



INFORMATION PACKET MEMORANDUM

To: Mayor Osborne and City Council

From: Jane S. Brautigam, City Manager
Paul J. Fetherston, Deputy City Manager
Maureen Rait, Executive Director of Public Works
Ned Williams, Director of Public Works for Utilities
Joanna Crean, Public Works Administrator

Date: July 13, 2011

Subject: Information Item: Update on Utilities 2008 Peer Review Implementation and 2011 Regional Survey

EXECUTIVE SUMMARY:

This informational item provides an update on the implementation of the Utilities 2008 Peer Review and to summarize the results of the 2011 Regional Survey. In response to the recommendations of the Blue Ribbon Commission I, department and program reviews are being conducted to comprehensively evaluate the use of public funds. A peer review of the Public Works Department's Utilities Division (water and wastewater) was conducted by the American Water Works Association (AWWA) / Water Environment Federation (WEF) in 2008. The peer review report identified areas of strength and opportunities for improvement. Staff and the Water Resource Advisory Board (WRAB) worked together to prioritize the opportunities for improvement to develop an implementation plan. Currently, 63 opportunities for improvement items (out of 89 opportunities identified) have been completed.

Of the 26 remaining items, 16 items are either partially complete or in a current work plan to begin this year and 10 items are not in a current work plan due to limited resource allotment (see the Analysis Section for a summary description of examples of these 26 remaining items).

One outcome of the Utilities Peer Review was to compare approaches in treatment plant operations, treatment plant maintenance and environmental quality services with those activities in similar, front-range communities. With input from WRAB, a survey was completed in March 2011. A primary focus of the survey was to compare staffing levels for different activities or

functional areas. An initial review of the results indicates that Boulder has more water treatment plant staff (operations and maintenance) in comparison to other communities. The results also illustrate that many water treatment plants do not have dedicated maintenance staff, but either share maintenance staff with the wastewater treatment plant, have operations staff perform maintenance or contract out the maintenance responsibilities. Review of the survey results will continue to better understand why differences occur and to determine if changes should be considered in the different activities or functional areas. An update on the peer review items and regional survey will be communicated to WRAB and City Council during the 4th quarter of 2011.

FISCAL IMPACT:

As part of the 2010 and 2011 budget processes, the fiscal impacts of implementing opportunities for improvement as recommended in the peer review report were evaluated. During the 2012 budget process, fiscal impacts will be prioritized and considered using the Priority-based Budget (PBB) approach.

COMMUNITY SUSTAINABILITY ASSESSMENTS AND IMPACTS:

- **Economic:** Implementing some of the opportunities for improvement identified in the peer review report should result in fewer water service outages to the business community, though it may take several years before the water service outage data is available for confirmation. Implementing other opportunities for improvement will support business needs by more quickly alerting customers to potential water service disruptions.
- **Environmental:** Implementing opportunities for improvement related to repairing pipelines will increase hydropower generation or provide ongoing power savings at the treatment plants, thereby reducing the city's electrical demands and carbon footprint. Some opportunities for improvement support the city's water conservation programs, which also enhance and protect the environment.
- **Social:** Implementing opportunities for improvement will enhance overall customer communications.

BACKGROUND:

Utilities 2008 Peer Review Implementation

In October 2008, AWWA/WEF conducted a peer review of the Utilities Division and submitted a final report to the city. (For the full report, visit www.boulderwater.net and click on "What's new with Boulder Utilities.") The peer review of the water and wastewater operations included a 420-question self-assessment survey that, in part, created the basis for a week-long peer review of the water and wastewater utilities. The peer review team, composed of four volunteer utility professionals from across the country, toured the utility facilities, interviewed staff, analyzed operations based upon their professional expertise and generated a final report of their experienced views. Prior to the on-site visit, each peer review professional spent 60 to 80 hours reviewing documents provided by utilities staff.

The peer review report identifies areas of strength and opportunities for improvement. In order to prioritize the opportunities for improvement and develop an implementation plan, Utilities staff, with input from WRAB, developed guiding principles and compiled additional information

related to resource needs, benefits and costs, internal and external impacts, and service levels. Based on these factors, each opportunity for improvement was then grouped into one of three tiers (highest priority is Tier 1 and lowest priority is Tier 3). The tiers dictate how priority was assigned in implementation plan. **Attachment A** provides a detailed list of all opportunities for improvement along with the implementation plan priorities.

Utilities 2011 Regional Survey

In March 2011, a survey was completed to compare approaches to water, wastewater and environmental services with similar, front-range communities. A primary focus of the survey was to compare staffing levels for water and wastewater treatment operations and maintenance along with water quality and environmental services. Specifically, the survey included questions in the following five sections:

1. Water Treatment Operations
2. Water Treatment Maintenance
3. Wastewater Treatment Operations
4. Wastewater Treatment Maintenance
5. Water Quality and Environmental Services

Nine communities participated in the survey including:

- Boulder
- Broomfield
- Ft. Collins
- Greeley
- Littleton/Englewood
- Longmont
- Loveland
- Westminster
- Cheyenne, WY

Attachment B includes a summary of the survey results grouped by the five sections mentioned above.

ANALYSIS:

Status of 2008 Peer Review Implementation

Beginning with the 2010 budget process, opportunity for improvement items were evaluated and implemented based on priority and resource needs. As of July 2011, out of the 89 opportunity for improvement items recommended by the report, 63 items (71%) have been completed. Of the 26 remaining items, 16 items are either partially complete or in a current work plan to begin this year and 10 items are not in a current work plan due to limited resource allotment. **Table I** (next page) summarizes the status and **Attachment A** includes the details along with the status related to each item.

Examples of items that are either partially complete or in a current work plan include:

1. Two items concern staff levels at treatment plants and whether fewer operators on a shift are feasible. The regional survey provides information about shift work in other communities and a cost/benefit analysis will be prepared to analyze this item.

2. Three items concern the computerized maintenance systems. The Information Technology Department has initiated a project to assess the feasibility of developing a city-wide “enterprise” GIS maintenance system that could consolidate multiple maintenance applications that are currently being used. This assessment should be completed in the fall of 2011.
3. Two items were delayed, pending the hiring of supervisors to initiate the enhanced interface with field crews.
4. Two items require the development of brochures for new customers, but were delayed pending changes to the utility billing system.

Examples of items that are not in a current work plan due to limited resource allotment include:

1. Three items concern GIS maps and field inspections, such as the timeliness of updates, use of mobile computers and enforcement of right-of-way encroachments. Staff vacancies in key supervisor positions and in work-group reorganizations have delayed these items until 2012.
2. An item concerning the integration of work groups at the WWTP is a long term objective and will be pursued after reviewing work group staffing levels and after the current capital project at the WWTP is completed in 2013.
3. An item concerning alternatives for WWTP biosolids disposal may be pursued after the capital project at the WWTP is completed in 2013.
4. An item recommending the use of hydroelectric power as back-up power at water treatment plants will be pursued as various Power Purchase Agreements with Xcel Energy need to be renewed and as more certainty about Boulder’s Energy Future is developed.

Table I: Status Summary of 2008 Peer Review Implementation

Implementation Plan Priority Tiers	Number of Opportunity for Improvement Items				
	Done	Partially Complete	In Workplan to Begin	Not in a Workplan	TOTAL
1 - high	23	2	2	3	30
2 - medium	26	2	8	2	38
3 - low	14	0	2	5	21
TOTAL	63	4	12	10	89
PERCENT	71%	5%	13%	11%	100%

Summary of Utilities 2011 Regional Survey

One outcome of the Utilities Peer Review was to compare approaches to water, wastewater and environmental services with similar, front-range communities through a survey. An initial review of the results indicates the following:

1. Boulder has more water treatment plant staff (operations and maintenance) in comparison to other communities;
2. Many water treatment plants do not have dedicated maintenance staff, but either share maintenance staff with the wastewater treatment plant, have operations staff perform maintenance or contract out the maintenance responsibilities;
3. Use of 10-12 hours shifts at treatment plants is common;

4. Most water treatment plants have an operator on-site all the time, but about half of the wastewater plants operate in an “automatic” mode (no operator on-site) during a portion of the night; and
5. Only two other wastewater plants have a co-generation facility to generate electrical power.

NEXT STEPS:

Staff will continue to review the survey results to better understand why differences occur and to determine if changes should be considered in the different activities or functional areas.

An update on the peer review items and regional survey will be communicated to WRAB and City Council during the 4th quarter of 2011.

Questions regarding the peer review or regional survey may be directed to Ned Williams at 303-441-3209 or williamsn@bouldercolorado.gov.

ATTACHMENTS:

A – Status of Utilities 2008 Peer Review Implementation

B – Summary of Utilities 2011 Regional Survey Results

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
1	Full staff meetings are held annually with upper management. It may be of value to all employees to attend full staff meetings semi-annually.	The Directors of Public Works (Maureen Rait, Ned Williams and Tracy Winfree) hold full work group meetings at each Public Works site on an annual basis. Expand to semi-annual meetings.	1	Done
2	The roles and responsibilities for WRAB and utility staff need to be better defined. The WRAB should perform at a policy level and staff at the technical detail oriented level. Both the WRAB and staff needs to be mindful of the WRAB's need for information that is necessary to make policy decisions.	WRAB roles and responsibilities (as are all city boards and commissions) are defined in the city code. City staff is working with city council to improve board member orientation, training and selection processes in order to improve the effectiveness for all city boards. Consider reviewing the city code responsibilities with WRAB/staff in 2009 as to appropriate scope and balance of board activities in order to further define and clarify the relationship between WRAB and staff.	1	Done
3	Expand use of employee development plan within the evaluation system.	Each supervisor/employee should detail a development plan in the employee's 2009 annual Performance Evaluation.	1	Done
4	Senior management needs to actively promote a safety culture	Currently, supervisors actively spend time in the field as well as attend safety trainings alongside staff. Improper safety practices are captured and debriefed with staff. If necessary, training is modified or requested to prevent incidents. If injury losses increase in the future, may need to consider increasing resources to this Health and Safety program and hold conferences, seminars, and workshops to more actively promote a safety culture.	1	Done
5	Trainers need to be well versed and experienced in their subjects. Topics should be varied to ensure all aspects of safety requirements are covered.	Kevin Krayna, risk managers office, works closely with supervisors to ensure that proper and effective safety training is being provided. Kevin also attends the training for quality control purposes. Need to ensure that all training is done in a professional manner and need to continue to update the list of available trainers on a pre-qualified vendor list to call.	1	Done
6	Flexibility in replacement of lines should be used to establish priorities.	The city uses a data based decision tool to help with the prioritization of waterline replacement projects. Factors include pipe age, material type, diameter and soil type. The decision tool is one of many factors used to prioritize replacement projects and the judgment of engineering, operations and maintenance staff continues to play an important role in any final decisions. A recent review of the decision tool provided several recommendations for improvement that staff intends to implement. The CIP process provides flexibility in re-evaluating and prioritizing projects on an annual basis.	1	Done

