

TXU Power Comanche Peak Site

NRC Onsite Review
Site Geotechnical Investigation Activities
12-13 December 2006

Agenda and Introduction

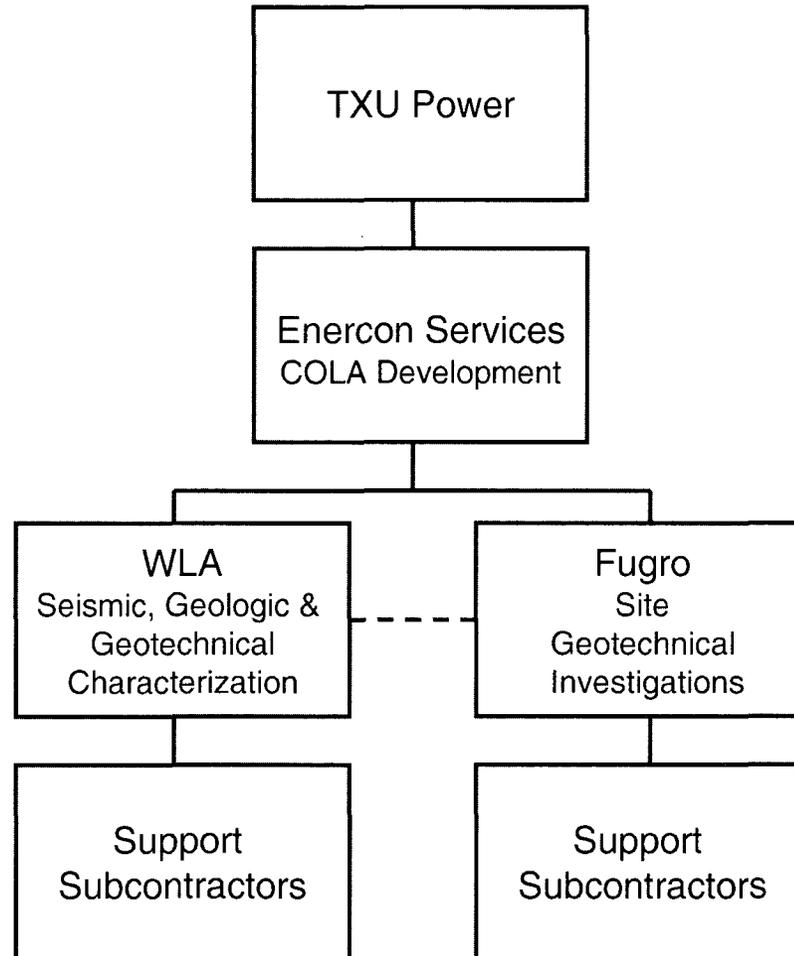
- Project Introduction
 - Introductions
 - Project Background and Status
- Project Organization and QA
- Site Investigations Overview
- Site Orientation
 - Site safety briefing
 - Logistics
 - Site tour

Comanche Peak Site Background

- Multiple reactor technologies considered
- Plant placement designs were developed that enveloped potential reactor technologies
- Multiple placements on the Comanche Peak site were considered before current placement selected
- Geotechnical investigation commenced on borings common to all potential reactor technologies (Phase 1)
- Geotechnical investigations will finalize site characterization after the reactor technology is selected (Phase 2)
- Hydrogeological investigation – including well development performed to investigate groundwater conditions

