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MEMORANDUM FOR: Robert E. Browning, Director
Division of High-Level Waste Management, NMSS

FROM: Ronald L. Ballard, Chief
Geosciences & Systems Performance Branch
Division of High-Level Waste Management, NMSS

SUBJECT: SCOPE OF PROPOSED NATURAL RESOURCES TECHNICAL POSITION

Enclosed is a scope developed by the Geosciences and Systems Performance Branch (HLGP) of a proposed Technical Position (TP) and License Application Review Plan(s) dealing with the (1) identification and clarification of natural resources related regulatory requirements and with the (2) development of an arid environment natural resources assessment methodology, with emphasis on the Yucca Mountain site. The scheduled completion date for the TP is estimated to be May 3, 1990. The TP resource impact to the Division will be approximately 0.4 FTE for FY 1989 and approximately 0.2 FTE for FY 1990. The scheduled completion date and Division resource impact for the LARP(s) has not yet been determined.

In accordance with the HLWM work plan, those parties receiving copies of this memorandum who are listed below are encouraged to provide recommendations on the need to continue development of this TP and LARP. All recommendations should be provided to the Director within ten working days of the date of this memorandum. If you require any additional assistance, please contact the HLGP staff member responsible for the development of this TP and LARP, Harold Lefevre, at extension 23464.

Ronald L. Ballard, Chief
Geosciences & Systems Performance Branch
Division of High-Level Waste Management
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Enclosure:
As stated

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Approved, R. E. Browning

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PROPOSED NATURAL RESOURCES TECHNICAL POSITION

1.0 Regulatory Evaluation

The need for this Technical Position (TP) and License Application Review Plan (LARP)* arose because the NRC has repeatedly found deficiencies in the Yucca Mountain plans to assess natural resources as presented in a number of the DOE's major statutory documents including (1) the Draft Environmental Assessment (1985), (2) the Final Environmental Assessment (1986) and (3) in the Consultation Draft Site Characterization Plan (July, 1988). The staff is concerned that without a clearer understanding of what is needed to meet NRC requirements, DOE's efforts to characterize and assess the Yucca Mountain site may be inadequate, and the issue of natural resources may remain unresolved at the time of submittal of the repository construction authorization application. The staff believes it would be in keeping with Commission policy to develop early guidance on acceptable methods for determining compliance with NRC requirements on natural resources. Additional reasoning underlying the need for, and benefits to be derived from, undertaking the dual-approach guidance effort (TP and LARP) is presented in the final paragraph of Section 4.2 of this document.

Because of the complexity of the subject and the multitude of phrases constituting the natural resources assessment issue, two guidance format types

are being suggested. This includes a Technical Position, which will be supplemented/complemented by one, perhaps more License Application Review Plan(s). The rationale underlying the selection of these types of guidance is discussed below (see Section 4.2). The suggested TP would provide regulatory guidance to include (1) identification and clarification of regulatory requirements (see Attachment B) and (2) an identification of a number of words and phrases constituting portions of the natural resources provisions of the rule which are considered controversial and require clarification in order to minimize the need for resolution of issues late in the hearing process (see Attachment A.) A LARP, or series of LARP's, would provide guidance on compliance by DOE, through identification of review procedures and acceptance criteria constituting the staff's evaluation of the DOE license application, thereby facilitating DOE's compliance with 10 CFR Part 60.

The staff has considered the regulatory requirements of 10 CFR Part 60 relevant to natural resources. This consideration includes an assessment of the risk of future human intrusion into a repository resulting from activities associated with the exploration for, and perhaps eventual, exploitation of, these natural resources. The specific requirements include performance objective §60.113(c), and additional rule provisions (§60.2, §60.21(c)(13), §60.122(c)(17) and §60.122(b)(4). The rule provisions center on (1) demonstrating, given the presence (or presumed presence) of a potentially adverse condition that the performance objective relating to waste isolation (human intrusion resulting from natural resource exploration and/or mining activities) after permanent closure will not be compromised (10 CFR Part 60.113(c)). Part 60.2 provides

* See Section 2.0 for further details.

for consideration in a licensing hearing of "unanticipated processes and events" which expressly includes a human intrusion scenario such as exploratory drill holes associated with natural resources exploration. The regulations likewise require that the license application for construction authorization include identification and evaluation of natural resources within the geologic setting of the repository (10 CFR Part 60.21(c)(13)). The presence of such naturally-occurring materials constituting a potentially adverse condition (such as the potential feasibility of economic extraction of such materials) must also be investigated under the siting criteria (§60.122(c)(17)). Siting criteria also require that favorable conditions associated with the presence of mineral assemblages (identified or undiscovered) be presented (§60.122(b)(4)). The previous rule provision cites as an example a mineral assemblage that when subjected to anticipated thermal loadings remains unaffected or perhaps even increases its capacity to inhibit radionuclide migration.

2.0 Proposed Guidance

Given the NRC staff concerns regarding the adequacy of DOE plans for assessing natural resources at the Yucca Mountain site, as described in several key DOE site-specific documents such as the Final Environmental Assessment (FEA) and the Consultation Draft Site Characterization Plan (CDSCP), and the potential for delays and increased cost in the high-level waste program if this issue remains unresolved at the time of submittal of the license application, the staff believes it would be in keeping with Commission policy to develop early guidance on acceptable methods for determining compliance with NRC requirements on natural resources. Guidance to be provided through two formats, a TP incorporating Tasks 1 and 2 as indicated below and a LARP enveloping Tasks 3, 4 and 5. At least one LARP, perhaps several, may be desired depending upon the desired timing and availability of human resources.

Since the provisions of the NRC's natural resources rule are, of necessity, generic, the proposed technical position and companion review guides are to provide both guidance and clarification to the DOE of such portions of the rule in order to facilitate the early resolution of natural resources-related issues. This clarification and guidance will include the following items or tasks: (1) identification of information required of the DOE in order to determine compliance with the NRC's regulatory requirements, (2) the identification and definition of a number of ambiguous terms/phrases within the natural resources-related provisions of the rule in order to facilitate the accomplishment of (1) above, (3) development of a methodology (preferably by DOE) for natural resources assessment that, if adopted in whole, or in part by the DOE, would satisfy the regulatory requirements identified in (1) above, (4) identification of the steps to be taken by the NRC (principally through quality assurance procedures) in its evaluation of the field data, samples and other information acquired by the DOE in support of its natural resources assessment, and (5) description of the activities to be undertaken by the NRC in its evaluation of the DOE's implementation of an acceptable natural resources assessment methodology (Task 3). [Note that NRC has recently tasked the U.S.