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
7	High pressure pipeline right-of-ways not regularly inspected & maintained.	High pressure transmission pipelines have two categories--raw water and treated water. Raw water pipeline right-of-ways are regularly inspected, at least annually. Treated water transmission line maintenance is not assigned to any one work group, so attention to these pipelines varies and is done on an "as needed" basis by Water Treatment, Hydro, Utilities Maintenance or Project Management. Consider a more organized and frequent inspection program of treated water transmission pipelines and more inspections of valves on the raw water pipelines. These functions could be combined into a single program under a single work group. Maintenance of the treated water transmission pipelines should be specifically assigned to one group and resources provided. An O&M plan for treated water transmission pipelines should be developed.	1	Done
8	Digitize project records to ensure information is not lost and provide methods to easily access this information.	A project tracking database and procedures for scanning and archiving of electronic files has been implemented to capture critical information and provide easy access to and query of these records.	1	Done
9	Develop and implement procedure to ensure management and the public information office is informed of shut-off, sanitary sewer overflows (SSOs), breaks and other emergency problems so they may be properly informed.	If emergency occurs during work hours, a "water info" e-mail goes out which includes Public Works' Communications staff. If it's a large main break, Communications staff is contacted directly by a supervisor. Off-hours, Communications will get phone call only if something really significant happens, and a water info e-mail may or may not go out the next day. Week-end responses are not consistent. Currently no set standard for the division on communication procedures (including creek spills, power outages at the plant, main breaks, etc.) Staff will establish procedures for communicating urgent/emergency issues and write a Utilities Division policy. This would be distributed and supervisors would train staff.	1	Done
10	Develop and implement procedure to ensure management and the public information office is informed of shut-offs, SSOs, breaks and other emergency problems that impact customers.	Public Works Communications group is alerted for all urgent situations such as water main breaks and sewer main backups. Otherwise, it's a case-by-case judgment to alert the PIOs. Need to keep the CMO aware of emerging situations and possible press-related issues. Staff will establish procedures for communicating urgent/emergency issues and write a Utilities Division policy.	1	Done

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
11	Provide a system to include field collected data into the analysis and prioritization of line replacement or rehabilitation.	Field observations for gravity mains (storm and sewer) and manholes is currently recorded in Utilities Maintenance and Management System (UMMS.) Observations come from TV-ing mains and manhole observations. In addition, the condition of hydrants is recorded during hydrant inspections and main breaks and break causes are tracked and entered in UMMS. The Utilities Planning and Project Management workgroup is going to implement a separate asset management system for which Utilities Maintenance workgroup will provide UMMS data for inclusion in making replacement/rehabilitation decisions. The field reports will be modified to capture pipe and manhole condition, then the UMMS system will be modified to capture and sort by maintenance need priority in order to prioritize maintenance work.	1	Done
12	Consider conducting an energy audit to review new electrical demands as well as review current sources and uses of energy.	Construction completed at WWTP in June 2008 and have yet to optimize process of certain major electrical loads such as aeration blowers and centrifuges. An energy audit is warranted and will likely result in some recommendations that could provide ongoing power savings.	1	Done
13	Plant management is working to establish goals and a mission statement for the plant.	Goals and mission statement were in progress during Peer Review week. Since that time, mission, goals, values, and expectations have been finalized in a document by Coordinator and Supervisors. Consistent and regular follow up to see how well the goals and mission statement are being utilized is needed. Performance reviews should include many of the elements listed in the document.	1	Done
14	Management needs to make a business case for purchasing of environmental lab equipment and continue to review analytical request to ensure only necessary and relevant work is completed.	Currently, the Laboratory conducts all metals analysis to support WWTF liquid stream and biosolids monitoring (both compliance and non-compliance monitoring) and some drinking water metals analysis. A "business case evaluation" process will be conducted to evaluate the possible cost/benefit of the metals analysis work to see if this activity should be conducted in-house or outsourced.	1	Done

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15	Reallocation of staffing must be considered in order to operate the process economically and effectively.	Since 2003, staff responsibilities have shifted from driving city trucks to land apply biosolids to operational responsibilities inside the WWTP (with contract truck hauling.) As of June 2008, the dewatering system has been expanded with on-site, high performance centrifuges as well as more complex support systems such as biosolids screening, centrate return, and odor control. Staffing needs/levels will be evaluated in 2009-2010 to determine an optimal staffing level for the Resources Recovery functions with the idea that staffing will be redistributed either via work-sharing or reallocation.	1	Done
16	Limited communication between maintenance staff and operations management.	Daily meetings are held each morning at both plants that include mechanics, e-techs, operators, supervisors and SCADA Administrator (Hydro at Betasso) staff to discuss plant issues and needs. Management walks site and checks in with staff. Quarterly meetings are held with maintenance to prioritize projects and to check-in about what may be needed for each project. Reviews are held every six months with each individual. Additional meetings are held as needed. Consider the need for communication training and additional resources, if warranted. May also need to consider a separate Maintenance Supervisor position that is separate from a Treatment Operations Supervisor.	1	Done
17	Maintenance Computerized Maintenance and Management System (CMMS) not happening	A CMMS system has been purchase by Water Treatment in 2008 and is called "Fast Maintenance." Staff is currently entering data into the system and started to use the system in December 2008. WTP staff will maintain the CMMS.	1	Done
18	Corrosion resistant bolts not always used on buried applications.	In 2008, anti-corrosion bolts were purchased and used while making repairs. The city's design standards need to be edited so that new installations have this requirement. Will work with Planning and Development Services' staff to revise design standards so that anti-corrosion bolts are used during routine installations and construction of water mains.	1	Done
19	Field reports not recorded in electronic records/maps	June 2008, the Utilities Program Planner started to scan all submitted "utility field reports." The scanned field reports are hotlinked to a field report tracking database created and administered by the Program Planner. This database can be made available to other city employees upon requesting access from the Program Planner.	1	Done

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
20	Group needs to objectively analyze existing work load as to what needs to be accomplished and what is desirable to be done.	The program is responsible for required compliance programs and reporting and non-regulatory monitoring--both used in supporting water treatment and operations. The group needs to prioritize required programs with other program needs and evaluate shared responsibilities and resources. Through WQES, the program will be developing a work plan in 2009 to assist with these decisions.	1	Done
21	Group needs to objectively make a business case for new programs/projects	The Drinking Water Quality program is a support group to water resources, engineering, treatment and operations and has the opportunity for involvement at many levels. Staff plans to interact more with the other groups to better define how the program can provide support and help prioritize programs/projects and leverage resources for projects. In doing so, staff will conduct a cost/benefit analysis to determine if work activities are more appropriately done in house (may need to purchase equipment) or out-sourced. An analysis is currently being done with respect to source water nutrient analysis.	1	Done
22	Some work groups consistently over-run their budgets. Some years this may be unavoidable but it is suggested these work groups be required to stay in budgeted amounts or provide written justification on why the budget must be exceeded. The justification in writing should occur between the second and third quarter of the fiscal year.	Some work groups go over budget and it is handled in one of the following ways: 1) try to cover the overage from some other area with their workgroup, 2) talk to another coordinator looking for coverage, and 3) communicate the overage to Ned and/or Carol to develop a plan for coverage at the fund level. Staff will develop a procedure in 2009 for reporting budget status and projected year-end status.	1	Done
23	Improve safety & health program within all divisions	Safety and health are essential and part of the job description of almost all utility staff. Stewart Ellenberg, the risk manager for the city of Boulder, is working with his staff to schedule training opportunities for specific workgroups. If injury losses increase in the future, may need to consider increasing resources for this Health and Safety program.	1	Done (ongoing review of safety program will continue)
24	Considering the succession plan, efforts should be made to provide internal leadership and supervisory training.	Some supervisory training available through Human Resources (HR). More training could be developed to focus on developing employees for promotional opportunities and hiring-for-success practices.	2	Done

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25	Develop objectives and methods for knowledge sharing including a job succession plan for critical areas of the utility.	Currently rely upon on-the-job training and working along-side of outgoing employee for a short time. There has also been a large effort to move all hard copy documents to storage in digital files. Some work groups are developing Standard Operating Procedures (SOPs). Utilities Division completed a "pilot" program in 2008 for succession planning awareness.	2	Done
26	Develop procedures and/or training to ensure policies are enforced fairly across the utility.	City policies and department policies are on the intraweb. Work group policies, if any, are available at each work site. Coordinators/supervisors may initiate contact with other supervisors/coordinators to assess consistency across work groups.	2	Done
27	Need to track efforts, set goals and determine expectations. This will help set the course for all employees.	Goals and expectations are communicated in annual Performance Evaluations. Various work performance data are reported in the annual Utilities Report. The annual report is posted on the intraweb and shared with staff.	2	Done
28	Track or review the plan for goals & improvements.	Annual flood drills and exercises are debriefed and plans and procedures are modified accordingly. Employee rosters are updated annually. Areas for improvement are assigned accordingly (ex: paging system improvement).	2	Done
29	Financial training & communication with employees may help work groups stay within their budget.	Currently, the Utilities Financial Manager meets with new coordinators and gives them an overview of the utilities budget and the city's budget process. The Utilities Financial Manager also meets with new supervisors and workgroups as requested, sends out monthly budget status reports to coordinators and provides updates as part of the annual budget process. Accountability for staying within budgets is addressed through performance evaluations.	2	Done
30	The outstanding debt is rather high (~\$85 million). Boulder should look for more ways to "pay as you go" until bond retirement dates are nearer.	Outstanding debt: Water - \$47M paid off in 2021; Sewer - \$42M paid off in 2025; Flood - \$5M paid off in 2018. "Pay as you go" would require 1) additional revenues and/or 2) reduced expenditures from the current budget. Money from any option would go to fund balance until enough was saved for the next large CIP project. Projected bonds: Water - \$36M in 2014; Sewer - \$12M in 2010; Flood - \$5M in 2011. Utilities is reevaluating it's debt level with the city's finance director and private financial advisor. The Utilities' current debt obligation meets all landing requirements and satisfies the city's designated reserve requirements. Bond rating agencies have provided a fairly high (AA+, Aa2) rating for the revenue bonds.	2	Done

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31	Have approved vendor list include those services that may be required at treatment plants.	Annual Pricing and Contract Agreement Catalog does not currently include vendors that supply metering pumps, motors or other maintenance equipment that is needed at the treatment plants. The pricing and contract agreement catalog is updated annually and staff will make sure treatment plants have input to vendors included in annual contracts. Only vendors reasonably expected to be used each year should be included in the annual contracts. An alternative is for the treatment plants to maintain a list of vendors who can supply the appropriate parts to simplify identifying them when needed.	2	Done
32	Shorten the lead time required for purchasing equipment costing greater than \$50,000.	Annual Pricing and Contract Agreement Catalog does not currently include vendors that supply metering pumps, motors or other maintenance equipment that is needed at the treatment plants. Finance is working with the attorney's office to consolidate contracts (for material purchases) into the PO to streamline the purchasing process for materials. Finance is also considering developing a checklist in 2009 for bid packets.	2	Done
33	Reinforce that information technology infrastructure is a critical operation of the utility and that the appropriate level of response time must be maintained.	The installation of fiber optic cable to the Betasso WTP and 75th St. WWTP will be completed in the first quarter of 2009. This will greatly improve the information technological support to these facilities. Discussions will be scheduled with the city's IT Department to further discuss and clarify lead and support roles.	2	Done
34	Implement E-care to provide customers on-line access to their accounts.	The current priority for the billing office has been implementing the 2008 water budget changes and processing customer credits. The June 2008 changes should be programmed into CIS and credits processed by the end of 2008. Staff will work with the billing vendor to schedule E-care for the first half of 2009. This will allow customers on-line access to their accounts and to be able to pay bills online. Staff will work with Advanced Utility Systems to implement the e-care module.	2	Done