Project Organization

Site Geotechnical Investigations

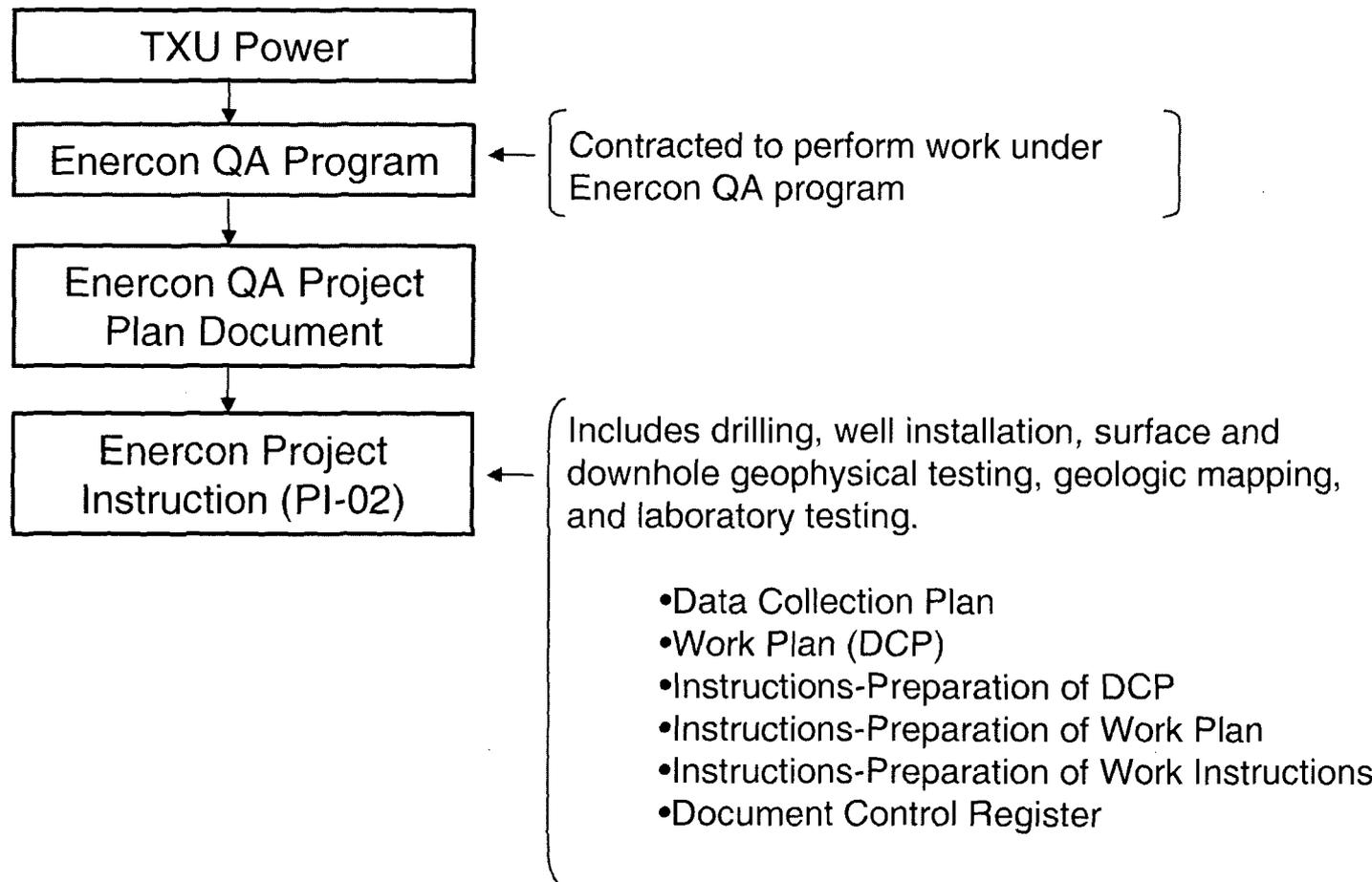


Project Organization Responsibilities

Site Geotechnical Investigations

- TXU Power
 - Site owner
- Enercon Services, Inc.
 - COLA contractor for TXU Power
 - Providing QA oversight for geotechnical investigation activities as well as managing interface with site owner
- Enercon Subcontractors
 - William Lettis & Associates, Inc. (WLA) – Provides Overall Technical Direction for Geological, Geotechnical and Seismological Studies
 - Fugro – Implementation of Site Characterization Activities; i.e., Drilling, Well Installation, Laboratory Testing, Geotechnical Engineering Services