Bureau of Mines to report to NRC on what are existing and acceptable methods for assessing resources in the Yucca Mountain region.]

2.1 Technical Position

The suggested TP would provide regulatory guidance to include (1) identification and clarification of regulatory requirements (see Attachment A) and (2) an identification of a number of words and phrases constituting portions of the natural resources provisions of the rule which are considered controversial and require clarification in order to minimize the need for resolution of issues late in the hearing process (see Attachment A.)

An initial step in the process of issue resolution of natural resources including early identification of such items, would be a comprehensive, systematic requirements analysis of the natural resources provisions of 10 CFR Part 60 using as a focal point the outline of the analyses developed in 1987 by the Systems Engineering and Evaluation Branch (see Attachment B). Utilization of such an approach would serve two major purposes. First of all, it would permit and identify for the staff in clear, concise terms the nature of required licensing findings and would also identify actions or activities to be taken in order to accomplish the licensing finding. The requirements analysis could serve as a "living" document enabling any staff member, at any phase in the review status, to see the staff's current bases for assessment of the DOE's compliance with the natural resources provisions of 10 CFR Part 60. Additionally, the requirements analysis would serve as a guide to the DOE by identifying, from NRC's perspective, the types of information, data, and analyses to be submitted by the DOE in order to meet NRC's regulatory requirements. Coupled with the requirements analysis effort would be the identification and definition of those words, terms or phrases contained within the rule that may be considered either ambiguous or requiring elucidation (see Attachment A.) This task is considered essential for promotion of the early resolution of the natural resources issue by clarifying, at an early time, words, phrases, or terms that (given the absence of such definition) could possibly be misinterpreted or misunderstood by the DOE. The feeling is that considerable benefit (both in terms of staff time and staff resources) would be derived by the clarification (through definition) of segments of the rule prior to the possible raising of that issue or issues by the DOE.

2.2 Natural Resources (Arid Environment) Assessment Methodology

Compliance with the NRC's regulatory requirements is dependent upon the DOE's utilization of a methodology or, more than likely, a combination of methodologies, designed to assess the natural resources of the geologic setting and to submit such information in the Safety Analysis Report (10 CFR Part 60.21(c)(13) as a portion of the license application. Based upon the nature of DOE's CDSCP responsiveness to earlier NRC concerns, it is clear that timely direction in the form of a natural resources assessment methodology is needed. This has been demonstrated by staff concerns transmitted to the DOE as part of

the 1986 Final Environmental Assessment (FEA) comments and in 1988 as part of the Consultation Draft Site Characterization Plan (CDSCP) point papers. The staff comments focused on : (1) the inadequacy of DOE's natural resources investigative program, (2) the lack of an integrated conceptual model for natural resources occurrences, (3) the lack of recent information pertaining to publications, models and discoveries and (4) the apparent lack of integration of proposed natural resources-related investigations with other data. Based upon the 1988 CDSCP content, it is apparent that the NRC FEA comments of 1986 have had minimal impact on changing the direction of the DOE's natural resources assessment program. Additional clarification and direction, such as in the form of an acceptable natural resources assessment methodology including a concise identification of the means for demonstrating compliance with NRC regulatory requirements is a necessity. Information derived through utilization of the natural resources assessment methodology (or methodologies) is to not only demonstrate conclusively the absence of natural resources, if such is the case, but is to identify a potentially adverse condition, should such exist, relative to the presence of naturally-occurring materials characteristic of the controlled area or possibly affecting isolation within the controlled area (10 CFR 60.122(c)(17)).

2.3 Quality Assurance Audits

Implementation of a natural resources assessment methodology results in the acquisition of field data collected through a variety of surface, subsurface and aerial investigations. The investigations include, but are not limited to, surface and subsurface sampling and geochemical and geophysical surveys. It is essential that the data which has been collected, and will continue to be collected by numerous investigators over a period of years, and which will be subject to intense scrutiny by various parties to the licensing process, is fully qualified. Reliability of the data acquired hinges upon the ability of the DOE to develop a fully implemented and effective Quality Assurance Program. Such Quality Assurance requirements are to be derived principally from 10 CFR Part 50, Appendix B and 10 CFR Part 60, Subpart G. Following development and implementation of DOE's NRC-approved Quality Assurance Program, frequent evaluation of the data is essential throughout the site characterization phase of investigations. This monitoring, to be performed by NRC/Center staff, should be conducted frequently, occurring preferably during the actual field acquisition of the data or, lacking the ability to do so, shortly thereafter.

Since much of the field data required for the assessment of natural resources is obtained through investigative techniques identical, or similar to those techniques to be utilized for other site characterization purposes, it would neither be practical, nor possible, in those cases, to separate natural resources-related quality assurance audits/reviews from those required for site characterization. Consequently, the majority of natural resources data subject to quality assurance audits/reviews would be evaluated/audited for completeness concurrently with the site characterization data. For natural resources assessment purposes, data acquired through surface and subsurface investigations such as geophysical surveys and drill holes, will probably

constitute the majority of the records subject to quality assurance evaluation. However, there will undoubtedly be considerable data, acquired for geochemical evaluation purposes for example, requiring audit and surveillance. 3.0

Justification

For two reasons (both of which center on the appropriateness of the NRC, rather than the DOE, providing clarification and/or guidance relative to 10 CFR Part 60) HLWM staff should undertake this effort. The primary reason is that, through its review of three major DOE documents, as discussed previously, it is apparent to the NRC that the DOE has not yet grasped the reasoning underlying the NRC's regulatory requirements for an acceptable natural resources assessment methodology. The second, perhaps equally as significant, reason is that the natural resources provisions of the rule contain words and phrases that, lacking appropriate additional definition and clarification, may lead to a misunderstanding on the DOE's part, resulting in a program loss of time and resources. With respect to the primary reason, the staff has found deficiencies in the DOE's plans to assess the mineral and energy resources of the Yucca Mountain site as early as 1985 (Draft Environmental Assessment). These deficiencies have continued through the Final Environmental Assessment in 1986 and in the DOE's January, 1988 Consultation Draft Site Characterization Plan for the Yucca Mountain site. The staff is concerned that without a clearer understanding of what is needed to meet NRC requirements for a comprehensive natural resources assessment, DOE efforts to develop the Site Characterization Plan (SCP) to assess natural resources may be inadequate. Clarification of words/phrases contained within the rule that are possibly ambiguous is unquestionably the role of the NRC, not the DOE.

4.0 General Information

4.1 TP/LARP Relation to the Review Process

Section 4.0 of the scope contains a discussion of the information requested in Items (4), (5), (6), and (7) of Section 4.2, "Scope Development", in the HLWM Policy #46 entitled "Work Plan on the Development of Technical Positions."

