

08.16.2022

Feasibility Screening - Meeting Summary

Attendance:

Advisory Council: Andrew Dunkley, Liz Seacrest for Anna Wishart, Brittney Albin, Chittaranjan Ray, David Cary, Donna Garden, Eliot Bostar, Elizabeth Elliott, Glenn Johnson, Jeanne McClure, Jerry Obrist, Kennon Meyer, Lori Seibel, Lynn Rex, Marc LeBaron, Richard Meginnis, Sean Flowerday, Susan Seacrest, TJ McDowell, Todd Wiltgen, Tom Beckius, Trish Owen

Absent: Holley Salmi, Katie Wilson, Martha Shulski, Michon Morrow, Tut Kailech

City Staff: Cyndy Roth, Jocelyn Golden, Steve Owen

Consultants: Andrew Hansen, Ben Day, Brian Chaffin, Haley Engstrom, Jamie Carson, Jeff Henson, Sarah Foster, Terry Cole Fairchild, Tessa Yackley

Summary:

- 1. Welcome** - Susan Seacrest
 - a. Questions and comments brought to Susan from the Council since last meeting.
 - i. Remember to keep discussions from becoming too technical so each member can understand what is being discussed.
 - ii. Water rights issue will become a focal point for September meeting with experts to be brought in to speak on the topic.
- 2. Introduction** – Brian Chaffin
 - a. Rules of engagement
 - b. Levels of consensus
- 3. Goals for the Meeting** – Brian Chaffin
 - a. Consensus of criteria with nesting.
 - b. Consensus of proposed weighting on criteria.
- 4. Final Criteria Definitions** – Jeff Henson
 - a. Criteria voting results were reviewed from 7/19/2022 Water Source Advisory Council (WSAC) Meeting. Members voted for their top seven criteria.
 - i. Reliability = 100%
 - ii. Governance = 96%
 - iii. Cost/Affordability = 92%
 - iv. Operational Flexibility = 88%

- v. Implementation Challenges = 88%
 - vi. Environmental Stewardship = 71%
 - vii. Time to Implement = 46%
 - viii. Permitting Requirements = 33%
 - ix. Water Rights = 33%
 - x. Socioeconomic Factors = 25%
- b. Final criteria with nesting from the 7/19/2022 Advisory Council Meeting were reevaluated and confirmed. In the 8/16/2022 Advisory Council Meeting a seventh criteria was added based on further discussion along with some additional nested items. Below are the final criteria with nesting from the 8/16/2022 Advisory Council Meeting.
- i. Reliability
 - 1. Viable
 - 2. Sustainable
 - 3. Redundant
 - 4. Capacity
 - 5. Resilient
 - ii. Governance
 - 1. Regionalization
 - 2. Autonomous
 - 3. Complexity
 - iii. Life Cycle Cost
 - 1. Affordability
 - 2. Capital costs
 - 3. Cost per MGD (changed from unit cost)
 - iv. Operations
 - 1. No usage or availability constraints (changed from No Constraints)
 - 2. Complexity
 - 3. Flexibility
 - 4. Agility (added)
 - 5. Expertise (added)
 - v. Implementation
 - 1. Time to implement
 - 2. Permitting
 - 3. Water rights
 - 4. Change in water quality/quantity
 - vi. Environmental Stewardship
 - 1. Environmental impacts
 - 2. Cultural impacts

vii. Stakeholder Impacts (added)

1. Equity
2. Community Impacts
3. Economic Impacts
4. Environmental Justice

c. All final criteria and nested terms were agreed upon by consensus of the Council.

5. Proposed Criteria Weightings – Jeff Henson

a. Proposed Criteria Weightings

i. Due to the addition of the Stakeholder Impacts criteria, a new vote was taken to rescore and assign criteria weighting. The new scores are as follows:

1. Reliability = 22%
2. Governance = 18%
3. Implementation = 13%
4. Stakeholder Impacts = 13%
5. Environmental Stewardship = 12%
6. Life Cycle Cost = 12%
7. Operations = 10%

ii. Consensus check was performed, and the new weighting was approved.

b. Scoring Definitions

- i. 5 = **Fully** meets the criteria definition.
- ii. 4 = Meets **most** of the criteria definition.
- iii. 3 = Meets **some** of the criteria definition.
- iv. 2 = Meets **little** of the criteria definition.
- v. 1 = Meets **none** of the criteria definition.

6. Water Usage Supply Needs – Ben Day

- a. Bring all council members to an understanding of the average water usage per person.
- b. Discussed city water usage trends from 2020 master plan.

