

**NYE COUNTY, NEVADA
EARLY WARNING DRILLING PROGRAM
(EWDP)**

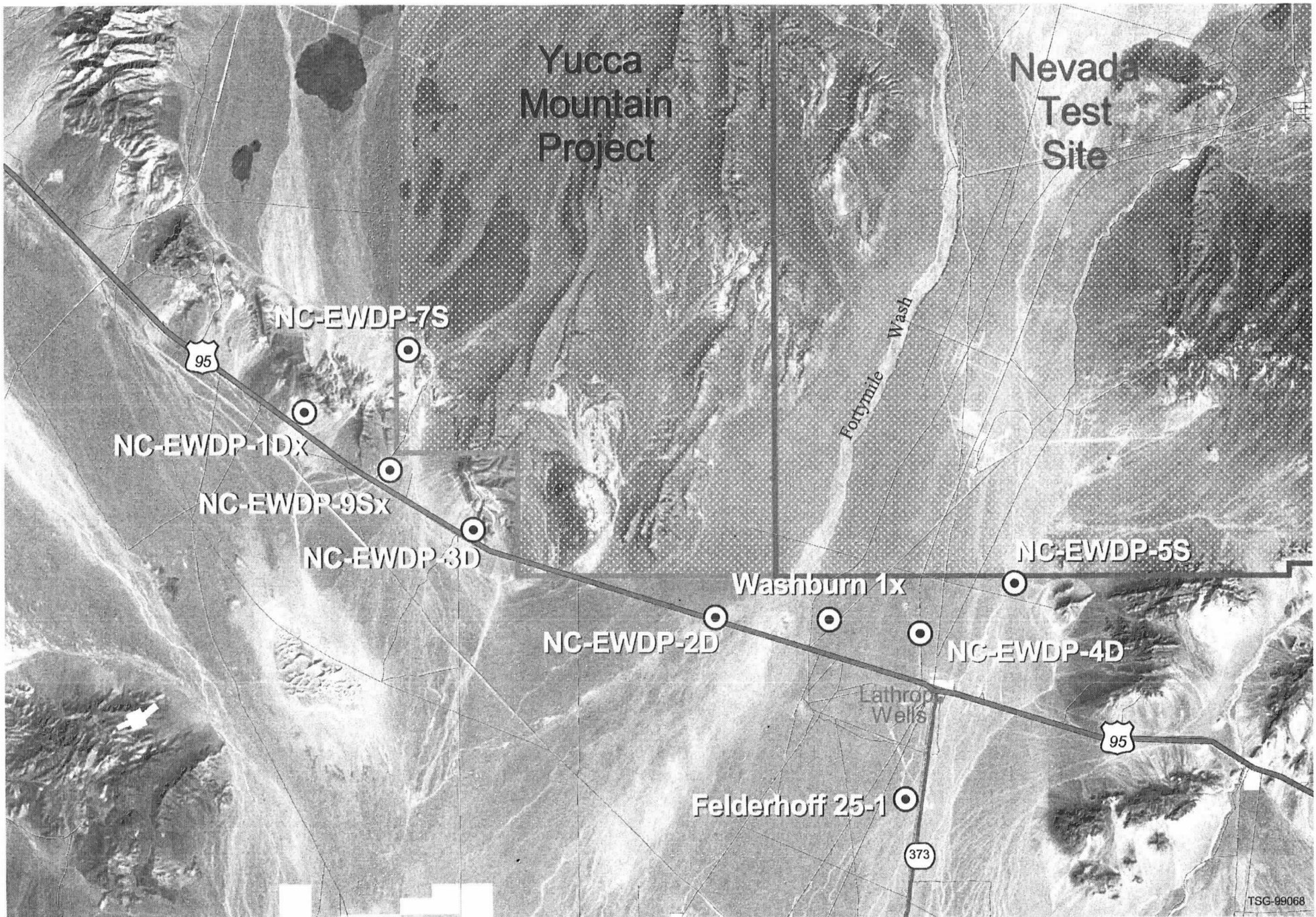
**Nuclear Waste Technical Review Board
January 26 - 27, 1999**

Presented by:


