

Rec'd ~~with letter~~ w/o Hr.
dtd. 9/7/94

"QA N/A"
WBS 1.2.6.1.1

ESF TEST COORDINATION OFFICE SAMPLE PLAN

CONSOLIDATED SAMPLING IN THE RAMPS, MTL
DRIFTS, AND ALCOVES

Sample Plan ID: SP 92-20C, Rev. 09/07/94
(Administrative Only)

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WM-11 0/1
102-8
WM-11

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

This sample plan (SP) implements and operates within the constraints and requirements established in Test Planning Package (TPP) 92-10, TPP 92-11, TPP 92-12, TPP T-93-2, TPP 92-13, TPP 92-14, TPP T-93-8, Job Package (JP) 92-20A, JP 92-20B, JP 92-20C, JP 92-20D, and JP 92-20E, and supplements instructions provided in Work Plan (WP) 92-20B and 92-20C. This SP will be revised as necessary by the Test Coordination Office (TCO) and changes communicated to all affected participants for concurrence.

This SP is administrative only and has been prepared to facilitate work to be conducted in the field. This plan has been reviewed (1) to assure that it is fully consistent with the controlled requirements basis represented in the TPPs and JPs listed above and (2) to assure that it contains no quality-affecting requirements. The SP does provide a planned method to meet requirements in the TPPs and JPs listed above. Any anticipated deviations from this plan should be brought to the immediate attention of the TCO. The TCO will assure that planned deviations are evaluated to determine if they are consistent with the requirements basis. If so, the TCO will give direction to proceed with the work and document the deviation. If the deviation is not consistent with the requirements basis, work will not proceed until inconsistencies are resolved.

The SP is descriptive in nature and is not a work instruction. No quality-affecting work will be done to this plan. All quality-affecting requirements, instructions, controls, and records are contained in the TPPs and JPs listed above; these documents must be used as the basis for implementation of the quality-affecting portions of this work. All quality-affecting work will be conducted and documented in accordance with approved procedures or scientific notebooks or appropriate provisions of the affected organization's quality program.

The following activities will be performed in support of this test:

1. PROJECT SCHEDULING AND COORDINATION

1.1 The U.S. Department of Energy (DOE) Field Test Coordinator (FTC), the TCO, the Civilian Radioactive Waste Management System Management & Operating (CRWMS M&O) Contractor Construction Manager (CM), REECo Construction Department Manager (CDM), U.S. Geological Survey/U.S. Bureau of Reclamation geologic mappers, and the Principal Investigators (PIs) for whom samples will be collected (or their representatives) will mutually review and accept the SP and any subsequent TCO revision and will mutually agree upon a tentative schedule, implementation methods, and representative or approval authority for the work described below.

Concurrence:

PI	<u>Daniel J. Soeder</u>	(USGS)	Date	<u>8/30/94</u>
PI	<u>Clark Antonson</u>	(SNL)	Date	<u>9/7/94</u>
PI	<u>Albert White</u>	(LANL)	Date	<u>9/7/94</u>
PI	<u>[Signature]</u>	(LLNL)	Date	<u>9/7/94</u>
USGS/USBR	<u>D.J. Soeder FOR S. BEASON</u>		Date	<u>8/30/94</u>
TCO	<u>Orlando D. Torsell</u>		Date	<u>8/30/94</u>
CM	<u>R. C. McDonald</u>		Date	<u>8/30/94</u>
CDM	<u>M. Howard</u>		Date	<u>8/30/94</u>
FTC	<u>W. H. Birdley</u>		Date	<u>9/27/94</u>

9/8/94

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

2. SAMPLING INSTRUCTIONS

- 2.1 Sample selection criteria, based on instructions provided by PIs and consistent with the controlled requirements basis represented in the TPPs and JPs, are shown in Attachment 1. USGS/USBR geologic mappers may use an administrative database (which provides a copy of selection criteria) to assist in selecting samples and documenting sample collection. If the database is used, and after a sample has been collected, a sample collection form must be generated, along with a transfer of custody form, either using the database or forms from YAP-SII.4Q. The hard copy sample collection form should be checked for accuracy and completeness and, when signed, will be a quality-affecting record that must be submitted to document sample traceability.

3. EQUIPMENT & MATERIALS

Refer to WP 92-20C.

4. SAFETY

Refer to WP 92-20C.

5. TRAINING

- 5.1 All sample collectors will be trained to YAP-SII.4Q. Participants will be responsible for training to any additional participant procedures that are used in sample collection.

6. REPORTING & RECORDS

Refer to WP 92-20C.

7. VERIFICATION

Refer to WP 92-20C.

8. SAMPLE PLAN COMPLETION

Refer to WP 92-20C.

9. CONCURRENCE OF THE COMPLETION OF THE SAMPLE PLAN

Refer to WP 92-20C.

