

## 6 POTENTIAL PROJECTS

Through the system analysis, multiple deficiencies have been identified. The purpose of this section is to develop projects that would help to fix these problems as well as other problems identified by the District. A "planning level" preliminary opinion of probable cost has been estimated for each project. These costs are based on approximate costs obtained from past similar projects assuming typical construction conditions. Also included in these costs are typical engineering and surveying fees. These costs can be refined as the project is further developed.

Besides determining the costs, a priority level has been assigned to each project based on the District's needs and how critical the project is. **Table 6-1** provides a summary of the potential projects, cost, and priority of each project. **Exhibit D** shows the locations of potential projects overlaid on the water system maps. Descriptions of each project are contained in the following sections. It should be noted that the project details and costs are conceptual and are subject to change as further research and design is conducted.

**Table 6-1: Potential Project Matrix**

Project	Description	Cost	Priority	
1	New Well <i>GRANT IN 2/11/14</i>	\$400,000	Very High	?
2	Booster Pump from State to Chimney Cyn. Zone	80,000	Very High	
3	State and Lebec Zone Interconnection	65,000	High	
4	Flow Meters at Wells <i>COMPLETED 07/2012</i>	40,000	High	COMPUTER PROBLEM
5	Replace Lebec Zone 8" Water Main	230,000	High	CHECK IN ON DISTANCE
6	Separate Starter for Booster at State Well	25,000	High	?
7	State Zone <u>New Tank</u>	750,000	High	4 DEMON 4000 OLD YES
8	Chimney Canyon Zone <u>New Tank</u> Booster	500,000	High	4 "
9	Portable Emergency Generator <i>connection over well</i>	40,000	High	PLUS @ WELL
10	Lebec Zone <u>New Tank</u>	260,000	Medium	
11	Upgrade Water Mains in Commercial Areas <i>12" LINE IN</i>	150,000	Medium	12 MAIN
12	Water System Chlorination <i>COMPLETED</i>	45,000	Medium	IN
13a	Alarm System <i>TEST TANK 03/20/2014</i>	150,000	Low	RADIO
13b	SCADA System	300,000	Low	RADIO
14	Upsize Water Main in Phillips Pressure Zone	110,000	Low	

### Project 1: New Well GRANT

Project 1 consists of the construction of a new well to provide additional water supply capacity to the District. As noted in the previous section, an additional capacity of 150 to 250 gpm is required to meet the MDD depending upon how much future capacity is desired by the District. A new well is also advisable because current wells produce water that is in marginal compliance with MCLs for uranium and fluoride. If an existing well exceeds a primary MCL, it must be shut down. Because the Chimney Canyon well may exceed water quality standards, it is recommended that this capacity be accounted for in selecting the capacity of the new well. Therefore, the District should target a new well capacity of about 350 gpm.

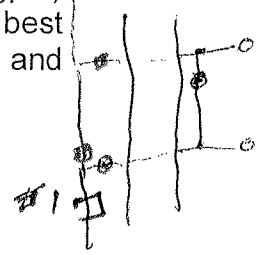
Ideally, the new well should be constructed west of I-5 for added system reliability. The new location should be determined based on a hydro-geological study of the area. The well could serve either the Chimney Canyon or State pressure zones, but if the well serves the State pressure zone, it would be recommended to also include a booster pump to provide additional capacity to the Chimney Canyon zone.

Cost: \$400,000 (Does not including transmission pipeline since the cost will depend on the location of the new well)

**Project 2: Booster Pump from State to Chimney Canyon Zone**

#2 This project would provide additional MDD capacity to the Chimney Canyon zone by transferring water from the State Pressure Zone. Currently, the Chimney Canyon Pressure Zone water source capacity is limited to the Chimney Canyon Well (120 gpm), and the Landfill Booster (50 gpm), which is insufficient for MDD for the zone. The best location for a new booster pump is at the interconnection of the Chimney Canyon and State Systems at the intersection of Chimney Canyon Road and Lebec Road.

Cost: \$80,000  
CUT OFF VALVES ON EAST SIDE  
WEST



**Project 3: State and Lebec Zone Interconnection**

#1 The purpose of this project is to connect the State and Lebec Zones west of I-5. Currently, a single pipeline crosses I-5 and serves the Lebec pressure zone. If this pipeline were to break, the only water available to this area is from water stored in the Lebec Tanks. This problem is worsened by the fact that there is limited emergency storage at the Lebec Tanks and because the pipeline crosses I-5. The interconnection would consist of approximately 1,600 linear feet (LF) of 6-inch water main and a pressure reducer valve assembly.

