



Department of Energy

Washington, DC 20585

MAR 17 1994

Mr. Joseph J. Holonich, Director
Repository Licensing & Quality Assurance
Project Directorate
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Holonich:

This letter transmits the Office of Civilian Radioactive Waste Management (OCRWM) Yucca Mountain Site Characterization Project Office (YMPO) Monthly Study Plan Status Report for the month of February 1994. This report summarizes review and approval status of Site Characterization Plan study plans for the Yucca Mountain Site Characterization Project. This summary includes the major accomplishments in the process of developing study plans for the month of February 1994, and the current status of all study plans that are currently planned or in review at the YMPO, the Office of Civilian Radioactive Waste Management, and the U.S. Nuclear Regulatory Commission.

If you have any questions, please contact Ms. Sheila Long at 202-586-1447.

Sincerely,

Dwight E. Shelor
Associate Director for
Systems and Compliance
Office of Civilian Radioactive
Waste Management

Enclosure:
Status Report for Study
Plans, February 1994

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cc: w\enclosure
R. Nelson, YMPO
R. Loux, State of Nevada
T. Hickey, Nevada Legislative Commission
D. Bechtel, Las Vegas, NV
Eureka County, NV
Lander County, Battle Mountain, NV
P. Niedzielski-Eichner, Nye County, NV
W. Offutt, Nye County, NV
L. Bradshaw, Nye County, NV
C. Schank, Churchill County, NV
F. Mariani, White Pine County, NV
V. Poe, Mineral County, NV
J. Pitts, Lincoln County, NV
J. Hayes, Esmeralda County, NV
B. Mettam, Inyo County, CA
C. Abrams, NRC

MONTHLY STUDY PLAN STATUS FOR FEBRUARY 1994

1.0 INTRODUCTION

The following report summarizes the status of review and approval of Site Characterization Plan (SCP) study plans for the Yucca Mountain Project. Table 1 provides a summary status of all study plans that are currently planned or in review at the Yucca Mountain Site Characterization Project Office (Project Office), the Office of Civilian Radioactive Waste Management (OCRWM), and the U.S. Nuclear Regulatory Commission (NRC).

Section 2 of this report provides the major accomplishments in the process of developing study plans for the month of February 1994. Section 3 summarizes the status of all study plans in the review process at the Project Office. Section 4 summarizes the status of study plan reviews that have been completed by the NRC and the State of Nevada.

Study Plan Breakdown as of the end of February 1994

	<u>Initial Plans</u>	<u>Major Revisions</u>
Not Submitted to YMPO.....	36	
In Screening Review.....	0	0
In Project Office Review.....	3	2
Awaiting Comment Resolution.....	3	3
In Verification Audit.....	5	1
Awaiting YMPO Approval.....	1	0
Awaiting Submission to the NRC.....	0	0
Awaiting NRC Initial Review.....	7	5
Accepted by the NRC.....	50	6
Totals.....	<u>104</u>	<u>17</u>
Total Submitted to the NRC.....	57	11

2.0 STUDY PLAN HIGHLIGHTS FOR THE MONTH OF FEBRUARY, 1994

2.1 NEW STUDY PLAN SUBMITTALS

One new Study Plan, 8.3.1.17.3.3 Ground Motion from Regional Earthquakes and UNE's, and two major revisions to Study Plans, 8.3.1.8.2.1 R1 Tectonic Effects: Evaluations of Changes in the Natural and Engineered Barrier Systems Resulting from Tectonic Processes and Events, and 8.3.1.17.3.1 R1, Relevant Earthquake Sources, were submitted to YMPO in February.

2.2 REVIEW COMMENTS COMPLETED

One Study Plan, 8.3.1.17.4.1 R1 Historical and Current Seismicity, completed the initial YMPO technical review in February.

2.3 COMMENT RESOLUTION MEETINGS

One comment resolution meetings, for Study Plan 8.3.1.3.4.1/3 Batch Sorption Studies and Development of Sorption Models, was held in February.

2.4 STUDY PLAN REVISIONS

No revisions of Study Plans to resolve reviewer's comments were completed in February.

2.5 COMMENT VERIFICATION

No Study Plans completed verification of comment resolution in February.

2.6 STUDY PLANS APPROVALS

No Study Plans were approved by YMPO in February.

2.7 COMPLETED NRC REVIEWS

One Study Plan technical review, 8.3.1.9.2.1 Natural Resource Assessment of Yucca Mountain, Nye County, Nevada, was completed by the NRC in February.

3.0 CURRENT STATUS OF ALL STUDY PLANS

3.1 STUDY PLANS IN REVIEW

The following study plans have not yet completed the screening and technical reviews by the Project Office.

Identification/Organization	Date Draft Transmitted
8.3.1.5.1.6: Characterization of Future Regional Climates and Environments/SNL	12/29/93
8.3.1.8.2.1 R1: Tectonic Effects/USGS	2/18/94
8.3.1.17.3.1 R1: Relevant Earthquake Sources/USGS	2/18/94
8.3.1.17.3.3: Ground Motion from UNE's/SNL	2/2/94
8.3.4.2.4.2: Hydrologic Properties of the Waste-Package Environment/LLNL	12/20/93

3.2 STUDY PLANS IN REVISION

The following study plans are being revised by the authors in response to comments.