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
35	Develop procedures to ensure any software or hardware changes will not interfere with data exchange between billing and meter reading systems.	The meter reading software is called CONNECT and it is currently located at the yards. CONNECT reads a file generated by the utility billing system (CIS) which contains the meters "to be" read and creates a file with the meters reads which is uploaded into CIS and used to generate bills. In the past software or hardware changes to CONNECT have occurred and interrupted (either miscalculated or omitted reads) the data used to generate bills. The changes are not always communicated to the billing office and they become aware as billing issues surface. Utility billing staff, IT staff and Meter Reading staff will meet and agree to implementation control procedures and coordinate all future changes between the two groups.	2	Done
36	May need to improve outreach to managers of key customers.	Currently, contact key customers when there is an urgent situation (water service outage or water quality problem) that involves the customer. Will initiate contact with key customers or groups (like the Chamber of Commerce) when performing studies (PIF, monthly rates, IPT, etc) that affect them.	2	Done
37	Upgrading camera equipment will provide for better collection and analysis of data.	The workgroup is currently in the process of acquiring Granite XP software in order to further evaluate, categorize and characterize the conditions of the sewer mains. This system will provide a more uniform analysis of the pipe conditions. It is anticipated that the new software will be installed and useable by staff by July 2009.	2	Done
38	May need to improve communication with SIU's for response to accidental releases.	Control of accidental releases and reporting are of primary importance to Pretreatment staff. Significant Industrial Users (SIUs) are required by permit, local, and federal regulations to prevent unauthorized releases to the sanitary sewer and to establish spill control and reporting plans. Annually, pretreatment staff review during site inspections the potential for spills to the sanitary sewer. This review also includes a check of the SIU spill control plan. During this annual inspection, Pretreatment staff will also review the communication plan with each SIU and emphasis the requirement of quick notification and response.	2	Done

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39	Boulder Canyon hydro needs to be evaluated to determine if it should be upgraded or abandoned.	A feasibility study of options for Boulder Canyon Hydro was completed in 2005. It was determined that it would be cost-effective to replace the existing turbine with a 4.9 MW unit. No further analysis can be completed until the FERC exemption from licensing process is complete in 2009 for the Boulder Canyon Hydro Project. Work can proceed on a final determination of whether or not to install a new turbine at Boulder Canyon Hydro in 2009 or 2010.	2	Done
40	Changes in procedures or standard practices need to be fully coordinated with all work groups involved.	Continual improvement, training, meeting and field visits between supervisors and staff are currently underway to discuss and communicate changes in procedures and practices. Monthly "all employee workgroup" meetings are held and staff are allowed to provide feedback on all operations in order to become more effective and efficient.	2	Done
41	Cathodic protection practices not employed (attachment of anodes when opportunity exists, isolation, bonding, etc.).	Utilities Planning/Project Management staff are evaluating existing steel pipelines (recent and older). With assistance from a cathodic protection/corrosion control consultant, a program is being developed to replace anodes and test stations on older pipelines and to implement monitoring of all test stations into O&M practices for all large diameter steel pipelines.	2	Done
42	No air-vac valve maintenance.	Responsibility for maintenance of the air-vac valves has not been clearly defined. Multiple work groups have performed maintenance on air-vac valves in the past. Need to evaluate if the responsibility should be with the pressure system maintenance staff simply based upon where the valves are located, or with another work group and more clearly and formally designate maintenance responsibilities.	2	Done
43	Aging work force.	Utilities Division completed a succession plan "pilot" project in 2008 related to an aging work force and possible retirements. One response has been that Joe Cowan has taken a leadership role in developing a program with the BVSD and AWWA to teach and train local vo-tech students about skills and abilities for jobs in the utilities maintenance field.	2	Done

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44	Maintenance staff pulled in too many directions.	The two plants and pump stations use 4 mechanics, 2 E-techs, and a SCADA administrator. Daily meetings are held each morning at both plants that include mechanics, e-techs, operators, supervisors, SCADA Administrator (Hydro at Betasso) to discuss plants issues and needs. Quarterly maintenance meetings are held. Supervisors and the workgroup decide what would be the best action plan to accomplish the work which may include outsourcing. Coordinator/supervisors may need to better define work priorities and schedules for maintenance activities, along with providing some communications training. The recently implemented Computerized Maintenance Management System (CMMS), called "Fast Maintenance", will also allow for planning and prioritization of maintenance activities.	2	Done (evaluated as part of Regional Survey)
45	There are 4 industrial mechanics (including load mechanic) working on plant maintenance, new and replacement projects, regulators, cleaning tasks, residuals handling and developing the CMMS. Routine tasks and equipment projects might be considered for outsourcing so that the CMMS can be fully developed, priorities can be clearly identified and the right tasks performed per plan.	Use of the CMMS called "Fast Maintenance" started in December 2008. Routine tasks and equipment projects are considered for outsourcing as budgets allow. Outsourcing now includes HVAC, painting, pumps and motors, pipe valve replacement, electrical work, doors, windows, and locks, paving, janitorial, roofing, sludge cleaning and hauling.	2	Done (evaluated as part of Regional Survey)
46	Management staff needs to improve their visibility amongst the maintenance and operations staff. Field visits and possibly quarterly meetings are recommended.	The Directors of Public Works (Maureen Rait, Ned Williams and Tracy Winfree) hold full work group meetings at each Public Works site on an annual basis. Other staff meet with operations and maintenance staff on a project or program specific basis. In 2009, upper Utility management staff (Director, Coordinators) will get out in the field more often.	2	Done (ongoing)
47	Extend strengths to all sections of utility.	In house "experts" are available to train others within utilities. Key responders within the division routinely take part in emergency drills, exercises and training. A more comprehensive and formal training program for all employees could be developed in the future, if warranted.	2	Done (ongoing)

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
48	Continued expansion of GIS enterprise system with integration of maintenance management system will improve work place efficiency.	The city's enterprise GIS system is fully integrated with the maintenance (UMMS) database. Each active asset in UMMS has a hotlink to the Utilities Viewer ArcIMS website enabling users to view the mapped location and GIS data behind all assets. Plans are in place to continue and improve this integration with the roll-out of an ArcServer application. Plans for the future expansion of this integration include mapping of multi-point and multi-line maintenance types (valve operations, sewer and storm line cleaning, hydrant inspection, hydrant repair, etc) and mapping of maintenance based on structured queries (i.e. over selected date ranges etc.). Currently, staff is in the early stages of creating a utilities GIS server solution to implement these expansions. It is in the 2009 work plan to begin.	2	Done (ongoing)
49	Continue to work with researchers on projects that effect water quality in the city.	Since 2002, the city has been part of cooperative studies with CU Boulder and the USGS on emerging contaminants in wastewater. The studies have focused on emerging contaminant removal in the 75th Street WWTF and emerging contaminant impact to aquatic life in Boulder Creek. To date, the city's support has been in-kind and focused on site access, power for the research trailer and staff support for sampling and field work. These efforts are anticipated to continue through at least 2010. Results from this research will help the city address possible future regulatory requirements for emerging contaminants.	2	Done (ongoing)
50	Changes to the water budget billing criteria should be minimized until the effect of these rates have on revenues is fully realized	Changes to water budgets have been made in response to customer concerns and have been approved by WRAB and council. The June 2008 changes were programmed into CIS and credits processed at the end of 2008.	3	Done
51	Provide a venue to award performance and a higher level venue for recognizing employees who received awards from organizations outside the utilities division.	Currently use "Alternative Recognition and Rewards" program, promotion to higher grade for treatment plant certifications, and cash bonus for collection and distribution system certification. This program could be expanded to include other types of recognition, if appropriate.	3	Done

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
52	The city has a purchasing policy that allows employees to make purchase up to \$50,000 with informal quotes. It is recommended that the informal quotes are documented and reviewed by both management and cost accounting staff	For purchases of <u>\$10k to \$50k</u> it is <u>required</u> that 3 informal quotes, sole source rationale, pre-qualified vendor, or annual contract & pricing agreement is required to be documented in the note pad. For purchases of <u>\$1k to \$10k</u> comparison shopping is <u>recommended</u> with documentation/rationale in the note pad. Finance does spot audit purchases below \$50,000 and reviews the informal quotes. Finance will be reviewing these requirements as part of their purchasing review that is expected to be completed in December 2008.	3	Done
53	Monitor purchases from \$1,000 to \$10,000 to ensure procurement policy is followed	For purchases of \$1k to \$10k comparison shopping is recommended with documentation/rationale in the note pad. Finance annually pulls a sample of purchases citywide and performs a high level review of compliance with the procurement policy. Finance will be reviewing these requirements as part of their purchasing review that is expected to be completed in December 2008.	3	Done
54	Expand training opportunities to include more technical water sections. The training that was offered was exclusively for safety related tasks. If AWWA section conferences or other short school type training is available, field staff should be allowed to attend	Every year, some staff attend the C.U. Water and Wastewater short course and several technical presentations put on by vendors. Staff also attend local, regional and national conferences, when economically feasible.	3	Done
55	No flushing program or unidirectional flushing	A "pilot" program was developed and evaluated. The results of the "pilot" program showed little water quality improvement. And, with a community-wide focus on water conservation, a flushing program was not currently considered to be an efficient use of water.	3	Done
56	Emergency response night work usually unsupervised	Emergency response work after-hours is supervised by a Maintenance Person IV crew lead who is in contact with the supervisor. Supervisor is required to respond if the issue affects a major road or public health and safety.	3	Done

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
57	Expensive flushing program sitting idle	Utilities carried out a demonstration Uni-Directional Flushing (UDF) Program which, after four years (2004-2007) resulted in flushing only about 20 percent of the distribution system. MACTech Engineers and Merrick completed a study of the UDF flushing results that showed little water quality improvement and estimated it would take at least 5 years to flush the system once if we had a concentrated effort and dedicated manpower. Currently, MWHSof is completing the UDF flushing run designs for the entire system and whether the city proceeds with the program or holds the UDF flushing runs for potential contamination events will be evaluated in 2009 and 2010.	3	Done
58	No utility help passing certification tests, tracking certification CEUs, etc	Water and Wastewater maintenance crews are supplied course work and tutors for the math sections and city pays for C.U. short course held annually to prepare for certification tests. A certification bonus policy was also implemented in 2008 to reward employees for higher levels of certification than required by their positions.	3	Done
59	Very low pay for newer employees for long time	Incoming employees are paid at the entry level wage as set by market comparison. If they have experience and certifications above what is required they may be paid at a higher wage (within budget and approved FTE limits), as provided for in BMEA contract.	3	Done (as part of HR workplan)
60	Need to analyze the benefits of a FOG program with the goal of reducing cleaning within the collection system.	Control of Fats, Oils, and Grease in the sanitary sewer system is often referred to as a FOG program. POTWs and sewer districts around the country have found that proactive FOG programs with program elements that include: specific sizing criteria; installation inspection; routine maintenance inspection; pump out manifest requirement, and; follow up blockage investigation, have significantly reduced line cleaning operations and the occurrence of sanitary sewer overflows (SSOs) related to FOG. Boulder's current regulations require food service facilities to install grease traps or interceptors when grease is generated. Boulder does not have specific design criteria for such plumbing devices. City staff will identify plumbing code changes that could enhance the FOG program and that could be approved in the B.R.C. in 2009 for new construction.	3	Done with initial analysis
61	Expand incentive program for developing needed skills within operations and maintenance.	Currently use "Alternative Recognition and Rewards" program, promotion to a higher grade for treatment certifications and cash bonus for collection and distribution system certifications. Incentive program could be expanded, depending upon organizational needs.	3	Done (ongoing review of incentive program)

