

**U.S. DEPARTMENT OF ENERGY  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**NUCLEAR WASTE TECHNICAL REVIEW BOARD  
STRUCTURAL GEOLOGY & GEOENGINEERING PANEL MEETING**

**SUBJECT:      FY93 APPROACH FOR  
                  DEVELOPING EXPLORATORY  
                  STUDIES FACILITY**

**PRESENTER:     CARL P. GERTZ**

**PRESENTER'S TITLE  
AND ORGANIZATION:   PROJECT MANAGER  
                          YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT OFFICE  
                          LAS VEGAS, NEVADA**

**PRESENTER'S  
TELEPHONE NUMBER:   (702) 794-7920**

**PLAZA-SUITE HOTEL • LAS VEGAS, NEVADA  
NOVEMBER 4 - 5, 1992**

# PRELIMINARY ALLOCATION OF FY93 FUNDING

Preliminary

## WBS

	<u>M\$</u>
1.2.1 Systems Engineering	5.9
1.2.2 Waste Package	8.3
1.2.3 Site Investigations	50.0
1.2.4 Repository	4.5
1.2.5 Regulatory	23.0
1.2.6 Exploratory Studies Facility	49.0
1.2.7 Test Facilities	10.2
1.2.9 Project Management	17.4
1.2.10 Financial Assistance	17.6
1.2.11 Quality Assistance	10.0
1.2.12 Information Management	11.0
1.2.13 Environment, Safety and Health	12.4
1.2.14 Institutional	3.5
1.2.15 Support Services	16.2
YMP Support to OGD Analysis and Verification Division	1.5
NTS Allocation	<u>4.2</u>
<b>Total</b>	<b>244.7</b>

