

Wastewater Reclamation & Reuse

Presentation to
Mayor's Sustain Lincoln Plan
Blue Ribbon Committee

by
Lincoln Wastewater System
Dept. of Public Works & Utilities
April 24, 2012

Wastewater Reclamation & Reuse

Purpose : Current Reuse of Treated Wastewater Effluent in Lincoln

- Lincoln's Two Wastewater Treatment Facilities
 - Theresa St. Facility
 - Northeast Facility

- Facilities treat approx. 25 million gallons of wastewater per day
- Reuse at the Facilities has been occurring for more than 25 years.

Theresa St. Treatment Facility – 2400 Theresa St.



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3

Northeast Treatment Facility Near N. 70th & Salt Creek



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Biological Treatment - Aeration Basin



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5

Solids Removal Clarifiers & Anaerobic Digesters



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6

Ultraviolet disinfection of wastewater effluent prior to water being discharged or reused



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7

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Primary Reuse At Treatment Facilities

- Treatment processes
 - Grit Handling
 - Liquid Waste Facility
 - Biosolids Dewatering Process
- Equipment cooling – e.g. Cogeneration Units & Aeration Blowers
- Heating & cooling of buildings (HVAC)
- Irrigation of treatment facility grassed areas & grounds
- Effluent Reuse –
 - Replaces over 305 million gallons/year of fresh water use
 - Reuse of treated effluent water - Potential Est. cost avoidance of \$816,000/ year
- Terry Bundy Generating Station
 - Uses 50 to 60 million gallons per year of treated wastewater effluent from Northeast.
 - Returns approx. 20 million gallons per year of reused water to treatment facility for further treatment prior to discharge.

Treated effluent - used for cooling combined heat and power units that use anaerobic digester gas for generating electricity and heating of the digesters



Treated effluent Reuse - Cooling aeration blowers used for the aeration basins



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Treated effluent used the facility grit handling facilities and other processes at the treatment facilities



Treated effluent -used to heat and cool the Divisional Administration Building



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12

Equipment used to transfer heat from effluent to the heat pumps in the administration building



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Theresa St. Laboratory building uses treated effluent for cooling



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14

Theresa St. - Operations Control Center - HVAC system being retrofitted to use treated effluent for heating and cooling

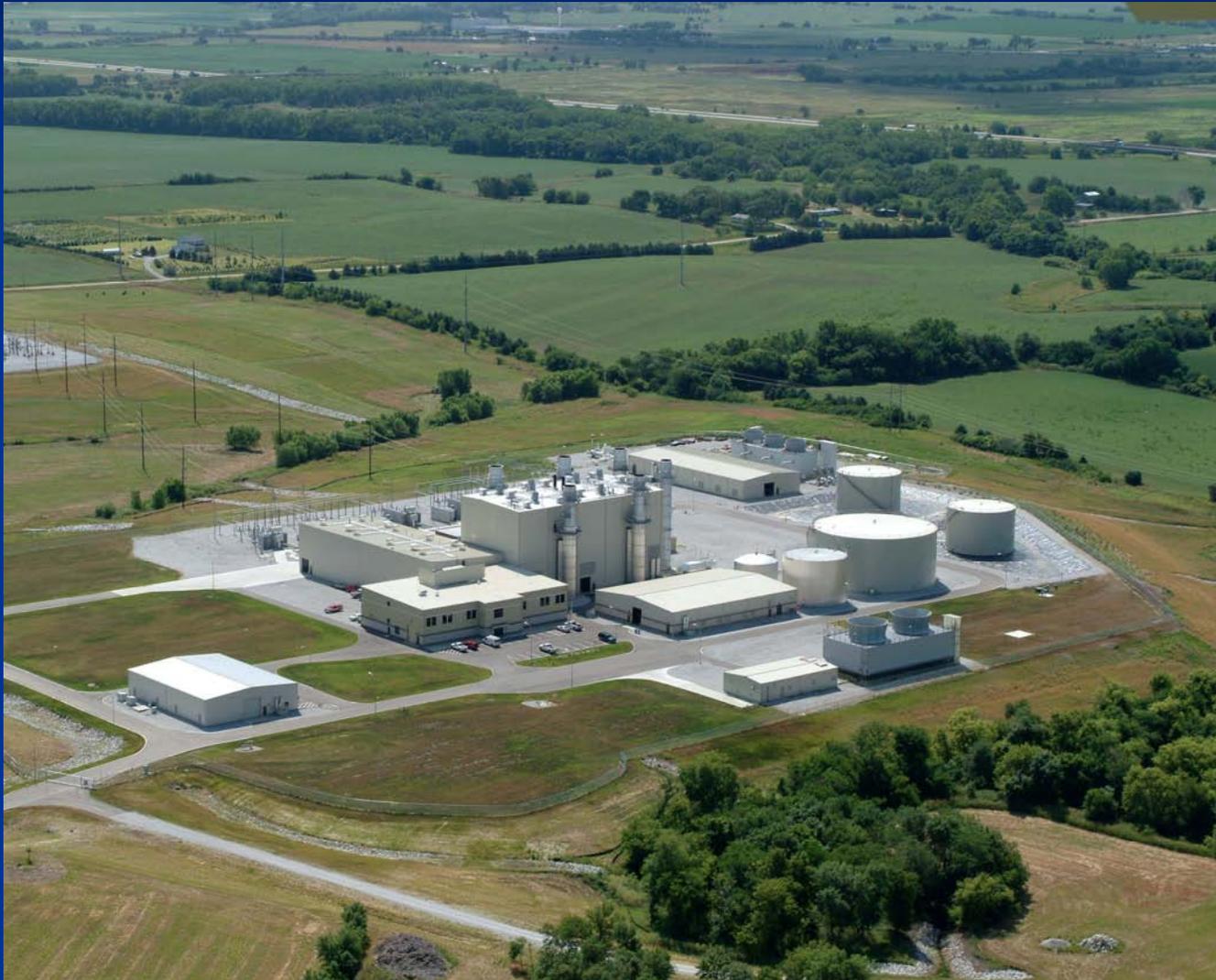


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LES Terry Bundy Electrical Generating Station uses treated effluent from Northeast for cooling towers