7. Planning Horizon and Capacity Needs – Andrew Hansen

- a. American Water Works Association (AWWA) sets the water industry standard on a national level. They produce an annual benchmarking of utilities nationwide, AWWA found available supply nationwide is at an average level of 51 years. Lincoln has an available supply average of 26 years, putting Lincoln on the low end of the study.
- b. I don't think we can assume all members have an understanding. How about "council members were provided information and explanations of the following items:":
 - i. 90-day peak is the three months of highest water usage in the city.
 - ii. Max day is the largest amount of water used in one day. This is commonly used to determine the capacity of the water treatment plant.

- iii. Seasonal peak is the time of the year when water use is at its highest. This is commonly used to determine the supply needed.

8. Feasibility Analysis – Ben Day/Andrew Hansen

Three categories for determining feasibility were discussed.

- a. Supply enhancement
 - i. Water conservation
 - 1. Maor's Water Conservation Task Force was formed in 1988 determined voluntary cooperation for encouraging water conservation was the best approach to accomplish this endeavor.
 - 2. Columbia, Missouri program estimated to cost \$1 million dollars to implement, but predicted to reduce average day usage by 1 MGD after 10 years.
 - ii. Water reuse. The wastewater treatment plants in Lincoln, Theresa Street and Northeast plants, are leading the strides in reuse of water in Lincoln. Theresa Street provides water to Innovation Campus for heating and cooling while Northeast provides water to LES for power generation cooling water.
 - iii. Water rights. To be discussed further at the next Water 2.0 Advisory Council meeting in September.
 - iv. Aquifer storage and recovery (ASR). These storage options will not provide Lincoln the full capacity needed but could help to augment supply. (Example: Bell Creek Reservoir Release-100cfs at Waterloo)
 - v. Lower Platte River Drought Contingency Plan projects that have been evaluated to increase summer stream flows include:
 - 1. Import Missouri River Water to Bell Creek (via alluvial well field with no reservoir)
 - a. Volume increase at Ashland of 80 Cubic Feet Per Section (cfs).
 - 2. Sherman Release (400 cfs at St. Paul)
 - a. Volume increase at Ashland of 132 cfs.
 - 3. Sherman Release (250 cfs at St. Paul)
 - a. Volume Increase at Ashland of 83 cfs.
 - 4. Skull Creek Reservoir Release (100 cfs at Linwood)
 - a. Volume Increase at Ashland of 80 cfs.
 - 5. Bell Creek Reservoir Release (100 cfs at Waterloo)
 - a. Volume Increase at Ashland of 80 cfs.
 - 6. Pump Missouri River Water (via alluvial well field) and into Bell Creek Reservoir
 - a. Volume Increase at Ashland of 80 cfs.
 - 7. Middle Loup Canal Recharge (Historic Loup Canal Operations)
 - a. Volume Increase at Ashland of 4 cfs.

8. Middle Loup Canal Recharge (Full Hydropower Right downstream)
 - a. Volume Increase at Ashland of 1 cfs.
 9. Alluvial Sandpit Pumping Leshara
 - a. Volume Increase at Ashland of 100 cfs.
 10. Augmentation Well Field
 - a. Volume Increase at Ashland of 100 cfs.
 11. Rapid Response Area/Dry-year Lease
 - a. Volume Increase at Ashland of 33 cfs.
 12. Interconnection of MUD and LWS Finished Water Supplies
 - a. Volume Increase at Ashland is still being determined.
- vi. Many of the supply enhancement ideas discussed were viewed as beneficial and should continue to be explored, however they lacked the necessary capacity to be considered a significant solution to the 2nd source issue. The one exception to this was the Interconnection of MUD and LWS Finished Water.
- b. Alternatives Recommended for Discarding
- i. High Plains Aquifer
 1. 50+ miles of conveyance distance.
 2. Limited aquifer recharge.
 3. Water quality concern – Nitrates.
 4. Permitting challenges.
 5. Consensus check was performed, and High Plains Aquifer was discarded by WSAC.
 - ii. Schuyler Wellfield
 1. 50+ miles of conveyance distance
 2. Lower Platte River Basin Collation.
 3. Impacts to MUD wellfield near Yutan.
 4. Impacts to LWS Platte river wellfield.
 5. Consensus check was performed, and Schuyler Wellfield was discarded by WSAC.
 - iii. Dakota Formation
 1. 15+ miles of conveyance distance.
 2. Limited and variable capacity.
 3. Potential for minerals as seen in Antelope Park wells which brought in overabundance of salt during the 1900s.
 4. Does not have the capacity for Lincoln.
 5. Could be used for ASR.
 6. Consensus check was performed, and Dakota Formation was discarded by WSAC.

