4.3.4

. •

#### ID NO: UE-25 FM#1

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.4;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki FRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Infiltration measurements as part of Fortymile Wash recharge study

LOCATION: Fortymile Wash,~3/4 mi east of UE25 WT#15

: NTS Area 25 LAND OWNERSHIP ROAD ACCESS : Additional acess necessary SURFACE PREPARATION : Drill pad construction, required DISTURBANCE AREA : ~2.5 acres : 500 ft (~ 150 m) PROPOSED DEPTH : 7" FINISHED HOLE SIZE MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : 24 hour crew : minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: cemented and cased to top of saturated zone; final casing pipe should be at least 15' above ground to prevent infilling during flash-flood events in Fortymile wash

SAMPLE REQUIREMENTS: core 2'/20' to TD

DRILLING TIME ESTIMATE (days) : 19 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: UE-25 FM#1

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.4;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: infiltration measurements as part of Fortymile Wash recharge study

LOCATION: Fortymile Wash, 3/4 mi east of UE25 WT-15

ROAD ACCESS: Existing access may be adequate

- GEOPHYSICAL LOGS: borehole TV survey, neutron log, epithermal neutron log, gamma log, spectral gamma log, caliper log, induction log, formation density log
- TESTING DESCRIPTION: 1) infiltration pond to be built around drill hole casing conductor pipe; 2) periodic or continuous measurements of formation moisture content to be made in hole at selected intervals

TEST INTERVAL:

COMPLETION RIG SIZE: USGS function - no rig support required

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days):ROAD WORK TIME ESTIMATE (days):SCHEDULED START DATE: FY 90SCHEDULED FINISH DATE: FY 93

ID NO: UE-25 FM#2

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.4;-R.16

------

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Infiltration measurements as part of Fortymile Wash recharge study

LOCATION: Intersection of Fortymile Wash and main road to Yucca Mountain

LAND OWNERSHIP : NTS Area 25 : Existing access adequate ROAD ACCESS SURFACE PREPARATION : Drill pad construction required DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : 500 ft (150 m) FINISHED HOLE SIZE : 7" MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : 24 hour crew : minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: cemented and cased to top of saturated zone; final casing pipe should be >15' high to prevent infilling during flash flood events in Fortymile Wash

SAMPLE REQUIREMENTS: core 2'/20' to TD

DRILLING TIME ESTIMATE(days): 19 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: UE-25 FM#2

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.4;-R.16

\_\_\_\_\_

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: infiltration measurements as part of Fortymile Wash recharge study

LOCATION: intersection of Fortymile Wash and main road to Yucca Mountain

ROAD ACCESS: Existing access is adequate

- GEOPHYSICAL LOGS: borehole TV survey, neutron log, epithermal neutron log, gamma log, spectral gamma log, caliper log, induction log, formation density log
- TESTING DESCRIPTION: 1) infiltration pond to be built around drill hole casing conductor pipe; 2) periodic or continuous measurements of formation moisture content to be made in hole at selected intervals

TEST INTERVAL:

COMPLETION RIG SIZE: USGS function - no rig support required

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days):ROAD WORK TIME ESTIMATE (days):SCHEDULED START DATE: FY 90SCHEDULED FINISH DATE: FY 93

 $\smile$ 

ID NO: UE-25 FM#3

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.4;-R.16

\_\_\_\_\_

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: UGSG

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Infiltration measurements as part of Fortymile Wash recharge study

LOCATION: 2 mi south of J-13

LAND OWNERSHIP : NTS Area 25 ROAD ACCESS : Additional access is necessary SURFACE PREPARATION : Drill pad construction required : ~2.5 acres DISTURBANCE AREA PROPOSED DEPTH : 500 ft (150 m) FINISHED HOLE SIZE : 7" MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: cemented and cased to top of saturated zone; final casing pipe should be >15' high to prevent infilling during flash flood events in Fortymile Wash

SAMPLE REQUIREMENTS: core 2'/20' to TD

DRILLING TIME ESTIMATE(days): 19 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

1D NO: UE-25 FM#3

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 0.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.4;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: UGSG

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: infiltration measurements as part of Fortymile Wash recharge study

LOCATION: 2 mi south of J-13

ROAD ACCESS: Additional access will be provided at the time of drilling

GEOPHYSICAL LOGS: borehole TV survey, neutron log, epithermal neutron log, gamma log, spectral gamma log, caliper log, induction log, formation density log

TESTING DESCRIPTION: 1) infiltration pond to be built around drill hole casing conductor pipe; 2) periodic or continuous measurements of formation moisture content to be made in hole at selected intervals

TEST INTERVAL:

COMPLETION RIG SIZE: USGS function - no rig support required

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93

ID NO: FMN#1 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

.

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

\_\_\_\_\_

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

: NTS LAND OWNERSHIP ROAD ACCESS : SURFACE PREPARATION : none required DISTURBANCE AREA : : < 33 ft (< 10 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6" (~ 15 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew RIG SIZE : CP RIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE(days): 1 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

.

 $\checkmark$ 

ID NO: FMN#1 (informal number)

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.R.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed by USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93

ID NO: FMN#2 (informal number)

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

\_\_\_\_\_

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

LAND OWNERSHIP : NTS ROAD ACCESS : SURFACE PREPARATION : None required DISTURBANCE AREA : PROPOSED DEPTH : < 33 ft (< 10 m) FINISHED HOLE SIZE : 6" (~ 15 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew RIG SIZE : CP RIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE(days): 1 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

# DATE OF CURRENT REVISION: Dec 15, 1988

ID NO: FMN#2 (informal number) SCP STUDY NO : 8.3.1.2.1.3 DATE OF CURRENT REVISION: Dec 15, 1988

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

\_\_\_\_\_

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed by USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93

ID NO: FMN#3 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

LAND OWNERSHIP : NTS ROAD ACCESS : SURFACE PREPARATION : None required DISTURBANCE AREA : : < 33 ft (< 10 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6" (~ 15 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew RIG SIZE : CP RIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE (days) : 1 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: FMN#3 (informal number)

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

--------------

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed by USGS; No budget impact under WBS 1.2.3.5.

. TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93

ID NO: FMN#4 (informal number)

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

\_\_\_\_\_

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

LAND OWNERSHIP : NTS ROAD ACCESS : SURFACE PREPARATION : None required DISTURBANCE AREA : : < 33 ft (< 10 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6" (~ 15 cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew RIG SIZE : CP RIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE (days) : 1 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: FMN#4 (informal number)

\_\_\_\_\_

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

\_\_\_\_

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed by USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93

ID NO: FMN#5 (informal number)

\_\_\_\_\_

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

: NTS LAND OWNERSHIP ROAD ACCESS : SURFACE PREPARATION : None required DISTURBANCE AREA . PROPOSED DEPTH : < 33 ft (< 10 m) FINISHED HOLE SIZE : 6" (~ 15 cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew RIG SIZE : CP RIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE(days): 1 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

------

ID NO: FMN#5 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

\_\_\_\_\_

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed by USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93

ID NO: FMN#6 (informal number)

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. B. Czarnecki PRINCIPAL ORGANIZATION: USGS

\_\_\_\_

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

LAND OWNERSHIP ': NTS ROAD ACCESS : SURFACE PREPARATION : None required DISTURBANCE AREA : PROPOSED DEPTH : < 33 ft (< 10 m) FINISHED HOLE SIZE : 6" (~ 15 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew RIG SIZE : CP RIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE(days): 1 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

ID NO: FMN#6 (informal number)

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. B. Czarnecki FRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed by USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93 DATE OF CURRENT REVISION: Dec 15, 1988



ID NO: FMN#7 (informal number)

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

\_\_\_\_\_

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

LAND OWNERSHIP : NTS ROAD ACCESS 1 SURFACE PREPARATION : None required DISTURBANCE AREA : PROPOSED DEPTH : < 33 ft (< 10 m) FINISHED HOLE SIZE : 6" (~ 15 cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew RIG SIZE : CP RIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE(days): 1 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

ID NO: FMN#7 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed bY USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : .FY 90 SCHEDULED FINISH DATE : FY 93 ID NO: FMN#8 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

: NTS LAND OWNERSHIP ROAD ACCESS ٠ SURFACE PREPARATION : None required DISTURBANCE AREA : : < 33 ft (< 10 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6" (~ 15 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew RIG SIZE : CP RIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE (days) : 1 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: FMN#8 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

\_\_\_\_\_

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed bY USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93 ID NO: FMN#9 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

LAND OWNERSHIP : NTS ROAD ACCESS : SURFACE PREPARATION : None required DISTURBANCE AREA : PROPOSED DEPTH : < 33 ft (< 10 m) FINISHED HOLE SIZE : 6" (~ 15 cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air only DRILLING SCHEDULE : daylight crew : CP RIG RIG SIZE

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE(days): 1 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: FMN#9 (informal number)

\_\_\_\_\_

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed by USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93

ID NO: FMN#10 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

: NTS LAND OWNERSHIP ROAD ACCESS : SURFACE PREPARATION : None required DISTURBANCE AREA : : < 33 ft (< 10 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6" (~ 15 cm) : 2.4" MINIMUM CORE SIZE : air only DRILLING FLUIDS : daylight crew DRILLING SCHEDULE RIG SIZE : CPRIG

DRILLING METHOD: ODEX

CASING REQUIREMENTS: cased to TD

SAMPLE REQUIREMENTS: 1) 2 ft of core/5 ft of hole drilled for alluvium; 2) 1 ft of core/10 ft of hole drilled for welded tuff; 3) continuous core for non-welded tuff

DRILLING TIME ESTIMATE(days): 1 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90  $\smile$ 

ID NO: FMN#10 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.1.3.3

WBS NO: 1.2.3.3.3.4.G.3;1.2.3.5.2.H.21;-R.16

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Czarnecki PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: neutron moisture logging in Fortymile Wash

LOCATION: Fortymile Wash

ROAD ACCESS:

GEOPHYSICAL LOGS: gamma-gamma density log, neutron moisture log and neutron porosity log - Logging to be performed by USGS; No budget impact under WBS 1.2.3.5.

TESTING DESCRIPTION: emplacement of neutron moisture tube

TEST INTERVAL:

COMPLETION RIG SIZE: USGS Function - No rig support required

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 93

4.3.5 ,

ID NO: USW WT-8

SCP STUDY NO : 8.3.1.2.1.3;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.1.3.2

WBS NO: 1.2.3.3.3.1.G.2;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: study of saturated zone in the vicinity of the Solitario Canyon fault

LOCATION: East of USW H-6, in Solitario Canyon

LAND OWNERSHIP : USAF ROAD ACCESS : Additional access is likely, depends on final siting of hole SURFACE PREPARATION : Construction of drill pad will be required DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : 2100-2200 ft (640-670 m) FINISHED HOLE SIZE : 6-8" (15-20cm) MINIMUM CORE SIZE : 2.4" : Air to TD DRILLING FLUIDS DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP-1 for description)

CASING REQUIREMENTS: 1)Surface casing to first competent interval;2)removable packer set at approx.25' below WT;3)Small-diameter tubing (not less than 1" ID)landed at WT

SAMPLE REQUIREMENTS: Cuttings to TD and continuous core for systematic drilling program (Minimum core if not needed for systematic drilling: from 75' above WT to 30' below WT. Interstitial gas from isolated interval immediately...

DRILLING TIME ESTIMATE(days): 12 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: USW WT-8

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.3.1.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.1.G.2;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: study of saturated zone in the vicinity of the Solitario Canyon fault

LOCATION: East of USW H-6, in Solitario Canyon; approx N.762280/E.557050; based on SCP Figure 8.3.1.4-11

ROAD ACCESS: Additional access will be provided at the time of drilling.

- GEOPHYSICAL LOGS: gyroscopic survey, optical TV survey, induction survey, checkshot velocity survey, dielectric log, gamma ray log, spectral gamma ray log, caliper log, fluid density log, electric log, borehole compensated density log, epithermal neutron log
- TESTING DESCRIPTION: 1) Having drilled dry to within approx.75' of WT, dry core to approx.WT;2) Land removable packer and access tubing approx.10' above bottom;3) Collect representative gas sample using vacuum and peristaltic pumps;4) Drill to WT;5) Core approx.25';6) Drill to TD;7) Collect geophysical logs;8) Hang a submersible electric pump, approx.20 GPM capacity, between 2 packers (straddle to be specified onsite;9) Inflate upper packer and begin pumping for water samples;10) Deflate packer, re-position lower packer at same specified depth;11) Inflate lower packer and begin pumping for water samples;12) Remove pump and packer string;13) Hang removable bridge plug approx.25' below WT;14) Install small-diameter tubes;15) Hang small-capacity submersible pump in 2" ID tubing;16) Pump to be operated until representative water samples are collected;17) Remove small-capacity pump;18) Bridge plug and tubing to remain for long-term monitoring of potentiometric surface and vertical thermal profile.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : Uncontaminated ground water DISCHARGE VOLUME: 400,000 gals. (~20 GPM)

PLAN FOR DISCHARGE REMOVAL: Contain discharged water as appropriate and discharge offsite

TESTING TIME ESTIMATE (days):ROAD WORK TIME ESTIMATE (days):SCHEDULED START DATESCHEDULED FINISH DATE:FY 90

ID NO: USW WT-9

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3;8.3.1.4.3.1;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.3.1.2;8.3.1.4.3.1.1;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: study of saturated zone in the vicinity of the Solitario Canyon fault

LOCATION: Upper end of Solitario Canyon; N-769,477/E-557,642 (NPCS)

LAND OWNERSHIP : USAF : Proposed site is accessible by existing road. Some improvements may be necessary. ROAD ACCESS SURFACE PREPARATION : Construction of a drill pad is needed : ~2.5 acres DISTURBANCE AREA : 2100-2200 ft (640-670 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6-8" (15-20cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : Air to TD : 24 hour crew DRILLING SCHEDULE : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP#1 for description)

CASING REQUIREMENTS: 1) Surface casing to first competent interval; 2) Removable packer set at approx.25' below WT; 3) Small-diameter tubing (not less than 1" ID) landed at WT.

SAMPLE REQUIREMENTS: Cuttings to TD and continuous core for systematic drilling program (Minimum core if not needed for systematic drilling: from WT to approx.30' below WT). Water from: either completed hole or two intervals in completed ...

DRILLING TIME ESTIMATE(days): 12 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

I MARINED DOUBHOOD IBOIII

ID NO: USW WT-9

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.3.1.1;8.3.1.2.3.1.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: study of saturated zone in the vicinity of the Solitario Canyon fault

LOCATION: Upper end of Solitario Canyon; N-769,477/E-557,642 (NPCS)

ROAD ACCESS: Existing access, with improvements, should be adequate

- GEOPHYSICAL LOGS: gyroscopic survey, optical TV survey, induction survey, checkshot velocity survey, dielectric log, gamma ray log, spectral gamma ray log, caliper log, fluid density log, electric log, borehole compensated density log, epithermal neutron log
- TESTING DESCRIPTION: 1)Drill to WT, collect approx.30' of saturated core, drill to TD;2)Collect geophysical logs;3)Hang a submersible electric pump, approx.20 GPM capacity, between 2 packers (straddle to be specified onsite), such that the upper packer is at a depth specified onsite;4)Inflate upper packer and begin pumping for water samples;5)Deflate packer, re-position lower packer at same specified depth;6)Inflate lower packer and begin pumping for water samples;7)Remove pump and packer string;8)Hang removable bridged plug approx.25' below WT;9)Install small-diameter tubes;10)Hang small-capacity submersible pump in 2" ID tubing;11)Pump to be operated until representative water samples are collected;12)Remove small-capacity pump;13)Bridge plug and tubing to remain for long-term monitoring of potentiometric surface and vertical thermal profile.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : Uncontaminated ground water DISCHARGE VOLUME: 400,000 gals. (~20 GPM)

PLAN FOR DISCHARGE REMOVAL: Contain discharged water as appropriate and discharge offsite

TESTING TIME ESTIMATE(days) : 14 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: UE-25 WT-19

SCP STUDY NO : 8.3.1.2.1.3;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.1.3.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: determine potentionmetric levels east of repository site

LOCATION: 1.9 mi east of J-13; approx. N.747980/E.589975

LAND OWNERSHIP : NTS Area 25 : Proposed site is accessible by existing road ROAD ACCESS SURFACE PREPARATION : Construction of a drill pad is required. DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : 1100 ft (335 m) FINISHED HOLE SIZE : 6-8" (15-20cm) MINIMUM CORE SIZE : 2.4" : Air to TD DRILLING FLUIDS DRILLING SCHEDULE : 24 hour crew RIG SIZE : Minimum 120,000 Lb. pullback

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP-1 for descrription)

CASING REQUIREMENTS: 1) surface casing to first competent interval; 2) 2.875" OD, 8rd tubing w/12' well screen on bottom, landed at TD

SAMPLE REQUIREMENTS: Cuttings to total depth. Core from 875 ft (~50 ft above WT) to 20 ft below water table. Water from completed hole.

DRILLING TIME ESTIMATE(days): 9 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

 $\smile$ 

Mando Dorbhold 10011

ID NO: UE-25 WT-19

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.2

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: determine potentionmetric levels east of repository site

LOCATION: 1.9 mi east of J-13

ROAD ACCESS:

- GEOPHYSICAL LOGS: gyroscopic survey, optical TV survey, induction survey, checkshot velocity survey, dielectric log, gamma ray log, spectral gamma ray log, caliper log, fluid density log, electric log, borehole compensated density log, epithermal neutron log
- TESTING DESCRIPTION: 1) after logging, a small down-hole pump will be hung in 2.875" OD 8 rd tubing w/ 12' well screen at TD; 2) pump to be run for 1 week to obtain water samples for chemical analyses; 3) after testing, pump will be removed and tubingp will be reinstalled for long term monitoring of potentiometric surface.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : late FY89 SCHEDULED FINISH DATE : late FY89

ID NO: UE-25 WT-20

SCP STUDY NO : 8.3.1.2.1.3;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.1.3.2;8.3.1.2.3.2.2

\_\_\_\_\_

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: determine potentiometric levels south of the repository site

LOCATION: 3.1 mi southwest of J-12, approx. N.728300/E.565145

LAND OWNERSHIP : NTS Area 25 : Proposed site is accessible by existing road ROAD ACCESS SURFACE PREPARATION : Construction of a drill pad is required. DISTURBANCE AREA : ~2.5 acres : 1000 ft (305 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6-8" (15-20cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : Air to TD DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP-1 for description)

CASING REQUIREMENTS: 1) surface casing to first competent interval; 2) removable packer set at approx.25' below WT;3)Small-diameter tubing (not less than 1" ID) landed at WT.

SAMPLE REQUIREMENTS: Cuttings to total TD. Core from 770' (~50' above WT) to 20' below water table. Water from completed hole.

DRILLING TIME ESTIMATE(days): 8 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

 $\smile$ 

ID NO: UE-25 WT-20

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.2

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: determine potentiometric levels south of the repository site

LOCATION: 3.1 mi southwest of J-12

ROAD ACCESS:

- GEOPHYSICAL LOGS: gyroscopic survey, optical TV survey, induction survey, checkshot velocity survey, dielectric log, gamma ray log, spectral gamma ray log, caliper log, fluid density log, electric log, borehole compensated density log, epithermal neutron log
- TESTING DESCRIPTION: 1) after logging, a small down-hole pump will be hung in 2.875" OD 8 rd tubing w/ 12' well screen at TD; 2) pump to be run for 1 week to obtain water samples for chemical analyses; 3) after testing, pump will be removed and tubing will be reinstalled for long term monitoring of potentiometric surface.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : late FY89 SCHEDULED FINISH DATE : late FY89
ID NO: USW WT-21

DATE OF CURRENT REVISION: Dec 15, 1988

-------

SCP STUDY NO : 8.3.1.2.1.3;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.1.3.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: C. Czarnecki/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: measure potentiometric levels

LOCATION: N-760,086/E-550,238 (NPCS)

LAND OWNERSHIP : BLM : Additional access will be needed ROAD ACCESS SURFACE PREPARATION : Construction required: Drill pad with mud and cuttings pits. DISTURBANCE AREA : ~2.5 acres : 1800 ft (549 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6-8" (15-20cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : Air to TD DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP#1 for description)

CASING REQUIREMENTS: 1)Surface casing to first competent interval;2)Removable packer set at approx 25' below WT;3)Small-diameter tubing (not less than 1" ID) landed at WT.

SAMPLE REQUIREMENTS: Cuttings to total depth. Core from 1450' (~50' above WT) to 20' below water table. Water from completed hole.

ID NO: USW WT-21

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.2.

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: C. Czarnecki PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: measure potentiometric levels

LOCATION: N-760,086/E-550,238 (NPCS)

ROAD ACCESS:

- GEOPHYSICAL LOGS: gyroscopic survey, optical TV survey, induction survey, checkshot velocity survey, dielectric log, gamma ray log, spectral gamma ray log, caliper log, fluid density log, electric log, borehole compensated density log, epithermal neutron log
- TESTING DESCRIPTION: 1) after logging, a small down-hole pump will be hung in 2.875" OD 8 rd tubing w/ 12' well screen at TD; 2) pump to be run for 1 week to obtain water samples for chemical analyses; 3) after testing, pump will be removed and tubing will be reinstalled for long term monitoring of potentiometric surface.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING T	IME ESTIMATE(days)	:			
ROAD WORK	TIME ESTIMATE (days)	:			
SCHEDULED	START DATE	:	late	FY89	
SCHEDULED	FINISH DATE	:	late	FY89	

ID NO: USW WT-22

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.1.3.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: C. Czarnecki/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nucular Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

**PURPOSE:** measure potentiometric levels

LOCATION: N-778,858/E-528,373 (NPCS)

LAND OWNERSHIP : BLM : Proposed site is accessible by existing road ROAD ACCESS SURFACE PREPARATION : Construction of a drill pad is required. : ~2.5 acres DISTURBANCE AREA : 1300 ft (396 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6-8" (15-20cm) : 2.4" MINIMUM CORE SIZE : Air to TD DRILLING FLUIDS DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP-1 for description)

CASING REQUIREMENTS: 1)Surface casing to first competent interval;2)Removable packer set at approx. 25' below WT;3)Small-diameter tubing (not less than 1" ID) landed at WT.

SAMPLE REQUIREMENTS: Bottom-hole core. Cuttings to total depth. Water from completed hole.

DRILLING TIME ESTIMATE(days): 9 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

ID NO: USW WT-22

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.2

WBS NO: 1.2.3.3.3.1.G.1;1.2.3.5.2.H.5;-R.14

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: C. Czarnecki PRINCIPAL ORGANIZATION: USGS-Nucular Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: measure potentiometric levels

LOCATION: N-778,858/E-528,373 (NPCS)

ROAD ACCESS:

- GEOPHYSICAL LOGS: gyroscopic survey, optical TV survey, induction survey, checkshot velocity survey, dielectric log, gamma ray log, spectral gamma ray log, caliper log, fluid density log, electric log, borehole compensated density log, epithermal neutron log
- TESTING DESCRIPTION: 1) after logging, a small down-hole pump will be hung in 2.875" OD 8 rd tubing w/ 12' well screen at TD; 2) pump to be run for 1 week to obtain water samples for chemical analyses; 3) after testing, pump will be removed and tubing will be reinstalled for long term monitoring of potentiometric surface.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING T	IME ESTIMATE (days)	:	•
ROAD WORK	TIME ESTIMATE (days)	:	
SCHEDULED	START DATE	:	late FY89
SCHEDULED	FINISH DATE	:	early FY90

ID NO: USW WT-23

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.1.3;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.1.3.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.1.G.2.1;-4.G.2.1;1.2.3.5.2.R.5;-R.14;1.2.3.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Determine the nature of the potentiometric gradient in this area

LOCATION: Near Drill Hole Wash northwest of USW UZ-1, approx. N.771275/E.560220

LAND OWNERSHIP : USAF : Additional access is needed ROAD ACCESS SURFACE PREPARATION : Construction of a drill pad is required. DISTURBANCE AREA : ~2.5 acres : 2200 ft (670 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6-8" (15-20cm) MINIMUM CORE SIZE : 2.4" : Air to TD DRILLING FLUIDS DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP-1 for description)

CASING REQUIREMENTS: 1)Surface casing to first competent interval;2)Removable packer set at approx. 25' below WT;3)Small-diameter tubing (not less than 1" ID) landed at WT.

SAMPLE REQUIREMENTS: Bottom-hole core. Cuttings to total depth. Water from completed hole.