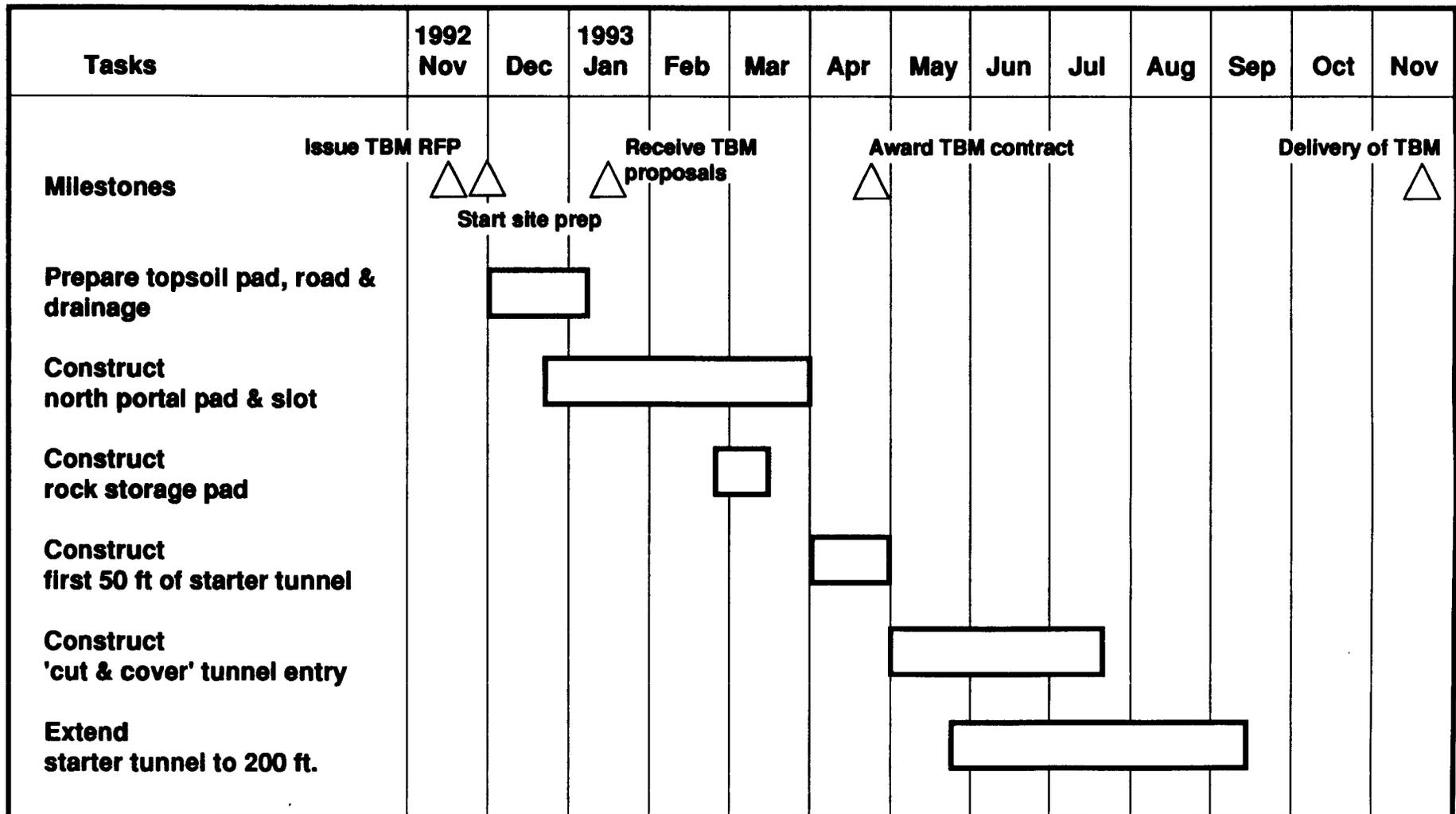
# **FY93 PLANNED ACCOMPLISHMENTS**

**Preliminary**

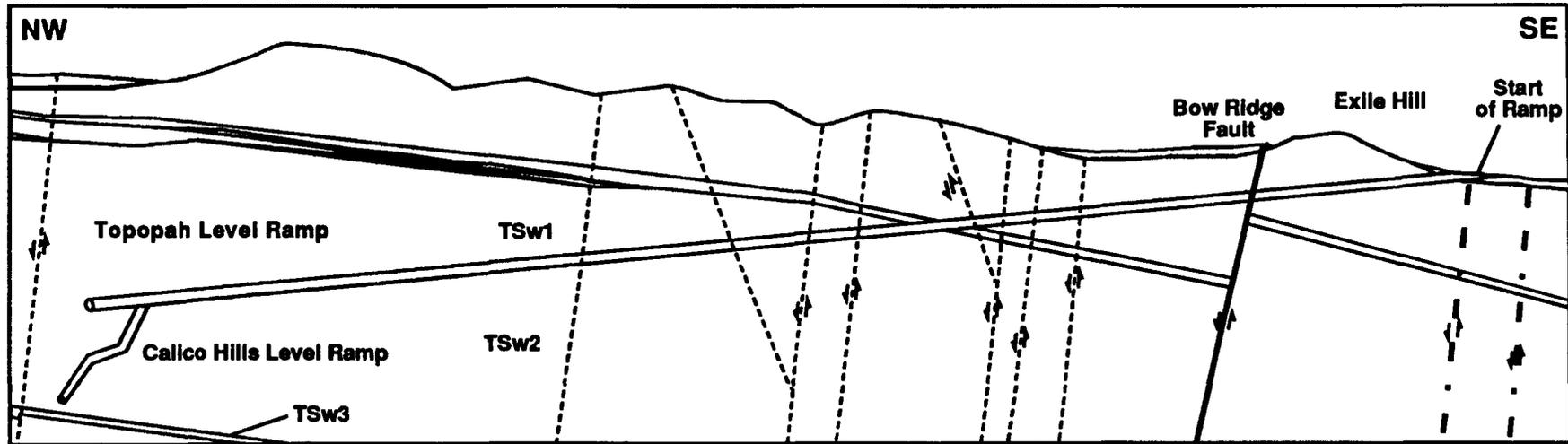
## **1.2.6. EXPLORATORY STUDIES FACILITY (\$49M)**

- **Start ESF site preparation and construct first 200' of north portal and ramp**
- **Continue ESF Title II Design, including Packages 1B and 2**
- **Issue TBM RFP**
- **Receive proposals, and award contract for first large TBM and support equipment**
- **Award subcontract for underground construction**
- **Upgrade power supply for ESF construction**

