0005**	**55**	**0**	**95**	**0**
16	**0.0005**	**56**	**0**	**96**	**0**
17	**0.0005**	**57**	**0**	**97**	**0**
18	**0.0005**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**	
Permit Number:	**UT0021717**	
Outfall Number:	**1**	
Parameter	**Mercury**	
Distribution	**Lognormal**	
Data Units	**ug/L**	
Reporting Limit	**10**	
Significant Figures	**3**	
Confidence Interval	**99**	
Maximum Reported Effluent Conc.	**0.0028**	**ug/L**
Coefficient of Variation (CV)	**0.829**	
RP Multiplier	**3.04**	
Projected Maximum Effluent Conc. (MEC)	**0.00852**	**ug/L**
Acute Criterion	**2.6**	**0**
Chronic Criterion	**0.012**	**0**
Human Health Criterion	**0**	**0**
RP for Acute?	**NO**	
RP for Chronic?	**NO**	
RP for Human Health?	**N/A**	

Effluent Data Mercury

#		#		#	
1	**0.0008**	**41**	**0**	**81**	**0**
2	**0.0015**	**42**	**0**	**82**	**0**
3	**0.001**	**43**	**0**	**83**	**0**
4	**0.0006**	**44**	**0**	**84**	**0**
5	**0.0005**	**45**	**0**	**85**	**0**
6	**0.0001**	**46**	**0**	**86**	**0**
7	**0.0013**	**47**	**0**	**87**	**0**
8	**0.001**	**48**	**0**	**88**	**0**
9	**0.0014**	**49**	**0**	**89**	**0**
10	**0.0023**	**50**	**0**	**90**	**0**
11	**0.0019**	**51**	**0**	**91**	**0**
12	**0.0028**	**52**	**0**	**92**	**0**
13	**0.001**	**53**	**0**	**93**	**0**
14	**0.0011**	**54**	**0**	**94**	**0**
15	**0.001**	**55**	**0**	**95**	**0**
16	**0.001**	**56**	**0**	**96**	**0**
17	**0.0011**	**57**	**0**	**97**	**0**
18	**0.001**	**58**	**0**	**98**	**0**
19	**0.0025**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**	
Permit Number:	**UT0021717**	
Outfall Number:	**1**	
Parameter	**Nickel**	
Distribution	**Lognormal**	
Data Units	**ug/L**	
Reporting Limit	**10**	
Significant Figures	**3**	
Confidence Interval	**95**	
Maximum Reported Effluent Conc.	**5**	**ug/L**
Coefficient of Variation (CV)	**0.348**	
RP Multiplier	**1.23**	
Projected Maximum Effluent Conc. (MEC)	**6.17**	**ug/L**
Acute Criterion	**1296**	**0**
Chronic Criterion	**147**	**0**
Human Health Criterion	**610**	**0**
RP for Acute?	**NO**	
RP for Chronic?	**NO**	
RP for Human Health?	**NO**	

Effluent Data Nickel

#		#		#	
1	**1.6**	**41**	**0**	**81**	**0**
2	**1.9**	**42**	**0**	**82**	**0**
3	**2.4**	**43**	**0**	**83**	**0**
4	**1.8**	**44**	**0**	**84**	**0**
5	**2.1**	**45**	**0**	**85**	**0**
6	**1.9**	**46**	**0**	**86**	**0**
7	**2.3**	**47**	**0**	**87**	**0**
8	**2.4**	**48**	**0**	**88**	**0**
9	**1.7**	**49**	**0**	**89**	**0**
10	**5**	**50**	**0**	**90**	**0**
11	**1.5**	**51**	**0**	**91**	**0**
12	**1.7**	**52**	**0**	**92**	**0**
13	**1.3**	**53**	**0**	**93**	**0**
14	**1**	**54**	**0**	**94**	**0**
15	**1.7**	**55**	**0**	**95**	**0**
16	**1.5**	**56**	**0**	**96**	**0**
17	**1.3**	**57**	**0**	**97**	**0**
18	**1.8**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**	
Permit Number:	**UT0021717**	
Outfall Number:	**1**	
Parameter	**Selenium**	
Distribution	**Lognormal**	
Data Units	**ug/L**	
Reporting Limit	**10**	
Significant Figures	**3**	
Confidence Interval	**95**	
Maximum Reported Effluent Conc.	**2.4**	**ug/L**
Coefficient of Variation (CV)	**0.234**	
RP Multiplier	**1.16**	
Projected Maximum Effluent Conc. (MEC)	**2.77**	**ug/L**
Acute Criterion	**19.7**	**0**
Chronic Criterion	**4.9**	**0**
Human Health Criterion	**170**	**0**
RP for Acute?	**NO**	
RP for Chronic?	**NO**	
RP for Human Health?	**NO**	

