TO: **Board of Directors – Platte Canyon Water and Sanitation District**
Board of Directors – Southwest Metropolitan Water and Sanitation District

FROM: **Scott Hand, Operations Supervisor**

THROUGH: **Cynthia Lane, General Manager**

DATE: **November 1, 2021**

SUBJECT: **Maintenance Goals for 2022**

The following projected maintenance schedule for 2022 identifies the maintenance levels and the manpower requirements needed to fulfill the proposed maintenance goals for the Platte Canyon, Southwest Metropolitan, Bow Mar and Columbine Water and Sanitation Districts and Valley Sanitation District. These goals have been determined to be necessary for the effective, efficient, and economical operation of the Districts' water distribution and wastewater collection systems.

The maintenance goals prescribe the frequency in which the various infrastructure maintenance activities are performed. For example, all water gate valves are fully exercised or inspected once each year. All fire hydrant maintenance tasks are performed once each year. All sewer mains are televised at least once every four years and re-televised, cleaned, root-cut, or chemically treated for roots on an "as needed" basis. A more detailed description of each maintenance activity is referenced in this memo, as well as in the Districts' maintenance job standards.

The maintenance activities to be performed in 2022 are scheduled throughout the year by considering job standards, manpower requirements, equipment levels and reliability, and expectations of time needed to perform non-routine maintenance activities. Manpower requirements are developed by applying the District's job standards to the maintenance task schedule. By applying the number of man-hours required to complete each maintenance task (job standards) to the number of maintenance tasks to be completed, the total man-hours required to complete the maintenance schedule is calculated. Through several iterations of schedule development, the optimum combination and level of permanent and seasonal labor requirements is calculated.

Maintenance Goals - 2022

Quality Assurance will continue to be the focus and emphasis of maintenance operations in 2022. Quality assurance procedures enable the operations supervisor and foreman to monitor and control the quality of work being produced. For water related activities, completed work orders are submitted by all maintenance employees to the operations supervisor after the activities are completed. The operations foreman inspects randomly selected assets to confirm the assigned work has been completed in accordance with job standards. Then, he documents and assigns any needed follow up maintenance. Deficiencies are reported to the operations supervisor for review and correction and are noted on each employee's monthly productivity report.

Sewer maintenance activities are also monitored by the operations supervisor. Random work orders are compared to the television inspection video produced in the field to ensure the accuracy of the information logged in the work order. The quality and accuracy of these reports are also incorporated into the employees' monthly productivity reports.

The Districts will continue to rely on the Infor computerized maintenance management system (CMMS) to schedule, generate work orders and record all maintenance activities. The CMMS supports the Districts' mobile workforce effort which eliminates paperwork orders and maintenance records. Laptop computers are issued to all operations employees and mounting equipment is installed in all maintenance vehicles. This equipment combined with the Districts' CMMS and Geographic Information System (GIS) has greatly enhanced the efficiency of conducting the various maintenance programs described in detail below.

The procedures for hydraulic root cutting of sewer mains that were implemented in 2006 continue to be very effective. Prior to implementation of revised root cutting procedures, no post-video inspection was conducted. It was discovered that even when cutting equipment was used properly, all roots were not being effectively removed. The revised procedures require television inspection of sewer mains as root cutting is conducted. This provides assurance that all roots are cut and removed from the pipelines. The procedure requires additional manpower but is essential for quality assurance and control.

The projected sewer maintenance schedule now reflects scheduled root treatment activities. Root treatment has been conducted since 2012 with more scheduled for 2022. Staff is currently developing an effective way to amend root cutting activities and incorporate additional root treatment activities into the scheduled maintenance. Vaporooter Sanifoam is a restricted-use-pesticide and requires certification from the Colorado Department of Agriculture to purchase and apply the chemical. All five operations staff have "certified applicator" certification. The operations foreman and I are "qualified supervisors". The District must have at least one qualified supervisor to oversee the certified applicators during chemical application.

It may be necessary to hire seasonal temporary employees to accommodate preventive water maintenance. For the past several years, maintenance goals have been accomplished with current

operations staff. Should a new or extended task arise, seasonal temporary employees would be considered to accomplish the maintenance goals.