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
62	Hire safety professional to mentor a safety culture.	Stewart Ellenberg, the risk manager for the city of Boulder, is working with his staff to schedule training opportunities along with specific workgroup's scheduling for their specific training needs and Risk Management staff may provide support on various topics. This Opportunity for Improvement is built around having a dedicated city employee focused 100% on safety and could "champion" the safety efforts for all utilities (or city-wide) workgroups. An alternative approach is to increase the skill and capacity for all employees to be responsible for a safe working environment.	3	Done (ongoing review of safety program will continue)
63	The utility relies on debt financing for major capital improvements. The utility division should consider building a reserve fund to begin a "pay as you go" financing method. In order to do this, senior policy makers (WRAB & Council) must accept that the reserve accumulations are necessary for the "pay as you go" and not dispute the large reserve in the funds. In addition, policy makers must realize that building reserves takes several years and the utility has immediate needs that require funding in the near future.	Outstanding debt: Water - \$47M paid off in 2021; Sewer - \$42M paid off in 2025; Flood - \$5M paid off in 2018. In recent years, Utilities CMO, WRAB and council have questioned the large reserve amounts. In Jan 2007, Red Oak Consulting completed a review of the utility reserves and recommended that, in addition to designated reserves (e.g. Lakewood Pipeline Remediation Reserve), each utility should maintain an operating reserve equal to 25% of its operating expenditures (water - \$4M; Sewer - \$2.5M; Flood - \$900k) and a capital reserve based on the minimum annual renewal and replacement costs for capital (Water - \$2M; Sewer - \$500k; Flood - \$200k). These recommendations are reflected in the 2008 and 2009 fund financials. Since the outside review was recently conducted; staff recommends that another review be undertaken in 2012, perhaps as part of the next comprehensive rate study.	3	Done (ongoing review will continue to see if opportunity for more cash financing arises (still using combination of cash finance and bond))
64	Operations staff appears heavy. 24/7 monitoring of distribution system by a dedicated operator seems excessive	At Betasso WTP, one operator monitors the SCADA system which includes the plant functions, hydro operations and pressure zones for the water distribution system. A second operator regulates and/or adjusts raw water sources, water treatment process (chemicals, sedimentation process, filtration process, residuals recovery, chemical feeders, pumps and valves to control liquid stream) and solids treatment processes. Operators also walk the facilities/campus to check for abnormal conditions to identify, locate, and resolve treatment problems and respond to emergencies. An evaluation will be conducted to staff levels could be reduced through remote monitoring/operations, or by relying upon less coverage. Comparisons with other water agencies will be evaluated.	1	Partially completed (evaluating as part of Regional Survey)

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
65	Business case for night monitoring of distribution system, and both plants from Betasso should be developed	Betasso WTP has two operators on duty per 12 hr shift, 24/7. The 63rd St WTP has one operator on duty per 12 hr shift, 24/7. All operators are available for emergencies and are alert to security of treatment plants, distribution reservoirs, pump and valve stations, and hydro-electric stations. Staff will evaluate the use of more automated and remote operations and what if any, equipment, instrumentation and communication devices may be required in order to rely less on human operations and more on equipment.	1	Partially completed (evaluating as part of Regional Survey)
66	Thrust restraint methods used by field crews are outdated.	New methods will be investigated and associated costs considered for this operation. The city's design standards will also be reviewed and edited by the Utilities Planning/Project Management, Maintenance and P&DS work groups for new installations.	2	Partially completed (field crews using new methods). Updating city's design standards is on 2011 workplan.
67	Updating UMMS program to include work order system within maintenance must be implemented to improve not only management of work but provide better access to data for capital improvement decisions.	The maintenance database, called UMMS (Utilities Maintenance Management System), presently has a functioning work order system. However, work orders are only created for hydrant and valve maintenance activities. The current work order function is too limited for it's use in the day-to-day maintenance of the sewer mains because it is missing other pipe rehabilitation methods (e.g., slip lining, chemical treatment, etc.). UMMS administrators and the database developer are aware the work order system needs improvement. This task is already on the work plan for a future release of UMMS, anticipated by the end of 2009.	2	Partially completed. Work stopped because it is now being incorporated into larger IT evaluation of long-term solution.
68	Enact policy to adopt "near OSHA" standards	Comment is primarily related to treatment plants, water distribution, and wastewater collection staff. OSHA standards should be applied for activities such as confined space entry, excavations/trenches, lock/out tag/out, chemical handling, traffic safety, etc. Currently, in the water distribution and waste water collection maintenance workgroups, most OSHA regulations are being followed. Treatment plants are following many OSHA standards. It is proposed that the city adopt a written policy that states utilities establish a goal of conforming to all OSHA standards and do an inventory and assessment of facilities and practices to identify and correct any deficiencies.	1	On workplan but have not started utility-level policy (workgroups are using "near OSHA" standards).

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
69	Supervisors need to observe practices of subordinates	Currently, supervisors actively spend time in the field as well as attend safety trainings alongside staff. Improper safety practices are captured and debriefed with staff. If necessary, training is modified or requested to prevent incidents. All supervisors need to have a front-line role in safety and lead by example. All employees are expected to play a role in safety and it should be a uniform category in performance evaluations. If injury losses increase in the future, may need to consider increasing resources for this Health and Safety program.	1	On workplan but have not started due to vacant supervisor positions. Once positions filled, anticipate as an ongoing effort.
70	Management has decreased interface with field crews.	Administrative functions have increased and field time is at a premium. Past practice and preference of crews was to NOT have the supervisor in the field as much. Finding the "middle road" is possible and coordinator/supervisors need to evaluate how best to interface and communicate with field crews.	2	On workplan but have not started due to vacant supervisor positions. Once positions filled, anticipate as an ongoing effort.
71	An enhanced work order system within the utility maintenance program will improve the effectiveness of work.	The UMMS 2008 work plan included tasks to enhance the work order functions and process. The goal is to complete the enhancements by the end of 2009, depending on contractor availability.	2	On workplan but have not started because it is being incorporated into larger IT evaluation of long-term solution.
72	Geo-assigning of work orders once integrated with GIS will improve effectiveness of work.	A planned overhaul of the UMMS work order system includes tasks that will allow the utilities maintenance supervisors/other staff to generate a work order for an asset/s by interactively selecting that asset/s from a GIS mapping application. This will not be possible until the ArcGIS Server (server-based GIS platform) is deployed. Server GIS provides users with live access to GIS Data and a set of customized GIS tools that will enable users to interact with real-time GIS datasets via the web. However, the deployment of a server GIS product is estimated to be by the end of 2009 or early 2010.	2	On workplan but have not started because it is being incorporated into larger IT evaluation of long-term solution.

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
73	The utility should consider developing an executive summary of all master plans that prioritize projects. This could assist in formulating and communicating the utility's CIP.	It is envisioned that master plans will be developed for each enterprise utility. The master plan will provide an executive summary of priority projects, programs and needs. The first such master plan will be for the Wastewater Utility and it is anticipated this will be presented to the WRAB in spring 2009.	2	On workplan but have not started (<i>expected completion Sept. 2011</i>).
74	Develop an executive summary of all master plans that prioritizes projects. This could assist in formulating and communicating the utility's CIP.	It is envisioned that master plans will be developed for each enterprise utility. The master plan will provide an executive summary of priority projects, programs and needs. The first such master plan will be for the Wastewater Utility and it is anticipated this will be presented to the WRAB in spring 2009.	2	On workplan but have not started (<i>expected completion Sept. 2011</i>).
75	The raw water lines have exceeded their expected life capacity.	This applies only to Barker Gravity Line and Betasso Pipeline because Silver Lake and Lakewood Pipelines have been recently reconstructed and Boulder Canyon Penstock was recently inspected and found to be in good condition. If expanded to include treated water transmission pipelines, it applies to Orodell Pipeline. The condition of Sunshine Pipeline is unknown. Repair of Barker Gravity Line should continue and preferably be accelerated. The Betasso Pipelines Project should be completed as planned in 2009, which would also address the worst section of Orodell Pipeline. Internal inspection of Sunshine Pipeline is scheduled for 2009 and an internal inspection of Orodell Pipeline should be scheduled.	2	On workplan but have not started. Identified in CIP and workplan.
76	Develop brochure to orient new customers.	Information is available on the web regarding utility billing, water budgets and payment options. In 2009, Communications and UTB staff will work together to create an appropriate customer friendly brochure that could be mailed to new customers.	2	On workplan but have not started (2012 workplan).
77	Consider a brochure to welcome new customers and inform them of utility's billing and payment options with contact information.	Information is available on the web regarding utility billing, water budgets and payment options. In 2009, Communications and UTB staff will work together to create an appropriate customer friendly brochure that could be mailed to new customers.	2	On workplan but have not started (2012 workplan).

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
78	Conduct customer surveys to measure customer satisfaction.	The city's community survey that is done periodically (last completed in 2007) has had questions addressing utility billing services. The results from the last survey showed that 62% of the respondents indicated the utility billing services were very good or good; which is similar to the 2001 survey results. The 2007 survey also noted that utility billing was one area that the city might want to focus on to improve resident perceptions. The city could hire a survey firm to create an appropriate survey, send it out and report on the results. Or the survey could be produced in-house, mailed to customers and an outside firm could compile the results.	3	On workplan but have not started (will do Community Survey in fall 2011).
79	Review pay scales for entry level position to ensure they do not cause significant turnover and added training costs.	Need to consult with HR about turnover data and appropriate grade levels/pay scale. Under the BMEA contract, supervisors have hiring discretion regarding entry level pay rate depending upon applicant's experience and skill level.	3	On workplan but have not started. Addressing in HR evaluation of city-wide performance measures and compensation study
80	Produce as-built drawings in a timelier manner so GIS maps can be accurately updated with new facilities. This will provide the information to field crews and allow them to work more efficiently	The topic is being discussed by staff and several ideas to help with the timelier development of as-built drawings and updating of GIS maps have been put forward. There is a lag time between the construction of facilities and the development of as-built drawings and updating of GIS maps. For this reason, design drawings and the development of a corresponding "work-in-progress" layer has been discussed. It is anticipated that further consideration and a decision regarding this issue will be made during the 1 st quarter of 2009.	1	Not included in workplan.
81	Integration of work groups will provide greater effectiveness in operating the plant.	This is an extremely important but long-term goal of the WWTP. The four workgroups at WWTP (Operations, Maintenance, Resource Recovery, and Admin) often work independently. More cooperation and collaboration between workgroups would provide a consistently high performing WWTP. Will consider teambuilding skills and training and cross-workgroup collaboration.	1	Not included in workplan.

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
82	Field's new GIS is slow, hard to read and not accurate. The older system is static and very accurate.	Mobile computers were deployed in the second and fourth quarter of 2008. The computerized mapping is the most up to date and accurate utilities mapping that exists in the city. The maintenance crews must complete "utility field reports" whenever they notice mapping inaccuracies. This, along with better dissemination of as-builts, are the only way the mapping will improve. Staff will evaluate ways to improve speed and readability of the system.	1	Not included in workplan.
83	Implement a program to orient employees to all the aspects of utility operations. This will help employees understand the relationship of their work to the overall mission of the utility.	A general, city-wide orientation is performed for all new employees during their first week at work. Then, each work group provides an on-the-job orientation. A more focused "Utility Division" orientation could be formally developed and implemented.	2	Not included in workplan.
84	Utility should establish vision, values and goals to guide employees in improving the utility's performance. Employees should be involved in the establishment of the utility's vision, values, and goals. Milestones should be set to monitor progress in accomplishing the goals to implement the utility's vision.	The Utilities Division has a mission statement and guiding principles. It is appropriate that mission and values (guiding principles) be reviewed periodically and that all employees are provided an opportunity to participate. Goals are typically developed through the master planning process. Master plans will be updated on a regular (5-10 year cycle) basis and milestones will be set through the annual budget process. Work groups are also encouraged to develop mission statements and goals specific to their activities.	2	Not included in workplan.
85	No enforcement of encroachment of landscaping on right-of-ways and meter pit sites.	Meter pit enforcement occurs as required, however the city does NOT charge the customer for the encroachment removal as a way to enhance customer service and decrease customer complaints.	3	Not included in workplan.
86	Consider a follow-up survey to customers so the utility can gauge how well it is responding to the customers concerns	Currently do not do this. Staff could select random customers from the credit card and front counter payment batches and from comments made on accounts and send them a postcard asking them for feedback based on their experience.	3	Not included in workplan.
87	Continue to look for opportunities for alternative disposal methods as part of a long-range plan.	Presently, biosolids are land applied 65 miles east of Boulder. Second option is to compost material, but this is also outside of Boulder County. Alternative disposal options are limited in Boulder. Future considerations for Class A compost products, or a dried product, have been considered in the past and remain as options for the future.	3	Not included in workplan.

