City Council Introduction: Monday, March 8, 2010
Public Hearing: Monday, March 15, 2010, 3:00 p.m. Bill No. 10R-75

FACTSHEET

TITLE: **COMPREHENSIVE PLAN AMENDMENT NO. 10001,** by the Director of Planning, at the request of the Public Works & Utilities Department, to amend the 2030 Lincoln/Lancaster County Comprehensive Plan to adopt the 2007 Lincoln Water System Facilities Master Plan Update.

STAFF RECOMMENDATION: Approval.

SPONSOR: Planning Department

BOARD/COMMITTEE: Planning Commission
Public Hearing: 02/24/2010
Administrative Action: 02/24/2010

RECOMMENDATION: Approval (8-0: Esseks, Taylor, Partington, Cornelius, Francis, Gaylor Baird, Lust and Sunderman voting 'yes'; Larson absent).

FINDINGS OF FACT:

1. This is a request by the Public Works & Utilities Department, Lincoln Water System, to amend the Comprehensive Plan to adopt and incorporate the 2007 Lincoln Water System Facilities Master Plan Update, a guide for short term and long term improvements to the infrastructure of the Lincoln Water System during the planning period.

2. The Master Plan document has been previously submitted to the City Council on CD and a precouncil meeting was held on March 1, 2010.

3. The staff recommendation of approval is based upon the "Analysis" as set forth on p.2-3, concluding that the proposed Lincoln Water System Facilities Master Plan Update is in conformance with the 2030 Lincoln/Lancaster County Comprehensive Plan. The staff presentation is found on p.5-7.

4. There was no testimony in opposition.

5. On February 24, 2010, the Planning Commission agreed with the staff recommendation and voted 8-0 to recommend approval.

6. This Comprehensive Plan Amendment does not require review and approval by the Lancaster County Board of Commissioners; however, a copy of this Factsheet is being provided for their information.

FACTSHEET PREPARED BY: Jean L. Preister **DATE**: March 2, 2010

REVIEWED BY:_____ **DATE**: March 2, 2010

REFERENCE NUMBER: FS\CC\2010\CPA.10001

LINCOLN /LANCASTER COUNTY PLANNING STAFF REPORT
for February 24, 2010 Planning Commission Meeting

PROJECT #: Comprehensive Plan Amendment #10001

PROPOSAL: Amend the 2030 Lincoln/ Lancaster County Comprehensive Plan to adopt the Lincoln Water System Facilities Master Plan.

CONCLUSION: The proposed Lincoln Water System Facilities Master Plan is in conformance with the 2030 Lincoln-Lancaster County Comprehensive Plan.

RECOMMENDATION: Approval of the proposed amendment

GENERAL INFORMATION:

HISTORY: The previous Lincoln Water System Facilities Master Plan was adopted as Comprehensive Plan Amendment #03002 in 2003 as part of the 2025 Comprehensive Plan and was retained with the adoption of the 2030 Comprehensive Plan in November 2006.

COMPREHENSIVE PLAN SPECIFICATIONS:

The basic elements of the Lincoln Water System are identified on pages 76-77 and on Appendix pages A37-A38 of the 2030 Comprehensive Plan. These sections describe the existing water system and outlines future improvements that were projected to meet future needs of community growth.

Page 21 Urban Growth Tiers with Priority Areas

Page 75 ***Water Guiding Principles:***
Utility improvements shall be in accordance with the Lincoln Water System Facilities Master Plan and the Comprehensive Plan. The Lincoln Water System Facilities Master Plan will guide future actions and serve as the basis for facilities planning and improvements.

Page 155 Lincoln Water System Facilities Master Plan, Public Works and Utilities Department; April 2003.

ANALYSIS:

1. Following the adoption of the Lincoln-Lancaster County 2030 Comprehensive Plan in November 2006, the City's Public Works and Utilities Department developed the 2007 Lincoln Water System Facilities Master Plan. This plan provides the City of Lincoln with a guide for short-term and long-term improvements to the infrastructure of the Lincoln Water System to the year 2057. The Water Facilities Master Plan was developed in conjunction with the growth tiers map and population projections from the 2030 Comprehensive Plan. The information is to be used for general planning, identifying projects for the Capital Improvement Program (CIP), and determining funding requirements. The Water Facilities Master Plan is updated every five years.

