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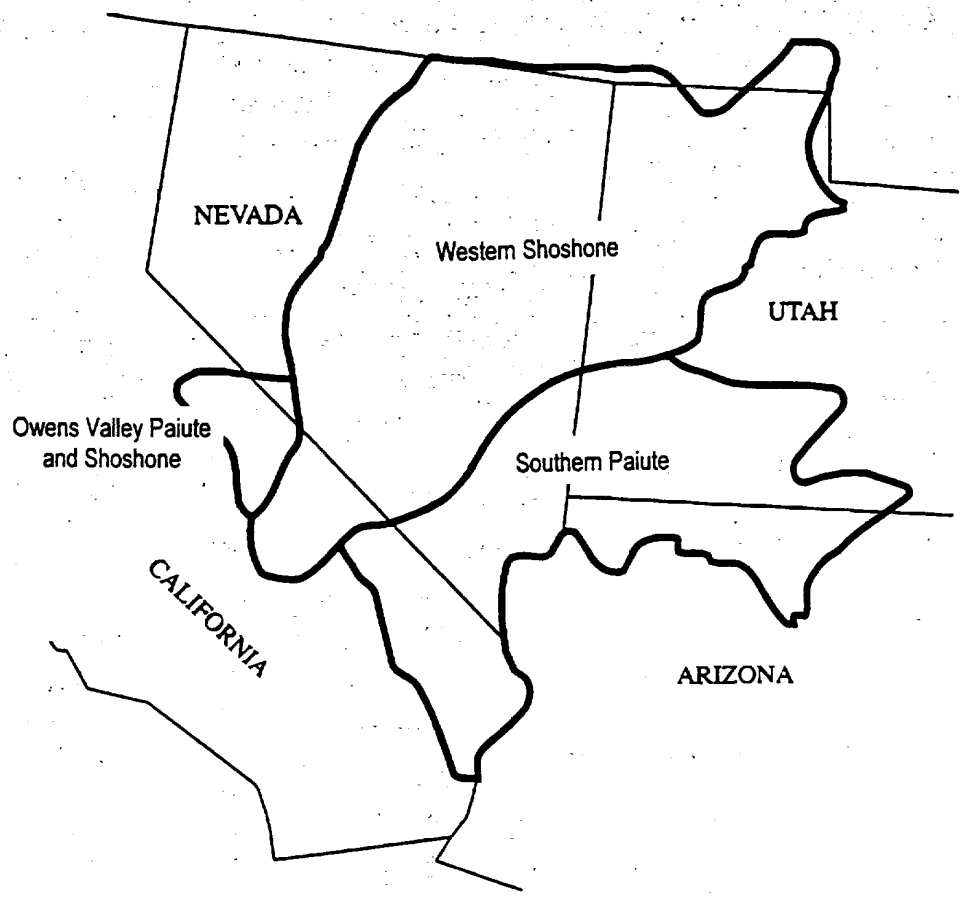
# AMERICAN INDIAN PERSPECTIVES ON THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT AND THE REPOSITORY ENVIRONMENTAL IMPACT STATEMENT

## AMERICAN INDIAN RESOURCE DOCUMENT




**February 1998**

**Prepared by**
**American Indian Writers Subgroup**
**Consolidated Group of Tribes and Organizations**

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# AMERICAN INDIAN PERSPECTIVES ON THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT AND THE REPOSITORY ENVIRONMENTAL IMPACT STATEMENT

## 1.0 INTRODUCTION AND OVERVIEW

This American Indian Resource Document (AIRD) is a summary of opinions expressed by the Consolidated Group of Tribes and Organizations (CGTO) regarding the proposed Repository Environmental Impact Statement (EIS) for the U.S. Department of Energy's (DOE), Yucca Mountain Site Characterization Project (YMP) situated within the State of Nevada. The document contains (a) general concerns regarding long-term impacts of the DOE's operations in the Yucca Mountain area, and (b) a synopsis of specific comments made by the American Indian Writers Subgroup (AIWS).

This AIRD was produced in response to the Repository EIS and in accordance with DOE Order 1230.2 American Indian Tribal Government Policy. The consultation focused specifically on the proposed siting of a high-level radioactive waste and spent nuclear fuel repository at Yucca Mountain. However, it should be noted that the CGTO's response to this consultation is not limited to the EIS, but also integrates relevant recommendations and insight made by Indian people throughout their long-term relationship with the DOE and involvement with other federal agencies.

The CGTO has an extensive history of affiliations with the various federal agencies including the DOE's YMP. Recognizing the traditional ties between Indian people and the Yucca Mountain area, in 1987, the DOE initiated long-term research relating to the inventory and evaluation of American Indian cultural resources in the area. This research was designed to comply with the American Indian Religious Freedom Act (AIRFA) (42 USC 1996), which specifically reaffirms the First Amendment of the United States Constitution rights of American Indian people to have access to lands and resources essential in the conduct of their traditional religion. These rights are exercised not only on tribal lands but beyond the boundaries of a reservation (Stoffle et al., 1990a).

To reinforce their cultural affiliation rights and to prevent the loss of ancestral ties to land within southern Nevada, including the YMP area, 17 tribes and organizations aligned themselves together to form the CGTO. This group is comprised of officially appointed representatives who are responsible for representing their respective tribal concerns and perspectives. The CGTO has established a long-standing relationship with various federal agencies including the DOE. The primary focus of the group has been the protection of cultural resources and environmental restoration. The CGTO has participated in various cultural resource management projects, including the DOE YMP (Stoffle, 1987; Stoffle and Evans, 1988, 1990, 1992, Stoffle et al., 1988a, 1988b, 1989a, 1989b, 1990a, 1990b), the Nevada Test Site (NTS) AIRFA Compliance Program, the Underground Weapons Testing Project (Stoffle et al., 1994b), and Native American

Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001-13) Compliance Program for the NTS Collection (Stoffle et al., 1996a), and the Nellis Air Force Base Native American Interaction Program.

Originally, the tribes met to formulate their thoughts from the collective wisdom of the group and to develop a resolution. The resolution that follows has served as the basis for establishing and conveying the position of the CGTO.

*The 16 (later increased to 17) Native American tribes involved in the Nevada Nuclear Waste Storage Investigations project (currently referred to as the YMP) strongly oppose the placement of a high-level radioactive waste disposal facility at the Yucca Mountain site due to the fact that the site is within the ancestral territories of certain Native American tribes or organizations, and due to possible hazardous ramifications such a facility may pose to the health and welfare of all people through contamination by any means (Stoffle et al., 1990a).*

While this AIRD provides recommendations that target the preservation of American Indian religion, culture, society, and economy, many of the comments presented here focus heavily on cultural resources. This emphasis is the product of continued cultural resource management consultation with the CGTO, which has reinforced Indian people's awareness of the wealth of cultural resources present in southern Nevada. On the other hand, the potential impacts of YMP activities on other essential aspects of Indian life, such as health and socioeconomics, are virtually undocumented. Being of a minority group indigenous to the area, American Indians have often been overlooked in regard to issues of Environmental Justice. The CGTO recommends that these issues be systematically evaluated by the DOE for this project. The opportunity given to the CGTO to develop a resource document is viewed optimistically as a positive step the YMP has taken toward eliciting Indian concerns.

The AIRD attempts to assess the impacts and effects that alternative management decisions will have on future activities conducted in the Yucca Mountain area and on the environment. Strategies are also proposed for mitigating adverse impacts to cultural resources resulting from the geologic disposal of spent nuclear fuel and high level radioactive waste. In the sections that follow this introduction, the document briefly reviews past and present relationships between Indian people and the DOE and examines impacts of YMP activities on American Indian religion, culture and economy, and summarizes the CGTO's position regarding the proposed repository. In short, the AIRD describes the nature of the relationship between Indian people and the YMP and other federal agencies, from an all-encompassing overview in regards to impacts, consequences, mitigation, and management. However, the document can not adequately articulate the unspoken gap that exists between the federal agencies and the indigenous people of the land.

It is important to note that throughout this document, different terms are used to describe tribal representatives, i.e., American Indians or Indian people. While there are numerous perspectives as to the generally accepted term, typically it cannot be agreed upon as to the proper usage. It is important for the readers to understand that traditionally, American Indian groups describe themselves in their own languages as "*the People*" which more accurately reflects the literal

translation of themselves as having a higher status. In some instances, however, the terms are used interchangeably in the text but are meant to identify those people who are indigenous to the Yucca Mountain area. In addition, the term YMP is used in this AIRD to refer to past and ongoing site characterization activities and the construction and operation of a potential repository at Yucca Mountain.

The AIRD begins with a summary of formal interactions between the CGTO members and YMP. In the following section, the members of the AIWS explain their role in the production of this document and the responsibilities and difficulties they had to confront throughout the writing process.

Next, the Native American overview section stresses the central role that DOE lands have had in American Indian life from antiquity to contemporary times. Moving from the concept of cultural landscape as a whole to the resources contained in a landscape, this section also examines impacts to cultural resources, Environmental Justice, health, and socioeconomics, which is typically categorized as part of the "affected environment" in the EIS process. This section also includes a brief discussion on political integration as it applies to the YMP.

Mitigation is another integral part of the interaction process with Indian tribes and organizations. In the view of Indian people, the ideal mitigation strategy would be to avoid any action that further disturbs cultural resources within the YMP area. However, the CGTO is aware that certain actions must be taken to restore and/or protect YMP lands and its resources while keeping the site safe and clean for future human use. The CGTO recommendations for mitigating adverse consequences of such actions are summarized in this text.

To further enhance the relationship between the YMP and the CGTO, a step-by-step consultation procedure is explained which American Indians would like federal agencies to follow in order to achieve positive government-to-government consultations. This section is complemented by Appendix A to this report which describes a detailed Consultation Model originally produced for the U.S. Department of Defense (DOD) that was reviewed and edited by the AIWS.

