

JOURNAL OF COMMISSION WORK SESSION
March 5, 2013

City Commission Work Session

Mayor Winters presiding

CALL TO ORDER: 5:30 p.m.

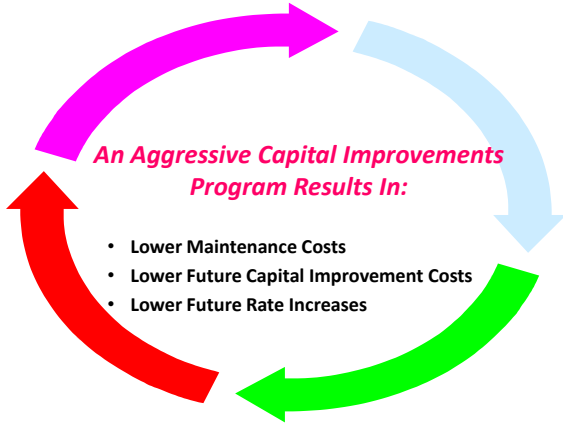
ROLL CALL: City Commissioners present: Michael J. Winters, Bill Bronson, Fred Burow, Bob Jones, and Bob Kelly.

STAFF PRESENT: City Manager; Deputy City Manager; Directors of Fiscal Services, Park and Recreation, and Public Works; City Engineer; Water Plant Supervisor; Utilities System Supervisor; Special Projects Engineer; Interim City Attorney; Police Chief; and the Deputy City Clerk.

1. UTILITY RATE ANALYSIS

Public Works Director Jim Rearden introduced Greg Dye, Black & Veatch, Helena; Wade DeBoo and Dustin Nett, Thomas, Dean, & Hoskins, Inc., Great Falls; Craig Caprara, HDR Engineering, Missoula; Travis Meyer, Morrison-Maierle Engineering, Helena; Craig Nowak, Morrison-Maierle Engineering, Great Falls; and Fiscal Services Director Melissa Kinzler. Mr. Rearden provided a PowerPoint presentation for water, wastewater, and storm drain utilities. Greg Dye of Black & Veatch, Helena, provided an update on possible improvements at the Water Treatment Plant, and Craig Caprara of HDR Engineering, Missoula, and Travis Meyer, Morrison-Maierle Engineering, Helena, discussed the Wastewater Treatment Plant project.

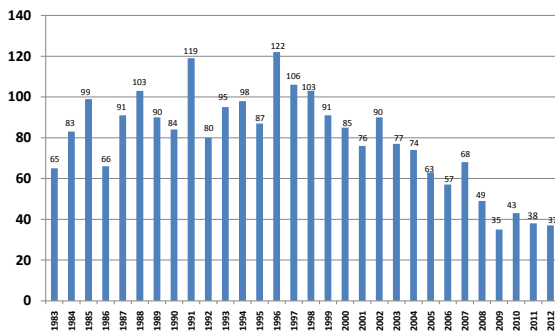
<p style="text-align: center;"><i>CITY OF GREAT FALLS UTILITIES</i></p> <p><input type="checkbox"/> Provides water, sewer and storm drain services to:</p> <ul style="list-style-type: none"><input type="checkbox"/> Approximately 18,700 Residential Properties<input type="checkbox"/> Approximately 2,300 Commercial Properties (64,000+ users) <p>This includes operations, maintenance, replacement, upgrade of 660+ miles of utility pipes, treatment plants and appurtenances.</p>	<p style="text-align: center;"><i>Proposed Rate Adoption Process</i></p> <ul style="list-style-type: none"><input type="checkbox"/> Proposed Rates are being presented at tonight's March 5, 2013 City Commission Work Session<input type="checkbox"/> March 5, 2013 - City Commission sets the Public Hearing Date<input type="checkbox"/> Public Notices will be published three times<input type="checkbox"/> Individual Customer Notices will be mailed<input type="checkbox"/> Public Hearing to be held at the April 16, 2013 City Commission Meeting<input type="checkbox"/> New Rates to take effect at least 10 days after City Commission adoption. Proposed for May 1, 2013.
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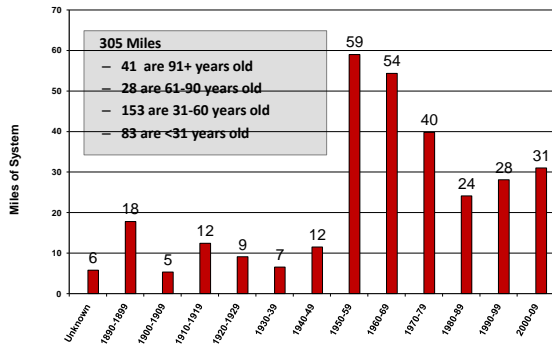
LIFE CYCLE COSTS