Title/Organization	Comments Transmitted to PI
8.3.1.3.6.1: Dynamic Transport Column Experiments/LANL	6/25/93
8.3.1.15.1.3 R1: Laboratory Determination of the Mechanical Properties of Intact Rock/SNL	9/23/93
8.3.1.15.1.5 R1: Excavation Investigations/SNL	5/10/93
8.3.1.17.4.1 R1: Current & Historic Seismicity/USGS	2/4/94
8.3.1.17.4.12: Tectonic Models and Synthesis/USGS	7/30/93
8.3.4.2.4.4: Engineered Barrier System Field Tests/LLNL	9/10/93

3.3 STUDY PLANS IN VERIFICATION AUDIT

The following study plans are being audited by reviewers to verify that comments have been satisfactorily responded to.

Identification/Organization	Date Draft Transmitted
8.3.1.2.2.4 R2: Characterization of the Yucca Mountain Unsaturated Zone in the ESF/USGS	10/1/93
8.3.1.3.1.1: Groundwater Chemistry Model/LANL	11/8/93
8.3.1.3.4.1/8.3.1.3.4.3: Batch Sorption Studies/ Development of Sorption Models/LANL	10/22/93
8.3.1.5.1.1: Characterization of Modern Regional Climate/USGS	1/13/94
8.3.1.15.1.4: Laboratory Determination of the Mechanical Properties of Fractures/SNL	4/20/93
8.3.1.15.2.2: Characterization of Site Ambient Thermal Conditions/USGS	5/19/93

3.4 BEING PREPARED FOR PROJECT OFFICE APPROVAL

8.3.1.8.5.2: Characterization of Igneous Intrusive Features/USGS	1/28/94
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3.5 APPROVED STUDY PLANS

None

4.0 STUDY PLANS IN REVIEW AT NRC AND THE STATE OF NEVADA

4.1 NRC ACCEPTANCE REVIEW

The following study plans are in Phase 1 review at the NRC.

Identification/Organization	Transmittal Date
8.3.1.2.2.6 R1: Characterization of Gas-Phase Movement in the Unsaturated Zone/USGS	10/7/93
8.3.1.2.2.8 R1: Fluid Flow in Unsaturated, Fractured Rock/USGS	12/29/93
8.3.1.3.5.1/2: Dissolved Species Concentration Limits and Colloid Behavior/LANL	9/17/93
8.3.1.8.1.2: Physical Processes of Magmatism and Effects on the Potential Repository/LANL	10/4/93
8.3.1.12.2.1 R1: Meteorological Data Collection at the Yucca Mountain Site/SAIC	8/16/93
8.3.1.15.1.1 R1: Laboratory Thermal Properties/SNL	9/14/93
8.3.1.15.1.2 R1: Laboratory Thermal Expansion Testing/SNL	9/14/93
8.3.1.15.1.3: Laboratory Determination of the Mechanical Properties of Intact Rock/SNL	06/21/91
8.3.1.15.1.5: Excavation Investigations/SNL	02/09/89
8.3.1.15.2.1.2: Characterization of Site Ambient Stress Conditions/USGS	02/09/89

4.2 STUDY PLANS ACCEPTED BY THE NRC

The following study plans have been accepted by the NRC.

Identification/Organization	Acceptance Date
8.3.1.2.1.1: Characterization of the Meteorology for Regional Hydrology and Meteorological Monitoring/USGS	10/21/91
8.3.1.2.1.2: Characterization of Run-off and Streamflow/USGS	08/14/92
8.3.1.2.1.3: Characterization of the Regional Ground-Water Flow System/USGS	10/4/91
8.3.1.2.1.4: Regional Hydrologic Synthesis and Modeling/USGS	5/6/92
8.3.1.2.2.1: Characterization of Unsaturated Zone Infiltration/USGS	5/31/91
8.3.1.2.2.2 R1: Water Movement Test/LANL	4/8/93
8.3.1.2.2.3: Characterization of Percolation in the Unsaturated Zone--Surface Based Study/USGS	3/26/92
8.3.1.2.2.4 R1: Characterization of the Yucca Mountain Unsaturated Zone/USGS	3/5/93
8.3.1.2.2.5: Diffusion Tests in the ESF/LANL	1/19/93
8.3.1.2.2.6: Characterization of Gaseous-Phase Movement in the Unsaturated Zone/USGS	10/07/91
8.3.1.2.2.7: Hydrochemical Characterization of the Unsaturated Zone/USGS	05/01/92
8.3.1.2.2.7 R1: Hydrochemical Characterization of the Unsaturated Zone/USGS	1/26/94
8.3.1.2.2.8: Fluid Flow in Unsaturated, Fractured Rock/USGS	1/28/93

8.3.1.2.2.9: Site Unsaturated Zone Synthesis & Modeling/USGS	11/8/93
8.3.1.2.3.1.1-6: Characterization of the Site Saturated Ground-Water Flow System/USGS	12/06/91
8.3.1.2.3.1.7: Testing of the C-Hole Site with Reactive Tracers/LANL	12/06/91
8.3.1.2.3.2: Characterization of the Saturated Zone Hydrochemistry/USGS	1/4/93
8.3.1.2.3.3: Site Saturated Zone Hydrologic Synthesis and Modeling/USGS	6/16/93
8.3.1.3.2.1: Mineralogy, Petrology, and Chemistry of Transport Pathways/LANL	03/13/91
8.3.1.3.2.2: History of Mineralogic and Geochemical Alteration of Yucca Mountain/LANL	04/27/92
8.3.1.3.4.2: Biological Sorption and Transport/LANL	3/25/93
8.3.1.3.6.2: Diffusion/LANL	1/19/94
8.3.1.3.7.1: Retardation Sensitivity Analysis/LANL	1/19/93
8.3.1.4.2.1: Characterization of Vertical and Lateral Distribution of Stratigraphic Units in the Site Area/USGS	12/14/92
8.3.1.4.2.2 R2: Characterization of Structural Features within the Site Area/USGS	2/8/93
8.3.1.4.3.1: Systematic Acquisition of Site-Specific Subsurface Information/SNL	1/11/93
8.3.1.5.1.2: Paleoclimate Study: Lake, Playa, and Marsh Deposits/USGS	04/27/92
8.3.1.5.1.3: Climatic Implications of Terrestrial Paleoecology/USGS	09/03/92
8.3.1.5.1.4: Analysis of the Paleoenvironmental History of the Yucca Mountain Site/USGS	12/06/91

