


Lincoln Water System Annual Report

March 2007






Mayor Seng
City Council Members
Karl Fredrickson, Director of Public Works & Utilities

Fellow Citizens

I am pleased to submit the annual report of the Water Operations Division of the Public Works & Utilities Department for fiscal year 2005/2006. This report serves as a valuable resource for the community to understand the division's work.

As the City of Lincoln, Nebraska continues to grow, the community's demand for safe, clean, affordable water will increase. Lincoln Water System will strive to meet this increased demand by adding facilities and infrastructure; efficiently allocating and adding personnel as needed to meet growth; building staff's technical skills; increasing the security of the water system; and seeking additional water supply sources. These changes and additions will be made in phases, as described in the Lincoln Water System Facilities Master Plan.

Lincoln Water System is dedicated to providing quality customer service throughout our community. The department is a team-oriented organization, emphasizing safety, communication, and respect for individuals.

Increasing demands cannot be continuously met by a limited water supply. Lincoln Water System must obtain new sources of supply and must continue to educate customers about water conservation.

Growing concerns about terrorism require facilities to be secure. Employees now have the extra responsibilities of focusing their time and attention on the security of the water system. Additional equipment and staffing may be required to help keep the water system safe and secure.

Increasing energy costs require the purchase of energy-saving equipment for new and replacement projects and we are placing new emphasis on efficient modes of operation, to hold down the level of rate increases.

Stricter water quality regulations will require the addition of new and modified treatment plant processes and techniques. This will involve purchasing replacement equipment and training staff. Pilot studies will be necessary to determine the most efficient treatment process changes.

The expansion of the water distribution mains, treatment and pumping facilities, and the imposition of stricter water quality regulations will result in a larger amount of work to be done by Water Division staff. The number of Lincoln Water System employees may increase to handle the addition of facilities and the increased workload.

The Lincoln Water System and its dedicated employees look forward to continue to provide an adequate quantity of quality water and to serve you, our customers in the years ahead.

Sincerely,

Jerome G. Obrist, P.E.
Lincoln Water System




LWS Mission Statement

Mission

Lincoln Water System's mission is to produce and distribute an adequate supply of high-quality water to meet the demands of customers efficiently and at the least cost.

Vision

As the city of Lincoln, Nebraska continues to grow, the community's demand for safe, clean water will increase. Lincoln Water System will strive to meet this increased demand by adding facilities and infrastructure, adding personnel, building staff's technical skills, increasing the security of the water system, and seeking additional water supply sources. These changes and additions will be made in phases, as described in the Lincoln Water System Facilities Master Plan.

Operating Philosophy

Lincoln Water System is dedicated to providing quality customer service throughout our community. The department is a team-oriented organization, emphasizing safety, communication, and respect for individuals.






Water Operations

Jerry Obrist - Utilities Coordinator

- Budget Preparation & Implementation
- C I P
- Project Management
- Planning
- Regulatory Monitoring
- Conservation
- Safety
- Security

Goals (06-07)

• Continue to manage energy usage to control operational costs.

• Maintain the department's finished water quality. Continue to meet all state and federal regulations.

• Increase the security level of the city's water supply and water infrastructure. A Strategic Security Master Plan is in the process of development.

• Decrease peak customer water usage through water conservation education.

• Maintain the current high level of service as the City of Lincoln, Nebraska continues to grow.

• Reduce downtime, costs, and inefficiencies relating to the operation of equipment and facilities, through a well managed Preventative Maintenance Program.

• Increase the amount of professional training and development offered to staff to utilize changing Technologies. Encourage mentoring programs to benefit junior staff members.

• Increase the number of wells serving the city. Water Supply Study is in progress.

• Increase water transmission capability. Project is currently under Design.

• Modify the East Treatment Plant to treat 100 % Horizontal Well water.

• Increase water storage capacity. Identified in the Long-Range CIP.

