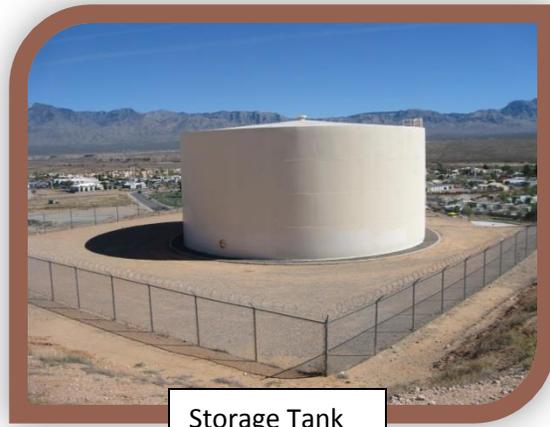


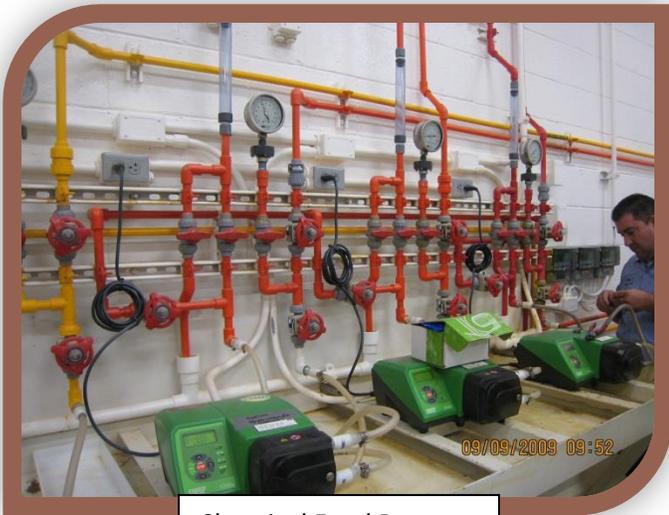


Well Motor

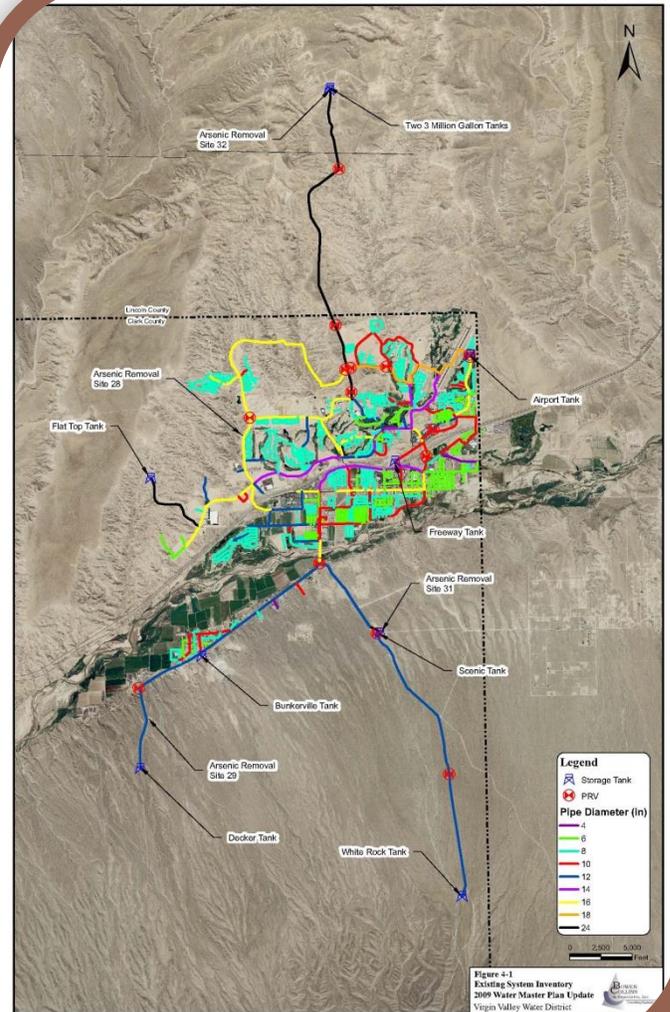


Storage Tank

Virgin Valley Water District FY2014 Report



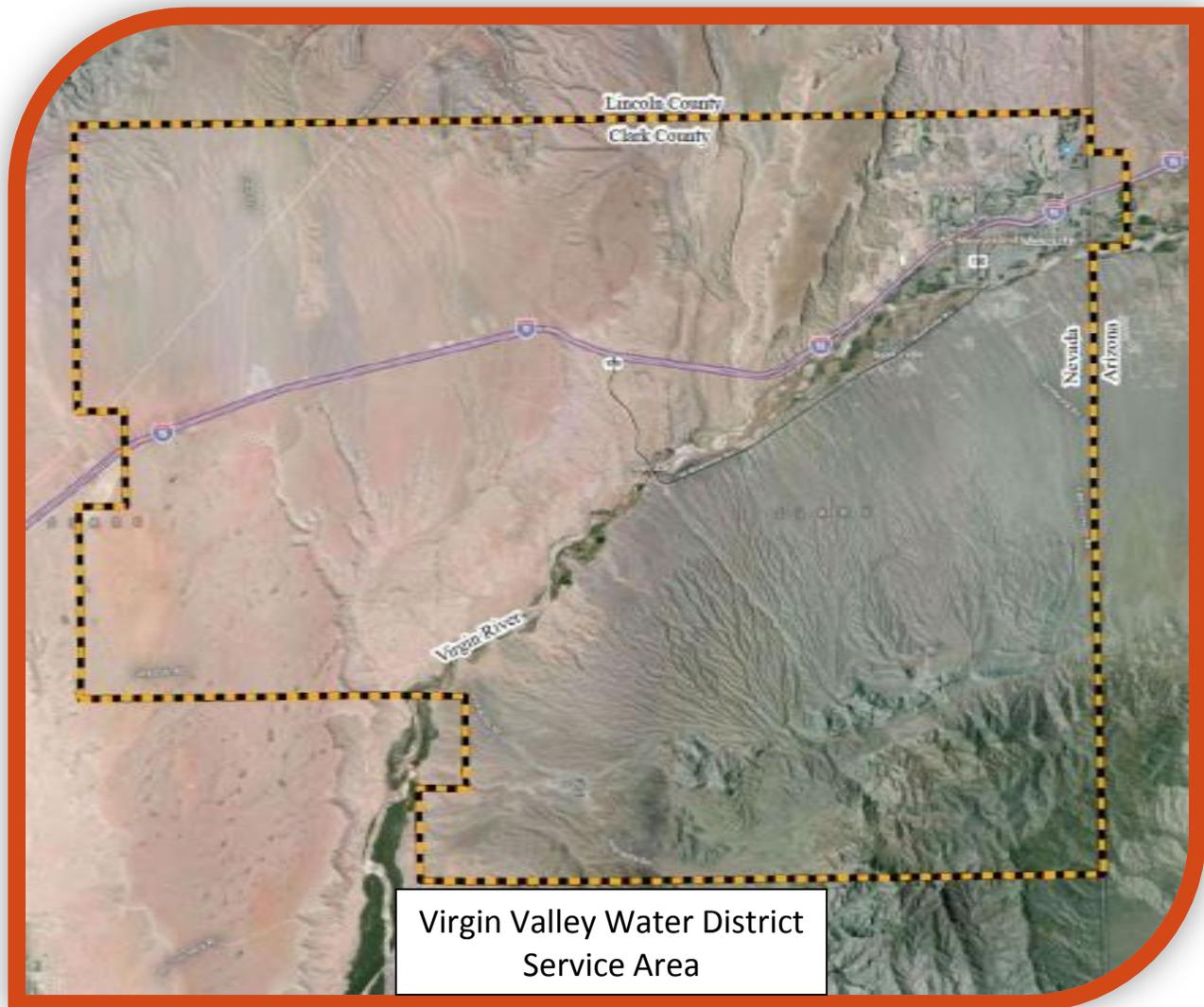
Chemical Feed Pumps
at Treatment Plant



Complex Water System

Executive Summary

The purpose of the VVWD is to provide culinary water service to all residents in its' boundaries: Town of Bunkerville, City of Mesquite, and Riverside.