**Nick Stellavato
Nye County**

Nuclear Waste Repository Project Office





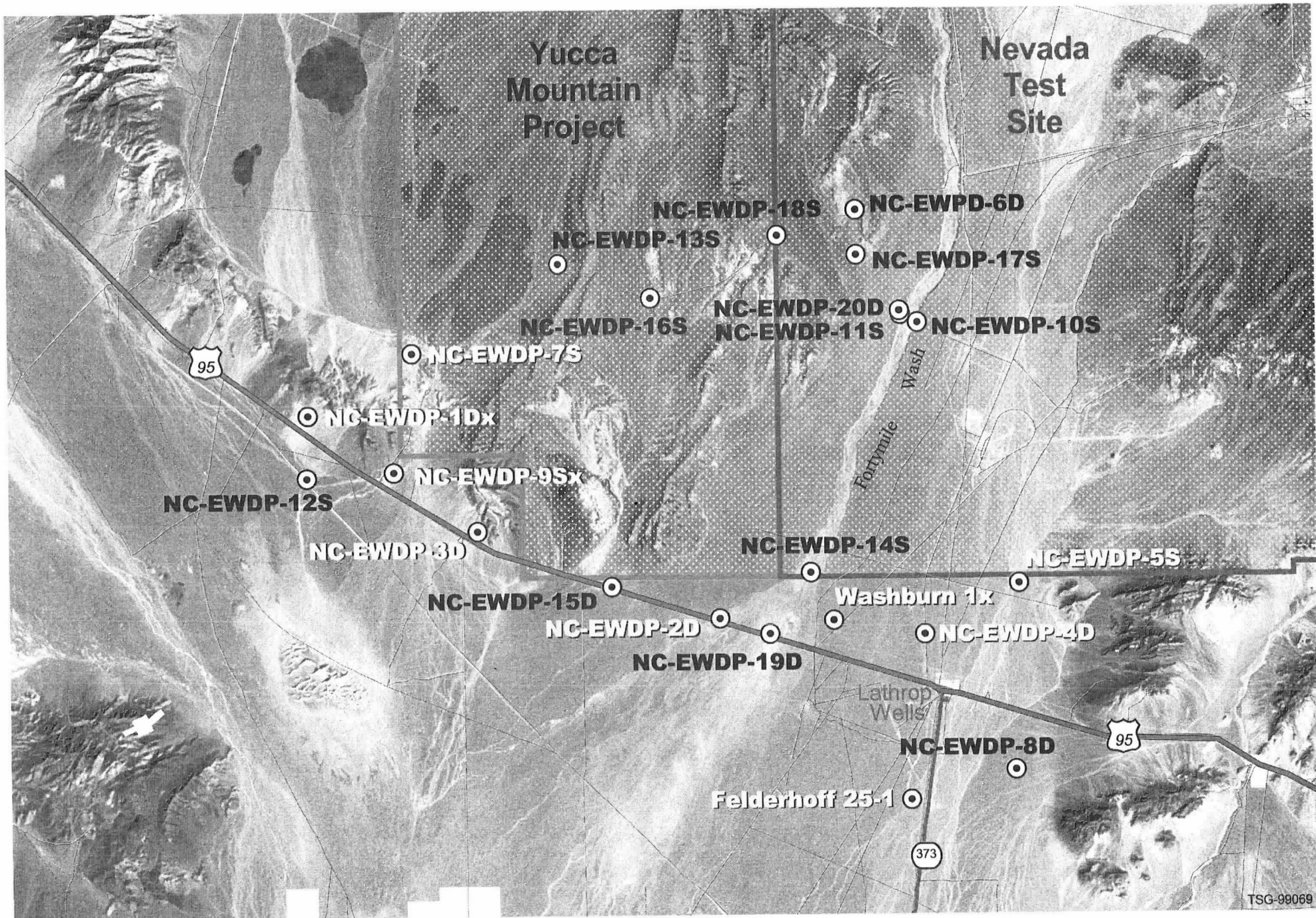
TSC-99068

 Phase I - Early Warning Drilling Program Well Locations



NYE COUNTY NEVADA
EARLY WARNING DRILLING PROGRAM
PHASE I

 1 0 1 2 Miles



TSG-99069

**NYE COUNTY NEVADA
EARLY WARNING DRILLING PROGRAM
ALL PHASES**

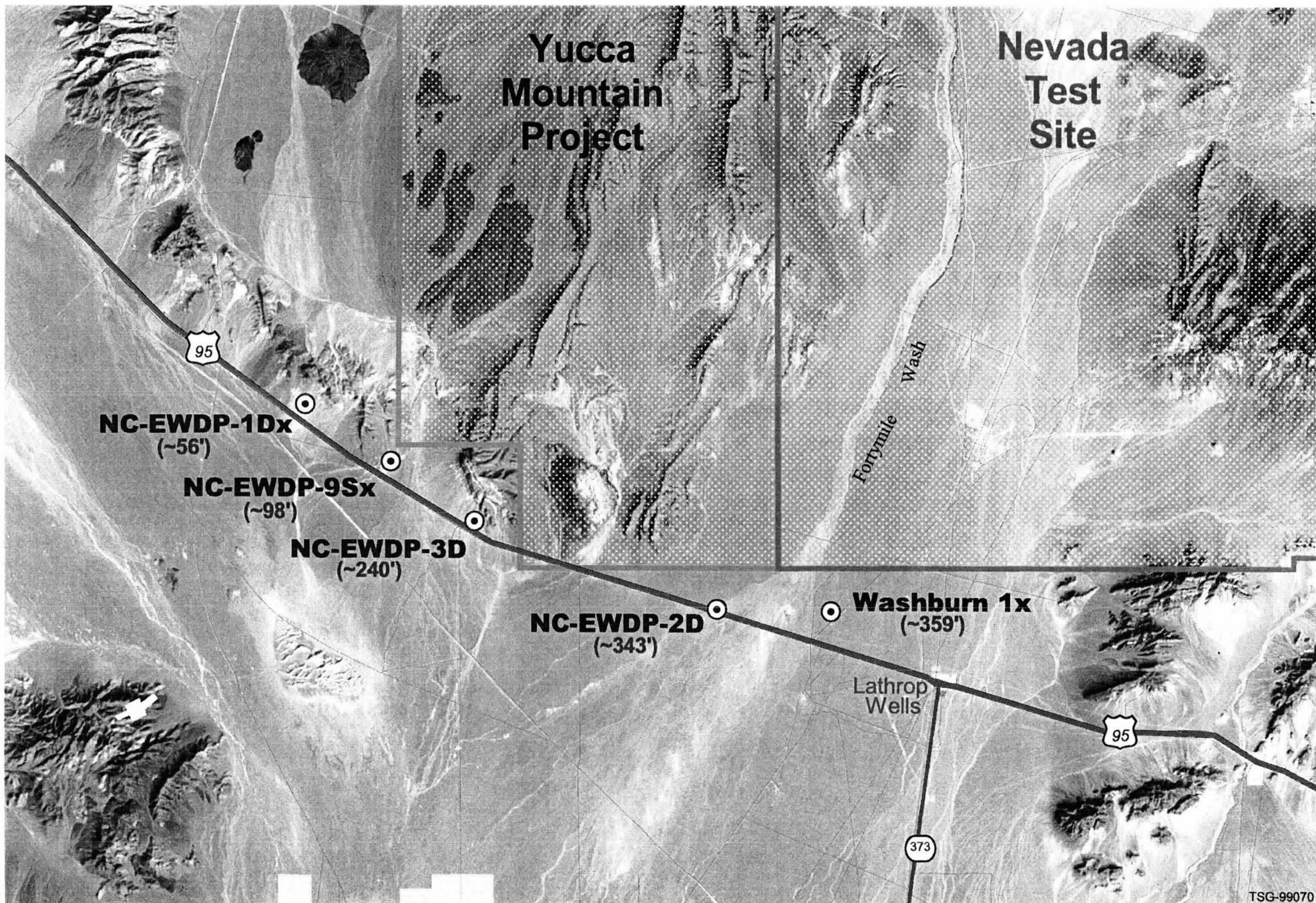
○ Phase I

○ Phase II & III



1 0 1 2 Miles





TSG-99070

**NYE COUNTY NEVADA
EARLY WARNING DRILLING PROGRAM**
Initiated or Completed Wells as of 1/26/99
and Approximate Depths to Water

⊙ Initiated or Completed Wells



EARLY WARNING DRILLING PROGRAM

Progress and Findings Through January 21st, 1999

PRE-DRILLING ACTIVITIES

- Plans and procedures in place (Work Plans, Health and Safety Plan, and Technical Procedures)
- Consultations and coordination with YMP, M&O, and others
- Permits and rights-of-way obtained
- Environmental clearances completed for FY 99 sites
- Public notification and information dissemination through NTS Citizens Advisory Board and Internet

NC-EWDP-Washburn (Completed)

- Drilled and sampled to total depth of 658 feet with dual wall rotary
- Static water level 359 ft
- Water samples taken at first water
- Main water bearing zone at 385-460
- Geophysical logs to 657 ft (neutron, density, and gamma) and to 512 ft (e-log & temperature)
- Difficult drilling conditions (lost circulation zones and caving sands)
- 400+ ft clay present at Lathrop Wells are is only 7 ft thick at Washburn site
- Installed two 1-1/2 inch piezometers at 333-353' and 420-480'

