



CITY OF RAPID CITY

RAPID CITY, SOUTH DAKOTA 57701-2724

PUBLIC WORKS DEPARTMENT

300 Sixth Street

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MEMORANDUM

TO: Public Works Committee

CC: Water Advocacy Task Force

FROM: Dirk Jablonski, Public Works Director

DATE: March 6, 2007

RE: Utility Master Plan Modeling

The Utility Master Plan is completed to the point where one of the last major efforts is to forecast future resource allocation for planning. Forecasting of water supply infrastructure needs is dependent on the sources of water to be used. Up to this point, the work was proceeding along the direction provided in the study conducted for the City by Burns & McDonnell. That is, the recommendation was to make full use of the Jackson Springs water supply.

The Rapid City community has shown an interest in the water sources to be used. In response to that interest, and for other water related issues, the Water Advocacy Task Force was formed to consider those issues and forward respective recommendations to the City Council.

Delay of the source water decision will impact the schedule and cost of the Utility System Master Plan project. Work on the water supply forecasting and associated modeling cannot proceed until a direction is recommended by the Water Advocacy Task Force and approved by Council. Although it is not possible to place definite costs and timelines on the delay, the consultant was asked what impact it may have on the project. A copy of the response provided by Burns & McDonnell Consulting Engineers is attached. The following is a summary of the information provided. More definite responses cannot be given until the Council provides a direction on the water sources to be used.

The three viable options are as follows:

1. Continue work on the future sewer modeling, and suspend work on the future water modeling. If the work on the future water modeling is delayed for no more than 30 days, there should be no cost impact. However, the longer the decision is delayed the more additional cost will be incurred. For example, if the decision is not made until the end of the year, the additional cost would be approximately \$89,000.00.
2. Suspended work on both the water and sewer portions of the project. If this project is delayed for no more than 30 days, there should be no cost impact. However, the longer the decision is delayed the more additional cost will be incurred. If this work is delayed until the end of the year, the additional cost is estimated at \$104,000.00
3. Continue work on the project assuming the water sources will be as recommended in the source water evaluation report. If the source water recommendations do not vary from those contained in the report, no rework would be required. However, if the source water recommendations vary from those contained in the report, the work would need to be redone. Significant variation in the source water recommendations could result in up to \$250,000.00 for rework of the future system modeling.

To date no additional costs have been incurred on the project and no rework is required. However, direction is needed from the Committee and ultimately from the Council on what the favored course of action is. The Public Works Department believes that option 1, proceeding with the sanitary sewer projections and suspending the water projection work, is the best option at this time. If a source water decision is made before the end of 2007, the costs should be not more that \$89,000.00. If a decision is made prior to early April, 2007, there should be no additional cost for the suspension.

From: Lichtwardt, Mark [mlichtwardt@burnsmcd.com]
Sent: Tuesday, February 20, 2007 12:04 AM
To: dan.coon@rcgov.org
Cc: Brickman, Darin; Gray, Jon; Claxton, Bryan; Fischer, Paul
Subject: Master Plan
Dan,

As indicated in our letter dated January 31, 2007, the pending water supply decisions will impact both the schedule and engineering fee for the Master Planning Project. The cost impact was estimated at approximately \$89K assuming key tasks associated with the water modeling are delayed as outlined in the letter and attachments.

At your request, we have evaluated the impact of delaying the wastewater modeling until all water supply decisions are made in an effort to improve the efficiency of the project. We have assumed that all remaining work would be delayed with the exception of the CMMS, the policy/ordinance reviews, and the CAD standards.

While there is a significant cost savings associated with the project management task due to eliminating the additional meetings, it appears that this savings will be offset by the additional effort associated with ramp up and resynchronization of the wastewater model with the GIS geodatabase. Based on this evaluation, we estimate the cost impact to be approximately \$104K if both the water and wastewater modeling is delayed.