DRILLING TIME ESTIMATE (days) : 12 ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 91

ID NO: USW WT-23

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1;8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.3.1.2;8.3.1.2.1.3.2

WBS NO: 1.2.3.3.3.1.G.2.1;-4.G.2.1;1.2.3.5.2.H.5;-R.14

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: determine the nature of the potentiometric gradient in this area

LOCATION: near Drill Hole Wash northwest of USW UZ-1

ROAD ACCESS:

- GEOPHYSICAL LOGS: gyroscopic survey, optical TV survey, induction survey, checkshot velocity survey, dielectric log, gamma ray log, spectral gamma ray log, caliper log, fluid density log, electric log, borehole compensated density log, epithermal neutron log
- TESTING DESCRIPTION: 1) after logging, a small down-hole pump will be hung in 2.875" OD 8 rd tubing w/ 12' well screen at TD; 2) pump to be run for 1 week to obtain water samples for chemical analyses; 3) after testing, pump will be removed and tubing will be reinstalled for long term monitoring of potentiometric surface.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING T	IME ESTIMATE (days)	:		
ROAD WORK	TIME ESTIMATE (days)	:		
SCHEDULED	START DATE	:	early H	FY90
SCHEDULED	FINISH DATE	:	early 1	FY90

ID NO: UE-25 WT-24

SCP STUDY NO : 8.3.1.2.1.3;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.2.1.3.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.1.G.2.1;-4.G.2.1;1.2.3.5.2.H.5;-R.14;1.2.3.3.3.G

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison/W. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

FURPOSE: Study the nature of the potentiometric gradient in this area

LOCATION: Near Drill Hole Wash between drill holes USW G-2 and UE25 WT-18

LAND OWNERSHIP : NTS-Area 25 : Proposed site may be accessible by existing road. However, some improvements may be necessary. ROAD ACCESS SURFACE PREPARATION : Construction of a drill pad is required. DISTURBANCE AREA : ~2.5 acres : 2200 ft (670 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6-8" (15-20cm) : 2.4" MINIMUM CORE SIZE : Air to TD DRILLING FLUIDS DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP-1 for description)

CASING REQUIREMENTS: 1)Surface casing to first competent interval;2)Removable packer set at approx. 25' below WT;3)Small-diameter tubing (not less than 1" ID) landed at WT.

SAMPLE REQUIREMENTS: Bottom-hole core. Cuttings to total depth. Water from completed hole.

DRILLING TIME ESTIMATE(days): 12 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 91 DATE OF CURRENT REVISION: Dec 15, 1988

ID NO: USW WT-24

SCP STUDY NO : 8.3.1.2.3.1;8.3.1.2.1.3

SCP ACTIVITY NO: 8.3.1.2.3.1.2;8.3.1.2.1.3.2

WBS NO: 1.2.3.3.3.1.G.2.1;-4.G.2.1;1.2.3.5.2.H.5;-R.14

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Robison PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: study the nature of the potentiometric gradient in this area

LOCATION: near Drill Hole Wash between drill holes USW G-2 and UE25 WT-18

ROAD ACCESS:

- GEOPHYSICAL LOGS: gyroscopic survey, optical TV survey, induction survey, checkshot velocity survey, dielectric log, gamma ray log, spectral gamma ray log, caliper log, fluid density log, electric log, borehole compensated density log, epithermal neutron log
- TESTING DESCRIPTION: 1) after logging, a small down-hole pump will be hung in 2.875" OD 8 rd tubing w/ 12' well screen at TD; 2) pump to be run for 1 week to obtain water samples for chemical analyses; 3) after testing, pump will be removed and tubing will be reinstalled for long term monitoring of potentiometric surface.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING T	[ME ESTIMATE(days)	:		
ROAD WORK	TIME ESTIMATE (days	):		
SCHEDULED	START DATE	:	early FY90	
SCHEDULED	FINISH DATE	:	early FY90	

DATE OF CURRENT REVISION: Dec 15, 1988



ID NO: UE25 A#1

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.6;8.3.1.2.3.2.2

WBS NO: 1.2.3.3.3.2.G.3;1.2.3.5.2.R.19

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Glover, B. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Well testing with conservative tracers to estimate effective porosity and hydrodynamic dispersion, or equivalent fracture-network properties (will be conducted if single-well tests prove successful).

LOCATION: surveyed location (NSPC) N-764,900.2/E-566350.0; see SCP Fig. 8.3.1.2-34; see also Draft NNWSI Site Atlas

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: sonic televiewer, tracejector and heat pulse logs if existing logs are insufficient.

TESTING DESCRIPTION: The method of testing depends of the results from the C-hole complex; 1) geophysical logs from G-4 will be identified to identify intervals for testing; 3) packers and a pump will be installed at the desired horizon and water will3 be withdrawn from the isolated interval @ 3.2-12.6 l/s; pumping will continue for 3-5 days or until steady state flow is established; pumping will ceaseu and pressure recovery data will be collected for a period ~ pumping time; 4) drift pumpback tests will also be conducted in ~5-10 G or H wells; tracer will drift into fm. under steady state hydraulic gradient; at completion of drift phase, water will be pumped from interval @ 3.2-9.6 l/s; pumping will continue for 3-5 days, or until all tracer is recovered.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: Same as UE-25 c-hole complex

DISCHARGE TYPE : Water w/ tracer DISCHARGE VOLUME: Rate will vary

PLAN FOR DISCHARGE REMOVAL:

ID NO: UE25 B#1

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.2.2;8.3.1.2.3.1.6

WBS NO: 1.2.3.3.3.2.G.3;1.2.3.5.2.R.19

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Glover, B. Steinkampf PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Well testing with conservative tracers to estimate effective porosity and hydrodynamic dispersion, or equivalent fracture-network properties (will be conducted if single-well tests prove successful).

LOCATION: surveyed location (NPCS) N-765,243.3/E-566,416.4; see SCP Fig. 8.3.1.2-34, see also, Draft NNWSI Site Atlas

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: sonic televiewer, tracejector and heat pulse lbgs if existing logs are insufficient.

TESTING DESCRIPTION: The method of testing depends of the results from the C-hole complex; 1) geophysical logs from B#1 will be identified to identify intervals for testing; 3) packers and a pump will be installed at the desired horizon and water will3 be withdrawn from the isolated interval @ 3.2-12.6 1/s; pumping will continue for 3-5 days or until steady state flow is established; pumping will ceaseu and pressure recovery data will be collected for a period ~ pumping time; 4) drift pumpback tests will also be conducted in ~5-10 G or H wells; tracer will drift into fm. under steady state hydraulic gradient; at completion of drift phase, water will be pumped from interval @ 3.2-9.6 1/s; pumping will continue for 3-5 days, or until all tracer is recovered.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED: Same as UE-25 c-hole complex

DISCHARGE TYPE : Water w/ tracer DISCHARGE VOLUME: Rate will vary

PLAN FOR DISCHARGE REMOVAL:

ID NO: UE-25 c#1

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.4;-.5;-.7

WBS NO: 1.2.3.5.2.R.19;1.2.3.3.3.2.G.1.2;-G.2;1.2.3.4.1.8.A.1;-2;-3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: testing of C-hole complex with conservative and reactive tracers

LOCATION: see SCP Fig. 8.3.1.2-32

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS:

TESTING DESCRIPTION: 1) ~20 draw down tests will be conducted using c-complex; pressure transducers & packers will be installed and inflated in a single well and water will be withdrawn @ 3.2-12.6 1/s for 3 days; pump will be shut off and pressure recovery datarecorded for ~3 days; wells not used for pumping will be used for monitoring; 2) a similar 30 day test will be conducted and monitored in the remaining c- complex and other nearby wells; pumping rate will be 6.4-25.2 1/s; pumping & recovery period will each be 30 days; 3) 3 drift-pumpback tests with conservative and reactive tracers will be conducted in the same intervals as (1); tracers will allowed to drift into the fm. under ambient pressure; pumping will then take place at 3.2-9.5 1/s for ~3 days or until tracer is recovered; 4) two recirculation tests will be run which involve pumping from isolated fm. in one well, tagging water w/tracer, and injecting it into same isolated fm. in a second well @ 6.3-18.91/s for up to 3 weeks; 5) 2 well convergent tracer tests will be run; water will be pumped from isolated interval @ 6.3-18.9 1/s until steady state flow develops; tracers will be injected into second well; pumping and monitoring will take place for 4-8 weeks to recover injected tracer.

TEST INTERVAL: TBD; needs to be intervals w/ large hydraulic conductivity

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: Not yet specified. Potential tracers include, but not limited to: Fluorescein dye, LiBr, LiC1, Perfluorinated Benzoic acid, NaBr, NaC1, SF6, Iodine-131

DISCHARGE TYPE : water w/ tracer DISCHARGE VOLUME: Variable per pump rates discussed

PLAN FOR DISCHARGE REMOVAL: Pumped from the site using existing drainage or using pipes

ID NO: UE-25 c#2

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.4;-.5;-.7

WES NO: 1.2.3.5.2.R.19;1.2.3.3.3.2.G.1.2;-G.2;1.2.3.4.1.8.A.1;-2;-3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: testing of C-hole complex with conservative and reactive tracers

LOCATION: see SCP Fig. 8.3.1.2-32

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS:

TESTING DESCRIPTION: 1) ~20 draw down tests will be conducted using c-complex; pressure transducers & packers will be installed and inflated in a single well and water will be withdrawn @ 3.2-12.6 l/s for 3 days; pump will be shut off and pressure recovery datarecorded for ~3 days; wells not used for pumping will be used for monitoring; 2) a similar 30 day test will be conducted and monitored in the remaining c- complex and other nearby wells; pumping rate will be 6.4-25.2 l/s; pumping & recovery period will each be 30 days; 3) 3 drift-pumpback tests with conservative and reactive tracers will be conducted in the same intervals as (1); tracers will allowed to drift into the fm. under ambient pressure; pumping will then take place at 3.2-9.5 l/s for ~3 days or until tracer is recovered; 4) two recirculation tests will be run which involve pumping from isolated fm. in one well, tagging water w/tracer, and injecting it into same isolated fm. in a second well @ 6.3-18.91/s for up to 3 weeks; 5) 2 well convergent tracer tests will be run; water will be pumped from isolated interval @ 6.3-18.9 1/s until steady state flow develops; tracers will be injected into second well; pumping and monitoring will take place for 4-8 weeks to recover injected tracer.

TEST INTERVAL: TBD; needs to be intervals w/ large hydraulic conductivity

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: Not yet specified. Potential tracers include, but not limited to: Fluorescein dye, LiBr, LiC1, Perfluorinated Benzoic acid, NaBr, NaC1, SF6, Iodine-131

DISCHARGE TYPE : water w/ tracer DISCHARGE VOLUME: Variable per pump rates discussed

PLAN FOR DISCHARGE REMOVAL: pumped from the site using existing drainage or using pipes

TESTING TIME ESTIMATE (days)3ROAD WORK TIME ESTIMATE (days):SCHEDULED START DATESCHEDULED FINISH DATESCHEDULED FINISH DATESCHEDULED FINISH DATE

:

ID NO: UE-25 c#3

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.4;-.5;-.7

WBS NO: 1.2.3.5.2.R.19;1.2.3.3.3.2.G.1.2;-G.2;1.2.3.4.1.8.A.1;-2;-3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: testing of C-hole complex with conservative and reactive tracers

LOCATION: see SCP Fig. 8.3.1.2-32

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS:

TESTING DESCRIPTION: 1) ~20 draw down tests will be conducted using c-complex; pressure transducers & packers will be installed and inflated in a single well and water will be withdrawn @ 3.2-12.6 1/s for 3 days; pump will be shut off and pressure recovery datarecorded for ~3 days; wells not used for pumping will be used for monitoring; 2) a similar 30 day test will be conducted and monitored in the remaining c- complex and other nearby wells; pumping rate will be 6.4-25.2 1/s; pumping & recovery period will each be 30 days; 3) 3 drift-pumpback tests with conservative and reactive tracers will be conducted in the same intervals as (1); tracers will allowed to drift into the fm. under ambient pressure; pumping will then take place at 3.2-9.5 1/s for ~3 days or until tracer is recovered; 4) two recirculation tests will be run which involve pumping from isolated fm. in one well, tagging water w/tracer, and injecting it into same isolated fm. in a second well @ 6.3-18.91/s for up to 3 weeks; 5) 2 well convergent tracer tests will be run; water will be pumped from isolated interval @ 6.3-18.9 1/s until steady state flow develops; tracers will be injected into second well; pumping and monitoring will take place for 4-8 weeks to recover injected tracer.

TEST INTERVAL: TBD; needs to be intervals w/ large hydraulic conductivity

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: Not yet specified. Potential tracers include, but not limited to: Fluorescein dye, LiBr, LiC1, Perfluorinated Benzoic acid, NaBr, NaC1, SF6, Iodine-131

DISCHARGE TYPE : water w/ tracer DISCHARGE VQLUME: Variable per pump rates discussed

PLAN FOR DISCHARGE REMOVAL: pumped from the site using existing drainage or using pipes

• .

ID NO: USW G-4

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.6;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.23;-R.19;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Glover, B. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Well testing with conservative tracers to estimate effective porosity and hydrodynamic dispersion or equivalent fracture-network properties (will be conducted if single-well tests prove successful).

. .

LOCATION: see SCP Fig. 8.3.1.2-34

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: sonic televiewer, tracejector and heat pulse logs if existing logs are insufficient.

TESTING DESCRIPTION: The method of testing depends of the results from the C-hole complex; 1) geophysical logs from H-1 will be identified to identify intervals for testing; 3) packers and a pump will be installed at the desired horizon and water will be withdrawn from the isolated interval @ 3.2-12.6 l/s; pumping will continue for 3-5 days or until steady state flow is established; pumping will cease and pressure recovery data will be collected for a period ~ pumping time; 4) drift pumpback tests will also be conducted in ~5-10 G or H wells; tracer will drift into fm. under steady state hydraulic gradient; at completion of drift phase, water will be pumped from interval @@ 3.2-9.6 l/s; pumping will continue for 3-5 days, or until all tracer is recovered.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: Same as UE-25 c-hole complex

DISCHARGE TYPE : Water w/ tracer DISCHARGE VOLUME: Rate will vary

PLAN FOR DISCHARGE REMOVAL:

\_\_\_\_\_

1

÷

ID NO: USW H-1

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.2.2.;8.3.1.2.3.1.8

WBS NO: 1.2.3.5.2.R.23;1.2.3.3.3.3.G.2;1.2.3.5.2.R.19;-20;1.2.3.4.1.8.A.4

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Glover, B. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Well testing with conservative tracers to estimate effective porosity and hydrodynamic dispersion or equivalent fracture-network properties (will be conducted if single-well tests prove successful).

LOCATION: see SCP Fig. 8.3.1.2-34

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: sonic televiewer, tracejector and heat pulse logs if existing logs are insufficient.

TESTING DESCRIPTION: The method of testing depends of the results from the C-hole complex; 1) geophysical logs from H-1 will be identified to identify intervals for testing; 3) packers and a pump will be installed at the desired horizon and water will be withdrawn from the isolated interval @ 3.2-12.6 l/s; pumping will continue for 3-5 days or until steady state flow is established; pumping will cease and pressure recovery data will be collected for a period ~ pumping time; 4) drift pumpback tests will also be conducted in ~5-10 G or H wells; tracer will drift into fm. under steady state hydraulic gradient; at completion of drift phase, water will be pumped from interval 00 3.2-9.6 l/s; pumping will continue for 3-5 days, or until all tracer is recovered.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: Same as UE-25 c-hole complex

DISCHARGE TYPE : Water w/ tracer DISCHARGE VOLUME: Rate will vary

PLAN FOR DISCHARGE REMOVAL:

ID NO: USW H-3

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.2.2;8.3.1.2.3.1.8

WBS NO: 1.2.3.5.2.R.23;1.2.3.3.3.3.G.2;1.2.3.5.2.R.19;-20;1.2.3.4.1.8.A.4

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Glover, B. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Well testing with conservative tracers to estimate effective porosity and hydrodynamic dispersion or equivalent fracture-network properties (will be conducted if single-well tests prove successful).

LOCATION: see SCP Fig. 8.3.1.2-34

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: sonic televiewer, tracejector and heat pulse logs if existing logs are insufficient.

TESTING DESCRIPTION: The method of testing depends of the results from the C-hole complex; 1) geophysical logs from H-1 will be identified to identify intervals for testing; 3) packers and a pump will be installed at the desired horizon and water will be withdrawn from the isolated interval @ 3.2-12.6 l/s; pumping will continue for 3-5 days or until steady state flow is established; pumping will cease and pressure recovery data will be collected for a period ~ pumping time; 4) drift pumpback tests will also be conducted in ~5-10 G or H wells; tracer will drift into fm. under steady state hydraulic gradient; at completion of drift phase, water will be pumped from interval @ 3.2-9.6 l/s; pumping will continue for 3-5 days, or until all tracer is recovered.

.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: Same as UE-25 c-hole complex

DISCHARGE TYPE : Water w/ tracer DISCHARGE VOLUME: Rate will vary

PLAN FOR DISCHARGE REMOVAL:

ID NO: USW H-4

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.2.2;8.3.1.2.3.1.8

WBS NO: 1.2.3.5.2.R.23;1.2.3.3.3.3.G.2;1.2.3.5.2.R.19;-20;1.2.3.4.1.8.A.4

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Glover, B. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Well testing with conservative tracers to estimate effective porosity and hydrodynamic dispersion or equivalent fracture-network properties (will be conducted if single-well tests prove successful).

LOCATION: see SCP Fig. 8.3.1.2-34

ROAD ACCESS: Existing site

GEOFHYSICAL LOGS: sonic televiewer, tracejector and heat pulse logs if existing logs are insufficient.

TESTING DESCRIPTION: The method of testing depends of the results from the C-hole complex; 1) geophysical logs from H-1 will be identified to identify intervals for testing; 3) packers and a pump will be installed at the desired horizon and water will be withdrawn from the isolated interval @ 3.2-12.6 l/s; pumping will continue for 3-5 days or until steady state flow is established; pumping will cease and pressure recovery data will be collected for a period ~ pumping time; 4) drift pumpback tests will also be conducted in ~5-10 G or H wells; tracer will drift into fm. under steady state hydraulic gradient; at completion of drift phase, water will be pumped from interval @@ 3.2-9.6 l/s; pumping will continue for 3-5 days, or until all tracer is recovered.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED: Same as UE-25 c-hole complex

DISCHARGE TYPE : water w/ tracer DISCHARGE VOLUME: Rate will vary

PLAN FOR DISCHARGE REMOVAL:

ID NO: USW H-5

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.23;1.2.3.3.3.3.G.2;1.2.3.5.2.R.19;-20;1.2.3.4.1.8.A.4

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Glover, B. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

**RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** 

PURPOSE: Well testing with conservative tracers to estimate effective porosity and hydrodynamic dispersion or equivalent fracture-network properties (will be conducted if single-well tests prove successful).

LOCATION: see SCP Fig. 8.3.1.2-34

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: sonic televiewer, tracejector and heat pulse logs if existing logs are insufficient.

TESTING DESCRIPTION: The method of testing depends of the results from the C-hole complex; 1) geophysical logs from H-5 will be identified to identify intervals for testing; 3) packers and a pump will be installed at the desired horizon and water will3 be withdrawn from the isolated interval @ 3.2-12.6 1/s; pumping will continue for 3-5 days or until steady state flow is established; pumping will ceaseu and pressure recovery data will be collected for a period ~ pumping time; 4) drift pumpback tests will also be conducted in ~5-10 G or H wells; tracer will drift into fm. under steady state hydraulic gradient; at completion of drift phase, water will be pumped from interval @ 3.2-9.6 1/s; pumping will continue for 3-5 days, or until all tracer is recovered.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED: Same as UE-25 c-hole comples

DISCHARGE TYPE : Water w/ tracer DISCHARGE VOLUME: Rate will vary

PLAN FOR DISCHARGE REMOVAL:

#### 

ID NO: USW H-6

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.2.2;8.3.1.2.3.1.8;8.3.1.2.2.1.2

WBS NO: 1.2.3.5.2.R.23;1.2.3.3.3.3.G.2;1.2.3.5.2.R.19;-20;1.2.3.4.1.8.A.4

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Glover, B. Steinkampf PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Well testing with conservative tracers to estimate effective porosity and hydrodynamic dispersion or equivalent fracture-network properties (will be conducted if single-well tests prove successful). Also, cross-hole testing will be conducted with USW H-7.

LOCATION: see SCP Fig. 8.3.1.2-34

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: sonic televiewer, tracejector and heat pulse logs if existing logs are insufficient.

TESTING DESCRIPTION: The method of testing depends of the results from the C-hole complex; 1) geophysical logs from H-1 will be identified to identify intervals for testing; 3) packers and a pump will be installed at the desired horizon and water will be withdrawn from the isolated interval @ 3.2-12.6 l/s; pumping will continue for 3-5 days or until steady state flow is established; pumping will cease and pressure recovery data will be collected for a period ~ pumping time; 4) drift pumpback tests will also be conducted in ~5-10 G or H wells; tracer will drift into fm. under steady state hydraulic gradient; at completion of drift phase, water will be pumped from interval @@ 3.2-9.6 l/s; pumping will continue for 3-5 days, or until all tracer is recovered.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: Same as c-hole complex

DISCHARGE TYPE : Water w/ tracer, and water alone DISCHARGE VOLUME: Rate will vary according to rates d

PLAN FOR DISCHARGE REMOVAL:

ID NO: USW H-7

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1;8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.1;8.3.1.4.3.1.1

WBS NO: 1.2.3.3.4.2.G.1;1.2.3.3.3.1.G.2;1.2.3.5.2.H.1;-R.17

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: A. Flint PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Study of the hydrologic character of the Solitario Canyon fault zone

LOCATION: East of the Solitario Canyon fault, approx. N.763300/E.557075, based on SCP Figure 8.3.1.4-11

LAND OWNERSHIP : USAF ROAD ACCESS : Additional access is needed SURFACE PREPARATION : Construction of a drill pad is required DISTURBANCE AREA : ~2.5 acres : 3000 ft (914 m); borehole must penetrate the UZ below the repository horizon PROPOSED DEPTH FINISHED HOLE SIZE : 6-8" (15-20cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air only DRILLING SCHEDULE : 24 hour crew : Minimum 150,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP-1 for description)

CASING REQUIREMENTS: Open except as required by hole conditions

SAMPLE REQUIREMENTS: Continuous core required for systematic drilling program overlap. Cuttings and water from completed test hole.

#### 

ID NO: USW H-7

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.2.1.2

WBS NO: 1.2.3.3.4.2.G.1;1.2.3.3.3.1.G.2;1.2.3.5.2.H.1;-R.17

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: A. Flint PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

\_\_\_\_\_

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Study of the hydrologic character of the Solitario Canyon fault zone

LOCATION: east of the Solitario Canyon fault, approx N.763300/E.557075, based on SCP Figure 8.3.1.4-11

ROAD ACCESS: Additional access will be provided at the time of drilling

- GEOPHYSICAL LOGS: caliper, collar locator, fluid density, density, epithermal neutron, neutron, acoustic, temperature, magnetometer, electric, spectral gamma, gyroscopic survey
- TESTING DESCRIPTION: 1) Borehole flow survey; 2) pump test conducted in conjunction with USW H-6; pumping on H-6 @ ~400 GPM while monitoring H-7; reverse pumping at ~400 GPM on H-7 while monitoring H-6

1

TEST INTERVAL:

COMPLETION RIG SIZE: ~30 days

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : water from unsaturated zone DISCHARGE VOLUME: ~1.7 M gallons for complete test

PLAN FOR DISCHARGE REMOVAL:

1

1

ID NO: STC#1 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8;8.3.1.2.3.1.6

WBS NO: 1.2.3.5.2.H.10;-R.20;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

FURPOSE: Multiple well tests with conservative tracers; to be conducted if single well tracer tests prove unsuccessful. Test results used to estimate effective porosity, hydraulic conductivity and hydrodynamic dispersion, or equivalent fracture-network properties.

LOCATION: Southern Tracer Complex holes; southeast of the repository block

: Depends on location LAND OWNERSHIP ROAD ACCESS : 7 SURFACE PREPARATION : Drill pad construction required DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : ~ 3000 ft (1000 m) (to saturated zone + 1000 ft) FINISHED HOLE SIZE : 7" (18 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew : 150.000 Lb. minimum pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (See UE-25 UZP#1<sup>+</sup> for description)

CASING REQUIREMENTS: 10-3/4" casing set at +100'

SAMPLE REQUIREMENTS: 10-30' cores, maximum. Plan 10' bottom core plus 10% of hole. ~100#(core and/or cuttings)will be needed by LANL from Bullfrog Member of Crater Flat Tuff.

DRILLING TIME ESTIMATE (days) : 29 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

.

#### ------

ID NO: STC#1 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8

WBS NO: 1.2.3.5.2.H.10;-R.20;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Multiple well tests with conservative tracers; to be conducted if single well tracer tests prove unsuccessful. Test results used to estimate effective porosity, hydraulic conductivity and hydrodynamic dispersion, or equivalent fracture-network properties.

