

rec'd via letter
YMP/TPP-92-02
8/17/92 Rev. 1

U.S. DEPARTMENT OF ENERGY

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YUCCA MOUNTAIN

YUCCA MOUNTAIN

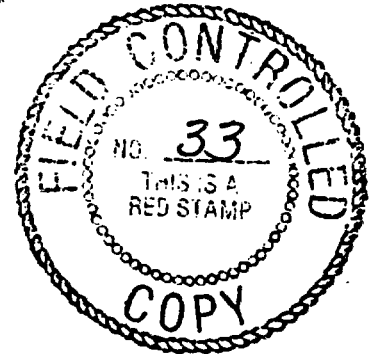
SITE CHARACTERIZATION

PROJECT

INFORMATION ONLY

DRILLING OF VSP DRILLHOLE UZ-16

TEST PLANNING PACKAGE 92-02 REVISION 1



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PDR WASTE PDR
WM-11

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June 1992

UNITED STATES DEPARTMENT OF ENERGY

ENCLOSURE 1

YMP-071-R0
10/30/91

**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
TEST PLANNING PACKAGE APPROVAL AND RELEASE**

Test Planning Package Title: Drilling of VSP Drillhole UZ-16, Revision 1

Test Planning Package Number: 92-02

Responsible PE: Deirdre M. Boak TSMSS/Test Planning & Support Department

Summary of Scope:

The purpose of this borehole is to support vertical seismic profiling (VSP) investigations at Yucca Mountain. See Attachment 1 for proposed changes.

Job Package Number: 92-03

WBS Number (third level): 1.2.3

Participants Affected: LANL, USGS

Concurrence of requirements by affected Technical Project Officers:

TPO: LANL: [Signature] Date: 06/09/92

TPO: USGS: [Signature] Date: 06/05/92

TPO: _____ Date: _____

TPO: _____ Date: _____

TPO: _____ Date: _____

Release to: Project Control Branch

RCB for job package assembly
for non-field work

YMPO Approvals: [Signature] Date: 6/5/92
RSED Director: _____

Affected Division Directors:

POCD: [Signature] Date: 6/5/92
DD: _____

EDD: [Signature] Date: 6/9/92
DD: _____

QA: [Signature] Date: 6/9/92
DD: _____

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TEST PLANNING PACKAGE 92-02 (DRILLING OF VSP DRILLHOLE UZ-16)

1. LIST OF STUDY PLANS USED IN SCIENTIFIC INVESTIGATION

- a. Study Plan 8.3.1.2.2.3, R0 (or current revision), "Characterization of the Yucca Mountain Unsaturated-Zone (UZ) Percolation Surface-Based Studies," approved March 5, 1991.
- b. Study Plan 8.3.1.2.2.7, R0 (or current revision), "Hydrochemical Characterization of the Unsaturated Zone," approved July 1990.
- c. Study Plan 8.3.1.2.2.2, R0 (or current revision), "Water Movement Tests," approved 1/9/89.

Note that the issues and information needs presented in the SCPB are addressed by the study plans. The study plans are consistent with the SCPB, the WBS dictionary statement of work, and the grading packages for this activity.

2. INVESTIGATION CONTROLS

a. Interference

The RSED Division Director has approved the following test-specific controls (Dyer to Distribution, 3/13/92, RSED:JMB-2168) to address test interference, waste isolation, and environmental impacts:

1. The quantity of water used in site preparation and operations shall not exceed an average of two gallons per square yard of application per day, averaged over a six-month period.
2. During drilling and testing of the UE-25 UZ-16 (VSP-2) borehole, appropriate measures will be taken to ensure that the drill pad and surrounding pad area drain properly, so that no standing bodies of water form either on the drill pad or in close proximity to the pad.
3. Air borne tracers shall be used in borehole drilling and in permeability testing. These tracers shall conform to those permitted by the State of Nevada. An exemption for tracer use may be obtained via a technically-based review consistent with the requirements of the Technical Requirements for the Yucca Mountain Site Characterization Project Surface-Based Testing, Section VI (YMP/CM-0007, Revision 6).
4. Due to the nature of planned Los Alamos National Laboratory (LANL) chlorine-36 analyses on samples from the UZ-16 borehole, and consistent with the requirements of the Site Characterization Program Baseline,