8.3.1.5.2.1: Characterization of the Quaternary Regional Hydrology/USGS	06/08/90
8.3.1.5.2.1.1 R2: Characterization of Quaternary Regional Hydrology/USGS	6/24/93
8.3.1.5.2.2: Characterization of Future Regional Hydrology due to Climate Change/USGS	4/5/93
8.3.1.8.1.1: Probability of Magmatic Disruption of the Repository/LANL	10/5/91
8.3.1.8.2.1: Analysis of Waste Package Rupture due to Tectonic Processes and Events/SAIC	11/19/93
8.3.1.8.5.1: Characterization of Volcanic Features/LANL	08/20/90
8.3.1.9.2.1: Natural Resource Assessment of Yucca Mountain, Nye County/USGS	3/16/93
8.3.1.9.2.2: Water Resource Assessment for Yucca Mountain/SAIC	5/4/92
8.3.1.12.2.1: Meteorological Data Collection at the Yucca Mountain Site/SAIC	11/12/91
8.3.1.14.2: Studies to Provide Soil and Rock Properties of Potential Locations of Surface and Subsurface Facilities/USGS	01/24/92
8.3.1.15.1.8: In Situ Design Verification/SNL	4/15/93
8.3.1.16.1.1: Characterization of Flood Potential of the Yucca Mountain Site/USGS	05/08/91
8.3.1.17.3.1: Relevant Earthquake Sources/USGS	5/18/92
8.3.1.17.3.4: Effects of Local Site Geology on Surface and Subsurface Ground Motions/USGS	6/8/92
8.3.1.17.3.5: Ground Motion at the Site from Controlling Seismic Events/USGS	11/2/93

8.3.1.17.4.1: Historical and Current Seismicity/USGS	05/14/91
8.3.1.17.4.2: Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities/SNL	03/16/90
8.3.1.17.4.3: Quaternary Faulting within 100 km of Yucca Mountain, including the Walker Lane/USGS	2/9/93
8.3.1.17.4.4: Quaternary Faulting Proximal to the Site within NE Trending Fault Zones/USGS	5/18/93
8.3.1.17.4.5: Detachment Faults at or Proximal to Yucca Mountain/USGS	2/1/93
8.3.1.17.4.6: Quaternary Faulting Within the Site Area/USGS	10/3/91
8.3.1.17.4.10: Geodetic Leveling/USGS	10/4/91
8.3.4.2.4.3: Mechanical Properties of the Waste Package Environment/LLNL	4/21/93

4.3 COMMENTS ON APPROVED STUDY PLANS

The following approved study plans have been the subject of written comments by the NRC and the State of Nevada. The status of the responses to these comments is given below.

Study Plan	Source & No. of Comments		Status
8.3.1.2.1.1: Characterization of the Meteorology for Regional Hydrology and Meteorological Monitoring	NV	10	Response sent 7/13/92
8.3.1.2.1.2: Regional Surface Water Run-Off and Streamflow	NV	7	Response sent 8/20/91
	NRC	2	Response sent 11/05/92
8.3.1.2.1.3 Regional Groundwater Flow System	NV	55	Response sent 9/22/93
8.3.1.2.1.4: Regional Hydrologic System Synthesis and Modeling	NRC	1	Response sent 7/23/92
	NRC	5	Response sent 8/30/93
	NV	18	Response sent 4/2/93
8.3.1.2.2.5: Diffusion Tests in the Exploratory Studies Facility	NV	12	In Preparation
8.3.1.2.2.6: Characterization of Gas Phase Movement in the Unsaturated Zone	NRC	1	Response sent 7/23/92
	NV	16	Response sent 7/27/92
8.3.1.2.2.7: Hydrochemical Characterization of the Unsaturated Zone	NV	27	Response sent 2/18/93
8.3.1.2.2.8: Fluid Flow in Unsaturated, Fractured Rock	NRC	2	Response sent 5/27/93
8.3.1.2.3.1.1-6: Characterization of the Site Saturated Zone Ground Water Flow System	NRC	2	Response sent 9/14/92
8.3.1.2.3.1.7: Testing of the C-Hole Site with Reactive Tracers	NRC	2	Response sent 9/14/92