LOCATION: Southern Tracer Complex holes; southeast of the repository block

ROAD ACCESS: Depends on final location. If needed, it will be supplied at the time of drilling.

- GEOPHYSICAL LOGS: sonic televiewer, tracejector log, heat pulse log, borehole TV survey, neutron log, epithermal neutron log, gamma log, caliper log, induction log, formation density log
- TESTING DESCRIPTION: 1) packers and a pump will be installed in each STC well, and water will be withdrawn from the testing interval at 302-12.6 1/s (50-200 gpm) for 3-5 daysw or until steady state conditions are achieved; then pressure recovery data will be collected for a period ~ pumping time; 2) two well recirculating tests will be conducted in intervals that have large hydraulic conductivity. Packers will isolate test intervals in a pumping and injection well, and water will be pumped from the pumping well at 6.3-18.9 1/s (100-300 gpm) and injected into the second well for ~8 days until steady state flow is achieved. Conservative tracers will be injected and sampling will continue to monitor tracer movement through the aquifer.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: 3-trifluoromethylbenzoate, several benzoic acids, pyridine, NaC1,LiBr,Sodium thiocyanate,Fluorescent microspheres (<2 micrn),Flrcbns.,Boron,Polystyrene Spheres

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

ID NO: STC#2 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8;8.3.1.2.3.1.6

WBS NO: 1.2.3.5.2.H.10;-R.20;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Multiple well tests with conservative tracers; to be conducted if single well tracer tests prove unsuccessful. Test results used to estimate effective porosity, hydraulic conductivity and hydrodynamic dispersion, or equivalent fracture-network properties.

LOCATION: Southern Tracer Complex holes; southeast of the repository block

: Depends on location LAND OWNERSHIP ROAD ACCESS : ? SURFACE PREPARATION : Drill pad construction required DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : ~ 3000 ft (1000 m) (to saturated zone + 1000 ft) FINISHED HOLE SIZE : 7" (18 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew : 150,000 Lb. minimum pullback RIG SIZE

DRILLING METHOD: Dual-Wall Reverse Circulation (See UE-25 UZP#1 for description)

CASING REQUIREMENTS: 10-3/4" casing set at +100'

SAMPLE REQUIREMENTS: 10-30' cores, maximum. Plan 10' bottom core plus 10% of hole. ~100#(core and/or cuttings)will be needed by LANL from Bullfrog Member of Crater Flat Tuff.

DRILLING TIME ESTIMATE(days): 29 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

#### 

ID NO: STC#2 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8

WBS NO: 1.2.3.5.2.H.10;-R.20;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Multiple well tests with conservative tracers; to be conducted if single well tracer tests prove unsuccessful. Test results used to estimate effective porosity, hydraulic conductivity and hydrodynamic dispersion, or equivalent fracture-network properties.

LOCATION: Southern Tracer Complex holes; southeast of the repository block

ROAD ACCESS: Depends on final location. If needed, it will be supplied at the time of drilling.

- GEOPHYSICAL LOGS: sonic televiewer, tracejector log, heat pulse log, borehole TV survey, neutron log, epithermal neutron log, gamma log, caliper log, induction log, formation density log
- TESTING DESCRIPTION: 1) packers and a pump will be installed in each STC well, and water will be withdrawn from the testing interval at 302-12.6 1/s (50-200 gpm) for 3-5 daysw or until steady state conditions are achieved; then pressure recovery data will be collected for a period ~ pumping time; 2) two well recirculating tests will be conducted in intervals that have large hydraulic conductivity. Packers will isolate test intervals in a pumping and injection well, and water will be pumped from the pumping well at 6.3-18.9 1/s (100-300 gpm) and injected into the second well for ~8 days until steady state flow is achieved. Conservative tracers will be injected and sampling will continue to monitor tracer movement through the aguifer.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: 3-trifluoromethylbenzoate; several benzoic acids, pyridine NaC1, LiBr, Sodium thiocyanate, Fluorescent microspheres (<2 micrn), Flrcbns., Boron, Polystyrene spheres

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

ID NO: STC#3 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8;8.3.1.2.3.1.6

WBS NO: 1.2.3.5.2.H.10;-R.20;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Multiple well tests with conservative tracers; to be conducted if single well tracer tests prove unsuccessful. Test results used to estimate effective porosity, hydraulic conductivity and hydrodynamic dispersion, or equivalent fracture-network properties.

LOCATION: Southern Tracer Complex holes; southeast of the repository block

: Depends on location LAND OWNERSHIP ROAD ACCESS : ? SURFACE PREPARATION : Drill pad construction required. DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : ~ 3000 ft (1000 m) (to saturated zone + 1000 ft) FINISHED HOLE SIZE : 7" (18cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air DRILLING SCREDULE : 24 hour crew RIG SIZE : 150,000 Lb. minimum pullback

DRILLING METHOD: conventional rotary

CASING REQUIREMENTS: 10-3/4" casing set at +100'

SAMPLE REQUIREMENTS: 10-30' cores, maximum. Plan 10' bottom core plus 10% of hole. ~100# (core and/or cuttings) will be need by LANL from Bullfrong Member of Crater Flat Tuff.

DRILLING TIME ESTIMATE(days): 29 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

L.

#### 

ID NO: STC#3 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8

WBS NO: 1.2.3.5.2.H.10;-R.20;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Multiple well tests with conservative tracers; to be conducted if single well tracer tests prove unsuccessful. Test results used to estimate effective porosity, hydraulic conductivity and hydrodynamic dispersion, or equivalent fracture-network properties.

LOCATION: Southern Tracer Complex holes; southeast of the repository block

ROAD ACCESS: Depends on final location. If needed, it will be supplied at the time of drilling.

- GEOPHYSICAL LOGS: sonic televiewer, tracejector log, heat pulse log, borehole TV survey, neutron log, epithermal neutron log, gamma log, caliper log, induction log, formation density log
- TESTING DESCRIPTION: 1) packers and a pump will be installed in each STC well, and water will be withdrawn from the testing interval at 302-12.6 1/s (50-200 gpm) for 3-5 daysw or until steady state conditions are achieved; then pressure recovery data will be collected for a period ~ pumping time; 2) two well recirculating tests will be conducted in intervals that have large hydraulic conductivity. Packers will isolate test intervals in a pumping and injection well, and water will be pumped from the pumping well at 6.3-18.9 1/s (100-300 gpm) and injected into the second well for ~8 days until steady state flow is achieved. Conservative tracers will be injected and sampling will continue to monitor tracer movement through the aguifer.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: 3-trifluoromethylbenzoate, several berzoic acids, pyridine, NaC1, LiBr, Sodium thiocyanate, Flaorescent mic3-trifluoromethylbenzoate; other unspecified tracer

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

ID NO: STC#4 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

\_\_\_\_\_

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8;8.3.1.2.3.1.6

WBS NO: 1.2.3.5.2.H.10;-R.20;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

\_\_\_\_\_

FRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Multiple well tests with conservative tracers; to be conducted if single well tracer tests prove unsuccessful. Test results used to estimate effective porosity, hydraulic conductivity and hydrodynamic dispersion, or equivalent fracture-network properties.

LOCATION: Southern Tracer Complex holes; southeast of the repository block

: Depends on location LAND OWNERSHIP ROAD ACCESS : ? SURFACE PREPARATION : Drill pad construction required DISTURBANCE AREA : ~2.5 acres : ~ 3000 ft (1000 m) (to saturated zone + 1000 ft) PROPOSED DEPTH FINISHED HOLE SIZE : 7" (18 cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew RIG SIZE : 150,000 Lb. minimum pullback

DRILLING METHOD: conventional rotary

CASING REQUIREMENTS: open hole to set packers as needed

SAMPLE REQUIREMENTS: 10-30' cores, maximum. Plan 10' bottom core plus 10% of hole. ~100#(core and/or cuttings) will be need by LANL from Bullfrog Member of Crater Flat Tuff.

DRILLING TIME ESTIMATE(days): 29 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

ι

ID NO: STC#4 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.2.3.1

SCP ACTIVITY NO: 8.3.1.2.3.1.8

WBS NO: 1.2.3.5.2.H.10;-R.20;1.2.3.3.3.2.G.3

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Kent Glover PRINCIPAL ORGANIZATION: USGS-Nuclear Hydrology Division

**RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** 

PURPOSE: Multiple well tests with conservative tracers; to be conducted if single well tracer tests prove unsuccessful. Test results used to estimate effective porosity, hydraulic conductivity and hydrodynamic dispersion, or equivalent fracture-network properties.

LOCATION: Southern Tracer Complex holes; southeast of the repository block

ROAD ACCESS: Depends on final location. If needed, it will be supplied at the time of drilling.

- GEOPHYSICAL LOGS: sonic televiewer, tracejector log, heat pulse log, borehole TV survey, neutron log, epithermal neutron log, gamma log, spectral gamma log, caliper log, induction log, formation density log
- TESTING DESCRIPTION: 1) packers and a pump will be installed in each STC well, and water will be withdrawn from the testing interval at 302-12.6 1/s (50-200 gpm) for 3-5 daysw or until steady state conditions are achieved; then pressure recovery data will be collected for a period ~ pumping time; 2) two well recirculating tests will be conducted in intervals that have large hydraulic conductivity. Packers will isolate test intervals in a pumping and injection well, and water will be pumped from the pumping well at 6.3-18.9 1/s (100-300 gpm) and injected into the second well for ~8 days until steady state flow is achieved. Conservative tracers will be injected and sampling will continue to monitor tracer movement through the aquifer.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED: 3-trifluoromethylbenzoate, several berzoic acids, pyridine, NaC1, LiBr, Sodium thiocyanate, Fluorescent microspheres (<2 micrn), Flrcbns., Boron, Polystyrene spheres

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

4.3.7

/

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.16.2.1

SCP ACTIVITY NO: 8.3.1.16.2.1.1

WBS NO:

ID NO: J-12

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: asses the cost feasibility and adequacy of wells J-12 and J-13 for use in construction and operation of the Yucca Mountain repository.

ł

٠

LOCATION: N733508.2/E581011.7

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: borehole TV and sonic televiewer

TESTING DESCRIPTION: 1) step draw-down test for each well for 1 week with energy consumption monitoring during testing; 2) sand content monitoring during testing; 3) water chemistry analysis for human consumption suitability; 4) 3-5 year monitoring of potentiometric surface with quarterly sampling and chemical analysis for human consumption suitability.

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT: USGS function; no rig support required

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

4

PLAN FOR DISCHARGE REMOVAL:

ID NO: J-13

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.16.2.1

SCP ACTIVITY NO: 8.3.1.16.2.1.1

WBS NO:

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: assess the cost feasibility and adequacy of wells J-12 and J-13 for use in construction and operation of the Yucca Mountain repository.

LOCATION: N749209.3/E579650.5

ROAD ACCESS: Existing site

GEOPHYSICAL LOGS: borehole TV and sonic televiewer

TESTING DESCRIPTION: 1) step draw-down test for each well for 1 week with energy consumption monitoring during testing; 2) sand content monitoring during testing; 3) water chemistry analysis for human consumption suitability; 4) 3-5 year monitoring ofe potentiometric surface with quarterly sampling and chemical analysis for human consumption suitability.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

.

PLAN FOR DISCHARGE REMOVAL:



DATE OF CURRENT REVISION: Dec 15, 1988 ID NO: USW G-5 SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2 SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.2;8.3.1.2.3.2.2 WBS NO: 1.2.3.5.2.R.6;-R.23;-H.25;1.2.3.3.3.3.G.2;1.2.3.2.3.2.2.G.9;1.2.3.2.1.1.G.1 INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88 PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions **RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** FURPOSE: correlate lithologic changes with changes in potentiometric surface LOCATION: N.781930/E.563008 LAND OWNERSHIP : USAF : May be accessible by existing road. However, some road improvement construction may be needed. ROAD ACCESS SURFACE PREPARATION : Construction required: Drill pad with mud and cuttings pit. DISTURBANCE AREA : 2.5 acres : 5000 ft (~1500 m) PROPOSED DEPTH FINISHED HOLE SIZE : 3.98" (9.6 cm) (HQ core or equiv) : 2.4" MINIMUM CORE SIZE : polymer mud DRILLING FLUIDS DRILLING SCHEDULE : 24 hour crew : Class XIV RIG SIZE

DRILLING METHOD: wire-line rotary w/conventional rotary reaming

CASING REQUIREMENTS: 13 3/8" casing set and cemented at 40'. 5 1/2" casing hung off at 40'

SAMPLE REQUIREMENTS: continuous wire line core w/split barrel

DRILLING TIME ESTIMATE(days): 92 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 91



ID NO: USW G-5

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.1;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.6;-R.23;-H.25;1.2.3.3.3.3.G.2;1.2.3.2.3.2.2.G.9;1.2.3.2.1.1.G.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: correlate lithologic changes with changes in potentiometric surface

LOCATION: N.781930/E.563008

ROAD ACCESS: Road improvement work may be needed and will be supplied at the time of drilling.

GEOPHYSICAL LOGS: borehole TV survey, borehole compensated nuetron log, epithermal nuetron log, spectral gamma log, caliper log, induction log, compensated density log, temperature log, electric log, acoustic televiewer, gyroscopic survey, boreholem compensated acoustic log, dielectric constant log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days)ROAD WORK TIME ESTIMATE (days):SCHEDULED START DATESCHEDULED FINISH DATESCHEDULED FINISH DATEFY 92
ID NO: USW G-6

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.6;1.2.3.5.2.R.23;-H.26;1.2.3.3.3.3.G.2;1.2.3.2.3.2.2.G.9;1.2.3.2.1.1.G.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: provide sub-surface stratigraphic control along the northwestern flank of Yucca Mountain in the vicinity of Windy Wash; also provide borehole for in-situc stress measurement

LOCATION: N.778722/E.548922

LAND OWNERSHIP : USAF ROAD ACCESS : Access road construction will be needed SURFACE PREPARATION : Construction required: Drill pad with mud and cuttings pit. DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : 5000 ft (~1500 m) FINISHED HOLE SIZE : 3.98" (9.6 cm) (HQ core or equiv) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : polymer mud : 24 hour day DRILLING SCHEDULE RIG SIZE : Class XIV

DRILLING METHOD: wireline rotary w/conventional rotary reaming

CASING REQUIREMENTS: 13 3/8" casing set and cemented at 40'. 5 1/2" casing hung off at 40'

SAMPLE REQUIREMENTS: continuous wire line core w/split barrel

DRILLING TIME ESTIMATE(days): 92 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 91

ID NO: USW G-6

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.1;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.6;-R.23;-H.26;1.2.3.3.3.3.G.2;1.2.3.2.3.2.2.G.9;1.2.3.2.1.1.G.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: provide sub-surface stratigraphic control along the northwestern flant of Yucca Mountain in the vicinity of Windy Wash; also provide borehole for in-situc stress measurement

LOCATION: N.778722/E.548922

ROAD ACCESS: Additional access road construction will be provided at the time of drilling.

- GEOPHYSICAL LOGS: borehole TV survey, borehole compensated nuetron log, epithermal nuetron log, spectral gamma log, caliper log, induction log, compensated density log, temperature log, electric log, acoustic televiewer, gyroscopic survey, boreholem compensated acoustic log, dielectric constant log
- TESTING DESCRIPTION: In-situ stress measurement by hydrofracturing; 1) borehole TV (dry hole) or acoustic televiewer (water filled hole) will be used to locate suitable intervals for testing; 2) straddle packers will be set in the hole and water will be pumped into the isolated interval until the fm. is fractured; 3) injection procedure may be repeated at the discretion of the USGS site geologist; 4) packers will be reset at different intervals until 5 good quality measurements have been made. Estimate 5,000 gallons clean water will be needed for the test.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 92 ID NO: UE-25 G-7

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2

\_\_\_\_\_\_\_

SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.2;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.6;1.2.3.5.2.R.23;-H.26;1.2.3.3.3.3.G.2;1.2.3.2.3.2.2.G.9;1.2.3.2.1.1.G.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: check on-lapping of Topopah Spring Tuff onto a paleo-high in Crater Flat Tuff and correlate to regional ground water flow; also provide borehole for in-situ stress measurement

LOCATION: N.724586/E.566090

: NTS-Area 25 LAND OWNERSHIP : Access road construction is needed ROAD ACCESS SURFACE PREPARATION : Construction required: Drill pad with mud and cuttings pit. DISTURBANCE AREA : ~2.5 acres : 5000 ft (~1500 m) PROPOSED DEPTH FINISHED HOLE SIZE : 3.98" (9.6 cm) (HQ core or equiv) MINIMUM CORE SIZE : 2.4" : polymer mud DRILLING FLUIDS DRILLING SCHEDULE : 24 hour crew RIG SIZE : Class XIV

DRILLING METHOD: wireline rotary w/conventional rotary reaming

CASING REQUIREMENTS: 13 3/8" casing set and cemented at 40'. 5 1/2" casing hung off at 40'

SAMPLE REQUIREMENTS: continuous wireline core w/split barrel

DRILLING TIME ESTIMATE(days): 92 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 92

ID NO: UE-25 G-7

DATE OF CURRENT REVISION: Dec 15, 1988

\_\_\_\_\_

SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.1;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.6;-R.23;-H.26;1.2.3.3.3.3.G.2;1.2.3.2.3.2.2.G.9;1.2.3.2.1.1.G.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: check on-lapping of Topopah Spring Tuff onto a paleo-high in Crater Flat Tuff and correlate to regional ground water flow; also provide borehole for in-situ stress measurement

LOCATION: N.724586/E.566090

ROAD ACCESS: Additional access road construction will be provided at the time of drilling.

- GEOPHYSICAL LOGS: borehole TV survey, borehole compensated nuetron log, epithermal nuetron log, spectral gamma log, caliper log, induction log, compensated density log, temperature log, electric log, acoustic televiewer, gyroscopic survey, boreholem compensated acoustic log, dielectric constant log
- TESTING DESCRIPTION: In-situ stress measurement by hydrofracturing; 1) borehole TV (dry hole) or acoustic televiewer (water filled hole) will be used to locate suitable intervals for testing; 2) straddle packers will be set in the hole and water will be pumped into the isolated interval until the fm. is fractured; 3) injection procedure may be repeated at the discretion of the USGS site geologist; 4) packers will be reset at different intervals until 5 good quality measurements have been made. Estimate 5,000 gallons clean water will be needed for the test.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

\_\_\_\_\_

ID NO: UE-25 G-8

DATE OF CURRENT REVISION: Dec 15, 1988

-----

SCP STUDY NO : 8.3.1.3.2.1

SCP ACTIVITY NO: 8.3.1.3.2.1.3

WBS NO:

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: D. Broxton/ D. Vaniman/ B. Carlos PRINCIPAL ORGANIZATION: LANL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: To study the effect of groundwater flow on mineralization in the Topopah Spring Member of the Paintbrush tuff

LOCATION: In the vicinity of UE-25 FM#2 (intersection of Fortymile Wash and main road to Yucca Mountain) where at least 200' of the densly welded tuff above the basal vitrophyre in the Topopah Spring Member is below the water table

ł

4

i

LAND OWNERSHIP : NTS ROAD ACCESS : Existing access adequate SURFACE PREPARATION : Drillpad construction required DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : Approx 50' into Calico Hills (approx 1600') FINISHED HOLE SIZE : 7" : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air DRILLING SCHEDULE . RIG SIZE : Minimum 120,000 Lb. pullback

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP#1 for description)

CASING REQUIREMENTS: Depending on final location selection surface casing may have to be set to prevent interference with UE-25 FM#2 infiltration studies

SAMPLE REQUIREMENTS: Continuous core from minimum of 200' above the water table

DRILLING TIME ESTIMATE(days) : 30 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : SCHEDULED FINISH DATE :

# 4.3.9

.



DATE OF CURRENT REVISION: Dec 15, 1988

# YMP SURFACE-BASED INVESTIGATIONS PLAN PLANNED DRILLING

SCP STUDY NO : 8.3.1.17.4.8 SCP ACTIVITY NO: 8.3.1.17.4.8.2 WBS NO: 1.2.3.5.2.H.27;1.2.3.5.2.R.8;1.2.3.2.3.2.2.G.9 INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88 PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS **RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** PURPOSE: Measurement of shallow in-situ stress field LOCATION: East of the site in either the little Skull Mt or Striped Hills area LAND OWNERSHIP : NTS : Exact location hasn't yet been determined. Therefore, requirements for access are unknown. ROAD ACCESS SURFACE PREPARATION : Drill pad will be constructed when location determined DISTURBANCE AREA : ~2.5 acres : ~1000 ft (330 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6 1/4" MINIMUM CORE SIZE : n/a : polymer mud or air foam DRILLING FLUIDS : 24 hour crew DRILLING SCHEDULE RIG SIZE : Class III DRILLING METHOD: conventional rotary CASING REQUIREMENTS: 9 5/8" casing set at 40' SAMPLE REQUIREMENTS: none DRILLING TIME ESTIMATE(days) : 9 ROAD WORK TIME ESTIMATE(days): : FY 91 SCHEDULED START DATE SCHEDULED FINISH DATE : FY 91

ID NO: USW ISS-1



ID NO: USW ISS-1

SCP STUDY NO : 8.3.1.17.4.8

SCP ACTIVITY NO: 8.3.1.17.4.8.2

WBS NO: 1.2.3.5.2.H.27;-;R.8;1.2.3.2.3.2.2.G.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

**RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** 

PURPOSE: measurement of shallow in-situ stress field

LOCATION: East of the site in either the Little Skull Mt or Striped Hills area

ROAD ACCESS:

GEOPHYSICAL LOGS:

TESTING DESCRIPTION: In-situ stress measurement by hydrofracturing; 1) borehole TV (dry hole) or acoustic televiewer (water filled hole) will be used to locate suitable intervals for testing; 2) straddle packers will be set in the hole and water will be pumped into the isolated interval until the fm. is fractured; 3) injection procedure may be repeated at the discretion of the USGS site geologist; 4) packers will be reset at different intervals until 5 good quality measurements have been made. Estimate 5,000 gallons clean water will be needed for the test.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : SCHEDULED FINISH DATE : DATE OF CURRENT REVISION: Dec 15, 1988

ID NO: USW G-5

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.1;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.6; -R.23; -H.25; 1.2.3.3.3.3.G.2; 1.2.3.2.3.2.2.G.9; 1.2.3.2.1.1.G.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: correlate lithologic changes with changes in potentiometric surface

LOCATION: N.781930/E.563008

ROAD ACCESS: Road improvement work may be needed and will be supplied at the time of drilling.

GEOFHYSICAL LOGS: borehole TV survey, borehole compensated nuetron log, epithermal nuetron log, spectral gamma log, caliper log, induction log, compensated density log, temperature log, electric log, acoustic televiewer, gyroscopic survey, boreholem compensated acoustic log, dielectric constant log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days)ROAD WORK TIME ESTIMATE (days):SCHEDULED START DATESCHEDULED FINISH DATESCHEDULED FINISH DATEFY 92

ID NO: USW G-6

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.1;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.6;-R.23;-H.26;1.2.3.3.3.3.G.2;1.2.3.2.3.2.2.G.9;1.2.3.2.1.1.G.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: provide sub-surface stratigraphic control along the northwestern flant of Yucca Mountain in the vicinity of Windy Wash; also provide borehole for in-situc stress measurement

LOCATION: N.778722/E.548922

ROAD ACCESS: Additional access road construction will be provided at the time of drilling.

- GEOPHYSICAL LOGS: borehole TV survey, borehole compensated nuetron log, epithermal nuetron log, spectral gamma log, caliper log, induction log, compensated density log, temperature log, electric log, acoustic televiewer, gyroscopic survey, boreholem compensated acoustic log, dielectric constant log
- TESTING DESCRIPTION: In-situ stress measurement by hydrofracturing; 1) borehole TV (dry hole) or acoustic televiewer (water filled hole) will be used to locate suitable intervals for testing; 2) straddle packers will be set in the hole and water will be pumped into the isolated interval until the fm. is fractured; 3) injection procedure may be repeated at the discretion of the USGS site geologist; 4) packers will be reset at different intervals until 5 good quality measurements have been made. Estimate 5,000 gallons clean water will be needed for the test.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days)ROAD WORK TIME ESTIMATE (days):SCHEDULED START DATESCHEDULED FINISH DATEFY 92

ID NO: UE-25 G-7

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.2.1;8.3.1.17.4.8;8.3.1.2.3.2

SCP ACTIVITY NO: 8.3.1.4.2.1.1;8.3.1.17.4.8.1;8.3.1.2.3.2.2

WBS NO: 1.2.3.5.2.R.6;-R.23;-H.26;1.2.3.3.3.3.G.2;1.2.3.2.3.2.2.G.9;1.2.3.2.1.1.G.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Rick Spengler; Ken Fox; Bill Steinkampf PRINCIPAL ORGANIZATION: USGS-Geologic & Nuclear Hydrology Divisions

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

FURPOSE: check on-lapping of Topopah Spring Tuff onto a paleo-high in Crater Flat Tuff and correlate to regional ground water flow; also provide borehole for in-situ stress measurement

LOCATION: N.724586/E.566090

ROAD ACCESS: Additional access road construction will be provided at the time of drilling.

