

MINUTES
Water Advocacy Task Force
June 18, 2008

Members Present: Chairperson JP Duniphan, Mayor Alan Hanks, Pete Cappa, Malcom Chapman, Karen Gundersen-Olson, Deb Hadcock, Tom Johnson, Hani Shafai, Dale Tech (for Robert Ellis,) John Wagner

Support Staff Present: Stacey Titus, Toni Broom

Others Present: Mark Lichtwardt and Anthony Beeson; Burns and McDonnell, and other members of the community

Meeting was called to order by Chairperson Duniphan at 5:03 p.m. with a quorum present.

The "Conceptual Designs for Water Treatment Plant Upgrades" report was presented by Anthony Beeson and Mark Lichtwardt, of Burns & McDonnell. A question and answer period along with discussion followed the presentation.

Discussion

In response to committee members' questions, the following information was provided. Staff recommended proceeding with the procurement of the membrane filter system for both the Jackson Springs and Mt. View Plants. It was further recommended to then proceed with construction of the Jackson Springs Plant first and immediately follow it with the construction of the Mt. View Plant. The Jackson Springs Plant is a smaller plant and will be inexpensive to operate due to the good source water. By bringing it on first, and using the existing Mt. View Plant as a peaking plant, there will actually be more capacity than is currently realized. If Mt. View is constructed first, there is a longer construction period and a longer time before additional capacity is realized. Once completed, the Jackson Springs Plant along with other City water supplies will support average water needs while the Mt. View Plant is being constructed. The Mt. View Plant could still be used as a back up if there were any kind of failure at the Jackson Springs Plant or for peak times. It was noted Mt. View is very redundant and plant parts could be borrowed from one component to service another, so the plant could continue to operate if any operational problems develop.

It was recommended to construct a new plant at Mt. View rather than do a retrofit. The total cost is considerably less for a new plant. It will be modular in design and allow for additional expansion and replacement of modules without putting the entire plant at risk. The existing Mt. View Plant will also be able to remain operational longer during the construction of the new plant.

Both plants will be bid as two projects, which will allow the opportunity to get the same general contractor for both. A general contractor will be utilized along with local sub-contractors. It was advised by staff to not bid both projects at the same time as construction will not begin immediately on the Mt. View Plant. Some of the reasons provided for this recommendation included: higher costs at construction time; doing both at the same time would create a larger burden on city staff and funding appropriations; a single large project limits the ability of some good general contractors to bid on the project; and efficiencies with the consultant would be realized with staged bidding and construction.

It was, however, recommended to pre-purchase membranes for both plants upfront to guarantee pricing. A recommended timeline is included in the Power Point presentation.

Funding options were evaluated by the consultant, however, the presentation only briefly addressed the funding. Generally, it was noted to pursue federal funding grants and supplement short falls utilizing other sources. Mayor Hanks reported all three members of our federal congressional delegation are interested in helping with this project. They indicated we should not count on large appropriations in any given year. Smaller funding requests over several years is likely a better approach than requesting a single large grant. The Mayor is cautiously optimistic help would be received by the federal government.

Discussion was held on the impact of delaying construction on either plant. With prices and inflation increasing, it is likely interest rates will also increase. It was generally noted that locking in prices as quickly as possible would be best.

Motions

Motion was made by Johnson, seconded by Shafai that the Water Advocacy Task Force recommends the City of Rapid City approve the "*Conceptual Design for Water Treatment Plant Upgrades Report*," dated May 23, 2008, by Burns & McDonnell. Motion carried unanimously.

Motion was made by Johnson, seconded by Chapman that the Water Advocacy Task Force recommends the City of Rapid City approve the proposed implementation plan for design and construction of the City water treatment plants as presented by City staff, including procurement of the membrane filters and construction of Jackson Springs first, followed by Mt. View. Motion carried unanimously.

Other Discussion

Discussion was held on the future role of the Water Advocacy Task Force. The committee agreed that there was no need to have any future meetings and that their intended purposes have been completed.

