



SANDY PUBLIC UTILITIES:
Water, Storm Water & Street Lighting



“Utility systems have no margin for failure; they are expected to provide uninterrupted service 24 hours a day, 7 days a week...”

-AWWA Cash Reserve Policy Guidelines, 2018

Drinking Water Utility Overview

Water Supply

Water Enterprise Fund

Water System Infrastructure

Future Topics:

Facilities Tour, Fluoride Update,

Street Light Program, Storm Water Comprehensive Master Plan,
Water Conservation, Aquifer Storage & Recovery, Irrigation Companies,
Metro Water District and Provo River System

PUBLIC UTILITIES



Sandy Water Supplies:

Direct Streamflow

- Little Cottonwood
- Bell Canyon
- Ontario Drain (Jordanelle)

Metro Storage

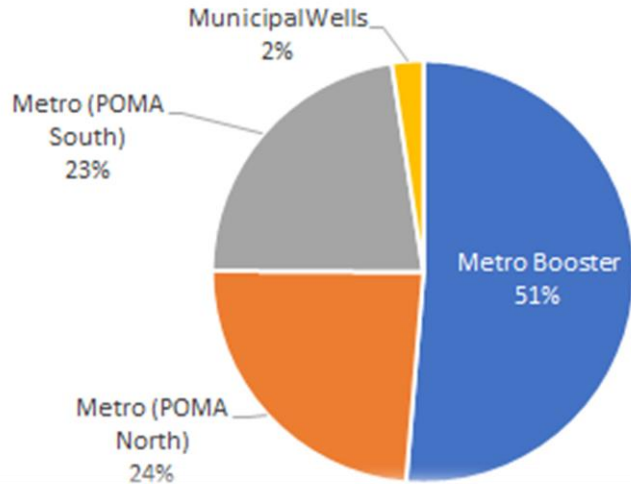
- Deer Creek Reservoir

Groundwater

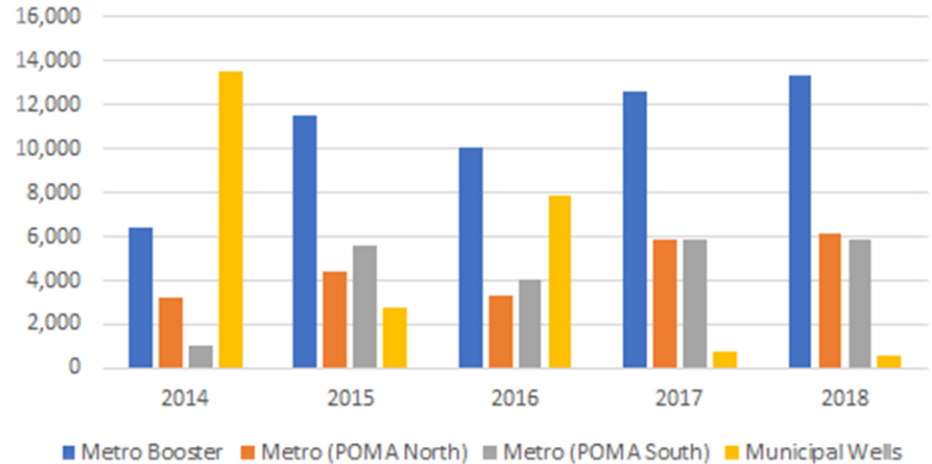
- Wells
- Aquifer Storage (future)

PUBLIC UTILITIES

2018 Water Sources



5 year Comparison Water Sources Supplies



	Well Water (AF)	% Well Water	Surface Water (AF)	% Surface Water	Annual Total (AF)
2014	13,497	56%	10,683	44%	24,180
2015	2,724	11%	21,475	89%	24,199
2016	7,842	31%	17,468	69%	25,310
2017	749	3%	24,345	97%	25,094
2018	625	2%	25,368	98%	25,992



DRINKING WATER FUND: FINANCE SUMMARY



DRINKING WATER ENTERPRISE FUND:

- Water Operations:**
- Day-to-day expenses
 - Revenue from retail water sales
 - MOST of our funding
 - ~HALF of spending

- Water Expansion:**
- Capital Assessments and Bonds
 - Repair of broken mainlines
 - New Projects
 - ~HALF of spending