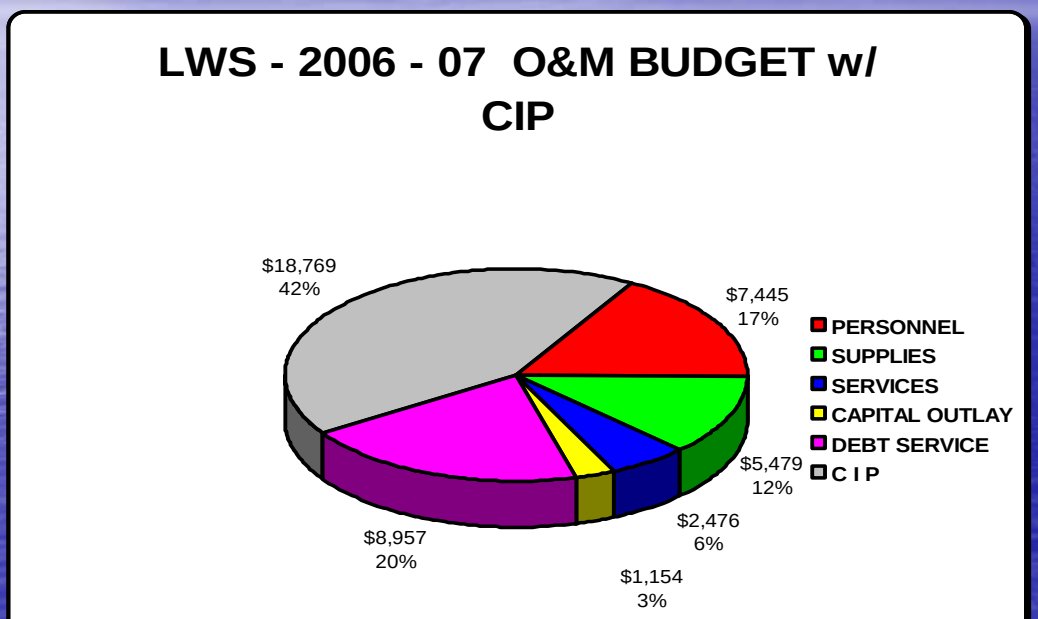
• Evaluate current treatment capabilities through Pilot work and the timing for Treatment Plant expansion.

• Implement an Asset Management Plan

Financial Overview

LWS O&M Budget w/ CIP

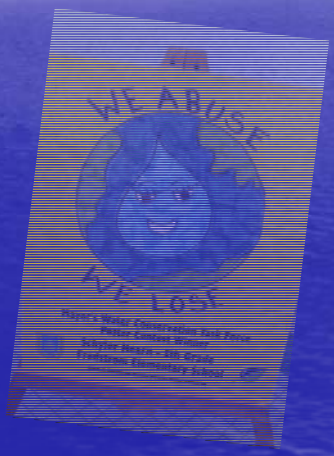
FY 2006-07 - $44.3 Million



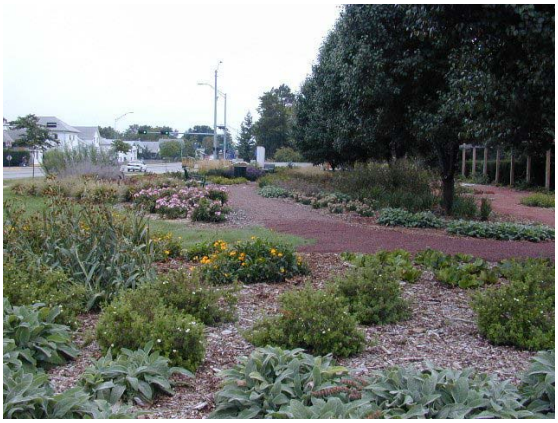
62% of the Total Budget for LWS is spent for CIP Projects and for Debt Service for CIP Projects completed in prior years.