The District's assets, if constructed new in 2014, would cost approximately \$185,000,000 to replace (including water rights). From multiple deep wells, state of the art arsenic treatment facilities, multiple pressure zones, and through miles and miles of pipe, the water provided exceeds federal and state safe drinking water requirements.

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The History¹

The Virgin Valley Water District was created by the State Legislature in 1993. The initial assets of the District were formed from the Mesquite Farmstead Water Association and Bunkerville Water User's Association.

The first well in the valley was drilled in 1930 on the school grounds in Mesquite. The well was 300 feet deep. The well water was not drinkable because of the high amount of dissolved solids (salts) so the water was used in the restrooms of the school.



The first "water system" in the Valley was constructed in 1933 which connected the Bunkerville High School and ten homes that utilized piped irrigation water. Soon after this, 25,000 and 10,000 gallon concrete tanks were constructed. The 10,000 gallon tank was built near the canal, the 25,000 gallon tank built on "Tank Hill". Water was pumped from the 10,000 gallon tank up to the 25,000 gallon tank. The water from the 25,000 gallon tank then flowed into the system that served the ten homes and high school.

In the mid 1930's, a plan was developed, funding was provided by the Soil Conservation Service, and labor from local residents and the Civilian Conservation Corps to develop several springs and pipe water part way down the mountain to a small dam. Residents from the valley could then drive wagons or trucks to the dam and fill water barrels with much better water than the canal water. A small water tank was built next to the dam for residents to receive their water (mainly because the small dam site had become a convenient swimming hole). Once enough funds were collected, a new tank, further down the mountain was constructed. It became known as "Three Mile Tank". It was unique in that it had a wall inside the tank that separated the water into a 40%/60% split. The 60% side was for Mesquite residents. The 40% side was for Bunkerville residents.

In 1938, funding was obtained from the Church of Jesus Christ of Latter Day Saints to complete the waterlines from "Three Mile Tank" to Bunkerville and Mesquite (separate lines). Now local residents could go to the local standpipe and obtain water in town instead of having to drive up the mountain.

In the mid to late 1940's, funding was secured to provide a rudimentary water distribution system. For Bunkerville, the Bunkerville Water User's Association was responsible for the distribution system. For Mesquite, it was the Mesquite Farmstead Water Association that was responsible for the distribution system. Because of World War II, steel/cast iron materials were not available for use for pipe. Asbestos cement pipe was used throughout the systems to deliver water.

The resulting infrastructure built and the associated water rights from the two water companies are what comprised the beginnings of the Virgin Valley Water District.

The Board

The Board of Directors for the Virgin Valley Water District in FY2014 were:

Ted Miller, President

Kenyon Leavitt, Vice-President

Sandra Ramaker, Secretary/Treasurer

Richard Bowler

Kraig Hafen

The Staff

The District Staff (pictured below) in FY2014 were:

Administration:

Kevin Brown

Aaron Bunker

Mary Johnson

Hatty Tanner

Valerie Martinez

Natalie Anderson

Kyle Hughes

Wes Smith

Distribution:

Steve Tietjen

Cameron Klug

Adam Owsely

Kevin Amen

Bryan Plum

Meters:

Rob Faught

John Zarate

Isaac Steed

Treatment:

Philip Abbott

Troy Tanner

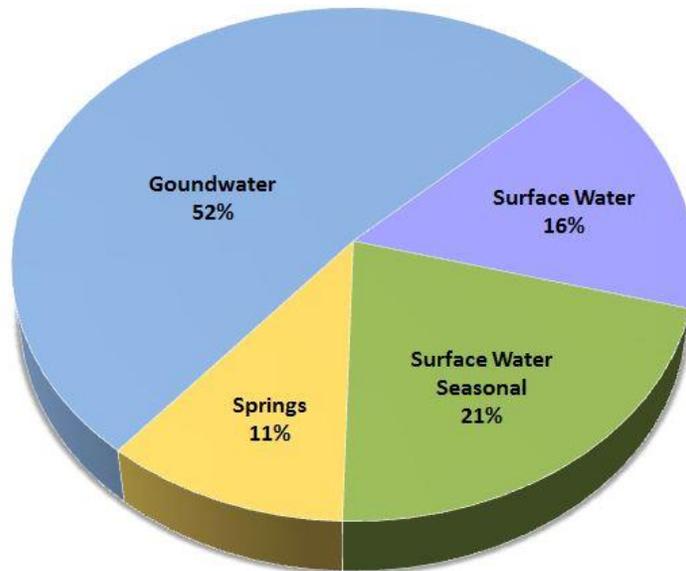
John Stock (Chris Woods replaced John in June 2014)



The District has a very experienced and dedicated staff. From top to bottom, the District's staff is top notch and dedicated to providing safe and reliable water to the residents and visitors to the Mesquite and Bunkerville area.

The System

Water Rights. The District has a variety of water rights including groundwater, surface water (Year Round: Virgin River and Riverside, and Seasonal: Halfway Wash), and spring water (multiple sources on the Virgin Mountains). The chart below summarizes the District’s water rights.



Entity	Approximate Amount afy
Groundwater	12,172
Surface Water	3,820
Surface Water Seasonal	5,000
Springs	2,501
Total	23,492
One acre-foot per year (afy) equals 325,851 gallons	



Figure 1: VVWD Water Rights

Water Sources. Of the water rights listed above, the District is only using groundwater to meet the current culinary water needs of its’ customers. In FY 2014, the District had eight wells that produced water. Three of the wells (including the District’s highest producing well) are south of the Virgin River either in or near Bunkerville. Three of the District’s wells are north of I-15 in Mesquite City limits. The other two are north of Mesquite in southern Lincoln County (one of which is the District’s second highest producing well).

The deepest well is 2,010’ deep, the shallowest is 645’ deep. The highest producing well can pump 2,500 gallons per minute, the lowest 400 gallons per minute. Total well production when all eight wells are pumping is 9,600 gallons per minute (13,824,000 gallons per day).

Figure 2 shows the historical pumping rate per year in acre-feet (one acre-foot = 325,851 gallons).