- GEOPHYSICAL LOGS: borehole TV survey, borehole compensated nuetron log, epithermal nuetron log, spectral gamma log, caliper log, induction log, compensated density log, temperature log, electric log, acoustic televiewer, gyroscopic survey, boreholem compensated acoustic log, dielectric constant log
- TESTING DESCRIPTION: In-situ stress measurement by hydrofracturing; 1) borehole TV (dry hole) or acoustic televiewer (water filled hole) will be used to locate suitable intervals for testing; 2) straddle packers will be set in the hole and water will be pumped into the isolated interval until the fm. is fractured; 3) injection procedure may be repeated at the discretion of the USGS site geologist; 4) packers will be reset at different intervals until 5 good quality measurements have been made. Estimate 5,000 gallons clean water will be needed for the test.

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) : ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

# 4.3.10

,

# ID NO: USW V-1

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO: 8.3.1.8.5.1.1

WBS NO: 1.2.3.5.2.H.3;-;R.3;1.2.3.2.3.1.2.A.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: B. Crowe PRINCIPAL ORGANIZATION: LANL-Isotope & Nuclear Chemistry Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Drill magnetic anamolies presumed associated with shallow intrusions or buried basaltic centers

LOCATION: N.729600/E.518000

LAND OWNERSHIP : BLM ROAD ACCESS : Proposed site may be accessible by existing road SURFACE PREPARATION : Construction required: Drill pad with mud and cuttings pit. : ~2.5 acres DISTURBANCE AREA : 1000 ft (~330 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6.25" (HCQ coring) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : Polymer mud DRILLING SCHEDULE : Daylight crew : Class XIV for surface. Class III below. RIG SIZE

DRILLING METHOD: conventional rotary borehole

CASING REQUIREMENTS: 9 5/8" casing at 40'

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 17 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 91

1

## ID NO: USW V-2

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO: 8.3.1.8.5.1.1

WBS NO: 1.2.3.5.2.H.3;-;R.3;1.2.3.2.3.1.2.A.1

\_\_\_\_\_

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: B. Crowe PRINCIPAL ORGANIZATION: LANL-Isotope & Nuclear Chemistry Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Drill magnetic anamolies presumed associated with shallow intrusions or buried basaltic centers

LOCATION: N.683450/E.572900 (NPCS)

LAND OWNERSHIP : BLM ROAD ACCESS : Proposed site may be accessible by existing road SURFACE PREPARATION : Construction required: Drill pad with cuttings and mud pit. DISTURBANCE AREA : ~2.5 acres : 1000 ft (~330 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6.25" (HCQ core) MINIMUM CORE SIZE : 2.4" : Polymer mud DRILLING FLUIDS DRILLING SCHEDULE : daylight crew : Class XIV for surface. Class III below. RIG SIZE

DRILLING METHOD: conventional rotary borehole

CASING REQUIREMENTS: 9 5/8" casing set at 40'

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE (days) : 17 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 91



# YMP SURFACE-BASED INVESTIGATIONS PLAN Planned Drilling

÷

ID NO: USW V-3

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO: 8.3.1.8.5.1.1

WBS NO: 1.2.3.5.2.H.3;-;R.3;1.2.3.2.3.1.2.A.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: B. Crowe PRINCIPAL ORGANIZATION: LANL-Isotope & Nuclear Chemistry Division

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Drill magnetic anamolies presumed associated with shallow intrusions or buried basaltic centers

LOCATION: Amargosa Valley

LAND OWNERSHIP : BLM ROAD ACCESS : Unknown at this time, depends on final location SURFACE PREPARATION : Construction required. Drill pad with cuttings and mud pit. DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : 1000 ft (~330 m) FINISHED HOLE SIZE : 6.25" (HCQ core) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : Polymer mud DRILLING SCHEDULE : daylight crew RIG SIZE : Class XIV surface hole. Class III below DRILLING METHOD: conventional rotary borehole CASING REQUIREMENTS: 9 5/8" casing at 40' SAMPLE REQUIREMENTS: continuous core DRILLING TIME ESTIMATE (days) : 17

ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 91 DATE OF CURRENT REVISION: Dec 15, 1988

i.

ID NO: USW V-4

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO: 8.3.1.8.5.1.1

WBS NO: 1.2.3.5.2.H.3;-;R.3;1.2.3.2.3.1.2.A.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: B. Crowe PRINCIPAL ORGANIZATION: LANL-Isotope & Nuclear Chemistry Division

\_\_\_\_\_

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Drill magnetic anamolies presumed associated with shallow intrusions or buried basaltic centers

LOCATION: Amargosa Valley

LAND OWNERSHIP : BLM : Unknown at this time. Depends on final hole locaion ROAD ACCESS SURFACE PREPARATION : Construction required: Drill pad with cuttings and mud pit. DISTURBANCE AREA : ~2.5 acres : 1000 ft (~330 m) PROPOSED DEPTH FINISHED HOLE SIZE : 6.25" (HCQ core) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : Polymer mud DRILLING SCHEDULE : daylight crew : Class XIV for surface. Class III below. RIG SIZE

DRILLING METHOD: conventional rotary borehole

CASING REQUIREMENTS: 9 5/8" casing set @ 40'

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE (days): 17 ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 91 SCHEDULED FINISH DATE : FY 91 DATE OF CURRENT REVISION: Dec 15, 1988

# 4.3.11

.

.

ID NO: PC#1 (informal number)

SCP STUDY NO : 8.3.1.5.1.2

SCP ACTIVITY NO: 8.3.1.5.1.2.2

WBS NO: 1.2.3.6.1.1.G.2

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ed Gutentag PRINCIPAL ORGANIZATION: USGS

\_\_\_\_\_

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Obtain regional and site climatological variation information

LOCATION: Selected playas in and near NTS; specific locations will picked after analysis of geophysical data;see letter NN1.880919.0053 for current details of possible locations

LAND OWNERSHIP : NTS, BLM, USAF, USF4S, ? ROAD ACCESS : SURFACE PREPARATION : None required DISTURBANCE AREA : PROPOSED DEPTH : ~ 17 ft (5 m) FINISHED HOLE SIZE : depends on depth MINIMUM CORE SIZE : DRILLING FLUIDS : if necessary DRILLING SCHEDULE : daylight crew : truck mount RIG SIZE

DRILLING METHOD: augering/Shelby tube coring, wire line core

CASING REQUIREMENTS: some holes will be cased as required - 4" plastic

SAMPLE REQUIREMENTS: Best samples possible under drilling conditions.

DRILLING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : SCHEDULED FINISH DATE : DATE OF CURRENT REVISION: Dec 15, 1988

ID NO: PC#1 (informal number)

SCP STUDY NO : 8.3.1.5.1.2

SCP ACTIVITY NO: 8.3.1.5.1.2.1

WBS NO: 1.2.3.6.1.1.G.2

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ed Gutentag PRINCIPAL ORGANIZATION: USGS

\_\_\_\_\_\_

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: obtain regional and site climatological variation information

LOCATION: selected playas in and near NTS; specific locations will be picked a fter analysis of geophysical data, see letter NN1.880919.0053 for current details of possible locations

ROAD ACCESS:

GEOPHYSICAL LOGS: SP log, resistivity log, gamma log, neutron log, caliper log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE: USGS function-no rig support required

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : SCHEDULED FINISH DATE : DATE OF CURRENT REVISION: Dec 15, 1988

# YMP SURFACE-BASED INVESTIGATIONS PLAN Planned drilling

# ID NO: UE-25 PH-1A1

SCP STUDY NO : 8.3.1.5.2.1

SCP ACTIVITY NO: 8.3.1.5.2.1.5

WBS NO: 1.2.3.5.2.H.22;1.2.3.5.2.R.5;1.2.3.3.5.G.2;-.G.5

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Downey PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Recover calcite/silica vein deposits

LOCATION: N.766,000/E.569,300

LAND OWNERSHIP : NTS-Area 25 : Add'l access road construction required for all five PH-1A holes. ROAD ACCESS SURFACE PREPARATION : One drill pad w/mud & cuttings pits needed for -1A1/-1A5. DISTURBANCE AREA : ~2.5 acres for all 5 PH-1A holes : 60' after Trench 14 expansion PROPOSED DEPTH FINISHED HOLE SIZE : 3.78" (9.6 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : polymer mud DRILLING SCHEDULE : daylight crew RIG SIZE : CME 550

DRILLING METHOD: conventional wireline core . .

CASING REQUIREMENTS: 5 1/2" casing set at 10' (as required)

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 2 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

# $\checkmark$

ID NO: UE-25 PH-1A2

SCP STUDY NO : 8.3.1.5.2.1

SCP ACTIVITY NO: 8.3.1.5.2.1.5

WBS NO: 1.2.3.5.2.H.22;1.2.3.5.2.R.5;1.2.3.3.5.G.2;-G.5

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Downey PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: recover calcite/silica vein deposits

LOCATION: N.766,000/E.569,300

LAND OWNERSHIP : Area NTS-Area 25 : Add'l access road construction required for all five PH-1A holes. ROAD ACCESS SURFACE PREPARATION : One drill pad w/mud & cuttings pits needed for -1A1/-1A5. : ~2.5 acres for all 5 PH-1A holes DISTURBANCE AREA : 60' after Trench 14 expansion PROPOSED DEPTH FINISHED HOLE SIZE : 3.75" (9.6 cm) MINIMUM CORE SIZE : 2.4" : polymer mud DRILLING FLUIDS DRILLING SCHEDULE : daylight crew : CME 550 RIG SIZE

DRILLING METHOD: conventional wireline core

CASING REQUIREMENTS: 5 1/2" casing set at 10' (as required)

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 2 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

# 4.3.12

# \_\_\_\_\_

ID NO: UE-25 PH-1A3

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.5.2.1

SCP ACTIVITY NO: 8.3.1.5.2.1.5

WBS NO: 1.2.3.5.2.H.22;1.2.3.5.2.R.5;-1.2.3.3.5.G.2;-G.5

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J.Downey PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Recover calcite/silica vein deposits

LOCATION: N.766,000/E.569,300

: NTS-Area 25 LAND OWNERSHIP : Add'1 access road construction required for all five PH-1A holes. ROAD ACCESS SURFACE PREPARATION : One drill pad w/mud & cuttings pits needed for -1A1/-1A5. DISTURBANCE AREA : ~2.5 acres for all 5 PH-1A holes : 60' after Trench 14 expansion PROPOSED DEPTH FINISHED HOLE SIZE : 3.75" (9.6 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : polymer mud : daylight crew DRILLING SCHEDULE RIG SIZE : CHE 550

DRILLING METHOD: conventional wireline core

CASING REQUIREMENTS: 5 1/2" casing set at 10' (as required)

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE (days) : 2 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90



### 

ID NO: UE-25 PH-1A4

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.5.2.1

SCP ACTIVITY NO: 8.3.1.5.2.1.5

WBS NO: 1.2.3.5.2.H.22;1.2.3.5.2.R.5;1.2.3.3.5.G.2;-G.5

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J.Downey PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Recover calcite/silica vein deposits

LOCATION: N.766,000/E.569,300

LAND OWNERSHIP : NTS-Area 25 : Additional access road construction will be required for acc ROAD ACCESS SURFACE PREPARATION : One drill pad w/mud & cuttings pits needed for -1A1/-1A5. DISTURBANCE AREA : ~2.5 acres for all 5 PH-1A holes : 60' after Trench 14 expansion PROPOSED DEPTH FINISHED HOLE SIZE : 3.75" (9.6 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : polymer mud : daylight crew DRILLING SCHEDULE : CME 550 RIG SIZE

DRILLING METHOD: conventional wireline core

CASING REQUIREMENTS: 5 1/2" casing set at 10' (as required)

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE (days) : 2 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

# YMP SURFACE-BASED INVESTIGATIONS PLAN Planned Drilling

# . . . . .

ID NO: UE-25 PH-1A5

SCP STUDY NO : 8.3.1.5.2.1

SCP ACTIVITY NO: 8.3.1.5.2.1.5

WBS NO: 1.2.3.5.2.H.22;1.2.3.5.2.R.5;1.2.3.3.5.G.2;-G.5

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Downey PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Recover calcite/silica vein deposits

LOCATION: N.766,000/E.569,300

: NTS-Area 25 LAND OWNERSHIP : Add'l access road construction required for all five PH-1A holes. ROAD ACCESS SURFACE PREPARATION : One drill pad w/mud & cuttings pits needed for -1A1/-1A5. DISTURBANCE AREA : ~2.5 acres for all 5 PH-1A holes : 60' after Trench 14 expansion PROPOSED DEPTH FINISHED HOLE SIZE : 3.75" (9.6 cm) MINIMUM CORE SIZE : 2.4" : polymer mud DRILLING FLUIDS : daylight crew DRILLING SCHEDULE : CME 550 RIG SIZE

DRILLING METHOD: conventional wireline core

CASING REQUIREMENTS: 5 1/2" casing set at 10' (as required)

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 2 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 DATE OF CURRENT REVISION: Dec 15, 1988

# YMP SURFACE-BASED INVESTIGATIONS PLAN Planned Drilling

DATE OF CURRENT REVISION: Dec 15, 1988

# ID NO: UE-25 PH-1B

SCP STUDY NO : 8.3.1.5.2.1

SCP ACTIVITY NO: 8.3.1.5.2.1.5

WBS NO: 1.2.3.5.2.H.22;1.2.3.5.2.R.5;1.2.3.3.5.G.2;-;G.5

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J.Downey PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Recover calcite/silica deposits

LOCATION: N.766000/E.569300

LAND OWNERSHIP : NTS-Area 25 : Will be provided as needed for access to UE-25 PH-1A drill pad. ROAD ACCESS SURFACE PREPARATION : If hole required, use same pad as used for UE-25 PH-1A. No additional disturbance anticipated DISTURBANCE AREA : ~500 PROPOSED DEPTH FINISHED HOLE SIZE : ~3.78" (9.6 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air foam DRILLING SCHEDULE : daylight crew : Hycalog Rig RIG SIZE

DRILLING METHOD: Slant hole; to be undertaken if vertical holes do not return core w/calcite/silica samples.

CASING REQUIREMENTS: 9 5/8" casing set at 40'

SAMPLE REQUIREMENTS: Up to ~40% below 300' at discretion of site geologist; to be determined on the basis of fault geometry and rig location. Cores will be taken using polymer mud.

DRILLING TIME ESTIMATE(days): 9 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90

4.3.13

.

YMP	SURFACE-BASED	INVESTIGATIONS	PLAN
	PLANNED	DRILLING	

ID	NO:	USW	SD-1	(informal	number)	
----	-----	-----	------	-----------	---------	--

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.5.2.H.30;1.2.3.5.2.R.7;1.2.3.2.1.4.S

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates: N768,220/E563,370(see SCP Fig.8.3.1.4-11); Final location to be determined by geostatical calculation

LAND OWNERSHIP : USAF (according to tentative location) ROAD ACCESS : May be accessible, but depends on final location SURFACE PREPARATION : Drill pad construction will be required DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) FINISHED HOLE SIZE : 7" (18cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew RIG SIZE : Minimum 120,000 Lb. pullback

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 38 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

YMP	SURFACE-BASE	D INVEST	IGATIONS	PLAN
	PLANNED B	OREHOLE	TESTING	

# 

ID NO: USW SD-1 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.5.2.H.30;-;R.7;1.2.3.2.1.4.S

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS:

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92



### 

ID NO: USW SD-2 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4..3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;1.2.3.5.2.R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates:N768,220/E563,370 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

LAND OWNERSHIP : USAF (according to tentative location) ROAD ACCESS : May be accessible, but depends on final location SURFACE PREPARATION : Drill pad construction will be required DISTURBANCE AREA : ~2.5 acres : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) PROPOSED DEPTH FINISHED HOLE SIZE : 7" (18cm) : 2.4 MINIMUM CORE SIZE DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback **RIG SIZE** 

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 38 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92 ID NO: USW SD-2 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4..3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS:

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE:

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) :ROAD WORK TIME ESTIMATE (days) :SCHEDULED START DATE :SCHEDULED FINISH DATE :FY 92

### ID NO: USW SD-3 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

\_\_\_\_\_

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman FRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates:N764,760/E559,345 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

: USAF (according to tentative location) LAND OWNERSHIP : May be accessible, but depends on final location ROAD ACCESS SURFACE PREPARATION : Drill pad construction will be required DISTURBANCE AREA : ~2.5 acres : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) PROPOSED DEPTH FINISHED HOLE SIZE : 7" (18cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 38 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

YMP SURFACE-BASED INVESTIGATIONS PLAN
PLANNED BOREHOLE TESTING

ID NO: USW SD-3 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1;8.3.1.4.2.2

SCP ACTIVITY NO: 8.3.1.4.3.1.1;8.3.1.4.2.2.5

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman/E. Majer (Testing PI) PRINCIPAL ORGANIZATION: SNL, USGS/LBL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS:

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION: vertical seismic profiling and seismic tomography between boreholes

TEST INTERVAL: entire borehole at 30 foot intervals

COMPLETION RIG SIZE: 7-10 days

REQUIRED SUPPLEMENTAL EQUIPMENT: 2 boom trucks from ReeCo and 2 wireline trucks from LBL

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) :10ROAD WORK TIME ESTIMATE(days):SCHEDULED START DATE:FY 92SCHEDULED FINISH DATE:FY 92

-	111100001	

### 

ID NO: USW SD-4 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

\_\_\_\_

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates:N764,390/E562,375 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

LAND OWNERSHIP : USAF (according to tentative location) ROAD ACCESS : May be accessible, but depends on final location SURFACE PREPARATION : Drill pad construction will be required DISTURBANCE AREA : ~2.5 acres PROPOSED DEPTH : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) FINISHED HOLE SIZE : 7" (18cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 38 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

# YMP SURFACE-BASED INVESTIGATIONS PLAN Planned Borehole Testing

ID NO: USW SD-4 (informal number)

SCP STUDY NO : 8.3.1.4.3.1;8.3.1.4.2.2

SCP ACTIVITY NO: 8.3.1.4.3.1.1;8.3.1.4.2.2.5

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman/E. Majer (Testing PI) PRINCIPAL ORGANIZATION: SNL, USGS/LBL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS:

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION: vertical seismic profiling and seismic tomography between boreholes

TEST INTERVAL: entire borehole at 30 foot intervals

COMPLETION RIG SIZE: 7-10 days

REQUIRED SUPPLEMENTAL EQUIPMENT: 2 boom trucks from ReeCo and 2 wireline trucks from LBL

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) :10ROAD WORK TIME ESTIMATE(days):SCHEDULED START DATESCHEDULED FINISH DATE:FY 92

DATE OF CURRENT REVISION: Dec 15, 1988

### ID NO: USW SD-5 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

\_\_\_\_\_\_

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

**PURPOSE:** to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Approximate coordinates:N763,175/E564,195 (see SCP Fig.8.3.1.4-11)

: USAF (according to tentative location) LAND OWNERSHIP : May be accessible, but depends on final location ROAD ACCESS SURFACE PREPARATION : Drill pad construction will be required DISTURBANCE AREA : ~2.5 acres : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) PROPOSED DEPTH FINISHED HOLE SIZE : 7" (18cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air : 24 hour crew DRILLING SCHEDULE : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE (days) : 38 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92


ID NO: USW SD-5 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

**RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** 

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS:

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92

#### ID NO: USW SD-6 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

\_\_\_\_\_

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates:N762,230/E559,375 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

ROAD ACCESS : May be accessible, depends on final location	
SURFACE PREPARATION : Drill pad construction will be required	
DISTURBANCE AREA : ~2.5 acres	
PROPOSED DEPTH : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone +	200 ft)
FINISHED HOLE SIZE : 7" (18cm)	
MINIMUM CORE SIZE : 2.4"	
DRILLING FLUIDS : air	
DRILLING SCHEDULE : 24 hour crew	
RIG SIZE : Minimum 120,000 Lb. pullback	

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 38 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 92 SCHEDULED FINISH DATE : FY 92 ID NO: USW SD-6 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1;8.3.1.4.2.2

SCP ACTIVITY NO: 8.3.1.4.3.1.1;8.3.1.4.2.2.5

\_\_\_\_\_\_

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman/E. Majer (Testing PI) PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS:

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION: vertical seismic profiling and seismic tomography between boreholes

TEST INTERVAL: entire borehole at 30' intervals

COMPLETION RIG SIZE: 7-10 days

REQUIRED SUPPLEMENTAL EQUIPMENT: 2 boom trucks from ReeCo and 2 wireline trucks from LBL

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) :10ROAD WORK TIME ESTIMATE(days) :SCHEDULED START DATE:SCHEDULED START DATE:FY 92SCHEDULED FINISH DATE:FY 92

YMP	SURFACE-BASED	INVESTIGATIONS	PLAN
	PLANNED	DRILLING	

#### -----

ID NO: USW SD-7 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates: N758,605/E561,060 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

LAND OWNERSHIP	: BLM (according to tentative location)
ROAD ACCESS	: May be accessible by existing road, but depends on final loc
SURFACE PREPARATION	: Drill pad construction will be required
DISTURBANCE AREA	: ~2.5 acres
PROPOSED DEPTH	: ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft)
FINISHED HOLE SIZE	: 7" (18cm)
MINIMUM CORE SIZE	: 2.4"
DRILLING FLUIDS	: air
DRILLING SCHEDULE	: 24 hour crew
RIG SIZE	: Minimum 120,000 Lb. pullback

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE (days) : 38 ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93

## YMP SURFACE-BASED INVESTIGATIONS PLAN PLANNED BOREHOLE TESTING

#### ID NO: USW SD-7 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1;8.3.1.4.2.2

SCP ACTIVITY NO: 8.3.1.4.3.1.1;8.3.1.4.2.2.5

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman/E. Majer (Testing PI) PRINCIPAL ORGANIZATION: SNL, USGS/LBL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS: Unknown at this time

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION: vertical seismic profiling and seismic tomography between boreholes

TEST INTERVAL: entire hole at 30 foot intervals

COMPLETION RIG SIZE: 7-10 days

REQUIRED SUPPLEMENTAL EQUIPMENT: 2 boom trucks from ReeCo and 2 wireline trucks from LBL

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : 10 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93



#### -----

ID NO: USW SD-8 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

**RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** 

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates: N761,415/E564,010 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

LAND OWNERSHIP : BLM (according to tentative location) : May be accessible by existing road, but depends on final location. ROAD ACCESS SURFACE PREPARATION : Drill pad construction will be required DISTURBANCE AREA : ~2.5 acres : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) PROPOSED DEPTH : 7" (18cm) FINISHED HOLE SIZE MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew : Minimum 120,000 Lb. pullback RIG SIZE

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 38 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93 ID NO: USW SD-8 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

**RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** 

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS:

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93

YMP	SURFACE-BASED	INVESTIGATIONS	PLAN
	PLANNED	DRILLING	

ID NO: UE-25 SD-9 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates: N761,160/E564,625 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

LAND OWNERSHIP : NTS-Area 25 (according to tentative location) ROAD ACCESS : May be accessible by existing, or planned road, but depends SURFACE PREPARATION : Drill pad construction will be required : ~2.5 acres DISTURBANCE AREA : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) PROPOSED DEPTH : 7' (18cm) FINISHED HOLE SIZE : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew RIG SIZE : Minimum 120,000 Lb. pullback

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equpment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 38 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93



#### ID NO: UE-25 SD-9 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS:

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93

# ID NO: USW SD-10 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.5.2.H.30;1.2.3.5.2.R.7;1.2.3.2.1.4.S

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL, USGS/LBL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates: N760,680/E563,610 (see Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

LAND OWNERSHIP : BLM (according to tentative location) ROAD ACCESS : May be accessible by existing road, but depends on final loc SURFACE PREPARATION : Drill pad construction will be required DISTURBANCE AREA : ~2.5 acres : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) PROPOSED DEPTH FINISHED HOLE SIZE : 7" (18cm)6 cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew RIG SIZE : Minimum 120,000 Lb. pullback

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days): 38 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93

YMP SURFACE-BASED INVESTIGATIONS PLAN
PLANNED BOREHOLE TESTING

#### ID NO: USW SD-10 (informal number)

SCP STUDY NO : 8.3.1.4.3.1;8.3.1.4.2.2

SCP ACTIVITY NO: 8.3.1.4.3.1.1;8.3.1.4.2.2.5

WBS NO: 1.2.3.5.2.H.30;-;R.7;1.2.3.2.1.4.S;1.2.3.2.4.2.B

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman/E. Majer (Testing PI) PRINCIPAL ORGANIZATION: SNL, USGS/LBL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS: Unknown at this time

