

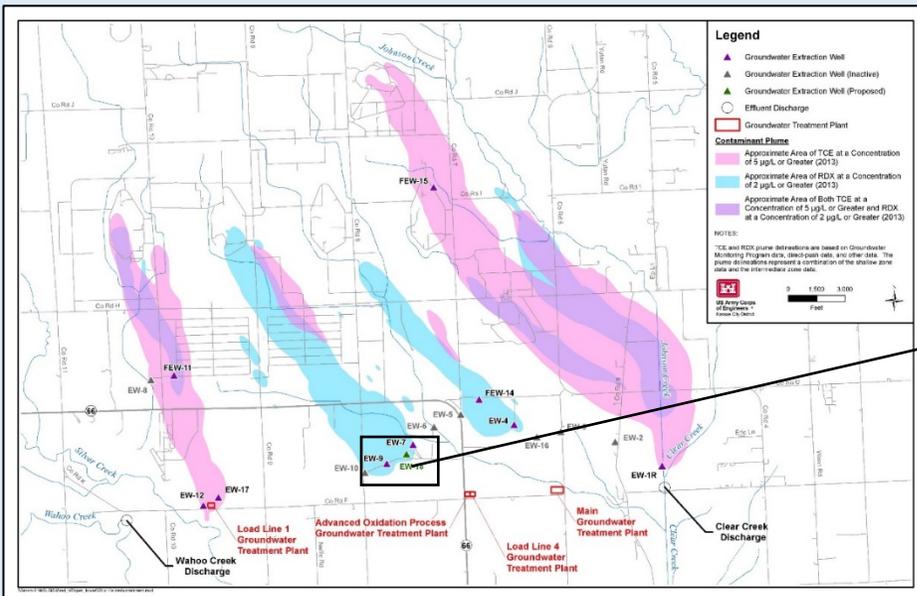


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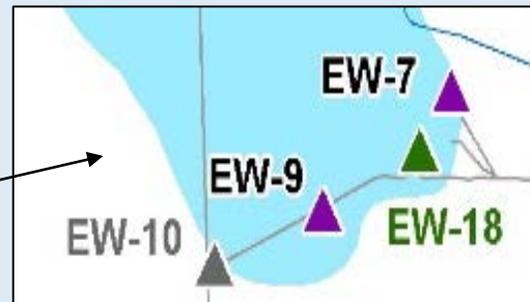
DETERMINING A LOCATION FOR NEW EXTRACTION WELL EW-18 FORMER NEBRASKA ORDNANCE PLANT, MEAD, NEBRASKA

STEP 1: PERFORM GROUNDWATER MODELING

- During the 2012 Containment Evaluation, groundwater modeling predicted that at some time in the future, a portion of the Load Line 2 groundwater plume with hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) concentrations above the Final Target Groundwater Cleanup Goal of 2 micrograms per liter would move southeast and between extraction wells EW-7 and EW-9.
- Groundwater modeling revealed that a new extraction well (EW-18) would supplement the existing extraction wells as part of Load Line 2 groundwater plume containment system.
- Additional groundwater modeling simulations were performed to determine the best location for EW-18 to be installed which suggested that there were three potential locations.