Sample Plan ID: SP 92-20C
ESF Test Coordination Office
(Administrative Only)

WBS 12.6.1.1
"QA N/A"

CONSOLIDATED SAMPLING IN THE RAMPS, MTL DRIFTS, AND ALCOVES

**ATTACHMENT
SAMPLE SELECTION CRITERIA DETAILS
42 Pages**

**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.15.1.1 Laboratory Thermal Properties
SCP Activity : 8.3.1.15.1.1.1 Density and Porosity Characterization
PI Name : Chocas
Phone : (505) 848-0806

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of the range of encountered thermomechanical properties. Emphasis on TSw units.

Special Features : None

Constraints : No sampling around spills of chemicals. May sample behind TBM.

Sp. Instructions : Sample in proximity to mineralogy/petrology or matrix hydrologic properties samples. Describe lithophysae content.

Exp. Dimensions : 11 x 11 x 16-cm (4.3 x 4.3 x 6.3-in)

Exp. # Samples : 188

Storage Reqs. : Protect from mechanical damage during shipping.

Packaging : Protect samples from damage or breakage.

Orientation : Describe. Mark "up" arrow on sample.

Sample Information

Comments: _____

Type of Sample : _____ No. Samples Collected : _____
Smpl. Description : _____

Loc. Identifier : _____ Gen. Location : _____ Loc. Detail : _____
Location Desc. : _____

Station : _____ Offset : _____
Survey Coord. : _____
Field Notebook #: _____ JCI Photo No. : _____



**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.15.1.1 **Laboratory Thermal Properties**
SCP Activity : 8.3.1.15.1.1.2 **Volumetric Heat Capacity Characterization**
PI Name : Chocas
Phone : (505) 848-0806

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of the range of encountered thermomechanical properties. Emphasis on TCw and TS_{w2} units.

Special Features : None

Constraints : No sampling around spills of chemicals. May sample behind TBM .

Sp. Instructions : Sample in proximity to mineralogy/petrology or matrix hydrologic properties samples. Describe lithophysae content.

Exp. Dimensions : 16 x 32-cm (6.3 x 12.6-in) **Exp. # Samples :** 40

Storage Reqs. : Protect from mechanical damage during shipment.

Packaging : Protect samples from damage or breakage.

Orientation : Describe. Mark "up" arrow on sample.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector
Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.15.1.2 Laboratory Thermal Expansion Testing
SCP Activity : 8.3.1.15.1.2.1 Thermal Expansion Characterization
PI Name : Chocas
Phone : (505) 848-0806

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of the range of encountered thermomechanical properties. Especially in lithophysae-rich zones.

Special Features : None

Constraints : No sampling around spills of chemicals or water. May sample behind TBM.

Sp. Instructions : Describe orientation in relation to bedding. Describe lithophysae content. Sample 1 per 30-m (100-ft) in TSw1 and TSw2.

Exp. Dimensions : 25 x 25 x 25-cm (10 x 10 x 10-in)

Exp. # Samples : 84

Storage Reqs. : Protect from mechanical damage.

Packaging : Protect samples from damage or breakage during shipping.

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ No. Samples Collected : _____
Smpl. Description : _____

Loc. Identifier : _____ Gen. Location : _____ Loc. Detail : _____
Location Desc. : _____

Station : _____ Offset : _____
Survey Coord. : _____
Field Notebook #: _____ JCI Photo No. : _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.15.1.3 **Laboratory determination of mechanical properties of intact rock**
SCP Activity : 8.3.1.15.1.3.1 **Compressive Mechanical Properties of Intact Rock at Baseline Experiment Conditions**
PI Name : Price
Phone : (505) 848-0350

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of the range of encountered thermomechanical properties. Emphasis on TSw unit.

Special Features : None

Constraints : No sampling around spills of chemicals or water. May sample behind TBM.

Sp. Instructions : Collect samples without visible fractures. Avoid fracturing during collection.

Exp. Dimensions : 9 x 9 x 12-cm (3.5 x 3.5 x 4.7-in)

Exp. # Samples : 112

Storage Reqs. : Protect from mechanical damage during shipping.

Packaging : Protect samples from damage or breakage.

Orientation : Describe. Mark "up" arrow on sample.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.15.1.4 **Laboratory determination of the mechanical properties of fractures**
SCP Activity : 8.3.1.15.1.4.1 **Mechanical Properties of Fractures at Baseline Experiment Conditions**
PI Name : Price
Phone : (505) 848-0350

Sampling Instructions, Packaging, & Storage

Sample Chars. : Sample with roughly planar single fracture. Representative samples of the range of encountered thermomechanical properties. Emphasis on TSw unit.

Special Features : None

Constraints : No sampling around spills of chemicals or water. May sample behind TBM.

Sp. Instructions : PI may direct initial sample collection in the field. Sample only in welded units.

Exp. Dimensions : 12 x 12 x 12-cm (4.7 x 4.7 x 4.7-in)

Exp. # Samples : 112

Storage Reqs. : Protect from mechanical damage during shipping.

Packaging : Protect samples from damage or breakage.