- **What does the CIP need to replace? When?**
 - Pipe 100 years
 - Structures 50 years
 - Equipment (pumps, etc.) 25 years
- **How much would it cost ?**
 - to replace the entire system
 - to replace the parts of the system, at the end of each part's useful life
 - in an average year
 - averaged over ten years
- **How much can we replace based on the proposed rates ?**

WATER MAIN BREAKS (1983-2012)



Water Mains Installed by Decade



WATER SYSTEM PIPE AGE COMPARISON

CITY	OLDEST PIPE	AVERAGE PIPE AGE
BILLINGS	1889	27.0
BOZEMAN	1888	30.0
KALISPELL	1924	31.4
GREAT FALLS	1890	40.1

WATER MAIN REPLACEMENT

YEAR	COST	FOOTAGE	MILES
2008	\$1,948,587	11,688	2.21
2009	\$2,187,471	17,672	3.35
2010	\$2,335,886	15,923	3.02
2011	\$1,556,083	13,072	2.48
2012	\$1,531,862	9,246	1.75
2013	Central Avenue Project	8690 lineal feet	

<p style="text-align: center;">Water Treatment Plant Facility Upgrades</p> <ul style="list-style-type: none"> • Purpose of Project: <ul style="list-style-type: none"> – Improve operator safety and accommodations – Bring treatment plant into regulatory compliance – Replace aging infrastructure – Improve reliability in operations and treatment – Improve site security and visitor access 	<p style="text-align: center;">Low Service Pump Station Upgrades</p> <ul style="list-style-type: none"> • Improve reliability by relocating motors out of potential flood zone • Add variable-speed-drives to provide for matching of pumping rates • Overhaul two pumps to improve operation and performance • Improve access to equipment
<p style="text-align: center;">Administration Building</p> <ul style="list-style-type: none"> • Training and conference room • Women and men’s locker rooms • Break room • Receiving area for water quality samples • Staff offices • Records storage • Visitor entry and site security 	<p style="text-align: center;">Machine Shop Upgrade</p> <ul style="list-style-type: none"> • Existing shop will be partially demolished to provide access for chemical delivery trucks • New shop will have: <ul style="list-style-type: none"> – Dedicated ventilation for painting operations – Dual voltage electrical service – Overhead crane for equipment handling – Separate space for welding
<p style="text-align: center;">Switchgear Replacement</p> <ul style="list-style-type: none"> • Existing equipment is 50+ years old. • Spare part availability is an issue. • Replacing failed parts requires shutdown of existing system. 	<p style="text-align: center;">Site Security Upgrades</p> <ul style="list-style-type: none"> • Standby generators to power facilities during a power outage • Wall around existing Substation • Bury overhead electrical feeder to Substation

Chemical Feed & Disinfection System Upgrades

- Disinfection
 - Inactivation of Cryptosporidium
 - Ultraviolet (UV) reactors
 - Hydraulic surge control
- Chemical Feed and Storage Systems
 - Ammonia
 - Lime
 - Future Corrosion Inhibitor
 - Sulfuric Acid

Site Upgrades

- Access for sludge removal trucks
- Parking for visitors and staff
- Piping to connect new facilities to existing system
- Electrical duct bank to power new facilities

Project Implementation

- Upgrades designed and constructed in multiple phases to accomplish financial objectives
- First priority is to address safety and regulatory requirements
- Second priority is to replace aging infrastructure and improve accommodations for workers
- Third priority is to address security and anticipated treatment needs
- Two phases are planned, Phase 1 and 2

Phase 1 Facilities and Cost Opinions

Upgrade	Opinion of Probable Cost
Pump Station	\$ 100,000
Chemical Feed & UV Disinfection	\$ 3,200,000
Switchgear Replacement	\$ 9,900,000
Administration Building	\$ 800,000
Machine Shop	\$ 700,000
Site	\$ 3,600,000
Subtotal	\$ 18,300,000
Construction Contingency (25% of Construction Cost Subtotal)	\$ 4,600,000
Opinion of Probable Construction Cost	\$ 22,900,000
Engineering, Legal and Administration (25% of Opinion of Probable Construction Cost)	\$ 5,700,000
Opinion of Probable Capital Cost	\$ 28,600,000