# PRELIMINARY ESF CONSTRUCTION SUMMARY SCHEDULE



# NORTH RAMP

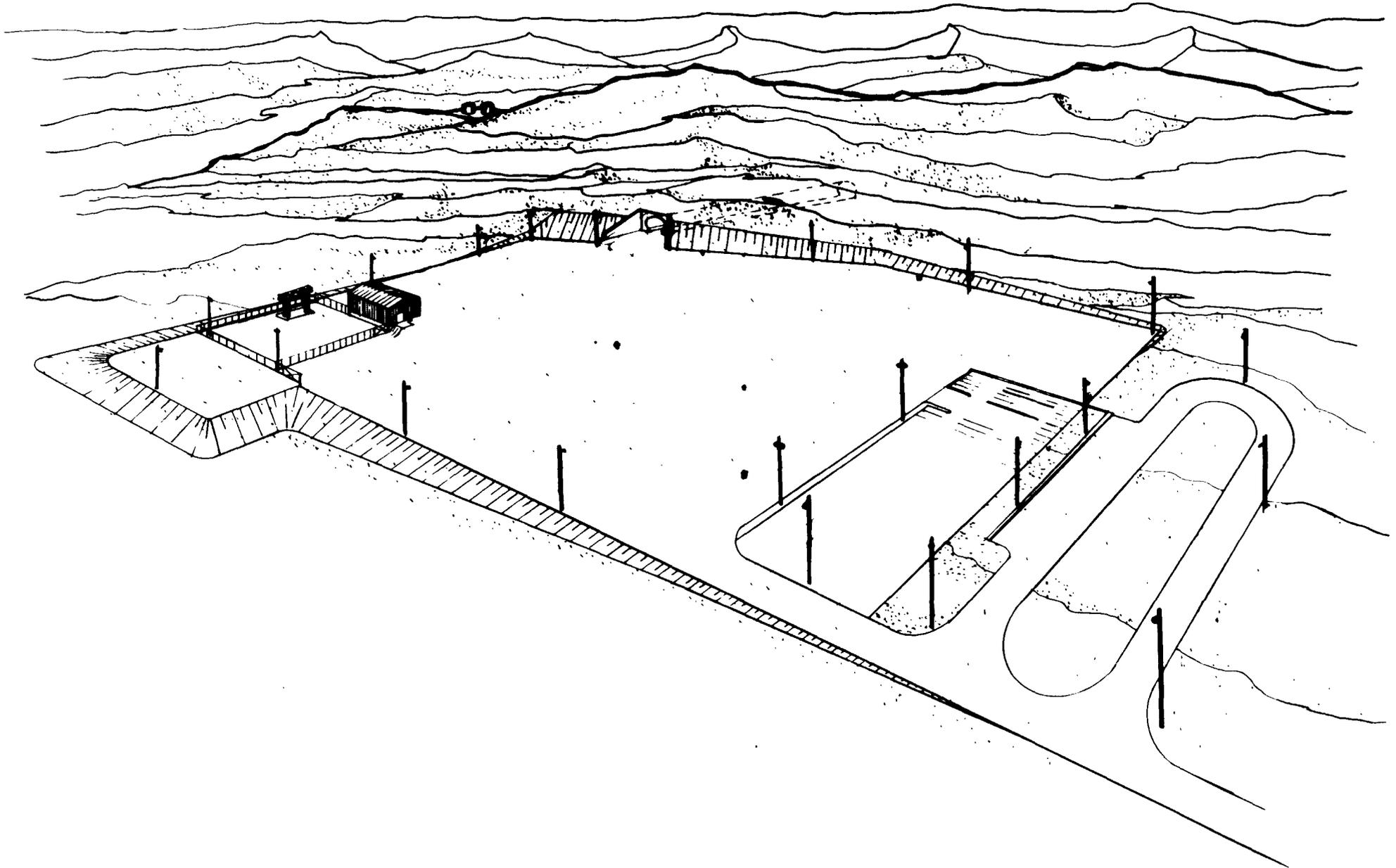


## Thermal/Mechanical Units

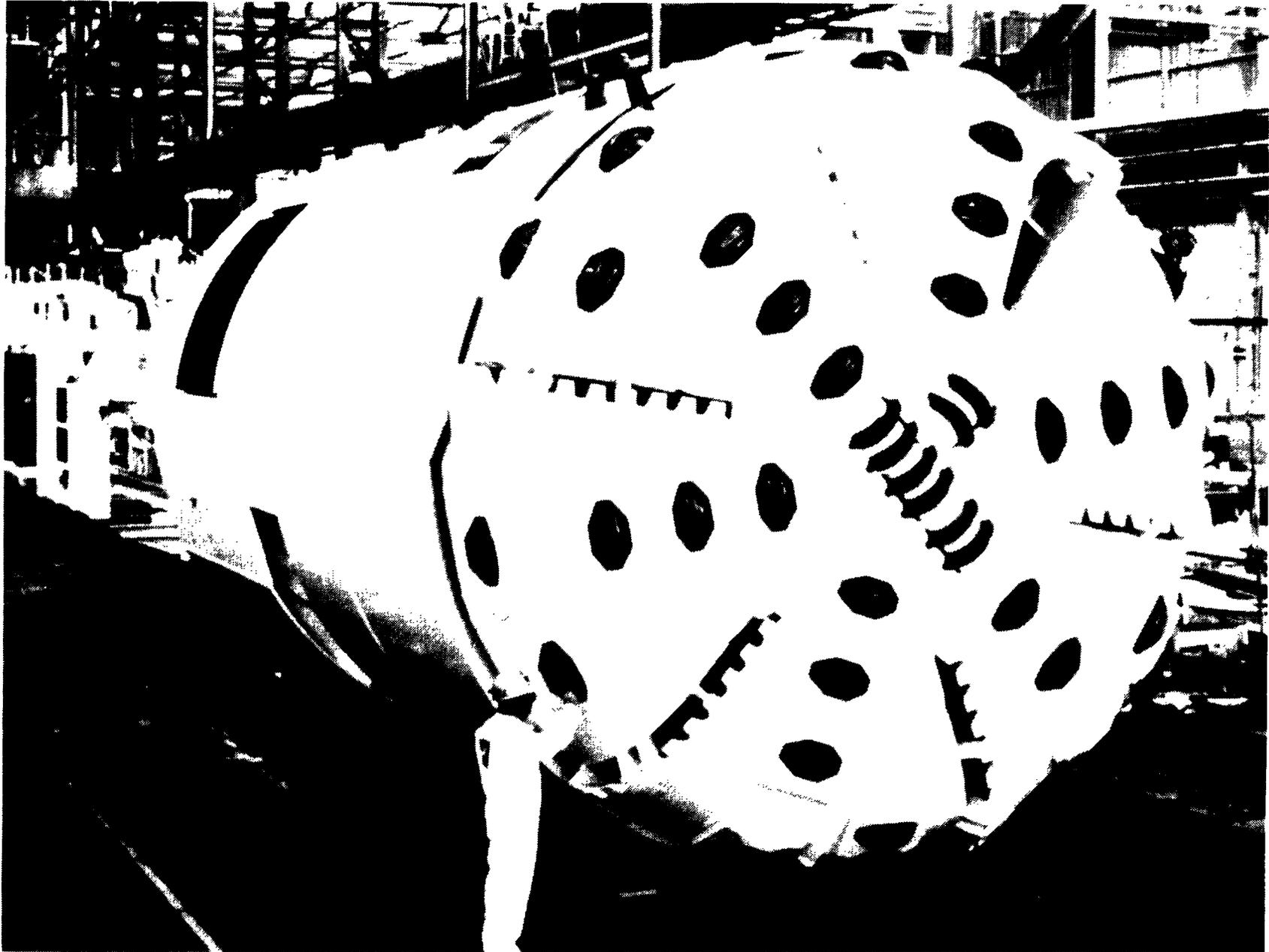
- Tcw  Tiva Canyon Member
- PTn  Yucca Mountain Member  
Pah Canyon Member
- TSw1  Topopah Spring Member
- TSw2  Topopah Spring Member
- TSw3  Topopah Spring Member
- CHn  Tuffaceous Beds of Calico Hills
- TZZ -- -- Zeolite-Vitric Contact in Calico Hills (TZZ)  
(Not Present on This Selection)

