

## Bratcher, Mike, EMNRD

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**From:** wayne price <wayneprice77@earthlink.net>  
**Sent:** Tuesday, January 13, 2015 11:01 PM  
**To:** Bratcher, Mike, EMNRD  
**Subject:** Fwd: Delineation BKE

Good Morning,

I sent all day going thru several well logs and various historical documents for the area surrounding the BKE well. For the most part it appears that the better quality water is generally found at depths greater than 100 ft, with most of the perms set at 130-250ft. The quality of this water can vary substantially ranging from 105/952 (Cl/So4) to 1140/2120. Lower on Chlorides, but high in Sulfates form the Gypsum beds. These deeper wells are normally completed in the limestone stringers and are classified as Sansstone/Gravel/Conglomerate.

In addition, it appears that when originally drilled a lot of these wells had Artesian characteristics and rose several feet in the well bores. This partially explains why some of the contours shown by the Chevron Map are probably not totally accurate, as they may not have taken into effect that some of the wells are under confined conditions, while an equal amount is not.

All of the 15-20 wells bores I looked at seem to have this characteristic, but shallow groundwater can be found through out the valley. The Southern Canal basically recharges these very shallow zones with higher Chloride/SO4 water every year. One report I found indicated Irrigation return water can be found at very shallow depths. Some of the well logs I looked at showed an area where water can be found at about 10 ft setting on top of a white clay. The quality of this water is considered non-potable, as some historical records showed very high Chlorides/Sulfates through out the area. This particular type of water is not good for crops or drinking water, and generally has to be flushed out of the root zone occasional.

So, when we start doing our vertical delineation, I want to make sure we don't go any further than what our contamination went. One way we may be able to differentiate is to run both Chlorides and Sulfates as most produced water is low in Cl/So4 ratio.

It would not surprise me now, if we dig a few feet and hit water, but it won't be the normal usable groundwater in the area.

So, I hope you see our dilemma, and allow us the 500 ppm Cl or background for delineation stop number.

Please let us know your decision.

Begin forwarded message:

**From:** wayne price <[wayneprice77@earthlink.net](mailto:wayneprice77@earthlink.net)>  
**Date:** January 13, 2015 11:53:39 AM MST  
**To:** "Bratcher, Mike, EMNRD" <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Subject:** Re: Delineation BKE

Hi Mike,

I did notice you included a copy of the map below.

The trend map certainly has some merit, I question where and when they got their data points and the fact the OSE has a study out that groundwater continuity, depth and flow vary seasonally depending upon time of year. In addition, is this map based on cross-sections of like lithology or simply depth to groundwater.

This may be an exercise in futility in me trying to convince you which map or who's data is correct. I do know from studying this area extensively that ground water depth can and does vary tortuously both vertically and horizontally. I would like to point out a delineation number of 600 ppm Cl seams to be the new default number coming out of Santa Fe. The shallow groundwater quality in this area will range from 500-2200 ppm Cl since this is the information given by the Carlsbad Irrigation folks and is well documented. So trying to go below that number just doesn't make sense.

Therefore we would like for you to consider a Cl number of 500 ppm for chloride, and a TPH number of 500 ppm which is halfway. Once we delineate these numbers, then I will send in a clean-up plan for your approval.

Currently we are rebuilding the SWD and any extensive delay in investigation and clean-up will cost a tremendous amount of revenue loss.

Wayne Price-Price LLC

On Jan 13, 2015, at 9:04 AM, Bratcher, Mike, EMNRD wrote:

Wayne,

OSE data is inconclusive for this area, as it shows DTGW at 40' and 120' for almost identical sites. The ChevronTexaco trend map indicates GW may be less than 50'. With that, I think OCD will want to consider that GW is possibly less than 50, unless Key has, or wants to obtain hard data that would prove differently.

At this time, for delineation purposes, the target goal for chlorides will be 250 mg/kg, or background, and 100 mg/kg for TPH.

If you have any questions or concerns, please contact me.

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-----Original Message-----

From: wayne price [<mailto:wayneprice77@earthlink.net>]

Sent: Monday, January 12, 2015 6:20 PM

To: Bratcher, Mike, EMNRD

Subject: Delineation

Hi Mike,

Next week I am going to try and find the vertical extent at our BKE SWD and would like to know if the following parameters will work for you to determine when to stop.

The Groundwater depth is 60 ft, there are no waters wells within 200 ft, and no rivers etc.

Benzene 10 mg/kg 8021

BTEX 50 mg/kg 8021

TPH 1000 mg/kg 8015M

Chlorides 600 mg/kg 300.1

The area is surrounded by out of service farmland where it was irrigated with river-canal water that ranged from 500-2200 ppm Cl.

Most of the surrounding area has heavy Sulfate and Salt stains from past farming.

Please let me know if this will work?

Wayne Price-PriceLLC

<Key BKE 1.pdf>