Orientation : Describe. Mark "up" arrow on sample.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector
Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.15.1.8 In-Situ Design Verification
SCP Activity : 8.3.1.15.1.8.4 Air Quality and Ventilation Experiment
PI Name : Grant
Phone : (702) 295-6867

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative muck samples of all lithologic units for radon experiments.

Special Features : None

Constraints : None

Sp. Instructions : Prefer samples taken from TBM from muck-handling system.

Exp. Dimensions : Fill 208-I (55-gal) container.

Exp. # Samples : 8

Storage Reqs. : Store at SMF. Periodic (weekly) access required by SNL for radon measurements,

Packaging : 208-I (55-gal) containers

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ No. Samples Collected : _____
Smpl. Description : _____

Loc. Identifier : _____ Gen. Location : _____ Loc. Detail : _____
Location Desc. : _____

Station : _____ Offset : _____
Survey Coord. : _____
Field Notebook # : _____ JCI Photo No. : _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector
Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.4.2.4.4.2 Engineered Barrier System Field Tests
SCP Activity : 8.3.1.19.4.2 Repository Horizon Rock-Water Interaction
PI Name : Lin
Phone : (510)422-7162

Sampling Instructions, Packaging, & Storage

Sample Chars. : Samples of any apparently natural (perched) water. Special interest in the lithophysal Topopah Spring tuff at the contact between the Tiva Canyon and Topopah Spring units, the welded Topopah Spring, the Basal Vitrophyre of the Topopah Spring, and the top of the zeolitic Tuff in the Calico Hills unit.

Special Features : Contacts

Constraints : None

Sp. Instructions : Obtain samples after USGS high priority needs for water samples have been met.

Exp. Dimensions : TBD

Exp. # Samples : 5

Storage Reqs. : Clean, dry secure area.

Packaging : Any unused water-tight container.

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q PI Procedure TBD
Study Plan : 8.3.4.2.4.4.2 Engineered Barrier System Field Tests
SCP Activity : 8.3.1.19.4.2 Repository Horizon Rock-Water Interaction
PI Name : Lin
Phone : (510)422-7162

Sampling Instructions, Packaging, & Storage

Sample Chars. : Bulk rock samples for lab testing of rock-water interactions. Special interest in the lithophysal Topopah Spring tuff at the contact between the Tiva Canyon and Topopah Spring units, the welded Topopah Spring, the Basal Vitrophyre of the Topopah Spring, and the top of the zeolitic in the Calico Hills unit.

Special Features : Contacts

Constraints : PI will collect all samples. No sampling around spills of chemicals or water.

Sp. Instructions : Obtain samples away from immediate drift face, if possible. Five samples requested per location.

Exp. Dimensions : 30 x 30 x 30-cm (12 x 12 x 12-in)

Exp. # Samples : TBD

Storage Reqs. : Clean, dry secure area.

Packaging : Clear, tear-resistant plastic bags.

Orientation : "Up" arrow on samples. Orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q PI Procedure TBD
Study Plan : 8.3.4.2.4.5 Engineered Barrier System Field Tests
SCP Activity : 8.3.1.19.5 Man-made Materials
PI Name : Meike
Phone : (510)422-3735

Sampling Instructions, Packaging, & Storage

Sample Chars. : Samples of artificial materials, including concrete, metal, and PVC pipe, to be emplaced by PI and later removed. Emplaced materials will be small and will not hamper construction.

Special Features : None

Constraints : Sterile collection may be required. If so, PI will emplace and collect sample materials.

Sp. Instructions : Sample material will be provided by PI. Locations for sample material will be selected by PI.

Exp. Dimensions : TBD

Exp. # Samples : TBD

Storage Reqs. : Clean, dry secure area. PI will handle if sterile conditions required.

Packaging : Sterile, air-tight, plastic containers to be provided by PI.

Orientation : "Up" arrow on samples. Orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q **PI Procedure TBD**
Study Plan : 8.3.4.2.4.5 **Engineered Barrier System Field Tests**
SCP Activity : 8.3.1.19.5 **Man-made Materials**
PI Name : Meike
Phone : (510)422-3735

Sampling Instructions, Packaging, & Storage

Sample Chars. : Solvent and/or diesel contaminated samples of rock and construction materials.

Special Features : None

Constraints : PI will collect sample if sterile collection required.

Sp. Instructions : May need to resample locations after one to two year interval.

Exp. Dimensions : 3 x 3 x 3-cm (1.25 x 1.25 x 1.25-in)

Exp. # Samples : N/A

Storage Reqs. : Clean, dry secure area. PI will handle if sterile conditions are required.

Packaging : Sterile, air-tight, plastic containers to be provided by PI.

Orientation : "Up" arrow on samples. Orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q PI Procedure TBD
Study Plan : 8.3.4.2.4.5 Engineered Barrier System Field Tests
SCP Activity : 8.3.1.19.5 Man-made Materials
PI Name : Meike
Phone : (510)422-3735

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of shotcrete. Initial shotcrete samples will be taken from test panels. Subsequent (aged) samples will be taken underground.