Item (4) requires that the scope describe how the proposed Technical Position and License Application Review Plan(s) (LARP) fit into the overall HLWM review process. As described in the preceding paragraphs, and as tabulated below, five subject areas, or phases if you will, constitute suggestions of tasks which should be undertaken by the staff, as a package effort. The steps (tasks) are:

- (1) Identification and clarification of regulatory requirements.
- (2) Definition of ambiguous words/phrases contained within the rule.
- (3) Development (preferably by DOE) of a natural resources assessment methodology specifically designed for application in an arid environment with particular attention directed toward the Yucca Mountain site environment.

(4) Identification of the process through which the quality of the data gathered in support of the natural resources assessment is to be assured.

(5) Description of activities to be undertaken by the staff while conducting its evaluation of the DOE's implementation of an acceptable natural resources assessment methodology.

4.2 Bases for Selections of Technical Position and LARP

In response to a sub-element within Item (4) of Section 4.2 "Scope Development", in HLWM #46, justification is requested for the use of a technical position (or a LARP) rather than as rule-making, a letter to the DOE or other mode of guidance. In the matter of natural resources assessment, several format choices are available to the staff within which DOE guidance could be developed and released. Additionally, the five task areas (see preceding paragraph) can be separated into two distinct categories with Tasks (1) and (2) constituting one format group (most likely as a technical position) to be prepared concurrently and released as a single product, while it is considered that Tasks (3), (4), and (5) appear to fit within the License Application Review Plan (LARP) guidance format and could be published as sequential separate items. Several objectives will have been attained through accomplishment of the above suite of tasks. These include:

(1) Development of a staff natural resources review plan.

(2) Development of guidance to the DOE by providing detailed insight into NRC requirements for complying with its regulations.

Since Tasks 1 and 2 relate directly to the rule and the NRC staff's interpretation of requirements associated with the rule, it is beneficial to provide the opportunity for public comment through the TP development process. A letter to the DOE would provide no such opportunity for public comment. Finally, although this information will ultimately be incorporated into the HLWM License Application Review Plan, it also needs to be presented to DOE for guidance prior to the completion of such an overall review plan. This would be sometime during the early stages of site characterization.

On the other hand, Tasks 3, 4 and 5 relate directly to staff methodology for review of certain aspects of the natural resources issue rather than the rule and as such need not be subjected to the level of detail as do Tasks 1 and 2.

This effort as envisioned would, through rule clarification, methodology development and description of review procedures provide guidance to the DOE in natural resources-related matters by containing NRC review procedures and acceptance criteria thereby enabling the staff to determine DOE compliance with 10 CFR Part 60. The LARP package (Tasks 3, 4 and 5) would serve as direct guidance to the DOE throughout the site characterization phase as to the review methodology employed by the NRC and would identify those investigations and analyses expected by the staff to be ultimately included in the DOE licensing

application. Additionally, the package would provide the means of monitoring, evaluating, and advising the DOE on the status of its compliance with NRC regulations through the early phases of site characterization rather than providing such guidance following submission of the license application.

4.3 Role of CNWRA in TP/LARP Development

Anticipated involvement of the Center for Nuclear Waste Regulatory Analysis (Center) would vary from task to task, but the Center would be requested to provide assistance on each of the five tasks described in this guidance package as follows:

Tasks 1 and 2 (Technical Position)

The NRC staff would look for considerable assistance from the Center and its cadre of consultants for the development of this technical position since this effort deals with the rule (requirements and definitions) portion (Tasks 1 and 2) of this guidance package. Development of Program Architecture should be timed to contribute directly to these tasks in FY 1989.

Task 3 (LARP)

The Center and its consultants would be extensively involved in this task (development of the basis of an acceptable arid environment natural resources assessment methodology) in FY 1990. Regarding this effort, it is anticipated that the U.S. Bureau of Mines, having previously developed a generic natural resources assessment methodology for the NRC, would provide valuable assistance in technical areas not available within either the NRC staff or the Center. [Note that NRC has tasked the U.S. Bureau of Mines to report to NRC on what are existing and acceptable methods for assessing resources in the Yucca Mountain region.]

Tasks 4 and 5 (LARP)

Assistance will be requested of the Center for both tasks - the conducting of quality assurance audits (Task 4) in FY 1989 and in the evaluation of the DOE's implementation of the NRC's natural resources assessment methodology (Task 5) in FY 1990.

4.4 Previous Guidance to the DOE

A survey of NRC products dealing with the natural resources-related issues has been made with the Offices of Nuclear Regulatory Research, NRR and NMSS. The resulting tabulation of five guidance documents follows:

(1) Regulatory Guide 4.17 - Standard Format and Content of Site Characterization Plans for High-Level Waste Geologic Repositories (published March 1987.)

- (2) NUREG-1200 - Standard Review Plan for the Review of a License Application for a Low-Level Radioactive Waste Disposal Facilities (published January 1987.)
- (3) NUREG-0902 - Site Suitability, Selection and Characterization. This is the Low Level Waste Licensing Branch Technical Position (published April 1982.)
- (4) NUREG-1199 - Standard Format and Content of a License Application for a Low Level Radioactive Waste Disposal Facility (published January 1987.)
- (5) NUREG- XXXX - Natural Resources Assessment Methodologies for Proposed High-Level Waste Repositories (undergoing revision by the U.S. Bureau of Mines; to be published in FY 1989).

In addition to the above, an early (1980) draft of the 1987 Regulatory Guide 4.17 was located and does provide a much-expanded version of the final regulatory guide. This document will be valuable in the formulation of the proposed LARP's (Tasks 3, 4 and 5).

Neither Regulatory Guide 4.17 nor the four NUREG's provide the type of definitive, detailed guidance required of the DOE for the resolution of the natural resources-related issues. The above tabulation makes it clear that, with the exception of two documents (Regulatory Guide 4.17 and the unpublished Bureau of Mines generic natural resources assessment methodologies NUREG), little direct guidance, applicable to the high-level waste program, has been provided to the DOE. This "guidance gap" will be accommodated through the approval and completion of the five tasks identified and discussed in this scoping document.

4.5 Project Schedule

In response to Item (5) of Section 4.2 "Scope Development", in HLWM #46, the project schedule for completion of the TP portion (Tasks 1 and 2) of a natural resources assessment review process strategy is presented in Attachment C. The schedule for the remaining segments (Tasks 3, 4 and 5) of the review process will be prepared following management review and anticipated approval of the five elements of the review process.