Chairperson Duniphan thanked the audience members for attending and asked for any further input or comments from them. Dr. Perry Rahn asked the committee to consider a paper he wrote and mailed to them on future water supplies for Rapid City.

Adjourn

There being no further business to come before the Committee, motion was made by Chapman, seconded by Hadcock to adjourn the Water Advocacy Task Force meeting at 6:06 p.m. Motion carried unanimously.

Respectfully submitted,

Toni Broom
Administrative Assistant
Public Works

Water Advocacy Task Force Presentation



Conceptual Designs for
Water Treatment Plant Upgrades
June 18, 2008



Presentation Outline

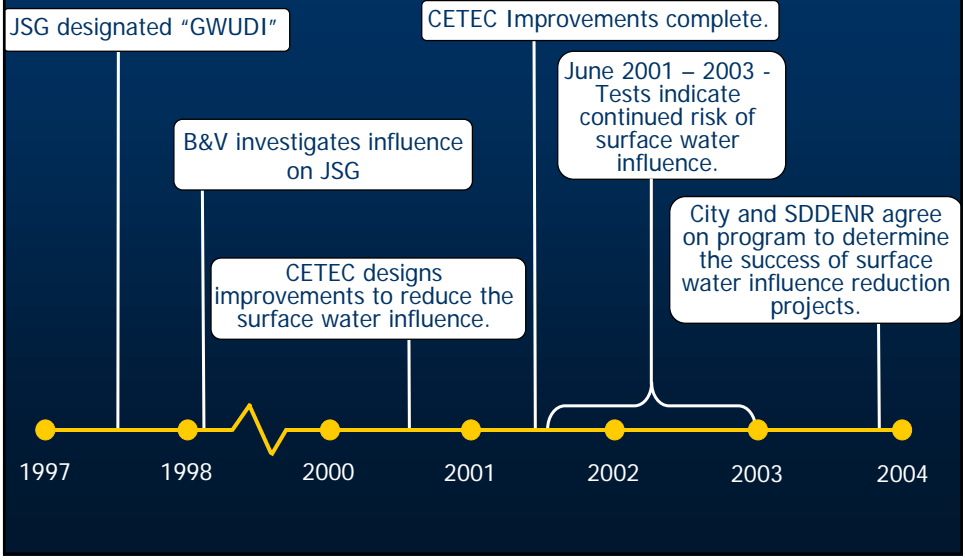
- Project History/Background
 - Objectives
- Conceptual Designs
 - Value Engineering
 - Process Design
 - Mt. View – New vs. Retrofit
 - Bidding Recommendations
- Cost Opinions
- Funding Recommendations
- How to Proceed (What's Next)
- Discussion



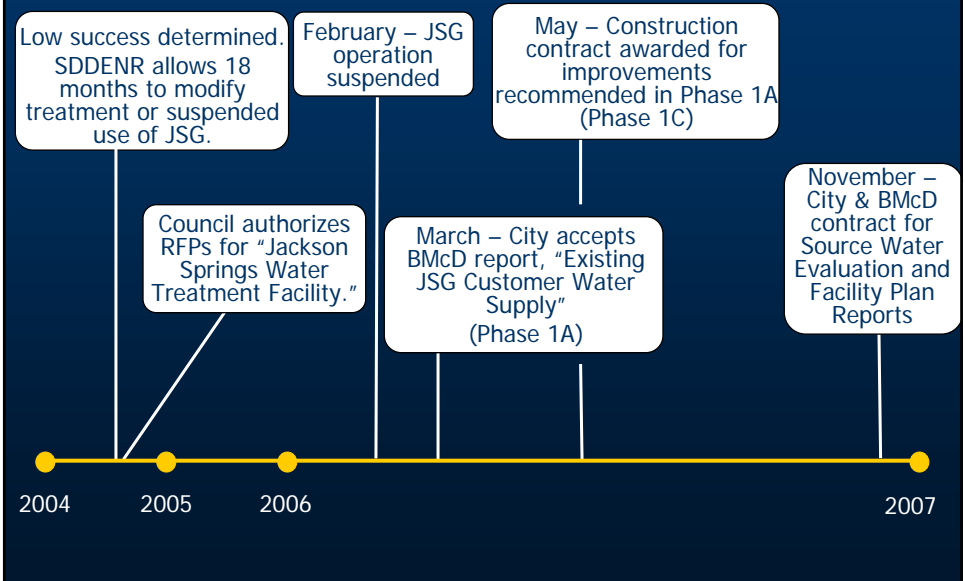
History / Background



History / Background



History / Background



History / Background

January BMcD submits "Source Water Evaluation" and "Facility Plan" Final Reports

February – WATF Formed

July – WATF makes Recommendation

April – BMcD submits "Utility System Master Plan"

