

RAI 4.2.5.9-001: Provide a more detailed description of the activities being conducted and procedures now being used, and planned for the future, to implement flora and fauna protection within the geological repository operations area (GROA).

1. RESPONSE

The U.S. Department of Energy (DOE) conducts several activities to protect the flora and fauna within the geological repository operations area. These activities and the tasks associated with these activities are described below in Table 1-1.

Table 1-1. Flora and Fauna Protection Activities

Work Activities	Description
Pre-activity Surveys	Assess proposed activity sites for impacts on desert tortoises, other important biological resources, migratory birds, and jurisdictional waters of the United States. Serve as the bases for development of recommendations for conservation measures. Surveys are performed by walking proposed project areas and recording information needed. No surface disturbing activity is involved.
Reclamation Surveys	Include conducting reclamation pre-activity surveys in order to obtain a reclamation inventory and vegetation assessment necessary to develop site-specific reclamation stipulations to mitigate surface disturbances. These surveys are often done at the same time as pre-activity surveys. Surveys are performed by walking proposed project areas and recording information needed. No surface disturbing activity is involved.
Desert Tortoise Clearance Surveys	Performed just prior to surface disturbing activities. If needed, desert tortoises and tortoise nests may be relocated. Surveys are performed by walking proposed project areas and searching for tortoises.
Reclamation Monitoring	Following implementation of reclamation, areas are monitored by measuring vegetation characteristics until the vegetation meets pre-established success criteria based on percent plant cover, density, and species richness. Monitoring involves no surface disturbing activity.
Environmental Surveillances	Performed periodically to assess whether project work activities are being conducted in accordance with environmental requirements, including those requirements to protect flora and fauna. Surveillances are performed by walking and inspecting work activities.

As noted in Table 1.1, these activities involve surveys, surveillances, and monitoring, which are conducted by walking various areas, recording information, and inspecting work activities. Surveys, surveillances, and monitoring are designed to limit disturbance of the earth's surface.

Activities to protect the desert tortoise are undertaken in accordance with the U.S. Fish and Wildlife Service Biological Opinion as found in the Final Environmental Impact Statement, Appendix O. These activities include worker education, clearance surveys, biological monitoring, and the relocation of tortoises.

Flora and fauna protection activities are currently governed by DOE's land access and environmental compliance procedure. Updates to this procedure are not expected to involve new activities. Should new activities be added, the impacts of those activities would be evaluated.

In addition to the flora and fauna protection activities, disturbed areas no longer needed for project activities are required to be re-vegetated with native plants. Reclamation does not involve the disturbance of previously undisturbed areas or the permanent addition to the GROA surface of non-biodegradable materials different from the existing environment. Examples of areas subject to reclamation may include construction lay down or staging areas, drill pads, and access roads to these areas. Reclamation involves re-contouring and/or ripping the disturbed area, re-spreading topsoil, seeding, and mulching. Equipment used for reclamation activities and the activities they conduct are similar to equipment used and activities associated with construction at the site.

Site reclamation activities are currently conducted in accordance with the DOE reclamation plan. Updates to this plan are not expected to involve new activities. Should new activities be added, the impacts of those activities would be evaluated.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

RAI 4.2.5.9-002: Discuss any effects that these protection activities will have on the operation of the structures, systems, and components important to safety, or the engineered and natural barriers important to waste isolation in accordance with 10 CFR 63.21(c)(22)(vii).

1. RESPONSE

1.1 INTRODUCTION

This RAI (4.2.5.9-002) discusses the effects of protection activities that are included in the response to RAI 4.2.5.9-001. The effects of these activities on the operation of structures, systems, or components (SSCs) that are important to safety (ITS), as discussed in the preclosure section below, do not pose a threat to the operation of ITS SSCs. The effects of these activities on the operation of engineered or natural barriers that are important to waste isolation (ITWI), as discussed in the postclosure section below, are negligible.

The reclamation activity described in the response to RAI 4.2.5.9-001 with the greatest potential to affect the operation of the ITS SSCs and the ITWI barriers is recontouring previously disturbed areas and restoring the flora to its natural state.