Water Conservation Task Force

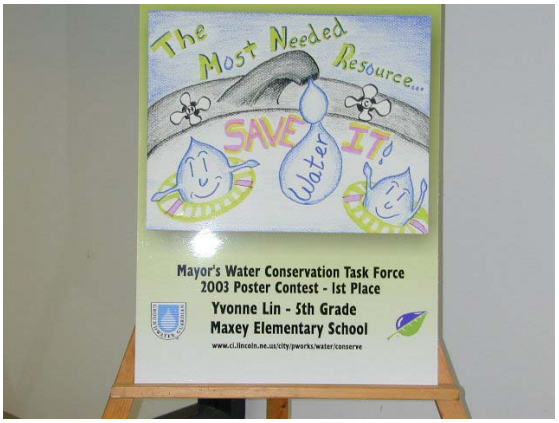
- Public Education
- Encourage Indoor & Outdoor Conservation
- Trade Shows
- Printed Material
- 5th Grade Coloring Contest
- Water Management Plan



The Mayor's Water Conservation Task Force leads the community in its water conservation efforts.



Water conserving landscape at LWS Operations center at 2021 N 27th St.



400+ area fifth graders participate in the Mayor's Conservation Task Force's Coloring Contest.

Volunteers from the Mayor's Water Conservation Task Force staffed a booth at several area trade and home and garden shows each year.

Information on water conserving practices, irrigation scheduling, mulching, and landscape materials was distributed at local nurseries and posted on the City's web site.

Production
John Miriovsky - Manager

Ashland Production - $4.6 Million - 29.7 FTEs

- Treatment Plant, Water Quality,
- Wells, Transmission, Control System
- 40 Million Gallons per Day - Annual Average

Lincoln Production – $2.8 Million - 11.6 FTEs

- Antelope Valley Wells and Ashland Wells
- 8 Pump Stations, 10 Reservoir Sites, 6 Pressure Districts

Water Production

Vision - As the City of Lincoln, Nebraska continues to grow, the community's demand for safe, clean water will increase. Environmental and technical regulations will become more numerous and strict. Lincoln Water System will strive to meet these increased demands by adding facilities and infrastructure, adding personnel, building staff's technical and professional skills, increasing the security of the water system, and seeking additional water supply sources. These changes and additions will be made in phases, as set forth in the Lincoln Water System Facilities Master Plan.

Philosophy - Lincoln Water System is dedicated to providing quality customer service throughout the community. We are team-oriented professionals who emphasize efficiency, cost-effective organization, safety, open communication, and respect for individuals.

Long Term Goals

• To increase the volume of raw water supply.

• To increase water transmission capability.

• To increase the levels of the staff's technical knowledge and skills for both individual positions and water system day-to-day operations.

•To reduce peak customer water usage.

• To increase the security level of the city's water supply and water infrastructure.

• To increase the City's water storage capacity.

•To increase communication among LWS sections.

• To reduce energy usage of treatment, transmission, and distribution processes in an effort to control costs.

• To maintain the department's finished water quality while continuing to meet all state and federal regulations.

• To maintain the current high level of service as the City continues to grow.

• To reduce downtime, costs, and inefficiencies related to the operation of equipment and facilities.

Accomplishments

Water production staff members were responsible for the following activities during the past year:

- Delivery of 14 billion gallons of water to LWS customers
- Maximum water delivery of water for one day of 75.7 million gallons – July 19, 2006
- 2574 water samples collected and tested for coliform bacteria
- 119,767 "Water Quality Brochures" were mailed to LWS customers.
- 123 wells, pumps, and motors were maintained in working order.

Inside a pump station in Lincoln.

- 7826 separate work orders were completed for repairs and scheduled maintenance activities.
- No water quality violations requiring public notification.
- Two replacement wells were constructed and placed into service for the summer 2006 pumping season.
- Pumping improvements were completed at the Northeast Pump Station providing increased capacity for future growth.
- Security improvements at various LWS facilities locations.

New Security Camera

Did you know?