WATER FUND: FINANCIAL SUMMARY	FY 18-19 APPROVED	FY 18-19 ACTUAL
<i>Water Operations: Total Financing Sources</i>	\$22,795,374	\$22,782,372
<i>Water Operations: Total Financing Uses</i>	(\$13,009,355)	(\$12,557,186)
<i>Water Expansion: Total Financing Sources</i>	\$290,000	\$689,019
<i>Water Expansion: Total Financing Uses</i>	(\$10,076,019)	(\$11,899,138)
TOTAL WATER FINANCING SOURCES <i>[Water Operations + Water Expansion]:</i>	\$23,085,374	\$23,471,391
TOTAL WATER FINANCING USES <i>[Water Operations + Water Expansion]:</i>	(\$23,085,374)	(\$24,456,324)
TOTAL WATER:	\$0	(\$984,933)

Variable #
(Weather)
+/- 10%

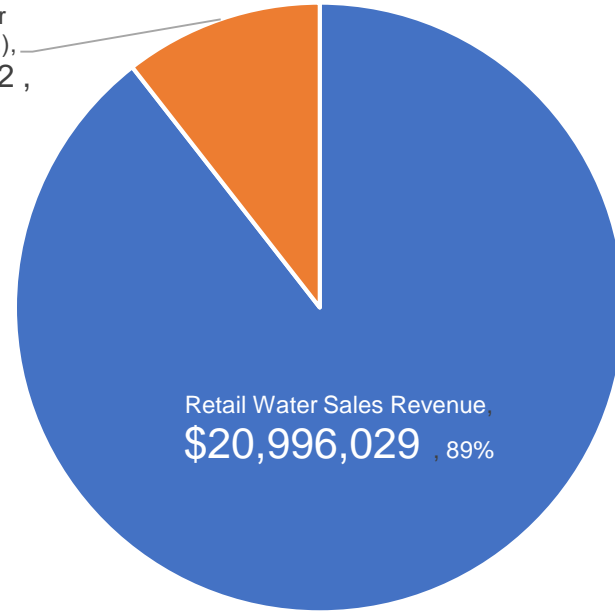
FY Carryover:
\$1.87M

Balanced
Budget

Drinking Water Enterprise Fund: SOURCES

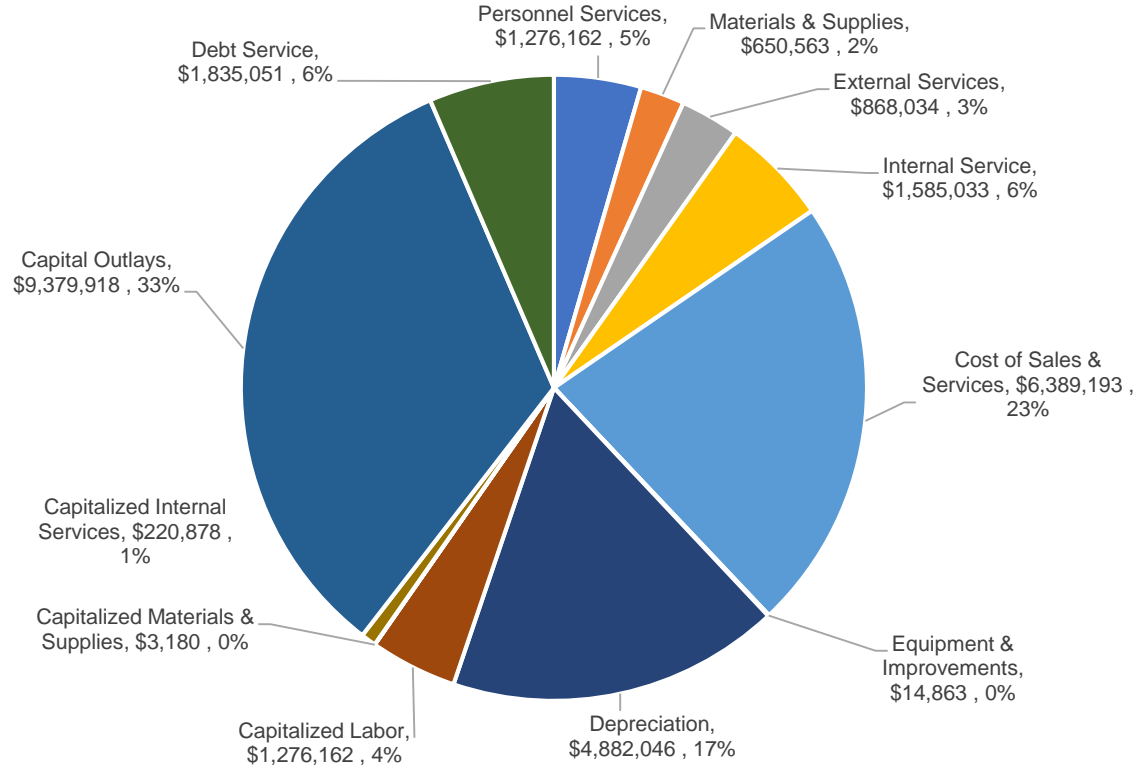
FINANCING SOURCES	FY 18-19 ACTUAL
TOTAL DRINKING WATER FINANCING SOURCES	\$23,471,391