Special Features : None

Constraints : Sterile collection may be required. If so, PI will collect sample materials.

Sp. Instructions : Collect samples representative of shotcrete applied in ESF. Collect additional samples annually from emplaced panels.

Exp. Dimensions : 7.5-cm (3-in) dia x 15-cm (6-in) long core plugs **Exp. # Samples :** 9

Storage Reqs. : Clean, dry secure area. PI will handle if sterile conditions are required.

Packaging : Sterile, air-tight, plastic containers to be provided by PI.

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q **PI Procedure** TBD
Study Plan : 8.3.4.2.4.5 **Engineered Barrier System Field Tests**
SCP Activity : 8.3.1.19.5 **Man-made Materials**
PI Name : Meike
Phone : (510)422-3735

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of bulk rock every (approximately) 300-m (1000-ft) of tunnel. Provide three adjacent samples at every location. Loose muck from TBM is also adequate.

Special Features : None

Constraints : Sterile collection may be required. If so, PI will collect sample materials.

Sp. Instructions : PI will determine if additional samples are required after laboratory analysis. Additional samples will be collected after construction.

Exp. Dimensions : 4 x 4 x 4-cm (1.6 x 1.6 x 1.6-in)

Exp. # Samples : 9

Storage Reqs. : Clean, dry secure area. PI will handle if sterile conditions are required.

Packaging : Sterile, air-tight plastic containers to be provided by PI.

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____

No. Samples Collected : _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q PI Procedure TBD
Study Plan : 8.3.4.2.4.5 Engineered Barrier System Field Tests
SCP Activity : 8.3.1.19.5 Man-made Materials
PI Name : Meike
Phone : (510)422-3735

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of cement used for pre-cast invert sections. Initial cement samples may be taken from holes drilled in invert to emplace SNL convergence pins. Subsequent (aged) samples from underground.

Special Features : None

Constraints : Sterile collection may be required. If so, PI will collect sample materials.

Sp. Instructions : Collect samples representative of concrete used in invert. Collect additional samples annually from emplaced panels.

Exp. Dimensions : 15-cm (6-in) dia. by 25-cm (10-in) long core plugs (or equivalent) **Exp. # Samples :** 9

Storage Reqs. : Clean, dry, secure area. PI will handle if sterile conditions are required.

Packaging : Sterile, air-tight, plastic containers to be provided by PI.

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.2.2.2 Water Movement Tests, Rev. 0
Water Movement Tests, Rev. 1
SCP Activity : 8.3.1.2.2.2.1 Chloride and Chlorine-36 Measurements of Percolation at Yucca Mountain
PI Name : Fabryka-Martin
Phone : (505) 665-2300

Sampling Instructions, Packaging, & Storage

Sample Chars. : Bulk samples at fault zones. Special interest in the Bow Ridge fault & the Drill Hole Wash structure, the potential repository horizon.

Special Features : Faults

Constraints : None

Sp. Instructions : Additional samples in alcoves adjacent to fault zones. Two samples, w/ addl samples w/in 2 m (6.6-ft) of each side of the fault, if exposed in alcove.

Exp. Dimensions : Samples to weigh approximately 100-kg (220-lb)

Exp. # Samples : 5

Storage Reqs. : Store to protect from moisture and dust.

Packaging : Sealed plastic bags, and containers to protect from moisture and dust.

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____

No. Samples Collected : _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature : _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.2.2.2 Water Movement Tests, Rev. 0
Water Movement Tests, Rev. 1
SCP Activity : 8.3.1.2.2.2.1 Chloride and Chlorine-36 Measurements of Percolation at Yucca Mountain
PI Name : Fabryka-Martin
Phone : (505) 665-2300

Sampling Instructions, Packaging, & Storage

Sample Chars. : Bulk samples at fault zones > 1-meter (3.3-ft) thick. Special interest in the Bow Ridge fault and the Drill Hole Wash structure.

Special Features : Faults

Constraints : None

Sp. Instructions : For fault zones > 1-m (3.3-ft) thick, sample every 2-m (6.6-ft) w/in the fault zone @ approx equal intervals. Minimum 2 samples, w/ addl samples w/in 2-m (6.6-ft) of each side of the fault.

Exp. Dimensions : Samples to weigh approximately 100-kg (220-lb)

Exp. # Samples : 10

Storage Reqs. : Store to protect from moisture and dust.

Packaging : Sealed plastic bags, and containers to protect from moisture and dust.

Orientation : None

Sample Information

Comments : _____

Type of Sample : _____ No. Samples Collected : _____
Smpl. Description : _____

Loc. Identifier : _____ Gen. Location : _____ Loc. Detail : _____
Location Desc. : _____

Station : _____ Offset : _____
Survey Coord. : _____
Field Notebook #: _____ JCI Photo No. : _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q **NWM-USGS-GP-27**
Study Plan : 8.3.1.2.2.3 **Characterization of the Percolation in the Unsaturated-Zone Surface-Based Study**
SCP Activity : 8.3.1.2.2.3.1 **Matrix Hydrologic Properties Testing**
PI Name : Flint
Phone : (702) 295-5805

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of all lithologic units. Will not be used for water saturation determination. Samples will be collected by PI. Due to water usage during sample collection, samples will be collected after all other samples in proximity have been collected.