Study Plan	Source & No. of Comments		Status
8.3.1.3.2.1: Mineralogy, Petrology and Chemistry Along Transport Pathways	NRC	6	Response sent 10/29/91
	NV	12	Response sent 2/24/93
8.3.1.3.2.2: History of Min and Chem Alt of Yucca Mtn	NV	25	In Preparation
8.3.1.3.6.2: Diffusion	NRC	1	In Preparation
8.3.1.4.2.1: Characterization of Vertical and Lateral Distribution of Stratigraphic Units within the Site Area	NRC	3	Response sent 3/22/93
	NRC	2	Response sent 9/3/93
8.3.1.4.2.2: Characterization of Structural Features at the Site	NV	33	In Preparation
8.3.1.5.1.2: Paleoclim Study: Lake, Playa, Marsh Deposits	NV	17	In Preparation
8.3.1.5.1.3: Climatic Implication Terrest Paleoecology	NV	18	In Preparation
8.3.1.5.1.4: Analysis of the Paleoenvironmental History of the Yucca Mountain Site	NRC	1	Response sent 9/16/92
	NV	9	In Preparation
8.3.1.5.2.1: Quaternary Regional Hydrology	NRC	9	Response sent 12/19/90
	NV	10	Response sent 9/19/91
8.3.1.5.2.1: Quaternary Regional Hydrology R2	NRC	3	Response sent 12/27/93
	NV	7	In Preparation
8.3.1.5.2.2: Characterization of Future Regional Hydrology	NV	12	In Preparation
8.3.1.8.1.1: Probability of Volcanic Eruption Penetrating the Repository	NV	9	Response sent 7/19/92
	NRC	13	Response sent 3/9/93
8.3.1.8.2.1: Analysis Waste Package Rupture Due to Tectonic Events	NRC	9	In Preparation

Study Plan	Source & No. of Comments		Status
8.3.1.8.5.1: Characterization of Volcanic Features	NV	5	Response sent 8/23/91
	NRC	3	Response sent 7/24/91
8.3.1.9.2.1: Natural Resource Assessment of Yucca Mountain	NRC	8	In Preparation
	NV	34	In Preparation
8.3.1.9.2.2: Water Resource Assessment of Yucca Mountain	NRC	1	Response sent 6/29/92
	NV	24	Response sent 4/22/93
8.3.1.12.2.1: Meteorological Data Collection at the Yucca Mountain Site	NV	5	Response sent 2/13/92
8.3.1.14.2: Studies to Provide Soil and Rock Properties for Potential Locations of Surface Facilities	NRC	1	Response sent 8/31/92
	NV	10	Response sent 8/21/92
8.3.1.15.1.8: In-Situ Design Verification	NV	3	In Preparation
8.3.1.16.1.1: Characterization of Flood Potential	NV	9	Response sent 6/6/91
	NRC	1	Telecon resolution 6/17/91
8.3.1.17.3.1: Relevant Earthquake Sources	NRC	1	Response sent 8/15/92
	NV	32	Response sent 4/21/93
8.3.1.17.3.4: Effect of Local Site Geology on Surface and Subsurface Motion	NRC	1	Response sent 9/4/92
	NV	25	Response sent 4/27/93
8.3.1.17.3.5: Grd Motion at the Site from Controlling Seismic Events	NRC	1	In Preparation
8.3.1.17.4.1: Historic and Current Seismicity	NRC	3	Telecon resolution 8/15/91
	NV	3	In Preparation
8.3.1.17.4.2: Location and Recency of Faulting Near Prospective Surface Facilities	NRC	16	Response sent 12/19/90
	NV	3	Response sent 10/15/90

Study Plan	Source & No. of Comments	Status
8.3.1.17.4.4: Quaternary Faulting within NE-Trending Zones	NRC 3	In Preparation
8.3.1.17.4.5: Detach Faults At or Proximal to Yucca Mountain	NV 68	In Preparation
8.3.1.17.4.6: Quaternary Faulting	NRC 1 NV 14	Response sent 12/16/91 Response sent 3/8/93
8.3.1.17.4.10: Geodetic Leveling	NV 16 NRC 2	Response sent 4/9/93 Response sent 9/21/93
8.3.4.2.4.3: Characterization of the Geomechanical Attributes of the Waste Package Environment	NRC 3	Response sent 9/3/93

LEGEND FOR TABLE 1

Submit to YMP	Gives the actual date of the submission of the draft study plan.
Screening Review Complete	Date that screening review was recieved by the Project Office. Screening reviews were not done for some study plans submitted early in the process. These are indicated by the word "None". Revs. 2 & 3 of AP-1.10Q did not require a screening review. Plans reviewed under Rev. 2 & 3 are indicated by "NA".
Comments to PI	Date that review comments were transmitted to the Principal Investigator for review.
PI Revision Complete	Date that revised study plan that responds to Project Office and Headquarters comments is submitted to the Project Office.
Verify Comm. Res.	Date that the verification of actual dispositions of comments is completed by reviewers.
PO Approve	Date that Project Office approves the plan.
Submit To NRC	The date that the study plan is submitted to the NRC for review.
NRC Initial Review	Date that NRC Acceptance and Start-Work Reviews are completed.
NRC Detailed Review	Date that NRC Detailed Technical Reviews are completed or note that none will be completed or the review will be deferred.
NV Review	Date that the State of Nevada Technical Reviews are completed.