Other
(Connection Fees, Meter Rentals, etc.),
\$2,475,362 ,
11%



Drinking Water Enterprise Fund: USES

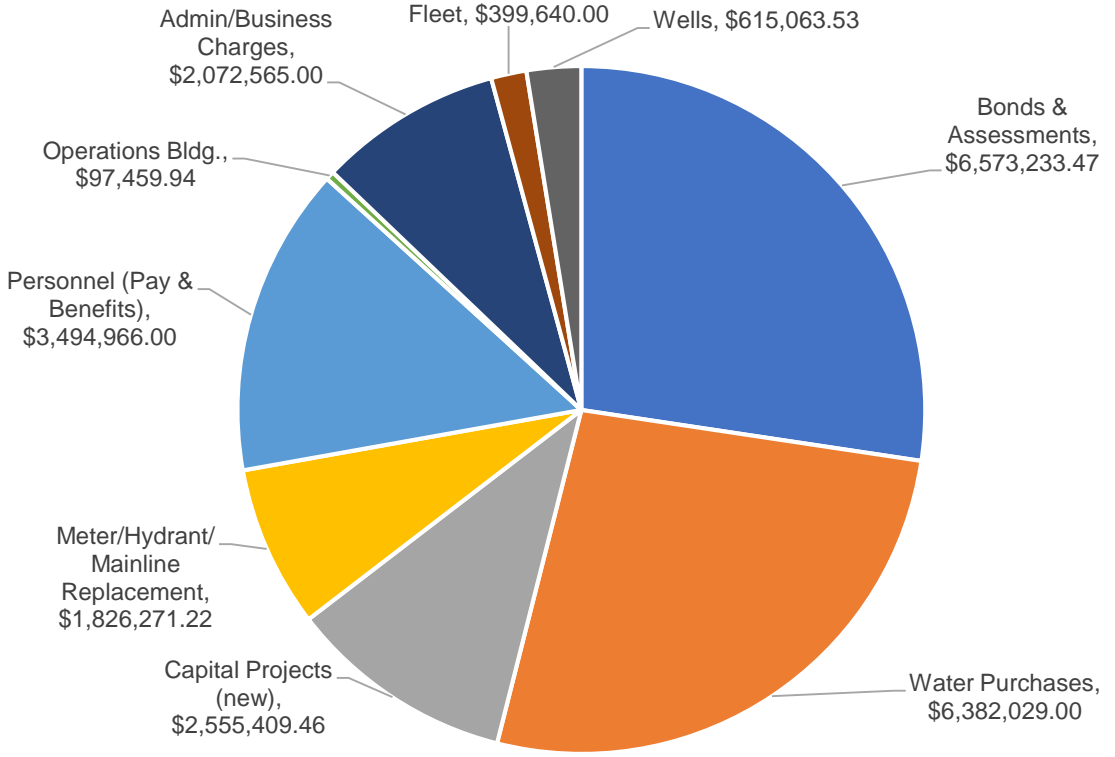
FINANCING USES	2019 ACTUAL
TOTAL DRINKING WATER FINANCING USES:	\$24,456,324



Drinking Water Enterprise Fund: USES

[plain English]

FINANCING USES	2019 ACTUAL
\$24,456,324	



Drinking Water Enterprise Fund: USES [plain English]