In order to maintain high quality, effective water and sanitary sewer operation and maintenance programs, it is strongly recommended that current maintenance schedules and job standards be retained. The following Exhibits A, B, and C reflect current maintenance schedules, job standards, and proposed man-hours.

The Hourly Labor Distribution Table (Exhibit A) depicts the actual man-hours utilized for maintenance activities between 2017 and 2020, estimated man-hour allocations for 2021, and projected 2022 man-hour requirements necessary to complete maintenance tasks listed in Exhibit C. The Proposed 2022 Maintenance Schedule (Exhibit B) summarizes actual scheduled maintenance activities for 2021, estimated year end maintenance accomplishments, and 2022 proposed maintenance activities for Platte Canyon, Southwest Metropolitan, Bow Mar, Columbine and Valley. Exhibit C, Projected 2022 Maintenance, breaks down maintenance activities by month and district and allocates manpower requirements based on job standards for each activity.

Following is a brief description of the work to be completed for each maintenance activity.

Hydraulic Sewer Cleaning

Sewer television inspections have identified sewer problem areas that require periodical cleaning on a regularly scheduled basis. Maintenance crews hydraulically clean only those sewer runs that are known to be problem areas as determined by television inspections or previously reported deficiencies. The job standard for hydraulic sewer cleaning is 3,750 feet per day.

Root Cutting

Sewer television inspections have identified sewer problem areas that require periodical root cutting on a regularly scheduled basis. Maintenance crews mechanically cut only those sewer runs that are known to be problem areas as determined by television inspections or previously reported deficiencies. The job standard for root cutting is 2,250 feet per day.

Root Treatment

Sewer television inspections have identified sewer problem areas that require chemical applications to kill and reduce root growth intruding into the sewer mains through pipe joints, broken pipes, and customer's service laterals. Maintenance crews apply the chemical only to those sewer runs that are known to be problems area as determined by television inspections or previously reported deficiencies. The job standard for root treatment is 2,500 feet per day.

Television Inspections

The District has adopted a plan to televise every sewer reach on a four year rotating cycle. In addition, television inspections occasionally identify sewer reaches that require inspection at more frequent intervals. A sewer main rating system is used to determine future scheduling for all sewer maintenance activities. The rating is based on the observed structural integrity and root content of each reach compared to the rating condition standards. Each sewer reach is prioritized for future maintenance as follows:

Condition **(Priority, condition 5 being highest)**	**Re-Televise Schedule** **(According to Condition)**
1	4 year intervals
2	2 year intervals
3	1 year interval
4	6 month intervals
5	3 month intervals

The job standard for television inspections is 3,500 feet per day.

General Scheduled Maintenance

General scheduled maintenance activities include those that are performed on a recurring daily, weekly, or monthly basis. These activities include:

- Pump stations inspection and maintenance
- Lift station inspection and maintenance
- Vehicle maintenance
- Staff and safety meetings
- Pressure monitoring

General Unscheduled Maintenance

General unscheduled maintenance activities include those that are performed on an "as needed" basis, but are necessary tasks requiring significant man-hours. These activities include:

- Customer service
- Utility locations
- Building and landscape maintenance
- New water and sewer service inspections
- Warranty inspections
- Messenger service
- General maintenance of facilities
- Corrective maintenance
- Overlay operations
- Maintenance administration
- Water and sewer emergencies

The Jefferson County Street Overlay Program is an unscheduled maintenance item which is projected into the maintenance schedule and may impact scheduled activities and manpower requirements. A schedule from the County will not be available until the first of the year. These overlay programs usually require an additional two man crew from the district.

Distribution System Flushing

In order to maintain high quality drinking water, it is necessary to flush and test water quality at dead end water mains at least once a year. This is accomplished by opening a blow-off valve or fire hydrant and flushing that main line until the water runs clear. Crews will then perform water quality testing at each site, meeting the criteria set forth by Denver Water for chlorine residual and temperature. The entire system is flushed and tested annually. The job standard for distribution system flushing is 30 units per day.