- LWS spends nearly $3.0 million per year for energy costs, most of this being spent for electricity and diesel fuel to pump water to and around Lincoln.
- Energy management efforts have resulted in energy savings of nearly $150,000 per year from previous years.
- For reliability purposes, each pump station is designed to meet the needs of its service area with one of its largest capacity pumps out of service.
- Lincoln's water is delivered to the customers with a temperature range of 50 to 25 degrees C.
- Lincoln's water is considered moderately hard, with a hardness of 10 grains per gallon.
- An un-abandoned well, the Rice Well, 24 feet in diameter and 75 feet deep, which was dug in the 1890s, was discovered, and properly abandoned.
- The capacity of the existing water supply system for LWS is 100 million gallons per day (MGD).
- The average water use is 161 gallons per person per day.

Distribution

Steve Owen - Manager

$5.7 Million - 40.6 FTEs

Construction	Service
• Water Mains, Valves, & Hydrants	• Meters & Backflow Preventers
• Contractor Services	• Tapping
• Supplies	• Service Lines
	• One-Call Locates
	• Customer Service

Water Distribution

Vision - The water distribution system and demand for high quality drinking water will continue to grow as the community develops and the City implements the Comprehensive Plan. The number of aging water mains and service lines will continue to require adequate staff and funding to perform repairs and respond to emergency failures. Based on past trends, customers will continue to expect safe, high quality water along with prompt response to water quality and water service concerns. The Section will meet growing challenges through a workforce dedicated to the community and the customers it serves by continuous professional training, by the use of efficient and proven technologies, and by diligent long range planning.

Philosophy - The Distribution Section prides itself in being a full service, knowledgeable, professional team that is deeply committed to the Lincoln community. The Section is dedicated to providing responsive, reliable, and efficient services utilizing best practices, proven technology, and consistent staff training to deliver safe and adequate water to all citizens. The Section will continue to employ and develop productive, responsible and safe staff to carry out its mission and deliver high quality service to the customers of Lincoln for the long term.

Long Term Goals

• To increase the use of efficient new technologies and data management so that productivity, timeliness, and accuracy of customer service responses are improved and disruptions to customers are minimized.

• To increase proficiency in emergency response so that staff can respond to real situations in a competent and safe manner.

• To increase the quality of construction observation performed by the Distribution Section and by City Engineering staff through providing adequate resources so that mains are properly constructed with minimal defects, failure and disruption of service.

• To reduce lost productivity caused from increasing travel times for crews as the distribution system expands.

• To increase the use of electronic work order handling and customer service tracking so that responses are timely and documented, total costs are known and payroll entry is more efficient. A move towards real time data acquisition, GIS implementation and GPS use should be anticipated in future budgets and training.

• To reduce the number of work requests that do not currently have a service charge so that costs are adequately recovered for services rendered.

Accomplishments

Water Distribution staff members were responsible for the following activities during the past year:

- 53,209 Service calls made
- 164,700 miles driven to get to these service calls
- 5748 backflow prevention devices tested

- 9613 meters tested

- 1324 new residential service taps with meters made
- 66 new non-residential service taps made

- 9532 residential meters replaced with new radio read units, completing the 9th year of the 10 year meter replacement program.
- Lincoln uses Automated Meter Reading (AMR) technology so that meters can be read by driving by rather than walking up to read each customer's meter.

• Approximately 9700 hydrants were inspected and operated

…..to assure that they will work when needed for fire fighting.

• 5891 valves were inspected and operated to assure they will work when needed to repair broken water mains

• 144 broken water mains repaired
• 1183 miles of water distribution main in the system to serve over 74,000 customers
• 2.4 miles of water main replaced.
• 23 miles of water main added to the distribution system.
• 19,697 field locations made as part of our involvement in the statewide One-Call system.

Did you know?

• LWS customers range in elevation from 1150 feet to 1440 feet above sea level
• LWS has 6 different pressure districts to meet the needs of customers at these varying elevations.
• The LWS service area is over 85 square miles.

Operations Support

Nick McElvain – Manager

$1.3 Million - 15.3 FTEs

- C I P & Project Management
- Developer Negotiations
- Maps & Records
- Safety
- One-Call Tickets
- Computer Network & Software Support
- System Maps / GIS / Asset Management

Water Operations Support

Vision –

The Operations Support Maps & Records Unit provides appropriate information and tools for LWS employees and managers to complete work in a timely and efficient manner. The Infrastructure and Facilities Management Unit provides management of the Capital Improvements Program (CIP) so customers receive maximum value for dollars invested in projects that maintain the existing infrastructure and provide for community growth.