FINANCING USES	2019 ACTUAL
\$24,456,324	

Bonds & Assessments	\$6,573,233.47
Water Purchases	\$6,382,029.00
Personnel (Pay & Benefits)	\$3,494,966.00
Operations Bldg.	\$97,459.94
Admin/Business Charges	\$2,072,565.00
Fleet	\$399,640.00
Wells	\$615,063.53
Capital Projects (new)	\$2,555,409.46
Meter/Hydrant/ Mainline Replacement	\$1,826,271.22
TOTAL	~\$24,016,637.62

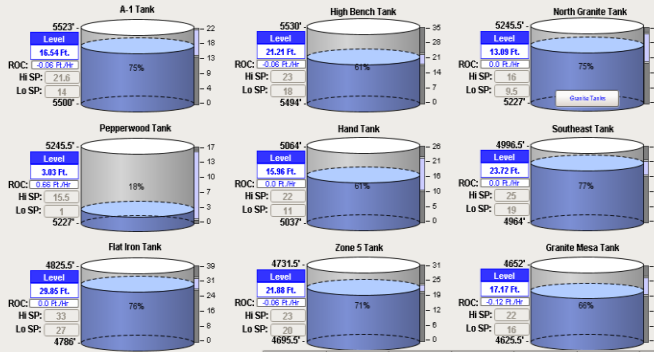




WATER SYSTEM INFRASTRUCTURE OVERVIEW

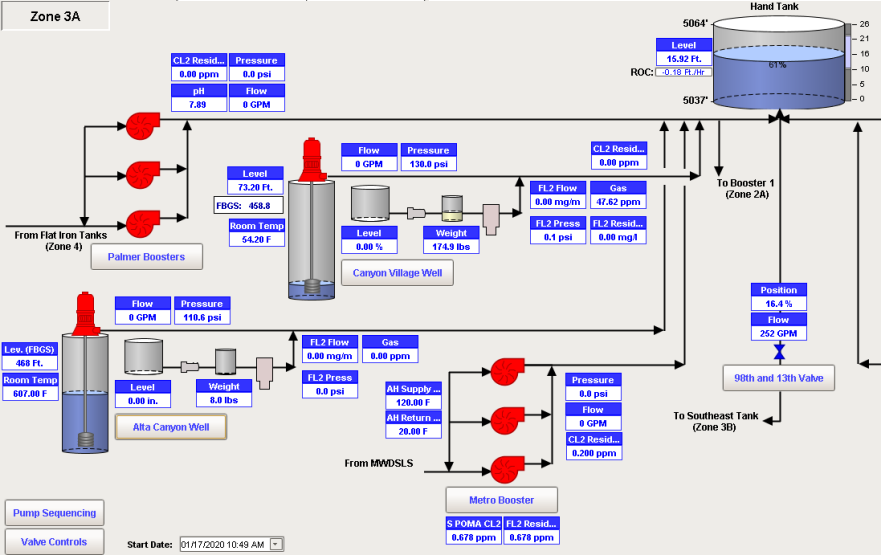
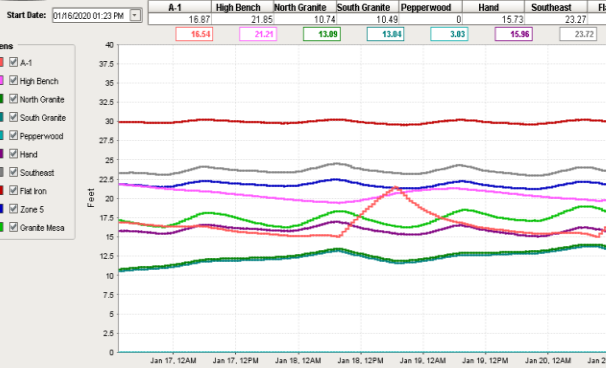
WATER SYSTEM OVERVIEW

- ▼ Distribution
- ▼ Overview
- Map
- Tanks
- Values
- ▼ Zones
- Zone 1
- Zone 2A
- Zone 2B
- Zone 3A
- Zone 3B
- Zone 4
- Zone 5&6



