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Memorandum For: ~~Robert E. Browning~~ <sup>nb</sup> Director  
(Return to WM, 623-SS) Division of Waste Management

From: Paul T. Prestholt, Senior On-Site Licensing Rep.  
Nevada Nuclear Waste Storage Investigation (NNWSI)

Subject: NNWSI Site Report for Week of Feb. 6, 1984

1. I interviewed Henry Melancon, DOE Waste Management Project Office (WMPO) member responsible for QA matters. Henry advised me that the DOE Nevada Project Office has a QA Division, reporting to Robert Taft, Assistant Manager for Energy and Conservation. Taft is Don Vieths boss. Quality Assurance Manager is John Rinaldi. A member of the QA division is assigned to the WMPO. This person is usually a member of audit teams that visit the WMPO contractors and, in addition, audits WMPO. Regular audits are scheduled and carried out. Henry stated that there are still QA problems, particularly with contractors who find it difficult to work within the QA framework. These problems are being addressed and solutions sought. Henry is setting up a meeting with the QA Division and SAI to look at the NNWSI QA program in depth.

I interviewed Ralph Richards, the DOE WMPO individual responsible for drilling. Ralph is a mechanical engineer with a long career in weapons design, NACA activities and as a reserve air force officer. Ralph does not have geotechnical credentials. Apparently, Ralph's primary duties are to interact with the various DOE offices on the Test Site to

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be certain that the drilling, trenching and geophysical activity can start on time and proceed smoothly. He does not have a technical overview or data quality function.

2. I met with Max Blanchard, Geologic Investigations Branch Chief. Max had 4 topics he wished to discuss.

A. Draft Technical Positions, STP-1 and STP-5 concerning hydrology and geology are under review by SAI. Max wanted to know what dialogue between DOE and NRC concerning these documents would be appropriate. I asked Seth Coplan to send me copies of these documents and he (Coplan) requested a letter detailing DOE comments as the first step in beginning a dialogue on these documents.

B. Max is proposing a 1 or 2 day workshop with the NRC to determine an approach to resolving identified issues in the earth sciences. He suggested that the issue of Quaternary volcanic activity adjacent to Yucca Mountain (actually, the entire question of volcanology) be used as a strawman since Bruce Crowe has done a considerable amount of work on this subject. In one sentence -- What does DOE have to do to put an issue to bed.

C. Max is proposing a workshop between the DOE, NRC and the State of Nevada so that the DOE can present the data that is the basis for the EA so that the NRC can understand how this data was used in developing the E.A.

This workshop would be held before the EA is given to the NRC for review. If there is interest in this exercise, he would like comments and ideas on how it can be accomplished to be the most helpful to the NRC and the State of Nevada.

D. Site Specific agreement, Max is preparing to take the Bennett to Browning answer to the Morgan-Davis agreement, which is supposed to be a site specific agreement, point by point and put on paper exactly how the NWSI will carry out the terms of the agreement. I have been invited to participate in this exercise to assure that the NRC point-of-view is known and, hopefully, incorporated. I should be sent a copy of the Bennett-Browning letter ASAP.

4. I've discussed upcoming workshops with Seth Coplan and have received a tentative schedule.

5. I'm enclosing a copy of the annotated table of Contents for the EA's and a copy of the weekly highlights for NWSI for week ending Feb. 3, 1984.

- CC,
- Coplan
- Verma
- Cook
- Prestholt (when typed)
- Regular distributee

ATP  
Senior OSLR, NWSI



## Department of Energy

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FEB 6 1984

J. William Bennett, Acting Assoc. Dir., Office of Geologic Repository  
Deployment, HQ (RW-20), GTN

NNWSI WEEKLY HIGHLIGHTS FOR WEEK ENDING FEBRUARY 3, 1984

### Accomplishments

None.

### Status of Ongoing Activities

Arrangements have been completed at LLNL for Ignasi Puigdomenech, KBS/SKDF-Swedish Nuclear Fuel Supply, Stockholm, to join the LLNL Geochemical Modeling Group for a 13-month assignment.

The pumping of well USW H-3 is continuing. The drilling fluid concentrations in the water are still very high. Natural water is expected to be obtained in approximately three weeks.

The draft EA was completed January 29 in time for a thorough review by Don Vieth and the Technical Project Officers at a workshop held in La Jolla this week.