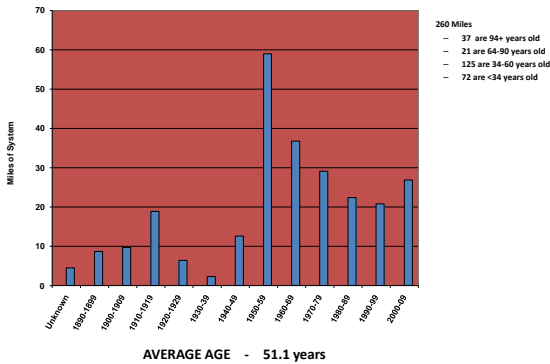
Phase 2 Facilities and Cost Opinions

Upgrade	Opinion of Probable Cost
Pump Station	\$ 1,000,000
Chemical Feed & UV Disinfection Expansion	\$ 3,000,000
Security	\$ 4,000,000
Site	\$ 2,400,000
Subtotal	\$ 10,400,000
Construction Contingency (25% of Construction Cost Subtotal)	\$ 2,600,000
Opinion of Probable Construction Cost	\$ 13,000,000
Engineering, Legal and Administration (25% of Opinion of Probable Construction Cost)	\$ 3,300,000
Opinion of Probable Capital Cost	\$ 16,300,000

Project Schedule

Milestone	Date
Notice to Proceed	August 2012
Preliminary Engineering Report	August 2013
Phase 1 Construction Bid Opening	August 2014
Phase 1 Construction Complete	December 2015
Phase 2 Engineering & Construction	TBD

Sewer Mains Installed by Decade



SANITARY SEWER COLLECTION REHAB AND REPLACEMENT

YEAR	COST	FOOTAGE	MILES	EMER. REPAIRS
2008	\$394,849	5,528	0.76	\$ 0
2009	\$133,494	4,000	1.05	\$149,735
2010	\$536,736	6,420	1.22	\$ 26,616
2011	\$1,218,161	11,475	2.17	\$ 55,745
2012	\$1,223,120	14,760	2.80	\$ 66,846

Increase sewer main rehabilitation from 20 blocks per year to 40 blocks per year.

MPDES Discharge Permitting

- Permit expired in 12/31/2004
- 6-year permit negotiation process
 - Multiple permit applications
 - Numerous meetings with MDEQ
 - Appeal of Permit
- Permit renewed on 12/1/2010

MPDES Discharge Permit Requirements

Parameter	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Interim Limits Effective Through Midnight November 30, 2013				
E. coli	cfu/100 mL	11,590	23,180	
Total residual chlorine	Mg/L	-	-	0.50
Effective December 1, 2013 Lasting Through the Term of the Permit				
E. coli, summer (Apr. 1 - Oct. 31)	cfu/100 mL	126	252	--
E. coli, winter (Nov. 1 - Mar. 31)	cfu/100 mL	630	1,260	--
Total residual chlorine	mg/L	0.026	--	0.035
Effective December 1, 2014 Lasting Through the Term of the Permit				
Ammonia	mg/L	2.18	--	3.25
Arsenic	mg/L	--	--	0.02
Copper	mg/L	0.016	--	0.019
Selenium	mg/L	0.005	--	0.006
Thallium	mg/L	--	--	0.01

MPDES Discharge Permit Requirements Permit Special Conditions:

- Plan for compliance with *E. coli* and total residual chlorine.
- Plan for compliance with total ammonia and metals (arsenic, copper, selenium, and thallium).
- Flow monitoring evaluation and plan for compliance.

Wastewater Permit Required Upgrades

- City Contracted with HDR/MMI in August of 2011 to provide:
 - Disinfection Alternatives Evaluation
 - Ammonia and Metals Compliance Evaluation
 - Mixing Zone Study
 - Flow Monitoring Evaluation
 - Final Design and Construction Services for Recommended Alternatives

Ammonia/Metals Removal Evaluation
Mixing Zone Study

- Study determined that mixing with the river will meet the permit discharge limits for metals.
- Cannot meet the discharge permit limits for Ammonia.
- MDEQ requires 10-12 months of river sampling prior to applying for mixing zone
- Application for a mixing zone requires a “major modification” to the discharge permit

Recommended Improvements

- **Ultraviolet Light Disinfection**
 - UV equipment pre-selection
- **Biological Treatment Expansion for Ammonia Removal**
 - Conversion to turbo blowers with fine bubble diffusion
 - Turbo blower equipment pre-selection
 - Nitrification/Denitrification capability
 - Expandable to BNR
- **Influent Pumping Improvements**
- **Flow Metering Improvements**