Overall Site Layout



Leading Edge of the Load Line 2 RDX
Groundwater Plume

Groundwater Model Output for Load Line 2 RDX
Groundwater Plume

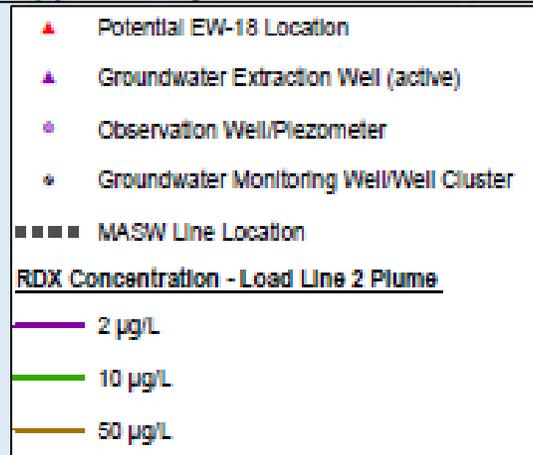
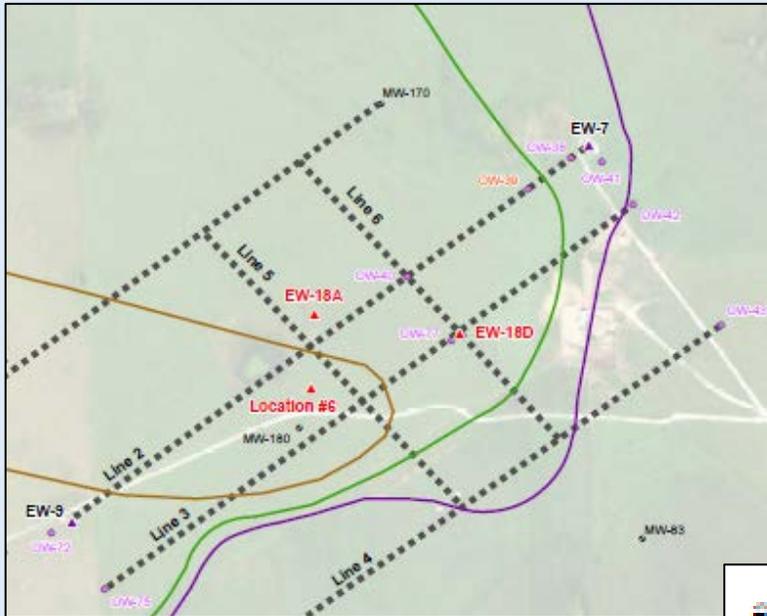


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STEP 2: GEOPHYSICAL SURVEY INVESTIGATION

Geophysical Survey Lines



- A ground surface geophysical survey was performed near the 3 potential locations for the new extraction well EW-18 to provide subsurface data so that the best location could be determined.
- The geophysical survey used a sledgehammer to create seismic surface waves that were recorded at closely spaced geophones connected to a seismograph.
- Sand or loose soil has lower seismic wave velocity values (shown as blue and green below) and higher hydraulic conductivity compared to hard clay or bedrock (shown as red and orange below).

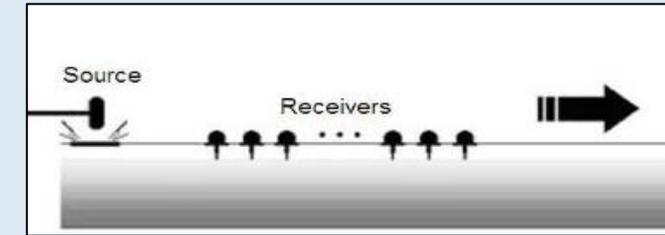
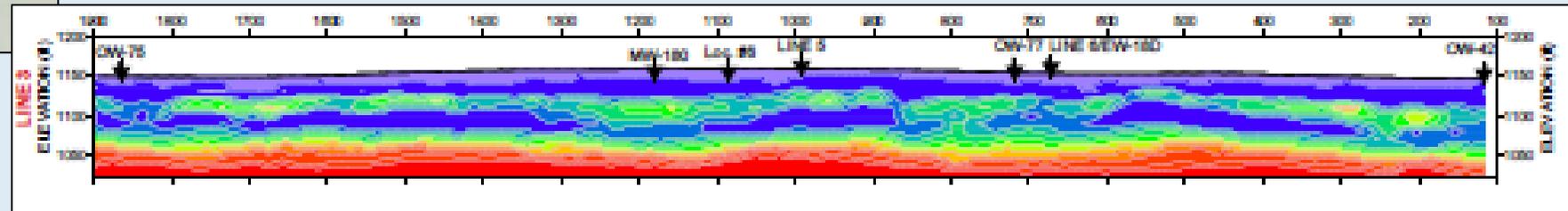


Figure Simulating Geophysical Survey



Geophysical Survey Cross Section Output

- The location for the EW-18 test hole was determined following the review of the geophysical data. A test hole is always installed prior to the installation of a new extraction well.



