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DEC 27 2004

STATEMENT OF BASIS

TIMPANOGOS SPECIAL SERVICE DISTRICT

Water Permits Unit



RENEWAL PERMIT  
Major Municipal

FACILITY CONTACT

Mailing Address: Garland Mayne, District Manager  
Timpanogos Special Service District  
P.O. Box 923  
American Fork, Utah 84003  
(801) 756-5231 Fax (801) 756-1472

Site Address: 5050 West 6400 North  
Utah County, Utah

DESCRIPTION OF FACILITY

This facility is a publicly owned wastewater treatment works. It treats wastewater by use of oxidation ditches, settling and disinfection (UV and chlorine). Timpanogos Special Service District (TSSD) has a permitted biosolids composting program, an approved pretreatment program and has built a six celled polishing pond to help in the removal of total residual chlorine (TRC). This wastewater treatment plant was originally designed in 1979 to treat 7.6 million gallons per day (MGD) of wastewater. In 1984 the plant was expanded to accommodate 10 MGD of wastewater, and again in 1996 to treat up to 18 MGD. This last expansion should cover population growth to the year 2015. TSSD provides wastewater disposal services to the communities of Alpine, American Fork, Cedar Hills, Eagle Mountain, Highland, Lehi, Pleasant Grove and Saratoga Springs, Utah.

There is one discharge from this wastewater treatment plant, with two sampling locations allowed. Discharge from the plant UV unit goes through a six celled pond system before discharge to Utah Lake at a latitude of 40° 20' 26" and a longitude of 111° 46' 35". Chlorine is used for "house keeping" to control algae in some of the unit processes. This may produce some detectable TRC. TRC will be monitored at the point where the pond system discharges to Utah Lake. All of the other parameters can be monitored at the discharge from the UV process or where the pond system discharges to Utah Lake.

The point at which Utah Lake receives effluent from the pond system varies depending on the Lake level. There is a bypass of the wetlands, which extends from the UV process to Utah Lake. This bypass will not be used unless absolutely necessary and only as provided by the bypass conditions and requirements of the permit.

## DISCHARGE

### DESCRIPTION OF DISCHARGE

Timpanogos Special Service District has been reporting self-monitoring results on Discharge Monitoring Reports on a monthly basis. A summary of the last 3 years of data is attached and there were no significant violations.

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	Two sampling locations are allowed under the permit. One for TRC at the outlet to Utah Lake from a six celled polishing pond. This is the only outfall from the plant and is located at latitude 40°20'26" and longitude 111°46'35". The other sampling location is located at the discharge from the UV chamber to the six-celled pond. The permittee may sample all other parameters (other than TRC) at either the UV chamber or at the outfall to Utah Lake.

### RECEIVING WATER CLASSIFICATION

The discharge flows into Utah Lake. Utah Lake is Class 2B, 3B, 3D and 4, according to Utah Administrative Code (UAC) R317-2-13.12.x.:

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

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

3D - Protected for waterfowl, shore birds and other water-oriented wildlife not included in classes 3A, 3B, or 3C including the necessary aquatic organisms in their food chain.

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

*Utah Administrative Code (UAC) R317-2* not only identifies classifications but also specific parameters and their concentrations in Utah Lake, which will protect the above, designated beneficial

uses. Any degradation outside of an allowed mixing zone will not be allowed and effluent numbers in this renewal permit are calculated to prevent such an occurrence from happening in Utah Lake.

### BASIS FOR EFFLUENT LIMITS

Limitations on total suspended solids (TSS), biochemical oxygen demand (BOD<sub>5</sub>), fecal and total coliforms, pH and percent removal for BOD<sub>5</sub> and TSS are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*. The oil and grease is based on best professional judgment (BPJ). Ammonia, total residual chlorine (TRC), and dissolved oxygen (DO) are based on a new waste load analysis (WLA). WET limits are based on the current permit. A new WLA was developed of which the WET limit was less stringent. Although the permittee has proven to meet the current limit and based on anti-back sliding rules at this time the limit will not be changed. The permit limitations are:

Parameter	Effluent Limitations			
	Maximum Monthly Average	Maximum Weekly Average	Daily Minimum	Daily Maximum
BOD <sub>5</sub> , mg/L	25	35	NA	NA
BOD <sub>5</sub> Min. % Removal	85	NA	NA	NA
TSS, mg/L	25	35	NA	NA
TSS Min. % Removal	85	NA	NA	NA
Fecal Coliforms, No./100mL	200	250	NA	NA
Total Coliforms, No./100mL	2000	2500	NA	NA
TRC, mg/L	NA	NA	NA	0.063
WET, Chronic Biomonitoring	NA	NA	NA	Pass
Oil & Grease, mg/L	NA	NA	NA	10
pH, Standard Units	NA	NA	6.5	9.0
Ammonia, mg/L	15.7	NA	NA	18.8
Dissolved Oxygen (DO), mg/L	NA	NA	5.0	NA

NA – Not Applicable

This facility currently discharges wastewater into an impaired waterbody listed in Utah's 303(d) list of impaired waters as defined in the Clean Water Act. As required under federal regulation a TMDL will be developed for all listed waters. The TMDL will focus on developing limitations for those parameters of concern (POC) that were identified during the 305(b) and 303(d) assessment process. POC's are identified as those parameters in violation of water quality standards or where defined methodologies indicate impairment of a beneficial use (a major component of the water quality standards).