Cost: \$65,000

**Project 4: Flow Meters at Wells** *COMPLETE*

The District currently does not have flow meters at each of the well sites. Current Waterworks Standards requires a flow meter at each water source (Section 64561). With the addition of flow meters the District will be able to account for water losses and keep track of pump performance and efficiency. A total of 3 flow meters would be required for the District's wells.

Cost: \$40,000

**Project 5: Replace Lebec Zone 8" Water Main**

The District has repaired the existing 8-inch diameter water main in the Lebec pressure zone many times in the past. The leaks have mostly occurred at the pipe's solvent cement welded joints. This joint method is not commonly used in municipal water systems due to past failures. Modern practice is to use push on flexible joints. Approximately 3,800 LF of water main and appurtenances requires replacement.

Cost: \$230,000

**Project 6: Separate Starter for Booster at State Well**

The State Well pump and State Well Tank booster use the same electrical system and motor starter. If the State Well pump is out of service and the District needs to transfer water from the Lebec Zone to the State Zone, an electrician has to reconfigure the wiring to operate the booster pump. This project would modify the existing electrical system to provide a separate starter for the booster pump.

Cost: \$25,000

Both, Y DOES IT COST 25K & SWITCH IT TO START EITHER  
IF A SEPARATE SYSTEM START EITHER

**Project 7: State Zone - New Tank/Booster**

This project would provide additional storage capacity for the State Pressure Zone. An ideal tank site would be located near the Chimney Canyon well site at the same elevation as the State Tanks and would feed the zone from the opposite end thereby alleviating fluctuating pressures at high demands. Other sites near elevation 4000 feet should be further studied to determine the most effective site. The 250,000 gallon storage tank would be connected to the distribution system by 6,000 LF of 8-inch diameter water main that would be located in Frazier Mountain Park Road. In addition, a booster pump would be installed to deliver water to the Chimney Canyon area. Also, this tank could be utilized for blending Chimney Canyon Well water with other sources, thereby reducing the uranium concentration in the water.

Cost: \$750,000

FLORIDE TANK FOR FIRE FLOW AND Y  
TO HOLD IN 120 K @ 100 K  
Show when IF IS PREPARED

**Project 8: Chimney Canyon Zone - New Tank**

Project 8 would demolish the old, existing 40,000 gallon Chimney Canyon tank and construct a larger 250,000 gallon tank. This zone has the highest water demands in the District and is the uppermost of the three major pressure zones and can feed the lower elevation zones. Therefore, storage is critical in this zone because of these factors.

Cost: \$500,000

Y BOOSTER PUMPS Y NOT LOCAT TANK SO GRAVITY WILL BOOST PREVENT

**Project 9: Portable Emergency Generator**

The District currently does not have a portable emergency generator on hand to allow pumping during electrical outages. This problem is made worse because the District is about an hour away from the nearest rental business. Additionally, the well sites are not equipped with generator receptacles to quickly connect the generator to the electrical system. This project would consist of retrofitting important well sites or booster pump stations with generator receptacles and the purchase a portable generator mounted on a trailer. A minimum of two well sites should be provided with receptacles.

Cost: \$40,000

RENT - INSTAL BREAKER LINES  
WITH EMERGENCY  
ELECTRICIAN  
ON RETARD

**Project 10: Lebec Zone - New Tank**

This project would provide additional storage capacity at the Lebec tank site especially for emergency storage. It is assumed that an additional 100,000 gallon tank would be constructed at the existing Lebec Tank site. This project may not be needed or may be

delayed if sufficient storage for the Lebec zone is incorporated into the State Tank pressure zone. Because the Lebec zone is downhill, water can be easily transferred in an emergency. If this project is delayed, Project 3 – State and Lebec Zone Interconnection is necessary for reliability.