Effluent Data Selenium

#		#		#	
1	**1.3**	**41**	**0**	**81**	**0**
2	**1.4**	**42**	**0**	**82**	**0**
3	**1.4**	**43**	**0**	**83**	**0**
4	**1.2**	**44**	**0**	**84**	**0**
5	**1.6**	**45**	**0**	**85**	**0**
6	**1.8**	**46**	**0**	**86**	**0**
7	**1.3**	**47**	**0**	**87**	**0**
8	**1.7**	**48**	**0**	**88**	**0**
9	**2.1**	**49**	**0**	**89**	**0**
10	**2.2**	**50**	**0**	**90**	**0**
11	**1.3**	**51**	**0**	**91**	**0**
12	**1.3**	**52**	**0**	**92**	**0**
13	**2.4**	**53**	**0**	**93**	**0**
14	**1.5**	**54**	**0**	**94**	**0**
15	**1.4**	**55**	**0**	**95**	**0**
16	**1**	**56**	**0**	**96**	**0**
17	**1.3**	**57**	**0**	**97**	**0**
18	**1.86**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**	
Permit Number:	**UT0021717**	
Outfall Number:	**1**	
Parameter	**Silver**	
Distribution	**Lognormal**	
Data Units	**ug/L**	
Reporting Limit	**10**	
Significant Figures	**3**	
Confidence Interval	**95**	
Maximum Reported Effluent Conc.	**0.5**	**ug/L**
Coefficient of Variation (CV)	**#NUM!**	
RP Multiplier	**1.00**	
Projected Maximum Effluent Conc. (MEC)	**0.5**	**ug/L**
Acute Criterion	**22.6**	**0**
Chronic Criterion		**0**
Human Health Criterion	**0**	**0**
RP for Acute?	**NO**	
RP for Chronic?	**NO**	
RP for Human Health?	**N/A**	

Effluent Data Silver

#		#		#	
1	**0.5**	**41**	**0**	**81**	**0**
2	**0.5**	**42**	**0**	**82**	**0**
3	**0.5**	**43**	**0**	**83**	**0**
4	**0.5**	**44**	**0**	**84**	**0**
5	**0.5**	**45**	**0**	**85**	**0**
6	**0.5**	**46**	**0**	**86**	**0**
7	**0.5**	**47**	**0**	**87**	**0**
8	**0.5**	**48**	**0**	**88**	**0**
9	**0.5**	**49**	**0**	**89**	**0**
10	**0.5**	**50**	**0**	**90**	**0**
11	**0.5**	**51**	**0**	**91**	**0**
12	**0.5**	**52**	**0**	**92**	**0**
13	**0.5**	**53**	**0**	**93**	**0**
14	**0.5**	**54**	**0**	**94**	**0**
15	**0.5**	**55**	**0**	**95**	**0**
16	**0.5**	**56**	**0**	**96**	**0**
17	**0.5**	**57**	**0**	**97**	**0**
18	**0.5**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

RP Procedure Output

Facility Name:	**Provo City**		
Permit Number:	**UT0021717**		
Outfall Number:	**1**		
Parameter	**Zinc**		
Distribution	**Lognormal**		
Data Units	**ug/L**		
Reporting Limit	**10**		
Significant Figures	**3**		
Confidence Interval	**95**		
Maximum Reported Effluent Conc.		**30**	**ug/L**
Coefficient of Variation (CV)		**0.343**	
RP Multiplier		**1.23**	
Projected Maximum Effluent Conc. (MEC)		**36.9**	**ug/L**
Acute Criterion		**324**	**0**
Chronic Criterion		**334**	**0**
Human Health Criterion		**7400**	**0**
RP for Acute?	**NO**		
RP for Chronic?	**NO**		
RP for Human Health?	**NO**		

Effluent Data Zinc

#		#		#	
1	**20**	**41**	**0**	**81**	**0**
2	**20**	**42**	**0**	**82**	**0**
3	**20**	**43**	**0**	**83**	**0**
4	**20**	**44**	**0**	**84**	**0**
5	**30**	**45**	**0**	**85**	**0**
6	**30**	**46**	**0**	**86**	**0**
7	**20**	**47**	**0**	**87**	**0**
8	**20**	**48**	**0**	**88**	**0**
9	**30**	**49**	**0**	**89**	**0**
10	**20**	**50**	**0**	**90**	**0**
11	**10**	**51**	**0**	**91**	**0**
12	**20**	**52**	**0**	**92**	**0**
13	**30**	**53**	**0**	**93**	**0**
14	**20**	**54**	**0**	**94**	**0**
15	**20**	**55**	**0**	**95**	**0**
16	**10**	**56**	**0**	**96**	**0**
17	**30**	**57**	**0**	**97**	**0**
18	**30**	**58**	**0**	**98**	**0**
19	**0**	**59**	**0**	**99**	**0**
20	**0**	**60**	**0**	**100**	**0**
21	**0**	**61**	**0**	**101**	**0**
22	**0**	**62**	**0**	**102**	**0**
23	**0**	**63**	**0**	**103**	**0**
24	**0**	**64**	**0**	**104**	**0**
25	**0**	**65**	**0**	**105**	**0**
26	**0**	**66**	**0**	**106**	**0**
27	**0**	**67**	**0**	**107**	**0**
28	**0**	**68**	**0**	**108**	**0**
29	**0**	**69**	**0**	**109**	**0**
30	**0**	**70**	**0**	**110**	**0**
31	**0**	**71**	**0**	**111**	**0**
32	**0**	**72**	**0**	**112**	**0**
33	**0**	**73**	**0**	**113**	**0**
34	**0**	**74**	**0**	**114**	**0**
35	**0**	**75**	**0**	**115**	**0**
36	**0**	**76**	**0**	**116**	**0**
37	**0**	**77**	**0**	**117**	**0**
38	**0**	**78**	**0**	**118**	**0**
39	**0**	**79**	**0**	**119**	**0**
40	**0**	**80**	**0**	**120**	**0**

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