May – BMcD submits "Conceptual Designs Report"

2007

2008

2009



History/Background

Source Water Evaluation Recommendations

- Utilize Two WTPs
 - Existing WTP
 - New WTP at Cleghorn School Site
 - Ability to treat Jackson Springs & Rapid Creek
- Utilize Membrane Filtration at Both WTPs





WATF Recommendation

As adopted by City Council

"The City of Rapid City should initiate, as soon as possible, the design and construction of water treatment facilities sufficient to provide water for the citizens of the community until 2020.

Those facilities will include a treatment plant to be located in the Cleghorn Springs area that is of sufficient capacity to provide the volume of water generated by Jackson Springs, or an equivalent volume from Rapid Creek.

Additionally, and concurrently, the existing treatment plant should be either retrofitted or a new plant constructed on the existing treatment plant site to compliment the capacity provided by the Jackson Springs facility."



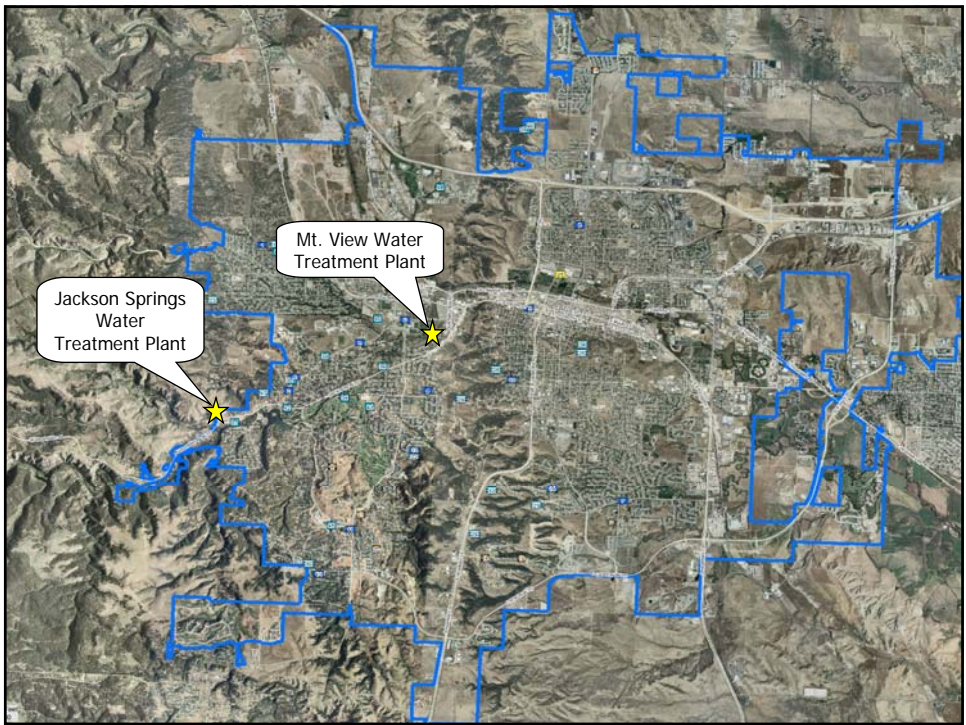
Current BMcD Scope of Work

- Source Water Management Plan
 - Source Water Utilization Tool – adopted by Council
- Conceptual Designs
 - Filtration Avoidance Recommendation
 - Pretreatment & Chemical Feed Requirements
 - Membrane Design Loading
 - Pilot Testing Recommendation
 - Mt. View Sizing
 - Jackson Springs Complex
 - Mt. View – New
 - Mt. View – Retrofit
- Opinions of Probable Construction Cost
- Funding Recommendation





