



## Example Survey Report

Nov 12 2015

Your name hear

Subject: Exploratory Ground Water Survey of Property Located at  
Anywhere in California

Gentlemen:

As per our agreement, Water Prospector is pleased to submit this report detailing our Exploratory Ground Water Survey of the Subject Property.

The field work was conducted on **November 5, 2015**, and consisted of **6 hours** of exploratory ground water survey work. We scanned **all** accessible parts of the **--- acre** property. Very low frequency waves (VLF) waves were used to scan or survey the available areas of the property. **Three** different VLF frequencies were used during the survey.

As presented herein, a total of **six (6)** target were marked as possible drilling locations.

## VLF TECHNOLOGY

Electromagnetic surveys, using “state of the art” instrumentation methodology, are ideal in assisting and identifying underlying fractures and the best locations for available ground water. In order to view the subsurface, a series of sections or profiles were conducted across the property using the VLF instrument. This form of hydrogeologic exploration method makes use of electromagnetic fields generated from very low frequency (VLF)

military transmitters located throughout the world. This method is very well suited for water prospecting in locating fractured zones in bedrock.

Each survey is subdivided into measured quadrants and several linear scans are conducted along the subsurface. The portable unit measures and records VLF waves at locations along a given traverse. The collected data are then downloaded onto our computer and analyzed. The analyzed data from each scan are presented graphically showing a cross section of the various geologic structures and differing lithologic units.

## **EQUIPMENT LIMITATIONS**

In general, the longer the runs, the better the quality of the data. Some areas cannot be scanned. Data can be obliterated or badly skewed by the presence of overhead electric wires or buried metal conduits. Metal fences and buildings also obscure data.

The VLF software utilizes metric measurements. Therefore, all field measurements are collected in meters and all generated profiles are shown in meters, both in terms of linear distance and in depth. The depth limitation of the unit is about 100 meters (330 feet). All information indicated in this report below about 350 feet is projected from available data.

One limitation of the software is the inability to differentiate between elevation changes. All profiles are assumed to be flat surfaces. Thus, quite naturally, drilling depths to ground water on hillsides may need to be deeper than if the same elevation were drilled in the valley area below.

Caution: The vertical depths of the fractures are only estimates. Depths are the minimum estimated depth for drilling, whereas the actual depth to encounter water may be deeper. Fractures do not always contain water and water levels in the fractures are not necessarily the same as the estimated depth of the fracture itself.

## **RESULTS AND SITE SELECTION**

From the scans conducted across the property, we selected possible targets for exploratory well drilling. Although these data are not absolute and are subject to interpretation, typically, the best targets have density readings of 30% out of a possible 30%. We then select the best location to drill a well at each target based upon either the deepest point of the downward dipping fracture or on the most porous part of the fracture to insure the best chance of encountering water. Ultimately, drilling is the only way to actually determine the presence or absence of ground water and, if present, the quantity

and quality of ground water at any given target. Drilling depths are approximate only and may require deeper depths based upon the driller's input.

Targets with a higher density percentage have the greatest chance of producing ground water. Likewise, the deepest targets usually have the best year-round flow. Shallow targets can be seasonal.

For this survey, we conducted 16 scans for a total of 4,410 meters or about 14,550 linear feet. Based upon these scans, we selected six (6) targets for future exploration and possible water well sites. The targets show potential fractures ranging from about 40 to 100 meters long for a total of about 410 meters (1,353 feet) for the entire 6 targets. We have concluded that there is only about nine (9) percent (1353'/14550') of the underlying bedrock that is sufficiently fractured and broken to allow water to accumulate and that will yield water to wells. In other words, there is about a 91 percent chance that, without using scientific investigative tools, a well drilled at the Subject Site would encounter hard rock that is either dry or that is not capable of yielding sufficient water to wells.

Each target was left with a ground marking and flagging, to identify its location for the driller. Additionally, GPS readings were at each target location for future reference using a Garmin GPS instrument with an accuracy of +/- 9 feet. **Figure 1** presents an aerial view of the property showing the selected Targets.

