

NYE COUNTY EARLY WARNING DRILLING PROGRAM

STATUS REPORT



**Nye County Nuclear Waste Repository Office
Pahrump, Nevada**

**AIRBORNE MAGNETIC
SURVEY**

**EARLY WARNING
DRILLING PROGRAM
PHASE II UPDATE**

**ALLUVIAL TRACER
COMPLEX**

Presented to:

Nuclear Waste Technical Review Board

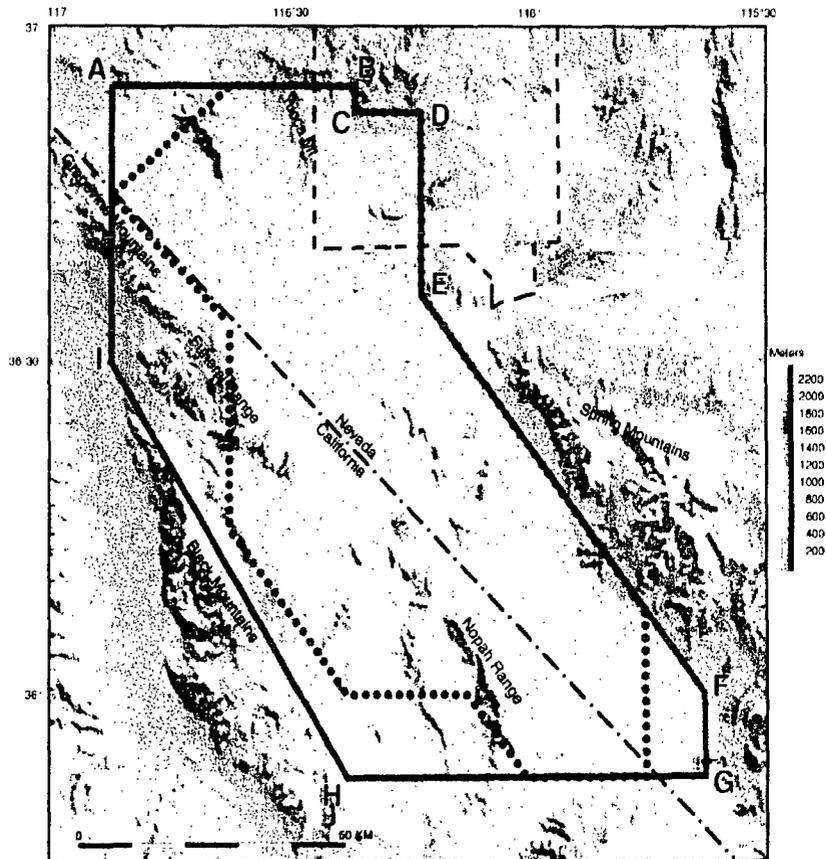
January 25th 2000

Presented by:

**Nick Stellavato
On-Site Geotechnical Representative
Las Vegas, Pahrump, and EWDPIland**

AIRBORNE AEROMAGNETIC SURVEY

Proposed Revisions, Aeromagnetic Survey of the Amargosa Desert



-  Revised boundary
-  Old boundary
-  NTS

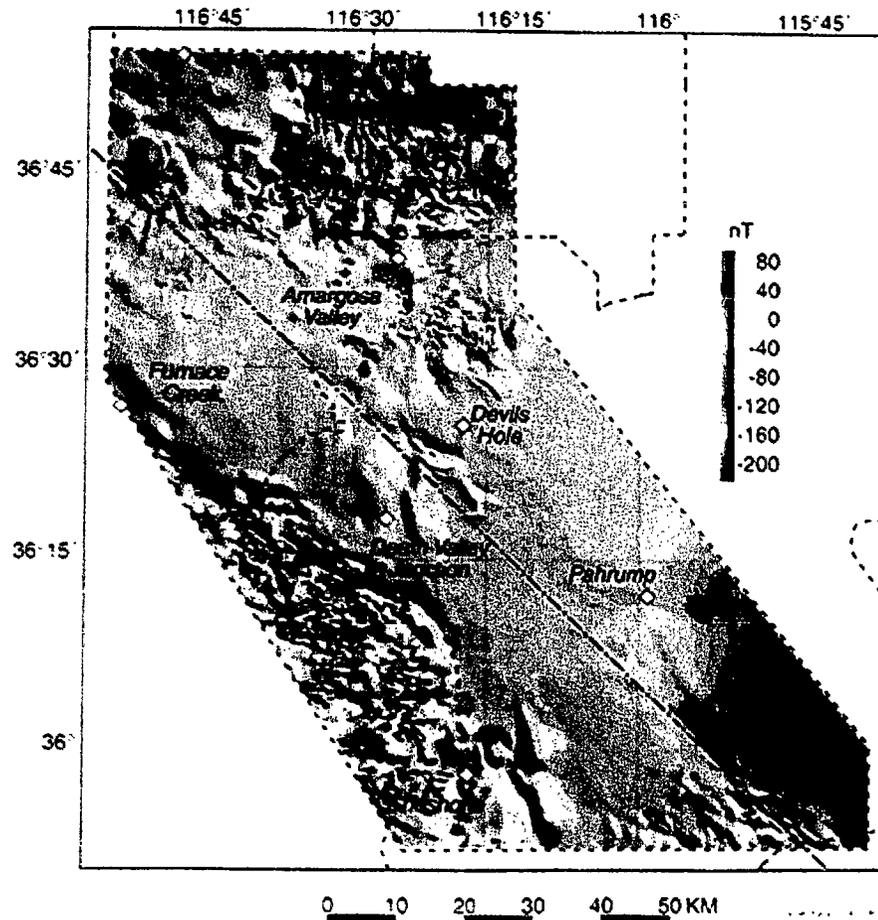
A:	-116. 52.50	36. 54.90
B:	-116. 21.50	36. 54.90
C:	-116. 21.50	36. 52.50
D:	-116. 13.10	36. 52.50
E:	-116. 13.10	36. 36.00
F:	-115. 37.50	36. 0.00
G:	-115. 37.50	35. 52.50

Low-Altitude Aeromagnetic Survey

- Cooperative effort funded by Nye County, Inyo County, and Clark County
- Survey conducted by Sanders Geophysics
- Kudos to Department of Energy Nevada Test Site Operations
- Airborne survey completed
- Data processing completed and transmitted to US Geological Survey
- USGS has done preliminary interpretations (Rick Blakely)
- Results are being used to finalize EWDP Phase II and Phase III locations
- Providing better definition of compartments and faults in the valley-fill sediments of Amargosa Desert

AIRBORNE AEROMAGNETIC SURVEY

Aeromagnetic Anomalies



Preliminary Findings by Rick Blakely (US Geological Survey)

- Spectacular detail in volcanic terrain north of Highway 95
- Clear delineation of shallow buried volcanic features
- Definition of geologic structures
- Provides detail on possible fault conduits in valley-fill deposits in Amargosa Desert

AIRBORNE AEROMAGNETIC SURVEY

This map shows the intensity of the earth's magnetic field in the vicinity of Yucca Mountain (unprocessed data). The interpretations and map are by Richard J. Blakely, USGS.

Numerous north-south and northeast-southeast magnetic lineaments in the volcanic terrane north of Highway 95. Likely fault related and could have effects on groundwater flow.

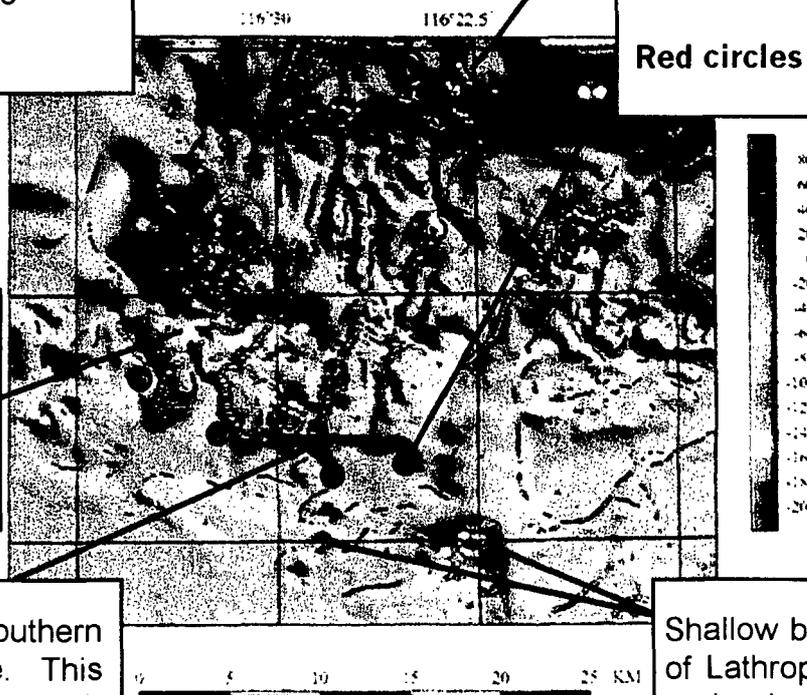
White circles are magnetic contacts that sometimes indicate near surface faults, but alternate explanations are possible.

