
REGULATORY REQUIREMENTS**6.1 CURRENT REGULATORY REQUIREMENTS****6.1.1 Surface Water Quality Standards**

Surface water quality in the state of Nebraska is governed by Title 117 of the Nebraska Surface Water Quality Standards. Surface water quality classifications for all surface waters in the state are established by the State of Nebraska Department of Environmental Quality (NDEQ) and the US Environmental Protection Agency (US EPA). The water quality classifications have been established to protect water uses associated with a given classification and directly affect the levels of wastewater treatment required for treated effluent discharge to surface waters of the State. Both the Theresa Street and Northeast wastewater treatment facilities discharge treated effluents to Segment LP2-20000 of Salt Creek located in the Lower Platte River basin. Segment LP2-20000 generally extends from Beal Slough to Rock Creek. Wastewater effluent quality requirements are dependent on stream classification, seasonal flow conditions, and secondary effluent standards set by National Pollutant Discharge Elimination System (NPDES) permits issued by the NDEQ.

The following water quality classifications have been established by the state of Nebraska.

- Aquatic Life:
 - Coldwater (Class A and B)
 - Warm Water (Class A and B)
- Recreation (Class A and B)
- Water Supply
 - Public Drinking Water
 - Agricultural (Class A and B)
 - Industrial
- Aesthetics
- Key Species
- State Resource Water

Table 6.1 presents the classifications established by the state for the segment of Salt Creek where the Theresa Street WWTF and Northeast WWTF outfalls are located.

Table 6.1 Salt Creek Segment LP2-20000 Stream Classification Wastewater Facilities Master Plan Update - 2007 City of Lincoln, Nebraska	
Use Classification ⁽¹⁾	Category
State Resource Water	Not assigned
Aquatic Life	Warm water, Class A ⁽²⁾
Water Supply	Agricultural, Class B
Recreation	Primary contact ⁽³⁾
Aesthetics	Applies to all surface waters
Key Species	Channel catfish, walleye (Species code i, w)
Notes 1. Classification per Title 117 Nebraska Department of Environmental Quality, Revised July 31, 2006 2. Site specific water quality criteria for ammonia are assigned. See Tables 6.2 and 6.3. 3. For Primary Contact, E. coli bacteria shall not exceed a geometric mean of 126/100ml based on a minimum of five samples within a 30-day period.	

The quality of all discharges into this segment of Salt Creek must be consistent with maintaining the water quality levels established by the stream classification.

6.1.2 Effluent Discharge Permitting System

Authorization to discharge wastewater effluent is provided by National Pollutant Discharge Elimination System (NPDES) permits issued by the NDEQ. NPDES permits identify wastewater effluent limitations, monitoring requirements, compliance schedule, influent monitoring requirements, and biosolids disposal requirements for WWTF discharge.

Table 6.2 presents NPDES permit monitoring requirements for the Theresa Street and Northeast WWTF facilities. Monitoring shall be conducted by sampling after all treatment processes and prior to discharge to the receiving stream unless otherwise indicated.

The NPDES permit requires that the 30-day average percent removal for CBOD₅ and TSS for both the Theresa Street WWTF and the Northeast WWTF shall not be less than 85-percent. The effluent discharge permits for both facilities are located in Appendix F.

6.1.2.1 Theresa Street WWTF NPDES Permit

The current Theresa Street WWTF NPDES permit, No. NE0036820, for discharge to Salt Creek has an effective date of January 1, 2004 and an expiration date of December 31, 2008. Table 6.3 presents NPDES permit requirements for wastewater effluent discharge from Theresa Street.