NC-EWDP-1D

- Attempted coring of paleospring deposits (poor recovery)
- Split spoon samples of spring deposits (better recovery)
- Drilled and sampled to 2500 ft with dual wall rotary
- Static Water Level 52 ft below land surface
- Water samples taken at first water
- Geophysical logs to 1620 ft and 1155 ft
- Water temperature 52° at 1155 ft below land surface
- Difficult drilling conditions (lost circulation zones and swelling clays)

NC-EWDP-2D

- Drilled and sampled to 420 feet with air hammer
- First water sampled
- Static water level in drill pipe at 311 feet
- Continuing to advance borehole to 500 feet to set conductor casing

NC-EWDP-3D

- Drilled and set surface conductor casing with air hammer
- First water sampled
- Static water level in drill pipe at 240 feet.
- Drilled and sampled to 900 feet

NC-EWDP-9S (Completed)

- Drilled and sampled to total depth of 397 ft with air hammer
- Static water level 98 ft below land surface
- Water samples taken at first water and after well completion
- Geophysical logs to 397 ft (neutron, density, and gamma only)
- Difficult drilling conditions (caving sands)
- Installed casing to 360 ft with 4 zones screened for Westbay completions
- Aquifer test completed (47-3/4 hour constant discharge test at 175± gpm)
- Began Westbay installation on January 22nd

LESSONS LEARNED

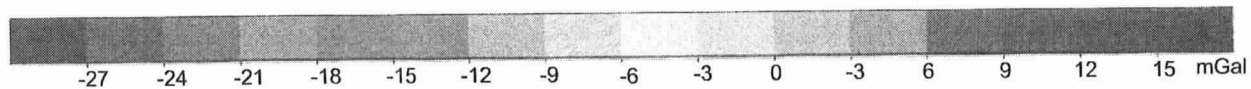
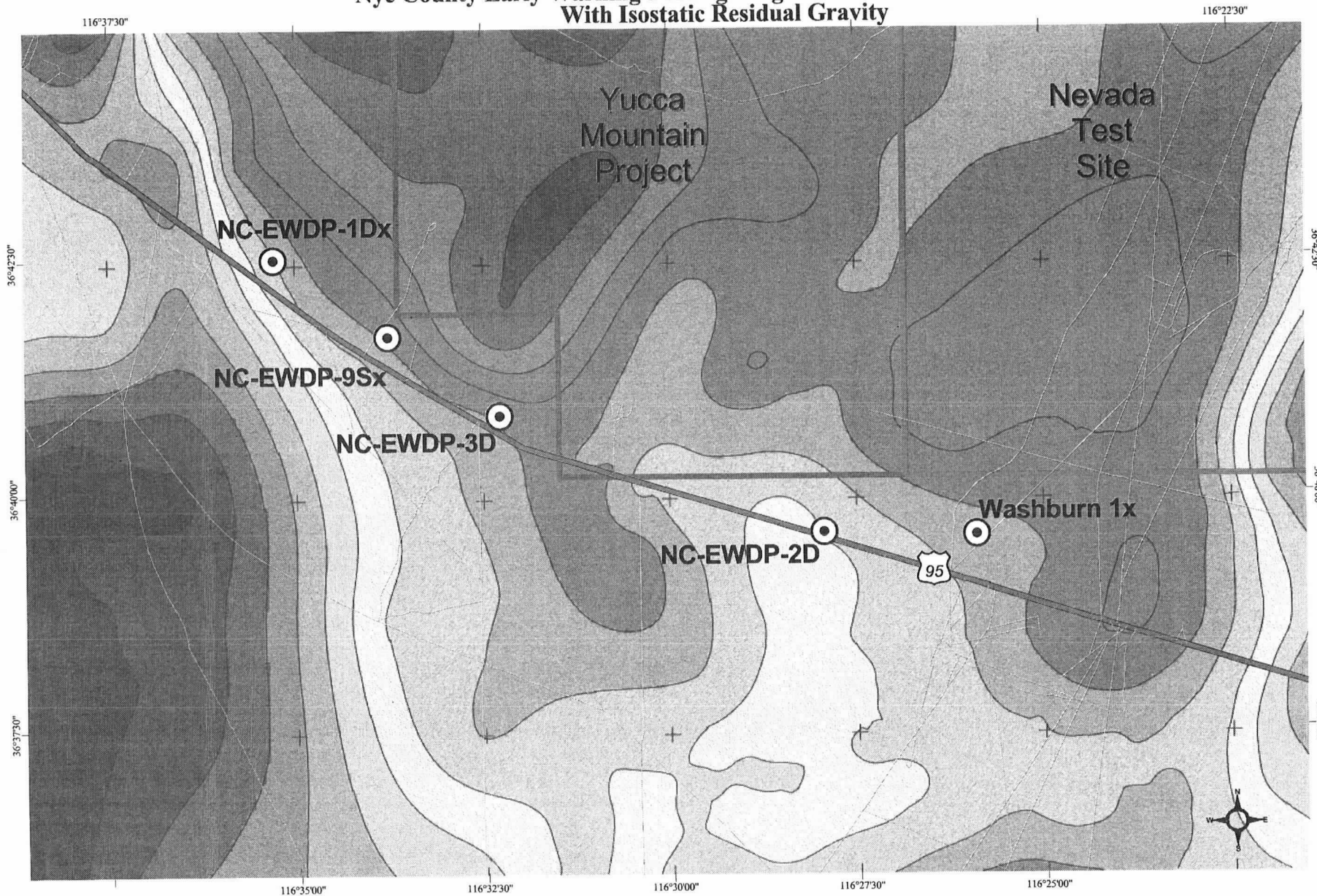
Drilling Methodology