1.2 PRECLOSURE EFFECTS

The earth moving activities involved in reclamation activities are similar to tasks that are performed as a part of construction activities that will take place concurrent with repository operations. These reclamation activities are less challenging to ITS SSCs than the construction activities analyzed in SAR Section 1.6.3.5. As discussed in the analysis of construction activities in SAR Section 1.6.3.5, construction activities do not initiate event sequences that could pose a threat to the operation of ITS SSCs; therefore, activities described in the response to RAI 4.2.5.9-001 would likewise not pose a threat to the operation of ITS SSCs.

1.3 POSTCLOSURE EFFECTS

Similar to the preclosure effects discussed above, the activities described in the response to RAI 4.2.5.9-001 with the greatest potential to affect the operation of the engineered and natural barriers important to waste isolation are related to reclamation implementation. Surface disturbing activities could potentially impact three features, events, and processes, which are analyzed in *Features, Events, and Processes for the Total System Performance Assessment: Analyses*. FEP 1.2.07.01.0A, Erosion/denudation, is excluded based on low consequence. FEP 2.3.01.00.0A, Topography and morphology, is included. FEP 2.3.11.02.0A, Surface runoff and evapotranspiration, is also included (see SAR Table 2.2-5).

SAR Table 1.9-8 identifies Topography and surficial soils as a feature of the upper natural barrier, and indicates that this feature's function is maintained by Design Control Parameter 09-04, Reclamation of Lands Disturbed by Repository. Because the activities described in RAI 4.2.5.9-001 include restoring flora and blending the restored area into the surroundings, the amount of erosion change due to the surface activities will be minimal, and the denudation of the

surface activity sites will be temporary. Topography change will be limited to the muck piles, which will preserve existing drainage patterns, blend into the natural topography when reclaimed, and will be located such that a 45-degree downward cone from the muck pile would not include any waste packages. The effects of surface-disturbing activities on the engineered barrier system and the lower natural barrier is negligible because of their location and extent relative to the geologic repository operations area, as defined in SAR Section 1.1.1.1.4 and depicted in General Information, Section 1, Figure 1-5. The postclosure engineered barrier system features are far below the ground surface, and are not affected by surface activities. The saturated zone feature of the lower natural barrier could only be affected by surface activities if the amount of recharge to the saturated zone is significantly increased. There is only a small amount of land disturbed by surface activities above or adjacent to the lower natural barrier. Because the fraction of the recharge area that is affected by surface activities is small, and because denudation is temporary, the overall long-term recharge to the saturated zone will not be significantly affected by the surface activities at the geologic repository operations area. Finally, the unsaturated zone above the repository feature of the upper natural barrier and the unsaturated zone below the repository feature of the lower natural barrier could only be adversely affected by surface activities if the infiltration is increased. However, the amount of infiltration in disturbed areas, during the time before repository closure at which time significant-size areas will be revegetated, will not significantly change the range of infiltration rates used in the total system performance assessment. Reclamation will render perturbations in the infiltration due to preclosure surface activity negligible within a short time after the repository is closed. Repository performance is not strongly sensitive to the infiltration (see SAR Section 2.4.2.3.3.7).

Project procedures address evaluation and control of proposed activities, including surface disturbing activities, with respect to waste isolation capabilities of the repository. These procedures result in evaluations that document potential effects and controls to limit the effects. The current evaluation for surface-based testing activities includes a requirement that, to the extent practical, surface-based testing sites are to be returned to their original condition after testing is complete. The evaluation also includes a discussion that compares the water usage for reclamation to the limits established based on the average evapotranspiration rate.

In summary, the activities described in the response to RAI 4.2.5.9-001 are controlled such that their effects on postclosure performance are negligible.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

RAI 4.2.5.9-003: Indicate if any archaeological sites, artifacts, or other cultural resources have been identified within the GROA.