Red circles are EWDP wells.

Major east-west magnetic low extending from western Crater Flat to eastern Jackass Flats (and perhaps points beyond)

East-west structure along the southern margin of the Nevada Test Site. This feature appears to truncate north-south and northeast-southwest faults in the vicinity of Yucca Mountain. (Expression of Carrara Fault?)

Shallow buried volcanic features south of Lathrop Wells include a basalt flow and volcanic centers. The largest feature occurs at the intersection of the Rock Valley and Winograd gravity faults, the location for NC-EWDP-8D.



AIRBORNE AEROMAGNETIC SURVEY

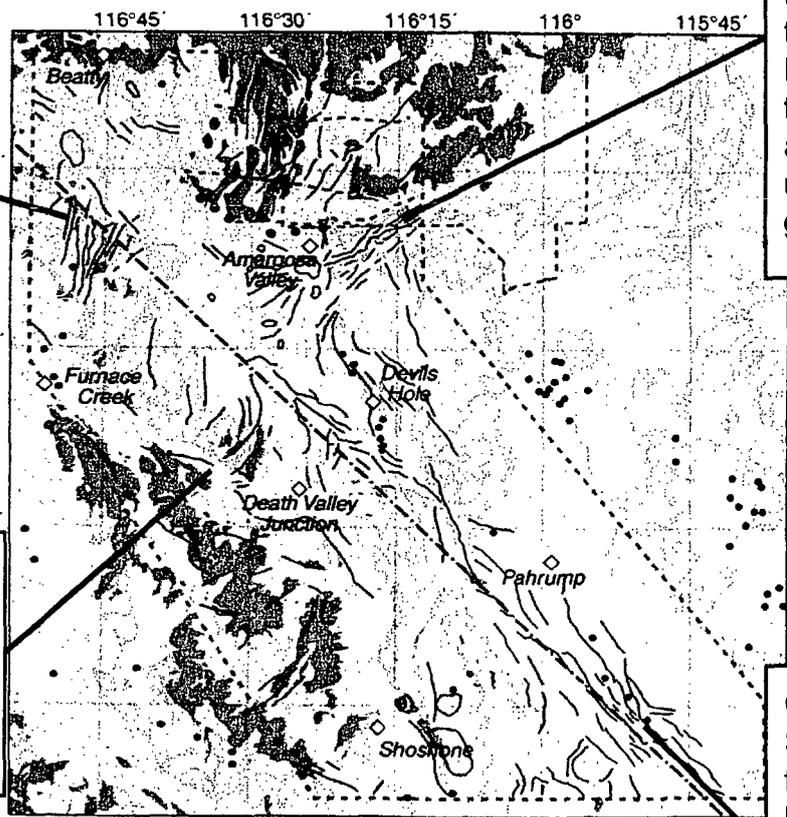
Generalized Geology

Magnetic lineations in Funeral Range may be fault zone that transmits groundwater into Death Valley.