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION: vertical seismic profiling and seismic tomography between holes

TEST INTERVAL: entire hole at 30 foot intervals

COMPLETION RIG SIZE: 7-10 days

REQUIRED SUPPLEMENTAL EQUIPMENT: 2 boom trucks from ReeCo and 2 wireline trucks from LBL

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93 DATE OF CURRENT REVISION: Dec 15, 1988

ID NO: USW SD-11 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

**RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** 

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates: N760,670/E564,132 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

LAND OWNERSHIP : BLM (according to tentative location) : May be accessible by existing road, but depends on final location ROAD ACCESS SURFACE PREPARATION : Drill pad construction will be required DISTURBANCE AREA : ~2.5 acres : ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft) PROPOSED DEPTH FINISHED HOLE SIZE : 7" (18cm) MINIMUM CORE SIZE : 2.4" DRILLING FLUIDS : air DRILLING SCHEDULE : 24 hour crew RIG SIZE : Minimum 120,000 Lb. pullback

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE (days) : 38 ROAD WORK TIME ESTIMATE (days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93

### YMP SURFACE-BASED INVESTIGATIONS PLAN PLANNED BOREHOLE TESTING

ID NO: USW SD-11 (informal number)

SCP STUDY NO : 8.3.1.4.3.1;8.3.1.4.2.2

SCP ACTIVITY NO: 8.3.1.4.3.1.1;8.3.1.4.2.2.5

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-;R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman/E. Majer (Testing PI) PRINCIPAL ORGANIZATION: SNL, USGS/LBL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS: Unknown at this time

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION: vertical seismic profiling and seismic tomography between holes

TEST INTERVAL: entire hole at 30 foot intervals

COMPLETION RIG SIZE: 7-10 days

REQUIRED SUPPLEMENTAL EQUIPMENT: 2 boom trucks from ReeCo and 2 wireline trucks from LBL

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE (days) :10ROAD WORK TIME ESTIMATE (days) :SCHEDULED START DATESCHEDULED FINISH DATE:FY 93

DATE OF CURRENT REVISION: Dec 15, 1988

ID NO: USW SD-12 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.S;1.2.3.5.2.H.30;-R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

**RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:** 

- PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns
- LOCATION: Approximate coordinates: N760,030/E564,260 (see SCP Fig.8.3.1.4-11); Final location to be determined by geostatistical calculation

LAND OWNERSHIP	: BLM (according to tentative location)
ROAD ACCESS	: May be accessible by existing road, but depends on final loc
SURFACE PREPARATION	: Drill pad construction will be required
DISTURBANCE AREA	: ~2.5 acres
PROPOSED DEPTH	: ± 2000 ft (~ 650 m) (holes will be drilled to top of saturated zone + 200 ft)
FINISHED HOLE SIZE	: 7" (18cm)
MINIMUM CORE SIZE	: 2.4"
DRILLING FLUIDS	: air
DRILLING SCHEDULE	: 24 hour crew
RIG SIZE	: Minimum 120,000 Lb. pullback

DRILLING METHOD: Dual-wall reverse circulation (see UE-25 UZP 1 for description)

CASING REQUIREMENTS: One joint of conductor pipe to provide flange for surface equipment

SAMPLE REQUIREMENTS: continuous core

DRILLING TIME ESTIMATE(days) : 38 ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93

#### ID NO: USW SD-12 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.4.3.1

SCP ACTIVITY NO: 8.3.1.4.3.1.1

WBS NO: 1.2.3.2.1.4.5;1.2.3.5.2.H.30;-R.7

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Scott Sinnock/Chris Rautman PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: to provide geostatistically based information to support three dimensional geologic models for answering performance assessment concerns

LOCATION: Location to be determined by geostatistical calculation; depicted map location is for planning purposes only

ROAD ACCESS: Unknown at this time

GEOPHYSICAL LOGS: deviation survey, neutron log, formation density log, checkshot velocity log, caliper log

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE:

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

TESTING TIME ESTIMATE(days) : ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 93 SCHEDULED FINISH DATE : FY 93

4.3.14

.

.

.

•

#### 

ID NO: UE-25 RF#6 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.14.2.1

SCP ACTIVITY NO: 8.3.1.14.2.1.3

WBS NO: 1.2.3.5.2.H.2;-R.4;1.2.3.2.1.2.1.S.3;-.8

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Geophysical measurements of dynamic soil properties to support engineering design/environmental hazard assessment

LOCATION: Vicinity of Exile Hill

:	NTS-Area 25
:	Depends on final location
:	Construction required: Drill pad & possibly mud pit.
:	~2.5 acres
:	~ 300 ft (100 m)
:	8.75* (22 cm)
:	2.4"
:	polymer mud
:	daylight crew
:	CPRIG
	** ** ** ** ** ** ** ** **

DRILLING METHOD: conventional rotary

CASING REQUIREMENTS: 10 3/4" casin set at ~ 40' completion casing should be 6" PVC and 3" SINCO

SAMPLE REQUIREMENTS: Intervals within consolidated units, at discretion of site geologist; 25% used for budgetary planning purposes (~ 75' of core)

DRILLING TIME ESTIMATE(days): 8 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90



#### YMP SURFACE-BASED INVESTIGATIONS PLAN PLANNED BOREHOLE TESTING

# ID NO: UE25 RF#15-6

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.14.2.1

SCP ACTIVITY NO: 8.3.1.14.2.1.3

WBS NO: 1.2.3.5.2.H.2;-R.4;1.2.3.2.1.2.1.S.3;-.8

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: geophysical measurements of dynamic soil properties to support engineering design/environmental hazard assessment

LOCATION: vicinity of Exile Hill

ROAD ACCESS: Depends on final siting of hole, If needed, additional acces

GEOPHYSICAL LOGS: geophysics and damping measurements - TO BE PERFORMED BY PI

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE: SNL function - no rig support required

REQUIRED SUPPLEMENTAL EQUIPMENT:

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

### 

ID NO: UE-25 RF#12 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.14.2.1

SCP ACTIVITY NO: 8.3.1.14.2.1.3

WBS NO: 1.2.3.5.2.H.2;-R.4;1.2.3.2.1.2.1.S.3;-.8

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Geophysical measurements of dynamic soil properties to support engineering design/environmental hazard assessment

LOCATION: Vicinity of Exile Hill

LAND OWNERSHIP : NTS-Area 25 : Depends on final location ROAD ACCESS SURFACE PREPARATION : Construction required: Drill pad and possibly mud pit. DISTURBANCE AREA : ~2.5 acres : ~ 300 ft (100 m) PROPOSED DEPTH FINISHED HOLE SIZE : 8.75" (22 cm) : 2.4" MINIMUM CORE SIZE DRILLING FLUIDS : polymer mud or dry, as required by drilling method : daylight crew DRILLING SCHEDULE RIG SIZE : CP RIG

DRILLING METHOD: conventional rotary

CASING REQUIREMENTS: 10 3/4" casing set at 40'; completion casing should be 6" PVC and 3" SINCO

SAMPLE REQUIREMENTS: intervals within consolidated units, at discretion of site geologist; 25% used for budgetary planning purposes (~ 75' of core)

DRILLING TIME ESTIMATE(days): 8 ROAD WORK TIME ESTIMATE(days): SCHEDULED START DATE : FY 90 SCHEDULED FINISH DATE : FY 90 

#### ID NO: UE25 RF#14/12-

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.14.2.1

SCP ACTIVITY NO: 8.3.1.14.2.1.3

WBS NO: 1.2.3.5.2.H.2;-R.4;1.2.3.2.1.2.1.S.3;-.8

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

\_\_\_\_\_

PRINCIPAL INVESTIGATOR: PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: geophysical measurements of dynamic soil properties to support engineering design/environmental hazard assessment

LOCATION: vicinity of Exile Hill

ROAD ACCESS: Depends on final siting of hole

GEOPHYSICAL LOGS: geophysics and damping measurements - TO BE PERFORMED BY PI

TESTING DESCRIPTION:

TEST INTERVAL:

COMPLETION RIG SIZE: SNL function - not rig support required

**REQUIRED SUPPLEMENTAL EQUIPMENT:** 

TRACERS USED:

DISCHARGE TYPE : DISCHARGE VOLUME:

PLAN FOR DISCHARGE REMOVAL:

LL.L

### \_\_\_\_\_

ID NO: Bare Mt#1 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.3

SCP ACTIVITY NO: 8.3.1.17.4.3.4

WES NO: 1.2.3.2.2.2.G.3;1.2.3.5.2.R.9;-H.32.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the record of past movement along the Bare Mountain fault zone.

LOCATION: SE/4, NW/4, T.13S, R. 47-1/2E

LAND OWNERSHIP : BLM ROAD ACCESS : Proposed site may be accessible by existing road SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : <0.1 acre NORTH COORDINATE: UIDTH : 5 m EAST COORDINATE : DEPTH : 3-4 m LENGTH: 15-20 m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

CONSTRUCTION TIME ESTIMATE (days):ROAD WORK TIME ESTIMATE (days):SCHEDULED START DATESCHEDULED FINISH DATESCHEDULED FINISH DATESCHEDULED FINISH DATE



#### \_\_\_\_\_

ID NO: Bare Mt#2 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.3

SCP ACTIVITY NO: 8.3.1.17.4.3.4

WBS NO: 1.2.3.2.2.2.G.3;1.2.3.5.2.R.9;-H.32.1

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the record of past movement along the Bare Mountain fault zone

LOCATION: SE/4, NW/4, sec.24, T.13S, R.47-1/2E

LAND OWNERSHIP : BLM ROAD ACCESS : Proposed site may be accessible by existing road SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : <0.1 acre NORTH COORDINATE: WIDTH : 2-3 m EAST COORDINATE : DEPTH : 2-3 m LENGTH: 5 m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

#### 

ID NO: Lathrop Wells #1A

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic history of deposits form eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP : Land held under patent claim by Cind-R-Lite company ROAD ACCESS : Proposed site is accessible by existing road SURFACE PREPARATION : E DISTURBANCE AREA : ~).1 acre; including trench & stockpiled area of excavated ma NORTH COORDINATE: WIDTH : 5-7 m EAST COORDINATE : DEPTH : 5-7 m LENGTH: 7-10 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trench will require monitoring of the cuts during construction. It is possible that renches could be smaller or larger than above estimates (estimate of disturbed area considers area 2x above estimates). The requird depths need to expose key geologic and soil units.

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:



#### \_\_\_\_\_\_

ID NO: Lathrop Wells #1B

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic history of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP : Land held under patent claim by Cind-R-Lite company ROAD ACCESS : Access to the proposed site may require establishing a one l SURFACE PREPARATION : Excavation of trench w/dozer or backhoe, and stockpiling exc DISTURBANCE AREA : <0.1 acre NORTH COORDINATE: WIDTH : 3-4 m DEPTH : 3-4 m LENGTH: 10-15 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trench will require monitoring of the cuts during construction. It is possible that trenches coud be smaller or larger than above estimates (estimate of disturbed area considers area 2x above estimates. The required depths need to expose key geologic and soil units.

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:



#### 

ID NO: Lathrop Wells #1C

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic history of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP ROAD ACCESS : Proposed site may be accessibel by existing road. Some off-r SURFACE PREPARATION : ExcExcavation of trench w/dozer or backhoe, and stockpil DISTURBANCE AREA : <0.1 acre NORTH COORDINATE: WIDTH : 3-4 m DEPTH : 3-5 m LENGTH: 5-6 m m

SPECIAL CONSTRUCTION REQUIREMENTS: Trench will require monitoring of the cuts during construction. It is possible that trenches could be smaller or larger than above estimates (estimate of disturbed area considers area 2x above estimates). The required depths need to expose key geologic and soil units

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

### 

ID NO: Lathrop Wells #1D

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic history of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP : Land held under patent claim by Cind-R-Lite company ROAD ACCESS : Proposed site may be accessible by existing road. Some off-r SURFACE PREPARATION : Exexcexcavation of trench w/dozer or backhoe, and stockpi DISTURBANCE AREA : <0.1 acre NORTH COORDINATE: WIDTH : 3-4 m EAST COORDINATE : DEPTH : 3-4 m LENGTH: 5-6 m m

SPECIAL CONSTRUCTION REQUIREMENTS: Trench will require comitoring of the cuts during construction.It is possibel that trenches could be smaller or larger than above estimates(estimate of disturbed area considers area 2x above estimates).The required depths need to expose key geologic and soil units.

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

ID NO: Lathrop Wells 2A

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

\_\_\_\_\_

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic history of deposits form eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP : Land held under patent claim by Cind-R-Lite Company ROAD ACCESS : Proposed site is accessible by existing road SURFACE PREPARATION : Excavation of soil pit DISTURBANCE AREA : Minimal NORTH COORDINATE: UIDTH : 1-2 m EAST COORDINATE : DEPTH : 1-2 m LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

# 

ID NO: Lathrop Wells 2B

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic history of deposits from eruptions at the Lathrop Wells volcanic center

. .

LOCATION: Vicinity of Lathhrop Wells volcanic center

•

LAND OWNERSHIP ROAD ACCESS SURFACE PREPARATION	: Land held under patent claim by Cind-R-Lite Compa : Proposed site is accessibel by existing road : Excavation of soil pit	зпУ
DISTURBANCE AREA	: Minimal	
NORTH COORDINATE:	WIDTH : 1-2 m	
EAST COORDINATE :	DEPTH : 1-2 m	
	LENGTH: 1-2 m	

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:



### \_\_\_\_\_

ID NO: Lathrop Wells 2C

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic hisotry of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP ROAD ACCESS SURFACE PREPARATION	: Land held under patent claim by Cind-R-Lite Co : Proposed site is accessible by existing road : Excavation of soil pit
DISTURBANCE AREA NORTH COORDINATE:	WIDTH : 1-2 m
EAST COORDINATE :	DEPTH : 1-2 m
	LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

#### ID NO: Lathrop Wells 2d

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic hisotry of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP	:	Land held under patent claim by Cind-R-Lite Company
ROAD ACCESS	:	Proposed site is accessible by existing road
SURFACE PREPARATION	:	Excavation of soil pit
DISTURBANCE AREA	:	Minimal
NORTH COORDINATE:		WIDTH : 1-2 m
EAST COORDINATE :		DEPTH : 1-2 m
		LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:



#### 

ID NO: Lathrop Wells 2e

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic hisotry of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP ROAD ACCESS SURFACE PREPARATION	: Land held under patent claim by Cind-R-Lite Company : Proposed site is accessible by existing road : Excavation of soil pit
DISTURBANCE AREA	; Minimal
NORTH COORDINATE:	
EAST COORDINATE :	DEPTH : 1-2 m
Little Contractions	LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

\_\_\_\_\_

#### YMP SURFACE-BASED INVESTIGATIONS PLAN PLANNED TRENCHING

#### 

ID NO: Lathrop Wells 2f

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/68

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic hisotry of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP	:	Land held under patent claim by Cind-R-Lite Company
ROAD ACCESS	:	Proposed site is accessible by existing road
SURFACE PREPARATION	:	Excavation of soil pit
DISTURBANCE AREA	:	Minimal
NORTH COORDINATE:		WIDTH : 1-2 m
EAST COORDINATE :		DEPTH : 1-2 m
		LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

# 

ID NO: Lathrop Wells 2g

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic hisotry of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP	: Land held under patent claim by Cind-R-Lite Compan
ROAD ACCESS	: Proposed site is accessible by existing road
SURFACE PREPARATION	: Excavation of soil pit
DISTURBANCE AREA	: Minimal
NORTH COORDINATE:	WIDTH : 1-2 m
EAST COORDINATE :	DEPTH : 1-2 m
	LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:



#### \_\_\_\_\_\_

ID NO: Lathrop Wells 2h

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic hisotry of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP	:	Land held under patent claim by Cind-R-Lite Company
ROAD ACCESS	:	Proposed site is accessible by existing road
SURFACE PREPARATION	:	Excavation of soil pit
DISTURBANCE AREA	:	Minimal
NORTH COORDINATE:		WIDTH : 1-2 m
EAST COORDINATE :		DEPTH : 1-2 m
		LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

#### 

ID NO: Lathrop Wells 2i

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic hisotry of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP : Land held under patent claim by Cind-R-Lite Company ROAD ACCESS : Proposed site is accessible by existing road SURFACE PREPARATION : Excavation of soil pit DISTURBANCE AREA : Minimal NORTH COORDINATE: UIDTH : 1-2 m EAST COORDINATE : DEPTH : 1-2 m LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:
# 

ID NO: Lathrop Wells 2j

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.8.5.1

SCP ACTIVITY NO:

WBS NO: 1.2.3.2.3.1.2.A

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Bruce Crowe PRINCIPAL ORGANIZATION: Los Alamos

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate stratigraphic hisotry of deposits from eruptions at the Lathrop Wells volcanic center

LOCATION: Vicinity of Lathrop Wells volcanic center

LAND OWNERSHIP	: Land held under patent claim by Cind-R-Lite Company
ROAD ACCESS	: Proposed site is accessible by existing road
SURFACE PREPARATION	: Excavation of soil pit
DISTURBANCE AREA NORTH COORDINATE: EAST COORDINATE :	: Minimal WIDTH : 1-2 m DEPTH : 1-2 m LENGTH: 1-2 m

SPECIAL CONSTRUCTION REQUIREMENTS: Trenches designated as LW 2A-LW2J consist of small soil pits that may be excavated within 2 different areas north and south of the cinder cone

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:



## 

ID NO: Midway Valley 1a (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.1

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possible occurence of late Quaternary surface fault rupture in the vicinity of the repository surface facilities

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP ROAD ACCESS : General vicinity of conceptual repository surface facilities surface facilities is accessible by existing road. Some offroad use w/backhoe may be necessary. SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : < 0.1 acre: Total for all MV-1 trenches may be ~0.5 acres. NORTH COORDINATE : UIDTH : 3m EAST COORDINATE : DEPTH : 3m LENGTH: 6m

SPECIAL CONSTRUCTION REQUIREMENTS: backhoe trench will need to be shored; trench face cleaned after completion of construction

PHOTO REQUIREMENTS: as specified by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

# 

ID NO: Midway Valley 1b (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4

SCP ACTIVITY NO: 8.3.1.17.4.2.1

WES NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possible occurence of late Quaternary surface fault rupture in the vicinity of the repository surface facilities

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : General vicinity of conceptual repository surface facilities SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : < 0.1 acre: Total for all MV-1 trenches may be ~0.5 acres. NORTH COORDINATE: WIDTH : 3m EAST COORDINATE : DEPTH : 3m LENGTH: 6m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS: as specified by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:



ID NO: Midway Valley 1c (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.1

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-;R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possible occurence of late Quaternary surface fault rupture in the vicinity of the repository surface facilities

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : General vicinity of conceptual repository surface facilities SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : < 0.1 acre: Total for all MV-1 trenches may be ~0.5 acres. NORTH COORDINATE: WIDTH : 3m EAST COORDINATE : DEPTH : 3m LENGTH: 6m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS: as specified by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

 $\sim$ 

## YMP SURFACE-BASED INVESTIGATIONS PLAN PLANNED TRENCHING

#### 

ID NO: Midway Valley 1d (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.1

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possible occurence of late Quaternary surface fault rupture in the vicinity of the repository surface facilities

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : General vicinity of conceptual repository surface facilities SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : < 0.1 acre: Total for all MV-1 trenches may be ~0.5 acres. NORTH COORDINATE: WIDTH : 3m EAST COORDINATE : DEPTH : 3m LENGTH: 6m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS: as specified by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

YMP SURFACE-BASED INVESTIGATIONS PLAN Planned Trenching

ID NO: Midway Valley le (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.1

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possible occurence of late Quaternary surface fault rupture in the vicinity of the repository surface facilities

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : General vicinity of conceptual repository surface facilities SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : < 0.1 acre: Total for all MV-1 trenches may be ~0.5 acres. NORTH COORDINATE: WIDTH : 3m EAST COORDINATE : DEPTH : 3m LENGTH: 6m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS: as specified by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

#### 

ID NO: Midway Valley 1f (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.1

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possible occurence of late Quaternary surface fault rupture in the vicinity of the repository surface facilities

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : General vicinity of conceptual repository surface facilities SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : < 0.1 acre: Total for all MV-1 trenches may be ~0.5 acres. NORTH COORDINATE: WIDTH : 3m EAST COORDINATE : DEPTH : 3m LENGTH: 6m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS: as specified by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:



#### 

ID NO: Midway Valley 1g (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.1

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possible occurence of late Quaternary surface fault rupture in the vicinity of the repository surface facilities

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : General vicinity of conceptual repository surface facilities SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : < 0.1 acre: Total for all MV-1 trenches may be ~0.5 acres. NORTH COORDINATE: WIDTH : 3m EAST COORDINATE : DEPTH : 3m LENGTH: 6m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS: as specified by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

#### \_\_\_\_\_

ID NO: Midway Valley 1h (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

í

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.1

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possible occurence of late Quaternary surface fault rupture in the vicinity of the repository surface facilities

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : General vicinity of conceptual repository surface facilities SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : < 0.1 acre: Total for all MV-1 trenches may be ~0.5 acres. NORTH COORDINATE: WIDTH : 3m EAST COORDINATE : DEPTH : 3m LENGTH: 6m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS: as specified by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

# ID NO: Midway Valley 2a (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.2

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possibility of late Quaternary surface fault rupture in the vicinity of the planned repository surface facility locations

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP ROAD ACCESS : NTS - Area 25 : Midway Valley is accessible by existing road. Off-road use, and/or establishment of additional roads, may be necessary. SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 1 acre NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4-6m LENGTH: ~300m

SPECIAL CONSTRUCTION REQUIREMENTS: backhoe trench will need to be shored; trench faces will need to be cleaned after construction

PHOTO REQUIREMENTS: as required by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:



ID NO: Midway Valley 2b (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.2

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possibility of late Quaternary surface fault rupture in the vicinity of the planned repository surface facility locations

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : Midway Valley is accessible by existing road. Off-road use, and/or establishment of additional roads, may be necessary. SURFACE PREPARATION : Excavation w/ backhoe or dozer 4 storing backfill. DISTURBANCE AREA : ~ 1 acre NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4-6 m LENGTH: ~300 m

SPECIAL CONSTRUCTION REQUIREMENTS: backhoe trench will need to be shored; trench faces will need to be cleaned after construction

PHOTO REQUIREMENTS: as required by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

#### -----

ID NO: Midway Valley 2c (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

 $\searrow$ 

SCP ACTIVITY NO: 8.3.1.17.4.2.2

WES NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possibility of late Quaternary surface fault rupture in the vicinity of the planned repository surface facility locations

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : Midway Valley is accessible by existing road. Off-road use, and/or establishment of additional roads, may be necessary. SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 1 acre NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4-6 m LENGTH: ~300 m

SPECIAL CONSTRUCTION REQUIREMENTS: backhoe trench will need to be shored; trench faces will need to be cleaned after construction

PHOTO REQUIREMENTS: as required by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

## YMP SURFACE-BASED INVESTIGATIONS PLAN Planned trenching

# \_\_\_\_\_

ID NO: Midway Valley 2d (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.2

SCP ACTIVITY NO: 8.3.1.17.4.2.2

WBS NO: 1.2.3.2.1.2.2.S.3;1.2.3.5.2.H.32.2;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Les Shephard PRINCIPAL ORGANIZATION: SNL

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the possibility of late Quaternary surface fault rupture in the vicinity of the planned repository surface facility locations

LOCATION: Midway Valley, east of Exile Hill

LAND OWNERSHIP : NTS - Area 25 ROAD ACCESS : Midway Valley is accessible by existing road. Off-road use, and/or establishment of additional roads, may be necessary. SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 1 acre NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4-6 m LENGTH: ~300 m

SPECIAL CONSTRUCTION REQUIREMENTS: backhoe trench will need to be shored; trench faces will need to be cleaned after construction

PHOTO REQUIREMENTS: as required by USGS site geologist

SAMPLING REQUIREMENTS:

SAMPLE USERS:

#### 

ID NO: Paleohydrology Trench #2 (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.5.2

SCP ACTIVITY NO: 8.3.1.5.2.1.5

WES NO: 1.2.3.5.2.H.32.2;-;R.18;1.2.3.3.5.G.2;-;G.5

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Downey PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Investigate the origin of cryptocrystalline calcite and opaline silica deposits which fill many faults and fractures in the vicinity of Yucca Mountain

LOCATION: Near existing trench 14

LAND OWNERSHIP : NTS-Area 25 ROAD ACCESS : May be accessible by existing road. Some off road access may SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~0.1 acre NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 3m LENGTH: 20m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

## ID NO: Rock Valley 1 (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.4

SCP ACTIVITY NO: 8.3.1.17.4.4.1

WBS NO: 1.2.3.2.3.2.3.G.4;1.2.3.5.2.H.32.1;-R.9

\*----

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary movement on the Rock Valley fault system

LOCATION: TBD

LAND OWNERSHIP : ? ROAD ACCESS : TBD SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

# \_\_\_\_\_

ID NO: Rock Valley 2 (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.4

`--

SCP ACTIVITY NO: 8.3.1.17.4.4.1

WES NO: 1.2.3.2.3.2.3.G.4;1.2.3.5.2.H.32.1;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary movement on the Rock Valley fault system

LOCATION: TBD

LAND OWNERSHIP : ? ROAD ACCESS : TBD SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

# \_\_\_\_\_

ID NO: Stagecoach Road 1 (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.4

SCP ACTIVITY NO: 8.3.1.17.4.4.3

WBS NO: 1.2.3.2.3.2.3.G.;1.2.3.5.2.H.32.1;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary movement on the Stagecoach Road fault system

LOCATION: TBD

LAND OWNERSHIP : ? ROAD ACCESS : TBD SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

# /

## YMP SURFACE-BASED INVESTIGATIONS PLAN PLANNED TRENCHING

#### 

ID NO: Stagecoach Road 2 (informal #)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.4

SCP ACTIVITY NO: 8.3.1.17.4.4.3

WBS NO: 1.2.3.2.3.2.3.G.6;1.2.3.5.1.H.32.1;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: K. Fox PRINCIPAL ORGANIZATION: USGS

**RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:** 

PURPOSE: Evaluate the magnitude and nature of Quaternary movement on the Stagecoach Road fault system

LOCATION: TBD

LAND OWNERSHIP	:	?
ROAD ACCESS	:	TBD
SURFACE PREPARATION	:	Excavation w/ backhoe or dozer & storing backfill.
DISTURBANCE AREA	:	~0.25 acres
NORTH COORDINATE:		WIDTH : 4m
EAST COORDINATE :		DEPTH : 4m
		LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

\_\_\_\_\_

ID NO: Trench 14

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.5.2

SCP ACTIVITY NO: 8.3.1.5.2.1.5

WBS NO: 1.2.3.5.2.H.32.2;-R.18;1.2.3.3.5.G.2;-G.5

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: J. Downey PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Deepen the existing trench to investigate the origin of crytocrystalline calcite and opaline silica deposits which fill many faults and fractures in the vicinity of Yucca Mountain.