Item #	Opportunity for Improvement from 2008 Report	Narrative - Staff Interpretation as of April 2009	Implementation Plan Priority - Tiers	Status as of July 2011
88	Use of Hydro as electrical back-up for the treatment plant should be investigated.	Betasso and Lakewood Hydros can't be used for power for the treatment plant under the existing power sales contract; Boulder Canyon Hydro could be used for this purpose if it is incorporated into a new power sales contract to be negotiated with Xcel Energy in 2009; a conduit for a dedicated power delivery cable from Boulder Canyon to Betasso could be incorporated into the current Betasso Pipelines Project to facilitate this possibility in the future.	3	Not included in workplan.
89	Dual reporting for coordinator is not a standard management best practice due to potential conflicts of priorities and styles.	While the potential for conflicts exist due to the unique reporting structure and unique function(s) of this position, it does not appear to impact the work products(s) or efficiency at this time.	3	Not included in workplan.

ATTACHMENT B: SUMMARY OF UTILITIES 2011 REGIONAL SURVEY RESULTS

- Responses were received from 9 communities:
 - Boulder
 - Broomfield
 - Ft. Collins
 - Greeley
 - Littleton/Englewood
 - Longmont
 - Loveland
 - Westminster
 - Cheyenne, WY

SECTION I: WATER TREATMENT FACILITIES (WTF) OPERATIONS

- **Highlights for Responses on Water Treatment Facilities (WTFs) (questions #1-5, 7)**

QUESTIONS		Boulder	Broomfield	Ft. Collins	Greeley	Littleton/ Englewood	Longmont	Loveland	Westminster	Cheyenne, WY
Number of WTPs		2	1*	1	2	1	2	1	2	1
State Classification		A	A	A	A	A	A	A	A	Level III Plant
Rated Hydraulic Capacities		16 MGD; 32 MGD	20 MGD	87 MGD	32 & 38 MGD	28 MGD	30 MGD;15 MGD	30 MGD	44 MGD & 15 MGD	35 MGD
Average Day Flow	2008	16.9 MGD	9.594 mgd	23.34 mgd	24.49 MGD	6.5 mgd	15.93 MGD	12.2 MGD	17 mgd	9.3 MGD
	2009	15.3 MGD	8.527 mgd	20.76 mgd	21.32 MGD	5.4 mgd	13.64 MGD	10.5 MGD	19 mgd	8.81 MGD
Distance between WTFs		18 miles, 40 min.	N/A	N/A	20 miles, 35 min.	N/A	3 miles, 10 min.	N/A	3 miles, 10 min.	N/A
Total WTF Staffing		26	10	18.8	18	15	9	10	16.5	

**Broomfield also purchases potable water from Denver Water (approx 40% demand).*

6) Organizational Charts for each Community

8/9) WTF Staffing

- Number of Communities with WTF Staffed when Operating (24/7)
 - Yes = 7 communities (*Boulder, Broomfield, Ft. Collins, Littleton, Longmont, Loveland, Cheyenne*)
 - No = 2 communities
 - Westminster – Plant operated remotely 24/7
 - Greeley –
 - 1 plant is staffed from 7:00 am until 3:30 pm, remaining hours on automatic with on-site resident operators respond to alarms
 - 2nd plant always staffed during operations

10) Type of Shift Hours for Operations Staff

- 12-Hour Shifts – 5 communities (*Boulder, Ft. Collins, Longmont, Westminster, Cheyenne*)
- 10-Hour Shifts – 3 communities (*Broomfield, Littleton, Loveland*)
 - Loveland primarily uses 10 hour shifts with the lead operator using 9 hour shift
- 8-Hour Shifts – 1 community (*Greeley*)

11) Number of Total Operations Staff Whose Primary Role is to Operate WTF

- 8 staff – 4 communities (*Boulder, Broomfield, Greeley-1 plant, Loveland*)
- 9 staff – 2 communities (*Longmont, Westminster*)
- 10 staff – 2 communities (*Cheyenne, Greeley – 1 plant*)
- 11 staff – 2 communities (*Ft. Collins, Littleton*)

12) Operator's job Titles Categorization

- Categorized by Certification Level – 5 communities (*Boulder, Littleton, Loveland, Westminster, Cheyenne*)
 - For example, Lead Operators and then A,B,C,D Operators
- Categorized by Certification Level Plus Responsibilities and Performance – 1 community (*Longmont*)
 - Operation and maintenance responsibilities are combined. There are two levels:
 - Operation and Maintenance Technician
 - Lead Operation and Maintenance Technician
 - Employees have an “area of emphasis” but are cross-trained
 - Eligible for skill-based pay (progressive certification)
- Two Categories – 1 community (*Greeley*)
 - Greeley – Operators A, Plant Operators

- One Category – 1 community (*Ft. Collins*) - Plant Operator with skills levels (A-D). All within one job title.

13) Designated Lead, Foreman or Chief Operator per Shift

- Yes – 3 communities (*Boulder, Ft. Collins, Greeley*)
 - Job Title:
 - Boulder - Chief Operator
 - Ft. Collins - Lead Operator
 - Greeley – no title, seniority determine authority
- No – 6 communities (*Broomfield, Littleton, Longmont, Loveland, Westminster, Cheyenne*)
 - Littleton – graveyard not covered by Lead Operator
 - Loveland – Lead Operator only M-F 6:30 am to 3:30 pm. Lead is a certified A operator.
 - Westminster – single-man shift

14) Number Operators on Duty Per Shift

Shifts	Boulder	Broomfield	Ft. Collins*	Greeley	Littleton	Longmont	Loveland	Westminster	Cheyenne
Weekday	2 (1 other plant)	1	2	2 (1 other plant)	2		2	2	2
Weeknight	2 (1 other plant)	1		2 (on-call other plant)	1	1	1	1	2
Weekend Day	2 (1 other plant)	1		2 (1 other plant)	2	1		2	2
Weekend Night	2 (1 other plant)	1		2 (on-call other plant)	1	1		1	2

**Some shifts have 1 operator per shift.*

15) Approach to Safety/Security During Single-Operator Shift

Approach to Safety/ Security	Boulder	Broomfield	Ft. Collins	Greeley	Littleton	Longmont	Loveland	Westminster
Check-Ins via Phone with Another Operator	X	X			X			
Cell Phone/ Radios		X			X	X	X	
“Man-down” Sensor			X					
Security Cameras								
SOPs Reinforce Safety						X		
SCADA				X				X

16) Designated “Lead” Operator When Two or More on Shift

- Yes – 3 communities (*Boulder, Ft. Collins, Greeley*)
- No – 4 communities (*Littleton, Longmont, Cheyenne, Loveland*)
 - Loveland – Operators decide and designate OIC.

17/18/22) Other Duties Assigned to Operators

Other Duties	Boulder	Broomfield	Ft. Collins	Greeley	Littleton	Longmont	Loveland	Westminster	Cheyenne
Maintenance		X		X	X	X	X	X	X
Maintaining/ Calibrating On-Line Water Process		X		X	X	X	X	X	
Custodial		X	<i>X (plant area not admin area)</i>	X	X	Contracted			
Admin.	X (after- hours calls)	X		X	X				X
I&C						X			
Off-Site Facilities	X	X	X		X			X	X

19) WTF Serves as After-Hours Call Center

- Yes – 2 communities (*Boulder, Littleton*)
 - Boulder – Betasso WTF is sole non-emergency call center at night for COB
- No – 6 communities (*Broomfield, Ft. Collins, Greeley, Longmont, Loveland, Cheyenne*)
 - Loveland – uses WWTP
 - Cheyenne – uses after-hours Operations and Maintenance Dutyman
 - Longmont – uses City dispatch call center

20) Clerical Assistance During Day at WTF

- Yes, 1 Staff Person – 5 communities (*Boulder, Broomfield, Ft. Collins, Longmont, Cheyenne*)
- No – 4 communities (*Greeley, Littleton, Loveland, Westminster*)

21) Operator Moves Freely about WTF for Equipment and Process Checks (*does not feel “confined” to control room due to phone, SCADA, etc.*)

- Yes – 8 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Loveland, Cheyenne*
 - Ft. Collins – Several SCADA stations located throughout plant, communicate with radios and pagers.
- To some degree – 1 community (*Westminster*)

23/24) WTF Residuals Processing and Handling Onsite

- No – 3 communities (*Boulder, Broomfield, Westminster*)
- Yes – 6 communities (*Ft. Collins, Greeley, Littleton, Longmont, Loveland, Cheyenne*)
 - Yes, Dedicated Staff – 2 communities
 - Littleton – 1 person. Belt Press Operator
 - Ft. Collins – One maintenance specialist (handling of the residuals – drying lagoons and then drying beds) who also performs maintenance duties
 - No, Dedicated Staff – 4 communities (*Greeley, Longmont, Loveland, Cheyenne*)

25) Anything Unique or Special about WTF Operations

- **Boulder** – Betasso facility in isolated mountain area. Operations staff monitors and controls a high pressure distribution system from the high mountain reservoirs until the end user. Operations staff also operate and control multiple hydroelectric facilities. The 63rd St. facility is a DAF style plant that utilizes dissolved air to accomplish sedimentation. DAF is a rapid process with very short detention times. This makes close monitoring essential from an operational standpoint.
- **Broomfield** – Responsible for ordering raw water daily, monitoring forebay to facility for quality and security, operations and monitoring of a reuse system
- **Ft. Collins** – Control plant production rate, not the distribution system.
- **Greeley** – Two on-site houses for 2 resident operators. Operators alternate every other week being the after hour on-call operator.
- **Littleton** – Standard coagulation, sedimentation, filtration and disinfection with sodium hypo.
- **Longmont** - We have initiated skill-based pay that allows O&M technicians to earn extra pay per hour for working in selected areas, as the need is identified. Although all the technicians are eligible for skill-based pay and must participate in the program, extra work is not automatically assigned and not all technicians will receive skill-based pay in any given year. There must be a defined need in order to have cross-trained workers in the skill block areas (mechanical maintenance, instrumentation/process control, water/wastewater operations, or SCADA/HMI programming). Although it is not unique to our operation, we have been able to reduce staffing and O&M costs through the use of automation, cross-training, and planned and predictive maintenance (effective implementation of a CMMS). We also share maintenance personnel between water and wastewater, which reduces the excess personnel involved in having separate groups for each treatment area.