Fire Hydrants – Service Cycle

Fire hydrant service cycle maintenance consists of exercising the branch valve, operating the hydrant, oiling and greasing the operating mechanisms, recording static pressure reading, and checking for leaks and proper drainage of the hydrant. These activities are performed biennially. The job standard for fire hydrant servicing is 25 units per day.

Fire Hydrants – Inspection Cycle

Fire hydrant inspection cycle maintenance consists of inspecting the branch valve, operating the hydrant, oiling and greasing the operating mechanisms, recording static pressure reading, and checking for leaks and proper drainage of the hydrant. These activities are performed biennially. The job standard for fire hydrant inspections is 30 units per day.

Fire Hydrants – Painting Cycle

Fire hydrant painting cycle consists of removing dirt and grease from the hydrant, which sometimes requires the use of sand blasting equipment. Paint is applied using pneumatic spraying equipment. The hydrants are painted biennially on the Service – Inspection Cycle. The job standard for fire hydrant painting is 50 units per day.

Valves – Exercise Cycle

Water valves are exercised biennially by completely operating the valve and counting the turns based on valve size. The valve box is painted to identify the opening direction, as well as the position of the valve. The job standard for valve exercising is 30 units per day.

Valves – Inspection Cycle

Water valves are inspected biennially by placing a valve key on the valve nut and confirming position of the valve. The valve box is painted to identify the opening direction, as well as the position of the valve. The job standard for valve inspections is 40 units per day

Pressure Reducing Valves

P.R.V.'s are maintained and inspected annually. The valves which isolate the P.R.V. are exercised and painted. Flushing of all the plumbing is performed and well as confirmation of proper operation. Upstream and downstream pressures are taken and recorded. These valves are used to reduce pressure between hydraulic zones. These valves are critical for the proper and efficient operation of the Districts' water systems. The job standard for pressure reducing valve maintenance is 5 units per day.

Air-Vacuum Valves

Air-vacuum valves are inspected biannually, once in the winter months to wrap the standpipe to prevent freezing, and then again in the spring to remove the wrapping from the standpipe. During each visit the hand valves are exercised and the assemblies are flushed to confirm proper operation and system tightness. The valves are used to allow air to enter water mains during isolation procedures and also to allow air to exit the water mains during filling. The job standard for air-vacuum valve maintenance is 10 units per day.

EXHIBIT A

Hourly Maintenance Labor Distribution (2017-2022)

DISTRICT	2017	2018	2019	2020	2021[1]	2022[2]
Platte Canyon Maintenance						
Regular Full-time	3,887	3,775	3,312	3,773	3,588	5,006
Regular Overtime	108	207	125	87	133	132
Temporary – Seasonal	0	0	0	0	0	0
Total Hours	**3,995**	**3,982**	**3,437**	**3,860**	**3,721**	**5,138**
Southwest Metro Maintenance						
Regular Full-time	7,524	7,230	7,673	7,430	7,616	8,280
Regular Overtime	138	140	270	226	172	189
Temporary – Seasonal	0	0	0	0	0	0
Total Hours	**7,662**	**7,370**	**7,943**	**7,656**	**7,788**	**8,469**
Bow Mar Maintenance						
Regular Full–time	360	397	196	413	434	420
Regular Overtime	19	17	19	22	22	20
Temporary – Seasonal	0	0	0	0	0	0
Total Hours	**379**	**414**	**215**	**435**	**456**	**440**
Columbine Maintenance						
Regular Full-time	354	372	320	410	380	478
Regular Overtime	4	10	16	7	8	9
Temporary – Seasonal	0	0	0	0	0	0
Total Hours	**358**	**382**	**336**	**417**	**388**	**487**
Valley Maintenance						
Regular Full-time	464	586	605	771	524	568
Regular Overtime	38	31	20	71	64	45
Temporary – Seasonal	0	0	0	0	0	0
Total Hours	**502**	**617**	**625**	**842**	**588**	**613**
Regular Hours	**12,589**	**12,360**	**12,106**	**12,797**	**12,542**	**14,752**
Seasonal Hours	**0**	**0**	**0**	**0**	**0**	**0**
Overtime Hours	**307**	**405**	**450**	**413**	**399**	**395**
TOTAL HOURS	**12,896**	**12,765**	**12,556**	**13,210**	**12,941**	**15,147**