*Conceptual Illustration  
Not To Scale*

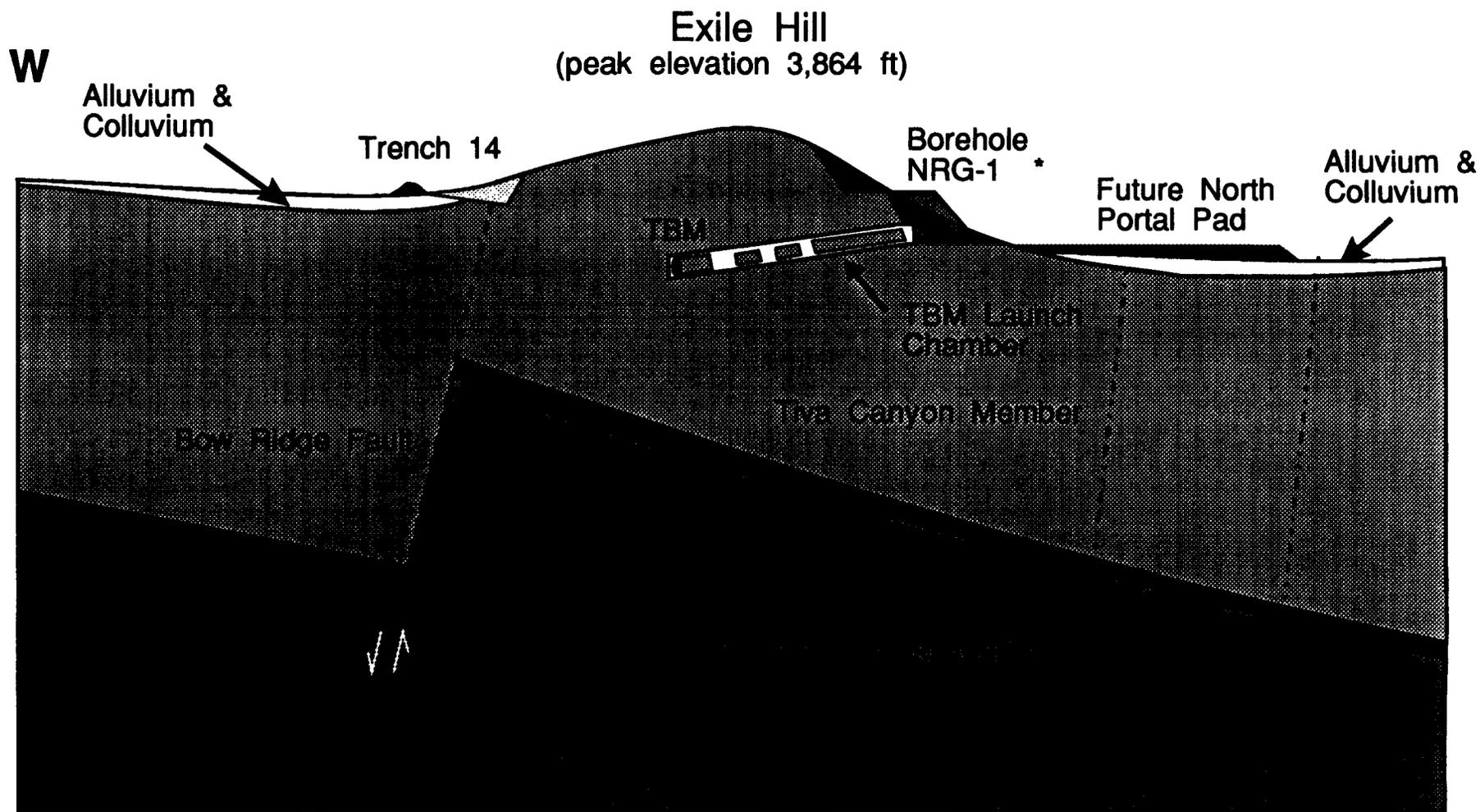
# ESF NORTH PORTAL DESIGN PACKAGE 1A



# TUNNEL BORING MACHINE

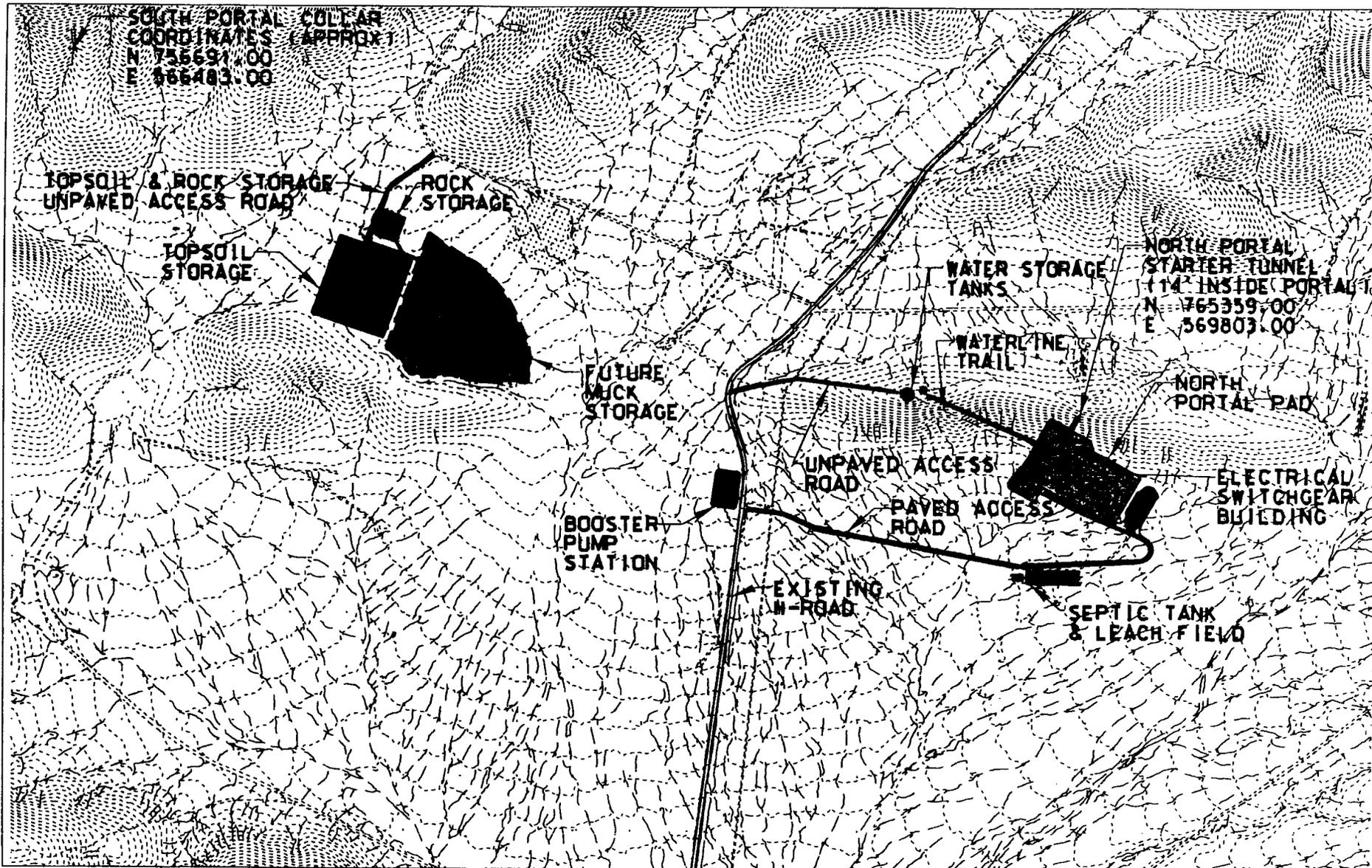


# CROSS SECTION OF EXILE HILL SHOWING TBM LAUNCH CHAMBER, NRG-1 AND FUTURE NORTH PORTAL PAD



\* Note: drill pad to be removed prior to excavation of launch chamber.