The AIRD concludes with a recommendation for Indian involvement if an overall Resource Management Plan (RMP) is prepared for the YMP. This document explains the importance of taking into consideration ecological categories of Indian people for resource management. This section also provides a brief picture of future co-management relationships between the DOE and the CGTO that could potentially be implemented as part of the mission of the YMP.

## 1.1 AMERICAN INDIAN PARTICIPATION IN THE AMERICAN INDIAN RESOURCE DOCUMENT

The CGTO consists of the following tribes and official Indian organizations:

- *Western Shoshones*

  Duckwater Shoshone Tribe, Nevada
  Ely Shoshone Tribe, Nevada
  Yomba Shoshone Tribe, Nevada
  Timbisha Shoshone Tribe, California

- *Owens Valley Paiutes and Shoshones*

  Benton Paiute Tribe, California
  Bishop Paiute Tribe, California
  Big Pine Paiute Tribe, California
  Lone Pine Paiute Tribe, California
  Fort Independence Paiute Tribe, California

- *Southern Paiutes*

  Kaibab Paiute Tribe, Arizona
  Paiute Indian Tribe of Utah
  Moapa Band of Paiutes, Nevada
  Las Vegas Paiute Tribe, Nevada
  Pahrump Paiute Tribe, Nevada
  Chemehuevi Paiute Tribe, California
  Colorado River Indian Tribes, Arizona

- *Other Official Indian Organizations*

  Las Vegas Indian Center, Nevada

## 1.2 AMERICAN INDIAN WRITERS SUBGROUP

*Representing the Western Shoshones:*

| | |
|---|---|
| Maurice Frank | Yomba Shoshone Tribe, Nevada |
| Jerry Charles | Ely Shoshone Tribe, Nevada |

*Representing the Owens Valley Paiutes and Shoshones:*

| | |
|---|---|
| Neddeen Naylor | Lone Pine Indian Tribe, California |
| Gaylene Moose | Big Pine Indian Tribe, California |

*Representing the Southern Paiutes:*

| | |
|---|---|
| Betty Cornelius | Colorado River Indian Tribes, Arizona |
| Cynthia Osife | Kaibab Paiute Tribe, Arizona |

*Representing Indian Organizations:*

| | |
|---|---|
| Don Cloquet | Las Vegas Indian Center, Nevada |

*Coordinator:*

| | |
|---|---|
| Richard Arnold | Pahrump Paiute Indian Tribe, Las Vegas Indian Center, Nevada |

## 1.3 FEDERAL GOVERNMENT SPONSORS

*U.S. Department of Energy - Yucca Mountain Site Characterization Project*

| | |
|---|---|
| Wendy Dixon | Assistant Manager for Environment, Safety, and Health |
| Scott Wade | YMP Tribal Liaison |

## 1.4 AMERICAN INDIAN WRITERS SUBGROUP - SUMMARY OF MEETINGS

During the November 1996 YMP Tribal Updating Meeting, CGTO representatives met with YMP personnel regarding the development of an EIS for the YMP. Discussions took place regarding the preparation of an American Indian resource document outlining Native American viewpoints concerning the Yucca Mountain area. This document would be used as a reference report to assure DOE comprehension of Native American views and concerns during the preparation of the YMP EIS. The CGTO's recommendations covered a wide range of issues.

To begin the process, the CGTO recommended that two representatives from the Western Shoshone, Owens Valley Paiute, and Southern Paiute groups be appointed to write the American Indian perspective for a resource document. The CGTO recommended that AIWS representatives be provided with funding, technical assistance, and resources necessary to develop a resource document for the YMP EIS. Richard Arnold, Executive Director of the Las Vegas Indian Center in Las Vegas, Nevada, would coordinate the activities of the AIWS. The draft text produced by the AIWS was to be reviewed by the participating writers and their tribes prior to submittal.

The YMP accepted this recommendation, offering to compensate the writers for their services and travel expenses, and to provide the AIWS with the necessary technical assistance, and resources needed to convey the American Indian perspective in a resource document. The DOE and the AIWS agreed to meet in Las Vegas, Nevada, to initiate the writing tasks that would be

supported by the Civilian Radioactive Waste Management System Management and Operating Contractor who would provide the necessary computers, resources, and documents.

### 1.4.1 First AIWS Meeting

The first meeting of the AIWS was held June 1997 in Las Vegas, Nevada. A briefing was provided by Mr. Scott Wade, Tribal Liaison for the Yucca Mountain Site Characterization Office concerning the development of an EIS for the YMP. Background information was provided about the scoping process which included 15 nationwide meetings that attracted 800 people with over 1,000 concerns. In late 1996, Jason Associates Corporation was selected to assist the DOE in the development and production of an EIS for the YMP. To systematically elicit the concerns of Indian people as mandated by the DOE's American Indian Policy, the DOE advised the CGTO and members of the AIWS to begin making arrangements in preparation for the production of this resource document which illustrates the DOE's long-term commitment to consult with culturally affiliated tribes and organizations.

The reasoning behind requesting AIWS participation at this time, was attributed to overall budgetary constraints nationwide in 1996, which resulted in a diminishment of EIS-related activities. Even though the formal scoping process closed on December 5, 1995, Indian people felt compelled to participate by expressing their concerns in this document to exercise their sovereign rights and not be considered as stakeholders as mistakenly identified.

In preparation for this document, the AIWS received periodic updates and background information about the basic design of the EIS and considered what was necessary to construct, operate, and close a geological repository for permanent disposal of high-level radioactive waste and spent nuclear fuel at Yucca Mountain. Other presentations from scientists and engineers focused on the transportation of high-level radioactive waste and spent nuclear fuel and the proposed rail corridors and routes for heavy haul-trucks. The proposed corridors and routes are expected to pass through land currently or formally occupied by various Indian tribes belonging to the CGTO. The AIWS has recommended that these transportation corridors and routes which fall within the boundaries of the Nellis Air Force Base, NTS, and YMP area, be situated in locations which do not disturb important cultural resource sites, potential Traditional Cultural Properties (TCPs), and sacred sites. The AIWS recommended that systematic studies be initiated cooperatively between the CGTO and the DOE to ascertain the impacts to cultural resources and the Indian people who live and gather foods and medicines along these corridors.

Transportation and dose assessments resulting from potential accidents and normal conditions have been identified as areas of concern by tribal governments. These assessments are believed to illustrate a disproportionate health risk due to the concentration of tribal members who reside at one location, and the fear of consuming traditional foods and medicines which may have become contaminated. The results of potential accidents are believed to result in negative impacts on tribal economies, tourism, infrastructure, and cultural well-being.

Other issues of concern identified and received during the scoping process were emergency preparedness support, environmental justice, protection of and access to cultural resource sites,

and cultural differences and perspectives relating to the storage of high-level radioactive waste and spent nuclear fuel. Throughout the Native American Interaction Program (NAIP), Indian people have expressed similar concerns and the potential negative impacts from siting a high-level radioactive waste and spent nuclear fuel repository at Yucca Mountain. Since the inception of this program, the culturally affiliated Indian tribal governments, in addition to the collective voice of the CGTO, have gone on record as formally opposing the nature of site characterization activities which could lead to determining the suitability of the area for a potential repository. Ongoing studies conducted as part of the NAIP have illustrated these continuous concerns and have become the basis for better understanding the perspectives of Indian people.

The goal of this meeting was to develop a writing strategy, draft an outline of writing tasks, and produce draft text. The AIWS identified three major issues that should be addressed in the resource document and in the EIS. These issues include:

1. American Indians have lived in YMP lands since the beginning of time.

2. American Indian culture, economy, religion, and health will be affected by the proposed YMP Repository.

3. The cultural significance and interpretation of areas found in the YMP area will be presented by American Indians through the AIWS.

The AIWS considered several areas in the development of this document that were derived from the comments and recommendations made by the CGTO through the NAIP. These recommendations truly became the foundation for this document. Contained throughout the text is the reference to the necessity of American Indian consultation as an essential component of a comprehensive scoping process. Dialogue among Indian tribes and the DOE is a critical source of information for better understanding the impacts of the current and proposed YMP activities on natural and cultural resources important to Indian people.

In preparation of an outline of writing tasks, the AIWS made the following three decisions regarding the writing of the American Indian perspective for the YMP:

1. The AIWS will produce short technical essays focusing on a wide range of topics such as cultural resources, tribal economics, and health.

2. The text will be assembled into an AIRD that will be used in the development of the EIS.

3. The report will be titled *American Indian Perspectives on the Yucca Mountain Site Characterization Project and the Repository Environmental Impact Statement.*

During the first meeting, the AIWS reviewed relevant background materials and produced short essays and draft text that documents the American Indian perspective for the YMP EIS.

### 1.4.2 CGTO Tribal Update Meeting

In September 1997, a Tribal Update Meeting was held which primarily focused on the proposed YMP EIS. The draft AIRD was mailed to all 17 tribes and organizations prior to the meeting for review and comment. The meeting was attended by 22 Native American representatives and additional comments and guidance for the development of the AIRD were received.

### 1.4.3 Second AIWS Meetings

A second meeting of the AIWS was held in December 1997 in Las Vegas, Nevada. The goal of this meeting was to incorporate comments from participating tribes and organizations and to finalize unfinished portions of the resource document. The AIWS focused heavily on transportation issues and analyzed numerous maps showing proposed rail and heavy-haul routes. The additional comments and text were inserted into the draft resource document by the AIWS Coordinator in January 1998.

### 1.4.4 American Indian Involvement in the EIS Process

Beginning in 1997, the DOE requested the assistance of the AIWS to develop a resource document for consideration during the preparation of the YMP EIS. This bold step confirmed the government-to-government relationship that exists with the culturally affiliated tribes and organizations. This request was based on the previous involvement of the AIWS in the development of a resource document, and actual text for NTS Site-wide EIS. The following is an abbreviated version of a paper which was developed by the AIWS illustrating their perceptions of their participation in the development of a comprehensive and complex EIS.