### Meetings Held

Jackie Braitman visited NV to discuss organizational concerns on February 2 and 3.

M. P. Kunich conducted a tour of the waste management activities at the NTS for a group of Japanese citizens on February 3.

The TPOs and Don Vieth reviewed the EA from January 30 to February 1 at SAI/HQ in La Jolla.

### Meetings Planned

W. W. Dudley will present a talk at the IAEA seminar in Sophia, Bulgaria, February 6-10.

M. P. Kunich will conduct a tour of the waste management activities at the NTS for a Japanese group on February 6.

The waste management activities will be presented at the Community Monitoring Program in Eureka, NV, on February 14.

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On February 14, approximately 60 persons who represent the crystalline rock states, along with Battelle and their contractors, will tour the waste management activities at the NTS.

On February 23, Don Vieth will address the Las Vegas Chamber of Commerce to discuss the repository program and the Chamber's potential support.

Mid-year technical review will be held in Germantown on March 5-9. The mid-year budget review will be held March 20-21.

Waste Management '84 will be held in Tucson March 12-15. Don Vieth will present a talk on March 12.

The Project Managers will meet in Germantown on March 9.

The NNWSI will hold their Project meeting in Las Vegas on February 22-23.

There will be a QA audit of SNL on February 21-23.

Significant Events

None.

WMPO:DLV-435

  
Donald L. Vieth, Director  
Waste Management Project Office

cc:

T. P. Longo, DOE/HQ (RW-22), GTN  
J. J. Fiore, DOE/HQ (RW-22), GTN  
C. R. Cooley, DOE/HQ (RW-24), GTN  
M. W. Frei, DOE/HQ (RW-23), GTN  
E. S. Burton, DOE/HQ (RW-25), GTN  
J. O. Neff, DOE/NPO, Columbus, OH  
O. L. Olson, DOE/RL, Richland, WA  
R. W. Taft, AMES  
L. E. Perrin, RMB  
A. J. Roberts, RMB  
T. O. Hunter, SNL, 6310, Albuquerque, NM  
W. W. Dudley, JR., USGS, Denver, CO  
W. S. Twenhofel, Lakewood, CO  
L. D. Ramspott, LLNL, Livermore, CA  
D. T. Oakley, LANL, Los Alamos, NM  
A. R. Haki, W, NTS  
Paul Prestholt, NRC/Las Vegas  
M. E. Spaeth, SAI, Las Vegas, NV  
A. E. Stephenson, SAI, Las Vegas, NV  
NNWSI Project File

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ANNOTATED TABLE OF CONTENTS FOR  
ENVIRONMENTAL ASSESSMENTS (EAs)  
REQUIRED BY THE NUCLEAR WASTE POLICY ACT (NWPA)

Foreword

(Prepared by HQ)

A brief discussion of the purpose of the EA, the scope of the EA (including a reference to the public hearings held for that purpose), the basis for the EA (i.e., available data), and the public review and comment process.

Executive Summary

(Prepared by HQ; based on input from Projects)

Chapter 1 SUMMARY OF THE DECISION PROCESS LEADING TO SITE NOMINATION

(Prepared by HQ; based on input from Projects)

1.1 Introduction

The introduction will provide the reader with background information. It will briefly discuss radioactive-waste disposal in mined geologic repositories, the principal features of a repository, the Nuclear Waste Policy Act and its requirements, and the guidelines.

1.2 Summary of the Overall Decision Process

A summary of the overall decision process from screening to the selection of sites for nomination.

1.3 Identification of the Nine Potentially Acceptable Sites (PASs)

Summary description of how the nine PASs were identified. This historical overview section will discuss the process used to select the nine PASs (summary of Section 2.2 combined from all EAs).

1.4 Evaluation of PASs

Summary of evaluation of the nine PASs against the disqualifying conditions (summary of Section 2.3 combined from all EAs). Results may be presented in matrix format.

1.5 Grouping Sites by Geohydrologic Setting

Description of the basis for grouping by geohydrologic setting. This is an application of the guidelines requiring the DOE to consider a diversity of rock types and geohydrologic settings (siting guidelines 960.3.1.1 and 960.3.2.2).

References for Chapter 1

**Chapter 2**      **DECISION PROCESS BY WHICH THE SITE PROPOSED FOR NOMINATION WAS IDENTIFIED**

(Prepared by each Project)

Sections 2.1, 2.2, and 2.3 will be included in all EAs; Section 2.4 will be included in salt-site EAs only. The suggested length for this chapter is 40 to 50 pages.