Special Features : Contacts

Constraints : No sampling around spills of chemicals or water. Drilling to be done in rib only (no ladders).

Sp. Instructions : Samples adjacent to geologic contacts and from bedded intervals are of particular importance. Drilling to be done with tagged water following construction.

Exp. Dimensions : TBD

Exp. # Samples : 280

Storage Reqs. : Clean, dry secure area

Packaging : Clear, tear resistant plastic bags

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____

No. Samples Collected : _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q HP 260 (USGS)
Study Plan : 8.3.1.2.2.4 Characterization of YM Percolation in the Unsaturated zone - ESF Investigation
SCP Activity : 8.3.1.2.2.4.7 Perched Water Testing in the ESF
PI Name : Chomack
Phone : (303) 236-5180

Sampling Instructions, Packaging, & Storage

Sample Chars. : Initial samples of of any apparently natural (perched) water.

Special Features : None

Constraints : Construction & safety constraints may limit or defer sampling.

Sp. Instructions : Immediately notify TCO of water occurrence. Take temperature and pH w/ USGS equipment per (USGS) HP-260.

Exp. Dimensions : Fill 2 approximately 20-l (5-gal) containers

Exp. # Samples : 5

Storage Reqs. : Refrigerate (or cool) all samples

Packaging : Two, 20 liter (5-gallon) bulk containers, sample-rinsed

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.2.2.4 **Characterization of YM percolation in the Unsaturated zone - ESF Investigation**
SCP Activity : 8.3.1.2.2.4.8 **Hydrochemistry Tests in the ESF**
PI Name : Chomack
Phone : (303) 236-5180

Sampling Instructions, Packaging, & Storage

Sample Chars. : Samples of any apparently natural (perched) water.

Special Features : None

Constraints : None

Sp. Instructions : Collect samples after USGS perched water test needs are met. See USGS HP-260 for further details.
PI will collect samples.

Exp. Dimensions : TBD

Exp. # Samples : 5

Storage Reqs. : See (USGS) HP-260

Packaging : Containers specified in (USGS) HP-260

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.2.2.4 **Characterization of YM Percolation in the Unsaturated zone - ESF Investigation**
SCP Activity : 8.3.1.2.2.4.8 **Hydrochemistry Tests in the ESF**
PI Name : Chomack
Phone : (303) 236-5180

Sampling Instructions, Packaging, & Storage

Sample Chars. : Samples of any construction-related tracers, fluids, or materials.

Special Features : None

Constraints : None

Sp. Instructions : Samples of TFM to be provided for PI on request of TCO.

Exp. Dimensions : TBD

Exp. # Samples : 10

Storage Reqs. : Storage instructions will be provided by PI when samples are requested.

Packaging : Standard containers to be provided by constructor; other containers from PI.

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.1 Mineralogy, Petrology, and Chemistry Transport Pathways
SCP Activity : 8.3.1.3.2.1.1 Petrologic Stratigraphy of the Topopah Spring Member
PI Name : Vaniman
Phone : (505) 667-1863

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative samples of phenocryst and rock matrix textures to determine petrologic variability within Topopah Spring member only.

Special Features : None

Constraints : No sampling around spills of chemicals or water.

Sp. Instructions : None

Exp. Dimensions : 1 x 1 x 1-cm (0.4 x 0.4 x 0.4-in)

Exp. # Samples : 28

Storage Reqs. : Clean, dry secure area.

Packaging : Clear, tear-resistant plastic bags.

Orientation : "Up" arrow on samples. Orientation in sample description

Sample Information

Comments: _____

Type of Sample : _____

No. Samples Collected : _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information :

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.1 Mineralogy, Petrology, and Chemistry Transport Pathways
SCP Activity : 8.3.1.3.2.1.2 Mineral Distribution Between Host Rock and Accessible Environment
PI Name : Vaniman
Phone : (505) 667-1863

Sampling Instructions, Packaging, & Storage

Sample Chars. : Clay segregations, especially in proximity to the Bow Ridge fault, the nonwelded tuffs between the Tiva Canyon and Topopah Spring welded unit, the Drill Hole Wash structure, and the potential repository horizon.

Special Features : None

Constraints : No sampling around spills of chemicals or water. Total samples for SCP activity - 200.

Sp. Instructions : Special interest in fibrous clays (sepiolite or polygorskite). May occur as patchy aggregates.

Exp. Dimensions : 1 x 1 x 1-cm (0.4 x 0.4 x 0.4-in)

Exp. # Samples : 56

Storage Reqs. : Clean, dry secure area.

Packaging : Clear, tear-resistant plastic bags.