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STEP 3: INSTALLING A TEST HOLE

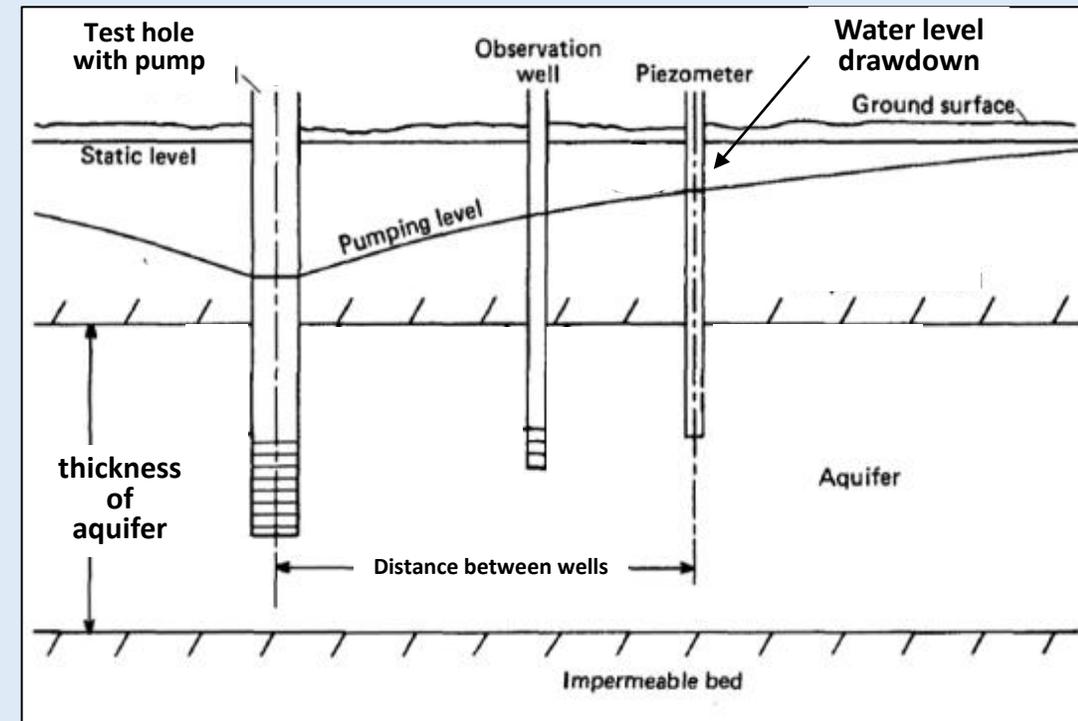


Drill Rig Collecting a Soil Core from the EW-18 Test Hole to Obtain Geologic Information



Pump Test for EW-18 Test Hole

- A test hole, observation well, and piezometer were installed near the final location for EW-18 to obtain additional geologic and hydraulic data to finalize the design of EW-18.
- A soil and bedrock core sample was collected from the test hole to provide information on the different subsurface geology from ground surface down into the bedrock.
- To obtain hydraulic data, the test hole was pumped at a constant rate and the drawdown of groundwater was monitored in the nearby observation well and piezometer.
- The pump test data was used to confirm that the pumping rate can be achieved for EW-18 to maintain hydraulic containment for the Load Line 2 RDX groundwater plume.



Typical Test Hole, Observation Well and Piezometer Setup



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WHAT COMES NEXT?

- Prepare the EW-18 Work Plan.
- Obtain approval from EPA and NDEQ on the design of the extraction well.
- Drill and install EW-18 and perform pumping tests.
- Install the EW-18 pump house and UV treatment system.
- Construct the pipeline to connect EW-18 to the UV treatment system and to the effluent pipeline to discharge to Wahoo Creek.
- Turn on EW-18 and perform system testing.
- Prepare Construction Completion Report.