Not to scale



ESF PACKAGE 1A  
 OVERALL SITE  
**PLAN**  
 REFERENCE  
 YMP-025-1-CIVL-PL111

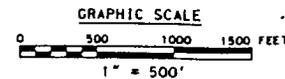


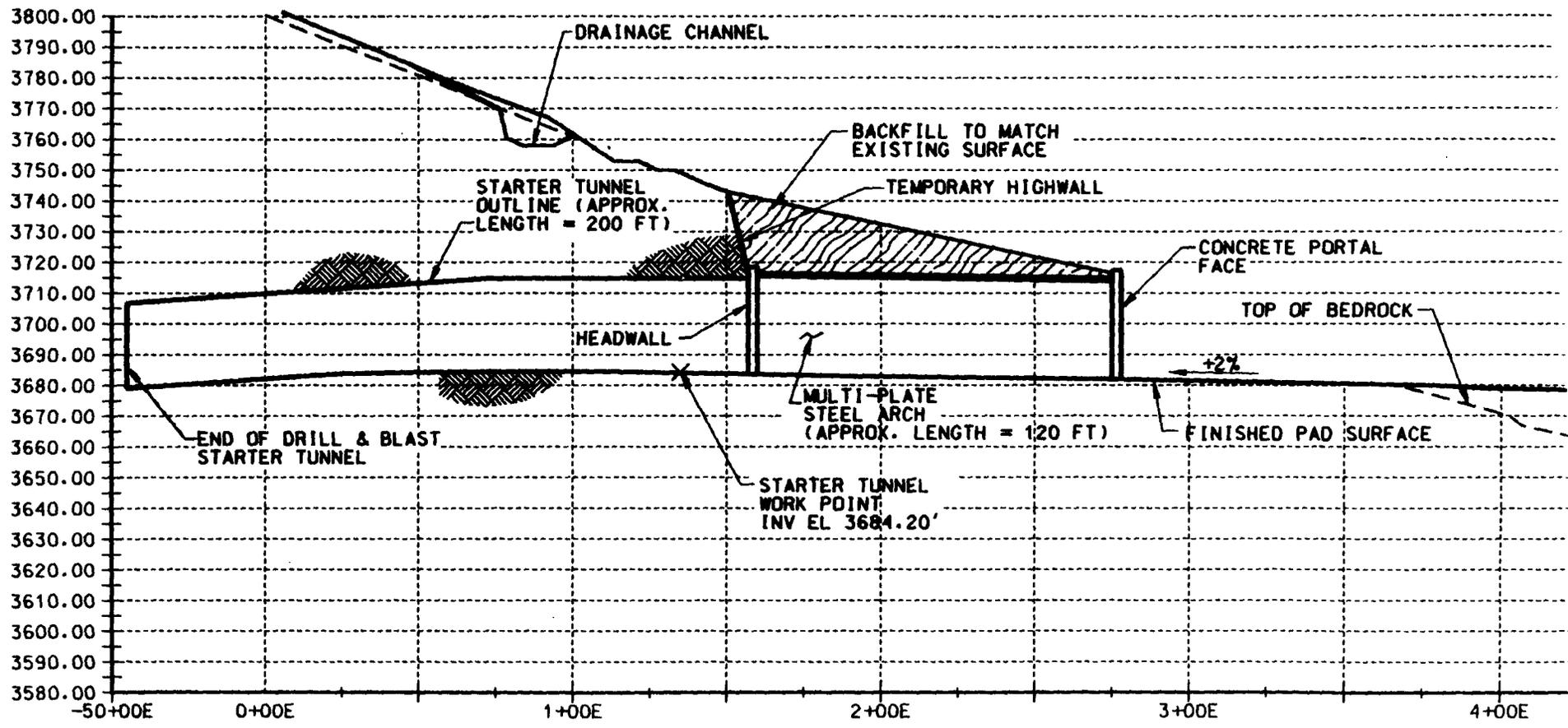
**ELECTRICAL POWER LINE FROM CANYON SUBSTATION**

↑

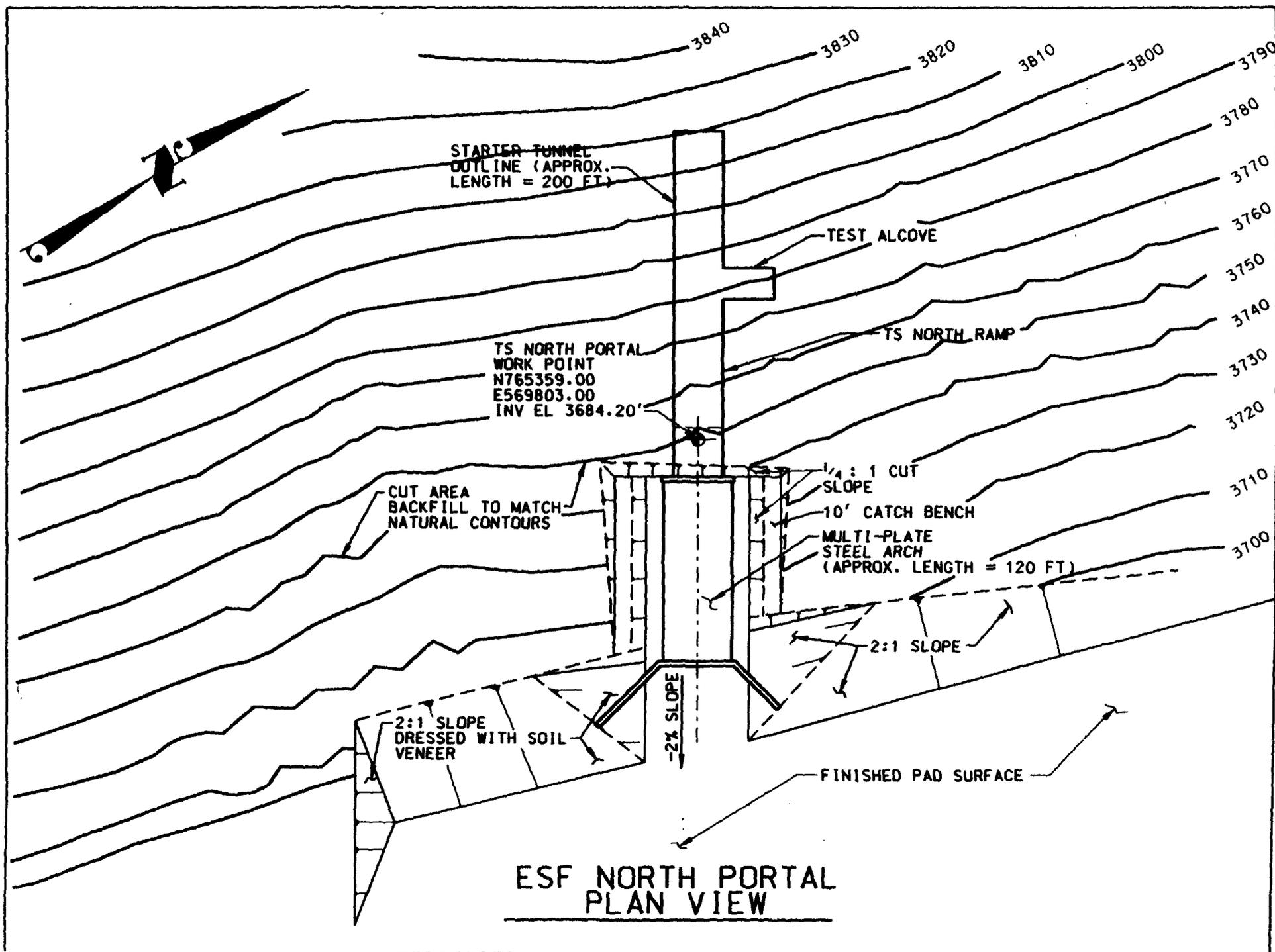
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**TO WELL J-13**