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SP NAMES/CODE		SP	SUBMIT	SCREENING	COMMENTS	PI	VERIFY	PO	SUBMIT	NRC	NRC	NV
		NUMBER	TO YMP	REVIEW	TO PI	REVISION	COMMENT	APPROVE	TO NRC	INITIAL	DETAILED	REVIEW
NRC & NV COMMENTS TABULATED IN SECTION 4.3				COMPLETE		COMPLETE	RESOL			REVIEW	REVIEW	
1	CHAR OF MET FOR REG HYDRO AND MET MONITOR/USGS	8.3.1.2.1.1	6/26/90	6/27/90	10/1/90	11/9/90	2/25/91	3/13/91	6/21/91	10/21/91	NONE	12/10/91
2	CHAR P/N/OFF AND STREAMFLOW/USGS	8.3.1.2.1.2	3/27/89	NA	10/17/89	3/22/90	7/17/90	8/21/90	10/4/90	5/14/91	8/14/92	4/12/91
3	CHAR OF REG GRD W FLOW SYSTEM/USGS	8.3.1.2.1.3	3/1/90	3/14/90	7/3/90	9/17/90	10/19/90	1/18/91	2/15/91	10/4/91	NONE	3/19/93
4	REG HYDRO SYS SYN AND MODELING/USGS	8.3.1.2.1.4	6/6/90	6/29/90	3/14/91	5/8/91	10/2/91	12/18/91	1/15/92	5/6/92	4/6/93	1/29/93
5	CHAR UNSAT ZONE INFILTRATION/USGS	8.3.1.2.2.1	3/9/90	3/14/90	7/3/90	9/17/90	10/15/90	1/18/91	3/1/91	5/31/91	NONE	
6	WATER MOVEMENT TEST/LANL, REV O	8.3.1.2.2.2	9/23/87	N/A	COMPLETE	10/30/87	1/9/89	11/9/89	2/9/89	4/8/93		
6 R1	WATER MOVEMENT TEST/LANL, REV J	8.3.1.2.2.2	10/17/91	N/A	5/12/92	12/10/92	2/4/93	2/10/93	2/19/93	4/8/93	DEFERRED	
7	CHAR PERCOL IN UZ-SURFACE BASED STUDY/USGS	8.3.1.2.2.3	8/12/88	NA	1/23/89	2/20/90	1/9/91	04/08/91	5/10/91	3/26/92		
8	CHAR YUC MTN PERCO UNSAT ZONE-ESF/USGS (4,5,7,8,9)	8.3.1.2.2.4	9/9/87	NA	12/7/88	1/4/89	1/9/89	1/09/89	2/9/89	3/5/93		
8 R1	CHAR YUC MTN UNSAT ZONE-ESF/USGS (4,5,7,8)	8.3.1.2.2.4	12/4/92	12/9/92	12/11/92	12/19/92	1/5/93	1/14/93	1/21/93	3/5/93		
8 R2	CHAR YUC MTN UNSAT ZONE-ESF INVEST/USGS (10)	8.3.1.2.2.4	3/16/93	3/24/93	5/12/93	10/1/93						
9	DIFFUSION TESTS IN ESF/LANL	8.3.1.2.2.5	11/1/88	11/18/88	2/28/90	6/11/91	1/24/92	4/22/92	6/8/92	1/19/93	DEFERRED	11/1/93
10	CHAR GAS-PHASE MOVEMENT IN UZ/USGS	8.3.1.2.2.6	6/12/89	7/14/89	3/9/90	5/24/90	04/03/91	6/11/91	6/24/91	10/07/91	NONE	5/1/92
10 R1	CHAR GAS-PHASE MOVEMENT IN UZ/USGS	8.3.1.2.2.6	4/6/93	4/20/93	6/8/93	8/27/93	9/21/93	9/30/93	10/7/93			
11	HYDROCHEM CHAR OF UZ/USGS	8.3.1.2.2.7	10/24/88	11/4/88	3/8/89	6/27/89	4/10/90	9/18/90	5/8/91	5/1/92	DEFERRED	12/28/92
11 R1	HYDROCHEM CHAR OF UZ/USGS	8.3.1.2.2.7	12/1/92	12/2/92	2/8/93	3/31/93	6/30/93	9/9/93	9/17/93	1/26/94		