**Figure 1 – Aerial Photo Showing Locations of Potential Drilling Targets**



All targets appear to be located at least 100 feet from any septic systems but should be verified by the Owner before drilling.

**Figure 2** presents an explanation of the density scale used in our survey.



**Figure 2 – Density Scale Used in Water Prospector Survey**

Based upon our experience, the percentages listed on the density scale represent the approximate rate of success for each of the categories of targets.

In addition to reviewing all electronic data collected during the survey, we also reviewed any topography and geology maps that available for the Subject Property, as well as aerial and satellite images which may show lineament patterns as a result of regional faulting or fracturing. Water Prospector searched and reviewed the online well location and data files of the California Department of Water Resources to glean well and ground water data for this investigation. Water Prospector also conducted a visual evaluation of the local geology during the survey which included locating any nearby well and outcroppings that may be relevant to the survey.

From the available data, it appears that the depth to ground water in this area varies greatly depending upon the depths of the wells, the aquifers perforated, seasonal fluctuations, drawdowns associated with nearby pumping wells, ground surface elevation differences, and even effects of possible unmapped faults in the area. Based upon our review of the available data (which are attached), we estimate that the depth to water at the Subject Site ranges between about 150 and 340 feet deep.

Depending upon the intended use of the water, we recommend that a water sample be collected and analyzed from each new well to determine the potability of the water.

## **DISCLAIMER**

Due to the limitations of the surveys performed for this study and the uncertainty of subsurface conditions and environments, no guarantee or warrantee as to the quality or quantity of ground water can be made or implied.

It must be realized that these data are not absolute and are subject to interpretation. Clearly, there are some risks involved with subsurface exploration. Even in areas where we find apparent fractures, it does not guarantee that they have water stored within them.

## **PROFESSIONAL CERTIFICATION**

This report has been prepared by the individuals whose seals and signatures appear hereon. The data utilized in this report were interpreted or presented using professional formats. The report is based on professional opinions that have a basis in fact.

The findings, recommendations, specifications, or professional opinions contained in this report were prepared in accordance with generally accepted hydrogeologic principles and practice in this area of southern California. There is no warranty, either expressed or implied.

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All of the scans or profiles conducted for Subject Property are attached. **The Targets are listed in order of preference.**

**Target A 200 @ 264 meters**

**The porous area of the target measures over 80 meters in width (264 feet).**

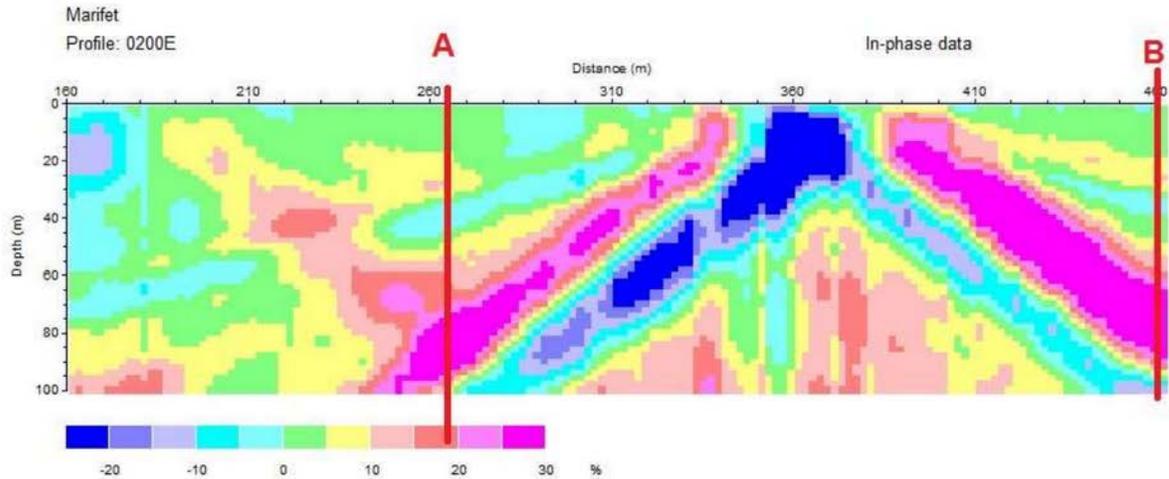
**The estimated depth to the target is 120 meters (396 feet)**