SECTION II: WATER TREATMENT FACILITIES (WTF) MAINTENANCE

26) Dedicated Electrical, Electronic, Mechanical and/or IT Maintenance Staff at WTF

	Boulder	Broomfield	Ft. Collins	Greeley	Littleton/ Englwood	Longmont	Loveland	Westminster	Cheyenne, WY
Dedicated	Yes	No	Yes	Yes	No	Yes. Share resource with WTF, WWTF, collection/distribution.	No	Yes. Share resources between WTF and WWTF	No
Number of Dedicated	5	N/A	4 + ICE team	2	N/A	1	N/A (<i>Tech Services Dept maintain WTP & WWTP</i>)	7	N/A
Job Titles	Electronics Technician II, Lead Industrial Mechanic, Industrial Mechanic	N/A	Instrumentation & Electrical Supervisor, Instrumentation & Electrical Technicians, ICE team (<i>O&M SCADA & maintain system for WTP & WWTP</i>)	Instrument Technician	N/A	Electrician	N/A	Electromechanic Specialist, Utility Technician, Sr Maintenance worker, Control Systems Engineer, Control Systems Analyst	N/A

27/28/29) Maintenance Staff Responsibilities

	Boulder	Broomfield	Ft. Collins	Greeley	Littleton/ Englwood	Longmont	Loveland	Westminster	Cheyenne, WY
Handle Off-Site Utility Facilities*	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
On-Call After Hours Respond Equipment Failures	No	No	Yes	Yes (if op needs assist.)	Yes (Lead Op)	No	Yes	Yes	Yes (everyone on call)
Number On-Call at One Time	N/A	N/A		As required	1 unless more needed	N/A	1 unless more needed	1	N/A
Paid for On-Call	N/A	N/A	Paid 2 hrs for initial response, regular or OT for rest depending on time worked that week	OT	Paid standby duty (1 – 14 hrs each day on standby & min 2 hr OT if called out)	N/A	Paid for 2 hrs/day week, 1 hr/day weekend and response time.	On-call pay = 1 hr OT/ 12 hrs on-call	No special pay.

*Off-site utility facilities such as storage tanks, pump stations, PRVs, etc.

30) Maintenance Staff Regularly Scheduled to Work Nights or Weekends (day or nights)

- No – 9 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Loveland, Westminster, Cheyenne*)
 - Regular Schedule (M-F) – Boulder, Broomfield, Ft. Collins, Littleton, Longmont, Loveland, Westminster
 - Weekly Rotation for an 8-Hour Day Shift– Cheyenne
 - Day Shift 8 Hours - Greeley

31) Maintenance Staff Use Computerized Maintenance Management System

- Yes – 7 communities use the following:
 - Boulder – SM Global Fast Maint
 - Ft. Collins – Developed in-house by ICE team
 - Greeley – MP2

- Littleton – Stratum
- Longmont – Antero (Allmax)
- Loveland – City Works
- Westminster – Accela (implementation phase)
- No – 2 communities (*Broomfield, Cheyenne*)

32) Anything Unique or Special about WTF Maintenance

- **Broomfield** – Routine maintenance tasks completed by staff, hire outside expertise as needed.
- **Littleton** – Also maintain source and supply reservoirs, ditches, and wells.
- **Longmont** – Maintenance staff works at both water and wastewater treatment plants and also maintains pump stations and lift stations in the distribution and collection systems. This is not particularly unique; many municipalities are either doing this or will be.

SECTION III: WASTEWATER TREATMENT FACILITIES (WWTF) OPERATIONS

• Highlights for Responses on Wastewater Treatment Facilities (WWTFs) (questions #33-37, 39)

QUESTIONS	Boulder	Broomfield	Ft. Collins	Greeley	Littleton/Englwood	Longmont	Loveland	Westminster	Cheyenne, WY	
Number of WWTPs	1	1	2	1	1	1	1	1	2	
State Classification	A	A	A	A	A	A	A	A	Level 4	
Rated Hydraulic Capacities	25 MGD max month; 20.8 MGD annual avg; 53 MGD peak hr	12 MGD (just completed a 4 MGD expansion)	23 & 6 MGD	14.7 MGD	50 MGD	17 MGD (max month)	10 MGD	9.8 MGD 11.9 Max month	Dry Creek WRF – 10.5 MGD, Crow Creek WRF – 6.5 MGD	
Average Day Flow	2008	13.2 MGD	4.65 mgd	15.19 mgd	7.64 MGD	21.9 mgd	7.63 MGD	5.84 MGD	6.37 mgd	5.5 MGD
	2009	13.5 MGD	5.143 mgd	15.34 mgd	7.59 MGD	22.8 mgd	7.26 MGD	6.22 MGD	6.46 mgd	3.5 MGD
Distance between WWTFs	N/A	N/A	3 miles	N/A	N/A	N/A	N/A	N/A	Approx 3 miles	
Total WWTF Staffing	30 (26 FTE filled with 4 vacancies)	10	30	23	78	7	8	16.5	24	

38) Organizational Charts for each Community

40/41) WWTF Staffing

- Number of Communities with WWTF Staffed when Operating (24/7)
 - Yes = 4 communities (*Boulder, Littleton, Westminster, Cheyenne*)
 - Cheyenne – 1 plant is staffed 24/7
 - No = 6 communities
 - Broomfield – M-F 6 am to 5:00 pm; Weekends 6:30 am to 4:30 pm. Maintain one staff person each day "on-call". This person receives on-call pay. On-call hours are 5 pm to 6 am M-F and 4:30 pm to 6:30 am on weekends.

- Ft. Collins – 13 hours. Small plant is operated as a satellite and monitored from the larger plant after process tests are performed. The afternoon shift goes home at 7 pm. Process control supervisor has access to monitoring system and the auto dialer dials out in an alarm scenario.
- Greeley – 7 days/week, 20 hours/day. Operated remotely by alarm phone and VPN SCADA.
- Longmont – Plant unattended from 8 pm to 6 am. Remote alarming as well as remote monitoring and operation are implemented through the SCADA system.
- Loveland – Operated remotely between 11 pm – 6 am.
- Cheyenne – 2nd plant is operated 5/10. Operated remotely nights, weekends and holidays except for occasional visits.

42) Type of Shift Hours for Operators

- 12-Hour Shifts – 2 communities (*Westminster, Cheyenne – main plant/other plant 10 hour shifts*)
- 10-Hour Shifts – 4 communities (*Broomfield, Greeley, Longmont, Loveland*)
- 10-Hour Shifts & 8-Hour Shifts – 2 community (*Ft. Collins, Littleton*)
 - Ft. Collins – primarily uses 10 hour shifts with 2 8-hour shifts
- 13.3-Hour Shifts & 10-Hour Shifts – 1 community (*Boulder*)

43) Number of Total Operations Staff Whose Primary Role is to Operate WWTF

- 5 staff - Broomfield
- 6 staff – Longmont, Loveland
- 8 staff – Greeley
- 9 staff – Westminster
- 11 staff – Ft. Collins
- 13 staff – Boulder, Cheyenne
- 24 staff – Littleton

44) Operator’s job Titles Categorization

- Categorized by Certification Level – 6 communities (*Boulder, Broomfield, Littleton, Loveland, Westminster, Cheyenne*)
 - Boulder - Chief Plant Operator (A certification required). Plant Operator A, Plant Operator B, Plant Operator C, Plant Operator D (respective cert. required). Plant Operator Trainee (no certification, must obtain within 1 year).
 - Broomfield - Plant Operators are classified and their pay range is based on their certification level. Class A, Class B, Class C, Class D and Trainee (no certification).
 - Littleton – A, B, C, D (including Division Manager, Process Specialist and Operations Supervisors, Lead Operators) and there is a separate job description for each.

- Westminster – Plant operator I = D certification, Plant operator II = C certification, Plant operator III = B certification, plant operator IV = A certification.
- Loveland – Tasks and routines are very similar; responsibilities increase by license.
- Categorized by Certification Level Plus Responsibilities and Performance – 1 community (*Longmont*)
 - Operation and maintenance responsibilities are combined. There are two levels:
 - Operation and Maintenance Technician
 - Lead Operation and Maintenance Technician
 - Employees have an “area of emphasis” but are cross-trained
 - Eligible for skill-based pay (progressive certification)
- Two Categories – 1 community (*Greeley*)
 - Greeley – Operators A, Plant Operators (no license to a “B” certification)
- One Category – 1 community (*Ft. Collins*)
 - Plant Operator with performance criteria incorporated certification level.

45) Designated Lead, Foreman or Chief Operator per Shift

- Yes – 4 communities (*Boulder, Ft. Collins, Greeley, Littleton*)
 - Job Title:
 - Boulder - Chief Operator
 - Ft. Collins - Lead Operator (*each operator rotates through lead position. Not compensated differently for lead position duties*)
 - Greeley – Supervisor or seniority determine authority
 - Littleton - Supervisor
- No – 4 communities (*Longmont, Loveland, Westminster, Cheyenne*)
- Unclear if Lead by Shift – Broomfield. One Chief Plant Operator who is responsible for both operations and biosolids and one Chief Plant Operator who is responsible for maintenance including odor control.

46) Number Operators on Duty Per Shift

Shifts	Boulder	Broomfield	Ft. Collins	Greeley	Littleton*	Longmont	Loveland	Westminster	Cheyenne
Weekday	2	1	1	2	2	2	1	2	2
Weeknight	1 (12:00 am - until 5 am)	0	1	2	2	0	1	2	2
Weekend Day	2	1 (+1 biosolids operator)	1	2	2	2	1	2	2
Weekend Night	2	1	1	2	2	0	1	2	2

**Littleton always has 2 operators although sometimes there may be 4 to 8 operators on duty depending on the shift.*

47) Approach to Safety/Security During Single-Operator Shift

Approach to Safety/ Security	Boulder	Broomfield	Ft. Collins	Loveland	Westminster	Cheyenne
Stays in Operations Center	X					
Cell Phone/ Radios		X		X		X
Regular Call to Supervisor			X			
Built in “man down” monitor in SCADA					X	
Monitor SCADA	X					

48) Designated “Lead” Operator When Two or More on Shift

- Yes – 5 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton*)
- No – 4 communities (*Longmont, Loveland, Westminster, Cheyenne*)
 - Cheyenne – senior operator typically takes overall responsibility for shift.

49/50/57) Other Duties Assigned to Operators

Other Duties	Boulder	Broomfield	Ft. Collins	Greeley	Littleton	Longmont	Loveland	Westminster	Cheyenne
Maintenance	X	X	X	X (minor)	X	X	X (some)	X	X
Maintaining/ Calibrating On- Line Wastewater Process	X (some TSS, majority done by other staff)		X (some)	X	X	X	X (some)	X	X
Custodial	X (some site cleanup duties)	X	X	X	X		X (some)	X	X
Admin.		X	X		X		X (some)		X
Public Tours of WWTP	X								
Off-Site Facilities	X (raw sewage lift station)								X (other WRF)

51/52) Cogeneration Process at WWTP

- Yes – 2 communities (*Boulder, Littleton*)
 - Boulder – since 1986. One Cogeneration Technician (specialized Industrial Mechanic) – part of Maintenance Staff
 - Littleton - High maintenance cost (due to insufficient methane gas treatment for siloxanes) stopped the practice as it was not financially beneficial to continue the co-gen process. Generators are being reconfigured for emergency use

only, fueled by natural gas. No dedicated staff. However, outside contractors have inquired about running the system under license (we are currently considering this approach).

- No – 7 communities (*Broomfield, Ft. Collins, Greeley, Longmont, Loveland, Westminster, Cheyenne*)
 - Longmont – currently being evaluated.

53) Process Control/ Optimization Needs at WWTP

- How does the WWTP enhance, focus or respond to process control/optimization needs?
 - Boulder – 1 Process Optimization Specialist on staff (non-operator), part of “Administrative” workgroup.
 - Broomfield - The duty operator reviews information with the Chief Plant Operator. No specialized or dedicated staff position.
 - Ft. Collins - Process control staff (ops and process control supervisor) for day to day. Process control staff, Maintenance utilities engineering, management and consultant for capital needs. All disciplines involved.
 - Greeley – dedicated process analyst position
 - Littleton – A process specialist is responsible for monitoring/setting process operating parameters. A very robust SCADA system helps staff monitor, adjust and maintain process operation.
 - Longmont, Loveland & Cheyenne – no dedicated staff.
 - Longmont - No dedicated staff – all operations personnel and the operations supervisor are responsible for process control and optimization. The Water Quality Laboratory assists with process control sampling and testing.
 - Westminster - All operations staff including the superintendent continuously look for and implement optimization needs, operations staff and the lead plant operators respond to process control issues.

