

Balmorhea Springs Aquifer and Oil and Gas Drilling
Apache Corporation Presentation
Balmorhea TX, November 7, 2019

A group of 8 Tierra Grande Master Naturalists listened to and questioned Apache's oil and gas drilling, fracking, production, water use and water recycling practices in their Alpine High and Southern Delaware Basin projects. There is strong local concern that increased oil and gas operations will pollute and/or drop the fresh water tables and dry up the Springs at the State Park and adjacent wetlands and irrigated farming.

The Big Bend Conservation Alliance will be hosting a conference on Aquifer Health and Continuing Research on December 7, 2019, in Balmorhea. Contact JD Newsom for more information.

The Alpine High is an intermediate fault block structure between the Delaware Basin to the North and the Davis Mountains to the South. It trends NW-SE along the Reeves and Pecos Counties SW borders with Jeff Davis County. Balmorhea State Park is near the south central edge of the Alpine High fault block. Apache has about 200,000 acres (300-315 square miles) under lease and has drilled 200-225 wells in the project to date. They are finding oil with some natural gas in their Delaware Basin wells and Natural Gas with Natural Gas Liquids in their Alpine High wells. They are down to two rigs drilling at this time because of low prices for Natural Gas Liquids (propane) and Natural Gas. They have recently shut in some wells rather than to produce at an economic loss.

Apache uses almost entirely salt water and brackish water for drilling and fracturing which comes from deep reservoirs. They use a chemical definition of greater than 6000 parts per million Chlorides for brackish water. Sea water is about 30000 ppm. Apache's produced water from deep reservoirs which they are recycling for drilling and fracking is 16000-48000 ppm. They do use fresh water to drill the first 1200' of each well since they are drilling through fresh water aquifers to that depth. Otherwise they are using and reusing salt and brackish waters from deep reservoirs in order to not damage swelling clays in their producing reservoirs with fresh water, and to not deplete the fresh water aquifers.

Apache has built 8 water recycling sites in the project area. Two of them are South of Interstate 10. The sites consist of an initial settling pond and 6 subsequent ponds. Once salt water passes through this process it is reused for drilling or fracturing. Apache is now using 95% plus recycled produced water for its operations. Unfortunately, it was pouring rain so we did not visit one of their water recycling sites. They did show us a small model of a water pit heavily lined with multiple plastic sheets that prevent leakage of brine into the fresh water aquifers. Their pit perimeters are regularly scanned electrically for leaks, and there have been none to date. Recycling brine prevents destruction of fresh water and reduces trucking of water (less traffic on highways and less dust). Apache is helping fund aquifer studies and monitoring of San Solomon Springs by CH2N Consulting, the National Cave and Karst Institute at New Mexico Tech in Socorro, and by UT Austin and UT Arlington.

Apache has invested in Good Neighbor projects around their Alpine High project. They have matched 1 Million dollars in donations and endowed an additional 1 Million dollars to repair and maintain Balmorhea State Park. They have donated several hundred native trees for planting to communities in our area. They are actively working with McDonald Observatory to insure that their newly constructed well locations and processing facilities minimize light pollution. They minimize flaring of natural gas during their well testing and production which reduces interference with the Observatories. Their rigorous low light requirements educate and influence their contractors and competitors to do the same. Apache measures light emissions from over 1500 light sources on their facilities to insure downward direction and low light compliance.

Denis E. Foley - Alpine, TG Class of 2019, biased by swimming in Balmorhea Springs for 60 years and by working as a Petroleum Geologist for 40. I think Apache is an environmentally responsible operator based on their investments and behavior to date, from Balmorhea to Hovey.