12	FLUID FLOW IN UNSAT, FRAC ROCK/USGS	8.3.1.2.2.8	9/7/90	10/3/90	5/01/91	11/26/91	5/28/92	8/12/92	9/1/92	1/28/93	DEFERRED	
12 R1	FLUID FLOW IN UNSAT, FRAC ROCK/USGS	8.3.1.2.2.8	12/1/92	12/2/92	2/8/93	10/1/93	11/29/93	12/17/93	12/29/93			
13	SITE DZ MODELING & SYNTHESIS/USGS	8.3.1.2.2.9	1/25/91	NA	2/27/92	4/19/93	6/14/93	7/1/93	7/14/93	11/8/93	DEFERRED	
14	CHAR SITE SAT ZONE GRD W FLOW SYS/LANL (7)	8.3.1.2.3.1	2/8/88	NA	7/15/89	11/16/89	1/-/90	2/22/90	4/6/90	12/6/91	DEFERRED	
15	CHAR SITE SAT ZONE GRD W FLOW SYS/USGS (1-6)	8.3.1.2.3.1	5/31/89	6/15/89	11/1/89	5/18/90	10/15/90	2/13/91	3/7/91	12/6/91	DEFERRED	
14 R1	CHAR SITE SAT ZONE GRD W FLOW SYS/LANL (8)											
16	CHAR SAT ZONE HYDROCHEM/USGS	8.3.1.2.3.2	3/28/90	5/9/90	11/27/90	11/27/91	3/11/92	4/22/92	6/5/92	1/4/93	NONE	
17	SAT ZONE HYDRO SYSTEM SYNTH AND MODELING/USGS	8.3.1.2.3.3	9/4/90	10/12/90	8/30/91	3/31/92	10/19/92	1/14/93	1/28/93	6/16/93	DEFERRED	
18	GROUND-WATER CHEMISTRY MODEL/LANL	8.3.1.3.1.1	3/15/91	NA	5/6/92	11/8/93						
19	MIN. P/E. CHEM OF TRANSPORT PATHWAYS/LANL	8.3.1.3.2.1	1/22/88	5/24/88	7/13/88	12/23/88	9/12/89	6/13/89	11/30/89	8/20/90	3/13/91	12/28/92
20	HIST OF MIN AND GEOCHEM ALT OF YUCCA MTN/LANL	8.3.1.3.2.2	3/28/88	NA	5/25/89	6/13/91	9/23/91	12/18/91	1/31/92	4/27/92	DEFERRED	1/24/94
21	NAT ANALOG HYDROTHERM SYS IN TUFF/LANL	8.3.1.3.3.1										
22	KINETICS AND THERMODYN OF MIN EVOL/LANL	8.3.1.3.3.2										
23	CONCEPTUAL MODEL OF MINERAL EVOL/LANL	8.3.1.3.3.3										
24	BATCH SORPT STUDIES AND DEVEL SORPT MODEL/LANL	8.3.1.3.4.1/3	10/28/92	11/4/92	2/18/93	10/22/93						
25	BIOLOGICAL SORPTION & TRANSPORT/LANL	8.3.1.3.4.2	12/12/88	1/5/89	3/12/90	8/28/91	12/7/91	11/25/92	12/24/92	3/25/93	DEFERRED	
26	DISSOLVED SPECIES CONC LIMITS AND COLLOID BEH/LANL	8.3.1.3.5.1/2	9/7/90	NA	11/8/91	10/21/92	8/6/93	9/9/93	9/17/93			
27	DYNAMIC TRANSPORT COLUMN EXPERIMENTS/LANL	8.3.1.3.6.1	3/10/93	3/22/93	6/25/93							
28	DIFFUSION/LANL	8.3.1.3.6.2	7/24/89	8/9/89	5/10/90	12/4/92	6/28/93	8/6/93	8/12/93	1/19/94	1/19/94	
29	REPERATION SENSITIVITY ANALYSIS/LANL	8.3.1.3.7.1	12/14/88	2/8/89	3/12/90	6/18/91	7/28/92	8/11/92	9/1/92	1/19/93	NONE	
30	DEMON APPL LAM DATA TO REPOS TRANS CALC/LANL	8.3.1.3.7.2										
31	GASEOUS RAD TRANS CALCS AND MEASURE/LANL	8.3.1.3.8.1										

