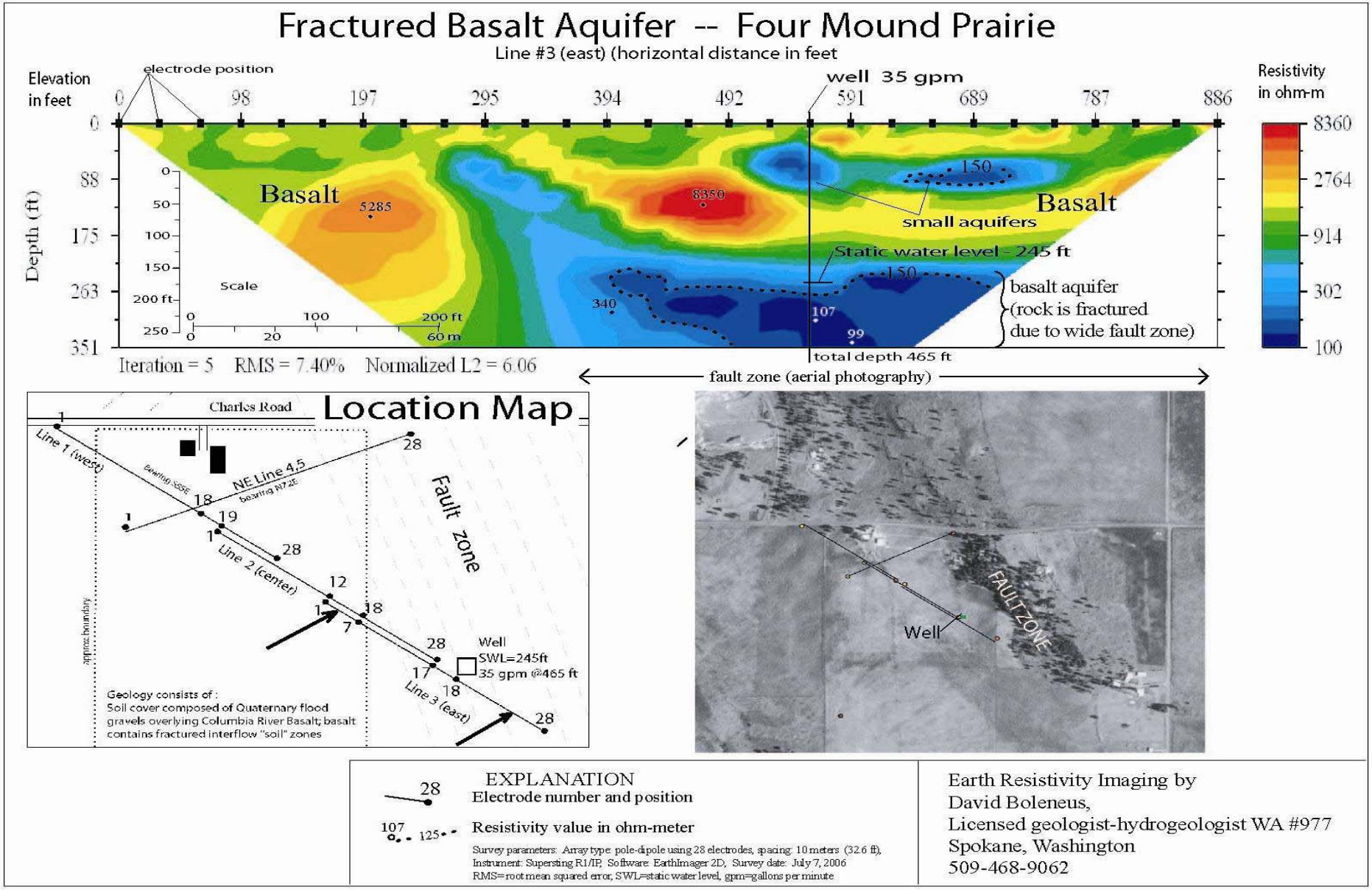


## Case Study 2

**Fractured Basalt Aquifer – Four Mound Prairie, Northwest part of Spokane County, Washington**

## Case Study 2
### Fractured Basalt Aquifer – Four Mound Prairie, Northwest part of Spokane County, Washington

CONCLUSION—Five *HydroImage* lines recorded in July 2006 did not locate a site for drilling of a well on the client's propert. Because the imaging work encountered no targets in an area that previously recorded 12 dry wells, it was recommended that the client arrange to share the water supply from the well located on the neighbor's property. Location of this well that produces 35 gallons per minute (gpm) is shown on the profile of line #3. This recommendation resulted in saving the cost of drilling of another unsuccessful well (dry hole).

REVIEW OF RESULTS—Located on Four Mound Prairie about 10 miles west of Spokane, the objective, using the HydroImaging method, was to find a suitable site to drill a new well. At that time the client shared water produced from a neighbor's well to the east shown in Line #3 profile. Analysis of the hydrogeologic and surface geology map data identified a fault zone about 200 ft or more in width that penetrated basalt (lava) rock at surface (see forested area, *aerial photograph*) near east end of Line #3 (arrows on the Location Map). One dry well had been drilled on the property and twelve wells had been drilled on two adjoining properties, of which only two wells produced usable quantities of water. One well located to the east on the neighboring property, and within the fault zone, produced 35 gallons per minute so the water storage was presumed to have formed due to the fracturing of rock within the fault zone.

Client requested that the survey lines be located as near as possible to the residence, so lines #1, #2, and #3 were recorded accordingly with Line #3 purposely located to cross the position of the 35 gpm well (see electrode 18 on line #3 on *HydroImage profile*). The HydroImage profile of Line #3 shows that the area below 250 ft depth on the lower right of the profile is likely within the presumed fault zone. This zone contained the low resistivity values ranging 99-107 ohm-meters. This zone is responsible for the water-producing well. The static water level in the well is known to be 245 ft, an elevation that closely corresponds to the top of the low resistivity zone on HydroImage profile #3. The hypothesis developed from this work was that the fault zone was responsible for fracturing of the rock and the development of the aquifer located at this well.

Based on this assessment, lines #4-#5 were deliberately positioned and recorded to cross the hypothesized fault zone and extend outside the client's property. The results of lines #4-#5were negative as they located no low resistivity zone that could be target for drilling. The recommendation made was that the client continue a water-sharing agreement from the neighbor well.