**2.1 The Geohydrologic Setting of the Site**

A description of the geohydrologic setting. This section will concentrate on a specific geohydrologic setting (i.e., the Permian Basin, the Paradox Basin, the Gulf Interior Region, the Southern Great Basin, or the Pasco Basin).

**2.2 Identification of PASs Within the Geohydrologic Setting**

A description of the process used for identifying the PASs within the geohydrologic setting.

**2.3 Evaluation of the PASs within the Geohydrologic Setting**

Evaluation of PASs considered within the geohydrologic setting against the disqualifying conditions. The evaluation will be based on currently available information, taking into consideration uncertainty in data. The results of this evaluation will represent a decision point as to whether the site is retained for further consideration (i.e., whether the site is not disqualified on the basis of available information).

The following disqualifying conditions will be used in this evaluation:

- Geohydrology, 960.4.2.1(d)
- Erosion, 960.4.2.5(d)
- Dissolution, 960.4.2.6(d)
- Human Interference (Natural Resources), 960.4.2.8.1(d)
- Population Density and Distribution, 960.5.2.1(d)
- Environmental Quality, 960.5.2.5(d)
- Rock Characteristics, 960.5.2.9(d)

**2.4 Decision Process and Analysis Supporting Selection of the Preferred Site Within a Setting**

This section will describe how the preferred site was selected from the PASs within the geohydrologic setting. It will include an

evaluation of the available data base to determine those guidelines that allow a reasonable comparison of the sites within a setting. This will be followed by a comparative evaluation based on those guidelines of the sites within the setting.

## References for Chapter 2

### Chapter 3 THE SITE AND THE REPOSITORY

(Prepared by each Project)

The suggested length for this chapter is about 30 pages.

#### 3.1 The Site

Description of the site, including those characteristics that may be affected both by site characterization activities and by repository development at the site. The depth of the discussion should be adequate for the reader to understand the evaluation presented in the Chapter 4 comparisons of the site with the siting guidelines, and commensurate with the importance of the potential effect, with less important material summarized or incorporated by reference. Graphics (maps, photos, diagrams) and tables should be used to organize and display information.

3.1.1 Location, General Appearance and Terrain, and Present Uses

3.1.2 Geologic Conditions

3.1.3 Hydrologic Conditions

3.1.3.1 Surface Water

3.1.3.2 Ground Water

3.1.4 Environmental Setting

3.1.4.1 Land Use

3.1.4.2 Terrestrial and Aquatic Ecosystems

3.1.4.3 Air Quality and Weather Conditions

3.1.4.4 Noise

3.1.4.5 Aesthetic Resources

3.1.4.6 Archaeological, Cultural, and Historical Resources

3.1.5 Transportation

The transportation section will address the existing transportation network.

3.1.6 Socioeconomic Conditions

3.1.6.1 Population Density and Distribution

3.1.6.2 Economic Conditions

3.1.6.3 Community Services

3.1.6.4 Social Conditions

3.1.6.5 Fiscal Conditions and Government Structure

3.2 The Repository

A brief physical description, as well as a conceptual description of the repository, aimed at introducing the reader to concepts that will be discussed in Chapter 4, such as engineered barriers and controlled area.

References for Chapter 3:

Chapter 4 SUITABILITY OF THE SITE FOR SITE CHARACTERIZATION AND FOR DEVELOPMENT AS A REPOSITORY

(Prepared by each Project except for Section 4.1)

The suggested length for this chapter is 40 to 50 pages.

4.1 Guidelines That Do and Do Not Require Site Characterization

(Prepared by HQ)

The rationale for distinguishing between guidelines requiring site characterization and those not requiring site characterization.

4.2 Suitability of the Site for Development as a Repository; Evaluation Against the Guidelines That Do Not Require Site Characterization

The purpose of this section is to meet the requirements of Section 112(b)(1)(E)(ii) of the Act by evaluating the site proposed for nomination against the guidelines that do not require site characterization. The scope and content of this chapter will be determined by the definition of site characterization as contained in the Act. For each technical guideline there are qualifying, favorable, and potentially adverse conditions. This section will evaluate the site against these conditions, as applicable. Favorable and potentially adverse conditions need not be evaluated if they do not apply to the site being evaluated, and the evaluation of compliance with any condition need not be final. Reference should be made to Chapter 2 for evaluation of disqualifying conditions.