On June 4, 1996, the AIWS was asked to develop and present a paper describing their efforts at the National Conference for Environmental Professionals in Houston, Texas. The following section is intended to share American Indian views of the EIS process in hopes of helping the YMP better understand some of the cultural dynamics involved. An excerpt from the paper entitled *Voicing American Indian Concerns through an Indian EIS Writing Team* is provided. The excerpt explains how the AIWS proceeded to write this text, their role and responsibilities in the production of the AIRD, and the difficulties they had to overcome throughout the preparation of text for the NTS EIS. A copy of the published proceedings paper (National Association of Environmental Professionals Conference Proceedings) is available through the U.S. Department of Energy/Nevada Operations Office (DOE/NV) Environmental Protection Division Office. Even though the paper describes the process which was used for the NTS, many of the concepts and philosophies contained herein should be considered in the development of the YMP EIS.

### 1.4.5 Voicing American Indian Concerns Through an Indian EIS Writing Team (modified excerpts)

Prepared By:

- Richard Arnold, Pahrump Indian Tribe, Pahrump, NV

Don Cloquet, Las Vegas Indian Center, Las Vegas, NV
Betty Cornelius, Colorado River Indian Tribe, Parker, AZ
Maurice Frank, Yomba Shoshone Tribe, Austin, NV
Gaylene Moose, Big Pine Indian Tribe, Big Pine, CA
Neddeen Naylor, Lone Pine Indian Tribe, Lone Pine, CA

Abstract. An American Indian writing team appointed by the 19 members of the CGTO (involved in the NTS program) prepared text for direct inclusion in the NTS EIS, prepared under the supervision of the DOE/NV. The procedure of having American Indians work directly on this EIS has produced relevant text in a timely manner, while keeping secret certain knowledge about Indian cultural resources.

Excerpt Introduction. American Indian concerns are by law and regulation to be incorporated into the environmental impact assessments of planned federal projects. Tribes do not consider themselves as "stakeholders" as defined by federal agencies, but rather a sovereign government within the boundaries of the United States who have a unique relationship and status unlike any other. All too often tribal input is gathered through regularly scheduled public scoping meetings. This approach is not the appropriate manner in which to involve Indian tribes. These tribal governments, and the people they represent, generally desire to have their environmental action preferences fully voiced on a government-to-government basis.

Two factors directly impact the quantity and quality of Indian participation: (1) the time permitted for their involvement; and (2) the level of confidentiality that can be provided to protect cultural resources. Time is needed for Indian tribes to understand what actions are being proposed and to learn what rules govern the production of the EIS so that knowledgeable tribal members can be selected to participate and devote sufficient time for the identification and evaluation of potentially impacted resources. When past American Indian studies can be used as a base, shorter evaluation periods are appropriate; unfortunately, there is a national tendency to involve tribes late in the EIS process, or not at all. Indian people demand rights of meaningful involvement and confidentiality of information shared about sacred places and natural resources used in ceremonies, and do not want these threatened by being made public during the EIS process. Indian people would prefer not to participate in an EIS unless they can be assured that sharing culturally sensitive information with the agency will afford more protection rather than threaten cultural resources.

This excerpt describes the formation and successful performance of the first American Indian EIS writing team established and supported by a major federal agency. The paper describes how past DOE/NV consultations with 19 members of the CGTO provided the foundation of knowledge and trust that made the Indian EIS writing team possible. The paper includes how the DOE/NV EIS writing team trained the Indian writing team so that Indian EIS text would be produced under common assumptions and with similar quality controls. The paper ends with a general model for involving American Indian tribal governments and organizations into the EIS process, using the Indian EIS writing team approach.

Translating Ideas. Members of the AIWS have had to learn about the EIS process and how to translate American Indian concerns into appropriate language. When members of the CGTO talk among themselves, they do so from the perspective of a common culture and history. Many issues are understood, and these remain an unspoken dimension of American Indian conversations. Some issues are specific to gender; there are issues that women are assumed to know about and when discussion turns to these subjects men listen rather than speak. Other issues involve respect for age; elders have a special place in these Indian societies, so when they speak special attention is given. Even the style of speech is an understood issue of communication, because there is an appropriate amount of time after a speaker ends his presentation before someone else should speak. There are certain understandings that should not be expressed in public communication, especially when non-Indians are present. When certain issues are discussed, Indian speakers may be accused of "talking too much or telling too much." All these dimensions of culturally based Indian communication can be challenged when AIWS members translate their assessments of potential project impacts into the language contained in a resource document.

The amount of responsibility placed on the AIWS members is in direct proportion to the amount of consultation that has occurred between the agency and the culturally affiliated tribes. When the AIWS has years of consultation on which to build an EIS argument, they are more confident of what variables they suggest and of ways to study the issue. Key here is the issue of cultural confidentiality, because certain issues may be inappropriate for public discussion. The AIWS will always be concerned about "not saying too much to non-Indians." If the issues have emerged in previous consultation studies, however, the AIWS can simply raise the variable and cite the report. The NTS consultation has produced 10 years of issues raised and studies completed, so when talking about cultural resources, the AIWS worked from a position of strength. When they moved to topics that had not been previously assessed, however, they were much more tenuous about raising issues and suggesting research methodologies and anticipating the findings of systematic research.

Negotiating Text. In an EIS, all variables, levels of analysis, and descriptive text is negotiated. By this, it is understood that something like the relationship between economics and residence on a reservation or radiation and air as a living organism cannot become a variable for consideration in the EIS unless a strong and reasonable argument can be made by someone that it is potentially impacted by the proposed actions under consideration. Generally, variables are established very early in the scoping stages of an EIS. Clear cause and effect hypotheses must be described before a variable is included and before a study can be designed to assess potential impacts. Once a variable becomes a part of the EIS analysis, it is necessary then to specify the type and level of analysis required to fully or appropriately assess the potential impact of the proposed project on it. A study design is agreed to, funds are allocated, and a research team is selected to conduct the research. When the analysis is completed, the EIS team must decide how much space to allocate for presenting the findings. Since all EIS text is negotiated, the further along the EIS process proceeds the more difficult it is to change the structure of the document. Early involvement of Indian writers in a resource document assures them a better chance to produce and argue the EIS studies and findings.

Consensus decision-making characterizes how most American Indian committees operate. In this context, alternative views are carefully expressed so as not to imply others are incorrect. Forceful debate is not encouraged, because of the mutual respect observed and the ongoing relationships between the committee members is considered more important than a specific issue under discussion.

The EIS process is a virtual battleground of debate over which variables should be included, how much data collection is needed, and the amount of report space to allocate for presenting the findings. EIS teams typically have dozens of experts who represent the subject in the agency, and generally have not and will not again work directly with one another. The NTS EIS writing team, for example, consisted of 80 experts with more than 1,082 years of collective professional research and EIS preparation experience. Their performance is judged by their unit in the agency according to how much attention the EIS devotes to their subjects. Good debate resolutions are often described as being when everyone is equally unhappy about the decision. In this environment, the AIWS had to change the rules under which they would operate and become each other's first critic. If they could not convince each other, then they probably could neither convince the EIS writing team nor the agency decision-makers who would use the findings to formulate a Record of Decision.

Supporters and Detractors. The Indian writers' involvement in the EIS process would not have occurred or been as successful without the foresight and continuous commitment of key federal employees and program managers who supported the American Indian writing effort. Since the involvement of Indian writers in an EIS had never been undertaken previously by federal agencies, various apprehensions developed, as might be expected. Interestingly enough, during this EIS scoping period, many of the concerns about the potential adverse effects of American Indian involvement were voiced by individuals who neither worked on the EIS study team nor worked with the DOE/NV. These concerns ranged from questioning the appropriateness of actually including American Indian perspectives in an EIS, to the fear of setting a precedent within other federal agencies.

Throughout the development of the actual text and the final source document, those individuals who originally expressed doubts about the process regained their confidence, and eventually concluded that American Indians should be included in the EIS process in order to share important cultural information relating to the area. Additionally, the Indian writers provided interpretative information that many times either expanded or contradicted the conclusions of other scientists involved in the EIS. Oftentimes, reconsideration and estimations about the cumulative effects on their reservations were provided, which were typically overlooked or misunderstood.

Trainers. How do you get a team of Indian people up to speed quickly so they can understand what data and writing rules govern the production of an EIS? Probably one of the most challenging tasks for both the American Indian writers and the scientists was learning about each other's frame of reference. According to one member of the AIWS, although we never fully understood each other, a better understanding and familiarity was achieved. This was followed by explanations about the scientific outcomes and data in a manner which was responsive to the

needs of the Indian writers. Some of the primary ways of presenting this information was to respond to direct questions, provide background information about the project, thoroughly explain the study design, and finally concluding with an analysis and interpretation of scientific findings. This approach worked successfully and allowed the presented information to be discussed among the writers who in turn formulated the information within their own cultural context and frame of reference.

To further ensure that the text developed by the Indian writing team was appropriate and related to the EIS document, ongoing critiques of draft Indian text were requested by the Indian writers. Key people were identified to help critique the format and style of the text produced by the Indian writers. These key people possessed previous cross-cultural interactions and had experience with diverse populations. This type of background proved to be invaluable throughout the entire process.

# 2.0 NATIVE AMERICAN PERSPECTIVES

## 2.1 CENTRALITY ISSUE

For many centuries, the YMP study area and nearby lands have been important to the lives of American Indians. The YMP area and nearby lands contain traditional gathering, ceremonial, and recreational areas for Indian people. From antiquity to contemporary times, this area has been used continuously by many tribes. It contains numerous ceremonial resources and power places that are crucial for the continuation of American Indian culture, religion, and society. Until the mid-1900s, traditional festivals involving religious and secular activities attracted Indian people to the area from as far as San Bernardino, California. Similarly, groups came to the area from a broad region during the hunting season and used animal and plant resources that were crucial for their survival and cultural practices.