TEST PLANNING PACKAGE 92-02 (DRILLING OF VSP DRILLHOLE UZ-16)

Revision 3, no chloride, bromide, or chlorine-based chemical compounds will be added to water used for dust control on the pad. Furthermore, such compounds shall not be applied in any form to the drill pad surface during construction or introduced into the borehole during drilling.

b. Impacts to Waste Isolation

This item is addressed in the test controls defined in Section 2.a.

- c. Environmental preactivity surveys (biological, archaeological, and radiological) and land access work have been completed. Air quality permits (Surface Disturbance and LM-300 Drill Rig Operation) have been acquired. If tracers are used during drilling, a permit from the State of Nevada must be obtained. No other environmental permits are required. See Job Package 92-4 for references addressing environmental stipulations (Dixon to Clanton, 1/9/92 and Grassmeir to Clanton, 1/23/92) on drill pad construction and land access. Environmental approval for drilling remains open and is required prior to initiation of drilling.

Field activities shall comply with all environmental requirements described in Job Package (JP) 92-4 (Drill Pad Construction for VSP Drillhole UZ-16) and applicable portions of:

- a. Drawing - SITE AND GRADING PLAN YMP-025-9-CIVL-PLO1 or current version
- b. Specification - DRILL PAD FOR UZ-16 BORE HOLE YMP-025-9-SP05 or current version

3. OTHER INSTRUCTIONS

a. Order for performing (sequence of) multiple tests

The order for performing primary activities associated with the drilling and testing of UE-25 (UZ-16) are briefly described below:

1. The bore hole will be drilled and continuously cored to approximately 40 feet below the water table. Selected core samples will be identified during drilling, sealed, and stored for later liquid extraction. Ream bit cuttings (to support Study Plan 8.3.1.2.2.2) will be collected during drilling at selected intervals. Approximate duration: five months, depending on the number of crews available for drilling.

TEST PLANNING PACKAGE 92-02 (DRILLING OF VSP DRILLHOLE UZ-16)

2. After the drilling is completed, geophysical logs will be run.
Approximate duration: 1 week.

3. Tracer gas used during the drilling operation will be removed from the borehole wallrock and gas and water vapor samples from the borehole will be collected for chemical analysis and age dating. Approximate duration: 1 month.

4. Air permeability testing will then be conducted and, when complete, additional gas and water vapor samples will be removed from the borehole wallrock. Approximate duration: 3 to 4 months.

5. The UZ-16 bore hole will be instrumented with a string of geophones & Vertical Seismic Profiling (VSP) data will be obtained. Approximate duration: up to 1 month to instrument hole and intermittent periods over FY 93 to obtain data.

b. Hold points (AP5.20)

No AP5.20Q hold points are applicable.

c. Interfaces (AP5.19Q)

No AP5.19Q interfaces are applicable.

d. Data Submittals (AP5.1Q)

LANL will not capture any data in the field and therefore will not have any data submittal requirements.

USGS will submit data according to YMP-USGS-QMP-17-01, Revision 5 or current version.

4. REFERENCES TO SCP COMMENTS (AP1.14Q)

No SCP comments relevant to this activity have been identified.