Disinfection and Ammonia Removal Improvements Project

Ammonia/Metals Removal Evaluation

- Major modification to the permit was submitted on 10/26/12
 - Modification requested mixing zone for metals and extension of *E. coli* and TRC limits to coincide with Ammonia
- Additional information requested by MDEQ on 11/23/12 and submitted on 12/20/12
- Major modification advertised for public comment on 2/19/13
- Comments due by 3/19/13

MPDES Discharge Permit Requirements

Parameter	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Interim Limits Effective Through Midnight November 30, 2013 - 2014				
E.coli	cfu/100 mL	11,590	23,180	
Total residual chlorine	Mg/L	-	-	0.50
Effective December 1, 2013-2014 Lasting Through the Term of the Permit				
E. coli, summer (Apr. 1-Oct. 31)	cfu/100 mL	126	252	--
E. coli, winter (Nov. 1 – Mar. 31)	cfu/100 mL	630	1,260	--
Total residual chlorine	mg/L	0.026	--	0.035
Effective December 1, 2014 Lasting Through the Term of the of the Permit				
Ammonia	mg/L	2.48-2.86	--	3.28-4.50
Arsenic	mg/L	0.0137	--	0.02-0.016
Copper	mg/L	0.046-0.0131	--	0.049-0.0206
Selenium	mg/L	0.005	--	0.006
Thallium	mg/L	--	--	0.94

Ammonia/Metals Removal Evaluation

- **Draft Permit Response**
 - Request postponement of metals limits until new process is operational (Bozeman MPDES Permit precedence)
 - Modify arsenic limits based on EPA “Technical Support Document for Water Quality-Based Toxics Control”, 1991
 - Set arsenic MDL equal to WLA (Deer Lodge MPDES Permit precedence)
 - Request copper limits be based on acute mixing zone factor of 0.8% meeting 15 minute criteria in the EPA guidance

Disinfection and Ammonia Removal Improvements

Overall Project Cost Summary

Project Element	Final Design Estimated Cost 3/5/2013
UV Disinfection	\$2,754,154
Bioreactor 1 and 2 Improvements	\$3,580,595
Bioreactor 3	\$5,502,080
Blower Building	\$3,466,385
Clarifier No. 4 (Bid Alternate A)	\$816,675
Flow Monitoring Improvements	\$3,364
Westside Pump Station Pump Addition	\$1,094,463
Pipe Gallery	\$720,653
Control Structure Modifications	\$549,883
Pipe Gallery (Bid Alternate B)	\$67,541
Total Construction Cost	\$18,105,793
Design Engineering	\$1,700,000
Construction Services	\$1,570,000
Total Project Cost	\$21,375,793

**Disinfection and Ammonia
Removal Improvements**

- **Next Steps**
 - Submit comments to MDEQ in response to the draft permit 3/19/13
 - Submit response to MDEQ comments on plans and specs 3/8/13
 - Finalize design 3/22/13
 - Advertise for bids 3/24/13
 - Open bids 4/23/13
 - Award Contract 5/7/13
 - Start Construction ~ 6/1/13

CITY OF GREAT FALLS

1" meter, 1250 ccf water, 650ccf sewer
7, 500 sq foot residential lot

2012		2013 (Proposed)		INCREASE
WATER	\$27.23	WATER	\$28.59	\$1.36
SEWER	\$20.82	SEWER	\$22.90	\$2.08
STORM DRAIN	\$4.27	STORM DRAIN	\$4.27	\$0.00
TOTAL	\$52.32	TOTAL	\$55.76	\$3.44

2013 CITY COMPARISON (Residential)
Monthly water and sewer costs based on:
1" meter, 1250 ccf water, 650 ccf sewer (With 5%
Increase Water & 10.0% Increase Sewer)

	WATER	SEWER	TOTAL
BOZEMAN	54.73	34.36	89.09
MISSOULA	67.44	19.32	86.76
KALISPELL	40.55	38.24	78.79
BUTTE	42.97	20.04	63.01
HELENA	36.28	22.56	58.84
BILLINGS	31.57	22.76	54.33
GREAT FALLS	28.59	22.90	51.49

Mr. Rearden provided handouts of a map of City sanitary sewer trenchless sewer linings since 1994 and a map of storm drainage improvements including 2010-2012 projects, future projects, and storm study areas.

Mr. Rearden discussed a five-year water system capital improvement plan and projected cash flow analysis, with 5% rate increases.

Mr. Rearden discussed a five-year storm drain system capital improvement plan and projected cash flows analysis. No increases are projected.

Mr. Rearden discussed a five-year sanitary sewer system capital improvement plan and projected cash flow analysis, with a 10% increase this year.

ADJOURN

There being no further discussion, Mayor Winters adjourned the informal work session of March 5, 2013, at 6:44 p.m.