- Paleospring deposits are too loose and soft to allow good core or sample recovery
- Dual wall rotary method is not as well suited for unconsolidated materials
- Air hammer dual wall technique works well for unconsolidated materials, provides best samples of unsaturated zone and best indication of first water
- Drilling fluids are essential to maintain borehole and to control lost circulation zones

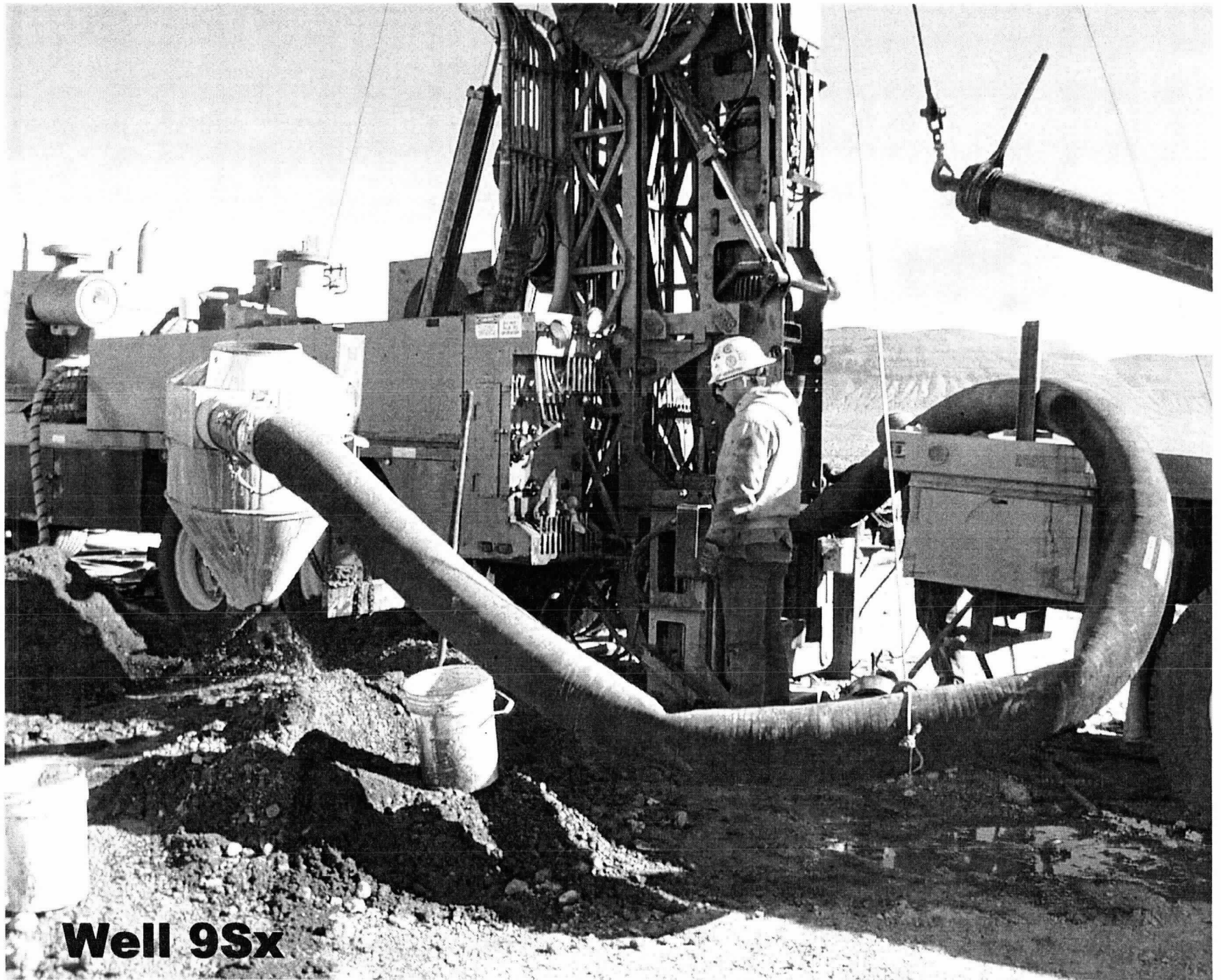
Hydrogeology

- Depth to water east of Bare Mountain Fault and north of Highway 95 is much shallower than expected