Please provide us with direction on how the City would like to proceed at your convenience. If you need additional information, please let me know.

Regards,

Mark



January 31, 2007

Mr. Dan Coon, P.E.
Project Manager
City of Rapid City
300 Sixth Street
Rapid City, SD 57701

RE: Potential Impacts of Water Supply Decisions on the
Rapid City Utility System Master Plan – Phase II
Burns & McDonnell Project No. 42370

Dear Dan:

Burns & McDonnell recently completed development of the Rapid City water and sanitary sewer models as part of Rapid City Project No. PW05-1447 and are in the process of completing the analysis of the existing systems. The next major project task, which is scheduled to begin over the next few weeks, is the development and evaluation of future scenarios. These evaluations will ultimately lead to the recommendations to accommodate future growth and the development of the Capital Improvements Plan (CIP). To successfully complete these tasks, it is imperative that these scenarios are consistent with the City's future water supply plans.

It is our understanding that the recently appointed Water Advocacy Committee will be reviewing the recently completed Source Water Evaluation, Facility Evaluations, and other City documents. The Source Water Evaluation and Facility Evaluations were completed as part of Rapid City Project No. PW04-1425. Further, the Water Advocacy Committee will be making recommendations for the future water supplies for Rapid City. The uncertainty of these recommendations and the associated schedule will delay critical portions of the Utility System Master Plan project. Tasks that rely on source water assumptions can not precede until the City's future source waters are determined. Furthermore, any work conducted based on the assumption that Jackson Springs will be utilized as a water supply will need to be redone if the Committee's recommendations are not consistent with those developed under the Source Water Evaluation. Burns & McDonnell anticipates that the following key tasks related to the water system will be affected:

- Future water rights planning – This task is currently in progress and can not proceed without full knowledge of the City's long-term water supply plan (i.e. surface water vs. ground water).
- Water distribution system analysis – The hydraulic analysis of the water distribution system requires us to input each source into the model. Any change to source water assumptions results in restarting this task. In addition, schedule delays will require resynchronization of the City's geodatabases with the model prior to continuing with this effort. Therefore, our team can not proceed with this task until the Committee's recommendations are rendered and adopted by the City.

January 31, 2007

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- Water treatment plant evaluation – This evaluation involves determining the required treatment capacity and finalizing process evaluations for upgrades at the existing plant. Work conducted by our team to this point has been consistent with the recommendations from the Source Water Evaluation and Facility Evaluations. Any changes to these recommendations will directly affect the assumptions and results of this effort.
- Development of the CIP – The CIP development requires completion of all tasks previously listed.
- Preparation of the final report – All previous tasks must be completed to prepare the final report to be submitted to the City of Rapid City.
- Hydraulic modeling workshops – Prior to conducting any training, the hydraulic models must be submitted to the City, which can not occur until all water system analysis is completed.

A more detailed breakdown of the tasks affected by the Water Advocacy Committee's work is provided in Attachment A. Burns & McDonnell does not anticipate the remainder of work related to wastewater collection system modeling and analysis, the wastewater treatment evaluation, the maintenance management system, and the CAD submittal standards will be affected. Therefore, these tasks can proceed as planned and scheduled.

The original scope of services, professional engineering fee, and schedule developed for the Utility System Master Plan project assumed that tasks related to both water and sanitary sewer modeling, and evaluation would be conducted concurrently to maximize efficiency and minimize the professional engineering services fee. Any delay in the key tasks listed above will result in reduced efficiency and additional effort on behalf of the Burns & McDonnell project team and also extend the completion date. Based on the project schedule, the affected tasks will require approximately seven months to complete once the decisions are made regarding the future water supplies. The costs associated with the additional effort are estimated to be \$89,833. A portion of these costs are related to familiarizing the project team with the Committee's recommendations, resynchronization of the water system geodatabase, and additional meetings required due to the nonconcurring work. Please note that if the completion date extends beyond 2007, our hourly rates will be adjusted accordingly. In addition, the estimate of hours may require adjustment depending on the recommendations from the Water Advocacy Committee.