**The density level is 30% out of 30%.**

**Reference: scan 200 @ 264 m**

**A ground marker has been placed at this site.**

**GPS 33 deg 26.899 N 117 deg 17.613 W**



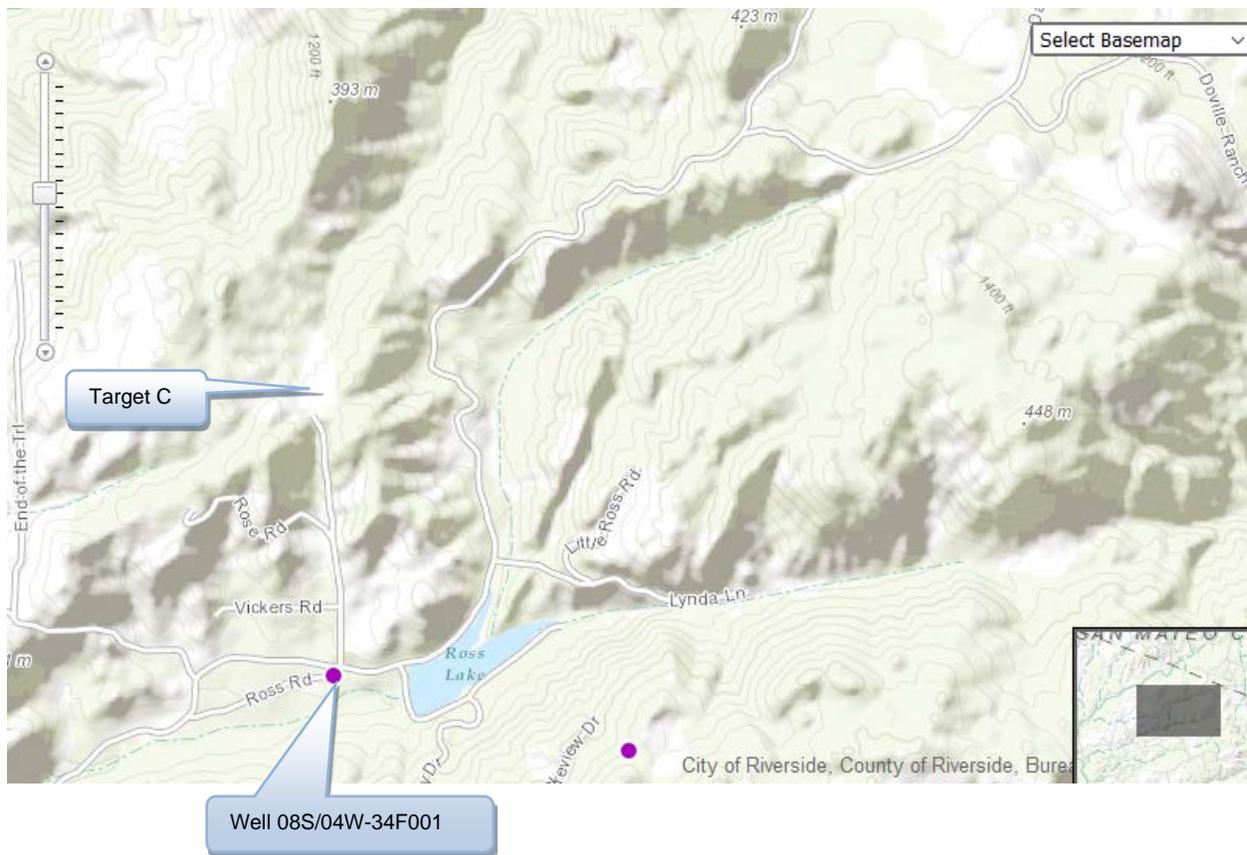


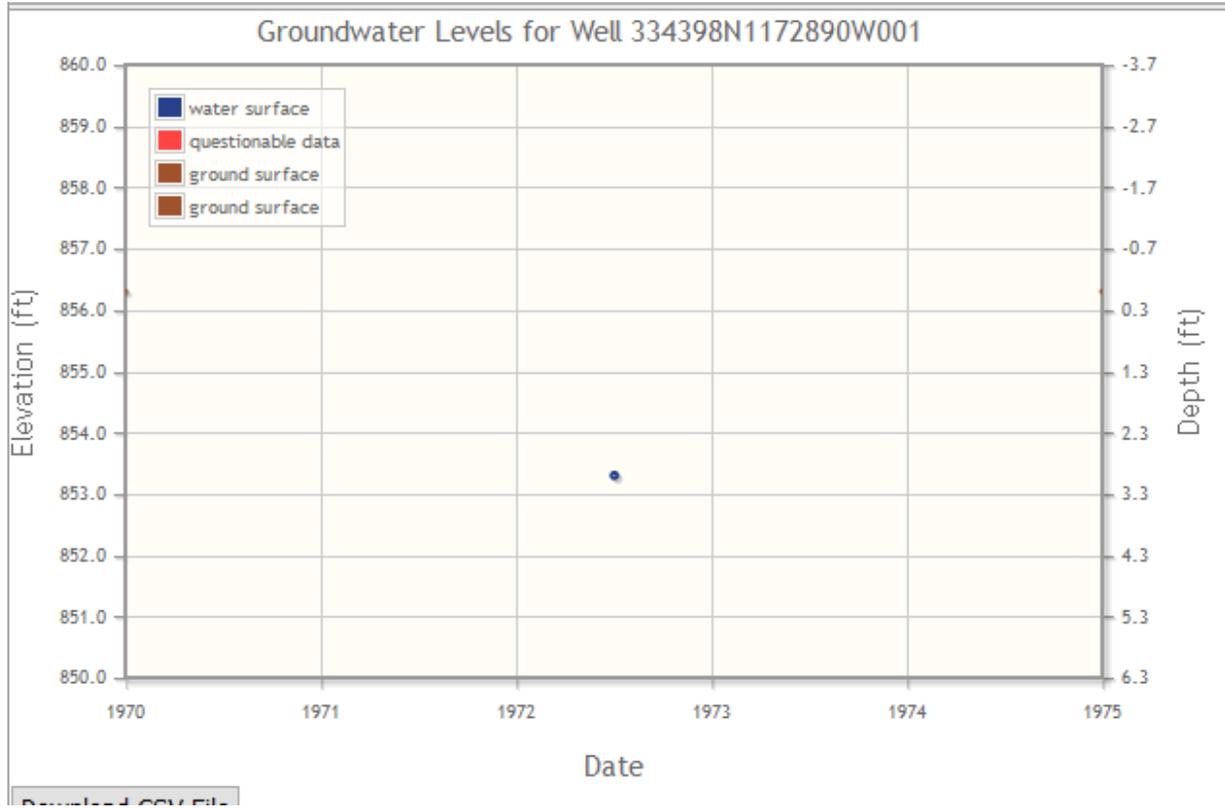
**Target A**

## RESULTS OF GROUND WATER LEVEL DATA FROM DWR

There is a well (08S/04W/34F001) on file with the State Department of Water Resources located about 2500 feet south of our Target C. The ground water level in 1972 in that well was at an elevation of 853 feet.

Our potential targets range in surface elevations from 1000 to 1195 feet. Assuming all things being equal and a flat ground water surface, wells drilled at 6 target sites would encounter ground water at about 147 feet deep in the well drilled at Target F to about 342 feet deep at the location of Target A. However, the ground water gradient probably slopes to the south allowing the water levels in the Target areas somewhat higher in elevation than at the well near Ross Lake.





Download CSV File  
**Hydrograph of Well 08W/04W-34F001**