Table 6.2 Theresa Street WWTF NPDES Permit Monitoring Requirements Wastewater Facilities Master Plan Update - 2007 City of Lincoln, Nebraska			
Parameter	Monitoring Frequency	Sample Type	Limits
Influent Wastewater			
pH, S.U.	Weekly	Grab	
CBOD ₅ , mg/L	Weekly	24-hour Composite	
TSS, mg/L	Weekly	24-hour Composite	
Wastewater Effluent			
pH, S.U.	Daily	Grab	
Effluent flow, MGD ⁽¹⁾	Daily	Meter	
CBOD ₅ , mg/L ⁽²⁾	Daily	24-hour composite	
TSS, mg/L ⁽³⁾	Daily	24-hour composite	
NH ₃ -N, mg/L	Daily	24-hour composite	
Acute Toxicity, TU	Once per Season	24-hour composite	
Total Residual Chlorine, mg/L ⁽⁴⁾	Daily	Grab	
Fecal Coliform, #/100 mL	Daily	Grab	
Dissolved Cadmium, mg/l	Once per Season	24-hour Composite	
Dissolved Chromium, mg/L	Once per Season	24-hour Composite	
Dissolved Copper, mg/L	Once per Season	24-hour Composite	
Dissolved Lead, mg/L	Once per Season	24-hour Composite	
Dissolved Mercury, mg/L	Once per Season	24-hour Composite	
Dissolved Nickel, mg/L	Once per Season	24-hour Composite	
Dissolved Silver, mg/L	Once per Season	24-hour Composite	
Dissolved Zinc, mg/L	Once per Season	24-hour Composite	
Notes			
1. MGD - million gallons per day.			
2. CBOD ₅ - 5-day carbonaceous biochemical oxygen demand.			
3. TSS - Total suspended solids.			
4. Only when chlorine is used for disinfection.			

Table 6.3 Theresa Street WWTF Effluent NPDES Permit Limitations Wastewater Facilities Master Plan Update - 2007 City of Lincoln, Nebraska			
Parameter, Units	March 1 - May 31	June 1 - October 31	November 1 - February 28
pH, S.U.	6.5 - 9.0	6.5 - 9.0	6.5 - 9.0
CBOD ₅ , mg/L (kg/day) ⁽¹⁾			
Monthly Average	25 (2198.2)	25 (2198.2)	25 (2198.2)
7-Day Average	40 (3517.1)	40 (3517.1)	40 (3517.1)
TSS, mg/L (kg/day) ⁽²⁾			
Monthly Average	30 (2637.8)	30 (2637.8)	30 (2637.8)
7-Day Average	45 (3956.7)	45 (3956.7)	45 (3956.7)
NH ₃ -N, mg/L (kg/day)			
Monthly Average	8.1 (567.5)	2.9 (198.2)	8.1 (539.8)
7-Day Average	21.3 (1492.4)	7.7 (526.3)	21.3 (1414)
Acute Toxicity, TU			
Monthly Average	---	---	---
7-Day Average	1.0	1.0	1.0
Total Residual Chlorine, mg/L (kg/day)			
Monthly Average	0.008 (0.56)	0.007 (0.48)	0.008 (0.53)
7-Day Average	0.020 (1.4)	0.020 (1.36)	0.020 (1.32)
Fecal Coliform, #/100 mL	200 (May 1 through September 30)		
Notes			
1. CBOD ₅ is 5-day carbonaceous biochemical oxygen demand			
2. TSS - Total Suspended Solids			

6.1.2.2 Northeast WWTF NPDES Permit

The current Northeast WWTF NPDES permit, No. NE0112488, for discharge to Salt Creek has an effective date of January 1, 2004 and an expiration date of December 31, 2008. Table 6.4 presents NPDES permit requirements for wastewater effluent discharge at the Northeast WWTF.

Table 6.4 Northeast WWTF Effluent NPDES Permit Limitations Wastewater Facilities Master Plan Update - 2007 City of Lincoln, Nebraska			
Parameter	March 1 - May 31	June 1 - October 31	November 1 - February 28
pH, S.U.	6.5 - 9.0	6.5 - 9.0	6.5 - 9.0
CBOD ₅ , mg/L (kg/day) ⁽¹⁾			
Monthly Average	25 (634.8)	25 (634.8)	25 (634.8)
7-Day Average	40 (1015.7)	40 (1015.7)	40 (1015.7)
TSS, mg/L (kg/day) ⁽²⁾			
Monthly Average	30 (761.7)	30 (761.7)	30 (761.7)
7-Day Average	45 (1142.6)	45 (1142.6)	45 (1142.6)
NH ₃ -N, mg/L (kg/day)			
Monthly Average	15.6 (384.5)	10.1 (229.6)	14.8 (364.7)
7-Day Average	40.8 (1005.5)	26.5 (602.4)	38.8 (956.2)
Acute Toxicity, TU			
Monthly Average	---	---	---
7-Day Average	1.0	1.0	1.0
Total Residual Chlorine, mg/L (kg/day)			
Monthly Average	0.011 (0.27)	0.009 (0.20)	0.010 (0.24)
7-Day Average	0.028 (0.69)	0.025 (0.56)	0.026 (0.64)
Fecal Coliform, #/100 mL	200 (May 1 through September 30)		
Notes			
1. CBOD ₅ is 5-day carbonaceous biochemical oxygen demand			
2. TSS - Total Suspended Solids			