09-Mar-94

Study Plan Tracking Sheet

2

#	SP NAMES/CODE	SP	SUBMIT	SCREENING	COMMENTS	PI	VERIFY	PO	SUBMIT	NRC	NRC	NV
		NUMBER	TO YMP	REVIEW	TO PI	REVISION	COMMENT	APPROVE	TO NRC	INITIAL	DETAILED	REVIEW
	NRC & NV COMMENTS TABULATED IN SECTION 4.3			COMPLETE		COMPLETE	RESOL			REVIEW	REVIEW	
32	CHAR VERT/LAT DIST STRAT UNITS SITE AREA/USGS	8.3.1.4.2.1	4/12/90	5/10/90	2/8/91	2/3/92	4/30/92	6/9/92	6/22/92	12/14/92	DEFERRED	
33	CHAR STRUCTURAL FEATURES W/IN SITE AREA/USGS	8.3.1.4.2.2	9/4/87	NA	Done	4/13/88	2/3/89	2/03/89	2/9/89	2/8/93		
33 R1	2 MORE ACTIVITIES (3, 5) USGS	8.3.1.4.2.2	2/27/90	3/22/90	8/21/90	7/29/91	2/10/92	4/22/92	6/15/92	2/8/93		
33 R2	CHAR STRUCTURAL FEATURES W/IN SITE AREA/USGS	8.3.1.4.2.2	11/18/92	11/19/92	12/1/92	12/14/92	12/18/92	12/22/92	1/6/93	2/8/93	DEFERRED	2/11/94
34	THREE-DIMENSIONAL GEOLOGIC MODEL/USGS	8.3.1.4.2.3										
35	SYST ACQ SITE-SPEC SUBSURF INFO/SNL	8.3.1.4.3.1	3/27/90	4/13/90	10/2/90	7/28/92	9/4/92	12/8/92	1/11/93	7/19/93		
36	THREE-DIMENSIONAL ROCK CHAR MODELS/SNL	8.3.1.4.3.2										
37	CHAR MODERN REGIONAL CLIMATE/USGS	8.3.1.5.1.1	6/24/93	6/25/93	8/30/93	1/13/94						
38	PALEOCLIM STUDY: LAKE, PLAYA, MARSH DEPS/USGS	8.3.1.5.1.2	10/25/90	NA	3/27/91	5/9/91	10/25/91	10/31/91	12/6/91	4/27/92	DEFERRED	1/24/94
39	CLIMATIC IMPLICATION TERREST PALEOECOLOGY/USGS	8.3.1.5.1.3	2/11/91	NA	6/25/91	DONE	12/11/91	1/17/92	6/5/92	8/27/92		1/24/94
40	ANALYSIS PALEOENVI HIST YUCCA MTN REGION/USGS	8.3.1.5.1.4	3/30/90	4/13/90	8/13/90	10/24/90	1/9/91	5/29/91	6/24/91	12/06/91	DEFERRED	1/11/93
41	PALEOCLIM-PAL EOENVIRO SYNTHESIS/USGS	8.3.1.5.1.5										
42	CHAR FUTURE REG CLIMATES AND ENVIRONS/SNL	8.3.1.5.1.6	12/29/93	1/7/94								
43	CHAR OF THE QUATERNARY REG HYDRO/USGS (3, 4, 5)	8.3.1.5.2.1	1/26/88	NA	12/9/88	5/15/89	6/8/89	6/08/89	7/10/89	11/24/89	6/8/90	4/9/91
43 R2	CHAR OF THE QUATERNARY REG HYDRO/USGS (1)	8.3.1.5.2.1	9/25/90	NA	8/8/91	3/31/92	8/10/92	11/10/92	12/31/92	6/24/93	6/24/93	11/1/93
44	CHAR FUTURE REG HYDRO DUE TO CLI CHANGES/USGS	8.3.1.5.2.2	1/16/91	NA	8/7/91	5/1/92	7/14/92	11/10/92	12/24/92	4/5/93	DEFERRED	11/1/93
45	DISTRIB AND CHAR PRESENT AND PAST EROSION/USGS	8.3.1.6.1.1										
46	INFLUENT CLI COND ON LOC & RATES OF ERO/USGS	8.3.1.6.2.1										
47	EVAL EFFECT OF FUT TECT ON ERO AT YUC MTN/USGS	8.3.1.6.3.1										
48	DEV TOPICAL RPT EFFECTS OF ERO ON THE HYDRO, GEOCHEM, AND ROCK CHAR AT YUCCA MTN/USGS	8.3.1.6.4.1										
49	PROB MAGMATIC ERUPT PENETRATE THE REPOS/LANL	8.3.1.8.1.1	3/29/89	4/5/89	9/12/89	6/19/90	9/10/90	9/19/90	3/5/91	10/5/91	7/10/92	8/8/91
50	PHYSICAL PROCESSES OF MAGMATISM AND EFFECTS/LANL	8.3.1.8.1.2	10/21/92	10/26/92	1/14/93	6/2/93	8/30/93	9/21/93	10/4/93			
51	ANAL WST PKG RUP DUE TO TECT PROC & EVENT/USGS	8.3.1.8.2.1	12/15/89	1/31/90	10/30/90	12/10/91	8/11/92	11/16/92	12/23/92	11/19/93		
51 R1	TECTONIC EFFECTS/USGS	8.3.1.8.2.1	2/18/94	2/23/94								
52	ANAL EFFECTS OF TECT PROC & EVENT ON AVE PERC FLUX RATES OVER REPOS/USGS	8.3.1.8.3.1										
53	ANAL EFF OF TECT PROC & EVENT CHGS WTR TBLE ELV/USGS	8.3.1.8.3.2										
54	ANAL EFF OF TECT PROC & EVENT ON LOCAL FRAC PERM AND EFFECTIVE POROSITY/USGS	8.3.1.8.3.3										
55	ANAL EFF TECT PROC & EVENT ON RK GEOCHEM PROP/USGS	8.3.1.8.4.1										
56	CHAR OF VOLCANIC FEATURES/LANL	8.3.1.8.5.1	12/14/88	1/17/89	6/20/89	1/2/90	3/15/90	4/18/90	5/15/90	8/20/90	3/18/91	2/21/91
57	CHAR IGNEOUS INTRUSIVE FEATURES/USGS	8.3.1.8.5.2	10/13/92	10/16/92	2/19/93	5/19/93	1/28/94					
58	INVEST FOLDS IN MIOCENE AND YNG RKS OF REG/USGS	8.3.1.8.5.3										
59	EVAL NAT PROC THAT COULD AFFECT LG TERM SURVIVABIL SURFACT MARKER SYS AT YUCCA MTN/M&O	8.3.1.9.1.1										
60	NAT PL ASSESS YUCCA MTN, NV & COUNTY/USGS	8.3.1.9.2.1	7/13/90	8/16/90	1/7/91	1/13/92	9/28/92	11/6/92	12/17/92	3/16/93	2/18/94	2/11/94
61	WATER RES ASSESS YUCCA MTN, NV/SAIC	8.3.1.9.2.2	10/6/89	1/30/90	8/15/90	12/26/90	6/13/91	8/26/91	9/20/91	5/4/92		12/28/92