Conceptual Designs





Design Criteria

- 10 States Standards
- SDDENR Design Guidelines
- American Water Works Association (AWWA) Standards
- American Association of State Highway and Transportation Officials (AASHTO)
- Building Codes Include
 - International Building Code (IBC) 2003
 - American Concrete Institute (ACI)
 - American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) 2005
 - International Mechanical Code (IMC) 2003
 - International Fire Code (IFC) 2003
 - International Plumbing Code (IPC) 2003
 - National Fire Protection Association (NFPA) Standards
 - National Electric Code (NEC) 70
 - Institute of Electrical and Electronics Engineers (IEEE) Standards



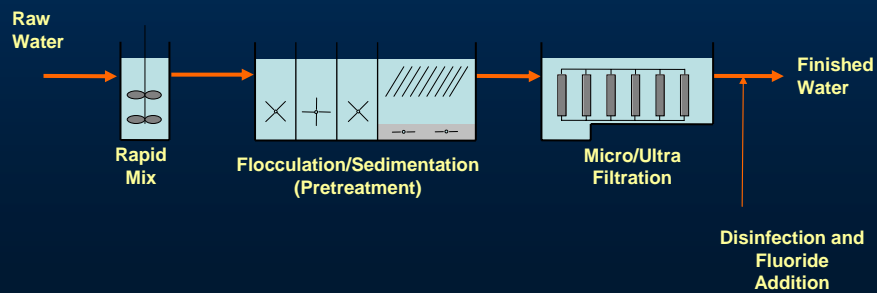
Value Engineering

- Design for Constructability!
 - Common Slabs
 - Linear Walls
 - Gang forms
 - Basin sizes
 - Basin configurations
 - Construction Equipment
 - Construction Materials



Treatment Processes

- Processes selected based on potential contaminants of concern and regulatory requirements



Pilot Testing

- Pilot testing not required
 - Good and consistent raw water
 - Pretreatment will be utilized
 - Schedule constraints → pilot testing must include worst case to be effective (i.e. cold temperature and worst water quality)
- Design criteria will be based on previous experience in treating similar raw water qualities





Pretreatment

- Increased operational flexibility
- Improved adaptability for future regs
- Improved membrane performance and longevity
- Decreased Membrane Cost
 - Reduced Capital Costs (fewer membranes)
 - Reduced Operations Costs (fewer cleanings)
- Generally results in reduced overall capital costs
 - Case Studies

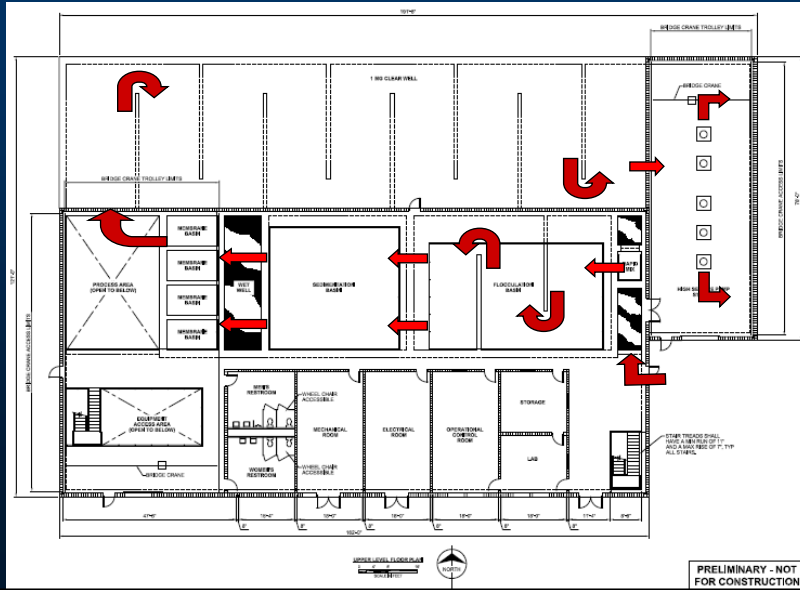


Jackson Springs Complex

- 8 MGD Firm Capacity
 - Ability to treat Jackson Springs or Rapid Creek
 - Includes Cleghorn Water Users right
- New raw water intake and pump station
- High service pumping to two pressure zones (based on Utility System Master Plan modeling)



