

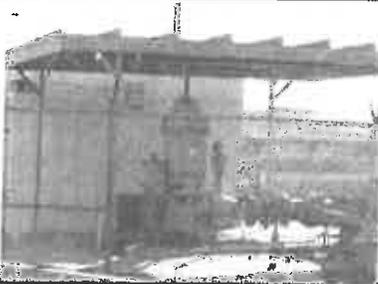
WATER SYSTEM

SYSTEM OVERVIEW
REGULATIONS
FUTURE PLANS
CAPITAL BUDGET

Water System Overview

- The City of Willcox has three wells supplying water to the city.
- Well 1
 - Supplies approximately 1100 gpm
 - Has variable frequency controls
 - This would allow us to operate the system without the water reservoir
 - The VFD would control the output of the well by changing the motor speed
 - The VFD monitors pressure at the well to control the speed of the motor.

Well #1



Water System Overview

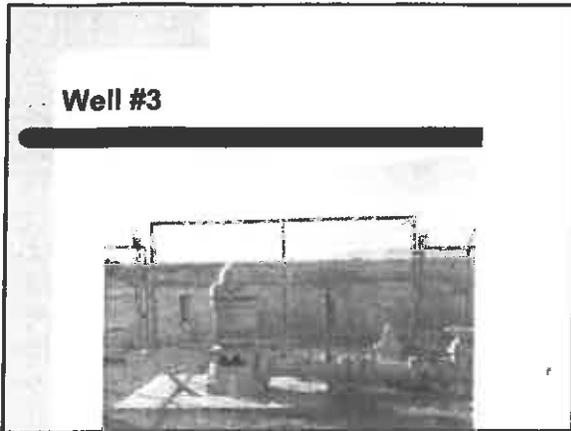
- Well 2
 - This well was completed in 2006
 - Supplies approximately 1100 gpm
 - Operates with standard three phase motor starters
 - Will only provide a constant output of 1100 gpm

Well #2



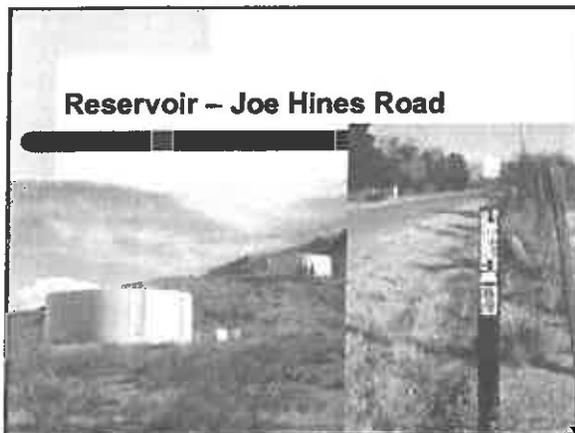
Water System Overview

- Well 3
 - Supplies approximately 300 gpm
 - Operates with standard three phase motor starter.



System Overview

- The City operates with 1 – 1.5 million gallon reservoir.
 - The reservoir is supplied with one 14" AC pipeline.
 - The single pipeline also returns the water to the 16" pipeline which follows the Joe Hines Road ROW.



System Overview

- Having a single supply and return line has some drawbacks.
 - The water in the pipeline has to change directions.
 - If the City is using 500 gpm and the reservoir reaches the point when the well is turned on then the well supplies 500 gpm to the City which leaves 600 gpm which needs to go to the reservoir.
 - Pressure in the line is about 10 psi higher when the wells are in operation due to the backpressure created by the reservoir
 - Stable pressures are better for the system.

System Overview

- The 16" main supplies water to the former well #10 site located at Fremont and Arizona.
 - From there 44 miles of pipeline supplies water to customer meters.

System Overview

- There are 1560 services currently connected.
 - Residential – 1213
 - Commercial - 339
 - These number varies month to month.
- Approximately 786 of these meters are read electronically.
- Approximately 4 of these are customers located outside the incorporated boundaries of the City.

Regulatory compliance

- Arizona Department of Environmental Quality (ADEQ)
 - On a daily basis a chlorine residual test is conducted. Chlorine residual is the amount of free chlorine available to attack bacteria which has not already been killed.
 - Water samples are taken monthly and sent to Turner laboratory to test for Coli-form.
 - Annually the City is required to provide a report on the water quality provided to the City.

Annual Consumer Confidence Report



Regulatory Compliance

- We are required to maintain a Backflow / Cross-connection system. (Ordinance NS 149)
 - Most commercial customers are required to maintain a backflow after the water meter
 - Backflows are required to be tested annually
 - The City sends out letters to remind owners to get tests conducted on backflows.
 - The City receives a report showing the test was completed

Backflow



Water System Integrity

- The supply lines in the City are comprised of AC Pipe, C900 PVC and Schedule 40 PVC.
- All of the line are in good repair and show little to no internal build up.