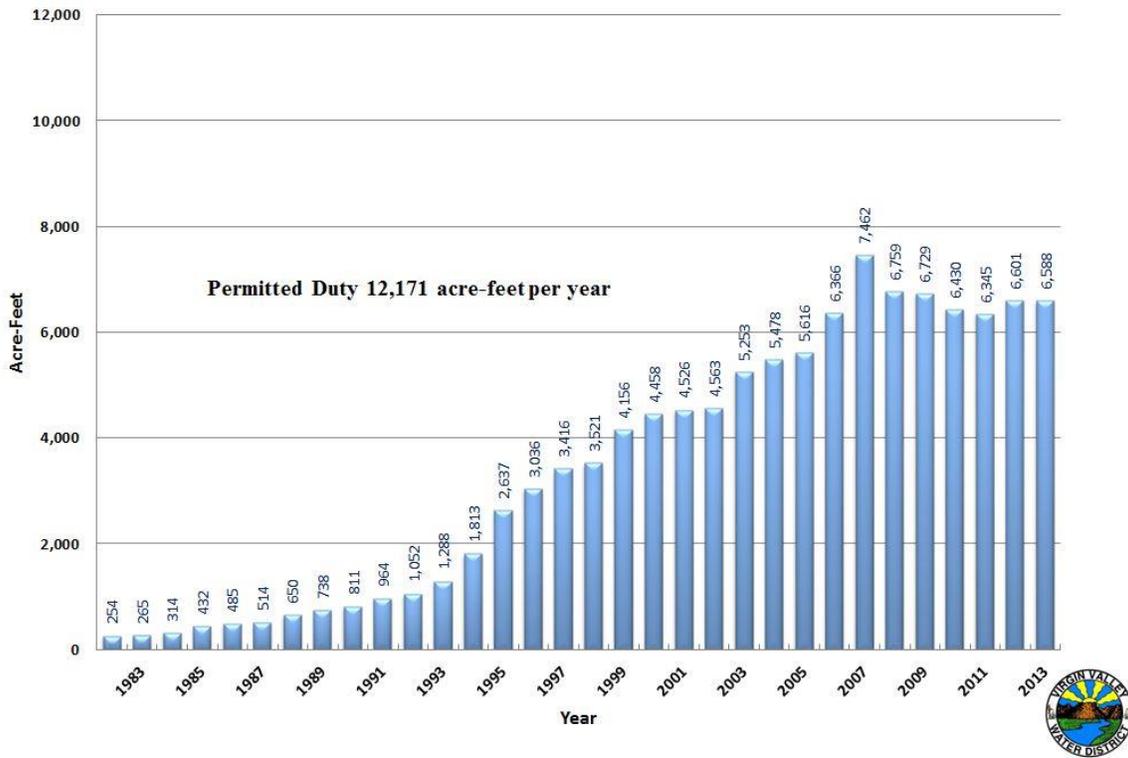


Figure 2: Historical Pumping Rates

Figure 3 shows the average and peak daily pumping rates in calendar year 2013 compared to the total daily system capacity (all eight wells operating simultaneously).

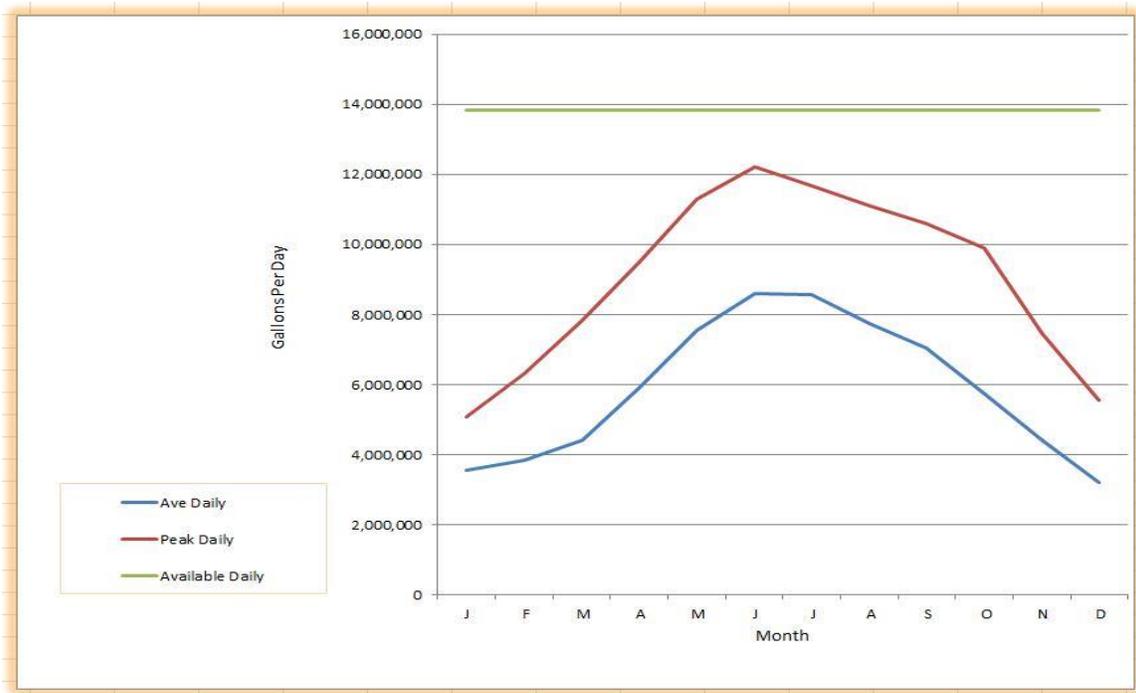


Figure 3: Average Daily and Peak Daily Pumping vs. Total Well Capacity

Water Treatment. The District utilizes five treatment facilities, completed in 2009, to treat the groundwater to remove high amounts of arsenic.