Many non-Indian people hold a different view of these lands. For example, the federal government has maintained the perception that the YMP is a remote area with very low population density and other characteristics that make it ideal for conducting site characterization activities to determine the suitability for the siting of a potential repository. Because of this "wasteland perception," YMP lands were withdrawn by the federal government by the Atomic Energy Commission for the Nuclear Test Site. Later, the federal agency was renamed the DOE who in turn changed the name of the area to the NTS and later designated a portion of the site specifically for the YMP.

Despite the loss of some traditional lands to destruction and reduced access, Indian people have neither lost their ancestral ties to, nor have forgotten the abundant cultural resources in the YMP area. Indian people have cared for the resources found within the YMP study area and will continue to do so. These strong beliefs and the presence of resources, confirm the continuity in the American Indian use of and broad cultural ties to the YMP.

Indian people acknowledge that the YMP land is part of the cultural landscape extending many miles in all directions. Because this land is a part and not the whole, it is, therefore, essential that YMP determinations of cultural affiliation, ancestral ties, and impact of YMP actions and programs on traditional Indian culture, religion, and society be made according to the broad regional use of lands around Yucca Mountain.

The extensive information compiled through long-term research involving the CGTO demonstrates that American Indian cultural resources are not limited to archaeological or historical remains of native ancestors, but include all natural resources, as well as geological formations contained throughout the region. Natural resources constitute critical components of American Indian daily life and religious beliefs. Plants and animals are a source of food, raw materials, and medicine. Ritual practices cannot be properly carried out without plants and animals. Similarly, natural landforms mark locations that are significant for keeping the historic memory of American Indian people alive and for teaching children about their culture and history.

This land and its resources are well-known by American Indian people. This knowledge has allowed them to be self-sufficient and to transfer all their cultural values and practices to future generations to this day.

## 2.2 AMERICAN INDIAN CULTURAL RESOURCES

### 2.2.1 Yucca Mountain Study Area.

The CGTO knows, based upon its collective knowledge of Indian culture and past American Indian studies, that American Indian people view cultural resources as being interconnected. Thus, certain systematic studies of a variety of American Indian cultural resources must be conducted before the cultural significance of a place, area, or region can be fully assessed. Although the NAIP has been in existence for some time, expanded efforts should be made to conduct specific studies about the cultural importance of the YMP area and nearby lands. In some portions of the YMP, a number of studies have been conducted with little or no American Indian involvement, while other studies have not yet begun. A number of the studies currently being planned could benefit from American Indian involvement.

Before Indian people can fully assess the cultural significance of a place and its associated natural and cultural resources, all studies must be complete and the tribal governments and organizations must have had the opportunity to review the recorded thoughts of its elders to determine their support of these conclusions. Typically, American Indian studies focus on one topic at a time so that tribes and organizations can send experts in the subject being assessed. The following is a list of studies that are required for a complete American Indian assessment:

1. Ethnoarchaeology - the interpretation of the physical artifacts produced by our Indian ancestors

2. Ethnobotany - the identification and interpretation of the plants used by Indian people

3. Ethnozoology - the identification and interpretation of the animals used by Indian people

4. Rock art - the identification and interpretation of traditional Indian paintings and rock peckings

5. Traditional Cultural Properties - the identification and interpretation of places of central cultural importance to a people, often referred to as "power places" by Indian people

6. Ethnogeography - the identification and interpretation of soil, rocks, water, and air

7. Cultural Landscapes - the identification and interpretation of spatial units that are culturally and geographically unique areas for American Indian people.

When all of these subjects have been studied, then it will be possible for American Indian people to assess three critical issues: (1) What is the natural condition of this portion of our traditional lands? (2) What has changed due to YMP activities? and (3) What impacts will proposed activities have on either furthering existing changes in the natural environment or restoring our traditional lands to their natural condition? Indian people believe that the natural state of their traditional lands was what existed before European contact, when Indian people were fully responsible for the continued use and management of these lands.

The YMP area and nearby lands were significant to the Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone people. The lands were central in the lives of these people and were mutually shared for religious ceremony, resource use, and social events (Stoffle et al., 1990a and b). When Europeans encroached on these lands, the numbers of Indian people, their relations with one another, and the condition of their traditional lands began to change. European diseases killed many Indian people; European animals replaced Indian animals and disrupted fields of natural plants; Europeans were guided to and then assumed control over Indian minerals; and Europeans took Indian agricultural areas.

The withdrawal of Nevada's lands for military purposes in the 1940s, followed by use of the land by the DOE (including the Yucca Mountain area), continued the process of Euroamerican encroachment on Indian lands. Land-disturbing activities followed, thus causing some places to become unusable again for Indian people. On the other hand, many places were protected by this land withdrawal because "pothunters" were kept from stealing artifacts from rock shelters and European animals were kept from grazing on Indian plants. The forced removal of Indian people from the YMP area was combined with their involuntary registration and removal to distant reservations in the early 1940s. Indian people were thus removed from lands that had been central in their lives for thousands of years.

Despite the disturbance and destruction of some cultural resources and the physical separation from the site characterization activities and neighboring lands, Indian people continue to value and recognize the central role of these lands in their continued survival. Recognizing this continuity in traditional ties between the Yucca Mountain area and Indian people, the DOE in 1987 began its first long-term NAIP involving the inventory and evaluation of American Indian cultural resources in the area. This research was designed to comply with various federal laws and executive orders including AIRFA, NAGPRA, and Executive Order (EO) 13007, *Indian Sacred Sites*. Throughout their involvement, the CGTO has continuously made recommendations to the DOE/YMP to assist in the design, implementation, and protection of cultural resources on and near the YMP. These recommendations can be found in Appendix B, *Recommendations and Commitments Regarding American Indian Cultural Resources.*

To reinforce their cultural affiliation rights, and to prevent the loss of ancestral ties to the Yucca Mountain area, 16 tribes and organizations who had demonstrated cultural and historic ties to the YMP, agreed to participate in 1987 in the original NAIP. In 1994, these tribes and organizations, aligned themselves together to adopt the name of the CGTO. In the same year, the CGTO recommended that the Ely Shoshone Tribe be invited to participate in the NAIP and become members of the CGTO. This group is formed by officially appointed representatives who are

responsible for representing their respective tribal concerns and perspectives. The CGTO has established a long-standing relationship with the YMP. The primary focus of the group has been the protection of cultural resources.

As mentioned earlier, the CGTO has participated in several cultural resource management projects, including the YMP and the Underground Weapons Testing Project. These studies are used in this report, along with the collective knowledge of the CGTO, as the basis of the comments in this resource document. The cultural resource management projects sponsored by various federal agencies have been extremely useful for expanding the inventory of American Indian cultural resources beyond the identification of archaeological remains and historic properties.

### 2.2.2 Plants and Animals

To date, the CGTO's involvement has supported in-depth studies of 107 plants and more than 20 animals that are present at Yucca Mountain and other nearby locations on the NTS. These plants and animals (Table 2-1 and Table 2-2) were identified by Indian elders as part of their traditional resources. Appendices C and D contain detailed listings of additional plants and animals that are present within or nearby the YMP study area. It is believed that these resources will be affected by YMP-related activities which are within an area roughly bounded and known from various sources to have been used by either Western Shoshones, Southern Paiutes, or Owens Valley Paiutes and Shoshones. Appendices C and D also contain the Indian names for these plants and animals.

Many of the plants identified as traditional use plants are derived from early American Indian interpretations of and concerns for plant resources on or near Yucca Mountain, Nevada. Representatives of the original 16 involved Indian tribes and organizations identified and interpreted plant resources, as part of a consultation relationship between themselves and the DOE. Participants in the ethnobotany studies included botanists who were associated with the YMP and knowledgeable Indian plant experts. Although these studies were initiated in 1988, the CGTO has recommended to the YMP that additional studies be conducted that will most likely reveal additional cultural information previously undocumented.

It is important to note, that although the referenced appendices are fairly comprehensive, they do not represent all of the traditionally known and used plants in the area. Experience has shown that in many instances, Indian people will intentionally omit or "not remember" resources which may be threatened or considered sacred. It is equally important to remember that although the fauna found in the surrounding areas may appear to be similar, Indian people are of the opinion that while areas may appear to be similar, they may in fact, be viewed as vastly different. There are also different pronunciations for some species due to dialect differences. Systematic linguistic studies would need to be conducted to further clarify and categorically identify the various species of plants and animals found in the YMP area. The CGTO believes that it is important to thoroughly assess the resources in the area before considering or responding to any proposed activities.

