

**FACT SHEET AND STATEMENT OF BASIS  
SALEM CITY WASTEWATER TREATMENT FACILITY  
UPDES PERMIT NUMBER: UT0020249  
RENEWAL PERMIT  
MINOR MUNICIPAL**

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**DESCRIPTION OF FACILITY:**

The Salem City Wastewater Treatment Facility (facility) consisting of three facultative lagoons was constructed in 1988 and is designed for an average daily flow of 1.25 million gallons per day (MGD) with a peak hydraulic flow of 2 MGD, and a 5-day biochemical oxygen demand (BOD<sub>5</sub>) and total suspended solids (TSS) loading of 1200 and 1350 lbs./day respectively. The current average daily flow is approximately 0.66 MGD, and the BOD and TSS loading is 1050 and 990 lbs./day respectively. The facility currently serves Salem City and Elk Ridge.

This facility consists of a 21" influent pipe, sewage dump station, two comminutors, one bar screen, 6" Parshall flume, Drexelbrook electronic flow meter, three lift pumps, three facultative lagoon cells (each at 3.6 acres and 8 feet deep) and chlorine disinfection. Cell one contains 7 aerators, cell two has 4 aerators and cell three has one aerator. All aerators are anchored to a concrete base by steel cables. The facility is also equipped with one Oman 50 KW, 1800 RPM diesel generator for standby power and a 1000 gallon underground fuel storage tank.

**DESCRIPTION OF DISCHARGE:**

This facility has two outfalls.

<u>Outfall Number</u>	<u>Location of Discharge Point:</u>
001	Discharge is from the southwest of the facility. The discharge is located at latitude 40° 04' 18" and longitude 111° 41' 18" and is to an unnamed irrigation ditch which flows to Beer Creek.
002	Discharge is to the head of constructed wetlands (located on Salem City property) located at latitude 40° 04' 29" and longitude 111° 41' 15" and then to an unnamed irrigation ditch which flows to Beer Creek.

**RECEIVING WATERS AND STREAM CLASSIFICATION:**

Final discharge is through an irrigation ditch to the Beer Creek classified 2B, 3C and 4 according to *Utah Administrative Code (UAC) R317-2-12:*

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

- Class 3C -protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.
- Class 4 -protected for agricultural uses including irrigation of crops and stockwatering.

**BASIS FOR EFFLUENT LIMITATIONS:**

In accordance with regulations promulgated in 40 Code of Federal Regulations (CFR) Part 122.44 and in 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). In cases where multiple limits have been developed, those that are more stringent apply. In cases where no water quality standards for a particular parameter have been developed, Best Professional Judgment (BPJ) may be used where applicable.

Effluent limitations are also derived using a WLA (Addendum I). The WLA incorporates Secondary Treatment Standards, Water Quality Standards, 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 Utah Water Quality Standards in the receiving waters. The facility has previously petitioned the Utah Water Quality Board for the alternate BOD and TSS limits and the Board has granted this request. The permit effluent limitations are set forth in Table 1.

**EFFLUENT LIMITATIONS:**

	30-day	7-day	Daily	Daily
Effluent Characteristics	Average	Average	Minimum	Maximum
BOD <sub>5</sub> , mg/L	45	65	NA	NA
BOD <sub>5</sub> Minimum % Removal	85	NA	NA	NA
TSS, mg/L	45	65	NA	NA
TSS Minimum % Removal	85	NA	NA	NA
E. coli, no./100mL	126	157	NA	NA
Flow, MGD <i>b/ c/</i>	NA	NA	NA	NA
Ammonia, mg/L	1.5	NA	NA	5.0
Total Residual Chlorine, mg/L	NA	NA	NA	2.0
Oil & Grease, mg/L	NA	NA	NA	10
pH, Standard Units	NA	NA	6.5	9.0
Dissolved Oxygen, mg/L	NA	NA	5.0	NA

- a/* See Definitions, Part I.A, 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/ Parameters to be monitored at Outfall 001 only.

**SIGNIFICANT CHANGES:**

The Ammonia limit in the permit is being changed. The modification to the ammonia limit is necessitated by a rule change required by EPA and adopted by the Utah Water Quality Board in October 2008. This rule change extended the chronic ammonia criteria from 3A and 3B waters to include 3C and 3D waters.