5. REFERENCES TO DESIGN REQUIREMENTS

a. Drawing - SITE AND GRADING PLAN YMP-025-9-CIVL-PLO1 or current version

TEST PLANNING PACKAGE 92-02 (DRILLING OF VSP DRILLHOLE UZ-16)

b. Specification - DRILL PAD FOR UZ-16 BORE HOLE YMP-025-9-SP05 or current version

c. A work program for drilling and testing shall be developed by Raytheon Services of Nevada (RSN) and referenced by JP 92-3 (Drilling of VSP Drillhole UZ-16)

6. COST AND SCHEDULE DATA

<u>Participant</u>	<u>P&S</u>	<u>Summary</u>	<u>Subject</u>
USGS	OG33123	OG331232	Percolation
USGS	OG33127	OG3312Y2	Hydrochemistry
USGS	OG33127	OG3312X2	Hydrochemistry
LANL	QA33122	QA331HL2	Water Movement

Reynolds Electrical and Engineering Company (REECo) and RSN cost data shall be addressed in JP 92-3 (Drilling of VSP Drillhole UZ-16). Approximate durations for the testing activities are defined in Section 3.a. A detailed schedule shall be included in JP 92-3 (Drilling of VSP Drillhole UZ-16).

7. QA PREPARATION

a. No relevant QA concerns (including unresolved Standard Deficiency Reports, Corrective Action Requests, or Stop Work Orders) have been identified.

b. The following grading assurance grading (QAG) reports associated with the testing activities are in place and have been approved:

<u>Participant</u>	<u>QAGR</u>	<u>WBS</u>	<u>Subject</u>
USGS	G1233123	1.2.3.3.1.2.3	Percolation
USGS	G1233127	1.2.3.3.1.2.7	Hydrochemistry
LANL	10	1.2.3.3.1.2.2	Water Movement

QAG reports pertinent to field (REECo & RSN) activities will be listed in JP 92-3 (Drilling of VSP Drillhole UZ-16).

8. READINESS REVIEW (QAAP 2.6)

The Readiness Review will verify that all remaining open prerequisites are appropriately described in JP 92-3 and will be responsible for notifying the RSED

TEST PLANNING PACKAGE 92-02 (DRILLING OF VSP DRILLHOLE UZ-16)

Division Director of their closure. Initiation of field activities shall be contingent upon closure of open prerequisites as described in JP 92-3.

**ATTACHMENT 1: PROPOSED CHANGES TO TEST PLANNING PACKAGE
92-02 (DRILLING OF VSP DRILLHOLE UZ-16)**

6/5/92

A. The following are minor items that require revision in TPP 92-02, Revision 0.

1. Section 2.a. (Interference). Modify control #3 as follows:

"3. Air borne tracers shall be used in borehole drilling and in permeability testing. These tracers shall conform to those permitted by the State of Nevada. An exemption for tracer use may be obtained via a technically-based review consistent with the requirements of the Technical Requirements for the Yucca Mountain Site Characterization Project Surface-Based Testing, Section VI (YMP/CM-0007, Revision 6)."

This change was requested by the RSED Division Director 4/28/92 (Attachment 2).

2. Section 3.b. Eliminate the following as AP 5.20Q hold points:

"Drilling shall not commence until a permit for underground injection of tracers is approved by the State of Nevada or until an independent technical review is conducted and an exemption from this requirement obtained from the RSED Division Director."

"Environmental approval for drilling remains open and is required prior to initiation of drilling."

"The Readiness Review chairperson or designee will review the finalized JP 92-3 for compliance with unresolved open items prior to approval of JP 92-3 by the RSED Division Director. "

Note: AP 5.20Q describes predetermined limits beyond which work cannot proceed. The three items indicated in Revision 0 of TPP 92-02 are administrative in nature and do not conform to the AP5.20Q definition of either information, document, or construction holds. Adequate administrative controls exist in Job Package 92-3.

3. Interfaces (AP5. 19Q) Eliminate the following as AP 5.19Q interfaces:

"The USGS will be primary Principal Investigators for this activity. Ream-bit cuttings will be obtained for LANL during drilling."

"JP 92-4 (Drill Pad Construction for VSP Drillhole UZ-16) is associated with this activity. "

Note: AP 5.19Q describes interfaces for which formal control of data transfer is necessary; this is not the case for UZ-16. All interfaces are appropriately described in the UZ-16 Job Package 92-3 and referenced documents.

B. The Project Engineer is directed to obtain signatures of the Director of QA and affected parties, to revise the subject TPP and to process it starting at step 21 of AP5.32Q, Revision 2, ICN 3.