**Table 2-1** American Indian Traditional-use Plants Present in the Southern Nevada Area

| Scientific Name | Common Name | GC/UTTR | YM | PM/RM |
|---|---|---|---|---|
| 1. *Ambrosia dumosa* | White bursage | X | | |
| 2. *Amelanchier utahensis* | serviceberry | | X | |
| 3. *Amsinckia tesselata* | fiddleneck | | X | |
| 4. *Anemopsis californica* | yerba mansa | | X | |
| 5. *Arabis pulchra* | wild mustard | | X | |
| 6. *Artemisia ludoviciana* | sagebrush, wormwood | X | X | |
| 7. *Artemisia nova* | black sagebrush | X | | X |
| 8. *Artemisia tridentata* | big sagebrush | | X | X |
| 9. *Atriplex canescens* | four-winged saltbush | X | | |
| 10. *Atriplex confertifolia* | shadscale | | X | |
| 11. *Brodiaea pulchella* | desert hyacinth | | X | |
| 12. *Calochortus bruneaunis* | sego lily | | | X |
| 13. *Calochortus flexuosus* | mariposa lily | | X | |
| 14. *Carex spp.* | sedge | X | | |
| 15. *Castilleja chromosa* | Indian paintbrush | | X | |
| 16. *Castilleja martinii* | narrowleaf paintbrush | | | X |
| 17. *Ceratoides lanata* | winterfat | | | X |
| 18. *Chenopodium fremontii* | Fremont goosefoot | | | X |
| 19. *Chrysothamnus nauseosus* | rabbitbrush | X | X | X |
| 20. *Cirsium mohavense* | desert thistle | | X | |
| 21. *Coleogyne ramosissima* | black brush | | X | |
| 22. *Coryphantha vivipara* var. | fishhook cactus | X | X | |
| 23. *Coryphantha vivipara* var. | foxtail cactus | | | X |
| 24. *Datura meteloides* | jimsonweed | X | X | |
| 25. *Descurainia pinnata* | tansy mustard | | X | |
| 26. *Distichlis spicata* | salt grass | | X | |
| 27. *Echinocactus polycephalus* | cotton-top cactus | | X | |
| 28. *Echinocereus englemannii* | hedge hog cactus | X | X | |
| 29. *Eleocharis palustris* | spikerush | | | X |
| 30. *Elymus elymoides* | squirrel tail | | | X |
| 31. *Encelia virginensis* var. | brittlebush | | X | |
| 32. *Ephedra nevadensis* | Indian tea | X | X | X |
| 33. *Ephedra viridis* | Indian tea | | X | X |
| 34. *Eriastrum eremicum* | desert eriastrum | | | X |
| 35. *Eriogonum inflatum* | desert trumpet | | X | |
| 36. *Erodium cicutarium* | herringbill | | | X |
| 37. *Euphorbia albomarginata* | rattlesnake weed | | X | X |
| 38. *Geastrum spp.* | earthstar | | X | |
| 39. *Gilia inconspicua* | gilia | | | X |
| 40. *Grayia spinosa* | spiny hop sage | | | X |
| 41. *Gutierrezia microcephala* | matchweed | X | X | |

**Table 2-1** American Indian Traditional-use Plants Present in the Southern Nevada Area (continued)

| Scientific Name | Common Name | GC/UTTR | YM | PM/RM |
|---|---|---|---|---|
| 42. *Juncus mexicanus* | wire grass | | X | |
| 43. *Juniperus osteosperma* | juniper, cedar | X | X | X |
| 44. *Krameria parvifolia* | range ratany | | X | |
| 45. *Larrea tridentata* | creosote bush | X | X | |
| 46. *Lewisia rediviva* | bitter root | | | X |
| 47. *Lycium andersonii* | wolfberry | X | X | |
| 48. *Lichen* | lichen | | X | X |
| 49. *Lycium pallidum* | wolfberry | | X | |
| 50. *Menodora spinescens* | spiny menodora | | X | |
| 51. *Mentzelia albicaulis* | desert corsage | | X | X |
| 52. *Mirabilis multiflora* | four o'clock | X | | X |
| 53. *Nicotiana attenuata* | coyote tobacco | | | X |
| 54. *Nicotiana trigonophylla* | Indian tobacco | X | X | |
| 55. *Opuntia basilaris* | beavertail cactus | X | X | |
| 56. *Opuntia echinocarpa* | golden cholla cactus | | X | |
| 57. *Opuntia erinacea* | Mojave prickly pear | X | X | |
| 58. *Opuntia polycantha* | grizzly bear cactus | | | X |
| 59. *Orobanche corymbosa* | broomrape, wild | | | X |
| 60. *Oryzopsis (Stipa) hymenoides* | Indian ricegrass | X | X | X |
| 61. *Penstemon floridus* | Panamint beard tongue | | | X |
| 62. *Penstemon pahutensis* | Pahute beard tongue | | | X |
| 63. *Peraphyllum ramosissimum* | squawapple | | X | |
| 64. *Phragmites australis* | cane, reed | X | X | |
| 65. *Pinus monophylla* | pinyon pine | | X | X |
| 66. *Prosopis glandulosa* | mesquite | X | X | |
| 67. *Prosopis pubescens* | screwbean | | X | |
| 68. *Psorothamnus polydenius* | dotted dalea | | X | |
| 69. *Purshia glandulosa* | buckbrush | | X | |
| 70. *Purshia mexicana* | cliffrose | | | X |
| 71. *Purshia tridentata* | buckbrush | | | X |
| 72. *Quercus gambelii* | scrub oak | | X | X |
| 73. *Rhus aromatica* | skunkbush, sumac | | | X |
| 74. *Rhus trilobata* var. *anisophylla* | squawbush | | X | |
| 75. *Rhus trilobata* var. *simplicifolia* | squawbush | X | X | |
| 76. *Ribes cereum* | white squaw currant | | | X |
| 77. *Ribes velutinum* | desert gooseberry | | | X |
| 78. *Rosa woodsii* | woods rose | | | X |
| 79. *Rumex crispus* | curly dock, wild | | X | |

**Table 2-1** American Indian Traditional-use Plants Present in the Southern Nevada Area (continued)

| Scientific Name | Common Name | GC/UTTR | YM | PM/RM |
|---|---|---|---|---|
| 80. *Salix exigua* | willow | X | X | |
| 81. *Salix gooddingii* | black willow | X | X | |
| 82. *Salsola iberica* | Russian thistle | X | | X |
| 83. *Salvia columbariae* | chia sage | | X | |
| 84. *Salvia dorrii* | purple sage, Indian | X | | |
| 85. *Sarcobatus vermiculatus* | greasewood | X | | |
| 86. *Sisymbrium altissimum* | tumbling mustard | | | X |
| 87. *Sphaeralcea ambigua* | globe mallow | X | X | X |
| 88. *Stanleya pinnata* | Indian spinach | X | X | X |
| 89. *Stephanomeria sp. spinosa* | spiny wire lettuce, gum | X | X | |
| 90. *Stipa speciosa* | bunchgrass | | | |
| 91. *Streptanthella longirostris* | wild mustard | | X | |
| 92. *Streptanthus cordatus* | wild mustard | | X | |
| 93. *Suaeda torreyana* | seepweed | | X | |
| 94. *Symphoricarpos longiflorus* | snowberry | | X | |
| 95. *Symphoricarpos spp.* | snowberry | | | |
| 96. *Tessaria sericeae* | arrowweed | X | X | |
| 97. *Thamnosma montana* | turpentine bush | X | X | |
| 98. *Thelypodium integrifolium* | wild cabbage | | X | |
| 99. *Typha domingensis* | cattail | | X | |
| 100. *Typha latifolia* | cattail | X | X | |
| 101. *Veronica anagallis-aquatica* | speedwell | | X | |
| 102. *Vitis arizonica* | wild grape | X | X | |
| 103. *Xylorhiza tortifolia* | desert aster | | X | |
| 104. *Yucca baccata* | banana yucca | X | X | X |
| 105. *Yucca brevifolia* | Joshua tree | | X | |
| 106. *Yucca spp.* | yucca | | X | |
| 107. *Yucca schidigera* | Mojave yucca ;Spanish | | X | |

NOTE: American Indian traditional-use plants present in the southern Nevada area are identified in the project reports entitled *Native American Plant Resources in the Yucca Mountain Area, Nevada* (YM) (Stoffle et al., 1989b) and *Native American Cultural Resources on Pahute and Rainier Mesas, Nevada Test Site* (PM/RM) (Stoffle et al., 1994b). This table includes traditional-use plants identified in the Colorado River Corridor Study (GC) and in the Utah Test and Training Range Study (UTTR) that are known to be present in the YMP area.

## Table 2-2 American Indian Traditional-use Animals Present in the Southern Nevada Area

| Scientific Name | Common name |
|---|---|
| *Alectoris chukar* | chukar |
| *Ammospermophilus leucurus* | white-tailed antelope squirrel |
| *Amphispiza bilienata* | black-throated sparrow |
| *Aquila chrysaetos* | golden eagle |
| *Buteo jamaicensis* | red-tailed hawk |
| *Callipepla gambelii* | Gambel's quail |
| *Canis latrans* | coyote |
| *Cicadidae spp.* | cicada |
| *Cnemidophorus tigris* | western whiptail lizard |
| *Canis latrans* | coyote |
| *Colaptes auratus* | northern flicker |
| *Crotalus spp.* | rattlesnake |
| *Eutamias dorsalis* | cliff chipmunk |
| *Felis concolor* | mountain lion |
| *Felis rufus* | bobcat |
| *Formicidae formicinae* | mound-building ant (red and black ant) |
| *Gopherus agassizii* | desert tortoise |
| *Haliaeetus leucocephalus* | bald eagle |
| *Odocoileus hemionus* | mule deer |
| *Ovis canadensis* | bighorn sheep |
| *Sauromalus obesus* | chuckwalla |
| *Spizella breweri* | Brewer's sparrow |
| *Stagmomantis spp.* | praying mantis |
| *Sylvilagus spp.* | cottontail |
| *Vulpes velox* | kit fox |
| *Zanaida macroura* | mourning dove |

NOTE: American Indian traditional-use animals are identified in the project report entitled *Native American Cultural Resources on Pahute and Rainier Mesas, Nevada Test Site* (Stoffle et al., 1994b). This table presents only a partial list of traditional-use animals believed to be present in the YMP area. To date, no systematic or extensive cultural animal studies have been conducted for the YMP area.

### 2.2.3 Biological Resources

Indian people believe that the Yucca Mountain area is the home of many important species of mammals. Studies conducted for the YMP and on the NTS indicate that as many as 46 species of mammals may be found in the vicinity, however, only 36 species of mammals have been recorded. Additionally, 35 species of birds were recorded in 1982 at Yucca Mountain (O'Farrell and Collins, 1984), and 98 species have been observed in the same area as of 1996. Indian people are aware of these different species found in the area which play an integral part in traditional stories and cultural beliefs. To date, several studies have been conducted by the DOE to record and monitor animals, birds, and reptiles located in the YMP area. However, no systematic studies have been conducted by the DOE to systematically ascertain the cultural significance to the Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone people.