54) WWTF Serves as After-Hours Call Center

- No – 9 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Loveland, Westminster, Cheyenne*)

55) Clerical Assistance During Day at WWTF

- Yes – 8 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Westminster, Cheyenne*)
 - 1 Staff Person – Boulder, Ft. Collins, Greeley, Littleton, Longmont, Cheyenne
 - 1 Part-Time Staff Person – Broomfield, Westminster
- No – Loveland

56) Operator Moves Freely about WWTF for Equipment and Process Checks (*does not feel “confined” to control room due to phone, SCADA, etc.*)

- Yes – 9 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Loveland, Westminster, Cheyenne*)
 - Boulder – 5am to midnight each day operators can move freely. Single-staffing issues arise 5 nights per week (for 5 hours). There are two (2) shared cell phones for use by Operations staff.

- Ft. Collins – Monitoring capability is throughout the plants. We can monitor both plants from either plant from multiple locations on each plant site. There is also a phone rollover to Ops phone when admin aide is gone for the day.
- Littleton - SCADA access is available in all process areas and process alarms are sent, via text message, to cell phones carried by area operators, supervisors, IT and managers.
- Westminster – SCADA terminals and phone throughout the facility.

58/59) WWTF Sludge Processing and Biosolids Handling Onsite

- Yes – 9 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Loveland, Westminster, Cheyenne*)
 - Yes, Dedicated Staff – 4 communities
 - Boulder – The Resource Recovery Workgroup manages biosolids and sludge processing. There are five (5) staff in the RRS workgroup: Supervisor, Chief Operator, two (2) Operators, and Industrial Mechanic.
 - Broomfield – One dedicated staff member responsible for the operations of the centrifuges. Job Title - Wastewater Equipment Technician. We have two plant operators trained as backups to cover leaves, etc. Supervision is the responsibility of the Chief Plant Operator who oversees operations.
 - Ft. Collins - Three staff members are dedicated to Resource Recovery. These positions duties start after the dewatering process is complete. Titles: Resource Recovery Crew Chief (1 FTE); Resource Recovery Specialist (2 FTE)
 - Littleton – A Beneficial Use division consists of one supervisor and four beneficial use operators to manage biosolids transport, application documentation and reporting. Dewatering activities are performed by Operations Division staff.
 - No, Dedicated Staff – 5 communities (*Greeley, Longmont, Loveland, Westminster, Cheyenne*)
 - Greeley – Operators run process.
 - Longmont – O&M technicians have combined job responsibilities that minimize the existence of “silos.” We currently contract out sludge dewatering, land application and composting.
 - Westminster - Operations staff predominately handles biosolids processing. 3 equipment operators haul biosolids and land apply them at the City owned farm site.
 - Cheyenne – Operators operate rotary drum thickeners and centrifuges; one Biosolids Coordinator turns, samples and spreads dried sludge.

60) Anything Unique or Special about WWTF Operations

- **Boulder** – We have a Cogeneration Facility for backup/supplemental power and associated waste heat recovery. We have a Solar PV system as an alternative power source.
- **Broomfield** – We operate an 12 MGD IFAS treatment (BNR) system with a 6 MGD reuse facility.
- **Ft. Collins** – Biosolids are dewatered at the WWTP and then hauled approximately 25 miles by Resource Recovery staff to a City owned biosolids processing facility and land application site. The biosolids are air dried to approximately 90% total solids

and then applied to City owned rangeland. The rangeland is also utilized as a working cattle ranch. In addition to biosolids processing, Resource Recovery staff have responsibilities related to maintaining the 26,680 acre property.

- **Littleton** – We have several long-range programs:
 - An Apprentice Operator program is in place to train new operators and ensure certification advancement.
 - Our O&M manual is electronic (web based) and being developed to include knowledge management topics for all facility divisions.
 - An electronic Asset Management program is used to electronically document all maintenance activities. The program is also used for PM, housekeeping, knowledge management and training activities. The system is directly accessible through our SCADA system and work requests can be written from any SCADA terminal throughout the facility.
- **Longmont** – Similar to Water Treatment, we have initiated skill-based pay that allows O&M technicians to earn extra pay per hour for working in selected areas, as the need is identified. Although all the technicians are eligible for skill-based pay and must participate in the program, extra work is not automatically assigned and not all technicians will receive skill-based pay in any given year. There must be a defined need in order to have cross-trained workers in the skill block areas (mechanical maintenance, instrumentation/process control, water/wastewater operations, or SCADA/HMI programming). Although it is not unique to our operation, we have been able to reduce staffing and O&M costs through the use of automation, cross-training, and planned and predictive maintenance (effective implementation of a CMMS). We also share maintenance personnel between water and wastewater, which reduces the excess personnel involved in having separate groups for each treatment area. We currently contract out sludge dewatering but may bring that operation back in house in the future; doing so would probably require the addition of one O&M technician.
- **Westminster** – Yes, the operations staff and maintenance staff are also required to operate and maintain the City’s reclaimed water treatment facility adjacent to the WWTF.

SECTION IV: WASTEWATER TREATMENT FACILITIES (WWTF) MAINTENANCE

61-62) Dedicated Electrical, Electronic, Mechanical and/or IT Maintenance Staff at WWTF

	Boulder	Broomfield	Ft. Collins	Greeley	Littleton/ Englwood	Longmont	Loveland	Westminster	Cheyenne, WY
Dedicated	Yes	No. Contract out major electrical and I&C.	Yes	No.	Yes	Yes. Share resource with WTF, WWTF, collection/distribution.	No. Tech Services serves WTF and WWTF	Yes. Share resources between WTF and WWTF	Yes
Number of Dedicated	9	3	10	N/A	5	1		1.5	3
Job Titles	Supervisor, Industrial Mechanics, Cogeneration Technician, Instrumentation and Controls Technician, Electronics Technician, Maintenance Person III positions, Maintenance Person II position	Chief Plant Operator (Supervisor responsible for maintenance program), Wastewater Equipment Technicians (<i>corrective and preventative maintenance</i>)	Maintenance/ Instrumentation & Electrical Supervisor, Instrumentation & Electrical Technicians, ICE team (<i>O&M SCADA & maintain system for WTP & WWTP</i>)	N/A	SCADA Administrator, Electrical/ Instrument Specialist, PC/systems administrator, Instrumentation and controls/ SCADA specialist, Data Analyst	Electrician		Electromechanic Specialist, Senior Maintenance, Instrumentation & Control Systems Engineer	Operator/ Maintenance (all required to be certified operators)

63-65) Maintenance Staff Responsibilities

	Boulder	Broomfield	Ft. Collins	Greeley	Littleton/ Englwood	Longmont	Loveland	Westminster	Cheyenne, WY
Handle Off-Site Utility Facilities*	Yes. 1 raw sewage lift station	No	Yes <i>(fabrication duties for other dept)</i>	No	No	Yes. 2 lift stations	Yes, Tech Services	Yes. Electromechanic in charge of reclaimed distribution vaults	No
On-Call After Hours Respond Equipment Failures	Available but not on-call	Yes	Call in system	Yes	Yes	Not from maintenance.	Yes, Tech Services	Yes	No
Number On-Call at One Time	N/A	1	N/A	1 Maintenance Supervisor carries cell 24/7 unless assigns to 1 mechanic to on call.	2 maintenance mechanics on stand-by	1 O&M technician assigned call out duty for after hrs at WWTF	1 from Tech Services	1 electromechanic on weekends	N/A
Paid for On-Call	Not paid to be on-call. If respond, paid OT.	For each hr of on-call duty, paid one-eighth hr at their straight-time rate.	No pay for on-call. Pay as needed. Supervisors called first.	Supervisor is exempt. Mech. gets OT	Paid standby duty per Association policy at 8 hrs of regular pay for 1 wk stand-by duty		Some pay for being on call (not OT) but extra pay including OT would come if called out	1 hr on-call pay for every 4 hrs on call. 18 hrs on call pay for each day.	N/A.

*Off-site utility facilities such as lift stations.

66) Maintenance Staff Regularly Scheduled to Work Nights or Weekends (days or nights)

- No – 9 communities (*Boulder, Broomfield, Littleton, Loveland, Ft. Collins, Greeley, Longmont, Westminster, Cheyenne*)
 - Regular Schedule: M-F, days

67) Maintenance Staff Use Computerized Maintenance Management System

- Yes – 8 communities use the following:
 - Boulder – MP2 (by Infor/Datastream) used as CMMS
 - Broomfield – Antero by Allmax and Operator 10
 - Ft. Collins – Developed in-house by ICE team
 - Greeley – Antero by Allmax and staff uses dataports rather than paper workorders.
 - Littleton – Infor EAM
 - Longmont – Antero (Allmax) [*same as WTF*]
 - Loveland - CityWorks
 - Westminster – Accela product [*implementation phase at WTF*]
- No – 1 community (*Cheyenne*)

68-69) Janitorial Work/ Maintenance of Grounds

- **Janitorial Work Accomplished by:**
 - WWTF Staff – Greeley, Loveland (*Plant Grounds and Building Maintenance staff with operator assistance at times*)
 - Other City Staff – Broomfield (*City's Facilities Division - responsible for all janitorial work throughout city*)
 - Contract – Longmont, Westminster
 - WWTF Staff & Contract – Boulder, Ft. Collins, Littleton, Cheyenne
 - Boulder - Maintenance Person II position performs the majority of the janitorial duties. Some areas (Administration building and lab) use a contract cleaning service.
 - Ft. Collins – Staff for outlying areas and city-wide contract is used for administration and lab areas.
 - Littleton – Administrative building janitorial work is contracted through the City of Englewood building services. Some janitorial site work is performed by plant facilities maintenance staff.
 - Cheyenne – Administration building is contracted.
- **WWTF Grounds Maintenance Accomplished by:**
 - WWTF Staff – Cheyenne, Ft. Collins, Loveland
 - Ft. Collins - on-site seasonal hourly and utility staff combination
 - Loveland - Plant Grounds and Building Maintenance staff with operator assistance at times
 - WWTF Staff & Contract – Boulder, Littleton, Longmont

- Boulder - Maintenance Person III (Grounds) position maintains the WWTF grounds. Other WWTF staff assist with special projects, including weed cutting and snow removal. Large projects like tree removal are contracted out.
- Littleton - Mowing and irrigation maintenance is done by plant staff. Weed spraying, aeration, snow removal is contracted.
- Longmont - Grounds care by contract, snow removal by staff (with assistance as needed from Streets).
- WWTF Staff & Other City Staff – Broomfield, Greeley
 - Broomfield - mowing and tree care done by City Park’s Division; snow removal WWTF staff
 - Greeley – Staff takes care of mowing and snow removal, city forester takes care of trees.
- WWTF Staff & Other City Staff & Contract – Westminster (*Contract mowers, City tree care, plant staff are in charge of snow removal.*)

70) Anything Unique or Special about WWTF Maintenance

- **Boulder** – Maintenance staff can accomplish the majority of the 120V wiring and controls wiring work (new or retrofit) in-house.
- **Ft. Collins** – Major focus on predictive and preventive maintenance. Includes infrared scanning electrical equipment, oil analysis on mechanical equipment, vibration analysis, laser alignment, etc.
- **Littleton** – Maintenance is conducted through a separate maintenance division (staff split for process-specific maintenance and non-process specific facilities maintenance). Preventive and predictive maintenance is conducted to minimize emergency and break-in repairs.
- **Longmont** – Maintenance staff works at both water and wastewater treatment plants and also maintains pump stations and lift stations in the distribution and collection systems. This is not particularly unique; many municipalities are either doing this or will be. We encourage all staff with a maintenance specialty to become trained and certified in operations areas. As mentioned previously, staff is cross-trained and we use skill-based pay.
- **Westminster** – Yes, maintenance staff is required to maintain the City reclaimed water treatment facility adjacent to the WWTF.