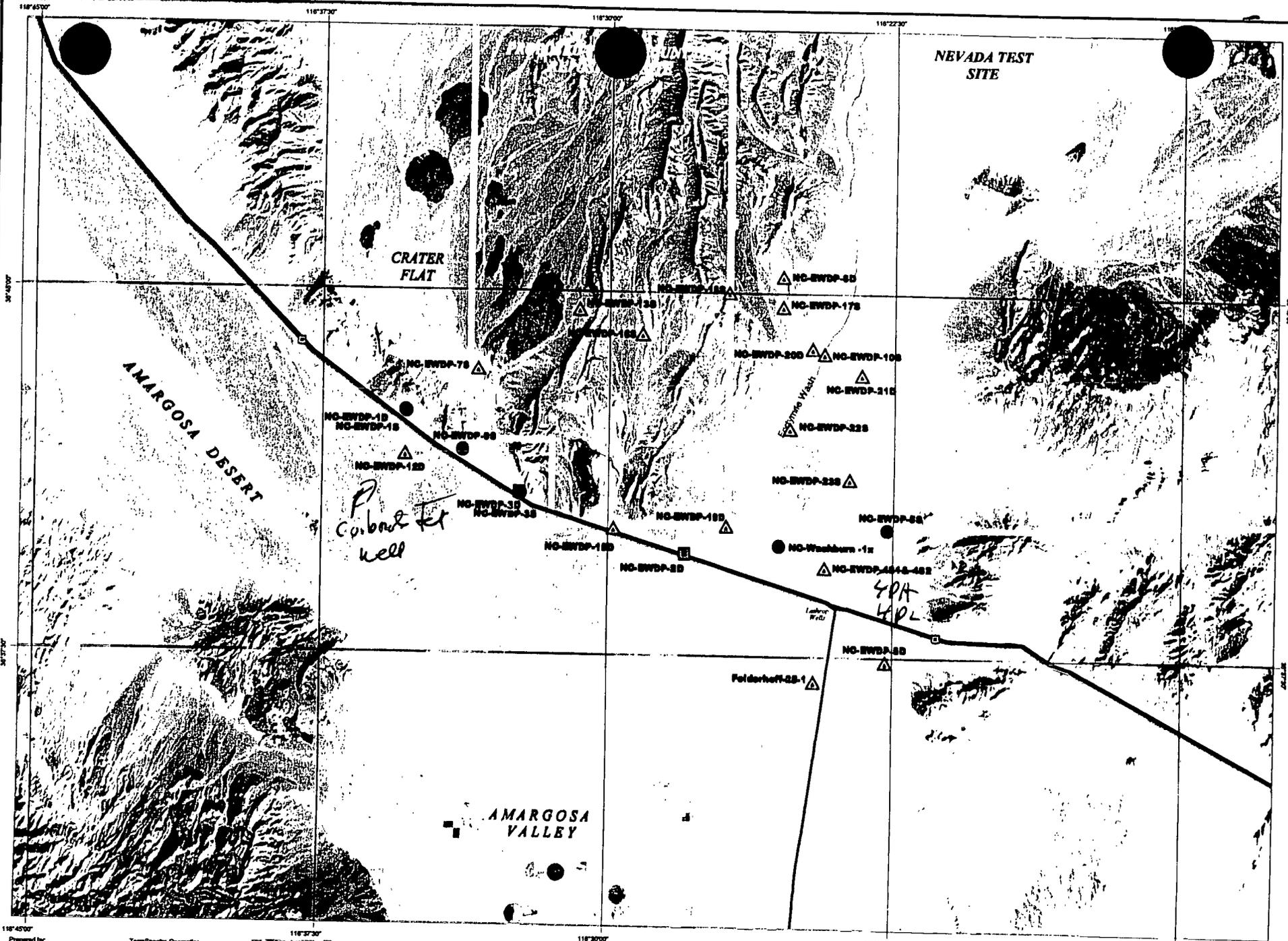
Magnetic lineations suggest that the Rock Valley fault extends further into Amargosa Desert than previously thought. Possible radial dikes and volcanic center have an unknown effect on regional groundwater regime.

Expression of Furnace Creek fault zone is not as strong. Inyo County proposes drilling in this fault zone to determine its hydraulic significance.

Complex lineations along the State Line fault zone. This fault zone coincides with a high in the pre-Cenozoic surface that may partially isolate the Nevada portion of Pahrump Valley hydraulically from the California portion.



- Quaternary sedimentary deposits
 - Tertiary and Quaternary volcanic rocks
 - ▨ Cenozoic granitic rocks
 - ▤ Pre-Cenozoic rocks
 - Spring
 - Early Warning Drill Site
 - Magnetic lineation
- 0 10 20 30 40 KM



Prepared by: TerraSpectra Geomatics
 Date Prepared: February 23, 1999
 Revision Date: September 30, 1999
 Project Director: Nevada State Plane
 Zone: Central
 Datum: NAD83
 Coordinates for Wells 10X, 15, 20, 30, 35, 55, 85, and Washburn-1X were taken from VSP Survey of EWDP Borohole, conducted March 6 & 10, 1989.
 Coordinates for Planned Wells 118, 145, 150, and 185 were converted from USGS 7.5' topographic quadrangles.
 Coordinates for Wells 10X, 15, 20, 30, 35, 55, 85, and Washburn-1X were converted using a Variable Proportional Scale. Well 220 and 225 were converted using a Variable Proportional Scale. All other EWDP coordinates were measured using a Global Positioning System (GPS) with a 2.5 meter horizontal accuracy. All other EWDP coordinates were measured using a Global Positioning System (GPS) with a 2.5 meter horizontal accuracy.
 Thermal Mapper satellite image map base.
 Nye County Nuclear Waste Regulatory Project Office