Attachment 2

Department of Energy
Yucca Mountain Site Characterization
Project Office
P. O. Box 98608
Las Vegas, NV 89193-8608

WBS 1.2.9
QA

APR 28 1992

Michael D. Voegele
Technical Project Officer
for Yucca Mountain
Site Characterization Project
Science Applications International Corporation
The Valley Bank Center, Suite 407
101 Convention Center Drive
Las Vegas, NV 89109

MODIFICATIONS TO TEST PLANNING PACKAGE 92-02 (DRILLING OF VSP DRILL HOLE UZ-16)

Test controls developed for UZ-16 drilling and testing originally required that downhole tracers conform to those listed in the U.S. Geological Survey Criteria Letter YMP-USGS-3343G-01-C3, Revision 0, and permitted by the State of Nevada. You are directed to modify these controls to state:

Airborne tracers shall be used in bore hole drilling and in permeability testing. These tracers shall conform to those permitted by the State of Nevada. An exemption for tracer use may be obtained via a technically-based review consistent with the requirements of the Technical Requirements for the Yucca Mountain Site Characterization Project Surface-Based Testing, Section VI (YMP/CM-0007, Revision 6).

If you have any questions, please contact either J. Russell Dyer at 794-7586 or Deirdre M. Boak of Science Applications International Corporation at 794-7814.

J. Russell Dyer, Director
Regulatory & Site Evaluation Division

RSED:USC-3151

APR 28 1992

Michael D. Voegele

-2-

CC:

L. R. Hayes, USGS, Las Vegas, NV
R. W. Craig, USGS, Las Vegas, NV
T. E. Blejwas, SNL, 6310, Albuquerque, NM
J. A. Canepa, LANL, Los Alamos, NM
R. D. Oliver, LANL, Las Vegas, NV
R. L. Bullock, RSN, Las Vegas, NV
R. F. Pritchett, REECO, Las Vegas, NV
L. D. Foust, M&O/TRW, Las Vegas, NV
D. M. Boak, SAIC, Las Vegas, NV
S. C. Smith, SAIC, Las Vegas, NV
J. H. Peck, SAIC, Las Vegas, NV
W. R. Dixon, YMP, NV
W. B. Simecka, YMP, NV
U. S. Clanton, YMP, NV

TRW Environmental
Safety Systems Inc.

101 Convention Center Drive, Suite P-110
Las Vegas, NV 89109
702.794.1800

TRW

WBS: 1.2.5.2.2
QA: QA

February 3, 1992

Contract #: DE-AC01-91RW00134
LV.MGYM.92-008

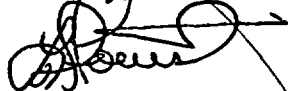
Carl P. Gertz, Project Manager
U. S. Department of Energy
Yucca Mountain Site Characterization Project Office
P. O. Box 98068
Las Vegas, NV 89193-8606

Attention: J. Russell Dyer

Subject: Test Interference Evaluation for Inclusion in the Test Planning
Package 92-02 for Construction of the Borehole UE 25 UZ-16 (VSP-2)

In accordance with the Test Planning Package (TPP) 92-02 requirement for
a Test Interference Evaluation covering the construction, and subsequent
testing of Borehole UE 25 UZ-16 (VSP-2), the attached report has been
completed. This report is submitted for inclusion in the Test Planning
Package 92-02.