### 2.2.4 Water Resources

The CGTO is concerned about all water sources located on or related to the YMP area. The CGTO is further aware that surface water does not exist at or near the YMP. However, *Pohs,* or tinajas are important water basins used to store water for everyday or ceremonial use. According to traditional stories and cultural beliefs, the water table is found below the surface of Yucca Mountain and is associated with the water that is found in the Amargosa Valley, Ash Meadows, and the Death Valley study area. The DOE has conducted numerous studies to inventory the water resources in the YMP area without systematically assessing the cultural concerns of Indian people. Many of these areas contain important medicinal plants or animal habitats which were used historically and are needed by Indian people today. Indian people believe that water sources are the homes of *water babies,* who live in the area and protect the springs and water resources. No studies have been conducted to ascertain the importance and understanding of this cultural phenomena. The water in which they live is part of the cultural landscape and ecosystem associated with other important features. In order to better understand the impacts to water resources, the DOE should expand their studies to respond to the concerns of Indian people.

### 2.2.5 Cultural Resources

American Indians believe that we have the responsibility to protect with care and teach the young the relationship of the existence of a non-destructive life on Mother Earth. This belief is the foundation of our holistic view of the cultural resources, i.e., water, animals, plants, air, geology, sacred sites, TCPs, and artifacts. Everything is considered to be inter-related and dependent on each other to sustain existence. Indian people believe that through proper respect and understanding, this complex relationship can be better understood and allow for existing and future generations to be better prepared for the care of these things.

Conversely, it is common archaeological practice to look at areas as distinct sites. Thus a rock shelter, a camping area, or a spring surrounded by broken pottery can be located within a few hundred yards or farther from one another and be assigned three different site numbers. When Indian people are asked to interpret the separate elements of a site, they consider that additional

areas may be interrelated and therefore, would prefer to define them as a single site. On other occasions, metallic objects or other historical artifacts might be found by archaeologists. It is usually concluded that these items were used exclusively by Euroamericans without any regard or consideration to use or adaptation by Indian people. Needless to say, these diverging perspectives are usually difficult to explain from the cultural perspective and harder to incorporate and understand from an archaeological point of view.

Typically, Indian people assign meaning to places that are involved with (1) their creation as a people, (2) religious stories, (3) burials, and (4) significant secular events. Indian people believe that they have inhabited their traditional homelands since the beginning of time and had very complex belief systems and values. Archaeologists, on the other hand, believe that scientific evidence supports the notion that Indian people were highly mobile groups of aboriginal hunter-gatherers who occupied the Yucca Mountain area and were followed by Euroamericans who used the area for purposes of travel and transportation, prospecting, surveying, and possibly ranching. This opinion appears to portray Indian people as roaming aimlessly across the desert without consideration to the early historic accounts of Indian farming activities prior to European contact and active participation in travel, transportation, prospecting, surveying, and ranching.

Other sites including the Yucca Mountain area are identified in the traditional stories of the Southern Paiutes, Western Shoshones, and the Owens Valley Paiutes and Shoshones. The lack of an abundance of artifacts and archaeological remains does not infer that the site was not used historically or presently and considered as an integral part of the cultural ecosystem and landscape. Perhaps with expanded American Indian cultural resource studies, a better understanding could be gained.

### 2.2.6 Environmental Restoration/Management

The CGTO has expressed their continued interest and involvement in entering into cooperative agreements with the DOE to co-manage the resources in and around the YMP study area. This is particularly appropriate when considering revegetation, monitoring of cultural resource sites, reclamation of archaeological sites, and systematic involvement in the interpretation and understanding of cultural resources located within the YMP study area. Other ethnographic studies in the areas of geology, zoology, biology, hydrology, meteorology, and volcanology should be conducted to better understand the complex cultural perspectives of Indian people.

Any future management decisions regarding these resources must take into account the concerns of the Indian people. Should an area fall within a TCP or sacred site, potential access to the area could be requested under EO 13007, *Indian Sacred Sites* and as mandated by AIRFA. In order to ascertain the importance of an area, a systematic study should be designed and implemented to gain further insight about the cultural significance. The YMP should incorporate ethnographers who are familiar with working with Indian people, especially Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone. Prior to implementation, a representative sample of these sites should be visited by a subgroup appointed by the CGTO.

The CGTO knows that the actions considered by the YMP potentially will affect American Indian cultural resources within an area roughly bounded by the traditional lands of the Western Shoshones, Southern Paiutes, and Owens Valley Paiutes and Shoshones. The YMP activities will have cultural effects within this region of influence (identified by American Indians) because of the cultural centrality of these lands to all three ethnic groups (Figure 1). Within this designated area, specific actions will have direct local impacts. Ultimately, however, any action that moves the Yucca Mountain area away from or back towards its natural state has influence on all Indian people.

Some of the important animals in the valley include bighorn sheep, rabbit, turtle, coyote, and the whiptail lizard, which was used for food, ceremony, and eye surgery. Limited systematic American Indian studies of animals and archaeology have been conducted for the YMP; therefore, a complete assessment of the cultural significance of this area is not possible at this time. Other locations known as hydrological areas contain a wide range of important cultural resources, including plants, animals, archaeological sites, minerals, and TCPs such as power places, sacred sites, and intellectual properties.

Ethnoarchaeological studies such as those conducted as part of the DOE's YMP help federal agencies understand the complex relationship Indian people have with lands and resources under federal jurisdictions. Many times federal agencies may have a vested interest in certain acreage for concurrent programs or activities. These divisions cause artificial boundaries often misunderstood by Indian people, making it difficult to interact. Nevertheless, due to the cultural interconnectedness, numerous archaeological resources in this area, dating as early as Clovis (10,000 years ago), have been identified. Equally important in this area are the presence of important minerals, which were extracted by Indian people to make tools, stone artifacts and various ceremonial objects. Traditional quarry sites and localities are associated with these mineral resources. A number of power places known to be associated with traditional healing ceremonies are located in this area.

1. Benton Paiute Indian Tribe
2. Bishop Paiute Indian Tribe
3. Big Pine Paiute Tribe of the Owens Valley
4. Fort Independence Indian Tribe
5. Lone Pine Paiute/Shoshone Tribe
6. Timbisha Shoshone Tribe
7. Yomba Shoshone Tribe
8. Duckwater Shoshone Tribe
9. Ely Shoshone Tribe
10. Pahrump Paiute Tribe
11. Las Vegas Paiute Indian Colony
12. Las Vegas Indian Center
13. Chemehuevi Indian Tribe
14. Colorado River Indian Tribes
15. Moapa Paiute Indian Tribe

16a. Shivwits Paiute Tribe—Utah
16b. Cedar City Paiute Tribe—Utah
16c. Indian Peaks Paiute Tribe—Utah
16d. Kanosh Paiute Tribe—Utah
16e. Koosharem Paiute Tribe—Utah

17. Kaibab Paiute Band of Southern Paiutes

Figure 2-1 Traditional ethnic boundaries and locations of tribes in the Yucca Mountain region.

## 2.3 SITE DESCRIPTIONS

**2.3.1 Fortymile Canyon** is well-known among Indian people who continue to use either its traditional Shoshone name *Dogowya Hunumpi* (Snake Wash) or the Owens Valley name *Towahonupi* (Snake Canyon) to describe it. The canyon was a significant crossroad where numerous traditional Indian trails from distant places like Owens Valley, Death Valley, and the Avawtz Mountains came together (Stoffle et al., 1989a). While many American Indian studies have been conducted in this area, certain cultural resources have not been systematically studied. Other needed studies include rock art (which is called in Southern Paiute *tumpituxwinap* or literally "storied rocks") (Stoffle et al., 1995), power places, and animals.

**2.3.2 Oasis Valley** is known as an important hydrologic area that is a part of the agricultural core area of a much larger Indian district called *Ogwe'pi* by the Indian people who used this farming, gathering, and medicine area. The cultural significance of the *Ogwe'pi* District is well established by document research (Stoffle et al., 1988b), one plant area study, one archaeological study area (Stoffle et al., 1994a), and by interviews conducted during the 1930s. According to Indian people interviewed in the 1930s (Steward, 1938), the *Ogwe'pi* District contained agricultural lands next to springs and streams in Oasis Valley itself, while the uplands formed by nearby mountains contributed pine nuts and deer to the diet of the Indian people (Stoffle et al., 1990b). The *Ogwe'pi* District was an important place for Indian trade and ceremonialism. Mineral hot springs were used by Indian people for curing, thus further increasing the cultural importance of the Oasis Valley core area. During much of the historic period, Indian people continued to live in Oasis Valley and use the surrounding uplands of the *Ogwe'pi* District. Much of the Oasis Valley hydrological basin has not been systematically studied by American Indian people. Therefore, at this time, it is not possible to fully assess the cultural significance of all places in the Oasis Valley.

**2.3.3 Prow Pass** is recognized as an important ceremonial site that was the focal point of many cultural activities. In some of the early ethnographic studies conducted as part of the YMP, many of the Indian people suggested that the area may contain burials. This information was based on the placement and formation of various types of rocks. Also associated with the Prow Pass area is a ceremonially placed pestle, a rock shelter that contains pictographs and numerous other important cultural resources. Many medicinal and food plants were harvested in the area because of its associated power and religious significance. The CGTO has recommended that Prow Pass be placed off limits to non-Indian people (other than for cultural monitoring purposes) and other site characterization activities associated with the YMP. Currently, there are no site characterization activities planned for the area.

**2.3.4 Black Cone Site *(Crater Flat Area)*** was visited by Indian people and ethnographers during some of the early ethnographic work associated with the YMP. The Black Cone was identified and considered a place of religious significance. Places such as this are considered sacred sites by Indian people where ceremonial activities would occur or offerings would be left. Even though the site was previously identified by Indian people, no systematic studies were conducted to determine the level of significance or importance of this area. Any activities which

would further disturb these areas or result in limited access would not be supported by the CGTO.

**2.3.5 Busted Butte** contains an isolated petroglyph which was recently included in a comprehensive Rock Art Study conducted in cooperation with the NTS. Indian people believe that this petroglyph is related to other ones found in lower and upper Fortymile canyon. Typically, petroglyphs are found in larger groupings, thus making this particular site culturally unique. Tribal representatives of the CGTO have visited the site and recommended that it be protected and access be afforded to Indian people on an as needed basis.