LOCATION: Midway Valley. Approx. N.765657/E.569241

LAND OWNERSHIP : NTS-Area 25 ROAD ACCESS : Existing trench SURFACE PREPARATION : Deepen existing trench w/dozer DISTURBANCE AREA : Minimal new disturbance NORTH COORDINATE: WIDTH : 20m EAST COORDINATE : DEPTH : 3m LENGTH: n.a

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

# \_\_\_\_\_

ID NO: Yucca Mountain #1 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.6

SCP ACTIVITY NO: 8.3.1.17.4.6.2

WBS NO: 1.2.3.2.3.2.3.G.2;1.2.3.5.2.H.32.1;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary fault movement in the vicintity of Yucca Mountain

LOCATION: vicinity of Yucca Mountain

LAND OWNERSHIP : ? ROAD ACCESS : Depends on final location SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

CONSTRUCTION TIME ESTIMATE (days): ROAD WORK TIME ESTIMATE (days) : SCHEDULED START DATE : FY 89 SCHEDULED FINISH DATE : FY 89

< L

# YMP SURFACE-BASED INVESTIGATIONS PLAN Planned Trenching

ID NO: Yucca Mountain #2 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.6

SCP ACTIVITY NO: 8.3.1.17.4.6.2

WBS NO: 1.2.3.2.3.2.3.G.2;1.2.3.5.2.H.32.1;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary fault movement in the vicinity of Yucca Mountain

LOCATION: vicinity of Yucca Mountain

LAND OWNERSHIP : ? ROAD ACCESS : Depends on final location SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:



# 

ID NO: Yucca Mountain #3 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.6

SCP ACTIVITY NO: 8.3.1.17.4.6.2

WBS NO: 1.2.3.2.3.2.3.G.2;1.2.3.5.2.H.32.1;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary fault movement in the vicinity of Yucca Mountain

LOCATION: vicinity of Yucca Mountain

LAND OWNERSHIP : ? ROAD ACCESS : Depends on final location SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:



# 

ID NO: Yucca Mountain #4 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.6

SCP ACTIVITY NO: 8.3.1.17.4.6.2

WES NO: 1.2.3.2.3.2.3.G.2;1.2.3.5.2.H.32.1;-R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary fault movement in the vicinity of Yucca Mountain

LOCATION: vicinity of Yucca Mountain

LAND OWNERSHIP : ? ROAD ACCESS : Depends on final location SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

CONSTRUCTION TIME ESTIMATE (days)	:			
ROAD WORK TIME ESTIMATE (days)	:			
SCHEDULED START DATE	:	FY	90	
SCHEDULED FINISH DATE	:	FY	90	

# .....

ID NO: Yucca Mountain #5 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.6

SCP ACTIVITY NO: 8.3.1.17.4.6.2

WBS NO: 1.2.3.2.3.2.3.G.2;1.2.3.5.2.H.32.1;-;R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary fault movement in the vicinity of Yucca Mountain

LOCATION: vicinity of Yucca Mountain

LAND OWNERSHIP : ? ROAD ACCESS : Depends on final location SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

ID NO: Yucca Mountain #6 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

1

SCP STUDY NO : 8.3.1.17.4.6

SCP ACTIVITY NO: 8.3.1.17.4.6.2

WBS NO: 1.2.3.2.3.2.3.G.2;1.2.3.5.2.H.32.1;-;R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary fault movement in the vicinity of Yucca Mountain

LOCATION: vicinity of Yucca Mountain

LAND OWNERSHIP : ? ROAD ACCESS : Depends on final location SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

ID NO: Yucca Mountain #7 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.6

SCP ACTIVITY NO: 8.3.1.17.4.6.2

WES NO: 1.2.3.2.3.2.3.G.2;1.2.3.5.2.H.32.1;-;R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary fault movement in the vicinity of Yucca Mountain

LOCATION: vicinity of Yucca Mountain

LAND OWNERSHIP : ? ROAD ACCESS : Depends on final location SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

CONSTRUCTION TIME ESTIMATE (days)	:	
ROAD WORK TIME ESTIMATE (days)	:	
SCHEDULED START DATE	:	TBD
SCHEDULED FINISH DATE	:	TBD

## 

ID NO: Yucca Mountain #8 (informal number)

DATE OF CURRENT REVISION: Dec 15, 1988

SCP STUDY NO : 8.3.1.17.4.6

SCP ACTIVITY NO: 8.3.1.17.4.6.2

WBS NO: 1.2.3.2.3.2.3.G.2;1.2.3.5.2.H.32.1;-;R.9

INFORMATION SOURCE/DATE: Statutory Site Characterization Plan, 12/88

PRINCIPAL INVESTIGATOR: Ken Fox PRINCIPAL ORGANIZATION: USGS

RESPONSIBLE NTSO CONTRACTOR: REECO RESPONSIBLE NTSO INDIVIDUAL:

PURPOSE: Evaluate the magnitude and nature of Quaternary fault movement in the vicinity of Yucca Mountain

LOCATION: vicinity of Yucca Mountain

LAND OWNERSHIP : ? ROAD ACCESS : Depends on final location SURFACE PREPARATION : Excavation w/ backhoe or dozer & storing backfill. DISTURBANCE AREA : ~ 0.25 acres NORTH COORDINATE: WIDTH : 4m EAST COORDINATE : DEPTH : 4m LENGTH: 100m

SPECIAL CONSTRUCTION REQUIREMENTS:

PHOTO REQUIREMENTS:

SAMPLING REQUIREMENTS:

SAMPLE USERS:

Section 5.0 - Map Sheets

The maps presented in this volume are products of the Geographic Information System (GIS) being used by the Yucca Mountain Project. The ARC/INFO GIS software, developed by Environmental Systems Research Institute, was used to digitize and process these SBIP maps. The maps were prepared using existing U.S. Geological Survey (USGS) maps as a planimetric base. Roads and other surface features were interpreted from a variety of sources and entered into the GIS. Sources include the USGS maps, 1976 USGS orthophotoquads and aerial photography, 1986 and 1987 aerial photography, surveyed coordinates of field sites, and a combination of various maps, figures, descriptions and approximate coordinates of proposed locations for future activities.

While the approach used allows a reasonably accurate measurement of feature length and area, the transferral of features from aerial photographs can be the source of positional errors impacting locational siting. In addition to these potential positional errors for features that were extracted from aerial photographs (including most of the existing road network at the site), the various scales of the maps were determined according to the geographical area to be covered, thereby rendering scales that are unsatisfactory for making precise measurements. Therefore, the activity maps contained in this volume are for graphical presentation only. They are not intended to be used for engineering or design purposes.

The 50 meter contours presented on the site area maps were digitized into the GIS from the 1983 USGS 1:100,000 Beatty NV/CA topographic quadrangle. Roads and other surface features (e.g., railroads and power lines) from 1952 and 1961. USGS 7.5' and 15' topographic quadrangles, 1976 USGS orthophotoguadrangles, and the 1983 1:100,000 topographic quadrangle were also digitized into the GIS. Roads that were not included on the source maps, or that have been constructed since those maps were produced were extracted from 1986 and 1987 aerial photographs of the area. The various land administration boundaries were also digitized into the GIS from the USGS topographic quadrangles. The road features and administration boundaries shown on the regional scale maps were taken from the 1:2,000,000 USGS National Map Atlas Digital Line Graph Map, which has also been digitized into the GIS. The conceptual perimeter drift boundary (CPDB) was digitized from Sandia National Labs (SNL) Drawing Number R07003A, and the conceptual controlled area boundary (CCAB) was taken from the definition and Figure 9 presented in the SNL Report SAND86-2157.UC-70 "Definitions of Reference Boundaries for the Proposed Geologic Repository at Yucca Mountain, NV."

As was stated before, the locations of field activities were obtained from various sources. The existing and proposed activity location tables presented in this volume provide the reference from which the location coordinates were obtained. These activity location coordinates were entered from the keyboard into the GIS and coded as to the type of activity. The conceptual Exploratory Shaft Facility (ESF) area was digitized from the NNWSI ESF Overall Site Map from the 90% review Title I Design package, Drawing Number JS-025-ESF-C3.B.

The location of existing and proposed activities are expressed in the SBIP according to the Nevada State Central Plane coordinate system. This coordinate system is the one that is currently used by the DOE's engineering contractor at the Nevada Test Site and at the Yucca Mountain Project. This system measures northing and easting distances in feet, as opposed to meters or degrees as is the case with the Universal Trans Mercator and Latitude/Longitude coordinate systems.

The Existing Activities map presented herein depicts the location of all existing surface based investigation field sites with the exception of geophysical surveys. The existing activities table contains only those sites where ongoing and proposed site characterization surface based testing is planned. A companion document to the SBIP, the NNWSI Site Atlas, contains detailed maps and attribute information on completed activities.

It should be noted that while the GIS data base used to produce these SBIP maps was also used to provide estimates of existing and proposed surface disturbances, the symbols used on the maps are not intended to represent surface disturbance.

# SURFACE BASED INVESTIGATIONS PLAN ACTIVITY LOCATIONS

# Existing Sites of Orgoing and Planed Site Characterization Activities

ACITVITY	ACTIVITY	LOCATION		SBIP	
IDENTIFICATION	NORTHING	EASTING	SOURCE OF LOCATION	MAP NUMBER	COMENIS
			UNSATURATED ZONE BOREHO	LES	
USW UZ-1	771,275.8	560,220.8	HEN Survey Dept. Report	89-018.1	As-built Survey
ue-25 uz#4	768,715.6	566,139.3	HEN Survey Dept. Report	89-018.1	As-built Survey
UE-25 UZ#5	768,591.0	566,135.2	HEN Survey Dept. Report	89-018.1	As-built Survey
USW UZ-6	759,731.0	558,325.0	HEN Survey Dept. Report	89-018.1	As-built Survey
USW UZ-6s	759,909.3	558,050.4	H&N Survey Dept. Report	89-018.1	As-built Survey
usw uz-7	760,836.1	562,911.3	Han Survey Dept. Report	89-018.1	As-built Survey
usw uz-8	760,762.2	562,293.5	HEN Survey Dept. Report	89-018.1	As-built Survey
usw uz-13	751,953.2	558,488.7	HSN Survey Dept. Report	89-018.1	As built Survey
	NATURA	L INFILIRATI	ON MONITORING HOLES (UNSATUR	AIED ZONE NEURIR	ON HOLES)*
UE-25 UZN#1	769,328.9	565,224.3	HEN Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#2	768,605.5	566,113.6	HSN Survey Dept. Report	89-016.1	As-built Survey
UE-25 U2N#3	768,630.4	566,119.4	HEN Survey Dept. Report	89-016.1	As-built Survey
UE-25 UZN#4	768,663.4	566,127.1	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#5	768,689.4	566,113.8	H&N Survey Dept. Report	89-016.1	As-built Survey
UE-25 UZN#6	768,705.6	566,136.6	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#7	768,724.1	566,141.2	H&N Survey Dept. Report	89-016.1	As-built Survey
UE-25 UZN#8	768,743.0	566,146.5	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzv#9	768,781.5	566,155.9	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#10	769,868.6	564,744.1	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzv#12	768,650.9	566,695.2	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#13	768,024.6	568,255.1	HSN Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#14	767,967.2	568,232.9	HEN Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#18	766,472.4	565,246.5	H&N Survey Dept. Report	89-016.1	As-brilt Survey
ue-25 uzn#19	763 <b>,68</b> 8 <b>.9</b>	564,570.6	HEN Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#20	763 <b>,</b> 759 <b>.9</b>	564,579.3	HEN Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzv#21	763,806.1	564,591.0	HEN Survey Dept. Report	89-016.1	As-built Survey
UE-25 U2N#22	763,880.3	564,604.5	HEN Survey Dept. Report	89-016.1	As-built Survey
UE-25 UZN#23	763,973.1	564,545.4	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N24	768,005.4	562.054.2	HSN Survey Dept. Report	89-016.1	As-built Survey

# SIRFACE BASED INVESTIGATIONS PLAN ACTIVITY LOCATIONS

# Existing Sites of Ongoing and Planned Site Characterization Activities

ACTIVITY	ACTIVITY	LOCATION		SBIP	
IDENTIFICATION	NORTHING	EASTING	SOURCE OF LOCATION	MAP NUMBER	COMENIS
USW UZ-N25	768,430.4	561,218.9	H&N Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N26	768,757.2	561,022.9	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzv#28	763,091.2	565,319.7	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#29	762,613.1	565,173.3	Han Survey Dept. Report	89-016.1	As-built Survey
UE-25 UZN#30	762,047.6	565,232.8	HEN Survey Dept. Report	89-016.1	As brilt Survey
uew uz-N40	766,175.8	564,221.3	HAN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N41	765,867.2	563,520.9	H&N Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N42	765,728.6	562,858.5	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N43	765,997.0	563,263.6	HEN Survey Dept. Report	89-016.1	As-built Survey
usw uz-N44	766,192.5	563,139.6	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N45	765,976.7	563,429.2	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N46	772,262.3	559,747.7	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N47	<i>77</i> 1,967.5	559,783.5	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N48	760,834.9	562,413.6	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N49	760,860.4	562,321.8	Han Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N50	760,775.9	562,911.7	Han Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N51	760,860.8	562,909.4	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N52	760,893.8	562,908.8	HEN Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#56	760,393.5	565,480.0	H&N Survey Dept. Report	89-016.1	As-built Survey
UE-25 UZN#60	759,756.9	566,567.0	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N65	758,627.1	562,537.1	Han Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N66	758,433.5	561,881.1	Han Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N67	753,634.2	563,799.0	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N68	753,962.4	564,005.8	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N69	754,460.9	564,401.7	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N70	769,250.7	560,164.7	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N71	761,025.9	558,405.6	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N72	761,067.9	558,626.1	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N73	761,049.1	558,926.0	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N74	761,362.2	558,559.9	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N75	761,462.4	559,075.9	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N76	761,353.2	559,047.7	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N77	755,526.1	554,397.2	HEN Survey Dept. Report	89-016.1	As-built Survey

# SUFFACE BASED INVESTIGATIONS PLAN ACTIVITY LOCATIONS

# Existing Sites of Ongoing and Planned Site Characterization Activities

ACTIVITY	ACTIVITY 1	LOCATION		SEIP	
IDENITIFICATION	NORTHING	EASTING	SOURCE OF LOCATION	MAP NUMBER	COMENIS
USW UZ-N78	757,557.8	556,262.3	H&N Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N79	757.733.2	556.333.9	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-NBO	757,634.3	557,201.1	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N81	757,807.1	555,595.1	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-NB2	757,498.1	554,689.7	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-NB3	760,624.2	556,349.0	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-NB4	760,717.0	555,887.8	H&N Survey Dept. Report	89-016.1	As-built Survey
UE-25 UZN#85	750,715.8	577,567.8	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-NB6	760,614.5	556,460.3	H&N Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N87	760,714.1	555,887.1	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N88	760,796.9	556,551.2	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N89	760,610.4	555,588.7	H&N Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N90	760,608.4	555,587.2	H&N Survey Dept. Report	89-016.1	As-built Survey
UE-25 UZN#91	797,275.0	585,340.9	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#92	778,009.5	583,558.5	H&N Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N93	759,584.3	558,320.7	H&N Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N94	759,723.5	558,236.2	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N95	759,899.0	558,172.3	HEN Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N96	759,445.8	558,403.1	H&N Survey Dept. Report	89-016.1	As-built Survey
ue-25 uzn#97	763,093.8	565,320.6	H&N Survey Dept. Report	89-016.1	As-built Survey
USW UZ-N98	767,996.2	562,083.5	HEN Survey Dept. Report	89-016.1	As-built Survey

\*Approximately 25 of these holes will also be used to monitor artificial infiltration associated with the proposed ponding studies discussed in SCP Activity 8.3.1.2.2.1.3.

# WATER TABLE BOREHOLES

USW WT-1	753,940.6	563,739.2	HEN Survey Dept. Report	89-019.1	As-built Survey
USW WI-2	760,660.5	561,923.6	HEN Survey Dept. Report	89-019.1	As-built Survey
UE-25 WI#3	745,995.1	573,384.4	HEN Survey Dept. Report	89-019.1	As-built Survey
UE-25 WI#4	768,511.7	568,040.1	HEN Survey Dept. Report	89-019.1	As-built Survey
UE-25 WI#5	761,826.0	574,249.7	H&N Survey Dept. Report	89-019.1	As-built Survey
UE-25 WI#6	780,575.8	564,523.9	H&N Survey Dept. Report	89-019.1	As-built Survey

# SURFACE BASED INVESTIGATIONS PLAN ACTIVITY LOCATIONS

# Existing Sites of Ongoing and Planned Site Characterization Activities

ACTIVITY	ACTIVITY	LOCATION		SBIP	
IDENITIFICATION	NORTHING	EASTING	SCIRCE OF LOCATION	MAP NUMBER	COMENIS
USW WI-7	755,569.8	553,891.3	HEN Survey Dept. Report	89-019.1	As-built Survey
LEW WI-10	748,770.9	553,302.1	HEN Survey Dept. Report	89-019.1	As-built Survey
USW WI-11	739,070.4	558,376.8	HEN Survey Dept. Report	89-019.1	As-built Survey
UE-25 WI#12	739,725.9	567,011.0	HEN Survey Dept. Report	89-019.1	As-built Survey
UE-25 WI#13	756,715.0	578,756.7	HEN Survey Dept. Report	89-019.1	As-built Survey
UE-25 WI#14	761,650.6	575,210.1	H&N Survey Dept. Report	89-019.1	As-built Survey
UE-25 WI#15	766,116.6	579,805.7	HEN Survey Dept. Report	89-019.1	As-brilt Survey
UE-25 WI#16	774,419.6	570,394.8	HEN Survey Dept. Report	89-019.1	As-built Survey
ue-25 wi#17	748,419.6	566,211.9	HEN Survey Dept. Report	89-019.1	As-built Survey
ue-25 wt#18	771,167.1	564,855.0	HEN Survey Dept. Report	89-019.1	As-brilt Survey
		-	SATURATED ZONE HYDROLOGIC BO	REHOLES	
USW H-1	770,254.3	562,387.9	Han Survey Dept. Report	89-020.1	As-built Survey
USW H-3	756,542.1	558,451.6	HEN Survey Dept. Report	89-020.1	As-built Survey
USW H-4	761,643.6	563,911.1	HEN Survey Dept. Report	89-020.1	As-built Survey
USW H-5	766,634.2	558,908.7	Han Survey Dept. Report	89-020.1	As-brilt Survey
USW H-6	763,298.8	554,074.9	H&N Survey Dept. Report	89-020.1	As-brilt Survey
UE-25c #1	757,095.8	569,680.4	Han Survey Dept. Report	89-021.1	As-built Survey
UE-25c #2	756,848.8	569,633.8	HEN Survey Dept. Report	89-021.1	As-brilt Survey
UE-25c #3	756,909.9	569,554.9	HEN Survey Dept. Report	89-021.1	As-built Survey
			WATER WELL LOCATIONS		
J-12	733,508.2	581,011.7	NWSI Site Atlas, Draft	89-019.1	As-built Survey
J-13	749,209.3	579,650.6	NWSI Site Atlas, Draft	89-019.1	As-built Survey
			GEOLOGIC COREHOLES		
USW G-1	770,500.2	561,000.4	HEN Survey Dept. Report	89-022.1	As-built Survey
USW G-2	778,824.1	560,503.8	HEN Survey Dept. Report	89-022.1	As-built Survey
USW G-3	752,779.8	558,483.1	HEN Survey Dept. Report	89-022.1	As-built Survey
USW G-4	765.807.0	563.081.6	HAN Survey Dept. Report	89-022.1	As-built Survey

# SURFACE BASED INVESTIGATIONS FLAN ACTIVITY LOCATIONS

# Existing Sites of Ongoing and Planned Site Characterization Activities

ACTIVITY IDENIIFICATION	ACITVITY I NORTHING	LOCATION EASTING	SCIRCE OF LOCATION	SBIP MAP NUMBER	COMMENIS
UE-25a #1	764,900.1	566,349.9	HEN Survey Dept. Report	89-022.1	As-built Survey
UE-25a #7	766,249.8	565,468.5	H&N Survey Dept. Report	89-022.1	As-built Survey
UE-250 #1	765,243.3	566,416.3	Han Survey Dept. Report	89-022.1	As-built Survey
UE-25p #1	756,171.2	571,484.5	Han Survey Dept. Report	89-022.1	As-built Survey
			VILCANISY/HAROLOGIC BOREH	IES	
USW VII-1	743,355.5	533,625.9	H&N Survey Dept. Report	89-014.1	As-built Survey
USW VH-2	748,319.4	526,264.2	HEN Survey Dept. Report	89-014.1	As-built Survey
			TRENCHES		
Trench 14	765,657	569,241	NWSI Site Atlas, Draft	89-017.1	Estimated location
			METEOROLOGICAL MONITORING TO	DWERS	
NIS-10-Aliœ Hill	769,500	577,000	NWSI Site Atlas, Draft	89-013.1	Not surveyed
NIS-10-Coyote Wash	766,063	563,125	NWSI Site Atlas, Draft	89-013.1	Surveyed coordinates
NIS-10-Fortymile Wash	733,125	580,875	NWSI Site Atlas, Draft	89-013.1	Surveyed coordinates
NIS-10-Yucca Mountain	766,300	558,400	NWSI Site Atlas, Draft	89-013.1	Not surveyed
NIS-60-Repository	761,784	569,122	NV&I Site Atlas, Draft	89-013.1	Surveyed coordinates
		REGIONAL I	RECIPITATION AND SIREAMFLOW I	INFIGRING SITE	5
Station #1 *	780,900	472,880	SCP SD Table 8.3.1.2-3	89-017.1	Anaropsa River near Beatty
#2 b,c	865,620	616,670	SCP SD Table 8.3.1.2-3	89-017.1	Wash north of Rattlesnake Ridge
<u>#</u> 3 c,d	778,010	583,580	SCP SD Table 8.3.1.2-3	89-017.1	Fortymile Wash at Narrows
#4 a,d	770.320	579,750	SCP SD Table 8.3.1.2-3	89-017.1	Yucca Wash
#5 b	764,990	569,340	SCP SD Table 8.3.1.2-3	89-017.1	Exile Hill
#6 d	766,120	563,030	SCP SD Table 8.3.1.2-3	89-017.1	North Fork of Coyote Wash
#7 a,d	753,630	578,750	SCP SD Table 8.3.1.2-3	89-017.1	Drillhole (Sever) Wash
#8 c,d	749,400	577,890	SCP SD Table 8.3.1.2-3	89-017.1	Fortymile Wash at well J-13
#9 *,d	743,770	575,700	SCP SD Table 8.3.1.2-3	89-017.1	Dune Wash