Site Investigation/Data Collection Quality Assurance



Quality Assurance

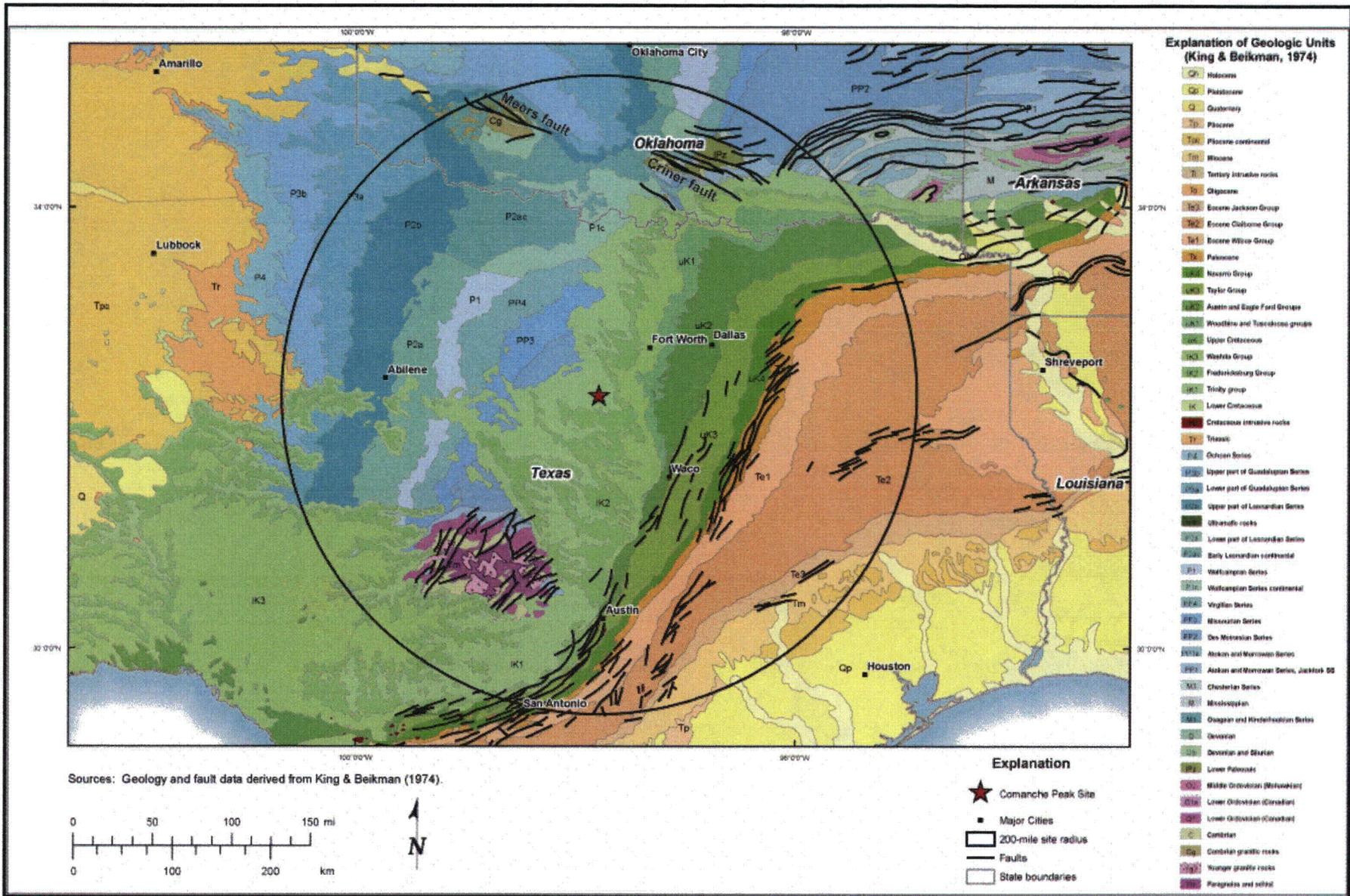
- TXU contracted Enercon Services to perform COLA development under the Enercon Services' QA Program
- Geotechnical field investigation, laboratory testing, and engineering analysis performed by William Lettis & Associates and Fugro is performed under the Enercon Services' Quality Assurance Project Plan