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The guidelines that do not require site characterization should include the following:

4.2.1 Technical Guidelines

- 4.2.1.1 Site Ownership and Control, 960.4.2.8.2
- 4.2.1.2 Population Density and Distribution, 960.5.2.1
- 4.2.1.3 Site Ownership and Control, 960.5.2.2
- 4.2.1.4 Meteorology, 960.5.2.3
- 4.2.1.5 Offsite Installations and Operations, 960.5.2.4
- 4.2.1.6 Environmental Quality, 960.5.2.5
- 4.2.1.7 Socioeconomic Impacts, 960.5.2.6
- 4.2.1.8 Transportation, 960.5.2.7

4.2.2 System Guidelines

- 4.2.2.1 Preclosure Radiological Safety, 960.5.1(a)(1)
- 4.2.2.2 Preclosure Environmental Quality, Socioeconomics, and Transportation, 960.5.1(a)(2)

4.3 Suitability of the Site for Site Characterization: Evaluation Against the Guidelines That Do Require Site Characterization

The purpose of this section is to meet the requirements of Section 112(b)(1)(B)(i) of the Act by evaluating the site against the guidelines that do require site characterization. For each technical guideline there are qualifying, favorable, and potentially adverse conditions. This section will evaluate the site against these conditions as applicable. Favorable or potentially adverse conditions need not be evaluated if they do not apply to the site being evaluated, and the evaluation of compliance with any condition need not be final.

Because of the complex interactions among the many technical factors affecting the performance and suitability of any given site, both the qualifying and the disqualifying conditions must be evaluated in terms of their site-specific importance to meeting the system guidelines. Reference should be made to Chapter 2 for evaluation of the site against disqualifying conditions. Evaluation against system guidelines cannot be supported by comprehensive system assessments in the pre-characterization phases; they will be supported by a simplified preliminary performance assessment, based upon available data, that evaluates the site's performance from a system analysis of the technical guidelines. Guidelines that require site characterization should include the following:

4.3.1 Postclosure Technical Guidelines, 960.4.2

4.3.1.1 Geohydrology, 960.4.2.1

4.3.1.2 Geochemistry, 960.4.2.2

4.3.1.3 Rock Characteristics, 960.4.2.3

4.3.1.4 Climatic Changes, 960.4.2.4

4.3.1.5 Erosion, 960.4.2.5

4.3.1.6 Dissolution, 960.4.2.6

4.3.1.7 Tectonics, 960.4.2.7

4.3.1.8 Human Interference and Natural Resources,  
960.4.2.8 and 960.4.2.8.1

4.3.2 Postclosure System Guideline, 960.4.1

4.3.3 Preclosure Technical Guidelines, 960.5.2

4.3.3.1 Surface Characteristics, 960.5.2.8

4.3.3.2 Rock Characteristics, 960.5.2.9

4.3.3.3 Hydrology, 960.5.2.10

4.3.3.4 Tectonics, 960.5.2.11

4.3.4 Preclosure System Guidelines

4.3.4.1 Preclosure Ease and Cost of Construction,  
Operation, and Closure 960.5.1(a)(3)

Detailed guidance on the format for presenting the evaluation of the site proposed for nomination with respect to these technical and system guidelines is given in Attachment 1.

4.4 Analyses Supporting the Comparison with Systems Guidelines

4.4.1 Preclosure System Guidelines Analyses

4.4.2 Postclosure Preliminary System Guidelines Analysis: A  
Preliminary System Performance Assessment

References for Chapter 4

**Chapter 5 EXPECTED EFFECTS OF SITE CHARACTERIZATION ACTIVITIES**

(Prepared by Projects)

This chapter will describe the proposed site-characterization activities and evaluate their expected effects. It will also discuss

alternative activities that may be undertaken to avoid such effects and proposed measures to mitigate any significant adverse effects. Relevant issues raised in State, tribe, and public comments will also be addressed. The suggested length for this chapter is about 15 pages.

## 5.1 Site Characterization Activities

This section will discuss all site characterization activities that are planned for the site proposed for nomination, using the Act's definition of "site characterization."