4.6 Annotated Outline

In response to Item (6) of Section 4.2 "Scope Development", in HLWM #46, the annotated outline is not included as a portion of this draft because (1) the nature of some of the uncertainties associated with this proposed Technical Position inhibit the orderly development of the outline and (2) the detail provided in preceding portions of this draft scope is fairly comprehensive and therefore provides much of the information requested in Appendix C (Standard Annotated Outline for Technical Positions, HLWM #46). A major uncertainty associated with the development of this TP is in determining the ability to obtain assistance from those personally involved with the original development of the rule. Every effort should be put forth to obtain this valuable

assistance since it would be most resource-effective to assign personnel who had been associated with the original rule development.

4.7 Identification of Meetings

With respect to Item (7) of "Scope Development" which deals with anticipated preliminary meetings, the following meetings seem necessary, as a minimum:

1) Meetings with Division, Research and Center managers to identify those staff members who could assist in this endeavour. Since many individuals originally associated with the development of the rule have been reassigned or have retired, the determination of the availability of resources will be a major effort. Likewise, since assistance from both the Office of Research and from the Center is being considered, not only the availability of human resources, but that of fiscal resources, are matters of concern. If resources (both human and fiscal) are not made available in a timely manner for assistance to the HLGP, the TP portion of the natural resources assessment task strategy should probably be deferred until such assistance is on-hand.

2) Meetings with RLPD to coordinate LARP. The Technical Position (consisting of two tasks as identified in Section 1.0), coupled with the LARPs (three separate tasks), should be considered as a coherent package, not readily amenable to development as single tasks.

3) Meetings with the U.S. Bureau of Mines concerning their report of investigations of existing and acceptable natural resources assessment methodologies applicable to the Yucca Mountain site.

4) Meetings with DHLWM leads on performance assessment, APE/UPE and with OGC and PM to coordinate and to integrate parts of the natural resources TP and LARP's that interface with other areas.

4.8 Sequence of Tasks

It is felt that the above tasks should be developed as a package with Tasks 1 and 2 (rule-related) being developed in tandem with Task 3 (natural resources methodology LARP). Tasks 4 and 5 would follow, building upon the guidance provided by Tasks 1, 2 and 3.

ATTACHMENT A

TERMS POSSIBLY REQUIRING CLARIFICATION IN NRC 10 CFR 60 REQUIREMENTS CONCERNING ASSESSMENT OF NATURAL RESOURCES AT CANDIDATE SITE FOR REPOSITORY DEVELOPMENT

§60.21(c)(13)

This provision requires that the Safety Analysis Report contain:

"(13) An identification and evaluation of the natural resources of the geologic setting, including estimates as to undiscovered deposits, the exploitation of which could affect the ability of the geologic repository to isolate radioactive wastes. Undiscovered deposits of resources characteristic of the area shall be estimated by reasonable inference based on geological and geophysical evidence. This evaluation of resources, including undiscovered deposits, shall be conducted for the site and for areas of similar size that are representative of and are within the geologic setting. For natural resources with current markets the resources shall be assessed, with estimates provided of both gross and net value. The estimate of net value shall take into account current development, extraction and marketing costs. For natural resources without current markets, but which would be marketable given credible projected changes in economic or technological factors, the resources shall be described by physical factors such as tonnage or other amount, grade, and quality."

A number of terms in this paragraph, particularly the underlined ones discussed below, may require additional clarification:

geologic setting. The paragraph requires "[a]n identification and evaluation of the natural resources of the geologic setting . . ." As defined in Part 60.2, "geologic setting" means the geologic, hydrologic, and geochemical systems of the region. Do earth scientists agree on the areal extent and vertical contours of these systems?

undiscovered. This term should be defined in terms of its significance in natural resources issues. For instance, by definition, "undiscovered" means "unknown," and yet Section 60.122(c)(17) of the rule (see below) speaks of "the presence . . . [of such resources] within the site". If something is "unknown" or "undiscovered" its "presence" is likewise not known. Should "presence" be interpreted to mean "implied" or "inferred" presence?

could affect the ability . . . to isolate. How much of an effect is necessary to trigger an evaluation? Is an evaluation necessary only for adverse effects or also for favorable effects? Over what time period do effects need to be evaluated?

reasonable inference. Undiscovered deposits of resources are to be estimated by "reasonable inference" based on geological and geophysical

evidence. What (1) degree of exploration and (2) method for extrapolation of information would constitute a "reasonable inference"? Could a "reasonable inference" be based solely on currently available geophysical evidence?

areas of similar size that are representative of. Evaluation of resources shall be conducted "for the site and for areas of similar size that are representative of and are within the geologic setting." Considering that there is currently no definition of the areal extent of the "geologic setting" it is possible, considering what may be a rather limited geographic area, that there may be no areas of similar size to evaluate. Some degree of latitude may be needed in the selection of an area of "similar size."

In addition, from a natural resources perspective, the geologic setting of the site may be unique, requiring that analogies be drawn from not one, but several "areas of similar size." How are such "representative" areas to be identified? To the extent that the repository site itself may not be representative, how is its natural resources potential to be considered in the selection of "representative" areas? Is there a basis for DOE to select areas with indications of resource potential comparable to the repository?

current markets. Considering that there will be a number of years intervening between (1) the time of the original assessments of gross and net value of any identified natural resource, (2) the time of presentation of such assessment in the licensing application, and (3) the points in the construction authorization, possession-for-waste-emplacement licensing, and license termination proceedings when such assessment values are subject to adjudication, economic conditions may have changed sufficiently to require reassessment of the "current market" on more than one occasion. It would appear that "current market" is a transitory term, requiring reevaluation at the time of each of the milestones identified above.

without current markets. This term can be interpreted in several ways. From one aspect "without current markets" can mean a low-grade ore (precious metal, oil shale or other material) for which there is no present market because of the high production costs involved in processing the ore. On the other hand, the term could be interpreted to require the applicant to attempt to develop a scenario (economic conditions having changed) wherein a market need is discussed relating to a mineral for which no current use is presently known. What interpretation would NRC be willing to defend? In commenting on a natural resources-related issue in the DOE Consultation Draft Site Characterization Plan (CDSCP) NRC has asked DOE how "resources without current markets" are to be selected by the DOE. Since this topic stems from the NRC rule, DOE may reverse the question and ask NRC to provide guidance.

credible projected changes. Resources without current markets are to be evaluated if "credible projected changes" in economic or technological factors would make them marketable. What "credible projected changes" need to be considered? Over what period of time? If a "credible projected change" is identified, to what extent, if at all, would DOE be required to estimate

undiscovered deposits using evidence and evaluative techniques sufficient to establish a "reasonable inference"?