[1]Estimated actual hours worked

[2] Hours necessary to complete maintenance tasks listed in Exhibit C

EXHIBIT B
Proposed 2022 Maintenance Schedule

Sewer Maintenance	Platte Canyon	Southwest Metro	Bow Mar	Columbine	Valley	Totals (feet)
Television Inspection						
2021 Proposed	102,652	204,920	18,334	19,599	27,738	373,243
2021 Actual (est.)	110,905	205,155	18,334	19,599	28,516	382,509
2022 Proposed	**101,240**	**190,406**	**11,155**	**23,238**	**48,776**	**374,815**
Hydraulic Cleaning						
2021 Proposed	33,365	365,421	528	17,471	16,085	432,870
2021 Actual (est.)	48,027	302,130	1,620	9,931	16,866	378,574
2022 Proposed	**104,064**	**207,000**	**606**	**26,642**	**24,051**	**362,363**
Root Cutting						
2021 Proposed	34,837	6,123	0	0	7,818	48,778
2021 Actual (est.)	52,452	8,362	7,729	2,184	13,090	83,817
2022 Proposed	**32,890**	**3,364**	**9,161**	**2,276**	**6,490**	**54,181**
Root Treatment						
2021 Proposed	13,553	1,287	361	1,026	1,196	17,423
2021 Actual (est.)	0	0	0	0	0	0
2022 Proposed	**17,342**	**883**	**760**	**339**	**4,427**	**23,751**
Grease Interceptors						**(Units)**
2021 Proposed	140	412	--	12	--	564
2021 Actual (est.)	140	412	--	12	--	564
2022 Proposed	**140**	**412**	**--**	**12**	**--**	**564**

EXHIBIT B (continued)
Proposed 2022 Maintenance Schedule

Water Maintenance	Platte Canyon	Southwest Metro	Bow Mar	Columbine	Valley	Totals (feet) (units)
Valves						
2021 Proposed	1,171	3,171	137	--	--	4,479
2021 Actual (est.)	1,192	3,171	137	--	--	4,500
2022 Proposed	**1,173**	**3,174**	**137**	**--**	**--**	**4,484**
Fire Hydrants (Service)						
2021 Proposed	489	1,557	59	--	--	2,105
2021 Actual (est.)	489	1,556	59	--	--	2,104
2022 Proposed	**490**	**1,556**	**59**	**--**	**--**	**2,105**
Fire Hydrants (Paint)						
2021 Proposed	270	679	0	--	--	949
2021 Actual (est.)	270	679	0	--	--	949
2022 Proposed	**223**	**877**	**59**	**--**	**--**	**1159**
Distribution System Flushing						
2021 Proposed	148	491	3	--	--	642
2021 Actual (est.)	165	502	3	--	--	670
2022 Proposed	**148**	**492**	**3**	**--**	**--**	**643**
Pressure Regulating Valves						
2021 Proposed	11	19	--	--	--	30
2021 Actual (est.)	11	19	--	--	--	30
2022 Proposed	**11**	**19**	**--**	**--**	**--**	**30**
Air Vac Valves						
2021 Proposed	14	80	--	--	--	94
2021Actual (est.)	14	80	--	--	--	94
2022 Proposed	**14**	**80**	**--**	**--**	**--**	**94**

(Hourly Labor Distribution Table)
Leave Time for Projected Maintenance Report for 2022

1. There are **11 Holidays** each calendar year. Each employee has **88** hours, per year, for Holiday Leave Time.

2. Each employee has 2 days **Personal Time** or **16 hours** per year.

3. Each employee has up to 2 **Safety Days** or **16 hours** per year.

4. There are **2,000 total work hours available from each employee;** (250 days x 8 hrs.)

5. Vacation Leave Time is as follows:
   2 weeks (10 days) = (80 hours) – Through 5 Full Calendar Years
   3 weeks (15 days) = (120 hours) – 5-10 Full Calendar Years
   4 weeks (20 days) = (160 hours) – 10+ Full Calendar Years