**2.3.6 Alice Hill** is considered a very important site both culturally and archaeologically. The area, which was used to place exploratory trenches by the United States Geological Survey, revealed an exorbitant amount of artifacts and is the location of many plants used for foods and medicines. Tribal representatives and spiritual leaders have visited the area and described it as a place of great importance. In the absence of systematic ethnographic studies, it is difficult to collectively express the significance of this important area. The CGTO would recommend that no further ground-disturbing activities occur or be considered for this area.

**2.3.7 Bare Mountain** is believed by Indian people to be related to the mountains near and around the YMP study area. Due to necessary site characterization studies, archaeological surveys and data recovery efforts were conducted in the Bare Mountain area by the Desert Research Institute. Species Springs is located in this area and has been visited repeatedly by Indian people. The springs provide a source of water for many important plants and animals which are the basis for many traditional stories. Although, this area falls outside of Yucca Mountain proper, the CGTO would recommend that no further ground-disturbing activities occur or be considered for this area.

**2.3.8 Ash Meadows** is believed by Indian people to be related to Fortymile Canyon and the water sources found at Yucca Mountain. The area was used traditionally by Southern Paiute and Western Shoshone people who frequented the area because of its high content of medicinal plants and springs. Indian people practiced true horticulture by cultivating crops of corn, squash, beans, sunflowers, and various melons irrigated through the abundant springs in the area. Devils Hole is a source for numerous traditional stories told by the Southern Paiutes and Western Shoshone who still hold Ash Meadows in high regard. Ash Meadows is located away from Yucca Mountain but has been included in early ethnographic studies and site visits by Indian representatives involved with the NAIP. The YMP currently monitors springs located in the area as part of the hydrology studies program. Since there is a correlation between the water system in Ash Meadows and the YMP, as confirmed both culturally and scientifically, the CGTO recommends that expanded ethnographic studies be conducted in the area to ascertain the impacts from the YMP.

**2.3.9 The Spring Mountains** are considered by the Southern Paiutes to be part of their traditional holy land. The area is the foundation of many traditional stories including the creation of the Southern Paiute people. The Spring Mountains are believed to be related to other areas that make up part of the trail to the afterlife. While the Spring Mountains fall outside of the

YMP study area, Indian people believe that the YMP may impact the cultural ecosystem located in the area.

**2.3.10 The Calico Hills** contain known archaeological sites and abundant other cultural resources. Indian people have used areas in the Calico Hills as ceremonial places and have acquired various resources considered to be culturally important. As part of the NAIP, field visits to the Calico Hills have confirmed the strong cultural ties of Indian people. The CGTO would recommend that no further YMP-related studies or activities occur in this area. Expanded ethnographic studies should be conducted to ascertain the cultural significance of the Calico Hills.

**2.3.11 YMP Site Description General Comments.** The CGTO knows that significant cultural resources including plants, animals, archaeological sites, and places of historic value to Indian people are present throughout the Yucca Mountain area. This area is known from Indian interviews conducted in the 1930s (Steward, 1938) and recent DOE plant, animal, and archaeology studies conducted south of the area in comparable environments (Stoffle et al., 1990b, 1994a and b). These studies document long-term and extensive involvement of Indian people in these traditional lands. These were among the last areas lived in before Indian people were forced out of the area to live on more distant Indian reservations. As a result of oral history, Indian people know there are numerous additional types of cultural resources located in this study area but cannot provide comprehensive site-specific information about these areas at this time.

## 2.4 OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY/RADIATION

### 2.4.1 Risk Perception Versus Risk Assessment

The CGTO is aware that typically risk assessment models have been used and accepted as a means of mathematically calculating potential risks and assessments to human health and safety. While these models project the potential impacts based on a worst-case scenario, they do not consider the perceived risks which are considered meaningful to Indian people. The lack of knowledge of an unfamiliar concept can lead to a feeling of perceived danger. A perceived danger or hazard associated with something can be very real to Indian people. Indian people view things holistically and believe that everything is interrelated resulting in a cause-and-effect model. This is contrary to scientific models that tend to compartmentalize things from a mathematical point of view, calculating potential risks to health and safety. This viewpoint often does not consider perceived risks which play an integral role to American Indian cultural beliefs. Therefore, perceived risks must also be considered in the risk analysis model to further understand the risks to health and safety from a cultural perspective.

Ultimately, the CGTO realizes that 6 basic factors will be used to arrive at various decisions regarding issues such as the selection of transportation corridors for the movement of high-level waste and spent nuclear fuel to the proposed repository at Yucca Mountain. These factors will most likely be based on (1) ease of building; (2) socioeconomics; (3) construction costs; (4)

impacts to biology, geology, and hydrology; (5) noise impacts; and (6) least controversial scenarios. Ironically, many of these factors coincide with the Indian point of view, in that, the CGTO is concerned about impacts to (1) tribal members and the people they represent; (2) tribal economies and enterprises; (3) flora and fauna which is considered vital to cultural survival; (4) important resources which may be damaged from ground-disturbing activities; and (5) the increased number of shipments of high-level waste and spent nuclear fuel through the traditional holy lands of the Western Shoshone, Southern Paiute, and the Owens Valley Paiute and Shoshone people. Again, the most efficient way to thoroughly understand and evaluate risk perception is to have a study design developed by qualified individuals who have the experience and trust of Indian people. The DOE should immediately initiate systematic studies to better understand the cultural dynamics of Indian people.

### 2.4.2 Angry Rock Concept

Indian people believe that various perceived risks are present and occur as a result of various activities. Although there are no Indian words for terms such as *radiation* in the Indian language, early ethnographic studies supported by the DOE documented a traditional view of radioactivity that centers on the perception by Indian elders of radiation being produced by an *angry rock* (Stoffle et al., 1989a). Briefly this view is outlined in the following paragraphs.

Rocks have power. It is recognized that some rocks have more or different power than others. Breaking a rock or removing it from its place without fully explaining these actions not only releases the power inherent in the rock, but also angers the rock. This can result in the creation of a source for cultural anomalies, which upsets the balance of the cultural ecosystem and affects Indian people.

Rocks can also be self-willing, in as much as they can reveal themselves to people and act on people. Crystals, for example, have a self-willing, animate power and will reveal themselves to a person whom they desire to be with. If this person picks these rocks up, the person will have great luck. The luck, however, is taken away from others and eventually people will come to recognize this fact and single out the excessively lucky person as having used some nonhuman power at the expense of his or her people. Usually the person takes the crystal back to where it had revealed itself and returns it with an explanation of why it was being returned.

Radioactivity was interpreted as being the angry action of a powerful rock that had been quarried without its permission and had its power used for purposes it did not agree to. Now the remains of the rock (radioactive waste) is angry and it is taking its anger out on things around it. Plants, animals, people, water, and even the air itself can be hurt or even killed by the radiation from the angry rock. Indian people express the belief that past radiation releases have contaminated plants and animals traditionally used for foods and medicines. Spiritual people believe that they can see and feel radiation, that it has unique colors. This is why they can neither eat nor collect some plants, animals, and minerals in some areas. It is now impossible for Indian people to go to certain places, do certain ceremonies, and eat certain foods because of the release of radiation from the angry rock.

Indian people believe that single purpose casks, disposal canisters, and dual purpose canisters which are being designed and proposed for transporting spent nuclear fuel and high-level radioactive waste will not be sufficient to contain the elements from the angry rock. The CGTO is aware that the DOE has conducted numerous scientific studies to determine the feasibility, strength, and necessary design to contain and transport the radioactive waste. However, these studies have only examined the scientific aspects and design without consideration to the cultural beliefs of the Indian people.

### 2.4.3 Air: Living and Dead

Indian people express the belief that the air is alive. There are different kinds of air with different names in Indian language. The Creator puts life into the air which is shared by all living things. When a child is born, he pulls in the air to begin its life. The mother watches carefully to make sure that the first breath is natural and that there is no obstruction in the throat. It is believed that if the day of birth is a windy day, it is a good day and the child will have a good life. According to one elder:

> *"The seasons—like winter, spring, summer, and fall—they're all important when a child comes into the world because their spirit is tied in with the harvest, or hunt; they say that it gets kind of like into their blood and they become hunters or farmers. You can listen to the wind, the wind talks to you. Things happen in nature. Our people had weather watchers, who are kinds of people who will know when crops and things should be done. They watch the different elements in nature and pray to ask the winds to come and talk about these things. Sometimes you ask the north wind to come down and cool the weather. The north wind is asked to blow away the footsteps of the people who have passed on to the afterlife. That kind of wind helps people, it is positive. The wind also brings you songs and messages. Sometimes the messages are about healing people, a sign that the sickness is gone now from the person, or that it is coming to get that sickness to take it away, or it is coming to bring you the strength that you need to deal with the illness."*

But air can be destroyed by radiation that has been released by the angry rock, thus causing pockets of dead air. There is only so much alive air which surrounds the world. If you kill the living air, it is gone forever and cannot be restored. Dead air lacks the spirituality and life necessary to support other life forms. Airplanes crash when they hit dead air. One member of the CGTO compared this Indian view of killing air with what happens when a jet flies through the air and consumes all of the oxygen, producing a condition where another jet cannot fly through the air. The atomic blast consumes the oxygen like the jet, killing the air. While this comparison of the Western science view of dead air from burning seems close to the Indian perspective, the latter has a "life force" component that makes killing air more significant than just consuming its natural components.

Some Indian people who were present during aboveground atomic blasts at the NTS believe that the sickness they have today came from the radiation. To some of these people, the effects of the radiation were in addition to what happened when the air itself was killed. Some elders today say

that even when the plants survive the effects of radiation, the dead air killed them or made them lose their power, their spiritual power to heal things.