Site	PSI	GPM	kGal	kGal
S1- Alta Canyon Well	108	0	0	0
S2- Walim Well	90	0	0	0
S3- Big Canyon Well	0	0	0	0
S4- Brandon Canyon Well	0	0	0	0
S5- Canyon Village Well	127	0	0	0
S9- Ormple Del Well	79	0	1	1
S11- Granite Mesa Well	71	0	0	0
S12- Severson Well	67	1	0	2
S17- A1 Booster	117	0	41	438
S18- Little Cottonwood Well	151	2	2	3
S14- Lone Hollow Well	119	0	0	0
S15- Paradise Well	62	0	0	1
S16- Pepperwood Well	23	2	1	0
S20- Small Canyon Well	0	0	0	0
S24- Palmer Well	37	0	0	0
S40- Wildflower Well	109	0	0	0
Total	5	4	7	
11800 S 300 F	61			
Storm Mountain	123			
Pepperwood Closed Zonet11	1			

Site	PSI	GPM	kGal	kGal
S27- Metro Booster (Granite)	0	4,539	2,491	3,998
S27- Metro Booster (Granite)	0	0	1	0
S27- Metro Booster Total	0	4,539	2,492	3,998
S22- Booster 1 (Pepperwood)	132	584	189	118
S22- Booster 1 (Granite)	1	2	5	
S24- Palmer Booster	0	0	0	0
S25- Granite Mesa Boost...	0	0	0	0
S26- Pepperwood Boost...	0	19	4	5
S43- High Bench Booster	161	0	0	0



Water System Components:

- Water Storage Tanks (9, 37MG)
- Wells (15, 27,829 gpm)
- Pump Stations (10, 58,500 gpm)
- Water Main Pipe (427 mi.)

Average Water Use:

- Annual: 23,000 ac-ft.
- Winter Day: 7 MGD
- Summer Day: 55 MGD

CAPITAL PROJECTS



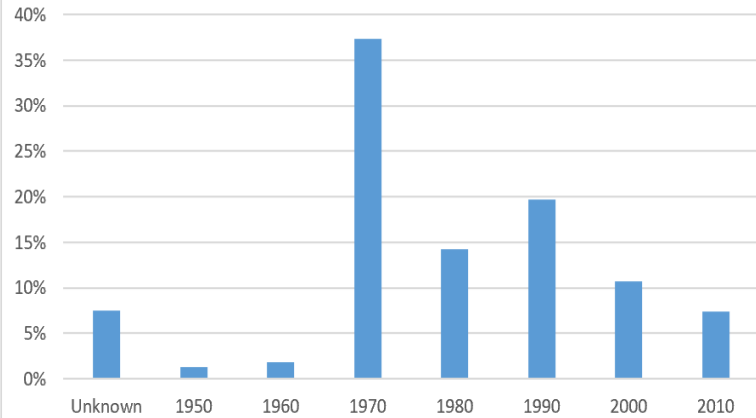
Major Water System Structures Last 10 Years

Structure	Year	Cost (Million \$)
Severson Well Rehab & Rebuild	2013	\$1.1M
High Bench Pump Station Rebuild	2014	\$1.5M
Pepperwood Tank Rebuild	2015	\$4.3M
Flat Iron Tank Rebuild	2018	\$4.6M
Flat Iron Well Redrill & Rebuild	2020	\$2.5M