2. The plan's recommended improvements are divided into four phases:
   Phase I: Immediate Improvements; current CIP (serve Tier I, Priority A)
   Phase II: Short-term Improvements by 2019 (serve Tier I, Priority B)
   Phase III: Mid-term Improvements by 2032 (serve Tier I, Priority C)
   Phase IV: Long-term Improvements by 2057 (serve Tier II)

3. Phase I improvements include projects identified for inclusion in the current 6-year Capital Improvement Program. The total projected cost for Phase I projects is $12,810,000. The majority of this ($11,010,000 or 86%) is for extending water mains to serve Tier I, Priority A. (see Pages 8-12 to 8-14)

4. Phase II improvements include projects up to the year 2019. The total projected cost for Phase II projects is $54,200,000. The majority of this ($49,800,000 or 92%) is for extending water mains to serve Tier I, Priority A and B. (see Pages 8-15 to 8-16)

5. Phase III improvements include projects up to the year 2032. The total projected cost for Phase III projects is $66,240,000. The improvements are split between pumping facilities, reservoirs, and main extensions to serve Tier I, Priority A, B, and C. $31,600,000 (48%) is for main extensions. (see Pages 8-16 to 8-18)

6. Phase IV improvements include projects up to the year 2057. These projects were not detailed in this master plan.

7. The "average day rate" is used to estimate future revenues and operating costs. The "maximum day rate" is used to size water supply hydraulics, treatments facilities and pumping stations. The "maximum hour use" is used to determine the sizes and locations of distribution facilities. (see Pages ES-4 and 3-1)

8. The Water Facilities Master Plan was formulated based on the currently adopted 2030 Comprehensive Plan that was updated in November 2006. The Lincoln Water System strives to serve the growth tiers through projects in the 6-year CIP. According to the Water Facilities Master Plan, Lincoln Water System could support the following capacities as phases are completed and growth tiers are fully served (see Page 8-21):
   - Phase II Completed/Tier I, Priority B served (2019): 418,000 capacity
   - Phase III Completed/Tier I, Priority C served (2032): 483,000 capacity
   - Phase IV Completed/Tier II (2057): 808,000 capacity

9. Assumptions in this Water Facilities Master Plan will need to be updated after the 2040 Comprehensive Plan is adopted.

PROPOSED AMENDMENTS:
Amend the 2030 Lincoln-Lancaster County Comprehensive Plan as follows:

1. Amend the following text on page 76, Utilities:
The Public Works and Utilities Department has completed the Lincoln Water System Facilities Master Plan in 200~~2~~7. The plan is a guide for short term and long term improvements to the infrastructure of the Lincoln Water System during the planning period. ~~The Facilities Master Plan should be updated to take into consideration the areas added to Tier I.~~ The projected maximum day water demand for year 20~~25~~32 is 1~~41~~54.7 million gallons per day (MGD), and for 205~~0~~7 is 2~~05~~23.9 MGD based on the assumed population growth rate of 1.5% per year. Additional supply, treatment, and transmission improvements will be necessary to meet these growing demands. The well fields currently owned by the Lincoln Water System have a projected maximum capacity of 210 MGD ~~approximately equal to the projected need for the year 2050~~. Additional well field property and water rights will need to be acquired in the planning period to meet these demands.

2. Amend the following text on page 155, Future Conditions - Plan Realization, "Subarea Planning":
- Lincoln Water System Facilities Master Plan, Public Works and Utilities Department; ~~April~~ 200~~3~~7.

Prepared by:

Brandon M. Garrett, AICP
Planner

APPLICANT:

Marvin Krout, Director Planning Department 555 S. 10th Street Lincoln, NE 68508 (402) 441-7491	at request of	Greg MacLean, Director Public Works & Utilities Dept. 555 S. 10th Street Lincoln, NE 68508 (402) 441- 7548

CONTACT :
Steve Masters, Public Utilities Administrator
Public Works & Utilities Dept.
555 S. 10th Street
Lincoln, NE 68508
(402) 441- 7588

COMPREHENSIVE PLAN AMENDMENT NO. 10001

PUBLIC HEARING BEFORE PLANNING COMMISSION: February 24, 2010

Members present: Lust, Partington, Cornelius, Taylor, Gaylor Baird, Francis, Esseks and Sunderman; Larson absent.

Ex Parte Communications: None.

Staff recommendation: Approval.