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16

After use, treated effluent reuse water is returned Treatment Facilities prior to discharge to Salt Creek



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Issues affecting Future Uses of Treated Wastewater

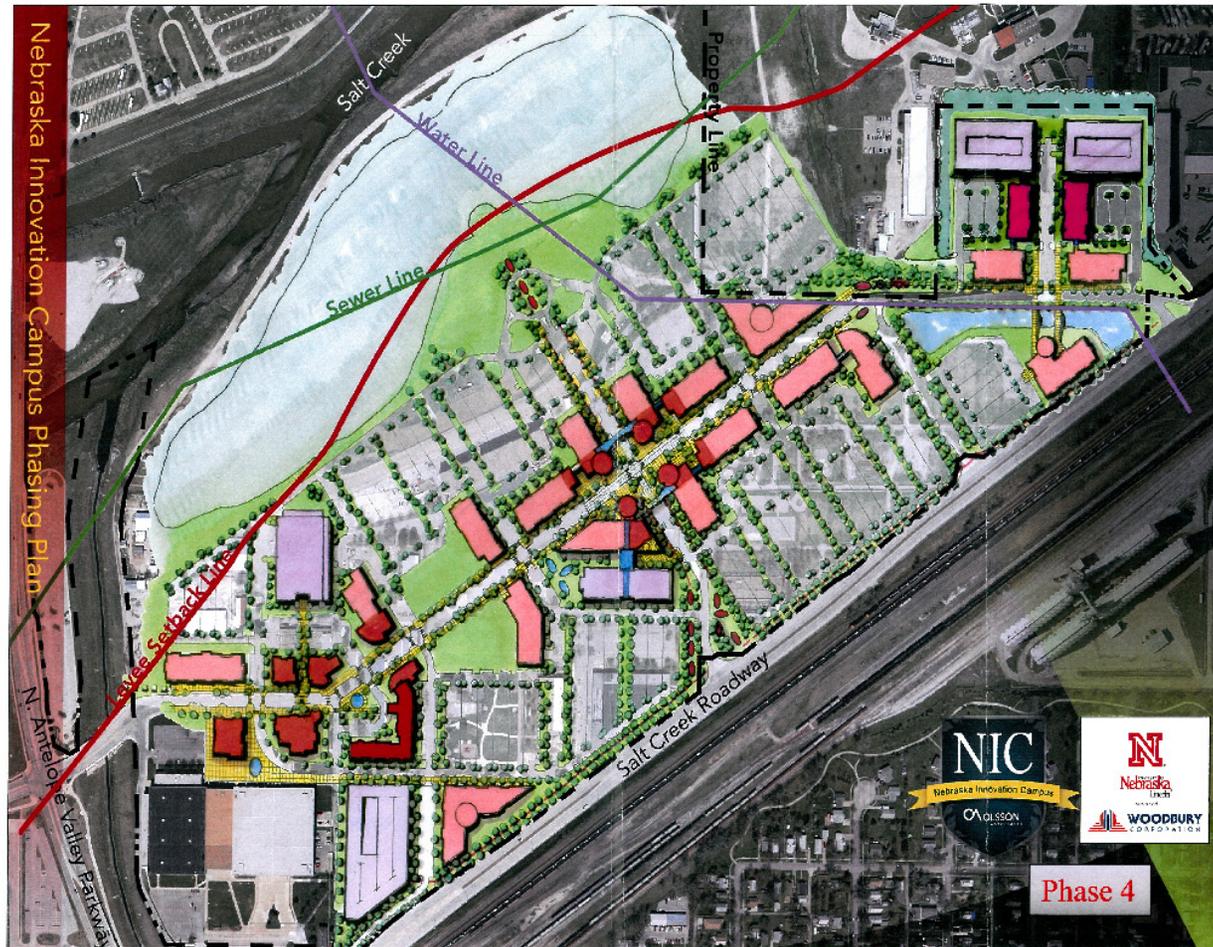
- Protection of Public Health & Safety
 - Possible direct contact with treated effluents used for irrigation
- Additional Costs for Advanced treatment and distribution
- Additional advanced treatment requirements (e.g.)
 - Filtering & Membrane Treatment
 - Greater Disinfection levels
 - Reduction and Removal of key bacteria & virus producing organisms
- Additional Regulatory requirements approaching those of Potable Water

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Potential Uses of Treated Wastewater

- UNL Innovation Campus Development - considering use of treated effluent for heating and cooling of buildings
- Irrigation of grassed areas
- Industrial uses for cooling and process requirements
- Potential reuse in “ Grey water “ systems

Nebraska Innovation Campus is considering using recycled effluent for heating and cooling



Water Wastewater Reclamation & Reuse Reclamation

- Questions

- Further Information & Contact:

Lincoln Wastewater & Solid Waste System

2400 Theresa St.

Divisional Office: 402-441-7961

Web Address: <http://lincoln.ne.gov/city/pworks/waste/index.htm>

Gary Thalken P.E. - Sanitary Engineer

email: gthalken@lincoln.ne.gov, (402) 441-7967

Gary Brandt P.E. - Division Manager – Wastewater & Solid Waste Operations

email: gbrandt@lincoln.ne.gov, (402) 441-7968