1. RESPONSE

U.S. Department of Energy (DOE) has identified 28 archaeological sites and isolated artifacts within the geologic repository operations area. The geologic repository operations area, as defined in SAR 1.1.1.1.4 and depicted in General Information Section 1 Figure 1-5, has undergone site surveys for archaeological sites, artifacts, and other cultural resources. These surveys have been conducted in accordance with project procedures and Bureau of Land Management inventory guidelines. These 28 sites are included in the total number of archaeological and historic resources described further in Section 3.1.6.1 of the Supplemental Environmental Impact Statement for the analyzed land withdrawal area. Information pertaining to specific locations of cultural resources is considered sensitive for their protection.

The DOE, in consultation with the Advisory Council on Historic Preservation, has determined that one of these archaeological sites was eligible for inclusion in the National Register of Historic Places. The DOE has determined the remaining archaeological sites and isolated artifacts within the geologic repository operations area are not eligible for inclusion in the National Register. The Nevada State Historic Preservation Office has formally concurred with the DOE determination of eligibility on all but a few of these sites, each of which contains obsidian artifacts.

Although the Nevada State Historic Preservation Office has not yet formally concurred with DOE determination of eligibility for the remaining sites, the Nevada State Historic Preservation Office has asked the DOE to include the obsidian artifacts from these sites in the DOE obsidian hydration study of the Yucca Mountain area. Recent studies suggest that obsidian hydration can be used to provide age estimates of archaeological sites, and therefore, may be useful in understanding prehistoric American Indian settlement systems. The DOE cultural resource contractor, the Desert Research Institute, has already collected the obsidian artifacts.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

RAI 4.2.5.9-004: Provide a specific description of the activities being conducted and procedures now being used, and planned for the future, to implement its program under 36 CFR Part 800, as required by Sections 106 and 110 of the National Historic Preservation Act (16 U.S.C. 470 et seq.) within the geological repository operations area.

1. RESPONSE

The DOE is implementing its Cultural Resource Management Program, as required by Sections 106 and 110 of the National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.), through various field studies and environmental monitoring activities at the Yucca Mountain site, which includes the geologic repository operations area. A draft programmatic agreement among the DOE, the Advisory Council on Historic Preservation, and the Nevada State Historic Preservation Office also has been prepared for cultural resources management activities associated with the licensing and development of a repository at Yucca Mountain. The agreement currently is in negotiation.

Any proposed land-disturbing activity within the geologic repository operations area must first undergo evaluation in accordance with DOE procedures before DOE will authorize the activity to proceed. DOE procedures: establish the process for submittal, review, and approval of land access requests; assign responsibility for the control and granting of access to perform field work; establish notification requirements for conducting field work; and support compliance with applicable monitoring and mitigation requirements pertaining to protection of historic properties and cultural resources. These procedures apply to Yucca Mountain Project organizations, including organizations engaged in cooperative agreement activities performing Yucca Mountain Project field work within the geologic repository operations area.

The geologic repository operations area, as defined in SAR Section 1.1.1.1.4 and depicted in General Information Section 1, Figure 1-5, has undergone site surveys for archaeological sites, artifacts, and other cultural resources. These surveys have been conducted in accordance with project procedures and appropriate Bureau of Land Management inventory guidelines. However, if new finds are reported by project personnel within the geologic repository operations area, or if survey standards change, or if the information needed to determine which cultural resources are eligible for the National Register of Historic Places evolves, the DOE may determine a new cultural resource survey is warranted. If this occurs, the cultural resource survey would be conducted in accordance with DOE procedures and Bureau of Land Management inventory guidelines.

If cultural resources, including potential historic properties, are discovered during the site survey, they will be evaluated for their importance and eligibility for inclusion in the National Register of Historic Places. To the extent possible, adverse effects to these properties will be avoided. When avoidance is not possible, adverse effects will be mitigated through various measures, including collection of artifacts, excavation of archaeological deposits, systematic analysis of these materials, and preparation of reports describing and interpreting the results. In this way, the material remains from these historic properties, and their value for understanding the region's prehistory and history, will be retrieved and memorialized.

In addition, the DOE, in consultation with the Nevada State Historic Preservation Office and interested parties, may conduct archaeological data recovery or other treatment measures at properties that do not specifically meet the eligibility criteria of the National Register of Historic Places, if such measures provide useful background information about prehistoric or historic patterns.