Scott Hand:	Vacation	(20 days)	(160 hours)	
	Pers. Time	(2 days)	(16 hours)	
	Safety Days	(2 days)	(16 hours)	
Total Leave Time		**(24 days)**	**(192 hours)**	
Total Work Hours	(250 days x 8 hrs. = 2,000 – 192 hrs. =)			**(1,808 hours)**

Armando Quintana:	Vacation	(20 days)	(160 hours)	
	Pers. Time	(2 days)	(16 hours)	
	Safety Days	(2 days)	(16 hours)	
Total Leave Time		**(24 days)**	**(192 hours)**	
Total Work Hours	(250 days x 8 hrs. = 2,000 – 192 hrs. =)			**(1,808 hours)**

Bruce Yarish:	Vacation	(20 days)	(160 hours)	
	Pers. Time	(2 days)	(16 hours)	
	Safety Days	(2 days)	(16 hours)	
Total Leave Time		**(24 days)**	**(192 hours)**	
Total Work Hours	(250 days x 8 hrs. = 2,000 – 192 hrs. =)			**(1,808 hours)**

John Mathias:	Vacation	(20 days)	(160 hours)	
	Pers. Time	(2 days)	(16 hours)	
	Safety Days	(2 days)	(16 hours)	
Total Leave Time		**(24 days)**	**(192 hours)**	
Total Work Hours	(250 days x 8 hrs. = 2,000 – 192 hrs. =)			**(1,808 hours)**

Mike Chavez:	Vacation	(15 days)	(120 hours)	
	Pers. Time	(2 days)	(16 hours)	
	Safety Days	(2 days)	(16 hours)	
Total Leave Time		**(19 days)**	**(152 hours)**	
Total Work Hours	(250 days x 8 hrs. = 2,000 – 152 hrs. =)			**(1,848 hours)**

David Williams:	Vacation	(10 days)	(80 hours)	
	Pers. Time	(2 days)	(16 hours)	
	Safety Days	(2 days)	(16 hours)	
Total Leave Time		**(14 days)**	**(112 hours)**	
Total Work Hours	(250 days x 8 hrs. = 2,000 – 112 hrs. =)			**(1,888 hours)**

Ben Dorak:	Vacation	(10 days)	(80 hours)	
	Pers. Time	(2 days)	(16 hours)	
	Safety Days	(2 days)	(16 hours)	
Total Leave Time		**(14 days)**	**(112 hours)**	
Total Work Hours	(250 days x 8 hrs. = 2,000 – 112 hrs. =)			**(1,888 hours)**

New Hire:	Vacation	(9 days)	(72 hours)	
	Pers. Time	(2 days)	(16 hours)	
	Safety Days	(2 days)	(16 hours)	
Total Leave Time		**(14 days)**	**(104 hours)**	
Total Work Hours	(230 days x 8 hrs. = 1,840 – 104 hrs. =)			**(1,736 hours)**

*** Total 1,248 hours, Leave Time for <u>2022</u>.**

6. The **<u>Estimated</u>** hourly number is generated by the Crystal Report, named **"Laborhours.table.rpt".** Actual hourly number is divided by eight, that number is multiplied by twelve.

7. The **<u>Projected</u>** hourly number is figured as:

2,000 hrs. (Total hrs. available per employee) (250 days x 7 + 1,736 hrs)

<u>x 8</u>	(Total number of employees)
15,736	(Total man-hours combined)
<u>- 1,248</u>	(Combined leave - Vacation-Personal-Sick-Safety)
14,488	**(Total man-hours available - 2022)**

8. Add total hours projected for each District from projected maintenance spreadsheet (Exhibit C) for regular full-time hours.

9. Subtract regular full-time hours from actual hours needed to get seasonal hours required. Divide regular full-time hours to get percentage for seasonal hours needed.