§60.122(a)(2)

This portion of the NRC siting criteria provides that:

"(2) If any of the potentially adverse conditions specified in paragraph (c) [see below] of this section is present, it may compromise the ability of the geologic repository to meet the performance objectives relating to isolation of the waste. In order to show that a potentially adverse condition does not so compromise the performance of the geologic repository the following must be demonstrated:

(i) The potentially adverse human activity or natural condition has been adequately investigated, including the extent to which the condition may be present and still be undetected taking into account the degree of resolution achieved by the investigations; and

(ii) The effect of the potentially adverse human activity or natural condition on the site has been adequately evaluated using analyses which are sensitive to the potentially adverse human activity or natural condition and assumptions which are not likely to underestimate its effect; and

(iii)(A) The potentially adverse human activity or natural condition is shown by analysis pursuant to paragraph (a)(2)(ii) of this section not to affect significantly the ability of the geologic repository to meet the performance objectives relating to isolation of the waste, or

(B) The effect of the potentially adverse human activity or natural condition is compensated by the presence of a combination of the favorable characteristics so that the performance objectives relating to isolation of the waste are met, or

(C) The potentially adverse human activity or natural condition can be remedied."

This subsection contains a number of terms, particularly those underlined, that could require additional clarification as they relate to natural resource assessments:

adequately investigated. 60.122(a)(2)(i) requires that any potentially adverse condition (e.g., presence of natural resources) be adequately investigated, "including the extent to which the condition may be present and still be undetected." What would NRC consider to be an adequate investigation? Would it require any more investigation than would be needed to support findings under § 60.122(a)(2)(ii) and (iii)?

adequately evaluated. Possible effects of a potentially adverse condition on repository performance are to be "adequately evaluated using analyses which are sensitive to the potentially adverse human activity or natural condition and assumptions which are not likely to underestimate its effect . . ." What would be an adequate evaluation? What analysis can be considered "sensitive" to the potentially adverse human activity? What assumptions can be considered likely to "underestimate" its effect?

affect significantly. A repository site may be acceptable, despite the presence of natural resources, if such resources would not "affect significantly the ability of the geologic repository to meet the performance objectives" of Part 60. How would NRC define a significant effect? Does this wording mean simply that the repository must meet the performance objectives despite the presence of resources? To what extent would this requirement effectively constitute a non-degradation criterion (i.e., any reduction in performance would be unacceptable)? Does the rule permit DOE to take into account remedies or compensating favorable conditions in making a showing of no significant effect?

compensated. A repository site may also be found acceptable, despite the presence of resources, if favorable conditions compensate for the effect of resources. How should the type or degree of compensation be evaluated?

remedied. A repository site may be found acceptable, despite the presence of resources, if the potentially adverse condition can be remedied. What information or analysis must DOE provide to show that the presence (or suspected presence) of resources can be remedied? What assurances would NRC need to have sufficient confidence that a potentially adverse natural resource condition would be remedied? Assuming that DOE would be required under 10 CFR 60.121(a)(2) to purchase all rights to exploit minerals or other resources in order to hold lands for the repository operations and controlled areas "free and clear of all encumbrances," would such purchase of rights be sufficient remedy for a potentially adverse condition involving possible human intrusion for natural resource development?

§60.122(c)(17)

This section of the rule's siting criteria provides that the following conditions are potentially adverse conditions if they are characteristic of the controlled area or may affect isolation within the controlled area:

"(17) The presence of naturally occurring materials, whether identified or undiscovered, within the site, in such form that:

(i) Economic extraction is currently feasible or potentially feasible during the foreseeable future; or

(ii) Such materials have greater gross value or net value than the average for other areas of similar size that are representative of and located within the geologic setting."

Terms not already discussed above that may require clarification are set forth below:

economic extraction ... feasible. The presence of natural resources at a site would be considered a potentially adverse condition if "economic extraction is currently feasible or potentially feasible during the foreseeable future...." How should NRC define the feasibility of economic extraction? Should feasibility be keyed to the ability of a commercial enterprise to obtain financing for extraction of the resource of interest in a deposit with similar potential (whatever "similar" is defined to be)? Should such deposit be within the geologic setting? Must there be actual profitable extraction taking place in order to find feasibility? Or would some other commercial or technological criterion or criteria be more appropriate for determining both current and future feasibility? Should "feasible" be defined differently for the different time periods of interest?

currently feasible ... foreseeable future. With respect to the feasibility finding above, should "current" feasibility be clarified to denote feasibility at the time of the repository licensing proceeding? How should "foreseeable future" be defined? If it can be argued that, because NRC must have reasonable assurance of compliance with EPA standards over a 10,000-year performance period, 10,000 years must by definition be considered a "foreseeable future" for licensing purposes, on what basis might NRC maintain that the "foreseeable future" for purposes of finding "economic extraction" need not be linked to that timeframe? In this regard, the discussion of "unanticipated process and events" below may assume added significance.

§60.2

This is the definition section of the rule. Among other things, it defines "unanticipated processes and events" in a way that provides special limits on the extent to which human intrusion scenarios must be considered in repository licensing:

"Unanticipated processes and events" means those processes and events affecting the geologic setting that are judged not to be reasonably likely to occur during the period the intended performance objective must be achieved, but which are nevertheless sufficiently credible to warrant consideration. ... Processes and events initiated by human activities may only be found to be sufficiently credible to warrant consideration if it is assumed that: (1) The monuments provided for by this part are sufficiently permanent to serve their intended purpose; (2) the value to future generations of potential resources within the site can be assessed adequately under the applicable provisions of this part; (3) an understanding of the nature of radioactivity, and an appreciation of its hazards, have been retained in some functioning

institutions; (4) institutions are able to assess risk and to take remedial action at a level of social organization and technological competence equivalent to, or superior to, that which was applied in initiating the processes or events concerned; and (5) relevant records are preserved, and remain accessible, for several hundred years after permanent closure."

One of the terms in assumption (2) bears on terms discussed above, and may also require clarification:

assessed adequately. Human-initiated processes and events may only be found to be sufficiently credible to warrant consideration if, inter alia, "the value to future generations of potential resources within the site can be assessed adequately under the applicable provisions of this part." The wording here is slightly different from that discussed above, although the concepts seem to be identical. Is a different interpretation intended? If so, what is it and on what basis would the NRC staff be able to defend it?