Orientation : "Up" arrow on samples. Orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.1 Mineralogy, Petrology, and Chemistry Transport Pathways
SCP Activity : 8.3.1.3.2.1.2 Mineral Distribution Between Host Rock and Accessible Environment

PI Name : Vaniman
Phone : (505) 667-1863

Sampling Instructions, Packaging, & Storage

Sample Chars. : Macroscopic fossil root casts, especially in proximity to the Bow Ridge fault, the nonwelded tuffs between the Tiva Canyon and Topopah Spring welded unit, the Drill Hole Wash structure, and the potential repository horizon.

Special Features : None

Constraints : No sampling around spills of chemicals or water. Total samples for SCP activity - 200.

Sp. Instructions : None

Exp. Dimensions : 1 x 1 x 1-cm (0.4 x 0.4 x 0.4-in)

Exp. # Samples : 56

Storage Reqs. : Clean, dry secure area.

Packaging : Clear, tear-resistant plastic bags.

Orientation : "Up" arrow on samples. Orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____

No. Samples Collected : _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.1 Mineralogy, Petrology, and Chemistry Transport Pathways
SCP Activity : 8.3.1.3.2.1.2 Mineral Distribution Between Host Rock and Accessible Environment
PI Name : Vaniman
Phone : (505) 667-1863

Sampling Instructions, Packaging, & Storage

Sample Chars. : Coarse calcite crystals (> 1-mm[0.04-in]), especially in proximity to the Bow Ridge fault, the nonwelded tuffs between the Tiva Canyon and Topopah Spring welded unit, the Drill Hole Wash structure, and the potential repository horizon.

Special Features : None

Constraints : No sampling around spills of chemicals or water. Total samples for SCP activity - 200.

Sp. Instructions : None

Exp. Dimensions : 1 x 1 x 1-cm (0.4 x 0.4 x 0.4-in)

Exp. # Samples : 28

Storage Reqs. : Clean, dry secure area.

Packaging : Clear, tear-resistant plastic bags.

Orientation : "Up" arrow on samples. Orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ No. Samples Collected : _____
Smpl. Description : _____

Loc. Identifier : _____ Gen. Location : _____ Loc. Detail : _____
Location Desc. : _____

Station : _____ Offset : _____
Survey Coord. : _____
Field Notebook #: _____ JCI Photo No. : _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.1 Mineralogy, Petrology, and Chemistry Transport Pathways
SCP Activity : 8.3.1.3.2.1.2 Mineral Distribution Between Host Rock and Accessible Environment
PI Name : Vaniman
Phone : (505) 667-1863

Sampling Instructions, Packaging, & Storage

Sample Chars. : *Opal, especially in proximity to the Bow Ridge fault, the nonwelded tuffs between the Tiva Canyon and Topopah Spring welded unit, the Drill Hole Wash structure, and the potential repository horizon.*

Special Features : None

Constraints : No sampling around spills of chemicals or water. Total samples for SCP activity - 200.

Sp. Instructions : None

Exp. Dimensions : 1 x 1 x 1-cm (0.4 x 0.4 x 0.4-in)

Exp. # Samples : 56

Storage Reqs. : Clean, dry secure area.

Packaging : Clear, tear-resistant plastic bags.

Orientation : "Up" arrow on samples. Orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.1 Mineralogy, Petrology, and Chemistry Transport Pathways
SCP Activity : 8.3.1.3.2.1.3 Fracture Mineralogy Studies
PI Name : Carlos
Phone : (505) 667-6879

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative fracture fillings & coatings from all fault zones, fractures containing moisture, and fractures representative of that 60-meters (200-ft) of tunnel or alcove. Special interest in calcite, manganese, and clays.

Special Features : Fractures

Constraints : No sampling around spills of chemicals or water.

Sp. Instructions : Describe fracture orientation, fracture aperture (to the nearest mm), and offset of any additional roughness. Cores (up to 30 cm [11.8-in]) may be requested in fault zones.

Exp. Dimensions : Sample size sufficient to provide 10-15-sq.cm (1.5-2.4-sq.in) fracture area **Exp. # Samples :** 56

Storage Reqs. : Clean, dry secure area.

Packaging : Clear, tear-resistant plastic bags with bubble wrap between fractured surfaces.

Orientation : "Up" arrow on samples.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : - _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector
Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.2 History of Mineralogic and Geochemical Alteration of YM
SCP Activity : 8.3.1.3.2.2.1 History of Mineralogy and Geochemical Alteration of YM
PI Name : Levy
Phone : (505) 667-9504

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative alteration features, especially in relation to representative variations in welding, lithophysae, breccia, (especially associated with hydrologic alteration), and other lithologic variations.