- iv. Paleo Valley Aquifer
 1. 15+ miles of conveyance distance.
 2. Slow recharge rate.
 3. Supply capacity is low for Lincoln's needs.
 4. Ability to support continued pumping.
 5. Could be used for ASR.
 6. Consensus check was performed, and Paleo Valley was discarded.
- v. Loup River Wellfield
 1. Approx. 100 miles of conveyance distance.
 2. Negative impacts on MUD and LWS supply.
 3. Consensus check was performed, and Loup River Well Field was discarded by WSAC.
- vi. Elkhorn River Wellfield
 1. Accounts for 25% of total flow in Platte River at Ashland.
 2. Reduced Platte River flow would have impact on MUD and LWS supply.
 3. Consensus check was performed, and Elkhorn River Well Field was discarded by WSAC.
- vii. Surface Water Reservoirs along Loup and Elkhorn Rivers
 1. Potential water rights issues with downstream users.
 2. Costs of acquiring land, homes, and rerouting roads.
 3. Costs of dam, spillway, permitting, pipeline, and treatment.
 4. Uncertain amount of additional flow it will provide at Ashland.
 5. Consensus check was performed, and Surface Water Reservoirs along Loup and Elkhorn Rivers were discarded by WSAC.
- viii. Lake I-80
 1. Lake I-80 was mentioned but the timing for information to be provided for that project and the uncertainty regarding if the lake will develop do not allow for analysis of that project.
 2. Consensus check was performed, and Lake I-80 was discarded by WSAC.
- c. Alternatives Advanced for Future Evaluation
 - i. Fully develop Existing Wellfield
 1. Includes wells, river crossing, pipeline, and plant expansion.
 2. Currently evaluating ultimate 90-day seasonal capacity for existing well field property.
 - a. Capacity will be less than the 145 MGD needed.
 3. Likely the lowest cost alternative but does not change risk profile.
 4. Concern with Arsenic levels that will need to be further examined.

- ii. Expand existing Wellfield south of I-80
 - 1. Fully develop existing well field property and then add wells south of I-80.
 - 2. Some increase in reliability by expanding the footprint of the well field.
 - 3. Does not improve redundancy.
 - 4. Economical means to obtain more capacity.
- iii. Off Channel Surface Reservoir
 - 1. Includes maximizing existing well field, pipelines, and reservoir.
 - 2. Pump excess water during high flows in the Platte River and store in the Reservoir.
 - 3. Significant public and environmental impacts that will need to be further examined.
 - 4. Would not have water rights implications.
 - 5. Would require plant modification to treat surface water.
- iv. Omaha MUD Interconnect
 - 1. Water quality challenges will need to be examined further.
 - 2. Both benefits and detriments of a shared utility will need to be examined further.
 - 3. Still working with MUD to understand available capacity.
 - 4. Need wholesale user rate and impact fees to proceed with life cycle cost analyses.
 - 5. With a shared utility there is a lack of control over rate increases.
- v. Missouri River Surface Water Intake to Ashland
 - 1. 35+ miles of conveyance.
 - 2. Susceptible to chemical spill, algal toxins, PFAS, taste and odor.
 - 3. Pretreatment at the Missouri River and finish treatment at Ashland.
 - 4. LWS is less familiar with treating surface water.
 - 5. Operational concerns for conditions like flooding, ice, riverbend degradation, etc.
- vi. Missouri River Wellfield to Ashland
 - 1. Multiple wellfield locations to be considered.
 - 2. Wellfield is subject to flooding.
 - 3. Some treatment at wellfield.
 - a. Remove oxidized particulates such as iron, manganese, arsenic.
 - 4. Filtration and disinfection at Ashland's treatment plant.
 - 5. Allow for control in leveraging operation cost.
- vii. Missouri River Surface Water Intake to Lincoln

1. Complete redundancy with ultimate supply to Lincoln.
 2. New water treatment plant near the Missouri River.
 3. Ability to serve communities between Missouri River and Lincoln.
 4. Most redundant and most expensive infrastructure of all alternatives being considered.
 5. This option is a river intake system which allows for use and access during a flood, but weather conditions such as ice needs to be considered.
- viii. Missouri River Wellfield to Lincoln
1. Identical to Missouri River Surface water intake except this option is supplying well water vs. surface water.
 2. This option is a collector well which allows for less contaminants, but there is a potential for higher arsenic and manganese levels which needs to be considered.
- ix. Combination of Alternatives
1. Expansion of the existing wellfield defers major capital expenditure.
 2. Benefits associated with second source can be seen on an earlier timeframe.
 3. Options:
 - a. Connect to MUD short term and expand wellfield long term.
 - b. Expand wellfield short term and connect to MUD or Missouri River long term.
- x. Life cycle cost will need to be examined further and considered.
- xi. Rate impact will need to be examined further and considered.
- 9. Look Ahead and Closing Thoughts**
- a. September 20th is the next meeting - coarse screening.
 - b. Closing thoughts- Susan
 - i. Key take aways from this meeting were the consensus on criteria and weighting.