Sincerely,



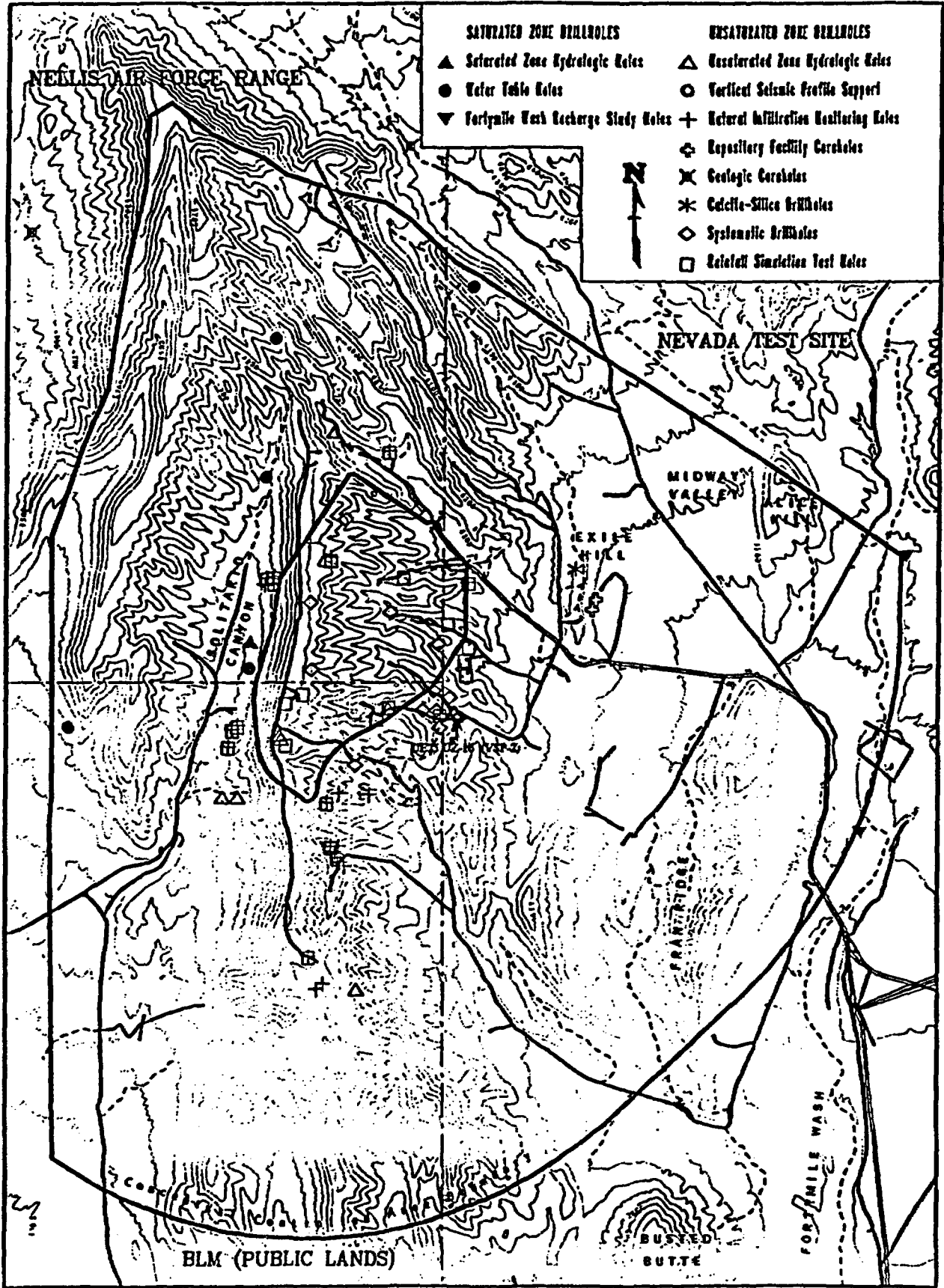
L. Dale Foust, Manager
Nevada Site
Management and Operating Contractor

BWD/JKC:kcb

cc:
D. M. Boak, SAIC, 517
J. C. Calovini, RSN, 403
L. S. Costin, SNL
U. S. Clanton, DOE/YMP, 523
R. Craig, USGS, 509
J. M. Davenport, SAIC, 517
H. N. Kalia, LANL, 527