Special Features : None

Constraints : No sampling around spills of chemicals or water

Sp. Instructions : Record use of hydraulic splitter if used to obtain samples

Exp. Dimensions : 10 x 10 x 10-cm (4 x 4 x 4-in)

Exp. # Samples : 56

Storage Reqs. : Clean, dry secure area

Packaging : Tear-resistant, clear plastic bags

Orientation : "Up" arrow on samples. Describe orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.2 History of Mineralogic and Geochemical Alteration of YM
SCP Activity : 8.3.1.3.2.2.1 History of Mineralogy and Geochemical Alteration of YM
PI Name : Levy
Phone : (505) 667-9504

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative alteration features, especially secondary minerals including opal, drusy quartz in lithologic or cooling cracks.

Special Features : None

Constraints : No sampling around spills of chemicals or water

Sp. Instructions : Record use of hydraulic splitter if used to obtain samples

Exp. Dimensions : 10 x 10 x 10-cm (4 x 4 x 4-in)

Exp. # Samples : 56

Storage Reqs. : Clean, dry secure area

Packaging : Tear-resistant, clear plastic bags

Orientation : "Up" arrow on samples. Describe orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.2 History of Mineralogic and Geochemical Alteration of YM
SCP Activity : 8.3.1.3.2.2.1 History of Mineralogy and Geochemical Alteration of YM
PI Name : Levy
Phone : (505) 667-9504

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative alteration features, especially breccia associated with hydrologic alterations, and matrix cements.

Special Features : None

Constraints : No sampling around spills of chemicals or water

Sp. Instructions : Record use of hydraulic splitter if used to obtain samples

Exp. Dimensions : 10 x 10 x 10-cm (4 x 4 x 4-in)

Exp. # Samples : 56

Storage Reqs. : Clean, dry secure area

Packaging : Tear-resistant, clear plastic bags

Orientation : "Up" arrow on samples. Describe orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.2 History of Mineralogic and Geochemical Alteration of YM
SCP Activity : 8.3.1.3.2.2.1 History of Mineralogy and Geochemical Alteration of YM
PI Name : Levy
Phone : (505) 667-9504

Sampling Instructions, Packaging, & Storage

Sample Chars. : Natural gels (semi-liquids). Gels are a semi-solid colloid-water system with the macroscopic appearance of a jelly or paste. Gels may contain colloidal smectite, amorphous materials (or a combination of both), with or without entrained detrius.

Special Features : Fractures

Constraints : No sampling around spills of chemicals or water

Sp. Instructions : Sample all occurrences, especially in fracture or fault zones, in and around lithologic contacts, and in proximity to existing or former perched water zones. Natural gels are expected to be uncommon.

Exp. Dimensions : Collect approximately 100-ml (3.4-oz)

Exp. # Samples : 11

Storage Reqs. : Clean, dry secure area

Packaging : Polyethylene bottles. Refrigerate or keep cool during storage and transport.

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____

No. Samples Collected : _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector
Signature: _____
Coll. Procedures : YAP-SII.4Q LANL-YMP-LS2-405 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.4.2 Biological Sorption and Transport
SCP Activity : 8.3.1.3.4.2 Biological Sorption and Transport
PI Name : Hersman
Phone : (505) 667-2779

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative sample (and duplicate for archiving) from each hydrogeologic unit, especially in proximity to the Bow Ridge fault, the nonwelded tuffs between the Tiva Canyon and Topopah Spring welded unit, the Drill Hole Wash structure, and the potential repository horizon.

Special Features : None

Constraints : No sampling around boreholes drilled w/ air or water. No alcove samples.

Sp. Instructions : PI will provide on-site direction for all sampling and will transport samples. Sample as soon as possible behind the TBM.

Exp. Dimensions : Collect 500-ml (17-oz)

Exp. # Samples : 20

Storage Reqs. : PI will provide storage/shipping containers. Archival samples must be stored @ -70 C (-94 F).

Packaging : Provided by PI: sterile mason jars or sterile polycarbonate jars sealed in Protecure.

Orientation : Describe orientation; do not mark on sample.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected** : _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location** : _____ **Loc. Detail** : _____
Location Desc. : _____

Station : _____ **Offset** : _____
Survey Coord. : _____
Field Notebook # : _____ **JCI Photo No.** : _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q **USGS GP-32**
Study Plan : 8.3.1.4.2.2 **Characterization of Structural Features in the Site Area**
SCP Activity : 8.3.1.4.2.2.4 **Underground Geologic Mapping**
PI Name : Beason/Spengler
Phone : (303) 236-4167 / 2514

Sampling Instructions, Packaging, & Storage

Sample Chars. : Hand samples representative of geologic units.

Special Features : None

Constraints : No sampling around spills of chemicals or water

Sp. Instructions : None

Exp. Dimensions : 10 x 10 x 10-cm (4 x 4 x 4-in)

Exp. # Samples : 50

Storage Reqs. : Clean, dry secure area

Packaging : Clear, tear resistant plastic bags

Orientation : None

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector
Signature: _____
Coll. Procedures : YAP-SII.4Q NWM-USGS-GP-27
Study Plan : 8.3.1.5.2.1 Characterization of Yucca Mountain Quaternary Regional Hydrology
SCP Activity : 8.3.1.5.2.1.5 Studies of Calcite and opaline Silica Vein Deposits
PI Name : Whelan
Phone : (303) 236-7671

Sampling Instructions, Packaging, & Storage

Sample Chars. : Calcite (especially cryptocrystalline) and opaline silica in faults and fractures with adjacent wall rock. Collect samples of mineralization representative of each calcite/opaline occurrence and any calcite/opalite silica occurrences unique in any respect.