Water Storage. The District has seven above ground steel storage tanks that provides 14,300,000 gallons of storage. The storage is important to help maintain pressures, adequate storage to fight fires, and provide water during power outages.

Water Distribution. The District has approximately 130 miles of pipe to transport water from the sources, treatment plants, and storage facilities to each individual customer. The District has over 8,000 metered customers. Figures 4 and 5 show the amount of pipe by pipe size and number of customer meters by size.

Diameter (inches)	Length (ft)
4	3,788
6	105,717
8	250,261
10	89,233
12	97,550
14	29,730
16	75,958
18	13,503
24	34,503
Total	700,243
Total (miles)	133



Figure 4: Pipe Size by Quantity in System

Meter Size (In Inches)	Number of Connections
3/4	7,716
1	126
1 1/2	86
2	89
3	12
4	20
6	8
8	2
10	1
12	1
Hydrant Meter	33
Total	8,094



Figure 5: Meter Quantity by Size

The Finances

According to the Financial Audit of the District, the District ended FY2014 in a negative balance for the second consecutive year. The operating loss for the District was \$1,100,335. The operating loss for the District in FY2013 was \$712,662.

Several factors have caused the financial issue:

- 1) Failure of revenue to keep up with inflationary expenses.
- 2) Economic collapse in 2008.
- 3) Prior business decisions to expend funds/incur large debt on questionable assets and government mandated assets.
- 4) Deferred maintenance on key assets that failed requiring expensive repairs.
- 5) Defective materials installed that broke requiring expensive repairs.
- 6) Aggressive soils and water that have led to shortened infrastructure life.
- 7) Significant topographic challenges (elevation changes, Virgin River, I-15)
- 8) Failure to focus on water delivery and key weaknesses of the system.

While these are issues that need to be overcome, dwelling on them is not a solution. The solution is to address them and find a financial, technical, or managerial solution to fix the problems and ensure history does not repeat itself.

The Plan

While the District has some critical issues to overcome, a plan is in place to address the issues in the future.

- 1) A capital facilities plan is in place to address strategic system shortfalls.
- 2) An increased focus of future planning also includes proposed funding in future budgets for asset management and maintenance of existing infrastructure.
- 3) While not palatable to anyone, a revenue increase is proposed for FY2015.

FY 2014 Events

FY 2014 brought many changes and challenges for the District. Personnel changes took place as Kevin Brown came on board in July 2013 as the General Manager. Chris Woods was hired in June 2014 to replace John Stock who departed for Hawaii.

In a short three month period, the District had three significant waterline breaks (all on Pioneer Blvd.).

During the year, Wells 2, 31, 27, 28, 32 were down for one reason or another. The District invested significant funding into rehabbing Wells 2 and 31. Well 27 will be rehabbed in FY 2015. Booster pumps impeller corrosion also played a role in creating production water concerns with

the District having to spend unplanned funds to replace bronze impellers with stainless steel impellers.

The District also closed down the Bunkerville secondary system due to the large amount of expenditures to operate it and the little revenue being received by the users. Approximately 210 accounts were converted from the secondary system to the culinary system.

The District transferred the Water Tower Lane assets (old concrete tank, storage shed, and booster pump building) to the Coal Creek Co.

Several legal issues were put to rest with settlements with the exception of two issues.

The District refinanced the 2004 Bond saving the District in excess of \$150,000 per year in debt service payments over the next five years.

The negative bond rating of the District was removed based on the District's commitment to raise revenue.

Staff and the Board began rate increase discussions with the public that carried into FY 2015.

Summary

The Virgin Valley Water District's mission to supply culinary water to the residents inside the boundary is a complex and challenging task. Political, social, technical, financial, economic, regulatory, and historical challenges exist that at times are in conflict with the District's mission. However, with the staff in place, a plan in place, and support from the community, the District will rise to the task assigned to it. Failure to plan and execute a well thought out plan is a recipe for a plan to fail.

References

1. Mesquite Flats: A History of Virgin Valley, Chapter 11 pages 145 - 153. Written by Vincent L. Leavitt, 2004.