While conducting activities within the geologic repository operations area, field personnel may discover a cultural resource, such as a Native American artifact. If this occurs, the process outlined in project procedures would be followed, including:

- Work is stopped in the vicinity of the cultural resources.
- The finding is reported to the appropriate management who will notify the appropriate authorities.
- The finds or remains are protected from any damage, and project activities are suspended until notified that work may proceed.

The draft programmatic agreement among the DOE, the Nevada State Historic Preservation Office, and the Advisory Council on Historic Preservation for Licensing and Development of a Nuclear Waste Repository at Yucca Mountain, Nye County, Nevada, discussed above also contains similar requirements for unanticipated discoveries.

The condition of known archeological sites is monitored periodically by the DOE cultural resource contractor, Desert Research Institute. Representatives from Native American tribes and organizations are invited to participate in site monitoring, as appropriate.

Personnel working at Yucca Mountain and within the geologic repository operations area are informed of their responsibilities for protecting archaeological resources, and trained through DOE general employee training.

Future implementation of DOE obligations under 36 CFR Part 800 within the geologic repository operations area will be conducted under the programmatic agreement among the DOE, the Advisory Council on Historic Preservation, and the Nevada State Historic Preservation Office. As discussed above the programmatic agreement is currently in formal consultation among the consulting parties. The DOE anticipates formal consultation concluding and the agreement signed before September 30, 2009.

Compliance with DOE procedures will continue to apply to future land access requests within the geologic repository operations area. Personnel working within the geologic repository operations area in the future will continue to be informed of their responsibilities for protecting archaeological resources and trained through general employee training.

The undertaking covered by the draft programmatic agreement includes activities conducted by the DOE and its contractors for the licensing and development of Yucca Mountain as a repository for disposal of spent nuclear fuel and high-level radioactive waste that have the

potential to affect historic properties. This agreement includes the areas within the geologic repository operations area.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

RAI 4.2.5.9-005: Discuss any effects that these activities will have on the operation of the structures, systems, and components important to safety or the engineered and natural barriers important to waste isolation in accordance with 10 CFR 63.21(c)(22)(vii).

1. RESPONSE

1.1 INTRODUCTION

This RAI (4.2.5.9-005) discusses the effects of activities intended to protect cultural resources. These activities are described in the DOE response to RAI 4.2.5.9-004. The effects of these activities on the operation of structures, systems, or components (SSCs) that are important to safety (ITS), as discussed in the preclosure discussion below, do not pose a threat to the operation of ITS SSCs. The effects of these activities on the operation of engineered or natural barriers that are important to waste isolation (ITWI), as discussed in the postclosure section below, are negligible.

1.2 PRECLOSURE EFFECTS

The activities intended to protect cultural resources are similar to tasks that are performed as a part of construction activities that will take place concurrent with repository operations. The cultural resources protection tasks are less challenging to ITS SSCs than are the construction activities that are analyzed in SAR Section 1.6.3.5. As discussed in the analysis of construction activities in SAR Section 1.6.3.5, construction activities do not initiate event sequences that could pose a threat to the operation of ITS SSCs; therefore, activities involved in protection of cultural resources would likewise not pose a threat to the operation of ITS SSCs.

1.3 POSTCLOSURE EFFECTS

Similar to the preclosure effects discussed above, the surface disturbing activities involved in the protection of cultural resources with the potential to affect the operation of the engineered and natural barriers important to waste isolation are less challenging than the surface disturbing activities related to construction. Surface disturbing activities could potentially impact three features, events, and processes which are analyzed in *Features, Events, and Processes for the Total System Performance Assessment: Analyses*. FEP 1.2.07.01.0A, Erosion/denudation, is excluded based on low consequence. FEP 2.3.01.00.0A, Topography and morphology, is included. FEP 2.3.11.02.0A, Surface runoff and evapotranspiration, is included (see SAR Table 2.2-5).