10. Overtime hours are average hours from previous years.

11. Sick time is an average of 12 hours per month.

Projected Maintenance Worksheet with 8 Employees

1. To calculate total man-hours, multiply the actual number of working days by the actual hours worked (8) and then by the number of maintenance employees. Subtract **105 hours** allowed for Vacation, Personal Time, Sick Leave, and Safety Leave - **per month.**

2. Crystal Reports generate tasks to be completed.

3. General scheduled maintenance hours are pre-determined hours calculated from actual hours used to complete these tasks. These hours are not adjustable.

4. General unscheduled maintenance hours are hours which are calculated from past history. These hours are adjustable.

5. All man hours for tasks are calculated by dividing the number of tasks by a predetermined number for each task and then multiplying it by the number of hours it takes to complete this task. (See table below)

Sewer

Hydraulic Cleaning/Root Cut - Divide **3,250' per day** x 16 hrs. (2 men)

TV Inspections - Divide **3,500' per day** x 16 hrs. (2 men)

Root Treatment - Divide **2250' per day** x 16 hours (2 men)

Water

Valves - Divide **35 Valves per day** x 8 hrs. (1 man)

Hydrants - Divide **27 Hydrants per day** x 8 hrs. (1 man)

Hydrant Painting - Divide **50 Hydrants per day** x 16 hrs. (2 men)

Blow-offs - Divide **30 Blow-Offs per day** x 8 hrs. (1 man) - Water Quality Flushing of dead-end mains.

EXHIBIT C -- PROJECTED 2022 MAINTENANCE

	Platte Canyon		Southwest Metro.		Bow Mar		Columbine		Valley		Hours	
	Quanity	Hours	Quanity	Hours	Quanity	Hours	Quanity	Hours	Quanity	Hours		
January - 20 days - 1,176 Manhours												
Hyd. Cleaning	3,151	13	18,734	80	0	0	0	0	0	0	93	
Root Cutting	10,018	71	0	0	0	0	0	0	0	0	71	
Root Treatment	251	2	0	0	0	0	0	0	0	0	2	
T.V. Inspections	6,168	28	14,635	67	0	0	0	0	14,042	64	159	
Grease Traps	35	18	103	52	0	0	3	2	0	0	71	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		191		287		15		5		10	508	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		428		630		19		21		78	1,176	100.00%
February - 19 days - 1,112 Manhours												
Hyd. Cleaning	1,868	8	8,963	38	0	0	91	0	6,329	27	74	
Root Cutting	10,246	73	0	0	0	0	0	0	0	0	73	
Root Treatment	2,628	17	0	0	0	0	0	0	0	0	17	
T.V. Inspections	10,148	46	7,405	34	0	0	0	0	15,075	69	149	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		199		299		15		5		10	528	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		448		516		19		19		110	1,112	100.00%
March - 23 days - 1,368 Manhours												
Hyd. Cleaning	22,450	96	25,301	108	0	0	3,244	14	0	0	218	
Root Cutting	4,260	30	0	0	0	0	2,276	16	0	0	46	
Root Treatment	1,789	11	0	0	0	0	0	0	0	0	11	
T.V. Inspections	20,432	93	11,618	53	0	0	0	0	0	0	147	
Air Vac's	7	11	40	64	0	0	0	0	0	0	75	
Dist. System Flushing	17	5	73	19	0	0	0	0	0	0	24	
Valves	144	33	419	96	0	0	0	0	0	0	129	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		166		250		15		5		10	446	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		551		735		19		49		14	1,368	100.00%