Specifically, Utah Lake has been identified as impaired for total dissolved solids (TDS) and total phosphorus (TP) based on the 1998, 303(d) assessment process. Currently a TMDL evaluation is

underway for Utah Lake. If the results of the TMDL process establish effluent limits for either or both of these POC's, then it would be required by (40 CFR Part 130) to include these effluent limits in UPDES permits. Therefore, it is strongly recommended that the facilities staff participate in the TMDL development process. The TMDL staff at the Division of Water Quality will be responsible for scheduling and notifying appropriate facilities personnel regarding TMDL meetings. In addition, please contact your UPDES permit writer for information on scheduled TMDL meetings.

### SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements are the same as in the pervious permit. The permit will require reports to be submitted monthly and quarterly, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Lab sheets for biomonitoring must be attached to the biomonitoring DMR.

TSSD has volunteered to do bimonthly monitoring for a year on total phosphorus and total dissolved solids. This is to gather more information for a TMDL on Utah Lake.

Self-Monitoring and Reporting Requirements			
Parameter	Frequency	Sample Type	Units
Total Flow	Continuous	Recorder	MGD
BOD <sub>5</sub> , Influent Effluent	3 x Weekly	Composite	mg/L
	3 x Weekly	Composite	mg/L
TSS, Influent Effluent	3 x Weekly	Composite	mg/L
	3 x Weekly	Composite	mg/L
Fecal Coliforms	3 x Weekly	Grab	No./100mL
Total Coliforms	3 x Weekly	Grab	No./100mL
TRC	Daily	Grab	mg/L
WET, Chronic Biomonitoring	Quarterly	Composite	Pass/Fail
Oil & Grease	1 x Monthly Unless Sheen	Grab	mg/L
DO	3 x Weekly	Grab	mg/L
pH	3 x Weekly	Grab	SU
Metals, Influent Effluent	Quarterly	Composite	mg/L
	Quarterly	Composite	mg/L
Ammonia	3 x Weekly	Grab	mg/L

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

In an effort to better address the needs of the watershed and increase efficiency, the DWQ has recently begun consolidating permits. Therefore, in addition to the Discharge provisions, the renewal permit for Timpanogos SSD will include provisions for storm water, biosolids, pretreatment and discharge.

Due to the facility's continual WET testing compliance and the fact that acute biomonitoring will be detected in the chronic biomonitoring test, the facility will only have to test for chronic toxicity during this permit cycle.

TRC and ammonia limits have changed due to a waste load analysis and the changes occurred due to variations in the computer model and changes to the Utah Water Quality Standards.

## **BIOSOLIDS**

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

Waste activated solids are pumped from the oxidation ditch to aerobic digesters, the solids (sewage sludge) in the two digesters are treated for 40 days at a temperature of 20° C (68° F), and 60 days at 15° C (59° F). The biosolids are wasted to one of the drying beds for partial de-watering. Wood chips are added to the drying beds at a ratio of two parts wood chips to one part biosolids. This mixture is moved to the compost pad and green waste is added to the wood chips and biosolids mixture. This mixture is then formed into windrows and the time, temperature and turnings process is begun. After meeting the permit requirements for a Class A compost derived from biosolids, the compost is sold or given away to the public.

#### **Future Disposal Methods**

The TSSD intends to continue composting biosolids to meet Class A requirements for the life of this permit. If the TSSD needs, or wants to change their disposal methods, the TSSD will need to contact the Division of Water Quality, at least 180 days in advance of the change.

### **BIOSOLIDS LIMITATIONS AND SELF-MONITORING REQUIREMENTS**

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

Minimum Frequency of Monitoring Based Upon Dry Metric Tons (DMT)	
Amount of Biosolids Produced Per Year	Monitoring Frequency
> 0 to < 290 DMT	Once Per Year
> 290 to < 1,500 DMT	Four Times Per Year
> 1,500 to < 15,000 DMT	Six Times Per Year

Since the TSSD sold or gave away 5,400 DMT of Class A biosolids in 2003, they will need to monitor the biosolids at least six times per year for the parameters listed below.

### BIOSOLIDS LIMITATIONS

#### Heavy Metals Limitations

Prior to sale or giveaway to the public, all biosolids need to be sampled and meet the heavy metals limits of *Table 3, 40 CFR 503.13*, for the biosolids to be considered Class A, exceptional quality (EQ) biosolids in regards to heavy metals. 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 EQ standards. If the biosolids do not meet the EQ standards for metals, the biosolids cannot be sold or given away to the public. If the biosolids are land applied for agricultural purposes or land reclamation, *Tables 1, 2, or 4 of 40 CFR 503.13* will need to be met. However, all biosolids produced from the TSSD have met EQ standards with respect to heavy metals during the life of the last permit, and it is expected that the TSSD will continue to meet EQ standards for the life of this permit. If the biosolids fail to meet any of the heavy metals standards of *40 CFR 503.13*, the biosolids cannot be land applied, and the TSSD will need find another method of disposal.