A larger Capital Improvements Program, coordinated with extension of other public improvements, will be necessary to meet the needs of a growing community with a deteriorating infrastructure. Skilled craftsmen in the industry will retire from service and fewer talented workers are available to maintain acceptable standards of workmanship. Planning for sources of water supplies 25 to 50 years into the future will be necessary to maintain a thriving community and to remain a good neighbor to the surrounding water users in the Platte River Valley

Philosophy –

Operations Support is a dedicated professional team that enjoys its work while providing responsive and effective services to the community and co-workers throughout the city. The staff will seek more knowledge and strive to solve problems in an innovative, organized, and team-oriented approach. We are committed to developing a high level of collaboration to take advantage of the expertise available in the department, in other City departments, and in organizations throughout the community.

Long Term Goals –

To reduce the number of projects built with defective components and improve the quality of construction of LWS infrastructure projects.

To reduce the number and amount of damages caused by improper locates.

To increase the quantity and quality of project information provided to the customers so that they will be informed regarding the requested rate increases to finance infrastructure improvements.

To increase the level of communication and coordination in the development of the Capital Improvements Program to include more and better information from the development community, Planning Department, and Engineering Services Division.

To increase the understanding of the water distribution system design and operation.




Accomplishments

• Water Operations Support staff members were responsible for the following activities during the past year:

• 33,252 One-Call tickets received from Digger's Hotline of Nebraska, and were processed within the required 48 hours.

• 83.8 percent of tickets received were cleared by staff using utility maps for water, wastewater, storm water, traffic, and the downtown business improvement district.

• 1,100 emergency locates were cleared or located in the field within the required 2 hours.

• 45 Capital Improvements Program (CIP) projects were in the design or construction phase

• $17,400,000 was spent on CIP projects, including reservoirs, pump stations, and water mains.

• Negotiations with developers of new subdivisions which resulted in 11 new annexation agreements.

• Worked with LPED to identify potential locations for large industrial sites and to determine the cost to install water mains for water service to these sites.

• The project to convert LWS maps by a consultant from CAD format to GIS format was approximately 60 percent complete.

• A project was begun to convert the existing asset management and work order system to a more current version.

• A Safety and Training coordinator was hired to focus on Water and Wastewater division safety concerns.

• 6 monthly safety and security meetings were conducted with sections of LWS and LWWS.

• 15 different safety topics were presented to employees attending specific training sessions with respect to safety and security in the work place.

• All LWS Employees completed National Incident Command System (NIMS) training to meet Department of Homeland Security compliance requirements.

• Provided training on LWS pressure districts to Lincoln Fire and Rescue management personnel for application to fire suppression capabilities.

• Conducted a Unified Command Tabletop Exercise for a water contamination incident. Included representatives from Lincoln Fire and Rescue, Lincoln-Lancaster County Health Department, Citizens Information Center, and Lincoln-Lancaster County Emergency Management.

• Conducted preliminary security site assessments at LWS and LWWS facilities for development of improvements.

• Evaluation of water main break history with respect to annual rainfall.