In the current permit, Outfall 001 and Outfall 002 to Beer Creek have an acute ammonia limit (maximum daily concentration) but does not have a chronic ammonia limit (30-day average concentration) due to the fact that the designated beneficial use of the receiving water in the waste load analysis was 3C (for aquatic life use) and did not have a chronic ammonia criterion in the water quality standards at the time of the permit issuance.

As a result of this rule change the new chronic ammonia standards will be difficult to meet with the current lagoons. Based on the wasteload allocation, the final ammonia will be 1.5 mg/l from all Outfalls. Given the treatment required to meet this rather stringent acute ammonia limit, DWQ is working with the facility resolve this issue and help the facility to comply with future permit limits through a compliance schedule and other means. It is anticipated that the facility will have to construct a new treatment plant capable of meeting the 1.5 mg/L 30 average for Ammonia.

As a result of the change in the chronic ammonia limit, and the facility's inability to meet the 1.5 mg/L 30 average for Ammonia, a compliance schedule for the facility to come into compliance has been drafted. That schedule is listed below.

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

- a. By August 1, 2016 Salem City shall submit for Division approval the Wastewater Master Plan describing in detail the community needs, alternatives considered, pretreatment requirements (if necessary), and plans for financing and implementing the recommended and necessary improvements to the Salem wastewater treatment.
- b. By February 1, 2018 Salem City shall submit detailed construction plans and specifications to DWQ to obtain a construction permit.
- c. By February 1, 2019 Salem City shall commence construction of approved wastewater treatment upgrades as outlined in the DWQ construction permit.

- d. By August 1, 2021 Salem City shall complete construction of wastewater treatment upgrades and begin startup and optimization of upgraded wastewater treatment processes.
- e. After 1 year from the time construction is complete at the facility, Salem City shall achieve compliance with all effluent limits prescribed in UPDES Permit # UT0020907 including the new ammonia effluent limits. The final Ammonia limits from outfall 001 and Outfall 002 of 1.5 mg/L in all seasons.

**SELF-MONITORING AND REPORTING REQUIREMENTS:**

The following effluent self-monitoring requirements are based on the *Utah Monitoring, Recording and Reporting Frequency Guidelines* as effective December 1, 1991. Reports shall be made on DMR forms, and are due 28 days after the end of the monitoring month. These reporting requirements are being changed to more accurately reflect the facilities ability to monitor these parameters.

<b>Table 1a. Self-Monitoring and Reporting Requirements</b>			
Parameter	Frequency	Sample Type	Units
Influent Flow	Continuous	Recorder	MGD
Effluent Flow	Daily	Gauge	MGD
BOD <sub>5</sub>	Weekly	Grab	mg/L
TSS	Weekly	Grab	mg/L
E. coli	Weekly	Grab	Col/100 ml
Total Residual Chlorine	Daily	Grab	mg/L
Ammonia	Weekly	Grab	mg/L
Oil & Grease /a	Monthly	Grab	mg/L
pH	Weekly	Grab	SU
Dissolved Oxygen	Weekly	Grab	mg/L
Metals, Influent and Effluent	Yearly Yearly	Composite Composite	mg/L mg/L
Organic Toxics, Influent and Effluent	1 <sup>st</sup> , 3 <sup>rd</sup> and 5 <sup>th</sup> Year of the permit	Grab	mg/L

- a/ Grab sample for Oil and Grease to be taken only when there is a visible sheen is observed in the effluent.

**STORM WATER REQUIREMENTS:**

A treatment works facility treating domestic sewage or any other sewage sludge, a wastewater treatment device or system used in the storage, treatment, recycling and reclamation of municipal sewage, and lands dedicated to the disposal of sewage sludge that are located within the confines of the facility is required to submit a Notice of Intent (NOI) specifically for the Utah Pollutant Discharge Elimination System Multi Sector General Permit for Industrial Activities by December 31, 2002, if the treatment facility meets one of the following two criteria,

1. any facility that holds an approved pretreatment program as described in 40CFR Part 403
2. or, has a design flow of 1.0 MGD or greater.

Salem fits one of these criteria for exclusion from a UPDES Storm Water Permit by a No Exposure Certification. Salem City has submitted these to the Division of Water Quality in the past and have met the requirements therein. However, since No Exposure Certifications are only good for five years, the facility will have to submit a new No Exposure Certification under this permit cycle. It is anticipated that the facility will meet all the requirements of the No Exposure Certification. Therefore, no storm water permitting requirements will be required at this time.