Staff presentation: **Brandon Garrett of Planning staff** presented this update to the Water System Facilities Master Plan. It will be incorporated into the 2030 Comprehensive Plan, with amendments to the text in the Comprehensive Plan found on page 3 of the staff report.

Proponents

1. Nick McElvain of City Public Works & Utilities, Lincoln Water System, overviewed the contents of the Master Plan. This Master Plan was engineered by Black & Veatch, Olsson Associates, and City staff. The bond covenants require that an update be done once every five years. The focus of this effort was mostly on the distribution system – once the water gets to Lincoln – rather than the production and supply side because there were already several improvements underway in those efforts.

This Master Plan is a plan for the growth of the community. It also looks for deficiencies in the existing system. The result is a phased improvement plan for the first 25 years of the plan, based on Tier I of the Comprehensive Plan.

The supply of treated water will be focused upon more in the next Master Plan update, budgeted for the fiscal year 2012-13 Capital Improvements Program.

The basis of a master plan consists of a review of the entire water distribution system, comprised of a computer model of almost 10,000 pipe segments. The model is run for the maximum day and maximum hour. They also run average days, but the focus is on maximum demands with fire flows added on top of those demands. The demands are evaluated based upon population over a variety of years, with emergency conditions added on. The results of that modeling provides the pipe sizes and locations for future growth; identifies deficiencies in the existing system (very few were found in this update); and identifies where reservoirs or pump stations are needed for the new or existing pressure districts (there are six different pressure districts – this tells us where we might have to take pumps out and replace them with larger facilities). The final result is that in today's dollars, we need 133 million dollars worth of improvements for Tier I of the Comprehensive Plan. That is a 25-year plan, equaling 5 million dollars a year. If the area in Tier I is a supply of land for greater than 25 years, maybe 35 years, then it's only 3.5 million dollars a year. It is important to know how big of an area we do plan to serve.

The current water main replacement program was also evaluated in this update as will as the historical water break information. With today's GIS system, they have been tracking the location of water main breaks for 25 years. The general findings are that the city still has over 45 miles of 100-year-old mains.

A main was replaced last year on city campus that was built in 1888. There is another 115 miles of pipe between 80-100 years old. 100 years is the general life expectancy. As a result, we are looking at the need to increase the annual funding for the main replacement program. If funded at the level of current depreciation, it will be over 6 million dollars per year.

A recommendation in the plan is to begin using new technology, i.e. a non-destructive testing program for larger diameter pipes. We have been fortunate not to have had a catastrophic failure, but every couple of months you see one of those on the news. Technology has come up with equipment that will go through those pipes without destroying them and use radio waves and listening devices. The city should consider investing some money to determine the condition of some of the older larger pipes. This is recommended in the master plan.

Another observation of the master plan is the number of broken mains of pipe less than 50 years old. There is a need to spend more effort to see what's happening with that newer infrastructure and what we do to maintain those assets. The number of breaks we have had has been on the increasing curve as those pipes get older.

This plan looks out 50 years, but develops a plan for the first 25 years. Another observation is that the average per person use for consumption is down 10-15 % over the last 15-20 years, so it appears that water conserving fixtures in the home, automated water sprinkling systems, etc., are paying off. We see that the peak customer use has shifted from the afternoon to the morning. A reliable sustainable delivery of water depends on climate conditions, condition of infrastructure, capacity, reliability of the system and well-equipped and trained staff.

As one final observation, McElvain suggested that there is a need to further develop information and technology to better manage our infrastructure assets. We need to look at the lowest life cycle cost rather than just the cheapest bid, i.e. what materials can give us the life that we need.

In summary, McElvain stated that the Master Plan is a road map for the future; the information contained therein will be valuable for us as we look at the next update to the Comprehensive Plan because it can show us the cost of growth to the various growth areas of the community. Growing in southwest is very expensive because our source of water is in the northeast. We now have projects and pipe sizes designed for 50 years out. A stable financial plan and rate structure is needed to sustain the built environment and provide for growth. The first cost is staff and energy costs; then debt service; then rehab and replacement cost; then finally the cost of growth. All of those need to be in our financial plan – a comprehensive asset management plan to provide the least possible life cycle cost.

Francis commented that she appreciates this review, and noted that the Planning Commission did have an extensive briefing two weeks ago. This is a very brief summary of that 204 page document.