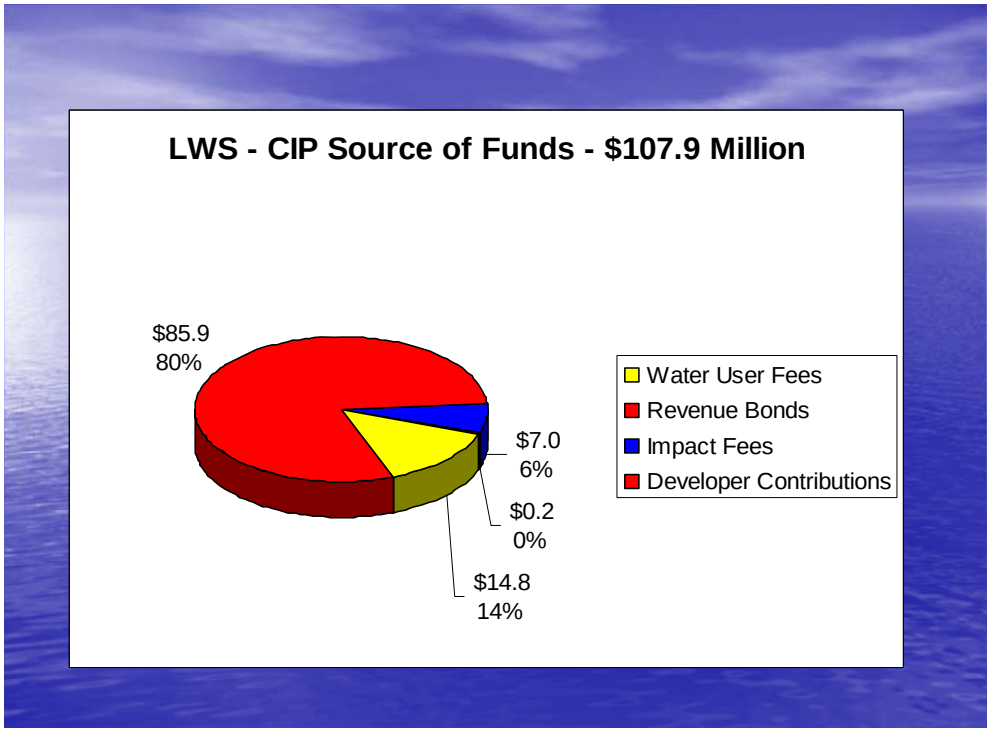




Major CIP Projects in 6 Year CIP

- Water Transmission Main – Greenwood to Lincoln – 2006-09
- Additional Wells at Ashland – 2007-10
- Treatment Plant Expansion – 2008-12
- These make up $51 million of the 6 year CIP Total $108 million

Greater than 45% of the $108 million 6 Year CIP is projected to be spent on additional wells, treatment capacity, and transmission mains.