# SURFACE BASED INVESTIGATIONS PLAN ACTIVITY LOCATIONS

# Existing Sites of Orgoing and Planned Site Characterization Activities

ACTIVITY	ACTIVITY	LOCATION	SBIP		
IDENIIFICATION	NORTHING	EASTING	SURCE OF LOCATION	MAP NUMBER	COMENIS .
#10 c,d	699,320	568,200	SCP SD Table 8.3.1.2-3	89-017.1	Fortymile Wash near Highway 95
#11 a,d	736,070	602,410	SCP SD Table 8.3.1.2-3	89-017.1	Topopah Wash
#12 a,d	749,390	667,300	SCP SD Table 8.3.1.2-3	89-017.1	Cane Springs Wash Tributary
#13 d	723.750	627,060	SCP SD Table 8.3.1.2-3	89-017.1	Skull Mt. Pass Jack Ass Flats Hwy
#14 d	704,400	651,830	SCP SD Table 8.3.1.2-3	89-017.1	Rock Valley on Jack Ass Flats Hwy
#15 d	683,380	604,810	SCP SD Table 8.3.1.2-3	89-017.1	Rock Valley at Hwy 95
#16 <sup>a,d</sup>	659,900	666,890	SCP SD Table 8.3.1.2-3	89-017.1	Amargosa R. Tributary near Mercury
#17 *	622,800	664,380	SCP SD Table 8.3.1.2-3	89-017.1	Anargosa R. Tributary #1 Johnie
<b>#18</b> ª	614,160	174,320	SCP SD Table 8.3.1.2-3	89-017.1	Amargosa R. Tributary #2 Johnie
#19 ª	661,500	432,950	SCP SD Table 8.3.1.2-3	89-017.1	Indian Sp. Valley Tributary
#20 d	878,700	635,610	SCP SD Table 8.3.1.2-3	89-017.1	Stockade Pass

a = crest-stage stream gage
b = recording rain gage (tipping bucket)
c = recording stream gage
d = plastic rain gage

Table 5-2		SURFACE B	ASED INVESTIGATIONS FLAN - ACT.	IVITY LOCATION	5
		Appr	oximate Locations of Proposed A	ctivities	
ACTIVITY IDENTIFICATION	ACTIVITY NORTHING	LOCATION EASIING	SOURCE OF LOCATION	SBIP MAP NUMBER	COMMENIS
		UNSATUR	ATED ZONE, DRY-DRILLING PROTOTY	RE BOREHLLES	
UE-25 UZP#1 UE-25 UZP#2	730,400 730,400	569,200 569,200	UBGE (Not an SCP Activity) UBGE (Not an SCP Activity)	89-019.1 89-019-1	Prototype boreholes will be located outside the Controlled Area Boundary, south of Busted Butte
			UNSATURATED ZONE BOREHOLES	5	
USW UZ-2 USW UZ-3 UE-25 UZ#9 UE-25 UZ#9a UE-25 UZ#9b UE-25 UZ#10	759,769 759,625 760,600 760,600 760,600 750,139	558,180 558,220 564,750 564,800 564,850 561,123	HEN Survey Dept. HEN Survey Dept. St. SOP Study 8.3.1.4.3.1 St. SOP Study 8.3.1.4.3.1 St. SOP Study 8.3.1.4.3.1 St. SOP Study 8.3.1.2.2.3	89-018.1 89-018.1 89-018.1 89-018.1 89-018.1 89-018.1	Layout Survey Layout Survey Fig. 8.3.1.4-11 Fig. 8.3.1.4-11 Fig. 8.3.1.4-11 Fig. 8.3.1.2-14
ue-25 uz#11 ue-25 uz#12 ue-25 uz#14	757,400 757,400 771,275	556,614 556,055 560,220	St. SOP Study 8.3.1.4.3.1 St. SOP Study 8.3.1.4.3.1 St. SOP Study 8.3.1.2.2.3	89-018.1 89-018.1 89-018.1	Fig. 8.3.1.4–11 Fig. 8.3.1.4–11 Fig. 8.3.1.2–14
	EXIST	ING SHALLOW	INSATURATED ZONE HOLES TO BE RE	-ENIERED AND D	EPPNED
ue-25 uz#4 ue-25 uz#5 uew uz-7	768,715.6 768,591.0 760,836.1	566,139.3 566,135.2 562,911.3	H&N Survey Dept. H&N Survey Dept. H&N Survey Dept.	89-018.1 89-018.1 89-018.1	As-built Survey As-built Survey As-built Survey
		<u>S</u>	ISTEMATIC DRUILING HURAM BORE	HIES	
USW SD-1 USW SD-2 USW SD-3 USW SD-4 USW SD-5 USW SD-6	768,220 767,875 764,760 764,390 763,175 762,230	563,370 560,665 559,345 562,375 564,195 559,375	St. SOP Study 8.3.1.4.3.1 St. SOP Study 8.3.1.4.3.1	89-018.1 89-018.1 89-018.1 89-018.1 89-018.1 89-018.1	Fig. 8.3.1.4-11 Fig. 8.3.1.4-11 Fig. 8.3.1.4-11 Fig. 8.3.1.4-11 Fig. 8.3.1.4-11 Fig. 8.3.1.4-11

.

.

 $\sim$ 

.
## Table 5-2

## SURFACE BASED INVESTIGATIONS PLAN - ACTIVITY LOCATIONS

## Approximate Locations of Proposed Activities

ACTIVITY	ACTIVITY	LOCATION		SEIP	
IDENTIFICATION	NORTHING	EASTING	SOURCE OF LOCATION	Map Number	COMMENTS
USW SD-8	761,415	564,010	St. SCP Study 8.3.1.4.3.1	89-018.1	Fig. 8.3.1.4–11
UE-25 SD#9	761,160	564,625	St. SCP Study 8.3.1.4.3.1	89-018.1	Fig. 8.3.1.4-11
USW SD-10	760,681	563,610	St. SCP Study 8.3.1.4.3.1	89-018.1	Fig. 8.3.1.4-11
USW SD-11	760,670	564,132	St. SCP Study 8.3.1.4.3.1	89-018.1	Fig. 8.3.1.4-11
USW SD-12	760,030	564,260	st. SOP Study 8.3.1.4.3.1	89-018.1	Fig. 8.3.1.4–11
			MLITI-FURFOSE BOREHOLES		
USW MEEH-1	766,100	563,700	St. SOP Study 8.3.1.2.2.4	89-018.1	Fig. 8.3.1.4-11
USW MEHH-2	766,168	564,035	st. SOP Study 8.3.1.2.2.4	89-018.1	Fig. 8.3.1.4–11
			SOLITARIO CANNON HORIZONIAL BORES	<u>TE</u>	
usw sh-1	TED (NW of	the CRDB)	St. SOP Study 8.3.1.2.2.3	89-018.1	Fig. 8.3.1.2-14
			VERIICAL SEISMIC PROFILE HOLE		
UE-25 VSP-1	760,600	564,775	St. SCP Study 8.3.1.3.1.4	89-018.1	Fig. 8.3.1.3-11
	NATURA	L INFILIPAT	ION MONITORING HOLES (UNSATURATED	ZONE NEUTRON	HILES)*
USW UZ-N11	760,000	556,400	Artificial Infilt. Surv Plan	89-016.1	Locations are tentative based on
USW UZ-N15	760,150	556,600	Artificial Infilt. Study Plan	89-016.1	preliminary definitions of
UE-25 UZN#16	765,500	565,300	Artificial Infilt. Study Plan	89-016.1	hydrogeologic surficial units.
USW UZ-N17	759,350	556,250	Artificial Infilt. Study Plan	89-016.1	Coordinates are from Table 3 of
USW UZ-N27	770,450	562,300	Artificial Infilt. Study Plan	89-016.1	the preliminary draft of the Study
USW UZ-NB1	757,550	560,450	Artificial Infilt. Study Plan	89-016.1	Plan.
USW UZ-NB2	757,200	559,990	Artificial Infilt. Sudy Plan	89-016.1	
USW UZ-NB3	751,400	559,300	Artificial Infilt. Study Plan	89-016.1	
usw uz-NB4	750,150	559,600	Artificial Infilt. Study Plan	89-016.1	
USW UZ-NB5	750,350	559,850	Artificial Infilt. Study Plan	89-016.1	
USW UZ-NB6	765,700	557 <b>,</b> 675	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N37	765,450	557,600	Artificial Infilt. Study Plan	89-016.1	

### SURFACE BASED INVESTIGATIONS PLAN - ACTIVITY LOCATIONS

## Approximate Locations of Proposed Activities

ACTIVITY IDENTIFICATION	ACTIVITY NORTHING	LOCATION EASIING	SURCE OF LOCATION	SBIP MAP NUMBER	COMENIS
USW UZ-N38	765,500	557,950	Artificial Infilt. Study Plan	89-016.1	······································
USW UZ-NB9	765,750	557,950	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N53	766,450	560,110	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N54	760,550	564,250	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N55	757,500	561,600	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N57	754,950	560,500	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N58	754,800	560,650	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N59	755,120	560,400	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N61	755,550	560,150	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N62	755,350	560,300	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N63	755,550	560,450	Artificial Infilt. Study Plan	89-016.1	
USW UZ-N64	767,000	559,300	Artificial Infilt. Study Plan	89-016.1	·

\* These holes will also be used to monitor artificial infiltration as part of proposed ponding studies described in SCP Activity 8.3.1.2.2.1.3.

#### RAINFALL SIMULATION SIUDY STIES

LFRS-1	751,400	559,300	Artificial Infilt. Study Plan	89-017.1	Locations are tentative,
LPRS-2	761,353	559,048	Artificial Infilt. Study Plan	89-017.1	based on preliminary
LPRS-3	757,200	559,990	Artificial Infilt. Study Plan	89-017.1	definitions of
LPRS-4	760,434	561,881	Artificial Infilt. Study Plan	89-017.1	hydrogeologic surficial
LPRS-5	760,860	562,321	Artificial Infilt. Study Plan	89-017.1	units. (SCP SD Activity
LFRS-6	765,500	565,300	Artificial Infilt. Study Plan	89-017.1	8.3.1.2.2.1.1). Coordinates
LERS-7	755,550	560,150	Artificial Infilt. Study Plan	89-017.1	are from Table 3 of
LPRS-8	770,450	562,300	Artificial Infilt. Study Plan	89-017.1	preliminary draft of the Study
LPRS-9	765,500	557 <b>,</b> 950	Artificial Infilt. Study Plan	89-017.1	Plan. Ten shallow neutron
LPRS-10	765,750	557,950	Artificial Infilt. Study Plan	89-017.1	moisture meter access holes
LARS-11	763,091	565,320	Artificial Infilt. Study Plan	89-017.1	will be drilled per site.
LFRS-12	762,048	565,233	Artificial Infilt. Study Plan	89-017.1	-
LARS-13	762,613	565,173	Artificial Infilt. Surly Plan	89-017.1	
LERS-14	760,150	556,600	Artificial Infilt. Study Plan	89-017.1	

 $\sim$ 

Table 5-2

### SURFACE BASED INVESTIGATIONS PLAN - ACTIVITY LOCATIONS

## Approximate Locations of Proposed Activities

ACITVITY	ACTIVITY	LOCATION		SBIP	
IDENTIFICATION	NORTHING	EASTING	SURCE OF LOCATION	MAP NUMBER	COMMENIS
<u> </u>					
SPRS-1	751,400	559,300	Artificial Infilt. Study Plan	89-017.1	Locations are tentative,
SPRS-2	761,026	558,406	Artificial Infilt. Study Plan	89-017.1	based on preliminary
SERS-3	759,446	558,403	Artificial Infilt. Surly Plan	89-017.1	definitions of
SPRS-4	761,353	559,048	Artificial Infilt. Sudy Plan	89-017.1	hydrogeologic-surficial
SERS-5	757,200	559 <b>,</b> 990	Artificial Infilt. Study Plan	89-017.1	units. Coordinates
SERS-6	765,700	557 <b>,</b> 675	Artificial Infilt. Study Plan	89-017.1	are from Table 3 of preliminary
SERS-7	760,434	561,881	Artificial Infilt. Surdy Plan	89-017.1	draft of the Study Plan.
SPRS-8	760,860	562,321	Artificial Infilt. Sudy Plan	89-017.1	Four shallow holes per site.
SIRS-9	765,500	565,300	Artificial Infilt. Study Plan	89-017.1	
SPRS-10	762,613	565,173	Artificial Infilt. Study Plan	89-017.1	
SFRS-11	760,550	564,250	Artificial Infilt. Study Plan	89-017.1	
SPRS-12	763,973	564,545	Artificial Infilt. Study Plan	89-017.1	
SPRS-13	766,400	560,100	Artificial Infilt. Study Plan	89-017.1	
SPRS-14	765,729	562 <b>,</b> 859	Artificial Infilt. Study Plan	89-017.1	
SPRS-15	755,550	· 560 <b>,15</b> 0	Artificial Infilt. Study Plan	89-017.1	
SFRS-16	770,450	562,300	Artificial Infilt. Study Plan	89-017.1	
SPRS-17	760,150	556 <b>,6</b> 00	Artificial Infilt. Study Plan	89-017.1	
SFRS-18	760,000	556,400	Artificial Infilt. Study Plan	89-017.1	
SPRS-19	765,500	557 <b>,</b> 950	Artificial Infilt. Sudy Plan	89-017.1	
SPRS-20	750,350	556,250	Artificial Infilt. Study Plan	89-017.1	
SPRS-21	755,120	560,400	Artificial Infilt. Study Plan	89-017.1	
SFRS-22	763,091	565,320	Artificial Infilt. Study Plan	89-017.1	
SFRS-23	762,048	565,233	Artificial Infilt. Study Plan	89-017.1	
			FORTMULE WASH RECHARGE BOREHOLE	<u>s</u> *	
UE-25 FM#1	766,450	581,695	St. SOP Study 8.3.1.2.1.3	89-019.1	Coordinates estimated from
ue-25 fm#2	756,065	579 <b>,</b> 975	St. SOP Study 8.3.1.2.1.3	89-019.1	location descriptions in the
UE-25 FM#3	710,445	572,380	st. SCP Study 8.3.1.2.1.3	89-019.1	st sop.

\* The locations of an additional 10 shallow (<50 feet) neutron access holes were not specified in the St SCP.

Table 5-2

## SURFACE BASED INVESTIGATIONS PLAN - ACTIVITY LOCATIONS

# Approximate Locations of Proposed Activities

ACITVITY	ACTIVITY	LOCATION			SBIP	
IDENIIFICATION	NORTHING	EASTING	SURCE OF LOOM	TION	Map Number	COMMENIS
		·	WATER TAE	LE BOREHOLES		•
USW WI-8 USW WI-9 UE-25 WI¥19 UE-25 WI¥20 USW WI-21 USW WI-22 USW WI-23	762,283 769,477 747,978 728,303 760,086 778,858 771,275	557,049 557,642 589,973 565,143 550,328 528,373 560,220	Han Survey Dep Han Survey Dep Han Survey Dep Han Survey Dep Han Survey Dep Han Survey Dep St., SOP Study (	t. Report t. Report t. Report t. Report t. Report t. Report 8.3.1.2.1.3	89-019.1 89-019.1 89-019.1 89-019.1 89-019.1 89-019.1 89-019.1	Layout Survey Layout Survey Layout Survey Layout Survey Layout Survey Layout Survey Coordinates estimated from
USW WI-24	776,622	565,449	St. SOP Study	B.3.1.2.1.3	89-019.1	description in SOP.
			SATURATED ZONE I	MOROLOGIC BOREHO	Œ	
usw H-7	763,298	557,074	st. SOP Study	8.3.1.4.3.1	89-018.1	Fig. 8.3.1.4-11
			SUIHERN TRACER	COMPLEX BOREHOLE	s	
SIC-1 SIC-2 SIC-3 SIC-4	SE of Repos SE of Repos SE of Repos SE of Repos	sitory Block sitory Block sitory Block sitory Block	St. SCP Study ( St. SCP Study ( St. SCP Study ( St. SCP Study (	8.3.1.2.3.1 8.3.1.2.3.1 8.3.1.2.3.1 8.3.1.2.3.1 8.3.1.2.3.1	89-021.1 89-021.1 89-021.1 89-021.1	Location on map is arbitrary based on description in SCP
			GELOGI	C COREHCLES		
USW G-5 USW G-6 UE-25 G#7 UE-25 G#8	781,930 778,722 724,586 THD	563,008 548,922 566,090	St. SCP Study ( St. SCP Study ( St. SCP Study ( St. SCP Study (	8.3.1.4.2.1 8.3.1.4.2.1 8.3.1.4.2.1 8.3.1.3.2.1	89-022.1 89-022.1 89-022.1 Not Shown	Fig. 8.3.1.4-4 Fig. 8.3.1.4-4 Fig. 8.3.1.4-4 Vicinity of UE-25 FM#2

 $\sim$ 

Table 5-2

Table 5-2		SURFACE E	ASED INVESTIGATIONS PLAN - ACTIV	TTY LOCATION	5
		Арр	oximate Locations of Proposed Ac	tivities	
ACTIVITY IDENTIFICATION	ACTIVIT NORTHENG	Y LOCATION EASTING	SURCE OF LOCATION	SBIP MAP NUMBER	COMENIS
		<u></u>	VOLCANISM BOREHOLES		•
USW V-1 USW V-2 USW V-3 USW V-4	729,600 683,450 Approx 8 J Approx 8 J	518,000 572,900 an SW of V-2 an SW of V-2	St. SOP Study 8.3.1.8.5.1 St. SOP Study 8.3.1.8.5.1 St. SOP Study 8.3.1.8.5.1 St. SOP Study 8.3.1.8.5.1	89-014.1 89-014.1 89-014.1 89-014.1	Fig. 8.3.1.8-9 Fig. 8.3.1.8-9 Location of V-3 and V-4 on map is arbitrary.
			CALCTIE-SILICA COREHOLES		
UE-25 FH#1a UE-25 FH#1b	766,000 766,000	569,300 569,300	Sum of Pro NVSI Drill, Draft Sum of Pro NVSI Drill, Draft	89-022.1 89-022.1	Consists of 5 shallow holes Slant hole, if needed.
		R	FOSITORY SURFACE FACILITY CORP.	IFS	•
ue-25 re#6 ue-25 re#12	Near Exile Near Exile	e Hill e Hill	St. SOP Study 8.3.1.14.2.1 St. SOP Study 8.s.1.14.2.1	89-022.1 89-022.1	Location on map for these holes is arbitrary.
			EXPLORATORY SHAFTS		
ES-1 ES-2	766,255 766,405	563,630 563,890	HEN Survey Dept. Report HEN Survey Dept. Report	89-023.1 89-023.1	Layout Survey Layout Survey
	SPU	OW SEISMIC R	FLECTION SURVEYS (EAST & WEST S	RVEY LINE EN	DFOINIS)
W9 E9	780,118 782,000	560,003 566,000	St. SCP Fig. 8.3.1.4-8 St. SCP Fig. 8.3.1.4-8	89-012.1	Endpoint coordinates estimated from lines
WL El	762,000 752,226	562,000 577,625	St. SP Fig. 8.3.1.4-8 St. SP Fig. 8.3.1.4-8	89-012.1	shown in SOP figure.
W2 E2	722,977 733,294	553,000 579,634	St. SOP Fig. 8.3.1.4-8 St. SOP Fig. 8.3.1.4-8	89-012.1	
w3a E3a	761,187 767,000	562,797 567,000	St. SOP Fig. 8.3.1.4-8 St. SOP Fig. 8.3.1.4-8	89-012.1	
мЗb	767,000	567,000	St. SOP Fig. 8.3.1.4-8	89-012.1	

.

### SURFACE BASED INVESTIGATIONS FLAN - ACTIVITY LOCATIONS

## Approximate Locations of Proposed Activities

ACTIVITY IDENTIFICATION	ACITVITY NORIHING	LOCATION EASTING	SOURCE OF LOCATION	SBIP MAP NUMBER	COMMENTS
E3b	777,000	571,000	St. SOP Fig. 8.3.1.4-8		
W4	/43,550	533,358	St. SD Fig. 8.3.1.4-8	89-012.1	
E4	753,613	550,877	St. SCP Fig. 8.3.1.4-8	~ ~ ~ ~	
WD FF	769 <b>,</b> 000	551,000	St. SP Fig. 8.3.1.4-8	89-012.1	
ED IVE	776,000	5/2,000	St. St.P Hg. 8.3.1.4-8	00 010 1	
Woa	/30,201	5/1,44/	St. SUP Fig. $8.3.1.4-8$	89-012.1	
LOA	767,000	5/8,000	St. St. P Hg. $8.3.1.4-8$	00 010 1	
MOD TS-	770,000	5/8,000	St. St. Fig. $8.3.1.4-8$	89-012.1	
EOU 1477	779,000	562,000	St. St. P P19. $6.3.1.4-6$	00 010 1	
W/ 57	754,000	550,000	St. SuP Fig. $6.3.1.4-6$	89-012.I	
E/ M0	753,000	502,000	St. St. Fig. $0.3.1.4-0$	90,012,1	•
NO F3	796,000	559,204	St. St. Fig. $0.3.1.4-0$	89-012.1	
EO	100,000	505,000	Sc. SCP 119. 0.3.1.4-0		
		DEEP 1	REFRACTION & REFLECTION (Test li	ne) SURVEYS	
Four deep seismic m planned. Coordinat	efraction prof es are not app	iles are licable.	st. sop study 8.3.1.17.4.3	89-015.1	Fig. 8.3.1.17–12
One deep reflection planned.	evaluation li	neis.	st. SOP Study 8.3.1.17.4.3	89-015 <b>.</b> 1	Fig. 8.3.1.17–12
			TRENCHES		
MV-la	Midway Val	ley	st. SOP Study 8.3.1.17.4.2	89-012.1	Midway Valley trenches to be
MV-1b	Micway Val	ley	St. SOP Study 8.3.1.17.4.2		located in the vicinity of the
MV-1c	Micway Val	ley	St. SOP Study 8.3.1.17.4.2		conceptual repository surface
MV-1d	Micway Val	ley	St. SOP Study 8.3.1.17.4.2		facilities. Location on Proposed
MV-le	Midway Val	ley	st. SOP Study 8.3.1.17.4.2		Activity Map is general location
MV-1f	Micway Val	ley	st. SCP Study 8.3.1.17.4.2		of Midway Valley trenches.
MV-lg	Midway Val	ley	st. SOP Study 8.3.1.17.4.2		Coordinates of individual trenches
MV-1h	Midway Val	ley	St. SCP Study 8.3.1.17.4.2		TED after field recornaissance
MV-2a	Midway Val	ley	St. SOP Study 8.3.1.17.4.2		and field mapping.

÷

Table 5-2

•

#### $\smile$

Table 5-2

## SURFACE BASED INVESTIGATIONS PLAN - ACTIVITY LOCATIONS

.

.

.

## Approximate Locations of Proposed Activities

ACTI	VIIY FICATION	ACTIVIT: NORIHING	LOOATION EASTING	SOURCE OF LOCATION	Seip Map Number	COMENIS
MV-2b MV-2c		Midway Val Midway Val	lley lley	St. SCP Study 8.3.1.17.4.2 St. SCP Study 8.3.1.17.4.2		
MV-2d		Midway Val	lley	st. SOP Study 8.3.1.17.4.2		
VM-1 VM-2 VM-3 VM-4 VM-5 VM-6 VM-7 VM-8				St. SCP Study 8.3.1.17.4.6 St. SCP Study 8.3.1.17.4.6	Not Shown	Yucca Mt. (YM) trenches will be located along suspected and known Quaternary faults w/in the site area, including the Paintbrush Canyon, Bow Ridge, Windy Wash, Chost Dance, and Solitario Canyon fault zones.
BM-1 BM-2	SE 1/4, NV 1/4 SE 1/4, NV 1/4	Sec 24 T.1 Sec 24 T.1	l3s r.47.5e l3s r.47.5e	st. SOP Study 8.3.1.17.4.3 st. SOP Study 8.3.1.17.4.2	89-012.1 89-012.1	Bare Mountain (BM) fault trenches
RV-1 RV-2		THD THD		St. SOP Study 8.3.1.17.4.4 St. SOP Study 8.3.1.17.4.4	Not Shown	Rock Valley (RV) fault system trenches
SR-1 SR-1		THED THED		St. SCP Study 8.3.1.17.4.4 St. SCP Study 8.3.1.17.4.4	Not Shown	Stagecoach Road (SR) fault system trenches
HI #2		Vicinity o	f Exile Hill	SCP SD Study 8.3.1.5.2.1.5	89-012.1	Palechydrology (Hi) trench
IW #1a IW #1b IW #1c IW #1d IW #2a	through IW #2j			LANL Ltr. NNL-1989-0355 LANL Ltr. NNL-1989-0355 LANL Ltr. NNL-1989-0355 LANL Ltr. NNL-1989-0355 LANL Ltr. NNL-1989-0355	89-012.1	Trenches will be located in the vicinity of the Lathrop Wells (IW) cinder cone. IW #2 trenches consist of up to 10 smaller "pits" to be dug in one of two locations. General location of trenches shown on Proposed Activity Map. Location of individual trenches TED.