- Depth to water in southern Jackass Flats is consistent with other data
- Permeable pathways are present at NC-EWDP-1D
- Upwelling of warm water through fractures at NC-EWDP-1D is likely
- The historic Well Drillers Report for the original Washburn well is inaccurate
- Geologic structures appear to have pronounced effect on water level

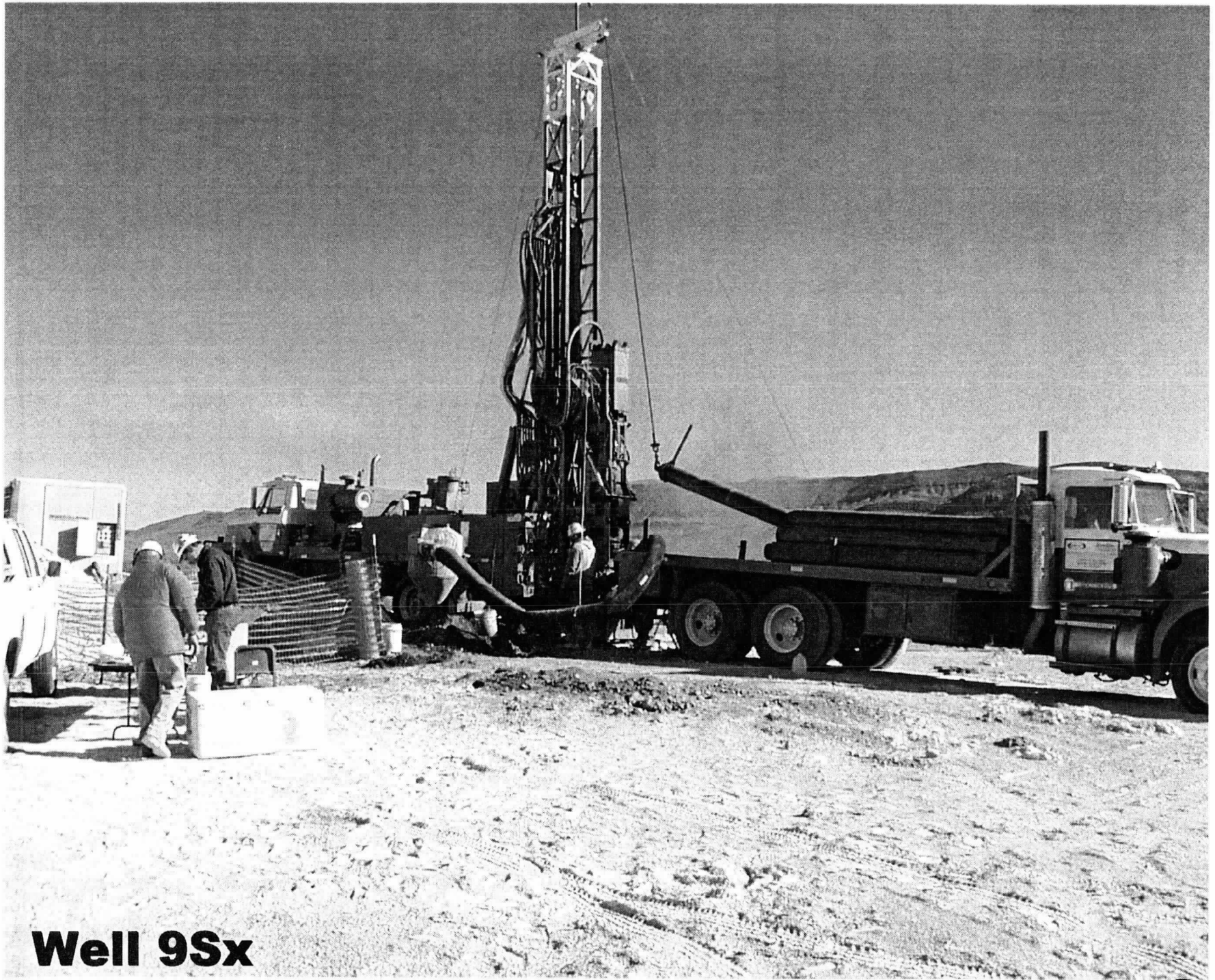
Nye County Early Warning Drilling Program Wells Status as of 1/26/99 With Isostatic Residual Gravity