EXHIBIT C -- PROJECTED 2022 MAINTENANCE

	Platte Canyon		Southwest Metro.		Bow Mar		Columbine		Valley		Hours	
	Quanity	Hours	Quanity	Hours	Quanity	Hours	Quanity	Hours	Quanity	Hours		
April - 21 days - 1,240 Manhours												
Hyd. Cleaning	9,518	41	15,083	64	0	0	91	0	0	0	105	
Root Cutting	0	0	0	0	0	0	0	0	0	0	0	
Root Treatment	2,460	16	100	1	0	0	0	0	1,720	11	27	
T.V. Inspections	13,637	62	1,564	7	0	0	0	0	0	0	69	
Grease Traps	35	18	103	52	0	0	3	2	0	0	71	
Dist. System Flushing	35	9	35	9	0	0	0	0	0	0	19	
Valves	194	44	420	96	0	0	0	0	0	0	140	
Hydrants	49	15	249	74	0	0	0	0	0	0	88	
Hyd. Painting	21	7	97	31	0	0	0	0	0	0	38	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		152		228		15		5		10	410	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		468		707		19		21		25	1,240	100.00%
May - 21 days - 1,240 Manhours												
Hyd. Cleaning	12,340	53	11,152	48	0	0	0	0	0	0	100	
Root Cutting	0	0	0	0	0	0	0	0	0	0	0	
Root Treatment	1,700	11	0	0	0	0	0	0	0	0	11	
T.V. Inspections	8,805	40	22,848	104	0	0	0	0	0	0	145	
Dist. System Flushing	13	3	45	12	3	1	0	0	0	0	16	
Valves	161	37	400	91	0	0	0	0	0	0	128	
Hydrants	106	31	165	49	59	17	0	0	0	0	98	
Hyd. Painting	35	11	88	28	59	19	0	0	0	0	58	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		153		229		15		5		10	412	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		444		707		56		19		14	1,240	100.00%
June - 22 days - 1,304 Manhours												
Hyd. Cleaning	13,589	58	9,985	43	0	0	2,280	10	2,380	10	120	
Root Cutting	0	0	0	0	0	0	0	0	0	0	0	
Root Treatment	897	6	245	2	0	0	0	0	0	0	7	
T.V. Inspections	12,919	59	14,285	65	0	0	2,189	16	0	0	140	
Dist. System Flushing	11	3	61	16	0	0	0	0	0	0	19	
Valves	135	31	406	93	0	0	0	0	0	0	124	
Hydrants	112	33	262	78	0	0	0	0	0	0	111	
Hyd. Painting	64	20	122	39	0	0	0	0	0	0	60	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		168		253		15		5		10	451	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		484		733		19		44		24	1,304	100.00%

EXHIBIT C -- PROJECTED 2022 MAINTENANCE

	Platte Canyon		Southwest Metro.		Bow Mar		Columbine		Valley		Hours	
	Quanity	Hours	Quanity	Hours	Quanity	Hours	Quanity	Hours	Quanity	Hours		
July - 20 days - 1,176 Manhours												
Hyd. Cleaning	110	0	2,885	12	400	2	0	0	1,979	8	23	
Root Cutting	0	0	0	0	0	0	0	0	0	0	0	
Root Treatment	1,748	11	538	3	0	0	0	0	0	0	15	
T.V. Inspections	0	0	13,337	61	11,155	51	0	0	14,275	65	177	
Grease Traps	35	18	103	52	0	0	3	2	0	0	71	
Dist. System Flushing	17	5	71	19	0	0	0	0	0	0	23	
Valves	156	36	408	93	0	0	0	0	0	0	129	
Hydrants	110	33	307	91	0	0	0	0	0	0	124	
Hyd. Painting	47	15	140	45	0	0	0	0	0	0	60	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		101		152		15		5		10	283	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		323		673				21		88	1,176	100.00%
August - 23 days - 1,368 Manhours												
Hyd. Cleaning	8,890	38	21,319	91	0	0	0	0	0	0	129	
Root Cutting	0	0	0	0	0	0	0	0	0	0	0	
Root Treatment	1,325	8	0	0	0	0	0	0	0	0	8	
T.V. Inspections	9,113	42	21,034	96	0	0	0	0	0	0	138	
Dist. System Flushing	25	7	102	27	0	0	0	0	0	0	34	
Valves	162	37	437	100	0	0	0	0	0	0	137	
Hydrants	52	15	356	105	0	0	0	0	0	0	121	
Hyd. Painting	28	9	275	88	0	0	0	0	0	0	97	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		161		241		15		5		10	432	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		422		894		19		19		14	1,368	100.00%
September - 21 days - 1,240 Manhours												
Hyd. Cleaning	0	0	28,691	122	0	0	9,308	40	4,406	19	181	
Root Cutting	0	0	0	0	0	0	0	0	0	0	0	
Root Treatment	0	0	0	0	760	5	0	0	2,707	17	22	
T.V. Inspections	0	0	21,790	100	0	0	7,028	32	5,384	25	156	
Dist. System Flushing	16	4	52	14	0	0	0	0	0	0	18	
Valves	155	35	384	88	137	31	0	0	0	0	155	
Hydrants	61	18	217	64	0	0	0	0	0	0	82	
Hyd. Painting	28	9	155	50	0	0	0	0	0	0	59	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		106		159		15		5		10	295	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		278		742		55		91		75	1,240	100.00%

