9.1 SUMMARY OF IMPROVEMENTS

As discussed previously, the 2007 modeling effort identified the addition of over one million feet of pipeline and almost 42.0 million gallons of collection system storage over the 100 year planning period. In this update, these improvements were refined based upon the new flow monitoring data and the updated model. In this chapter, a summary of how both the collection system piping, and storage improvements were updated will be presented. All improvements identified are considered planning level, and detailed engineering studies are recommended to finalize location and design criteria for each project.

9.2 COLLECTION SYSTEM PIPELINE IMPROVEMENTS

For this master plan update, the piping improvements as included in the 2007 master plan were updated based upon new planning information provided by the City. The new information included revisions to the Tier I, Tier II, and Tier III planning areas which were used to reassign each project into its respective updated planning horizon. It should be noted that for this update, only the timing of the projects changed while the location and size remained the same. A summary of the updated pipeline improvements can be seen in Table 9.1. It should be noted the pipe lengths presented in this table do not include any pipes identified in the current City CIP. Additionally a layout showing the overall updated Tier areas, and proposed sewers for the Tier I, Tier II, and Tier III can be seen in Figure 9.1, 9.2, and 9.3, respectively. Individual figures and summary tables for each basin are included in Appendix F.

<table>
<thead>
<tr>
<th>Basin</th>
<th>Tier I (2015-2040)</th>
<th>Tier II (2040-2060)</th>
<th>Tier III (2060-2115)</th>
<th>Basin Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt Valley</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Antelope Valley</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Beal Slough</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Upper Southeast</td>
<td>48,696</td>
<td>16,198</td>
<td>0</td>
<td>64,894</td>
</tr>
<tr>
<td>Upper Southwest</td>
<td>32,780</td>
<td>14,888</td>
<td>123,794</td>
<td>171,462</td>
</tr>
<tr>
<td>Haines Creek</td>
<td>7,019</td>
<td>61,464</td>
<td>56,131</td>
<td>124,614</td>
</tr>
<tr>
<td>Basin</td>
<td>Tier I&lt;sup&gt;(2)&lt;/sup&gt;</td>
<td>Tier II&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td>Tier III&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td>Basin Totals</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------</td>
<td>-----------------------</td>
<td>------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>West O St &amp; Middle Creek</td>
<td>41,780</td>
<td>0</td>
<td>142,603</td>
<td>184,383</td>
</tr>
<tr>
<td>Oak Creek &amp; Lynn Creek</td>
<td>19,920</td>
<td>19,023</td>
<td>150,021</td>
<td>188,854</td>
</tr>
<tr>
<td>Little Salt Creek</td>
<td>20,742</td>
<td>0</td>
<td>52,792</td>
<td>73,534</td>
</tr>
<tr>
<td>Deadmans Run, East Campus, Havelock</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Northeast Salt Creek</td>
<td>41,216</td>
<td>0</td>
<td>127,715</td>
<td>168,931</td>
</tr>
<tr>
<td>Stevens Creek</td>
<td>96,163</td>
<td>116,779</td>
<td>155,456</td>
<td>368,398</td>
</tr>
<tr>
<td>Southeast</td>
<td>0</td>
<td>0</td>
<td>25,934</td>
<td>25,934</td>
</tr>
<tr>
<td><strong>Totals:</strong></td>
<td><strong>308,315</strong></td>
<td><strong>228,243</strong></td>
<td><strong>834,446</strong></td>
<td><strong>1,371,004</strong></td>
</tr>
</tbody>
</table>

**Notes:**
1. Includes all sizes of pipes including forcemains.
2. Tier I values include pipelines 10-inches and larger.
3. Tiers II and III values generally includes pipelines 15 inches and larger.
FIGURE 9.1 – PLANNING AREA TIER I IMPROVEMENTS

CITY OF LINCOLN, NEBRASKA

Legend

- Theresa St. WWTP
- Northeast WWTP
- Basin Outlines

Growth Tiers

- Tier I
- Tier II
- Tier III

Pipes

- Tier I
- Tier IB and IC
- Existing City
- Existing Sewers

Notes:
(1) Represents all land within City limits which includes Tier IA.

FIGURE 9.1 – PLANNING AREA TIER I IMPROVEMENTS
WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014
CITY OF LINCOLN, NEBRASKA
FIGURE 9.2 – PLANNING AREA TIER II IMPROVEMENTS
WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014
CITY OF LINCOLN, NEBRASKA

Legend
- Theresa St. WWTP
- Northeast WWTP
- Existing City
- Tier II
- Tier III
- Tier II
- Existing and Tier I

Notes:
(1) Represents all land within City limits which includes Tier IA.

FIGURE 9.2 – PLANNING AREA TIER II IMPROVEMENTS
WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014
CITY OF LINCOLN, NEBRASKA
9.3 COLLECTION SYSTEM STORAGE IMPROVEMENTS

As stated previously the volumes, locations, and timing of the proposed storage facilities were reevaluated based upon the updated model. This resulted in the amount of required storage being much less than the 2007 version of the master plan. These updated storage facilities are summarized in Table 9.2. As seen in the table, the city may need storage in the West O, Oak Creek and Southeast basins to meet the minimum required freeboard of 3 feet. Although storage is showed for the Salt Valley basin under Tier II conditions, in reality no storage may be needed. The city needs to continue to monitor the Salt Valley trunk downstream of Manhole B1-290 as development increase in the SW Salt basin to determine if storage is required. It is also recommended that the city continues the flow monitoring efforts in all the basins as funds permit. These proposed storage facilities are illustrated in Figure 9.4

<table>
<thead>
<tr>
<th>Basin</th>
<th>Location</th>
<th>Capacity (MG)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tier I</td>
</tr>
<tr>
<td>Oak Creek</td>
<td>East of Fletcher and NW 40th St.</td>
<td>0</td>
</tr>
<tr>
<td>West O</td>
<td>O St and NW 84th St</td>
<td>0</td>
</tr>
<tr>
<td>Salt Valley</td>
<td>Rokeby and S 14th St</td>
<td>0</td>
</tr>
<tr>
<td>Southeast</td>
<td>Bennet and S 84th St</td>
<td>0</td>
</tr>
</tbody>
</table>

9.3.1 Recommended Improvements to Existing Lift Stations

Currently there are only two lift station improvements identified in the City’s current wastewater CIP. One of these projects is identified as project 0737, Replace C-6, C-7, C-13 Lift Station components which includes replacement of the existing motor, control centers and pumps which have exceeded their useful life. The other CIP project is identified as project 0558, P Street Liftstation Replacement Ph I (W “O”) which includes replacing the P street liftstation which has exceeded its useful life and requires additional capacity to serve the new development in the West “O” Street basin.
FIGURE 9.4 – PLANNING AREA STORAGE IMPROVEMENTS
WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014
CITY OF LINCOLN, NEBRASKA

Legend
- Theresa St. WWTP  - Basin Outlines
- Northeast WWTP    - Proposed Storage

Notes:
(1) Represents all land within City limits which includes Tier IA.

Growth Tiers
- Tier II
- Tier III
- Tier IB and IC

Existing City

MILES
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5

FIGURE 9.4 – PLANNING AREA STORAGE IMPROVEMENTS
WASTEWATER FACILITIES MASTER PLAN UPDATE – 2014
CITY OF LINCOLN, NEBRASKA