○ Early Warning Drilling Program Well Status Locations



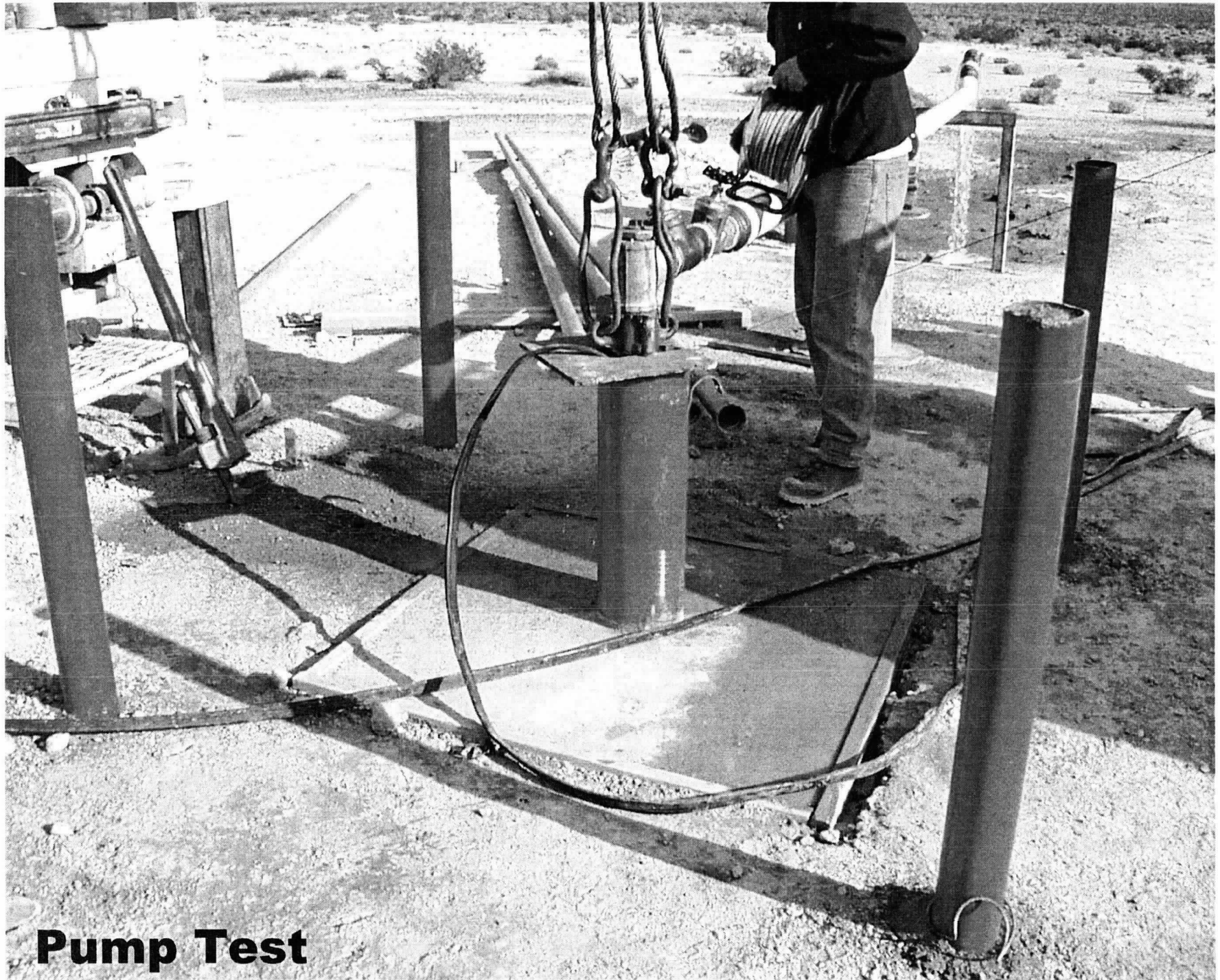