Geologic and Geotechnical Site Characterization

- Characterize subsurface with existing (FSAR) and new data
- Sufficient new exploration to confirm and refine site stratigraphy
- Evaluate site subsurface variability
- Develop site profile for ground motion response
- Identify possible geologic hazards
- Verify Vendor plant design parameters
- Prepare Conceptual Foundation/Geotechnical Design
- Characterize groundwater conditions (water table, confined aquifers, dewatering requirements)
- Evaluate rock excavatability and excavation support

Exploration Protocol

- Work will follow formal Enercon QA Program
- Performed by qualified, experienced geologists/engineers
- Senior Review (licensed professionals)
- Formal Internal Technical Review (ITR)
- Conformance to NRC RG 1.132, RG-1.138
- Satisfy vendor and SSI data requirements





Explanation of Geologic Units (Geologic Atlas of Texas)



Quaternary Alluvium
Flood plain deposits including low terrace deposits, gravel, sand, silt, clay, and organic matter.



Quaternary deposits (unclassified)



Quaternary fluvial terrace deposits
Gravel, sand, silt, and clay, with various textures of different ages separated by soil lines.



Walnut Clay

Clay and limestone about equally abundant. Limestone aphanitic, in part fossiliferous. Gypsiferous layering, beds 0.1-1 foot thick, in part nodular, grades laterally into either resistant bedrock-forming, gypsiferous-bearing limestone or calcareous clay, medium to dark gray, weathers yellowish brown. Clay fossiliferous, calcareous, olive brown, weathers yellowish brown. Thickness - 95 feet.



Paluxy Formation

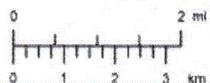
Sandstone, mudstone, and limestone. Sandstone fine to very fine grained, friable to calcite cemented, cross-bedded, common, in part massive, locally burrowed, light gray to greenish gray, weathers yellowish brown to dusky brown. Mudstone sandy, massive, locally burrowed, greenish gray, olive brown, and medium gray, weathers yellowish brown and red brown. Limestone locally in upper 40-50 feet, sandy, fossiliferous, beds 0.5-2 feet thick, yellowish gray, weathers mottled dark gray and yellowish brown. Thickness 66-105 feet.



Glen Rose Formation

Limestone alternating with units composed of variable amounts of clay, marl, and sand. Limestone, generally bedded, in part with variable amounts of clay, silt, and sand, soft to hard, various shades of brownish yellow and gray. Correlational to Paluxy Formation above, then Alvarado Formation below, sand-faceted beds, included in the Glen Rose Formation. Thickness 40-200 feet, thin northward.

Source: Geology data derived from the Geologic Atlas of Texas
15 minute quadrangles from the Texas Commission on Environmental Quality (TCEQ).



Explanation

- Comanche Peak Site
- 5-mile site radius

Field Exploration Methods

- Standard Penetration Testing (SPT) (Phases 1 and 2)
- Rock Coring (NQ, HQ sizes) (Phases 1 and 2)
- Borehole Pressuremeter Testing (Phase 2)
- Seismic Downhole and P-S Suspension Velocity Measurements (Phases 1 and 2)
- Borehole Televiwer Profiles (Phases 1 and 2)
- Gamma and Caliper Profiles (Phases 1 and 2)
- Seismic Refraction and Gravity (Phase 2)
- Spectral Analysis of Surface Waves (SASW) (Phase 2)
- Borehole Packer Testing (Phase 2)
- Cone Penetration Test (CPT) Soundings (Phase 2 potential)
- Groundwater Monitoring Wells (Phase 1)
- Geologic Mapping (Phase 2)
- Test Pit Excavation and Mapping (Phase 2)