#### Pathogens, Class A Biosolids

If biosolids are land applied to home lawns and gardens, the biosolids need to be treated by a specific process to further reduce pathogens (PFRP), and meet a microbiological limit of less than 3 MPN of *Salmonella* per 4 grams of total solids (or less than 1,000 most probable number (MPN) of fecal coliform per gram of total solids) to be considered Class A biosolids. The PFRP will be accomplished through windrow composting. (*Using the windrow method of composting, the temperature needs to be maintained at 55°C (131°F) or higher for fifteen days, with a minimum of five turnings during the fifteen days. (40 CFR 503.32(a)(8), Appendix (B), (B)(1).*) The practice of sale or giveaway to the public is an acceptable use of biosolids of this quality as long as the biosolids continue to meet Class A standards with respect to pathogens. If the biosolids do not meet Class A pathogen standards the biosolids cannot be sold or given away to the public, and the TSSD will need find another method of disposal.

#### Vector Attraction Reduction

The TSSD needs to meet a method of vector attraction reduction (VAR) if the biosolids are sold or given away to the public. Since the biosolids will be composted to meet Class A pathogen reduction standards, the biosolids will automatically meet a method of vector attraction reduction (*Aerobic treatment of the biosolids for at least 14 days at over 40°C (104°F) for at least 14 days (40 CFR*

503.33, Option 5).

**Landfill Monitoring**

Should the TSSD need to landfill any biosolids, Under 40 CFR 258, the landfill monitoring requirements include a paint filter test (to determine if the biosolids exhibit any free liquid). If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill (40 CFR 258.28(c)(1), and the TSSD will need to find another method of disposal.

**MONITORING DATA**

**Heavy Metals**

The TSSD was required to sample for heavy metals at least six times in 2003. All of the compost sold or given away in 2003 met Table 3 of 40 CFR 503.13, therefore the TSSD compost qualifies as EQ with respect to metals. The monitoring data of the six samples is below.

Heavy Metals Monitoring Data, 2003 Compost

Parameter	Table 3 Limits, mg/kg (Exceptional Quality)	TSSD, Average, mg/kg (2003)	TSSD, Maximum, mg/kg (2003)
Arsenic	41.0	1.81	2.7
Cadmium	39.0	0.61	1.1
Copper	1,500.0	85.6	150.0
Lead	300.0	14.4	28.0
Mercury	17.0	1.4	2.0
Molybdenum	75.0	8.7	23.0
Nickel	420.0	5.2	7.3
Selenium	36.0	1.7	2.7
Zinc	2,800.0	157.0	220.0

**Pathogens**

The TSSD was required to sample for pathogens at least six times in 2003. All of the compost sold or given away in 2003 met the Class A pathogen requirements of 40 CFR 503.32. The

monitoring data of the six samples is condensed below.

Parameter	Permit Limits Most Probable Number Per Four Grams of Total Solids (MPN/4G)	TSSD, Geometric Mean MPN/4g, Salmonella (2003)	TSSD, Maximum MPN/4g, Salmonella (2003)
Salmonella	<3MPN/4g	1.70 MPN/4G	2.01 MPN/4g

## REPORTING AND RECORD KEEPING REQUIREMENTS

### Record keeping

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

### Reporting

The TSSD must report annually as required in *40 CFR 503.18*. This report is to include the results of all monitoring performed in accordance with *Part I.C.* 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.

## STORM WATER

### STORMWATER REQUIREMENTS

Storm water provisions are included in this combined UPDES permit.

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

The permit requires the preparation and implementation of a storm water pollution prevention plan for all areas within the confines of the plant. Elements of this plan are required to include: 1. The development of a pollution prevention team: 2. Development of drainage maps and materials stockpiles: 3. An inventory of exposed materials: 4. Spill reporting and response procedures: 5. A

preventative maintenance program: 6. Employee training: 7. Certification that storm water discharges are not mixed with non-storm water discharges: 8. Compliance site evaluations and potential pollutant source identification, and: 9. Visual examinations of storm water discharges.

Timpanogos Special Service District is currently covered under the UPDES Multi Sector General Permit for Industrial Activities.

### **PRETREATMENT REQUIREMENTS**

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

The permittee will be required to perform an annual evaluation of the need to revise or develop technically based local limits to implement the general and specific prohibitions of *40 CFR, Part 403.5(a)* and *Part 403.5(b)*. This evaluation may indicate that present local limits are sufficiently protective, or that they must be revised.

As part of this evaluation, the permit requires quarterly influent and effluent monitoring for metals and yearly organic toxics listed in *R317-8-7.5* and sludge monitoring for potential pollutants listed in *40 CFR 503.*

### **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.*

Chronic toxicity testing will be required using one species quarterly, alternating between *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnow). The permit will contain the standard requirements for a TRE (Toxicity Reduction Evaluation) as necessary.

**PERMIT DURATION**

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

Drafted by  
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Utah Division of Water Quality  
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