NYE COUNTY, NEVADA
**EARLY WARNING DRILLING PROGRAM
 DRILLHOLE LOCATIONS**



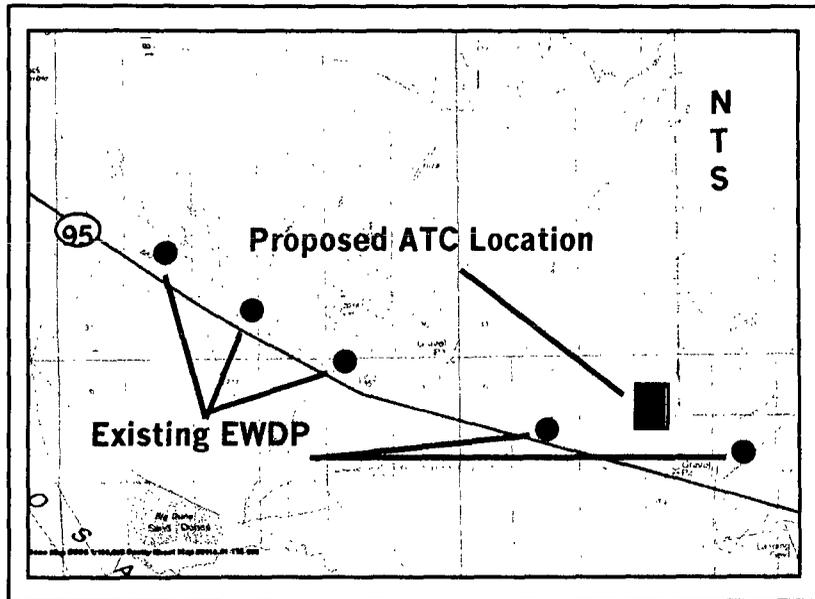
- Completed Drillholes
- In-Progress Drillholes
- ▲ Planned Drillholes

EWDP PHASE II UPDATE

DRILLING AND WELL CONSTRUCTION STATUS AND PLANS

- Conductor casing set at NC-EWDP-3DB (500')
- Conductor borehole being drilled at NC-EWDP-2DB (500')
- Piezometers drilled, constructed, and developed at NC-EWDP-4PA and 4PB
 - Confirms depth to water is 420 ft
 - Alluvial aquifer is confined at this location; static water level is 340± ft below land surface
 - First water was sampled at NC-EWDP-4PA
 - Shallow piezometer set to 495 ft screened from 405 ft to 485 ft
 - Deep piezometer is being set to 850 ft screened from 740 ft to 840 ft
- Shallow wells planned at NC-EWDP-7S, 22S, and 23S
 - NC-EWDP-7S cleared and ready to drill
 - NC-EWDP-22S and 23S waiting on ROW grant
- Deep wells planned at NC-EWDP-2D, 3D, 15D and 19D
 - Single piezometers will be installed first at 15D and 19D and then conductors drilled
 - NC-EWDP-15D and 19D waiting on ROW grant
- Test well planned at NC-EWDP-12D
 - Two piezometers will be drilled between test wells and other EWDP wells (1D and 9S)
 - Well will be drilled and constructed with a pumping pit to maximize production capacity for aquifer testing.

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The proposed ATC site is located just off the southwestern corner of the Nevada Test Site. The site is along the primary flow path between Yucca Mountain and the potentially affected environment of Amargosa Desert.

- ATC will provide much needed data on aquifer mechanics
THIS TESTING PROGRAM IS NEEDED TO ADDRESS
NUMEROUS DATA DEFICIENCIES AND CONCERNS
- Interagency effort involving National Labs, USGS, M&O, HRC, and Nye County.
- Proposed well site locations are based on geophysical survey results. NC-EWDP-19D was moved about 1 mile to a better testing location.
- Well drilling sequence
 1. Drill piezometer to 500+ ft to establish water table and provide samples.
 2. Drill 19D to depth of 1,500+ to define entire valley-fill sequence and depth to carbonate aquifer.
 3. Install tracer complex wells.
- Numerous tests are planned
 1. Short term discharge test of NC-EWDP-19D
 2. Single well injection-pumpback tracer test
 3. Cross hole hydraulic tests
 4. Cross hole tracer tests

ALLUVIAL TRACER COMPLEX

WORK ACCOMPLISHED AND PLANS

- o Equipment specifications defined and being costed
- o Borehole specifications defined for piezometer and NC-EWDP-19D
- o Injection control permitted under amendment
- o BLM right-of-way grant process has been initiated
- o Logistical requirements being identified and addressed
- o Piezometer will probably be installed by end of February if ROW is granted
- o NC-EWDP-19D should be installed and tested by the end of April