Cost: \$260,000

**Project 11: Upgrade Water Mains in Commercial Areas**

Water main capacity to the commercial areas of the District, near Lebec Road and Wainright Court, is limited by a single 6-inch diameter pipe. Kern County Development Standards require that pipe sizes be 8-inch diameter or greater for stubs longer than 800 feet. The existing 6" main can be paralleled along Lebec road by 3,500 8-inch pipe starting at the Landfill Road to the commercial area along Frazier Mountain Park Road. This project includes an analysis of the existing pipe network and construction of new mains as required to deliver adequate fire flow capacity.

Cost: \$150,000 – 300,000 (TBD)

**Project 12: Water System Chlorination**

Currently the water system is not disinfected (chlorinated). It is anticipated that in the future, CDPH will require chlorination for LCWD's water system. This project would require chlorinator units and a building/shed for storage of chemicals at each well site. The priority of this project could become higher if the water system becomes non-compliant due to multiple failed bacteriological tests. At a minimum, the District should have a small portable sodium hypochlorite (liquid chlorine) storage tank and feed pump for emergency disinfection.

Cost: \$45,000

**Project 13b: Alarm System**

Currently, well pumps are turned on automatically by a timer system or by manual operation. The timer can be adjusted as needed to account for seasonal variations in demand. If a high demand occurs, the tank levels could drop to a critical level. The installation of an alarm system would notify operators by telephone of this problem or other problems such as the loss of a well. This project would require installation of monitoring and communications equipment at well sites, tank sites, and important booster pump stations.

Cost: \$150,000

**Project 13b: SCADA System**

An upgraded alternative to the Project 13a would consist of a Supervisory Control and Data Acquisition (SCADA) system that would allow operators to monitor on a computer selected parameters including tank levels, pumping flow rates, pressures, well pump status, etc. This will reduce the amount of time operators have to check on the status of the distribution system and alert the operator to a potential emergency. The cost of the SCADA system increases with the number of individual monitoring locations.

Cost: \$300,000

**Project 14: Upsize Water Main for Phillips Pressure Zone**

The existing 3-inch diameter pipeline that serves the Phillips Pressure Zone is inadequate for fire flows and possibly high water demands. In addition, this pipe size is currently not allowed for use as public water main by the California Waterworks Standards. Approximately 3,200 LF of this pipeline should be replaced by a 6-inch diameter water main.

Cost: \$110,000

**Cost Alternatives**

Depending upon the funds available, the District can select a combination of projects to help improve the District's water system. **Table 6-2** has been prepared to show three different alternatives of project combinations to provide a range of total costs. The projects selected in each alternative are based on the priority of the project.

Future maintenance and emergency repairs have not been included in this analysis but should be accounted for by the District. Typical items that will require repair or replacement include re-coating tanks, pipelines, motors/pumps, meters, valves, and refurbishing wells.

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**Table 6-2: Project Cost Alternative Matrix**

Project Description	All Projects	High and Medium Priority Projects	High Priority Projects	Minimum Recomm. Projects
1 New Well	<del>GRANT</del> \$400,000	\$400,000	\$400,000	\$400,000
2 Booster Pump from State to Chimney Cyn. Zone	80,000	80,000	80,000	80,000
3 State and Lebec Zone Interconnection	65,000	65,000	65,000	65,000
4 Flow Meters at Wells	<del>40,000</del>	40,000	40,000	40,000
5 Replace Lebec Zone 8" Water Main	230,000	230,000	230,000	230,000
6 Separate Starter for Booster at State Well	25,000	25,000	25,000	25,000
7 State Zone - New Tank	<del>120,000</del> 750,000	750,000	750,000	750,000
8 Chimney Canyon Zone - New Tank/Booster	500,000	500,000	500,000	500,000
9 Portable Emergency Generator	<del>PLUGS</del> 40,000	40,000	40,000	40,000
10 Lebec Zone - New Tank	260,000	260,000		
11 Upgrade Water Mains in Commercial Areas	<del>12' L.M.</del> 150,000	\$150,000		
12 Water System Chlorination	<del>L.M.</del> 45,000	\$45,000		
13 SCADA System	300,000			
14 Upsize Water Main in Phillips Pressure Zone	110,000			
<b>Total</b>	<b>\$2,995,000</b>	<b>\$2,585,000</b>	<b>\$2,130,000</b>	<b>\$1,590,000</b>

2010  
 150K  
 100K

SOFT START 8K  
 TANK LADDER 2K  
 LAMP 15.5K  
 TANK 300K