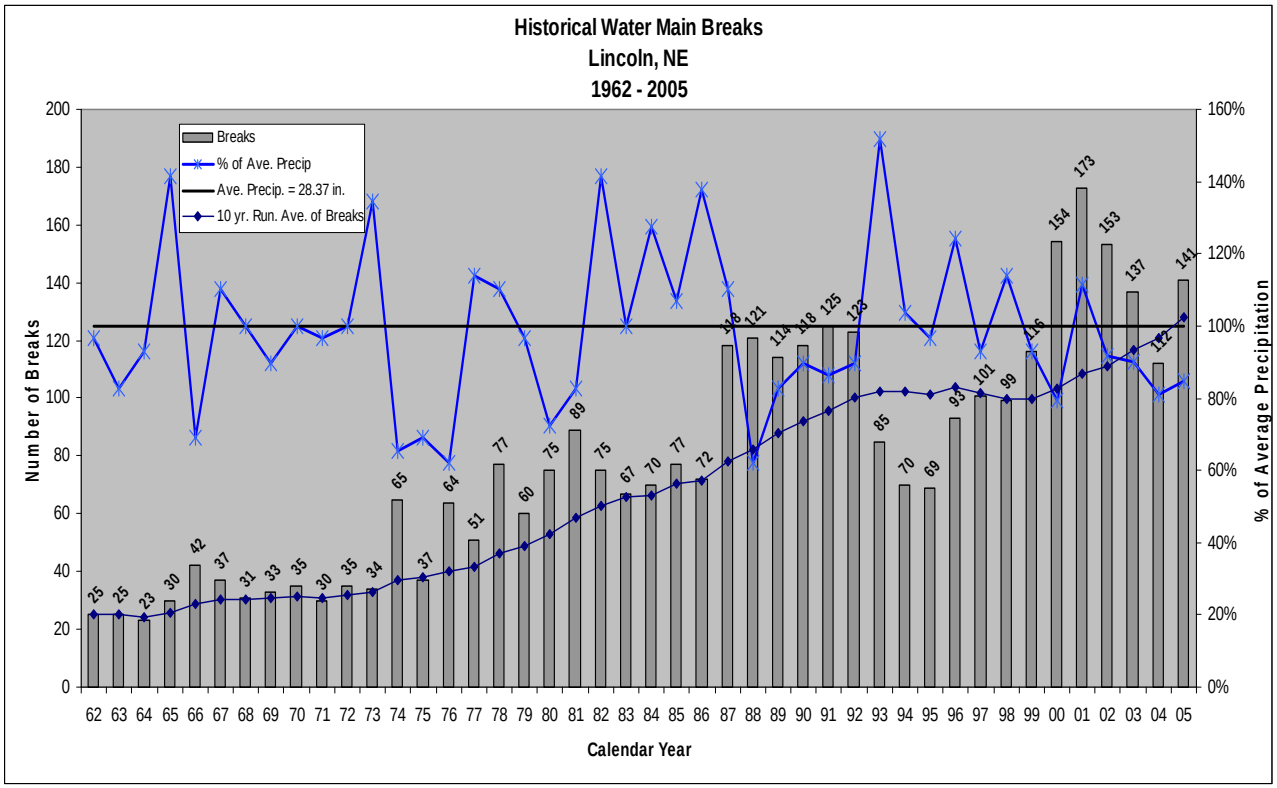


The CIP is funded primarily from Revenue Bonds, allowing future customers to share in the cost of Infrastructure Improvement Impact fees that are generated from new homes and businesses, these generate approximately $1.0 million per year. These funds are spent to build improvements necessary to meet the growth of the community.






24 inch steel pipe being delivered for new water main project in northwest Lincoln.



Graph of broken water mains from 1962 to 2005.

Vertical bars represent the number of water main breaks each year (scale on the left). The continuous line sloping up from left to right is the 10 year moving average of the number of broken water mains. The line at the top of the graph is the annual precipitation as a percentage of average precipitation (scale on the right). During periods of below average precipitation, the number of broken water mains generally increases. The cause of most broken water mains is corrosion. The metal pipes corrode as a result of the interaction with corrosive soils and moisture in the soil. When the ground is dry during drought periods, Lincoln's clay soils shrink, causing movement and stresses on the pipes. LWS has stepped up its water main replacement program in the past several years to begin to replace those pipes which have served their useful life. LWS has many miles of mains that are 100 years old. LWS averages between 12 and 13 broken mains per 100 miles of water main.

American Water Works Association has identified a target of 25 to 30 breaks per 100 miles.




Water Staff Qualifications

Certifications and Licenses

The LWS staff must maintain many licenses and certifications to remain proficient and competent to perform the duties and to meet the mission of LWS. One or more LWS staff possess the following Licenses, Certifications, and Trade Skills.

List of Professional Licenses / Certifications / Trade Skills

Professional License or Certificate

Professional Engineer License
Grade I, II, III, IV, VI Water Operator License
Micro Computer Technology Certificate
MS Certified Database Administrator,
MS Certified Systems Engineer,
MS Certified Trainer,
Master Certified Novell Engineer,
Cisco Certified Network Associate,
Cisco Certified Academic Instructor,
Comptia A+ Certification,
Comptia Network + Certification,
Oracle Certified Database Administrator
Certified GIS Professional CGISP
Certified Professional in Storm Water Quality CPSWQ,
Certified Floodplain Manager,

Technical Certificates or Licenses

Associate in Loss Control Management Certification,
Confined Space Entry Permits
Supervisory/ Management Training Certificate
Computer Application Certificates
IMSA or ATSSA Workzone Traffic Control Certification

Maintenance/Trade Skills

Nebraska Electrical Journeyman License,
Certified Maintenance Electrician,
Master/Contractor Electrician License
Pump Installers Certificate
Advanced Programmable Logic Control (PLC) Certificate