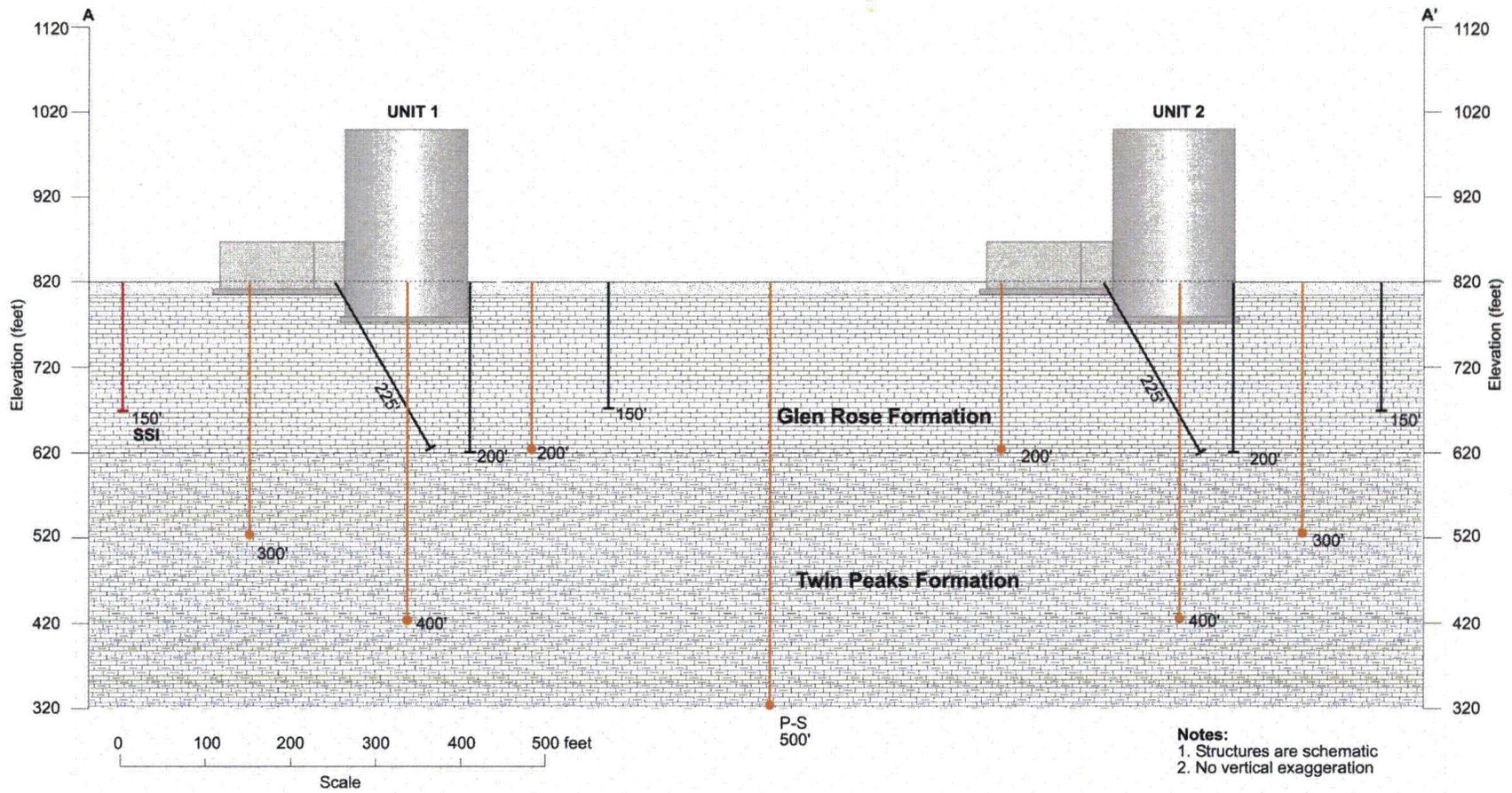
MONTHLY PROGRESS REPORT NO. 10
PERIOD ENDING AUGUST 31, 1975