EXHIBIT C -- PROJECTED 2022 MAINTENANCE

	Platte Canyon		Southwest Metro.		Bow Mar		Columbine		Valley		Hours	
	Quanity	Hours	Quanity	Hours	Quanity	Hours	Quanity	Hours	Quanity	Hours		
October - 21 days - 1,240 Manhours												
Hyd. Cleaning	7,018	30	23,687	101	0	0	91	0	4,677	20	151	
Root Cutting	0	0	2,832	20	0	0	0	0	6,350	45	65	
Root Treatment	1,022	7	0	0	0	0	0	0	0	0	7	
T.V. Inspections	5,663	26	24,260	111	0	0	0	0	0	0	137	
Grease Traps	35	18	103	52	0	0	3	2	0	0	71	
Air Vac's	7	11	40	64	0	0	0	0	0	0	75	
Dist. System Flushing	14	4	53	14	0	0	0	0	0	0	18	
Valves	66	15	300	69	0	0	0	0	0	0	84	
Gen. Sched. Mntc		40		60	0			10		0	110	
Gen. Unsched. Mntc.		132		198		15		5		10	361	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		347		774		19		21		79	1,240	100.00%
November - 19 days - 1,112 Manhours												
Hyd. Cleaning	15,640	67	13,782	59	206	1	9,257	39	0	0	166	
Root Cutting	0	0	0	0	9,161	65	0	0	0	0	65	
Root Treatment	2,346	15	0	0	0	0	339	2	0	0	17	
T.V. Inspections	6,788	31	13,782	63	0	0	11,832	54	0	0	148	
P.R.V.'s	11	35	19	61	0	0	0	0	0	0	96	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		127		191		15		5		10	348	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		380		518		85		115		14	1,112	100.00%
December - 20 days - 1,176 Manhours												
Hyd. Cleaning	9,490	40	27,418	117	0	0	2,280	10	4,280	18	185	
Root Cutting	8,366	59	532	4	0	0	0	0	140	1	64	
Root Treatment	1,176	8	0	0	0	0	0	0	0	0	8	
T.V. Inspections	7,567	35	23,848	109	0	0	2,189	10	0	0	154	
Gen. Sched. Mntc		40		60		0		10		0	110	
Gen. Unsched. Mntc.		185		278		15		5		10	493	
Gen. Mntc. Admin.		65		85		4		4		4	162	
		432		653		19		39		33	1,176	100.00%

EXHIBIT C -- PROJECTED 2022 MAINTENANCE

Totals

Total Hyd. Cleaning	104,064		207,000	606	26,642	24,051		
Total Root Cutting	32,890		3,364	9,161	2,276	6,490		
Total Root Treatment	17,342		883	760	339	4,427	2	
Total T.V. Inspects.	101,240		190,406	11,155	23,238	48,776		
Total Grease Traps	140		412	0	12	0		
Total Dist. Flushing Mntc	148		492	3	0	0		
Total Valve Mntc	1,173		3,174	137	0	0		
Total Hydrant Mntc	490		1,556	59	0	0		
Total Hyd. Painting	223		877	59				
Total Air Vac's	14		80	0	0	0		
Total PRV's	11		19	0	0	0		
							14,752	
Total Hours		5,006	8,280	420	478	568	14,752	100.00%