6.1.2.3 Future NPDES Permits

The current NPDES permits were issued recently with an effective date of January 1, 2004 and expire December 31, 2008. There are not any anticipated changes to the current NPDES permits for Theresa Street and Northeast WWTF facilities prior to the expiration date. Modifications to the current NPDES permits may be issued after public notice and opportunity for public hearing per NDEQ Title 119 - *Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System, Chapter 14*.

6.1.3 Residuals Disposal Regulations

The City of Lincoln and Lancaster County have entered into an agreement that covers the land application of treated Biosolids generated at the Cities WWTF's. A copy of this agreement is located in Appendix J. Specific Responsibilities of the City include the following.

1. Biosolids production and application is in compliance with the Federal 503 regulations, including all requirements related to vector and pathogen control.
2. The City designates an authorized staff representative.
3. City coordinate hauling of the biosolids to the appropriate application or storage sites.
4. Assist in developing markets, public education and customer contracts negotiations as needed.
5. Obtain and comply with all regulations.
6. Provide physical and chemical analysis necessary for complying with EPA Part 503 regulations and other said laws.
7. Manage and fund the projects.
8. Maintain required insurance as stated in the agreement.

In addition to the City County agreement biosolids disposal is also covered in the following regulations:

1. NDEQ Title 119 -- *Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System.*
2. NDEQ Title 121 -- *Effluent Guidelines and Standards.*
3. NDEQ Title 127 - *Rules and Regulations Governing the Nebraska Pretreatment Program.*
4. NDEQ Title 132 - *Integrated Solid Waste Management Regulations.*
5. EPA Standards for the Use and Disposal of Sewage Sludge, 40 CFR Part 503.
6. Federal Clean Water Act (CWA).
7. Resource Conservation and Recovery Act (RCRA) Subtitle D Municipal Solid Waste Regulations, 40 CFR Part 258.
8. RCRA Hazardous Waste Regulations, 40 CFR Part 261.
9. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or Superfund requirements.

Residuals are generated from the following processes at the Theresa Street WWTF and the Northeast WWTF.

1. Influent screening
2. Grit removal
3. Primary clarification
4. Secondary treatment

Screenings and grit residuals are collected and hauled to the City's Bluff Road Municipal Solid Waste sanitary landfill for disposal. The governing regulation for screenings and grit landfill disposal is section Subtitle D of the Federal Resource Recovery Act (40 CFR 258 or RCRA). Subtitle D requires that materials are not "hazardous" and do not contain free water. The screenings and grit material at the Theresa Street and Northeast WWTFs are dewatered and meet the requirements of Subtitle D for landfill disposal.

Primary and secondary sludge disposal regulations are required under the Clean Water Act (40 CFR Part 503), commonly referred to as the "503 Regulations". The 503 Regulations govern the disposal of wastewater sludge (biosolids) by land application, surface disposal, and incineration. Biosolids generated at the Theresa Street and Northeast WWTFs are land applied to agricultural land in the Lincoln area under the City/County Agreement. This agreement places several requirements on the biosolids including:

5. Biosolids application is in compliance with the Federal 503 regulations, including all requirements related to vector and pathogen control.
6. Biosolids are not applied within 200 feet of any actively used groundwater well, except for those used exclusively for irrigation.
7. Biosolids are not being applied within 1000 feet of any public drinking water supply well.
8. Application sites are not subject to public access.
9. Others.