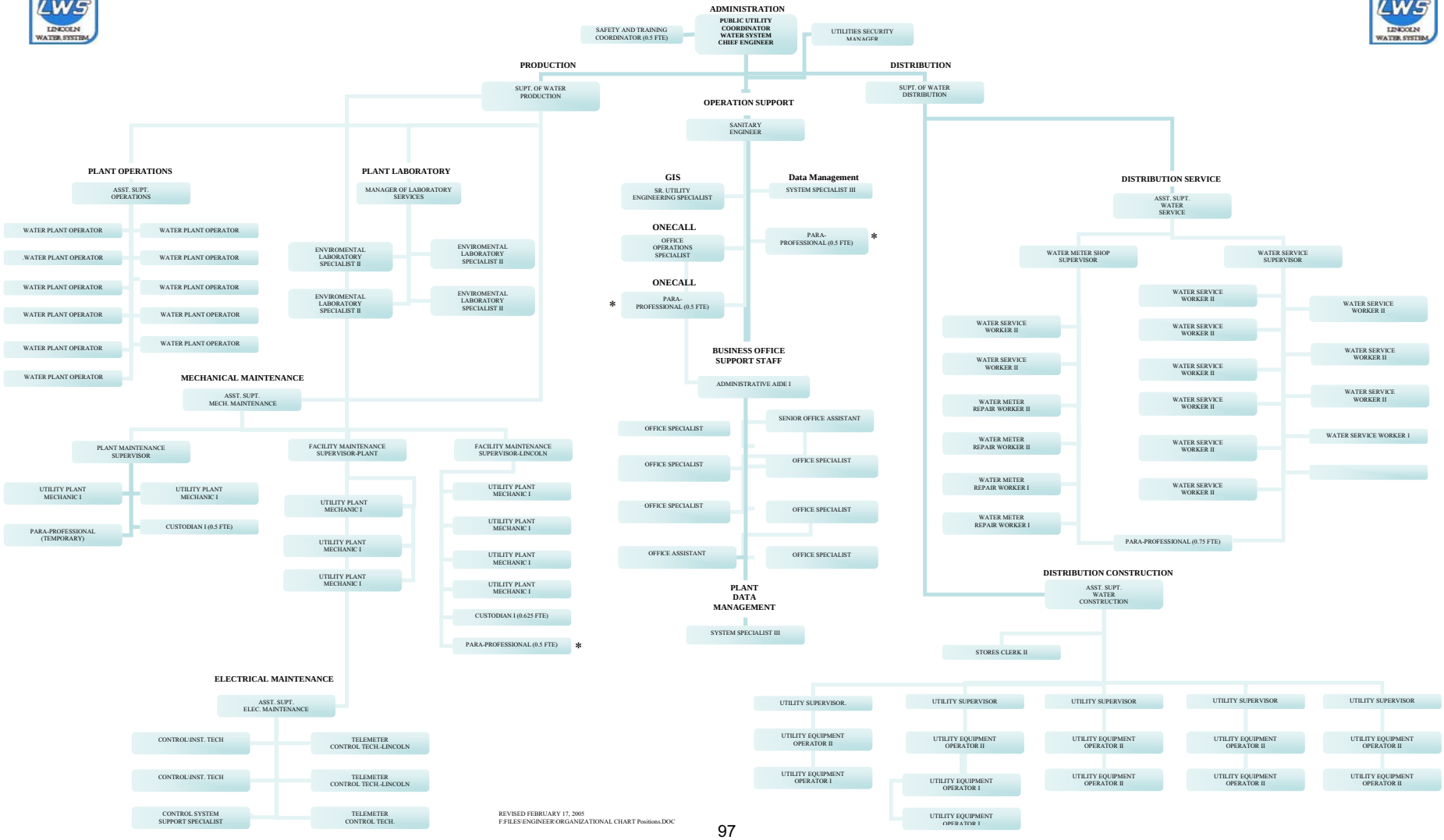
Operation Skills

Commercial Drivers License
Instrument / HVAC certification
Customer Service
Forklift Operator
Chemical/Pesticide Applicators License
Hazardous Waste Operations (HAZWOPPER)






ORGANIZATIONAL CHART
LINCOLN WATER SYSTEM 2005/2006



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