Is it clear that the Commission intended this language to provide, in effect, that if the value of a potential resource to future generations could not be adequately assessed, unanticipated processes and events initiated by human activities may not be considered sufficiently credible to warrant consideration? If so, can the "foreseeable future" under Section 60.122(c)(17) be taken as the period during which "the value to future generations of potential resources within the site can be assessed adequately"? If an "adequate" assessment can be made only for, say, a five- or ten-year period, would such assessments have to be made periodically throughout the pre-licensing and pre-closure periods in order to support Commission licensing and regulatory decisions concerning construction, operation, closure, and termination of the repository license?

§60.112 and the Effect of EPA Standards

The overall system post-closure performance objective in the Commission's repository licensing rule provides that:

"The geologic setting shall be selected and the engineered barrier system and the shafts, boreholes and their seals shall be designed to assure that releases of radioactive materials to the accessible environment following permanent closure conform to such generally applicable environmental standards for radioactivity as may have been established by the Environmental Protection Agency with respect to both anticipated processes and events and unanticipated processes and events."

One of the assurance requirements in EPA's 40 CFR 191 "Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Wastes" rule is that:

Places where there has been mining for resources, or where there is a reasonable expectation of exploration for scarce or easily accessible

resources; or where there is a significant concentration of any material that is not widely available from other sources, should be avoided in selecting disposal sites. Resources to be considered shall include minerals, petroleum or natural gas, valuable geologic formations, and ground waters that are either irreplaceable because there is no reasonable alternative source of drinking water available for substantial populations or that are vital to the preservation of unique and sensitive ecosystems. Such places shall not be used for disposal of the wastes covered by this Part unless the favorable characteristics of such places compensate for their greater likelihood of being disturbed in the future. [40 CFR 191.14(e)]

Before the EPA standards were remanded by the 1st Circuit Court of Appeals in 1987, NRC staff had been working on a conforming amendment to Part 60 that would have amended the portion of Section 60.122(c) on naturally-occurring materials to add as a potentially adverse condition: "The presence of significant concentrations of any naturally-occurring material that is not reasonably available from other sources." The staff had taken the view that the current NRC rule adequately addresses all other natural-resource-related requirements of the standard. Even assuming that no such additional conforming amendments to Part 60 will be required when EPA repromulgates its standards, the amendment proposed here may require additional clarification. How will it be clear to DOE and NRC when a material is "not reasonably available" from other sources, and what "concentration" of such a material will be considered "significant?"

NOTE: The rulemaking record may shed some light on the intended meaning of a number of the requirements discussed above, and any effort to clarify the terms so identified would be prudent to begin with an analysis of this record.

DRAFT**ATTACHMENT B**

10 CFR PART 60 ROLE/SECTION	10 CFR PART 60 ROLE/SECTION TITLE	10 CFR PART 60 REGULATION	REQUIRED LICENSING FINDINGS OR WORK ACTION
SUBPART A	GENERAL PROVISIONS.		
60.1	Purpose and scope.	None	None
60.2	Definitions.	(Definitions used in 10 CFR Part 60)	None
60.3(a)	License required. (Waste storage)	License required before a geologic repository operations area can receive or possess waste.	Approve License applications (and amendments thereto).
60.3(b)	License required. (Construction authorization)	Construction authorization required before construction of a geologic repository operations area can commence.	Approve License applications (and amendments thereto).
60.4	Communications.	None	Maintain a communication, recording, and tracking system for all communications, reports, and applications concerning 10 CFR Part 60. Assure that communications can be documented, traced, and controlled.
60.5	Interpretations.	Render interpretation concerning 10 CFR Part 60 requirements.	Maintain record of all General Counsel interpretations and/or opinions concerning 10 CFR Part 60.
60.6	Exemptions.	Render exceptions from the requirements of 10 CFR Part 60 by the Commission.	Review how proposed exemption(s) would affect the performance requirements for the geologic repository operations area. Approve of amendments to the License Application. Maintain a record of exemption disposition.
60.7(a,b)	License not required for certain preliminary activities.	"Preliminary" use of source or byproduct materials for purposes of site characterization, construction, or performance confirmation does not require a license.	Review proposed uses; establish criteria for handling and storage as required.
60.8	Reporting, recordkeeping, and application requirements.	None	None
60.9(a,b,c,d,e)	Employee protection.	None	None
SUBPART B	LICENSES:		
	PREAPPLICATION REVIEW.		
60.15(a)	Site characterization. (Site characterization program required)	DOE required to conduct a program of site characterization prior to license application.	Develop capability to independently review documents derived from site characterization activities. Includes but is not limited to SCP's, bi-annual SCP updates, and EA's.
60.15(b)	Site characterization. (At-depth testing required)	DOE required to conduct in-situ exploration and testing at emplacement depth.	Determine what constitutes an adequate program of in-situ testing and exploration.
60.15(c)	Site characterization. (Alternative site testing)	DOE required to conduct a program of site characterization, in-situ exploration, and testing at emplacement depths for alternative sites.	Review SCP's and bi-annual SCP updates for alternative sites and media.
60.15(d)	Site characterization. (Program requirements)	---	---
60.15(d)(1)	(Limit adverse effects)	Characterization activities limit adverse effects on the long-term	Establish acceptable methods of evaluation and projection of