Sunderman inquired whether we currently have access or own water rights to provide enough water to support us for the next 50 years. McElvain suggested it would be 35 to 40 years, depending on growth rates, conservation efforts and consumption levels. We may need an additional supply on line in another 35 years.

Sunderman asked how many lines are running from Ashland to Lincoln. McElvain indicated that there are two in service and a third is wrapping up completion.

There was no testimony in opposition.

Sunderman cited the last line of the proposed amendments, "Additional well field property and water rights will need to be acquired in the planning period to meet these demands." What demands are there? Garrett advised that to be the forecasted demands to which McElvain referred. The forecasted demand of the community would require an additional well field, probably aside from the Ashland site. This plan talks about the year 2057 time horizon, forecasting 223.9 million gallons per day. Garrett stated that since they are projecting more need than the projected capacity, they are needing to find more well fields in the future.

ACTION BY PLANNING COMMISSION: February 24, 2010

Esseks moved approval, seconded by Gaylor Baird.

Gaylor Baird stated that she feels very good knowing that staff is working on some really big issues to insure that a very basic human necessity is available for the short and long term in quality form and sufficient capacity. This is a real example of why planning is incredibly important for our community and it is nice to see such thoughtful work on such an important issue.

Motion for approval carried 8-0: Lust, Partington, Cornelius, Taylor, Gaylor Baird, Francis, Esseks and Sunderman voting; Larson absent. This is a recommendation to the City Council.

CITY OF LINCOLN
NEBRASKA
MAYOR CHRIS BEUTLER
lincoln.ne.gov

Public Works and Utilities Department
Gregory S. MacLean, Director
555 South 10th Street
Suite 203
Lincoln, Nebraska 68508
402-441-7548
fax: 402-441-8609

January 19, 2010

Marvin Krout
Director of Planning Department

RE: Water Facilities Master Plan Incorporation into the Comprehensive Plan

Dear Mr. Krout:

Request is made to schedule the Planning Commission Agenda to amend the Comprehensive Plan, incorporating the Water Facilities Master Plan by reference. Facilities Master Planning is important to the Water System for several reasons:

- Updates are required by bond covenants.
- Deficiencies in the existing system are identified and solutions developed.
- The plan identifies projects that are needed to support the growth of the community.
- Project costs generated are applied to capital improvement planning, and
- Costs are used in water rate forecasting.

Our water distribution system is the primary focus of the 2007 Water Facilities Master Plan. Source and treatment were not included in this project. Community distribution needs to 2057 were reviewed with this plan. Evaluated in the process are the physical distribution system requirements, operations and maintenance considerations, and essential transmission main features. A critical consideration in the planning process are alternatives to minimize energy consumption necessary for distribution pumping. Facilities Master Planning is a component in the overall sustainability of our community. Included in this process are:

- Future population and demographic considerations,
- Essential pipe networks,
- Requirements for water storage, pressure, and
- Facilities conditions and provisions for replacement.

How Lincoln's Tier I area is actually developed requires a delicate balance of planning, construction, and fiscal evaluation. Predicting the land necessary to meet anticipated population growth is further challenged by the increase anticipated in population density. Areas of the community targeted for growth vary considerably in the capital costs of extending service. The Comprehensive Plan states that more land is available in Tier I than is required for the population that is projected. Capital construction, operating requirements, and water demand rely upon an adequate revenue to meet costs. The provision of water system elements within our city is crucial to future economic viability, character of the, and employment opportunity.

LINCOLN
The Community of Opportunity

Future system expansion and investment are essential considerations in facilities master planning. Increasing importance is seen to be emphasized upon replacement of system components that have exceeded their useful service life. Comprehensive asset replacement and life cycle cost analysis are keys in meeting future Lincoln's Water System support of a vibrant, robust community.

Transmitted with this letter are nine diskettes and two copies of the plan. The participation of the Planning Department in preparing this Master Plan is appreciated. We anticipate providing a briefing for the Planning Commission on February 10, 2010. Nick McElvain is the Department's lead staff person for this project. Please contact Nick at 441-5931 or me if additional information is needed.

Public Works & Utilities looks forward to working with the Planning Commission to begin the process that leads to adoption of the Water Facilities Master Plan into the Comprehensive Plan.

Sincerely,

Greg MacLean
Director of Public Works

cc: Steve Masters
Jerry Obrist
Nick McElvain

Enclosure