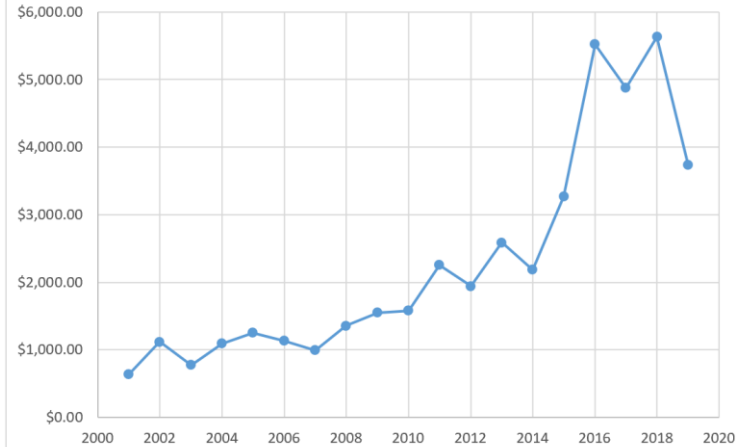
Total Cost: \$14 Million

WATER MAIN FACTS

Water Pipe Installed by Decade



Cost per Break



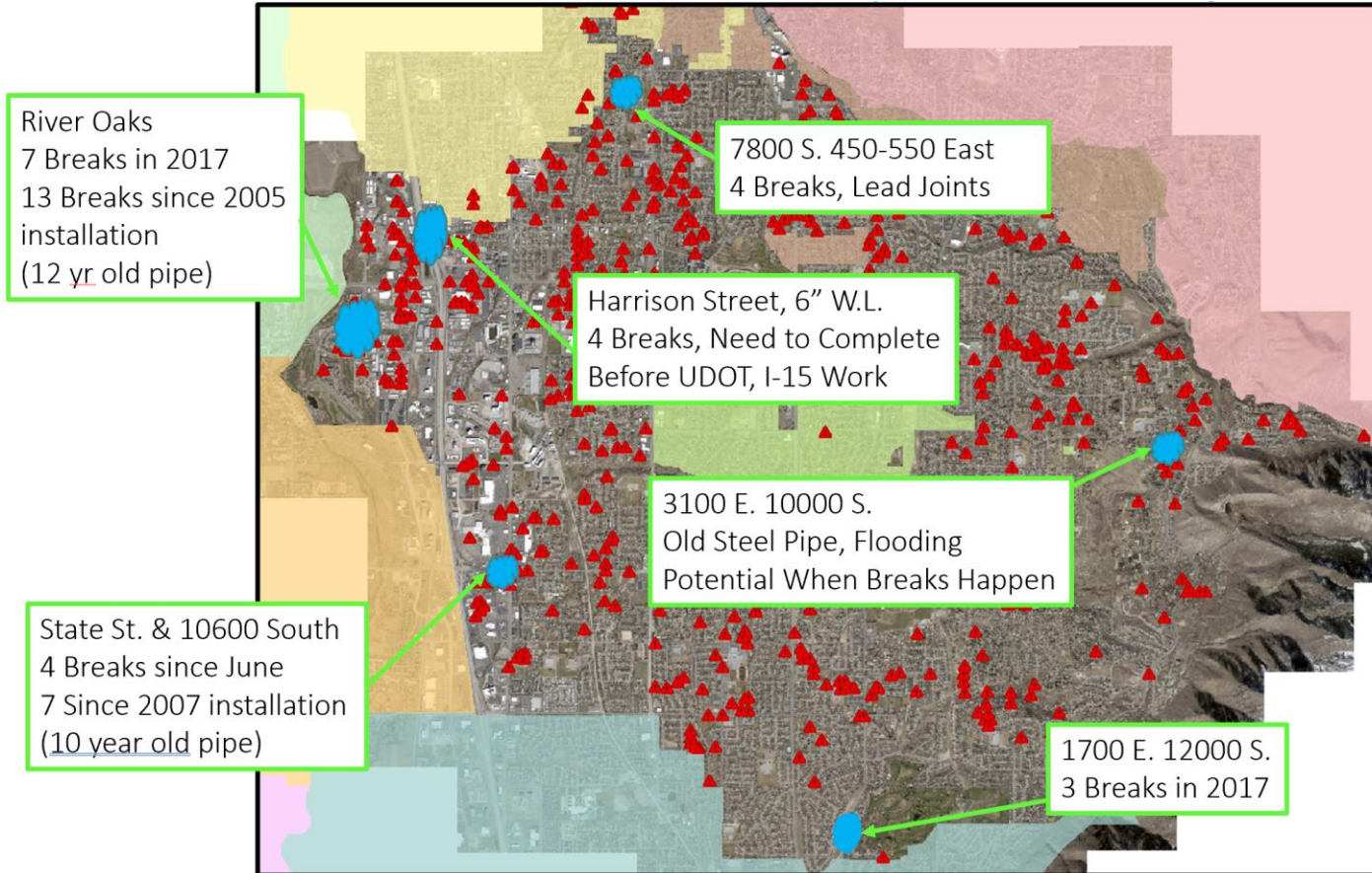
- Total pipe length: 2,246,272 feet or 427 miles
- 98% of water pipe in system is ductile iron (DI) material
- New, properly installed DI pipe: estimated life of 110 years
- DI pipe installed in 1970s in poor soils: estimated life of less than 50 years
- Poorly installed DI pipe: life is 10 to 20 years
- 5 Year annual average: \$350,000/year cost of break repair
- Increased cost of each break is because of increased breaks in major roadways



Cima Dr. (near Flat Iron Park)

- 6/18: \$19,228
- 1/19: \$6,236
- 400' of Pipe replaced Summer 2019

WATER MAIN PROJECTS (COMPLETED LAST 2 YEARS)



Break Analysis

- Frequency
- Cost of break
- Pipe condition
- Corrosive Soils
- Age of pipe
- Groundwater
- Stray currents
- Bad installation
- Defective pipe?