**ESF NORTH PORTAL  
CROSS SECTION**



STARTER TUNNEL  
OUTLINE (APPROX.  
LENGTH = 200 FT)

TEST ALCOVE

TS NORTH PORTAL  
WORK POINT  
N765359.00  
E569803.00  
INV EL 3684.20'

TS NORTH RAMP

CUT AREA  
BACKFILL TO MATCH  
NATURAL CONTOURS

1/4 : 1 CUT  
SLOPE

10' CATCH BENCH

MULTI-PLATE  
STEEL ARCH  
(APPROX. LENGTH = 120 FT)

2:1 SLOPE

2:1 SLOPE  
DRESSED WITH SOIL  
VENEER

-2% SLOPE

FINISHED PAD SURFACE

**ESF NORTH PORTAL  
PLAN VIEW**

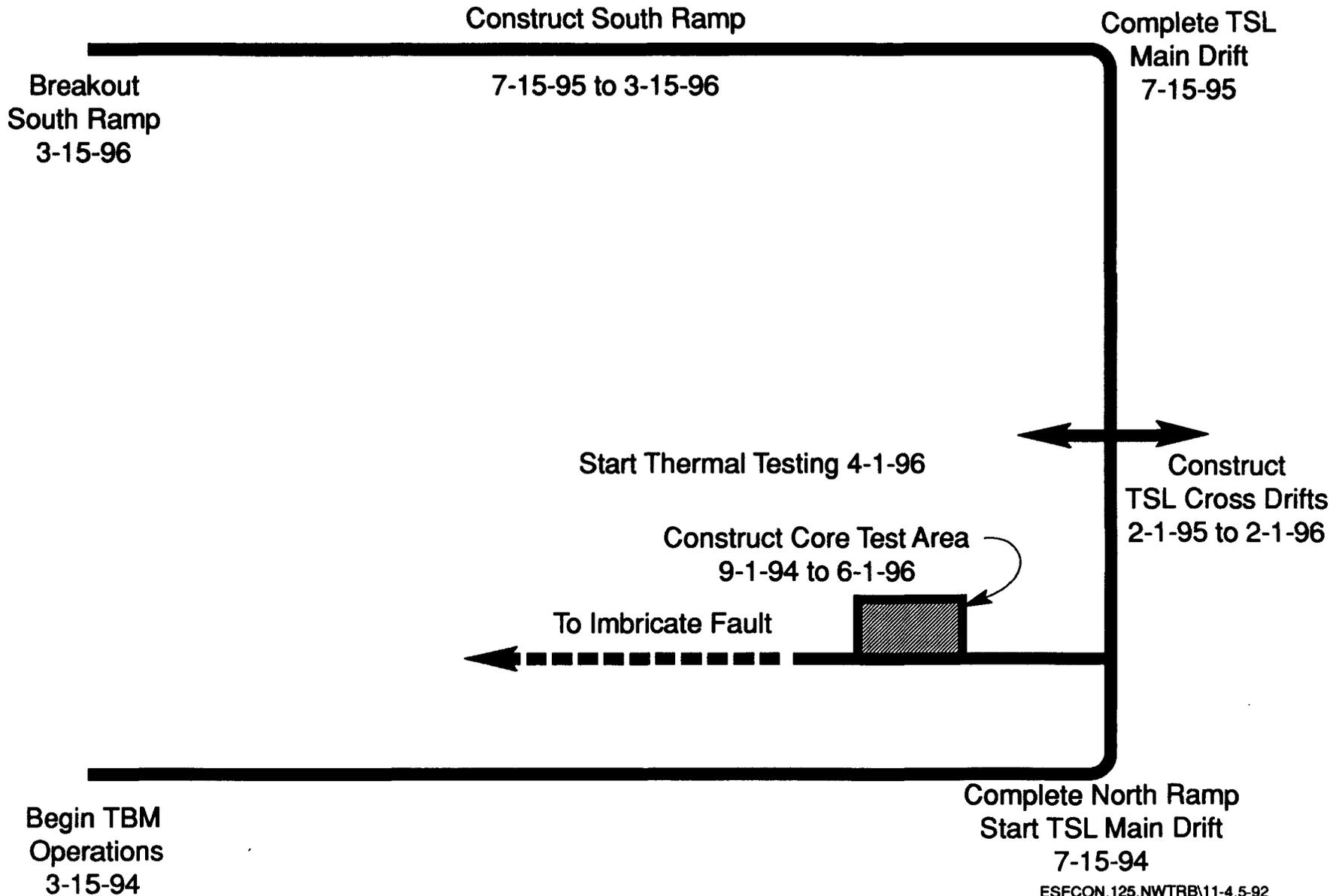
# **Title I Construction Sequence**

- **Assumed four TBMs in simultaneous operation**
- **North and south ramps would be started at virtually the same time (OCT 94)**
- **When the TSL ramps had been driven past the location of the CHL ramps, the CHL TBM launch chambers would be excavated, the CHL TBMs erected and started and excavation resumed in the TSL ramps**
- **Excavation would begin in the main test level (MTL) once its location had been reached by the north TBM**
- **Breakthrough in the TSL would be achieved well before completion of the MTL**

# Revised Construction Approach

- **Procurement for one large diameter TBM to begin mid-November 92**
- **Procurement results (new or used machine) will determine TBM startup date**
- **TBM receipt could occur as early as Nov 93**
- **TBM operation could begin as early as Feb 94**
- **One large diameter TBM (~ 7.6 - 9.1 meters) will start at the north portal, excavate the north ramp to the TSL, the TSL main drift, and the south ramp from the TSL to the surface (Approximately 26,000 ft)**
- **A second, smaller, TBM (~ 5.8 meters) will be employed to drive the north CH ramp to the CH level, the CH main drift (from north to south), and the south CH ramp from the CH to connection with the south TSL ramp**

# ESF CONSTRUCTION MILESTONES



# Exploratory Studies Facility (ESF) Preliminary Major Milestones

<u>ESF FY93</u>	<u>Scheduled</u>	<u>Expected/ Actual</u>
• Complete design of north portal, pad, and TBM launch chamber	9/30/92	11/23/92 (E)