SAR Table 1.9-8 identifies topography and surficial soils as a feature of the upper natural barrier, and indicates that this feature's function is maintained by Design Control Parameter 09-04, Reclamation of Lands Disturbed by Repository. The effects of cultural resource identification, survey, and mitigation activities at the ground surface will be negligible. The amount of erosion change due to the surface activities will be minimal, and the denudation of the surface activity sites will be temporary. The effects of surface disturbing activities on the engineered barrier system and the lower natural barrier are negligible because of their location and extent relative to

the geologic repository operations area, as defined in SAR Section 1.1.1.1.4 and depicted in General Information Section 1, Figure 1-5. The postclosure engineered barrier system features are below the ground surface, and are not affected by surface activities. The saturated zone feature of the lower natural barrier could only be affected by surface activities if the amount of recharge to the saturated zone is significantly increased. There is only a small amount of land disturbed by cultural resource identification, survey, and mitigation activities above or adjacent to the lower natural barrier. Because the fraction of the recharge area that is affected by these cultural resource identification, survey, and mitigation activities is small, and because the disturbance is temporary, the overall long-term recharge to the saturated zone will not be significantly affected by these activities at the geologic repository operations area. Finally, the unsaturated zone above the repository feature of the upper natural barrier and the unsaturated zone below the repository feature of the lower natural barrier could only be affected by surface activities if the infiltration is significantly increased. However, the amount of infiltration in areas disturbed by cultural resource identification, survey, and mitigation activities is not expected to significantly change the range of infiltration rates used in the total system performance assessment. Reclamation will render perturbations in the infiltration due to these activities negligible within a short time after the repository is closed. Repository performance is not strongly sensitive to the infiltration (see SAR Section 2.4.2.3.3.7).

Project procedures address evaluation and control of proposed activities, including surface-disturbing activities, with respect to waste isolation capabilities of the repository. These procedures result in evaluations that document potential effects and controls to limit the effects. The current evaluations for surface-based testing activities includes a requirement that, to the extent practical, surface-based testing sites are to be returned to their original condition after testing is complete. The evaluation also includes a discussion that compares the water usage for reclamation to the limits established based on the average evapotranspiration rate.

In summary, the activities undertaken to protect cultural resources are controlled such that their effects on postclosure performance are negligible.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

RAI 4.2.5.9-006: Provide information on U.S. Department of Energy's (DOE's) planned activities if cultural resources are identified within the GROA in a pre-construction survey, to implement its program under 36 CFR Part 800, as required by Sections 106 and 110 of the National Historic Preservation Act (16 U.S.C. 470 et seq.) within the geological repository operations area.

1. RESPONSE

The geologic repository operations area, as defined in SAR Section 1.1.1.1.4 and depicted in General Information Section 1, Figure 1-5, has undergone site surveys for archaeological sites, artifacts, and other cultural resources, such as historic properties. However, if new finds within the geologic repository operations area are identified, or if survey standards change, or if the information needed to determine which cultural resources are eligible for the National Register of Historic Places evolves, the DOE may determine a new cultural resource survey is warranted. If this occurs, the cultural resource survey would be conducted in accordance with project procedures and appropriate Bureau of Land Management inventory guidelines.

If cultural resources, including historic properties, are discovered during any future site survey or activity, they will be evaluated for their importance and eligibility for inclusion in the National Register of Historic Places. To the extent possible, adverse effects to historic properties are avoided. When avoidance is not possible, these adverse effects are mitigated through various measures, including collection of artifacts, excavation of archaeological deposits, systematic analysis of these materials, and preparation of reports describing and interpreting the results. In this way, the material remains from these historic properties, and their value for understanding the region's prehistory and history, are retrieved.

In addition, the DOE, in consultation with the Nevada State Historic Preservation Office and interested parties, may conduct data recovery or other treatment measures at properties which do not specifically meet the eligibility criteria of the National Register of Historic Places, if such measures provide useful background information about prehistoric or historic patterns.

The DOE is currently in formal consultation on a programmatic agreement with the Nevada State Historic Preservation Office and the Advisory Council on Historic Preservation for the Licensing and Development of a Nuclear Waste Repository at Yucca Mountain, Nye County, Nevada. Provisions set forth under the programmatic agreement would apply to cultural resources found during future pre-construction surveys within the geologic repository operations area and throughout the Yucca Mountain Project area.