Solutions

- Pipe Replacement
- Slip-lining existing pipe
- Abandoning unneeded pipe

Timing of

Replacement:

- Other work in roadway
- Property damage

WATER MAIN INSTALLATION PLAN

Water Main Replacement Priority List



Year	Total LF	In House LF	Bid Out LF	Bid Out Cost
2015	1107	1107	0	\$21.00
2016	7518	800	6718	\$1,992,580.00
2017	0	0	0	\$0.00
2018	4327	577	3750	\$1,158,420.00
2019	9538	508	9030	\$2,670,768.26
2020	TBD	TBD	3240	Est \$1,500,000.00
2021	TBD	TBD	2824	Est \$1,800,000.00
2022	TBD	TBD	3924	Est \$1,800,000.00

Master Plan Project	DESCRIPTION	Quantity	Unit (Size)
N/A	WILDCREEK DRIVE WATER LINE LOOP	2,440	8"
LR-1	GREEN AND ROAD CONNECTION LOOP EXTENSION	500	8"
N/A	RIVER OAKS CLUB DRIVE LAZY OAKS TO JORDAN OAKS	850	8"
LR-2	LOW CIRCLE @ 1181 E TO 705 E @ 8640 S	100	8"
LR-25	HIDDEN RIDGE LANE @ DEER HOLLOW TO 10747 S	150	8"
LR-5	8400 S @ HIGH AND DRIVE TO 220 EAST (WOODCHUCK WY)	1,700	10"
LR-5	8400 S @ 1701 EAST TO 1000 EAST	3,300	10"
LR-5	8400 S @ 1300 E TO HIGHLAND DRIVE	5,350	20"
LR-50	GREENWOOD @ 480 TO 90TH S	2,800	8"
LR-31	8400 S @ STAVE TO MONROE	2,575	10"
FF-4	SANDY CIRCLE	258	8"
FF-32	1200 BASHI DRIVE AND VALDE NEIGE CIRCLE	804	8"
FF-18	SUBLETTE PLACE & RIDGEPOINT ROAD	1,250	8"
FF-3	TEAL CIRCLE	224	8"
LR-23	JANELLA WY @ 1730 TO 1800 E	1,150	8"
LR-19	KSEL @ 8480 S 3100 E @ LCR TO 2482 E (AND KSEL CIRCLE)	1,850	8"
LR-59	PORTAL WAY @ VISCOUNTY TO 918 S	1,910	8"
LR-69	WYANDOTTE AVE @ DAVID STREET TO 700 E	1,800	8"
LR-38	HIGHLAND DRIVE @ 860 S TO 1050 S	1,700	16"
LR-27	RIO WAY @ 1809 E TO 3005 EAST	1,700	8"
LR-44	GLACIER LANE @ 8650 S TO 8520 S	1,200	8"
LR-74	WATERS LANE @ 1300 E TO 828 S	2,800	8"
LR-57	MESA DRIVE @ 300 S TO JULIHO STREET	1,100	8"
LR-78	400 E @ LOCUST TO 800 S (OLD 4" LINE)	430	8"
LR-77	400 E @ 2220 TO 200 E (OLD 4" LINE)	825	8"
LR-81	LARUE DRIVE @ LOCUST TO 400 E (OLD 4" LINE)	848	8"
LR-82	MINCO PARK DRIVE @ LOCUST TO 90TH S (OLD 4" LINE)	1,500	8"
LR-85	540 E @ LOCUST TO 800 S (OLD 4" LINE)	880	8"
LR-97	PARKWAY WAY @ PIONEER TO PIONEER (OLD 4" LINE)	1,140	8"
LR-89	CLARIMONT CIRCLE (OLD 4" LINE)	220	8"
LR-76	8920 S @ 220 TO 280 E (OLD 4" LINE)	625	8"
LR-79	8920 S @ 380 E TO HYDRANT (OLD 4" LINE)	150	8"