NDEQ Title 119 -- Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System - Disposal requirements for municipal and industrial wastewater treatment sludges or biosolids can be incorporated into NPDES permits. The disposal of wastewater sludge is subject to the requirements of 40 CFR Part 503. These disposal requirements assure that sludges or biosolids are treated and disposed of in a manner that is environmentally sound and protective of human health. Beneficial use such as land application of biosolids is encouraged.

NDEQ Title 121 –Effluent Guidelines and Standards - As part of the manufacturing process many industrial, commercial, and mining facilities produce point source pollution by discharging effluent and/or treated waste. Title 121 is used to establish the quantities, rates, and concentrations of pollutants that can be discharged from these facilities.

NDEQ Title 127 - Rules and Regulations Governing the Nebraska Pretreatment Program - The Nebraska Pretreatment Program functions to protect municipal wastewater collection and treatment systems from damage or overloading by industrial dischargers. Title 127 sets forth prohibited discharge standards that apply to all industrial users of publicly-owned wastewater treatment facilities and requires permits for significant industrial users. The significant industrial users are determined by one of several means: 1) the existence of an industrial category for which pretreatment discharge standards are established in NDEQ Title 121 - *Effluent Guidelines and Standards*, 2) the volume or strength of the wastewater discharged from the facility, or 3) the potential of the industrial user to adversely affect the wastewater collection or treatment facilities.

NDEQ Title 132 - Integrated Solid Waste Management Regulations - Title 132 regulates disposal areas for solid waste, construction and demolition waste, industrial solid waste, fossil-fuel combustion ash, de-listed hazardous waste, in addition to land application sites for the repeated treatment and disposal of special wastes. Processing facilities such as compost sites and transfer stations are covered by these regulations as well. The disposal areas are regulated by permits that impose location restrictions and design, construction, and operational requirements.

EPA Standards for the Use and Disposal of Sewage Sludge, 40 CFR Part 503 -

The federal regulations that govern disposal of biosolids are covered under the Clean Water Act. These regulations were published as 40 CFR Part 503, and are commonly referred to as the '503 Regulations'. These regulations govern the disposal of biosolids by

land application, surface disposal, and incineration. The 503 regulations establish site specific management and land application practices for different qualities of biosolids. The quality of biosolids is determined primarily on the basis of certain metal concentrations, the degree of treatment, and the concentrations of certain microorganisms in the biosolids at the time of disposal. The higher the quality of biosolids, the fewer the restrictions that apply to the disposal practices

Clean Water Act - Biosolids management and disposal in compliance with 40 CFR Part 503 Regulations is typically part of the NPDES permit.

RCRA Hazardous Waste Regulations, 40 CFR Part 261 - Wastewater biosolids are exempt from RCRA requirements unless is determined to be hazardous waste though toxicity testing. Hazardous waste is defined in 40 CFR Part 261 by the following criteria:

- Ignitability
- Reactivity
- Corrosivity (pH less than 2 or more than 12.5)
- Toxicity characteristics
- Listed hazardous waste

Toxicity characteristics are determined by testing the biosolids using the Toxicity Characteristics Leaching Procedure (TCLP).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - If hazardous wastes substances are traced to biosolids, CERCLA can require corrective actions to remove the hazardous waste discharged to the environment.

6.1.4 Air Permits

The Theresa Street WWTF has a Class II Specific Operating Permit for the two engine generators. The permit has an expiration date of January 1, 2011. The permit, located in Appendix H, contains the following emission ranges as outlined below

Table 6.5 Theresa Street WWTF - Air Permit Requirements (1) Wastewater Facilities Master Plan Update - 2007 City of Lincoln, Nebraska	
Parameter	
PM ₁₀	less than 100 tpy
SO ₂	less than 100 tpy
NO _x	less than 100 tpy
VOC	less than 100 tpy
CO	less than 100 tpy
Lead	Less than 2.5 tpy
Individual Hazardous Air Pollutants	Less than 10 tpy
Total Hazardous Air Pollutants	Less than 25 tpy
Notes	
1. See the permit located in Appendix H for actual permit.	

6.1.5 Stormwater Permits

Both of the wastewater treatment facilities are also covered under the State of Nebraska's General NPDES permit for industrial Stormwater permit Number NER000000. This permit was signed on August 28, 2002. A copy of this permit is located in Appendix I.