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10 CFR PART 60 RULE/SECTION	10 CFR PART 60 RULE/SECTION TITLE	10 CFR PART 60 REGULATION	REQUIRED LICENSING FINDING OR WORK ACTION
60.21(c)(4)	(Quality assurance program)	SAR includes a description of the quality assurance program to be applied to the structures, systems, or components important to safety and to the barriers important to waste isolation.	ces. Assure that DOE provides full documentation of all features mentioned.
60.21(c)(5)	(Radioactive waste specifications)	SAR includes a description of the kind, amount, and specifications of the radioactive material proposed to be received and possessed.	Assure that DOE provides full documentation of all features mentioned.
60.21(c)(6)	(Special license specifications)	SAR provides an identification and justification for the selection of those variables, conditions, or other items which are determined to be probable subjects of license specifications.	Develop a standard review plan for determining if there are any unique conditions requiring special license specifications. Assure that DOE provides full documentation of all features mentioned. Develop a defensible set of criteria for their identification and how they may influence final site design.
60.21(c)(7)	(Control and monitoring of radioactive effluents)	SAR includes a description of the program for the control and monitoring of radioactive effluents and occupational radiation exposures.	Assure that DOE provides full documentation of all features mentioned.
60.21(c)(8)	(Access to controlled areas)	SAR includes a description of the controls that DOE will apply to restrict access and to regulate land use at the site and adjacent areas. Included is a description of the conceptual design of monuments which would be used to identify the controlled area after permanent closure.	Assure that DOE provides full documentation of all features mentioned.
60.21(c)(9)	(Radiological emergency plans)	SAR includes description of plans for coping with radiological emergencies at any time prior to permanent closure, decontamination, or dismantling of surface facilities.	Assure that DOE provides full documentation of all features mentioned.
60.21(c)(10)	(Control and accounting program)	SAR includes a description of the nuclear material control and accounting program.	Assure that DOE provides full documentation of all features mentioned.
60.21(c)(11)	(Design considerations for closure)	SAR includes a description of design considerations that are intended to facilitate permanent closure and decontamination or dismantlement of surface facilities.	Assure that DOE provides full documentation of all features mentioned.
60.21(c)(12)	(Plans for retrieval and storage)	SAR includes a description of plans for retrieval and storage of the radioactive waste should the repository prove to be unsuitable for geologic disposal of radioactive wastes.	Assure that DOE provides full documentation of all features mentioned. Determine if performance objectives for the option of retrievability can be met.
60.21(c)(13)	(Natural resource evaluation)	SAR includes an analysis of the natural resources of the geologic setting.	Review the methodology used to identify and evaluate the natural resources of the geologic setting. Assure that an appropriate methodology has been used for the recognition of undiscovered natural resources at the site and that the extent of the uncertainty in the evaluation is provided.
60.21(c)(14)	(R & D design confirmation)	SAR identifies those structures, systems, and components of the geologic repository which require research and development to confirm the	Develop a standard review plan for determining if there are any structures, systems, and components of the geologic

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10 CFR PART 60 RULE/SECTION	10 CFR PART 60 RULE/SECTION TITLE	10 CFR PART 60 REGULATION	REQUIRED LICENSING FINDING OR WORK ACTION
		approved or specified by NRC.	
60.113(b)	Performance of particular barriers after permanent closure. (Commission may set other release rates, containment period, or travel time)	On a case-by-case basis, NRC may specify different radionuclide release rates, designed containment period or pre-waste-replacement groundwater travel time, provided that the overall system performance objective, as it relates to anticipated processes and events, is satisfied.	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized. Develop defensible criteria for supporting different radionuclide release rates, designed containment period or pre-waste-replacement groundwater travel time. Prepare a standard review plan to ensure that the overall system performance objective as it relates to waste isolation can be met.
60.113(b)(1)	(EPA standards)	Any generally applicable environmental standard for radioactivity established by EPA will be taken into account when NRC specifies radionuclide release rates, designed containment period, or pre-waste-replacement groundwater travel time.	Perform a requirements analysis of EPA environmental standards for radioactivity. Prepare a standard review plan to assure compliance with its findings.
60.113(b)(2)	(Age and nature of waste)	The age and nature of waste, and the design of the underground facility will be taken into account when NRC specifies radionuclide release rates, designed containment period, or pre-waste-replacement groundwater travel time.	Review the relationship between the general performance objectives for waste isolation and the radioactive waste specifications and the principal design criteria for the geologic repository operations area as described by DOE in its design basis.
60.113(b)(3)	(Ambient geochemistry)	The geochemical characteristics of the host rock, surrounding strata, and groundwater will be taken into account when NRC specifies radionuclide release rates, designed containment period, or pre-waste-replacement groundwater travel time.	Review the relationship between the general performance objectives for waste isolation and the geochemical characteristics of the host rock, surrounding strata, and groundwater as described by DOE in its design basis.
60.113(b)(4)	(Performance uncertainty)	Particular sources of uncertainty in predicting the performance of the geologic repository will be taken into account when NRC specifies radionuclide release rates, designed containment period, or pre-waste-replacement groundwater travel time.	Develop procedures and methods of assessment needed to identify particular sources of uncertainty in predicting the performance of structures, systems, and components. Includes those engineered and natural barriers that may not themselves be part of the geologic repository operations area. Review results of R & D that have been used to confirm adequacy of design, safety, and containment. Develop plan for coordinating review of recommended changes to design specifications.
60.113(c)	Performance of particular barriers after permanent closure. (Commission may set additional requirements)	Additional requirements may be necessary in order to satisfy overall performance objectives as it relates to unanticipated processes and events.	Define defensible design and performance requirements that can be used to measure the effectiveness of natural and engineered barriers. Includes those barriers that may not themselves be part of the geologic repository operations area. Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized. Assure that these events are factored into the general design basis. Develop plan for coordinating review of recommended changes to design specifications.
	LAND OWNERSHIP AND CONTROL.		
60.121(a)	Requirements for ownership and control of interests in land. (Ownership of land)		

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10 CFR PART 60 RULE/SECTION	10 CFR PART 60 RULE/SECTION TITLE	10 CFR PART 60 REGULATION	REQUIRED LICENSING FINDINGS OR WORK ACTION
60.122(b)(2)(iii)	(Low vertical permeability and hydraulic gradient)	Hydrologic conditions in the saturated zone that provide low vertical permeability and low hydraulic gradient between the host rock and immediately surrounding hydrogeologic units.	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized.
60.122(b)(3)	(Geochemical conditions)	---	---
60.122(b)(3)(i)	(Precipitation and sorption of radionuclides)	Geochemical conditions that promote precipitation or sorption of radionuclides.	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized.
60.122(b)(3)(ii)	(Formation of radionuclides)	Geochemical conditions that inhibit the formation of particulates, colloids, and inorganic and organic complexes that increase the mobility of nuclides.	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized.
60.122(b)(3)(iii)	(Transportation of radionuclides)	Geochemical conditions that inhibit the transportation of particulates, colloids, and complexes.	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized.
60.122(b)(4)	(Mineral assemblage resiliency)	Mineral assemblages that will remain unaltered or alter to mineral assemblages having equal or increased capacity to inhibit radionuclide migration when subjected to anticipated thermal loading.	Define workable procedures by which certain events in the pre-closure can be categorized as "anticipated operational occurrences" and by which geologic processes and events which occur in the post-closure period can be categorized.
60.122(b)(5)	(300 meter emplacement depth criteria)	Conditions that would permit the emplacement of waste at a minimum depth of 300 meters from the ground surface.	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized. Develop a defensible set of criteria for determining if favorable conditions exist which permit emplacement of waste at a minimum depth of 300 meters from the ground surface.
60.122(b)(6)	(Population density)	A low population density within the geologic setting and a controlled area that is remote from population centers.	Determine if the geologic setting and controlled area have a low population density and are remote from population centers.
60.122(b)(7)	(Groundwater travel time)	Pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment that substantially exceeds 1,000 years.	Develop procedures and methods of assessment of groundwater travel time. Develop a defensible set of criteria for determining if performance objectives for pre-waste-emplacement groundwater travel time will be met. Define when the groundwater travel time is substantially in excess of 1,000 years.
60.122(b)(8)	(Hydrogeologic conditions in the unsaturated zone)	---	---
60.122(b)(8)(i)	(Moisture flux)	Low moisture flux in the host rock and in the overlying and underlying hydrogeologic units.	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized.
60.122(b)(8)(iii)	(Water table position)	A water table sufficiently below the underground facility such that fully saturated voids contiguous with the water table do not encounter the underground facility.	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized.
60.122(b)(8)(iii)	(Low permeability units above host rock)	A laterally extensive low-permeability hydrogeologic unit above the host rock that would inhibit the downward movement of water or	Define a workable procedure by which geologic processes and events which occur in the post-closure period can be cate-