LR-83	400 E @ LOCUST TO 90TH S (OLD 4" LINE)	850	8"
LR-83	MINCO PARK AVE @ 500 E TO MINCO PARK DR (OLD 4" LINE)	500	8"
LR-84	500 E @ MINCO PARK DRIVE TO 90TH S (OLD 4" LINE)	560	8"
LR-88	LIVWOOD STREET @ PIONEER TO 8570 S (OLD 4" LINE)	320	8"
LR-88	PARKWAY CIRCLE (OLD 4" LINE)	220	8"
LR-75	60 E @ 8960 TO 90TH S (OLD 4" LINE)	300	8"
LR-91	160 E @ 8760 S TO 8850 S	240	8"
LR-41	8800 S @ 150 TO 280 E (BORING UNDER TRAIL)	560	8"
LR-58	TERRACE DRIVE @ VISCOUNTY TO RIO WAY	3,400	8"
LR-43	HIGH CROSSBOW @ 802 TO 9387 S	2,500	8"
LR-39	8280 S @ 1105 E TO 1280 E	950	8"
LR-61	POWARRANT DRIVE @ 2553 TO 2530 E	680	8"
LR-45	GRANDMA @ 1305 TO 1700 E	2,800	8"
LR-49	BORDEAUX WAY @ ALH AVE @ BONNET DR	950	8"
LR-40	8320 E @ 1105 E TO 1300 E	800	8"
LR-45	910 E @ 8600 TO SPARTAN	1,500	8"
LR-63	GAYLENE CIRCLE @ 1185 E TO 1230 E @ 8640 S	320	8"
LR-18	BELL CANYON CIRCLE @ 800 E TO 1050 S	1,175	8"
LR-24	GRANDVIEW WAY	910	8"
LR-47	8080 S @ 700 E TO 835 E	1,850	8"
LR-48	1010 WAY @ 110TH TO 11125 S	850	8"
LR-53	10140 S @ 2050 E TO 2110 E	510	8"
LR-55	CANDLEWOOD DRIVE @ WENTREE TO 8760 S	880	8"
LR-44	1205 E @ 8818 TO 8848 S	880	8"
LR-50	10500 S @ 65 E TO CLEARVIEW (OLD 6" LINE)	300	8"
LR-93	FLOYD @ DAVID STREET TO 700 E	1,880	8"
LR-84	HOWARD @ DAVID STREET TO 700 E	1,880	8"
LR-16	FIELD POINT CIRCLE (CASSIOWAY)	880	8"
LR-14	CASSIOWAY @ 1169 S TO 2889 E	880	8"
LR-17	HILL CLIMB CIRCLE (CASSIOWAY)	1,400	8"
LR-71	BEDSON WAY @ 8270 S TO SEMINARY ROAD	1,400	8"
LR-15	HIGHLAND OAKS CIRCLE (CASSIOWAY)	780	8"
LR-51	HILL HAVEN @ 100 E & 830 E	880	8"
LR-54	8685 S @ 1820 E TO 1700 E	500	8"
LR-73	HAGRIFF ROAD @ 114TH TO 1168 S	1,100	8"
LR-9	AUTO MALL DRIVE @ 1060 S TO 110TH S	2,800	8"
LR-10	10890 S AUTO MALL DRIVE (PARKING LOT)	880	8"
LR-21	1010 E @ 10TH S TO 1215 E	8,050	10"
LR-50	BEALMONT DRIVE @ 3150 S TO 8081 S	950	8"
LR-9	10775 S AUTO MALL DRIVE (PARKING LOT)	750	8"
LR-30	11470 S EAST OF 1300 E (AY 300+ FEET OF PIPE)	300	8"
LR-29	#84 & #85 LONE HOLLOW (MOVE LINE INTO STREET)	280	16"

Cost Saving Strategies:

- Bundle small projects
- Flexible completion schedule
- Trenchless rehab (slip-line)

Pipe Replacement Goal:

- Master Plan Recommendations
- \$1.5 to 2 million per year (increased funding needed)



END