Well 9Sx



Well 9Sx

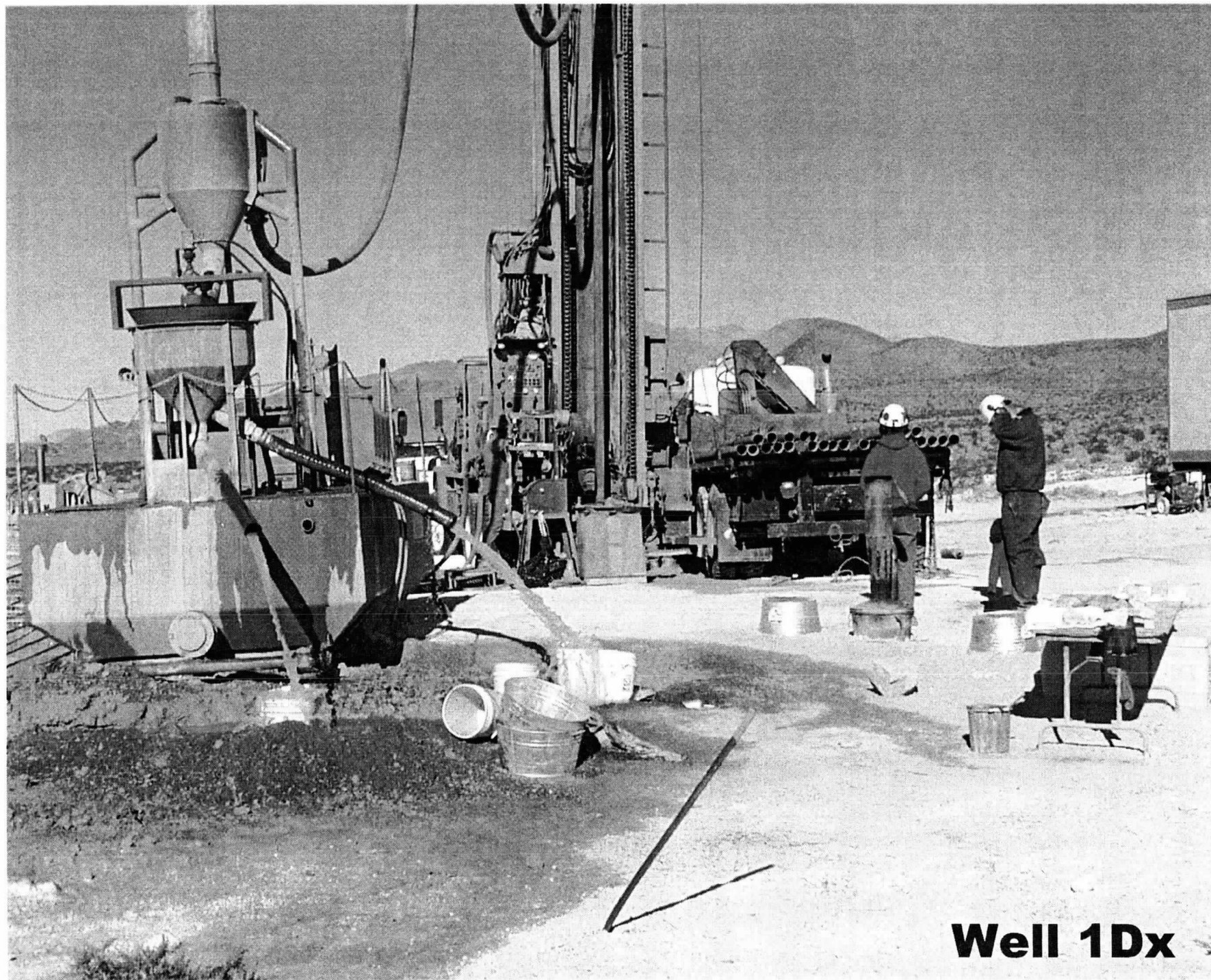
325
Well 9Sx





Pump Test





Well 1Dx