### 5.1.1 Field Studies

### 5.1.2 Exploratory Shaft

#### 5.1.2.1 Construction

#### 5.1.2.2 Testing

#### 5.1.2.3 Final Disposition

### 5.1.3 Other Activities

## 5.2 Expected Effects of Site Characterization

This section will describe the effects expected from each of the activities listed above. The depth of the discussion will be commensurate with the expected effect; the discussion can be presented as a narrative that covers all phases of site characterization, rather than separate sections for each phase. Included in the discussion will be both positive and adverse effects. It should cover, as appropriate, the characteristics and conditions listed in Chapter 3 (geologic conditions; hydrologic conditions; land use; ecosystems; air quality; noise; aesthetic resources; archaeological, cultural, and historical resources; population density and distribution; economic conditions; community services; social conditions; and fiscal conditions). Transportation effects, if any, can be included with socioeconomic effects.

### 5.2.1 Expected Effects on the Physical Environment

This section will discuss the expected effects of site characterization activities on various components of the physical environment (e.g., surface water, ecosystems, air quality), as appropriate.

### 5.2.2 Expected Socioeconomic Effects

5.3 Alternative Site Characterization Activities That Would Avoid Adverse Effects

References for Chapter 5

**Chapter 6 REGIONAL AND LOCAL EFFECTS OF LOCATING A REPOSITORY AT THE SITE**

(Prepared by each Project)

This chapter will discuss the environmental, socioeconomic and transportation effects expected to result from locating a repository at the nominated site and their significance. It may include any specific additions to the repository description in Chapter 3 necessary to adequately explain these effects. The discussion of effects will cover the preclosure phase of the repository (construction, operation, and closure), taking care to include only applicable effects for each phase. It will identify possible conflicts between proposed repository activities and the objectives of Federal, regional, State, local, and affected Indian tribe land-use plans, policies, and controls. A discussion of means to mitigate adverse environmental and socioeconomic effects will also be included. The discussion will distinguish between regional and local effects; and for local effects it will distinguish between onsite and offsite effects. The suggested length for this chapter is 20 pages.

6.1 Expected Effects on the Physical Environment

This section will discuss the expected effects, including radiological effects, if any, on geologic and hydrologic conditions; land use; ecosystems; air quality; noise; aesthetic resources; and archaeological, cultural, and historical resources.

6.2 Expected Effects of Transportation

6.3 Expected Effects on Socioeconomic Conditions

6.3.1 Population Density and Distribution

6.3.2 Economic Conditions

6.3.3 Community Services

6.3.4 Social Conditions

6.3.5 Fiscal Conditions and Government Structure

References for Chapter 6

Chapter 7 COMPARATIVE EVALUATION OF SITES

(Prepared by HQ with input from Projects)

A comparative evaluation and discussion of all nominated sites against each guideline (including, in matrix form, a summary of data for each site against all guidelines, technical and system, and the results of preliminary performance assessment) and against one another.

Glossary

Acronyms and Abbreviations

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Attachment 1

FORMAT FOR PRESENTING THE EVALUATION OF THE SITE WITH RESPECT TO THE TECHNICAL GUIDELINES (960.4.2 and 960.5.2)

- I. A description of how this section is organized
- II. Statement of qualifying condition
- III. Evaluation process
  - A. Relevant data
  - B. Assumptions and data uncertainty
  - C. Analysis (or reference to system calculations)
- IV. Favorable conditions
  - A. Position statement for each favorable condition
  - B. Brief statement of rationale (refer to position statement)
- V. Potentially adverse conditions
  - A. Dismiss those which do not apply
  - B. Discuss mitigating aspects where appropriate
  - C. For those remaining potentially adverse conditions, provide:
    - 1. Position statement for each potentially adverse condition
    - 2. Brief statement of rationale for each position
- VI. Conclusion on qualifying condition
  - A. Statement of position
  - B. Basis for conclusion given the reevaluation of favorable and potentially adverse conditions (individually and/or collectively).

Attachment 1 (Continued)

FORMAT FOR PRESENTING THE EVALUATION OF THE SITE WITH RESPECT TO THE SYSTEM GUIDELINES (960.4-1 and 960.5-1)

- I. Description of how this section is organized
- II. Statement of qualifying condition
- III. Evaluation process
  - A. Statement of technical guidelines appropriate to system guideline
  - B. Composite consideration of evaluations of technical guidelines appropriate to system guideline (including preliminary performance assessments)
- IV. Conclusion on qualifying condition