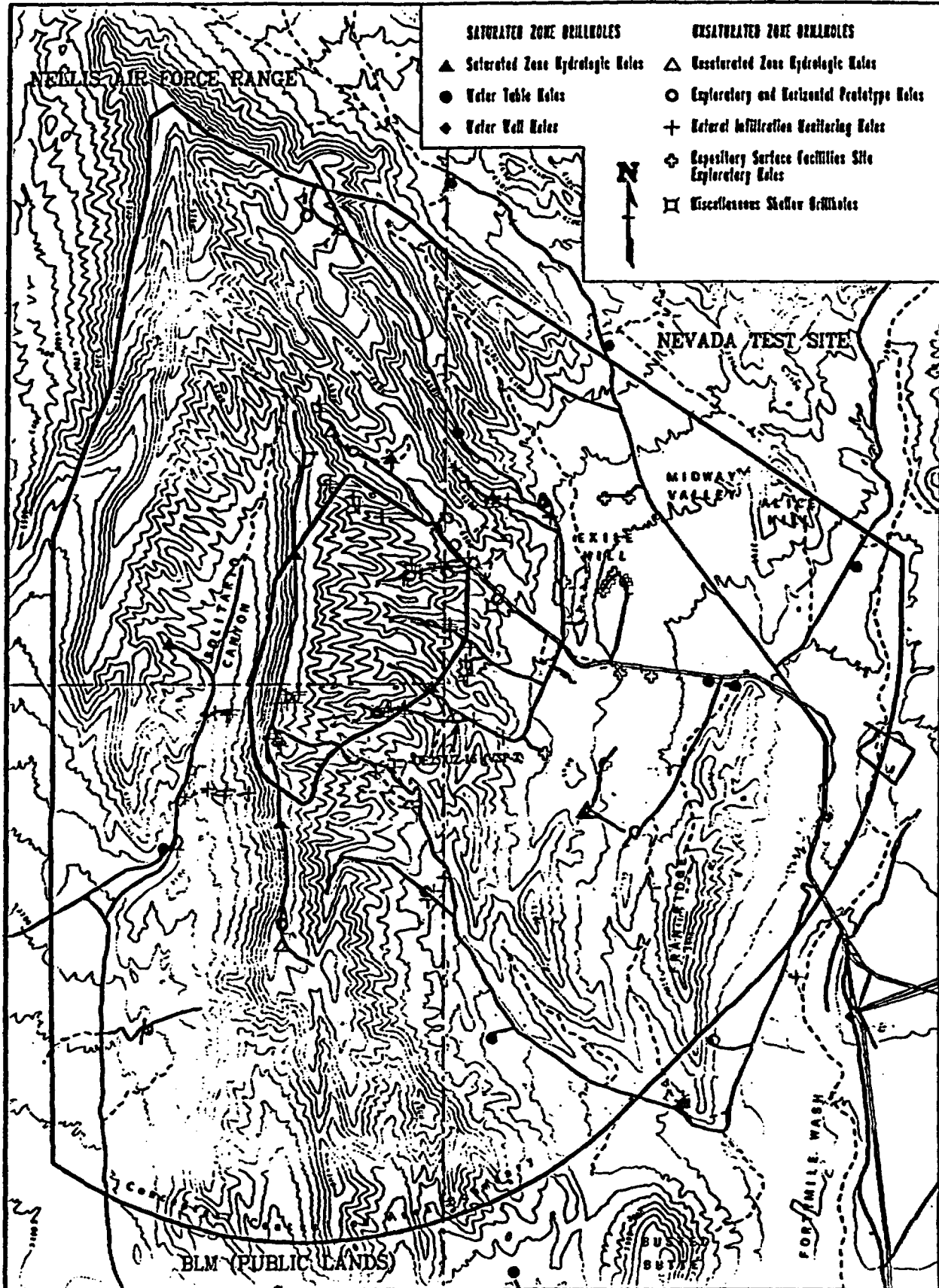
YUCCA MOUNTAIN PROJECT

PROPOSED DRILLHOLES IN SITE CHARACTERIZATION PLAN



YUCCA MOUNTAIN PROJECT

EXISTING DRILLHOLES 1978 - 1986



0 5 10 15

Contour Interval 100 feet



YMP-91-049.1