NUMBER 87
AUGUST 8, 1975

TEXAS UTILITIES SERVICES, INC.
COMANCHE PEAK STEAM ELECTRIC STATION
1980-82 2300 MW INSTALLATION

TURBINE GENERATOR AREA. BOTTOM—PUMPING CONCRETE
INTO UNIT 1 CIRCULATING WATER DISCHARGE TUNNEL; TOP—
SCALING SOUTH EXCAVATION WALL. VIEW TO SOUTHWEST





A

B

C

D

10

11

21

1007-8

1951

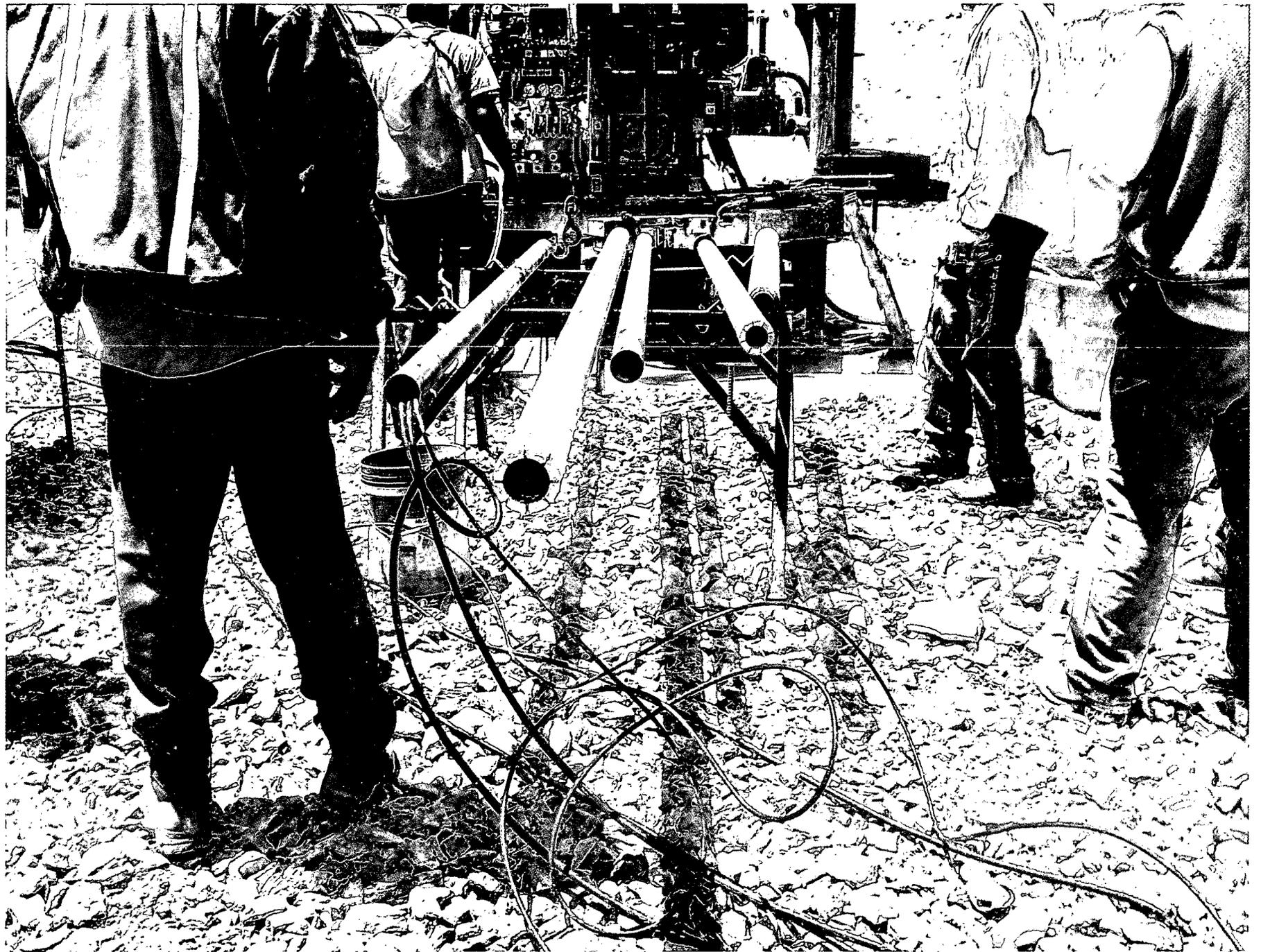
STANLEY

7710
134 2152
RUNG 4
RUNG 5
RUNG 6

CIPSES #1853
BORING NO. B-2000
DATE 11/5/66 - WASH
BOX 22 FROM 326 TO 3376
Rig 600 K. KRUL

3326
3376

BEAK COL



Laboratory Testing Program

GEOTECHNICAL INDEX

Moisture Content and
Density
Specific Gravity
X-Ray Diffraction/Mineralogy
Grain Size
Atterberg Limits and Indices
(soil)
Slaking Durability (core)
Organic Content

GEOTECHNICAL INDEX

Petrographic Thin Section
Carbonate Content Consolidation
Corrosion
Proctor
California Bearing Ratio (CBR)
Test

Laboratory Testing Program

GEOTECHNICAL STRENGTH

Unconfined Compression (core)

Unconfined Compression with
Modulus (core)

Unit Weight and Density (core)

Triaxial CU (3-point)

Direct Shear (3-point)

DYNAMIC TESTING

X-ray of UD Samples Prior to Shipping

Resonant Column/Torsional Shear Testing
(University of Texas – Austin)

Lab Shear Wave Velocity (modulus)

Project Organization Responsibilities

Site Geotechnical Investigations

- WLA provides field project management for geotechnical and geologic data collection tasks
- WLA Site Coordinator provides supervision of the day-to-day field activities