09-Mar-94

Study Plan Tracking Sheet

3

SP NAMES/CODE	SP	SUBMIT	SCREENING	COMMENTS	PI	VERIFY	PO	SUBMIT	NRC	NRC	NV
	NUMBER	TO YMP	REVIEW	TO PI	REVISION	COMMENT	APPROVE	TO NRC	INITIAL	DETAILED	REVIEW
NRC & NV COMMENTS TABULATED IN SECTION 4.3											
62 EVAL DATA NEEDED TO SUPP ASSESS LIKLIHOOD FUT	8.3.1.9.3.1										
INADVER IRUMAN INTRU YUC MTN EXPLO/EXT NAT RES/M&O											
63 EVAL POTENTIAL EFFECT OF EXPLOIT NAT RES ON HYDRO	8.3.1.9.3.2										
CHAR AT YUCCA MTN/M&O											
64 METEOROLOGICAL DATA COLLECT YUCCA MTN SITE/SAIC	8.3.1.12.2.1	9/28/90	NA	2/4/91	2/21/91	2/26/91	3/20/91	5/16/91	11/12/91	NONE	12/2/91
64 R1 METEOROLOGICAL DATA COLLECT YUCCA MTN SITE/SAIC, REV 1	8.3.1.12.2.1	3/31/92	4/21/92	6/17/92	12/2/92	7/29/93	8/9/93	8/16/93			
65 STUDIES TO PROVIDE SOIL/ROCK PROP OF POTENTIAL	8.3.1.14.2	7/15/91	7/23/91	8/11/91	8/21/91	9/22/91	10/01/91	10/16/91	1/24/92		4/6/92
LOCATIONS OF SURFACE/SUBSURFACE FACILITIES/SNL											
66 LAB THERMAL PROPERTIES/SNL	8.3.1.15.1.1	3/17/88	NA	11/1/89	3/16/90	5/23/90	10/21/90	1/25/91	DEFERRED		
66 R1 LAB THERMAL PROPERTIES/SNL	8.3.1.15.1.1	11/3/92	11/9/92	12/10/92	4/8/93	8/3/93	8/27/93	9/14/93			
67 LAB THERMAL EXPANSION TESTING/SNL	8.3.1.15.1.2	12/1/88	12/20/88	Done	11/20/89	5/23/90	8/21/90	10/4/90	DEFERRED		
67 R1 LAB THERMAL EXPANSION TESTING/SNL	8.3.1.15.1.2	11/3/92	11/9/92	2/3/93	4/8/93	8/3/93	8/27/93	9/14/93			
68 LAB DETERMIN MECH PROP INTACT ROCK/SNL	8.3.1.15.1.3	2/8/88	NA	7/6/88	11/29/88		5/21/91	6/21/91	DEFERRED		
68 R1 LAB DETERMIN MECH PROP INTACT ROCK/SNL	8.3.1.15.1.3	7/19/93	7/23/93	9/23/93							
69 LAB DETERMIN MECH PROP FRACTURES/SNL	8.3.1.15.1.4	10/23/91	2/5/92	5/12/92	4/20/93						
70 EXCAVATION INVESTIGATIONS/SNL	8.3.1.15.1.5	3/26/87	NA	Done	9/1/87	5/21/88	1/09/89	2/9/89	DEFERRED		
70 R1 EXCAVATION INVESTIGATIONS/SNL	8.3.1.15.1.5	3/18/93	3/24/93	5/10/93	3/4/94						
71 IN SITU THERMOMECH PROP/SNL	8.3.1.15.1.6										
72 IN SITU MECHANICAL PROP/SNL	8.3.1.15.1.7										
73 IN SITU DESIGN VERIFICATION/SNL	8.3.1.15.1.8	3/20/90	4/12/90	10/10/91	11/23/92	1/12/93	2/3/93	2/8/93	4/15/93	NONE	11/1/93
74 CHAR SITE AMBIENT STRESS CONDITIONS/USGS (2)	8.3.1.15.2.1	9/22/87	NA	Done	2/23/88	2/9/89	1/11/89	2/9/89	DEFERRED		
74 R1 CHAR SITE AMBIENT STRESS CONDITIONS/SNL (1)	8.3.1.15.2.1										
75 CHAR SITE AMBIENT THERMAL COND/USGS	8.3.1.15.2.2	10/13/92	10/16/92	2/19/93	5/19/93						
76 CHAR OF FLOOD POTENTIAL YUCCA MTN SITE/USGS	8.3.1.16.1.1	3/30/89	5/2/89	10/13/89	4/27/90	8/6/90	9/17/90	10/11/90	5/8/91	NONE	1/22/91
77 LOC OF ADEQ WATER SUPPLY CONST OPER, CLOS, DECOMM	8.3.1.16.2.1										
OF A RGHS AT YUCCA MTN/SAIC											
78 DETERMINE PRECIS HYDRO COND UZ YUCCA MTN/USGS	8.3.1.16.3.1										
79 POTENTIAL FOR ASH FALL AT SITE/LANL	8.3.1.17.1.1										
80 FAULTING POTENTIAL AT REPOSITORY/USGS	8.3.1.17.2.1										
81 RELEVANT EARTHQUAKE SOURCES/USGS	8.3.1.17.3.1	8/1/90	8/22/90	12/28/90	5/1/91	11/15/91	12/18/91	1/16/92	5/18/92		1/13/93
81 R1 RELEVANT EARTHQUAKE SOURCES/USGS	8.3.1.17.3.1	2/18/94	2/22/94								
82 UNDERGROUND NUCLEAR EXPLOSION SOURCES/SNL	8.3.1.17.3.2										
83 R1 GRD MOTION FROM REG EARTHQUAKES/USGS	8.3.1.17.3.3.1										
83 GRD MOTION FROM UNE/SNL	8.3.1.17.3.3.2	2/2/94	2/7/94								
84 EFFECT LOCAL SITE GEOL ON SRF&SUBSRF MOTION/USGS	8.3.1.17.3.4	7/6/90	7/23/90	1/23/91	4/16/91	8/26/91	11/14/91	12/4/91	6/8/92	NONE	1/11/93
85 GRD MOTION AT SITE FROM CONTROL SEIS EVENT/USGS	8.3.1.17.3.5	10/4/90	NA	2/27/92	4/14/92	6/29/93	7/9/93	7/19/93	11/2/93		
86 PROBABLE INTRUSION MTR HAZARD ANALYSIS/USGS	8.3.1.17.3.6										
87 HISTORICAL AND CURRENT SEISMICITY/USGS	8.3.1.17.4.1	10/17/89	10/25/89	4/30/90	7/6/90	9/4/90	9/17/90	10/22/90	5/14/91	NONE	11/1/93

Study Plan Tracking Sheet

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