We look forward to any direction that you can provide regarding the future water supplies and look forward to the successful completion of the Utility System Master Planning project for the City of Rapid City.

Sincerely,

Mark A. Lichtwardt, P.E.
Associate/Project Manager

Paul D. Fischer, P.E.
Vice President

CONFIDENTIAL

Attachment A

ADDITIONAL PERSONNEL EFFORT
RAPID CITY, SOUTH DAKOTA
UTILITY SYSTEM MASTER PLAN

TASK NO.	ACTIVITY NAME	Item Impacted		Total B&McD Labor		Subconsultants Total Labor		Total Labor		Direct Expenses	Subtotals	TASK NO.	
		Schedule	Cost	Hrs	Cost	Hrs	Cost	Hrs	Cost	Cost	Costs		
1	PROJECT INITIATION AND COORDINATION	x	x ⁽²⁾	353	\$43,651	39	\$3,735	392	\$47,386	\$3,317	\$50,702	1	
2	PREPARE GEODATABASES			0	\$0	0	\$0	0	\$0	\$0	\$0	2	
3	DEVELOP FORECASTS	x ⁽³⁾		0	\$0	0	\$0	0	\$0	\$0	\$0	3	
4	WASTEWATER COLLECTION SYSTEM ANALYSIS			0	\$0	0	\$0	0	\$0	\$0	\$0	4	
5	WW TREATMENT EVALUATION			0	\$0	0	\$0	0	\$0	\$0	\$0	5	
6	WATER DISTRIBUTION SYSTEM ANALYSIS	x	x ^(4,5)	122	\$15,236	0	\$0	122	\$15,236	\$1,067	\$16,303	6	
7	WTP EVALUATION	x	x	24	\$3,064	0	\$0	24	\$3,064	\$214	\$3,278	7	
8	DEVELOP CIP	x	x ⁽⁶⁾	66	\$8,530	0	\$0	66	\$8,530	\$597	\$9,127	8	
9	PREPARE FINAL REPORT	x		0	\$0	0	\$0	0	\$0	\$0	\$0	9	
10	MODEL/GIS TRAINING	x		0	\$0	0	\$0	0	\$0	\$0	\$0	10	
11	MAINTENANCE MANAGEMENT SYSTEM			0	\$0	0	\$0	0	\$0	\$0	\$0	11	
12	UTILITY BILLING SOFTWARE			0	\$0	0	\$0	0	\$0	\$0	\$0	12	
13	CAD SUBMITTAL STANDARDS & IMPORT TOOLS			0	\$0	0	\$0	0	\$0	\$0	\$0	13	
14	AS-BUILT DRAWING SCANNING AND REFERENCING			0	\$0	0	\$0	0	\$0	\$0	\$0	14	
	Travel Expenses:											\$10,422	
	Total Master Planning and Modeling Effort									\$5,195	\$89,833		

- Notes: 1. Costs presented on this table represent costs associated with the delay of future water supply decisions
2. Task 1 costs include maintenance of the public website & project website, 6 additional project meetings (3 by teleconference), and overall coordination of the affected tasks.
3. Task 3 schedule impact is related to future water rightsplanning.
4. Task 6 costs include resynchronization of the model based on the City's updates to the GIS water system geodatabase.
5. Costs assume water model is not delivered to the City prior to full completion. Therefore, no recalibration of the model is included.
6. Task 8 includes review of Committee recommendations and addition of any recommended projects into the current CIP (which has already been reviewed). No rework of the existing CIP review is included.
7. If no changes are made to the Burns & McDonnell recommendations, costs associated with Tasks 6,7 , & 8 can be reduced.
8. Costs do not include any additional source water evaluation, deliverables, or City reviews. If additional evaluation is required, costs can be provided on request.