The DOE will maintain a historic property management capability with a qualified Cultural Resource Management Designee who will act as subject matter expert and point of contact for all historic property management actions related to this undertaking. The Cultural Resource Management Designee will meet the requirements of the Secretary of the Interior's "Professional Qualifications Standards," and will maintain the specialized professional qualifications and training to provide appropriate decision-making services, information, judgment, guidance, and recommendations through the duration of the programmatic agreement.

If potentially historic properties are encountered, the Cultural Resource Management Designee will evaluate the historical significance of the properties to determine if they qualify for the National Register of Historic Places, and assess potential effects to qualifying properties. Evaluations will be made with reference to appropriate historic contexts pertinent to the Yucca Mountain region, and will utilize inventory information to the extent practicable. If the information gathered in the inventory is inadequate to determine eligibility, limited testing or other evaluative techniques may be necessary to determine the nature, density and distribution of materials. The DOE will report results and evaluations to the Nevada State Historic Preservation Office for review and comment on determinations of eligibility. The Nevada State Historic Preservation Office will have 30 days to respond upon receipt of adequate information specified in 36 CFR 800.11(d)-(e). If the Nevada State Historic Preservation Office and the DOE disagree regarding a determination of eligibility, and through continued consultation cannot resolve the difference, DOE will notify all parties and seek a formal determination of eligibility from the Keeper of the National Register pursuant to 36 CFR Part 63. The Keeper's determination is final.

The DOE will also notify culturally affiliated tribes and the Advisory Council on Historic Preservation for the Licensing and Development of a Nuclear Waste Repository at Yucca Mountain, Nye County, Nevada of the results of the inventory and the DOE determinations of eligibility. The DOE will consult with culturally affiliated tribes to identify whether historic properties in the Yucca Mountain Project Operator-Controlled Area may hold traditional, religious, or cultural significance. Upon receipt of adequate information specified in 36 CFR 800.11(d)-(e), the tribes will have 30 days to respond regarding their views about the traditional religious and cultural importance of historic properties in the area of potential effects and their concerns on the activity's effects to those historic properties. Following Nevada State Historic Preservation Office and tribal review and comment, if the Cultural Resource Management Designee determines that an activity will not affect historic properties, then the DOE will document the finding of "no historic properties affected." The Cultural Resource Management Designee may then authorize activities to proceed.

Protective actions may at times be necessary to ensure an activity will not cause effects to nearby historic properties. The Cultural Resource Management Designee will determine what protective actions may be necessary, and will ensure that these actions are carried out. Protective actions may include modification of the area of potential effects, the establishment of buffer zones between the work area and an historic property, physical barriers (e.g., using flagging tape, painting, barriers and other forms), the deployment of monitors during conduct of the activity to assure site avoidance, stabilization efforts, or post-activity assessment.

To the extent practicable, the DOE will avoid adverse effects to historic properties through design, modification of the activity's area of potential effects, or relocation of facilities. If avoidance of adverse effects to an historic property is not practical, the Cultural Resource Management Designee will develop a treatment plan to resolve effects to the historic property. The Cultural Resource Management Designee will afford the Nevada State Historic Preservation Office, Advisory Council on Historic Preservation for the Licensing and Development of a Nuclear Waste Repository at Yucca Mountain, Nye County, Nevada, culturally affiliated tribes, and interested parties appropriate opportunity to comment on the draft treatment plan prior to finalization of the plan.

While conducting activities within the geologic repository operations area, if a cultural resource, such as a Native American artifact or human remains is discovered, work is stopped in the vicinity and the finding reported to the appropriate management. Appropriate measures will be taken to protect the cultural resource and work will not resume until so authorized.