**PRETREATMENT REQUIREMENTS:**

The permittee has not been designated to develop the pretreatment program because the Division of Water Quality (DWQ) at this time is the Control Authority. There has been evidence of pass through at the POTW. Currently the DWQ is in the process of resolving the issues of pass through with the industrial user. Salem may be required to develop and implement the pretreatment program in the future, if additional industrial users are found impacting the POTW or if the DWQ determines that Salem should be the Control Authority rather than the DWQ.

Salem City shall conduct an Industrial Waste Survey (IWS) in order to determine whether the development of an industrial pretreatment program is warranted. The IWS should be completed within 180 days of permit issuance. If an Industrial User begins to discharge or an existing Industrial User changes their discharge, then Salem must resubmit an IWS no later than sixty days following the introduction or change as stated in Part II of the permit.

Any wastewater discharges to the sanitary sewer by industrial users are subject to Federal, State, and local pretreatment regulations. Pursuant to *Section 307 of the Clean Water Act*, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in *40 CFR Part 403* and the State Pretreatment Requirements found in *UAC R317-8-8*.

The permit requires Salem to yearly monitor the influent and effluent for metals and monitor the influent and effluent. Total toxic organics (TTOs) are required to be sampled on the 1<sup>st</sup>, 3<sup>rd</sup> and 5<sup>th</sup> year of the permit cycle. This monitoring is to determine the need for local limits. If local limits are developed by Salem, then it is recommended that Salem perform an annual evaluation of the need to revise or develop technically based local limits for pollutants of concern, to implement the general and specific prohibitions *40 CFR, Part 403.5(a)* and *Part 403.5(b)*. This evaluation may indicate that

present local limits are sufficiently protective, need to be revised or should be developed. It is required that Salem submit for review any local limits that are developed to the Division of Water Quality for review and if needed public notice.

**BIOMONITORING REQUIREMENTS:**

As part of a nationwide effort to control toxic discharges, biomonitoring requirements are being included in permits for facilities where effluent toxicity is an existing or potential concern. In Utah, this is done in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity (WET) Control (Biomonitoring)* (2/1991). 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.*

Salem City Wastewater Treatment Facility is a minor municipal facility, which discharges less than one (1) MGD, and has no categorical industries contributing to the wastewater system. The dilution ratio of the irrigation ditch to discharge is approximately 2 to 1. Based on these considerations, there is no reasonable potential for toxicity in Salem City's discharge (per *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control*). As such, there will be no numerical WET limitations or WET monitoring requirements in this permit. However, the permit will contain a toxicity limitation re-opener provision. This provision allows for modification of the permit, should additional information indicate the presence of toxicity in the discharge.

**BIOSOLIDS (SLUDGE) DISPOSAL REQUIREMENTS:**

Because the permitted facility is a lagoon, there is no regular sludge production. Therefore requirements of 40 CFR 503 do not apply unless or until sludge is removed from the bottom of the lagoon and used or disposed of in some way.

**TMDL REQUIREMENTS:** This facility ultimately discharges to Utah Lake which is listed on Utah's 2006 303(d) list of impaired waterbodies as defined in the Clean Water Act. As required under federal regulations, a total maximum daily load (TMDL) will be developed for all 303(d) listed waters. Specifically, Utah Lake has been identified as impaired for total phosphorous (TP) and Total Dissolved Solids (TDS). Currently, a TMDL evaluation is underway for the lake. The TMDL process may result in pollutant load reductions and wasteload allocations for either of these constituents. Wasteload allocations would then be translated to effluent limits in UPDES permits. It is therefore strongly recommended that the facilities' staff participate in the TMDL process. It is also recommended that the facility self-monitor TP and TDS on a monthly basis in order to better quantify their contribution of phosphorus and Total Dissolved Solids loading to the lake. The TMDL staff at the Division of Water Quality will be responsible for scheduling and notifying appropriate facility personnel regarding TMDL meetings. In addition, please contact your UPDES permit writer for information on scheduled TMDL meetings.

**PERMIT DURATION:** It is recommended that this permit be effective for a duration of 5 years.

Drafted by Lonnie Shull  
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January 28, 2015

PND DRAFT