Water System Integrity

- When leaks occur there are four general reasons.
 - Ground shrinkage or swelling, caused by dry or wet conditions, will cause AC pipe to shear. These are generally easy to find because there is a lot of water involved.

Water System Integrity

- A saddle tap comes loose.
 - Early taps on the system used a brass saddle but they used steel straps to hold them to the pipe.
 - Because of the high pH of our soil, steel does not last very long in the soil.

Water System Integrity

- Customer service line leaks from pinch off tools.
 - These are typically repairs that occur after a previous service line repair.
- Customer side leaks. Commonly show up at the meter box.

Water System Integrity

- Meter Updates
 - Current goal is to replace 10% of the meters in a given year.
 - This is a perpetual program

Future Plans

- Capacity of the systems is adequate for current volumes as well as the foreseeable future.

Future Plans

- Plans that have been discussed in the past.
 - Install a secondary pipeline from the tank to the City.
 - Install a raised water tower in the City to supply water in the event of a pipeline break on Joe Hines road.
 - Provide backup system for well to operate in the event of a significant power outage.
 - Install a separate line to tank from wells to eliminate water reversal and pressure spikes.

Capital Budget



Water Utilities Budget for 2013 to 2023

Capital Purchase

Description	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	TOTAL
3/4 Ton Service Truck (replace unit 57)	\$ 11,667										\$ 11,667
Plate Tamper	\$ 667										\$ 667
Metal Locator	\$ 333										\$ 333
GPS/Mapping Capabilities	\$ 4,000										\$ 4,000
3/4 Ton Service Truck (replace Unit 61)		\$ 11,667									\$ 11,667
Mobile Phones/Radio System (push to talk - 11 each)		\$ 6,333									\$ 6,333
On-Call Laptop		\$ 333									\$ 333
Security System for Wells, Tank, WWTP, Gas Regulator Station		\$ 6,000									\$ 6,000
1 Ton Dump Truck (Used)			\$ 8,333								\$ 8,333
Replace Backhoe			\$ 25,000								\$ 25,000
3/4 Ton 4 x 4 Service Truck (Replace Unit 51)				\$ 12,667							\$ 12,667
Replace Pothole Machine/Vac Trailer			\$ 20,000								\$ 20,000
1 Ton Service Truck (Replace Unit 55)				\$ 16,667							\$ 16,667
Replace On-Call Laptop				\$ 333							\$ 333
3/4 Ton Service Truck (Replace Unit 03)					\$ 13,333						\$ 13,333
3/4 Ton Supervisor Truck (Replace Unit 50)						\$ 13,333					\$ 13,333
Replace Trencher							\$ 12,667				\$ 12,667
Replace On-Call Laptop						\$ 13,333					\$ 13,333
Replace Bobtail Dump Truck (used)						\$ 333					\$ 333
Replace Portable Welder on 12-03								\$ 13,333			\$ 13,333
Replace Three (3) Compressors								\$ 2,000			\$ 2,000
Replace 3/4 ton Service Truck (12-01)								\$ 3,000			\$ 3,000
SUB TOTAL	\$ 16,667	\$ 24,333	\$ 33,333	\$ 32,667	\$ 17,000	\$ 13,333	\$ 26,333	\$ 18,333	\$ 11,667	\$	\$ 193,666

Capital Projects

Description	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	TOTAL
Replace four (4) Water Main Valves		\$ 18,000									\$ 18,000
Replace four (4) Water Main Valves					\$ 20,000						\$ 20,000
Replace four (4) Water Main Valves								\$ 22,000			\$ 22,000
Rebuild Well #2 Motor and Bowles								\$ 40,000			\$ 40,000
Rebuild Well #1 Motor and Bowles									\$ 40,000	\$ 40,000	\$ 40,000
Replace Four (4) Water Main Valves									\$ 22,000	\$ 22,000	\$ 22,000
Water Meter Replacement Program	\$ 25,000										\$ 25,000
Water Meter Replacement Program		\$ 25,000									\$ 25,000
Water Meter Replacement Program			\$ 25,000								\$ 25,000
Water Meter Replacement Program				\$ 25,000							\$ 25,000
Water Meter Replacement Program					\$ 25,000						\$ 25,000
Water Meter Replacement Program						\$ 25,000					\$ 25,000
Water Meter Replacement Program							\$ 25,000				\$ 25,000
Water Meter Replacement Program								\$ 25,000			\$ 25,000
Water Meter Replacement Program									\$ 25,000		\$ 25,000
Water Meter Replacement Program										\$ 25,000	\$ 25,000
SUB TOTAL	\$ 25,000	\$ 43,000	\$ 25,000	\$ 25,000	\$ 45,000	\$ 25,000	\$ 25,000	\$ 47,000	\$ 65,000	\$ 87,000	\$ 412,000
TOTAL	\$ 41,667	\$ 67,333	\$ 58,333	\$ 57,667	\$ 62,000	\$ 38,333	\$ 51,333	\$ 65,333	\$ 76,667	\$ 87,000	\$ 412,000