The DOE anticipates formal consultation concluding and the programmatic agreement signed and implemented before September 30, 2009. In the event that an unanticipated discovery of potentially historic properties occurs within the geologic repository operations area after activities have commenced and the programmatic agreement is in effect, the DOE would comply with provisions set forth under this agreement. These provisions would include ceasing activities, notifying the Cultural Resource Management Designee, protecting the find until discovery can be investigated by a qualified specialist, and notification of and consultation with the Nevada State Historic Preservation Office, Advisory Council on Historic Preservation for the Licensing and Development of a Nuclear Waste Repository at Yucca Mountain, Nye County, Nevada, culturally affiliated tribes and interested parties. If human remains are discovered, under any circumstances, the discoverer will avoid damaging the remains, immediately stop all potentially damaging work activities, notify the Nye County Sheriff's Department, and the Cultural Resource Management Designee. In cooperation with the Nye County Sheriff's Department, the Cultural Resource Management Designee will initiate avoidance, security, and preservation measures to protect the remains until they can be treated properly and comply with the discovery procedures of the Native American Grave Protection and Repatriation Act of 1990 and 36 CFR Part 800, as appropriate and applicable. If the human remains are Native American, the Cultural Resource Management Designee will consult with culturally affiliated tribes to determine cultural identity, and discuss appropriate disposition to the appropriate tribe or family in accordance with Native American Grave Protection and Repatriation Act of 1990 and its implementing regulations at 43 CFR Part 10.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

RAI 4.2.5.9-007: Discuss how DOE would evaluate the effects of the pre-construction cultural resources survey results on the operation of the structures, systems, and components important to safety or the engineered and natural barriers important to waste isolation in accordance with 10 CFR 63.21 (c)(22)(vii).

1. RESPONSE

1.1 INTRODUCTION

This RAI (4.2.5.9-007) discusses the approach the DOE would use to evaluate the effects of activities identified in the DOE response to RAI 4.2.5.9-006, which are intended to protect cultural resources identified within the geologic repository operations area in the future. The approach is expected to be similar to the approach used to evaluate the effects of activities intended to protect cultural resources that have already been identified, the effects of which are described in the DOE response to RAI 4.2.5.9-005. Accordingly, as discussed in the preclosure discussion below, the effects of these activities on the operation of structures, systems or components (SSCs) that are important to safety (ITS) are not expected to pose a threat to ITS SSCs. As discussed in the postclosure section below, the effects of these activities on the operation of engineered or natural barriers that are important to waste isolation (ITWI) are expected to be negligible.

1.2 PRECLOSURE EVALUATION APPROACH

The activities associated with future discovery of cultural resources are expected to be similar to activities evaluated for existing cultural resources. The tasks involved in the protection of existing cultural resources are similar to tasks that are performed as a part of construction activities that will take place concurrent with repository operations. Cultural resource activities are less challenging to ITS SSCs than are the construction activities that are analyzed in SAR Section 1.6.3.5. As discussed in the analysis of construction activities in SAR Section 1.6.3.5, construction activities do not initiate event sequences that could pose a threat to the operation of ITS SSCs; therefore, activities involved in the protection of existing cultural resources would likewise not pose a threat to the operation of ITS SSCs. Because the activities associated with future discovery of cultural resources are expected to be similar to activities evaluated for existing resources, the activities associated with future discovery of cultural resources would also not pose a threat to the operation of ITS SSCs. New activities would be evaluated to determine if there would be any impacts to ITS SSCs, as described in the introduction to SAR Chapter 5.

1.3 POSTCLOSURE EVALUATION APPROACH

The activities associated with future discovery of cultural resources are expected to be similar to activities associated with existing cultural resources. The surface disturbing activities involved in the protection of cultural resources are similar to the surface disturbing activities associated with surface-based testing conducted during site characterization or with potential repository construction activities, and would be evaluated in a similar manner with respect to their effects on the operation of engineered or natural barriers that are important to waste isolation.

Project procedures address evaluation and control of proposed surface disturbing activities, such as excavation of archeological deposits, deployment of physical barriers, design changes, and relocation of facilities, with respect to waste isolation capabilities of the repository. These procedures result in evaluations that document potential effects on the operation of the engineered and natural barriers important to waste isolation, and in controls to limit the effects of those activities. For example, the current evaluation for surface-based testing activities includes an evaluation of excavation activities and specifies controls to limit the impact of those activities on the geologic setting.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.