Special Features : Faults

Constraints : No sampling around spills of chemicals or water. Total samples for SCP activity - 200

Sp. Instructions : None

Exp. Dimensions : 15 x 15 x 15-cm (6 x 6 x 6-in)

Exp. # Samples : 20

Storage Reqs. : Clean, dry secure area.

Packaging : Clear, tear-resistant plastic bags.

Orientation : "Up" arrow on samples. Orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ Sample Bar Code : _____
Collector Name : _____ Collector Org. : _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q NWM-USGS-GP-27
Study Plan : 8.3.1.9.2.1 Natural Resource Assessment of Yucca Mountain, Nye County, Nevada
SCP Activity : 8.3.1.9.2.1.1 Geochemical Assessment of Yucca Mountain in Relation to the Potential for Mineralization
PI Name : Peterman
Phone : (303) 236-7883

Sampling Instructions, Packaging, & Storage

Sample Chars. : Samples assoc w/fractures, faults, brecciated zones or epigenetic veins of: metallic minerals (pyrite, sulfides, arsenides, sulfosalts, native metals); nonmetallic minerals (fluorite, barite, sparry calcite); staining (iron, copper, manganese) and/or bleaching ; argillic or sericitic alteration (with or w/o chloritization); silicification; any veining; anomalous features not commonly observed in the volcanic units.

Special Features : Fractures

Constraints : No sampling around spills of chemicals or water.

Sp. Instructions : Mappers to collect representative samples. PI will select, collect, and transport additional samples as required.

Exp. Dimensions : 8 x 8 x 8-cm (3.1 x 3.1 x 3.1-in)

Exp. # Samples : 5

Storage Reqs. : Clean, dry, secure area.

Packaging : Clear, tear resistant plastic bags.

Orientation : "Up" arrow on samples. Describe orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____ **No. Samples Collected :** _____
Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____
Location Desc. : _____

Station : _____ **Offset :** _____
Survey Coord. : _____
Field Notebook #: _____ **JCI Photo No. :** _____

Place Barcode Label Here

**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q **NWM-USGS-GP-27**
Study Plan : 8.3.1.9.2.1 **Natural Resource Assessment of Yucca Mountain, Nye County, Nevada**
SCP Activity : 8.3.1.9.2.1.1 **Geochemical Assessment of Yucca Mountain In Relation to the Potential for Mineralization**
PI Name : Peterman
Phone : (303) 236-7883

Sampling Instructions, Packaging, & Storage

Sample Chars. : Any samples with evidence of natural hydrocarbons.

Special Features : None

Constraints : No sampling around spills of chemicals or water.

Sp. Instructions : Mappers to collect representative sample of occurrence of natural hydrocarbons. PI will select, collect, and transport additional samples.

Exp. Dimensions : 8 x 8 x 8-cm (3.1 x 3.1 x 3.1-in)

Exp. # Samples : 5

Storage Reqs. : Clean, dry, secure area.

Packaging : Clean, tear resistant plastic bags.

Orientation : "Up" arrow on samples. Describe orientation in sample description.

Sample Information

Comments: _____

Type of Sample : _____

No. Samples Collected : _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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**YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT**

General Information

Date Collected : _____ **Sample Bar Code :** _____
Collector Name : _____ **Collector Org. :** _____
Phone : _____
Collector Signature: _____
Coll. Procedures : YAP-SII.4Q
Study Plan : 8.3.1.2.2.7 **Unsaturated zone hydrochemistry**
SCP Activity : 8.3.1.2.2.7.2 **Aqueous Phase Chemical Investigations**
PI Name : Yang
Phone : (303)236-5178

Sampling Instructions, Packaging, & Storage

Sample Chars. : Clean calcite (especially laminated) with no detrital material.

Special Features : None

Constraints : No sampling around spills of chemicals or water.

Sp. Instructions : Collect samples for this activity after sample requirements for activity 8.3.1.5.2.1 have been satisfied.

Exp. Dimensions : Samples to weigh approximately 10-g (0.4-oz)

Exp. # Samples : 28

Storage Reqs. : Clean, dry, secure area

Packaging : Wrap calcite in aluminum foil and place in clear, tear resistant bags.

Orientation : "Up" arrow on samples

Sample Information

Comments: _____

Type of Sample : _____

No. Samples Collected : _____

Smpl. Description : _____

Loc. Identifier : _____ **Gen. Location :** _____ **Loc. Detail :** _____

Location Desc. : _____

Station : _____ **Offset :** _____

Survey Coord. : _____

Field Notebook #: _____ **JCI Photo No. :** _____

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