6.2 EVOLVING REGULATIONS

6.2.1 Effluent Limits

6.2.1.1 Nutrient Criteria

EPA has published recommended water quality criteria to nutrient levels in lakes, reservoirs and streams in 17 eco-regions. The parameters for which numeric criteria could be established are total nitrogen, total phosphorus, chlorophyll a, and turbidity. These recommended water quality criteria are suggested baselines that should be used by the NDEQ to identify problem areas, serve as a basis for criteria, and evaluate the success in reducing.

To date the State of Nebraska has implemented ammonia limits. Limits for Total N and/or or Total P have been discussed but there is no current timetable to implement these changes. Discussions with NDEQ staff have indicated that they a study is ongoing to investigate the nutrient loading and biometrics. The results of that study are expected in the 2010 to 2012 time frame. If the outcome of the study shows that nutrients have an adverse affect on

water quality numeric limits would likely be developed and enforced through the permit process.

6.2.1.2 *Pre-Treatment Limits.*

There is a current push by the EPA to establish local pre-treatment limits. These limits would be enforced through the permitting process. The purpose of these limits would be to limit the headworks loading by industrial dischargers. The time table for the implementation of these limits has not been determined, but it is suspected that they may be in place as soon as 2010.

6.2.1.3 *TMDL's*

Section 303(d) of the Clean Water Act, required EPA and the States to list any stream not meeting the water quality standards. The segments listed must have a TMDL developed for them. This TMDL may specify specific requirements for point source discharges. It should be noted that the TMDL development for Salt Creek is currently in progress.

6.2.1.4 *Change in Indicator Organism*

The EPA, through its Clean Water Plan, is requiring states to change to an E. Coli standard from a fecal coliform standard. The State of Nebraska had adopted the E. coli standard.

6.2.1.5 *SSO's*

The current NDEQ strategy is to monitor SSO's and identify areas where chronic problems are noted. If problems are identified through the monitoring process, they are to be fixed and maintained. Based on discussions with NDEQ staff there are no new SSO regulations planned for the near future. The City's current proactive approach to the sewer maintenance and repairing problems once identified has aided in minimizing SSO's throughout the City. It is recommended that this practice be continued.

6.2.1.6 *Constituents of Concern*

6.2.1.6.1 Organics

There is an ongoing movement by the EPA to tighten effluent limitations for organic compounds including pesticides and herbicides. To date the State of Nebraska has not evaluated organics as part of NPDES permit development for wastewater treatment facilities.

6.2.1.6.2 Metals

Many wastewater treatment facilities around the Country are dealing with the imposition of metal limitations on their discharges. Most notable are the limitations for copper and mercury. To date the State of Nebraska has required monitoring for certain metals, but actual limits have not been implemented. Discussions with NDEQ staff has indicated that

arsenic, copper, mercury, and PCB's are being discussed but no immediate action is envisioned.

6.2.1.6.3 Other Constituents

Other constituents of concern that are on the horizon include pharmaceuticals and endocrine disrupters. At this point the question of how to best regulate pharmaceuticals is still a highly scientific debate and no action is envisioned for the immediate future regarding these.

6.2.2 Biosolids Use and Disposal Regulations

The National Academies of Science (NAS) completed an assessment of the science that supports the Part 503 Rule, and concluded that more research is required to update that science (NRC 2002). NAS concerns included the synergistic effects of chemical pollutants and pathogens, and pathogens and chemical pollutants not considered in the risk assessment of the Part 503 Rule. As a result of NAS recommendations, the EPA may begin a review of Part 503 Rule every five years, as is done for other EPA promulgated rules. It is possible that Class B biosolids may be further restricted in the future due to regulatory changes. At a 2003 Water Environment Research Foundation (WERF) biosolids summit, top industry critics voiced concerns about the adequacy of the Part 503 regulations. However, the EPA has reaffirmed its endorsement of biosolids land application in a letter to state biosolids coordinators on October 31, 2003, and will ultimately decide whether Class B biosolids will be further restricted in the future. The EPA is currently reviewing the Part 503 regulations and is expected to issue an updated version in the next 2 to 3 years.