SECTION V: WATER AND WASTEWATER QUALITY SERVICES

71) Organizational Charts for each Community

- Greeley –
 - Water – Duties assigned to Boyd and Bellvue Plant staff as “other duties”. See attached organizational chart.
 - Wastewater - Division Manager oversees the following: Op Sup - 8 Ops; Maint Sup - 4 Techs; IPP Sup - 2 Techs; Lab Sup - 2 Analysts; Proc & Inf Analyst - 1 Analyst; Admin Spec - 1 Specialist
- Littleton –
 - WTP – N/A
 - WWTP (see attached organizational chart)
 - Pretreatment (7 total)
 - Laboratory (6 total)
 - Safety (1)
 - Regulatory Programs Administrator (1)
- Westminster – One Water Quality Administrator, 2 Water Quality Specialists, Water Plant: 2 chemists, 1 lab analyst, 1 lab aide; Wastewater Plant: 2 chemists, 1 lab analyst

72) Drinking Water Quality Compliance Program

- Yes – 9 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Loveland, Westminster, Cheyenne*)
 - Boulder – Raw water quality management (source water protection); treated water system compliance monitoring; treated water system modeling; water quality emergency response and customer complaint response; backflow prevention and compliance; laboratory analysis (non certified).
 - Broomfield – Environmental Laboratory staff on the left hand side of the organizational chart are responsible for drinking water quality compliance. Activities include: raw water influent, treated water, process control, backflow prevention.
 - Ft. Collins – Both raw and treated waters are monitored. A Cross-Connection Control Program is part of the Utility’s Water Engineering & Field Services Operations (WEFSO) Department. See org. chart for staff.
 - Greeley – THE PLANT’S STAFF (“A” OPERATORS) ADMINISTER THE RAW AND TREATED PROGRAMS. WATER ADMINISTRATION DIVISION HANDLES THE BACKFLOW PROGRAM AND ADMINISTRATIVE COMPLIANCE ISSUES. ONE FULL TIME REGULATORY COMPLIANCE COORDINATOR WITH WATER & SEWER SERVICES COORDINATOR SPENDING APPROXIMATELY 30% OF HER TIME ON BACKFLOW. OPERATIONS MANAGER, WATER SYSTEM ENGINEER AND DISTRIBUTION SUPERINTENDENT ALSO ASSIST ON BACKFLOW PROGRAM. Wastewater - NA
 - Littleton – WTF: One person is our Water Production Administrator who is responsible for assuring all regulatory requirements are met as well as Water rights are adhered to. WWTF: Regulatory Programs Administrator is

responsible for monthly DMR reporting and all activities regarding facility permitting for all air and water related permits. Facilities maintenance supervisor takes care of the backflow prevention program.

- Longmont – The Water Quality Laboratory and Environmental Services staff handle drinking water compliance issues, including monitoring and data analysis of distribution system and watershed sampling. Environmental Services works with the Operations staff to insure compliance in raw water, drinking water treatment and distribution. There is no dedicated staff for this work, but approximately 1 FTE of staff time is used for drinking water-related issues. Backflow prevention certification is contracted out; the program is managed by Utilities (distribution and collection) O&M .
- Loveland – The City of Loveland Water Quality group includes a total of 5 employees. 2 Water Quality Analyst I, 2 Water Quality Analyst II and 1 Water Quality Coordinator. These analysts staff both the water and wastewater labs and perform sampling, analysis, reporting. Activities include: WTP raw water, WTP treated drinking water, WTP reservoir monitoring, WTP algae monitoring, WTP/WWTP regulatory testing & reporting, WTP/WWTP Process control, WWTP 503 sludge analysis.
- Westminster – The drinking water programs cover raw water, treated water, distribution system monitoring, and a large lake and watershed monitoring program. The watershed monitoring is shared with Northglenn, Thornton, Arvada, Golden, and several municipalities in the Clear Creek Watershed.
- Cheyenne – Yes. Raw and treated water quality...all aspects. Two folks; Laboratory Supervisor and Senior Laboratory Technician.

• **Highlights for Responses on WQES (questions #73, 77, 78)**

QUESTIONS – Dedicated Staff to:	Boulder	Broomfield	Ft. Collins	Greeley	Littleton/ Englwood	Longmont	Loveland	Westminster	Cheyenne, WY
Monitor Water Systems*	5	7	2.5	No	Process control & discharge testing – Staff (6.5) & Contract Labs.	No	5	4	2
Monitor & Test WW & Receiving Surface Water Systems	1	5	8.5	1	5.5	No. Sampling team.	5 (same group as Water)	4 (same group as Water)	No.
Industrial Pretreatment Program	2.5	3	2.5	3	7	1	1	No, WQ Administrator handles.	1

*Monitor Water Systems could include: raw water, transmission & distribution, treated water storage, customer complaints, lab tests

74-75) Raw Water Supply Monitoring Program or Source Water Assessment Plant

- Yes – 9 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Loveland, Westminster, Cheyenne*)
- Monitoring Program or Assessment Plan Conducted by:
 - In-House Staff – Boulder, Broomfield, Littleton
 - Combination In-House and Outsourced – Greeley, Longmont, Loveland, Westminster, Cheyenne

76) Water Conservation Program

- Yes – 7 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Longmont, Westminster, Cheyenne*)
 - 0 staff – Longmont (work done by various people in Environmental Services)
 - .5 FTE - Westminster
 - 1 staff – Boulder, Broomfield, Cheyenne
 - 2.3 FTE & 4 Hourly – Ft. Collins (staff not in Laboratory; located in Utilities Customer and Employee Relations Department)
 - 3 FTE & 4 Seasonals – Greeley (in Water Resources Division)
- No – 2 communities (*Littleton, Loveland*)

79) Number of Significant Industrial Users Regulated

- 2 – Loveland
- 4 – Westminster
- 10 – Cheyenne
- 11 – Longmont
- 12 – Greeley
- 14 – Boulder, Ft. Collins
- 17 – Littleton

80) Operate Analytical Laboratory for Water &/or Wastewater Analysis

- Water & Wastewater – Boulder, Broomfield, Ft. Collins, Longmont, Loveland, Westminster
- Wastewater & Limited Water – Greeley, Littleton, Cheyenne

81) Outsource Any Water Quality Analyses for Water or Wastewater Operations or Compliance

- Yes – All communities. The following is outsourced:
 - Boulder – Required treated water distribution system monitoring that requires a certified laboratory is contracted to an outside laboratory.
 - Broomfield – WET tests for wastewater and radionuclides and for water.
 - Ft. Collins – Biomonitoring along with analyses for various NPDES-required potential organic chemical contaminants that routinely show "non-detect" levels.
 - Greeley – All COMPLIANCE TESTING IS OUTSOURCED TO STATE CERTIFIED LABORATORIES. DAILY LABORATORY TESTS ARE PERFORMED BY “A” OPERATORS. Wastewater - All metals, toxic organic pollutants and WET testing contracted out.
 - Littleton – WTF – in-house test for daily analysis info such as turbidity, alkalinity, Hardness, Ph, Cl₂ residual, TOC, etc. Other testing done by a private lab.; WWTF - Specialized testing (i.e. biosolids compliance testing and Whole Effluent Toxicity testing).
 - Longmont – metals and organic analyses
 - Loveland - Wastewater-biomonitoring, low level Hg & assorted metals; Water-VOC/SOC, MPA, giardia, crypto, DBP (TTHMs/HAA), TOC.
 - Westminster – All work in house except metals, Phase II & V organics, radiochem, and soil sample analysis for the biosolids program.
 - Cheyenne – Wastewater – very little. Water - use a “process laboratory” in-house. All regulatory required sampling is sent to EPA certified Lab.

82) Stormwater Compliance Program

- Yes – 7 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Westminster*)
 - Regulated under MS4 Permit
 - Yes – Boulder, Broomfield, Ft. Collins, Littleton, Longmont, Westminster
 - Number of Staff in Compliance Program
 - 1 FTE – Littleton, Westminster
 - 2 FTE – Ft. Collins
 - 3.5 FTE – Boulder (staff also cover other responsibilities)
 - 4 FTE – Longmont (staff also cover other responsibilities)
- No – Loveland (different dept.), Cheyenne

83) Public Education and Outreach Program to Support Regulatory or Non-Regulatory Programs

- Yes – 8 communities (*Boulder, Broomfield, Ft. Collins, Greeley, Littleton, Longmont, Westminster, Cheyenne*)
 - Boulder – 1.75 FTE; supports Keep It Clean Partnership
 - Broomfield – Couple of staff members that provide public education through Earth Day, Public Works Week, Broomfield Days community events, and to schools and community groups upon request.
 - Ft. Collins – See answer to #76. In addition, we have outreach and education department, including a manager, public relations coordinator, publicity technician, and senior communication specialist. (Please note that these positions support light and power utility as well).
 - Greeley – NO SPECIFIC DEDICATED STAFF BUT “OTHER DUTIES AS ASSIGNED” TO WATER CONSERVATION AND WASTEWATER DIVISION. Wastewater - Yes, 0.25 FTE
 - Littleton – WTP, 1 FTE; WWTP, tours, internship program, annual events.
 - Longmont – contract with Keep It Clean Partnership, water conservation done by Environmental Services staff and contractors
 - Westminster – outreach as part of Phase II permit, city functions, drinking water week, annual water festival
 - Cheyenne – FTE does water conservation program
- No – Loveland

84) Anything Unique or Special about WTF Operations

- **Boulder** – The City's water quality program is broad and covers Clean water Act and Safe Drinking Water Act compliance including wastewater treatment facility permit compliance, industrial pretreatment, stormwater permit compliance, drinking water program compliance, water conservation, regulatory compliance and negotiations with state and federal agencies and groundwater assessments.
- **Ft. Collins** – Exceptional laboratory facilities, staff, equipment, and program support.
- **Littleton** – WTP: No; WWTP: Actively involved with watershed issues and regulatory rule development.

- **Longmont** – Environmental Services division is made up of an unusual collection of work groups and provides a wide variety of services. These include water resources (raw water, water supply, water rights, and water conservation), the water quality laboratory, industrial pretreatment, stormwater compliance program management, regulatory monitoring & guidance for water and wastewater treatment and stormwater, distribution system sampling, watershed monitoring and the City’s sustainability initiatives. There are two Environmental Project Specialists that work in and support all these activities. The pretreatment coordinator also supports stormwater enforcement.
- **Loveland** – Large amount of sampling & analysis for regulatory & process control, customer complaints, source water programs and special projects completed with WQ group of 5. Algae program is very proactive. WQ assists other departments with projects such as; small water treatment system design and installation, Cl2 training, gas detector training, hazardous spills etc. Perform analysis for other utilities.
- **Westminster** – Westminster was the first lab in the state to purchase a FloCAM instrument for detection of quagga and zebra mussel veligers. Besides monitoring for invasive species, we do the algae/zooplankton monitoring mentioned above.