1

Table 5-2

### SUFFACE BASED INVESTIGATIONS FLAN - ACTIVITY LOCATIONS

## Approximate Locations of Proposed Activities

ACTIVITY	ACTIVITY	LOCATION		SBIP	
IDENIIFICATION	NORTHING	EASTING	SURCE OF LOCATION	MAP NUMBER	COMMENTS

### BEDROCK PAVEMENT STUDY STIES

Number and Location TED.

St. SCP Study 8.3.1.4.2.2 Not Shown

#### SITE PRECIPITATION & STREAMFLOW STATIONS\*

21	767,900	562,250	St. SCP Table 8.3.1.2-4	89-013.1	Wren Wash below UE-25 UZN#98
52	768,890	560,450	St. SOP Table 8.3.1.2-4	89-013.1	Wren Wash above UE-25 UZN#26
ន	769,450	559.830	St. SCP Table 8.3.1.2-4	89-013.1	Wren Wash near top of drainage
S4	772,250	559,700	St. SCP Table 8.3.1.2-4	89-013.1	Drill Hole Wash above USW UZ-1146
\$5	766,350	565,240	St. SOP Table 8.3.1.2-4	89-013.1	Drill Hole Wash below UE-25 UZN#18
<b>S</b> 6	766,300	562,500	St. SCP Table 8.3.1.2-4	89-013.1	Coyote Wash north fork
\$7	765,650	562,700	St. SCP Table 8.3.1.2-4	89-013.1	Coyote Wash south fork
58	766,150	559,675	St. SCP Table 8.3.1.2-4	89-013.1	Coyote W. So. fk. below crest of YM
S9	768,550	566,800	St. SOP Table 8.3.1.2-4	89-013.1	Pagany Wash below UE-25 UZN#12
S10	770,050	564,650	St. SOP Table 8.3.1.2-4	89-013.1	Pagany Wash above UE-25 UZN#10
S11	763,910	564,125	St. SOP Table 8.3.1.2-4	89-013.1	Split Wash 500ft. above UZN#19
S12	762,275	563,150	St. SOP Table 8.3.1.2-4	89-013.1	H-4 Canyon 1,000ft. above H-4
S13	760,850	563,000	St. SCP Table 8.3.1.2-4	89-013.1	WI-2 Canyon just below UZ-7
S14	760,950	559,010	St. SOP Table 8.3.1.2-4	89-013.1	WI-2 Canyon north fork
S15	758,700	559,600	St. SOP Table 8.3.1.2-4	89-013.1	Ghost Dance Wash north fork
S16	757,480	560,375	St. SOP Table 8.3.1.2-4	89-013.1	Ghost Dance Wash s.cen. Fk lower pt
S17	755,050	560,500	St. SOP Table 8.3.1.2-4	89-013.1	Abandon Wash below G. D. fault trch
S18	750,300	559,350	St. SOP Table 8.3.1.2-4	89-013.1	Drainage south of UZ-13
519	754,525	556,875	St. SCP Table 8.3.1.2-4	89-013.1	Solitario Canyon near USW UZ-N35
S20	755,300	554,225	St. SOP Table 8.3.1.2-4	89-013.1	Solitario Canyon Canyon mouth
S21	762,750	556,190	St. SOP Table 8.3.1.2-4	89-013.1	Solitario Canyon mid-part
<b>S</b> 22	768,780	557,725	St. SOP Table 8.3.1.2-4	89-013.1	Solitario Canyon upper part
\$23	757,675	556,000	St. SOP Table 8.3.1.2-4	89-013.1	Solitario Canyon unnamed tributary
524	765,800	557 <b>,</b> 775	St. SOP Table 8.3.1.2-4	89-013.1	Solitario Canyon unnamed tributary
					_

## Table 5-2

#### SUFFACE BASED INVESTIGATIONS PLAN - ACTIVITY LOCATIONS

#### Approximate Locations of Proposed Activities

ACTIVITY IDENIIFICATION	ACTIVITY NORTHING	LOCATION EASTING	SURCE OF LOCATION	SBIP MAP NUMBER	COMPNIS
P1	772,100	558,670	St. SOP Table 8.3.1.2-4	89-013.1	Yucca Crest north end
P2	763,920	559,300	St. SOP Table 8.3.1.2-4	89-013.1	Yucca Crest top of Split Wash
P3	756,540	558,450	St. SOP Table 8.3.1.2-4	89-013.1	Yucca Crest near USW H-3
P4	765,780	558,480	St. SOP Table 8.3.1.2-4	89-013.1	Yucca Crest near USW G-3

S = Both precipitation and streamflow gages are planned for these sites. P = These sites will consist only of precipitation gages.

\* Up to 10 meteorological monitoring sites may be established to augment data collected at existing Meteorological Monitoring Towers for unsaturated zone investigations. The exact number and location TED.

Map Number	Map Identification Number	Map Title (Surface-based activity represented)
1	YMP-89-011.1	Existing Activities - Overview Map
2	YMP-89-012.1	Proposed Activities - Overview Map
3	YMP-89-013.1	Site Meteorological & Precipitation/Streamflow Monitoring Network
4	YMP-89-014.1	Regional Investigation Boreholes and Precipitation/Streamflow Monitoring Sites
5	YMP-89-015.1	Proposed Regional Survey Lines
6	YMP-89-016.1	Natural Infiltration Monitoring Holes (Unsaturated Zone Neutron Holes), and Tentative Artificial Infiltration Monitoring (Ponding) Study Locations
7	YMP-89-017.1	Proposed Artificial Infiltration - Rainfall Simulation Study Sites
8	YMP-89-018.1	Unsaturated Zone and Systematic Drilling Program Boreholes
9	YMP-89-019.1	Water Table and Fortymile Wash Recharge Investigation Boreholes
10	YMP-89-020.1	Site Potentiometric-level Monitoring Network
11	YMP-89-021.1	Locations of Boreholes to be used for the Solitario Canyon Fault Hydraulic Conductivity Investigation and Saturated Zone Pump Tests
12	YMP-89-022.1	Proposed Coreholes, including the Geologic, Volcanism, Calcite-Silica, and Repository Surface Facility Holes
13	YMP-89-023.1	Proposed Exploratory Shafts and Support Facilities

## SURFACE-BASED INVESTIGATIONS PLAN MAP INDEX



## YUCCA MOUNTAIN PROJECT

# SURFACE BASED

EXISTING ACTIVITIES MAP



## LEGEND

<ul> <li>UNSATURATED ZONE NEUTRON HOLES AND OTHER MISC. SHALLOW UNSATURATED ZONE HOLES (&lt;100 FT. DEEP)</li> <li>UNSATURATED ZONE BOREHOLES</li> <li>COREHOLES (GEOLOGIC, VOLCANIC, EXPLORATORY, AND REPOSITORY SURFACE FACILITY</li> <li>WATER TABLE AND SATURATED ZONE BOREHOLES, AND POTENTIAL WATER SUPPLY WELLS</li> <li>SEISMIC SHOTHOLES</li> <li>TRENCHES, PITS AND BEDROCK PAVEMENTS</li> <li>METEDROLOGICAL AND STREAMFLOW</li> </ul>				
$\sim$	MEDIUM DUTY ROADS			
N	LIGHT DUTY ROADS			
$\sim$	UNIMPROVED ROADS			
N	TRAILS			
N	RAILROADS			
$\sim$	POWERLINES			
0	CONCEPTUAL PERIMETER DRIFT BOUNDARY			
	SOURCES :			
15 M ELEVATION CONTOURS - USGS 1:100,000 MAP 1956 1:24,000 USGS TOPOGRAPHIC MAPS 1876 1:24,000 USGS ORTHOPHOTO MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAP 7/1986 AND 8/1987 1:24,000 UNCONTROLLED AERIAL PHOTOGRAPHY GRID TICKS BASED ON NEVADA STATE COORDINATE SYSTEM, CENTRAL 20NE MAP COMPILED IN DECEMBER 1988				
	N E V A D A	N Att		

BEGEG YMP-89-011.1

C-01



YUCCA MOUNTAIN I	PROJECT
------------------	---------

# SURFACE-BASED

#### PROPOSED ACTIVITY LOCATIONS



# LEGEND

•	UNSATURATED ZONE NEUTRON HOLES AND ARTIFICIAL RAINFALL SIMULATION
	SITES (<100 FT. DEEP)
6	UNSATURATED ZONE, SYSTEMATIC DRILLING, AND MULTI-PURPOSE BOREHOLES
۵	COREHOLES (GEOLOGIC, VOLCANIC, CALCITE- Silica, and repository surface facility
•	WATER TABLE, SATURATED ZONE,
-	AND RECHARGE BUREHOLES
н	EXPLORATORY SHAFTS
×	METEOROLOGICAL AND STREAMFLOW
	MONITORING SITES
$\sim$	MEDI'UM DUTY ROADS
$\sim$	LIGHT DUTY ROADS
$\sim$	UNIMPROVED ROADS
~/	TRAILS
~	RAILROADS
N	POWERLINES
~	SHALLOW SEISMIC REFLECTION LINES
0	CONCEPTUAL PERIMETER DRIFT BOUNDARY
	SOURCES:
51	W ELEVATION CONTOURS - USES 1-100 000 MAP
11	DIG 1:34,000 USGS TOPOGRAPHIC MAPS
19	76 1:34,000 USGS ORTHOPHOTO MAPS
7	183 1:100,000 USGS TOPOGRAPHIC MAP 1986 AND 9/1987 1:24,000 UNCONTROLLED AERIAL PHOTOGRAPHY
GI	TICKS BASED ON NEVADA STATE
M	AP COMPILED IN DECEMBER 1988
	NEVADA
	Ň

JE

C-02

SEGLE YMP-89-012.1







![](_page_195_Figure_0.jpeg)

# YUCCA MOUNTAIN PROJECT SURFACE-BASED INVESTIGATIONS PLAN NATURAL INFILTRATION MONITORING, AND PROPOSED ARTIFICIAL INFILTRATION PONDING STUDIES MILES KILOMETERS LEGEND . NATURAL INFILTRATION MONITORING (UNSATURATED ZONE NEUTRON ACCESS HOLE) - EXISTING NATURAL INFILTRATION MONITORING (UNSATURATED ZONE NEUTRON ACCESS HOLE) - PROPOSED PROPOSED ARTIFICIAL INFILTRATION PONDING STUDY AT EXISTING UNSATURATED ZONE NEUTRON ACCESS HOLE LOCATION PROPOSED ARTIFICIAL INFILTRATION PONDING STUDY AT PROPOSED UNSATURATED ZONE NEUTRON ACCESS HOLE LOCATION N LIGHT DUTY ROADS V UNIMPROVED ROADS CONCEPTUAL PERIMETER DRIFT BOUNDARY SOURCES: SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1956 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS ORTHOPHOTO MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAPS 7/1986 AND 9/1987 1:24,000 UNCONTROLLED AERIAL PHOTOGRAPHY GRID TICKS BASED ON NEVADA STATE COORDINATE SYSTEM, CENTRAL ZONE MAP COMPILED IN DECEMBER 1988 ----N ------06 SEGLE YMP-89-016.1

![](_page_196_Figure_0.jpeg)

![](_page_197_Figure_0.jpeg)

![](_page_197_Figure_1.jpeg)

![](_page_198_Figure_0.jpeg)

## YUCCA MOUNTAIN PROJECT

# SURFACE-BASED

WATER TABLE BOREHOLES AND FORTYMILE WASH RECHARGE INVESTIGATION BOREHOLES

![](_page_198_Figure_4.jpeg)

# LEGEND

<ul> <li>WATER TABLE HOLES - PROPOSED</li> <li>FORTYMILE WASH RECHARGE INVESTIGATION BOREHOLES - PROPOSED</li> <li>UNSATURATED ZONE PROTOTYPE HOLES PROPOSED</li> <li>NATURAL INFILTRATION MONITORING (UNSATURATED ZONE PROTOTYPE HOLES PROPOSED</li> <li>NATURAL INFILTRATION MONITORING (UNSATURATED ZONE PROTOTYPE HOLES HOLES) - EXISTING</li> <li>POTENTIAL WATER SUPPLY WELLS EXISTING</li> <li>MEDIUM DUTY ROADS</li> <li>LIGHT DUTY ROADS</li> <li>UNIMPROVED ROADS</li> <li>TRAILS</li> <li>RAILROADS</li> <li>POWERLINES</li> <li>CONCEPTUAL PERIMETER DRIFT BOUNDARY SOURCES:</li> <li>SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1953 1:100,000 USGS TOPOGRAPHIC MAPS 1953 1:100,000 USGS TOPOGRAPHIC MAPS 1953 1:100,000 USGS TOPOGRAPHIC MAP</li> <li>SOURCES:</li> <li>ME UNCONTROLED AERIAL PHOTOGRAPHY GRID TICKS BASED OW NEVADA STATE COORDINATE SYSTEM, CENTRAL ZONE MAP COMPILED IN DECEMBER 1985</li> <li>N E V A D A</li> <li>ME V A D A</li> <li>MAP COMPILED IN DECEMBER 1985</li> </ul>	۰	WATER TABLE HOLES - EXISTING
<ul> <li>PORTURILE WASH RECHARGE INVESTIGATION BOREHOLES - PROPOSED</li> <li>UNSATURATED ZONE PROTOTYPE HOLES PROPOSED</li> <li>NATURAL INFILTRATION MONITORING (UNSATURATED ZONE NEUTRON ACCESS HOLES) - EXISTING</li> <li>POTENTIAL WATER SUPPLY WELLS EXISTING</li> <li>MEDIUM DUTY ROADS</li> <li>LIGHT DUTY ROADS</li> <li>UNIMPROVED ROADS</li> <li>TRAILS</li> <li>RAILROADS</li> <li>POWERLINES</li> <li>CONCEPTUAL PERIMETER DRIFT BOUNDARY SOURCES:</li> <li>SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS TOPOGRAPHIC MAPS 1975 1:24,000 USGS TOPOGRAPHIC MAPS</li> <li>ISBN 1:00,000 USGS TOPOGRAPHIC MAPS</li> </ul>	•	WATER TABLE HOLES - PROPOSED
<ul> <li>UNSATURATED ZONE PROTOTYPE HOLES PROPOSED</li> <li>NATURAL INFILTRATION MONITORING (UNSATURATED ZONE NEUTRON ACCESS HOLES) - EXISTING</li> <li>POTENTIAL WATER SUPPLY WELLS EXISTING</li> <li>MEDIUM DUTY ROADS</li> <li>LIGHT DUTY ROADS</li> <li>UNIMPROVED ROADS</li> <li>TRAILS</li> <li>RAILROADS</li> <li>POWERLINES</li> <li>CONCEPTUAL PERIMETER DRIFT BOUNDARY</li> <li>SOURCES:</li> <li>SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS TOPOGRAPHIC MAPS 1978 1:24,000 USGS TOPOGRAPHIC MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAPS 1984 1:24,000 USGS TOPOGRAPHIC MAPS 1985 1:24,000 USGS TOPOGRAPHIC MAPS 1984 1:24,000 USGS TOPOGRAPHIC MAPS 1985 1:24,000 USGS TOPOGRAPHIC MAPS 1984 1:24,000 USGS TOPOGRAPHIC MAPS 1985 1:24,000 USGS TOPOGRAPHIC MAPS 1984 1:24,000 USGS TOPOGRAPHIC MAPS 1985 1:20,000 USGS TOPOGRAPHIC MAPS 1984 1:20,000 USGS TOPOGRAPHIC MAPS 1985 1:20,000 USGS TOPOGRAPHIC MAPS 1986 1:20,000 USGS TOPOGRAPHIC MAPS 1986 1:20,000 USGS TOPOGRAPHIC MAPS 1987 1:20,000 USGS TOPOGRAPHIC MAPS 1988 1:20,000 USGS TOPOGRAPHIC MAPS 1988 1:200 USGS TOPOGRAPHIC MAPS 1988 1:200 USGS TOPOGRAPHIC MAPS 1980 TICKS BASED OUT TO TOURS - USGS 100000 USGS TOPOGRAPHIC MAPS 1980 TICKS ADSCOOLED ADSCOOLED ADS 100000 TICKS ADSCOOLED ADSCOOLED ADS 1000000 TICKS ADSCOOLED ADSCOOLED</li></ul>	•	INVESTIGATION BOREHOLES - PROPOSED
<ul> <li>NATURAL INFILTRATION MONITORING (UNSATURATED ZONE NEUTRON ACCESS HOLES) - EXISTING</li> <li>POTENTIAL WATER SUPPLY WELLS EXISTING</li> <li>MEDIUM DUTY ROADS</li> <li>LIGHT DUTY ROADS</li> <li>LIGHT DUTY ROADS</li> <li>TRAILS</li> <li>RAILROADS</li> <li>POWERLINES</li> <li>CONCEPTUAL PERIMETER DRIFT BOUNDARY</li> <li>SOURCES:</li> <li>SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS TOPOGRAPHIC MAPS 1975 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS TOPOGRAPHIC MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS TOPOGRAPHIC MAPS 1:24,000 USGS 1:00,000 USGS TOPOGRAPHIC MAPS 1:24,000 USGS 1:00,000 USGS TOPOGRAPHIC MAPS 1:24,000 USGS 1:00,000 USGS 1:200 USGS 1:00,000 USGS 1:200 USGS 1:200</li></ul>	۵	UNSATURATED ZONE PROTOTYPE HOLES Proposed
<ul> <li>POTENTIAL WATER SUPPLY WELLS EXISTING</li> <li>MEDIUM DUTY ROADS</li> <li>LIGHT DUTY ROADS</li> <li>UNIMPROVED ROADS</li> <li>TRAILS</li> <li>RAILROADS</li> <li>POWERLINES</li> <li>CONCEPTUAL PERIMETER DRIFT BOUNDARY</li> <li>SOURCES:</li> <li>SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS TOPOGRAPHIC MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAPS</li> <li>ISBN 1:24,000 USGS TOPOGRAPHIC MAPS</li> <li>ISBN 1:100,000 USGS TOPOGRAPHIC MAPS</li> <li></li></ul>	•	NATURAL INFILTRATION MONITORING (UNSATURATED ZONE NEUTRON ACCESS HOLES) - EXISTING
MEDIUM DUTY ROADS LIGHT DUTY ROADS IGHT DUTY IGHT DUTY IGHT DUTY IGHT DUTY IGHT DUTY IGHT DUTY IGH	.•	POTENTIAL WATER SUPPLY WELLS EXISTING
CONCEPTUAL PERIMETER DRIFT BOUNDARY SOURCES: SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS TOPOGRAPHIC MAP 1958 1:00,000 USGS TOPOGRAPHIC MAP 7/1986 AND 9/1987 1:24,000 UNCONTROLLED AREITAL PHOTOGRAPHIC MAP 7/1986 MAD 9/1987 1:24,000 UNCONTROLLED IN DECEMBER 1988 <b>N</b> POWERLING ENTRAL ZONE MAP COMPILED IN DECEMBER 1988 <b>SECONTROLLED</b> AREITAL PHOTOGRAPHIC MAP <b>SECONTROLLED</b> AREITAL PHOTOGRAP	N	MEDIUM DUTY ROADS
VUNIMPROVED ROADS TRAILS RAILROADS POWERLINES CONCEPTUAL PERIMETER DRIFT BOUNDARY SOURCES: SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS TOPOGRAPHIC MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAP 7/1985 AND 9/1987 1:24,000 UNCONTROLED AERIAL PHOTOGRAPHY GRID TICKS BASED ON NEVADA STATE COORDINATE SYSTEM, CENTRAL 20NE MAP COMPILED IN DECEMBER 1988 N E V A D A SECOND VMP-89-019.1 (-09)	~	LIGHT DUTY ROADS
TRAILS RAILROADS POWERLINES CONCEPTUAL PERIMETER DRIFT BOUNDARY SOURCES: SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1958 1:24,000 USGS ORTHOPHOTO MAPS 1958 1:100,000 USGS TOPOGRAPHIC MAP 7/1958 AND 0/1057 1:24,000 UNCONTROLLED AREIAL PHOTOGRAPHY GRID TICKS BASED ON NEVADA STATE MAP COMPILED IN DECEMBER 1:008 <b>N E VAD A S CONDUCTION CONTOURS - USGS</b> 1000 USGS TOPOGRAPHY 500 JIAN (CHITRAL ZONE MAP COMPILED IN DECEMBER 1:008 <b>S CONDINATE SYSTEM </b>	$\sim$	UNIMPROVED ROADS
RAILROADS POWERLINES CONCEPTUAL PERIMETER DRIFT BOUNDARY SOURCES: SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS ORTHOPHOTO MAPS 1976 1:24,000 USGS ORTHOPHOTO MAPS 1978 1:24,000 USGS ORTHOPHOTO MAPS 1983 1:100,000 USGS TOPOGRAPHIC UNCONTROLLED AERIAL PHOTOGRAPHY GRID TICKS BASED ON NEVADA STATE MAP COMPILED IN DECEMBER 1988 NE VADA	14	TRAILS
CONCEPTUAL PERIMETER DRIFT BOUNDARY SOURCES: SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1956 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS ORTOPOGRAPHIC MAPS 1978 1:24,000 USGS TOPOGRAPHIC MAPS 1978 1:24,000 USGS TOPOGRAPHY GRID TICKS BASED ON NEVADA STATE MAP COMPILED IN DECEMBER 1988 NE VADA	~	RAILROADS
SOURCES: SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1953 1:100,000 USGS TOPOGRAPHIC MAP 7/1985 AND 9/1987 1:24,000 UNCONTOLLED ARTIAL PHOTOGRAPHY GRID TICKS BASED ON NEVADA STATE COORDINATE SYSTEM, CENTRAL 20NE MAP COMPILED IN DECEMBER 1988	0	CONCEPTUAL PERIMETER DRIFT BOUNDARY
SO M ELEVATION CONTOURS - USGS 1:100,000 MAP 1955 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS ORTHOPHOTO MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAP 7/1985 AND 0/1987 1:24,000 UNCONTROLLED AREIAL PHOTOGRAPHY GRID TICKS BASED ON NEVADA STATE COORDINATE SYSTEM, CENTRAL ZONE MAP COMPILED IN DECEMBER 1988 N E V A D A 		SOURCES:
NEVADA Contraction N Contraction N Contracti	1956 1976 1983 7/198 UNCON GRID COORD MAP	1:24,000 USGS TOPOGRAPHIC MAPS 1:24,000 USGS ORTHOPHOTO MAPS 1:100,000 USGS TOPOGRAPHIC MAP 6 AND 9/1987 1:24,000 Trolled Arrial Photography Ticks Based on Nevada State IMATE SYSTEM, CENTRAL ZOME OMPILED IN DECEMBER 1988
AEGEG YMP-89-019.1 (-09		N E V A D A

![](_page_199_Figure_0.jpeg)

![](_page_200_Figure_0.jpeg)

![](_page_200_Figure_1.jpeg)

![](_page_201_Figure_0.jpeg)

## YUCCA MOUNTAIN PROJECT

# SURFACE-BASED

PROPOSED COREHOLES, INCLUDING GEOLOGIC VOLCANISM, CALCITE-SICLICA, AND REPOSITORY SURFACE FACILITY HOLES

![](_page_201_Picture_4.jpeg)

## LEGEND

GEOLOGIC COREHOLE - PROPOSED
 VOLCANISM COREHOLE - PROPOSED
 CALCITE-SILICA COREHOLE - PROPOSED
 REPOSITORY SURFACE FACILITY
 COREHOLE - PROPOSED

MEDIUM DUTY ROADS
LIGHT DUTY ROADS
UNIMPROVED ROADS
TRAILS
RAILROADS
POWERLINES

CONCEPTUAL PERIMETER DRIFT BOUNDARY

#### SOURCES:

50 M ELEVATION CONTOURS - USGS 1:100,000 MAP 1956 1:24,000 USGS TOPOGRAPHIC MAPS 1976 1:24,000 USGS ORTHOPHOTO MAPS 1983 1:100,000 USGS TOPOGRAPHIC MAP 7/1986 AND 9/1987 1:24,000 UNCONTROLLED AERIAL PHOTOGRAPHY GRID TICKS BASED ON NEVADA STATE COORDINATE SYSTEM, CENTRAL ZONE MAP COMPILED IN DECEMBER 1988

![](_page_201_Picture_11.jpeg)

![](_page_202_Figure_0.jpeg)