Jackson Springs WTP



Mt. View WTP

- 36 MGD Capacity
 - Provisions to treat Meadowbrook & Girl Scout Gallery water in the future
 - Expandable to 48 MGD
- High Service pumping to two pressure zones (based on Utility System Master Plan modeling)





Mt. View WTP

New vs Retrofit

- Chemical Rooms – Code Requirements
- Basin Floors and New Walls
- Filter Basin Hydraulics
- Electrical Upgrades
- Continue Operation of Existing Plant During Construction of New



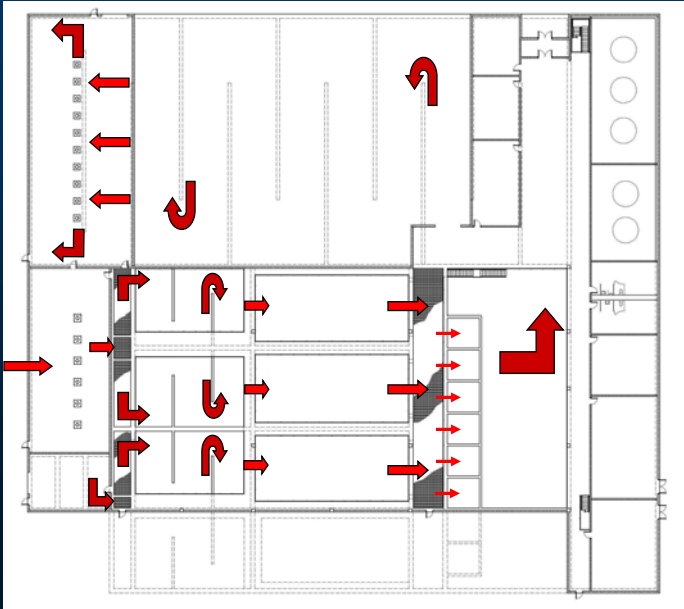
Mt. View - Retrofit



Mt. View - New



Mt. View WTP





Design Reviews

- Conceptual Design Reviews conducted by City Staff
 - Engineering Staff
 - Water Dept Staff
 - Wastewater Dept Staff
 - Building Department
 - Fire Department
 - Growth Management Department
 - Jim Bell

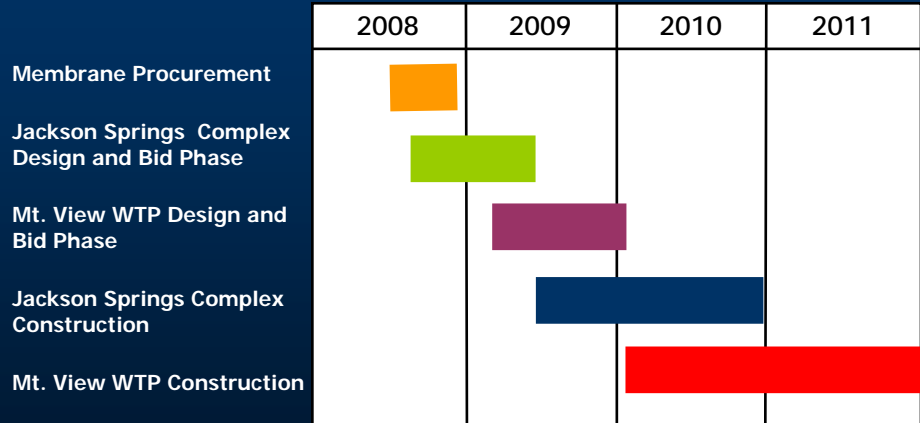




Bidding Recommendations

- Bid WTP Projects Separately
- Membrane Prepurchase
 - Purchase same system for both WTPs
 - Prepurchase saves time and money
 - Operation/Maintenance advantages
- Contractor Pre-Qualification
- Construction Phasing
 - Report based on WATF recommendation only
 - May want to consider a phased construction approach
 - Efficiency for City staff
 - Utilize same design team for both facilities
 - Availability of local contractors and materials