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10 CFR PART 60 RULE/SECTION	10 CFR PART 60 RULE/SECTION TITLE	10 CFR PART 60 REGULATION	REQUIRED LICENSING FINDINGS OR WORK ACTION
		area in which the geologic setting is located.	investigated all potentially adverse conditions present at the site. Define a workable procedure by which geologic processes and events which occur in the post-closure period can be categorized at the site. Assure that DOE provides full documentation of all features mentioned.
60.122(c)(15)	(Igneous activity)	Evidence of igneous activity within the controlled area since the start of the Quaternary Period.	Develop procedures to assure that DOE has systematically investigated all past, present, or future igneous activity at the site. Assure that DOE provides full documentation of all features mentioned.
60.122(c)(16)	(Erosion)	Evidence of extreme erosion during the Quaternary Period.	Develop procedures to assure that DOE has systematically investigated all potentially adverse conditions present at the site. Assure that DOE provides full documentation of all features mentioned.
60.122(c)(17)	(Natural resource potential)	Presence of naturally occurring materials within the controlled area.	Develop conceptual and semi-quantitative models to describe the natural resources of the geologic setting.
60.122(c)(17)(i)	(Feasibility of economic extraction)	Naturally occurring materials within the controlled whose extraction is economically feasible or potentially feasible during the foreseeable future.	Determine if economic extraction of naturally occurring materials within the controlled area is currently feasible or economically feasible during the foreseeable future.
60.122(c)(17)(ii)	(Economic value)	Naturally occurring materials within the controlled whose gross value or net value is greater than the average for other areas of similar size that are representative of and located within the geologic setting.	Determine if naturally occurring materials within the controlled area have greater gross value or net value than the average for other areas of similar size that are representative of and located within the geologic setting.
60.122(c)(18)	(Past mining activity)	Evidence of previous subsurface mining within the controlled area.	Develop procedures to assure that DOE has systematically investigated all potentially adverse conditions present at the site. Assure that DOE provides full documentation of all features mentioned.
60.122(c)(19)	(Drilling evidence)	Evidence of previous drilling within the controlled area.	Develop procedures to assure that DOE has systematically investigated all potentially adverse conditions present at the site. Assure that DOE provides full documentation of all features mentioned.
60.122(c)(20)	(Complexity of engineering requirements)	Rock or groundwater conditions that would require complex engineering measures in the design and construction of the underground facility or in the sealing of boreholes and shafts.	Develop procedures to assure that DOE has systematically investigated all potentially adverse conditions present at the site. Includes defining workable procedures by which events in the pre-closure can be categorized as "anticipated operational occurrences" and which will provide the basis by which natural initiating events for the design basis for accidents can be reviewed. Assure that DOE provides full documentation of all features mentioned.
60.122(c)(21)	(Geochemical properties)	Geomechanical properties that would not permit design of an underground opening that would remain stable through permanent closure.	Develop workable procedures by which geologic processes and events which occur in the pre-closure and post-closure periods can be categorized. Includes determining which pre-closure events can be categorized as "anticipated operational occurrences" and which will provide the basis by which natural initiating events for the design basis for accidents

**MILESTONES AND SCHEDULE FOR THE
PROPOSED NATURAL RESOURCES TECHNICAL POSITION**

<u>Schedule</u>			
Milestone	Elapsed Time (weeks)	Accumulated Time (weeks)	Date
Initiate need for TP	0	0	02Nov1988
Obtain Program Planning and Status Assessment System (PPSAS) number	0	0	02Nov1988 (1)
Scope Complete	6	6	15Dec1988
Determination of need for TP	2 (2)	8	29Dec1988
Notify special parties of the staff intent to issue a TP	4 (3)	12	25Jan1989 (4)
Preliminary meeting	3	15	15Feb1989
Internal draft	23 (5)	38	01Aug1989
Internal NRC comments	4	42	01Sep1989
Public comment draft	8	50	01Nov1989
Federal Register Notice/ transmittal to Advisory Committee on Nuclear Waste	3	53	22Nov1989
Public comment period closed	10 (6)	63	07Feb1990
Evaluation of comments and Revision of TP	6	69	22Mar1990
Public meeting on disposal of comments	0	69	Not needed
ACNW review	2	71	05Apr1990

Complete Final TP	4	75	05May1990
Issue Final TP	4	77	03Jun1990

(1) Obtained prior to 02 Nov 1988 by Section Leader.

(2) Because of the discrepancy between the HLWM #46 milestone allowance (one week) for this item and the time suggested (ten working days) for this item in the J. Holonich example of a TP cover memo, an additional week has been added to the schedule.

(3) Additional week added (revised from 3 to 4) because of Holiday impact.

(4) PM letter to the DOE notifying them of the intent; letter to the Center identifying task and requesting assistance; letter to Research requesting assistance in the matter. Considerable reliance will be placed upon those NRC personnel (both on an active status and hopefully upon retired personnel such as Bob Wright) who played a substantial role in the development of the natural resources portion of the rule. Utilization of the thoughts of those involved in the initial promulgation of the rule will be invaluable in expediting this TP.

(5) The need for an additional seven weeks (increased from 17 to 24) time estimated because of the impact on human resources due to SCP review and comment development.

(6) Additional two weeks added (revised from 6 to 8) because of Holiday impact.

NOTE: At this time only minimal effort - and then only with respect to the TP - has been spent on resource estimate for fiscal years 1989 and 1990. This matter is to be discussed with the Section Leader since resources, other than HLGP, will constitute the predominance of the work. What needs to be determined is: (1) the ability of the Center to participate, (2) the ability to use the Center's consultants, (3) the ability to utilize the Office of Research personnel, if appropriate, and (4) the identification of others who had been involved in the development of the rule who could provide additional assistance to this effort.