• Start Title II design of north ramp	10/1/92	
• Start Title II design of selected north access surface facilities	10/1/92	
• Issue Tunnel Boring Machine (TBM) Request For Proposal (RFP)	11/16/92	

# Exploratory Studies Facility (ESF) Preliminary Major Milestones

(Continued)

<u>ESF FY93</u>	<u>Scheduled</u>	<u>Expected/ Actual</u>
• Start site preparation	11/30/92	
• Start excavating TBM launch chamber	4/2/93	
• Complete TBM launch chamber	9/15/93	
• Complete design of north ramp	9/30/93	
• Complete design of selected north access surface facilities	9/30/93	

# Exploratory Studies Facility (ESF) Preliminary Major Milestones

(Continued)

<u>ESF FY94</u>	<u>Scheduled</u>	<u>Expected/ Actual</u>
• Start Title II design of the Topopah Spring Level (TSL) main and cross drifts	10/1/93	
• Start Title II design of remaining north access surface facilities	10/1/93	
• Start Title II design of TSL core test area	10/1/93	
• Deliver TBM to site	12/15/93	
• Start TBM operations (north ramp)	3/15/94	

# Exploratory Studies Facility (ESF) Preliminary Major Milestones

(Continued)

<u>ESF FY94</u>	<u>Scheduled</u>	<u>Expected/ Actual</u>
• Complete north ramp excavation	7/1/94	
• Complete design of the TSL main and cross drifts	7/30/94	
• Complete design of remaining north access surface facilities	9/30/94	
• Complete design of TSL core test area	9/30/94	
• Start Title II design of Calico Hills Level (CHL) north ramp	10/1/94	
• Complete design of CHL north ramp	9/30/95	

# **The Yucca Mountain Site Characterization Project has a Balanced Site Characterization Program to Meet Requirements**

- **Published Site Characterization Plan in accordance with requirements of the NWPA and NRC**
- **Reviewed by public, external and oversight groups; comments received and responses generated**
- **NRC, EPA, USGS found the site characterization program to be adequate**
- **Detailed study plans prepared and reviewed by NRC**
- **Controls in place to revise characterization plans as needed**

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