Conceptual Design & Construction Schedule



Opinions of Probable Construction Cost



Cost Opinions

Design Element *	Cost Opinion
Mt. View WTP New	\$72,745,000
Mt. View WTP Retrofit	\$84,480,000

* Includes Engineering, Contingency, Legal, and Administration Costs

- **New** Facility at Mt. View is more economically feasible than a Retrofit

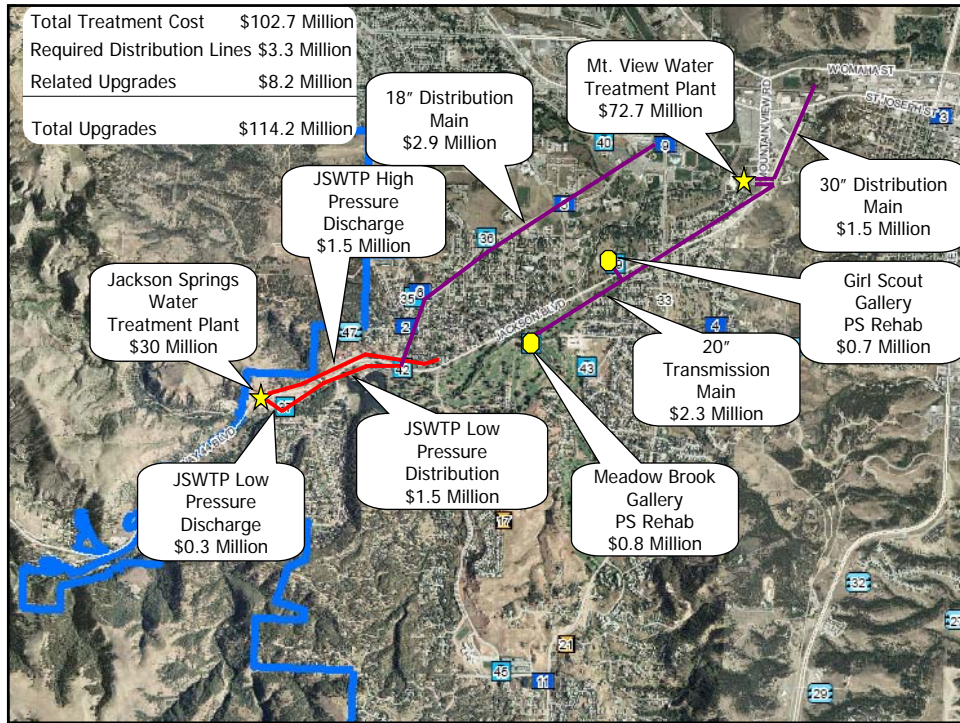


Cost Opinions

Design Element	Cost Opinion
Jackson Springs Raw Water Pump Station and Intake	\$3,761,000
Jackson Springs WTP	\$25,512,000
Jackson Springs WTP Property Acquisition	\$656,000
Mt. View WTP New	\$72,745,000
Total Project Cost	\$102,683,000

- Required Distribution System Improvements identified in Master Plan - \$3,300,00
- Related Distribution System Improvements identified in Master Plan - \$8,200,00
- Total Funding ~ **\$114,000,000**








Funding Recommendations



Funding Sources

- Many sources evaluated
 - Federal Grants
 - SRF Loans
 - Revenue Bonds
 - Private financing
 - GE Financial
 - Siemens Financial
 - Others



Funding Recommendation

Maximize Funding from Federal & State Grant Programs and/or appropriations





What's Next?

- Continue to Seek Funding
- Request of the WATF
 - Accept the 'Conceptual Designs Report'
 - Authorization to Proceed with Phased Construction Approach



Questions & Discussion