- Rig Geologist is assigned full-time with a drill rig. Responsibilities include:
 - Verify drilling or testing operations are conducted in conformance with specified procedures
 - Document sample or test depths and test results
 - Maintain field logs of borings, including classification of materials recovered and description of geotechnical soil properties
 - Chain-of-custody document preparation and logging samples

Geotechnical Borehole Procedure

- Work Instructions issued to drilling companies and Rig Geologists defining duties
- Boring Assignments for each borehole prepared by WLA Site Coordinator. Boring assignments specify:
 - Boring location
 - Boring type
 - Boring depth
 - Required tests
 - Boring Completion
- Rig Geologist directs Drill Crew to prepare drill site and perform drilling per Boring Assignment
- Rig Geologist monitors drilling, describes samples, maintains field log
- Modifications to Boring Assignment instructions, if needed, reviewed and approved by Site Coordinator
- Samples transported to site storage facility at end of each day

Current Site Activities

- **Borings**
 - 22 geotechnical borings completed or in progress
- **Testing**
 - Caliper
 - Gamma
 - Seismic Downhole and P-S Suspension Velocity Measurements
 - Borehole Televiewer Profiles
- **Monitoring Wells**
 - 20 monitoring well clusters installed

Safety

- Personal protective equipment requirements
- Incident reporting (including near misses)
- Inclement weather precautions
- Potential hazardous insects/reptiles
- Plant access requirements

Q&A