If the DOE wants to better understand Indian peoples' feelings about the impacts of activities on their cultures, they should support studies designed, conducted, and produced by the CGTO. Previously, there has been limited studies of American Indians perceptions of identification and impacts to cultural resources. Without comprehensive and systematic studies, it is difficult to provide detailed information about the impacts to cultural resources from YMP-associated activities.

## 2.5 ENVIRONMENTAL JUSTICE AND EQUITY

On February 11, 1994 President Clinton signed EO 12898 which mandated each federal agency to review and achieve environmental justice as part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations in the United States. Specifically, each federal agency is to (1) promote enforcement of all health and environmental statutes in areas with minority and low-income populations, (2) ensure greater public participation, (3) improve research and data collection relating to the health and environment of minority and low-income populations, and (4) identify differential patterns of consumption of natural resources among minority and low-income populations. In addition, the environmental justice strategy shall include, where appropriate, a timetable for undertaking identified revisions and consideration of economic and social implications of the revisions.

The EO requires federal agencies such as the DOE to (1) identify an internal administrative process for developing its environmental justice strategy, and inform the Interagency Work Group on Environmental Justice (IWGEJ) within 4 months from the date of the order; (2) provide the IWGEJ with an outline of its proposed environmental justice strategy within 6 months; (3) provide the IWGEJ with the actual environmental justice strategy within 10 months; (4) finalize the strategy and provide a copy and written description of its strategy within 12 months to the IWGEJ including the identity of several specific projects that can be promptly undertaken to address particular concerns; and lastly, (5) report its progress in implementing its agency-wide environmental justice strategy within 24 months to the IWGEJ. The CGTO has other concerns that fall within the context of EO 12898. More specifically, the issue of subsistence consumption which requires the DOE to collect, maintain, and analyze information on consumption patterns such as those of Indian populations who rely principally on fish and/or wildlife for existence. Most importantly, the EO mandates each federal agency to apply equally their environmental justice strategy to Native American programs and assume the financial costs necessary for compliance.

As previously noted, this EO identifies specific actions that must be undertaken by the DOE to maintain full compliance. It is widely known that many tribal representatives still collect and use various plants in addition to animals (some that are considered endangered or threatened species) that are found within the Yucca Mountain area. Many of the plants or animals cannot be

gathered or found in other places. The perceived health risks and environmental effects resulting from the construction and operation of the proposed Intermodal Transfer Facility (ITF) and the transportation of high-level waste and spent nuclear fuel is considered by Indian people to be disproportionately high. This is primarily attributed to the consumption patterns of Indian people who still use these plants and animals for food, medicine, and other related cultural or ceremonial purposes. Furthermore, Indian people have expressed the need for privacy when conducting certain ceremonial events. The anticipated additional noise and interference associated with an ITF and increased transportation may disrupt important ceremonies that help the plants, animals, and other important cultural resources flourish, or may negatively impact the solitude that is needed for healing or praying.

To date, the YMP has not shared its design and implementation strategy for Environmental Justice with the CGTO, nor has it identified and analyzed subsistence consumption patterns of natural resources by Indian people within the American Indian identified region of influence. Since the EO specifically addresses equity to Indian people and low-income populations, it is critical that the DOE immediately address the concerns of Indian tribes and communities by conducting systematic ethnographic studies and eliciting input necessary for administrative compliance and in the spirit of the DOE American Indian Policy. The DOE must also consider how it will calculate tribal concerns and what criteria will be used within the context of Environmental Justice and risk assessment associated with the proposed repository, ITF, and transportation corridors.

Until such time as these studies are conducted and input elicited, the AIWS and the CGTO are limited to the level of their respective comments due to the lack of consultation associated with this EO. However, the AIWS and the CGTO can express their concerns and impacts to several Indian reservations and tribal communities that may be directly impacted by the proposed shipments and the construction of an ITF. Most of these tribes have limited resources to adequately respond to any emergency related to transportation shipments of high-level waste and spent nuclear fuel. None of the communities are in a position nor do they desire to relocate from their aboriginal lands; the anticipated impacts will be far-reaching and long-lasting.

Federal agencies are directed by EO 12898 to detect and mitigate potentially disproportionately high and adverse human health or environmental effects of its planned programs, policies, and activities to promote nondiscrimination among various populations in the United States. Of special concern to the CGTO is the potential for holy land violations and cultural survival-access violations. There is no question that the holy lands of Indian peoples have been, continue to be, and will be impacted by government actions. There is no question that only Indian people have lost cultural traditions because they have been denied free access to many places on federal lands where ceremonies have or need to occur, where plants need to be gathered, and where animals need to be hunted in a traditional way. Studies of how Indian people perceive themselves to be at risk and the social and cultural impacts derived from these risk perceptions can be conducted, but have not been analyzed thus far.

### 2.5.1 Holy Land Violations

American Indian people who belong to the CGTO consider the YMP lands to be as central in their lives today as they have been since the creation of their people. The YMP lands are part of the holy lands of Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone people. These holy lands, and their resources, have been subjected to damage by long-term activities involving NTS activities prior to and including YMP activities. The CGTO perceives that the past, present, and future pollution of these holy lands constitutes both Environmental Justice and equity violations. No other people have had their holy lands impacted by YMP-related activities. Prior to undertaking or approving new activities, the CGTO should be funded to design, conduct, and produce a systematic American Indian Environmental Justice study.

### 2.5.2 Cultural Survival-Access Violations

One of the most detrimental consequences to the survival of American Indian culture, religion, and society has been the denial of free access to their traditional lands and resources. Loss of access to traditional foodstuffs and medicine have greatly contributed to undermining the cultural well-being of Indian people. These Indian people have experienced, and will continue to experience, breakdowns in the process of cultural transmission due to lack of free access to government controlled lands and resources such as those in the Yucca Mountain area. No other people have experienced similar cultural survival impacts due to lack of free access to the YMP area.

In 1996, President Clinton signed EO 13007, *Indian Sacred Sites*. The EO promotes accommodation of access to American Indian sacred sites by Indian religious practitioners and provides for the protection of the physical integrity of such sites located on federal lands. The CGTO recommends that open access be allowed for American Indians who must conduct their traditional ceremonies and obtain resources within the YMP study area. Unfortunately, however, land disturbance and irreparable damage of cultural landscapes, potential TCPs, and cultural resources may render certain locations unusable.

To date, a systematic evaluation of traditional sacred sites or places within the YMP has not been made by Indian people. Two specific areas have been identified during some of the preliminary ethnographic studies, these areas are Prow Pass and Fortymile Canyon. Other areas are known to exist but without proper studies and consultation, no specific statements about access to particular locations can be made at this time.

## 2.6 OUTLINE OF SOCIAL AND ECONOMIC ISSUES

### 2.6.1 Socioeconomic Region of Influence

Within the social and economic region of influence covered by the YMP EIS, there also are several Indian reservations, tribal enterprises, tribally controlled schools, tribal police departments, and tribal emergency response units. The following CGTO member tribal

reservations and Indian communities are located within the socioeconomic region of influence (Nye, Clark, and Lincoln counties): Duckwater Shoshone Tribe, Las Vegas Paiute Tribe, Moapa Paiute Tribe, Pahrump Paiute Tribe, and the Yomba Shoshone Tribe. Several other tribes and organizations belonging to the CGTO also play an important role because of the interrelationships among tribal groups. In addition, there are tribes which are located geographically outside of the region of influence, but are potentially impacted by YMP activities. One of these tribes is the Timbisha Shoshone Tribe, based in Death Valley, California. This tribe is actually located closer to the YMP than many towns in northern Nye County. As a consequence of this proximity, people from the Timbisha Shoshone Tribe are a part of the social and economic region of influence of the YMP. For example, students from the Timbisha Shoshone Tribe attend public school in Beatty, Nevada, whereas many Shoshone students from Tecopa, California, attend school in Pahrump, Nevada. Timbisha tribal members work and shop in Clark and Nye counties. The Pahrump Paiute Tribe, located in Pahrump Valley, is composed of Indian people who have been historically recognized by state and federal agencies as qualified to receive services as Indian people, and who, as a group, are currently seeking federal acknowledgment. The tribal communities located within the socioeconomic region of influence are discussed further in the following paragraphs.

The Duckwater Shoshone Tribe has approximately 3,800 acres of tribal land. It is located 19 miles northwest of Currant, Nevada off of State Route 379. The tribe operates the Duckwater Shoshone Elementary School which is located on the reservation. Police protection is provided by tribal police with a separate tribal court and judicial system. Fire and ambulance services are provided by the Tonopah Dispatch.

The Las Vegas Paiute Tribe has approximately 4,000 acres of tribal land. Part of the tribal lands are located within the city limits of Las Vegas, one mile north of downtown. The majority of the tribal land base, however, is situated north of Las Vegas on both sides of Highway 95 near the Mount Charleston exit. The tribe has several business enterprises including retail outlets and two professional golf courses. Police protection is provided by the Las Vegas Paiute Tribal Police Department with a tribal court and judicial system. Fire and ambulance services are provided by the City of Las Vegas through a cooperative agreement.

The Moapa Paiute Tribe has a reservation that encompasses approximately 72,000 acres of tribal lands. It is located approximately 8 miles west of Glendale, Nevada near the junction of State Route 168 and Interstate 15 and is approximately 55 miles northeast of Las Vegas, Nevada. The tribal lands are situated on both sides of Interstate 15 near the Valley of Fire exit. This tribe also has a tribally owned enterprise consisting of a retail outlet and casino. Currently, there are considerations of expanding these developments outlined in a comprehensive long-range plan. The Moapa Paiute Tribe has its own tribal police department and tribal court and judicial system. Fire protection is provided by the Moapa Volunteer Fire Department.

The Pahrump Paiute Tribe is non-federally recognized and is currently seeking federal recognition from the federal government. Tribal representatives have existing and past relationships with the Bureau of Indian Affairs, Indian Health Services, the State of Nevada, the

DOE, and the Department of Defense. This tribal community has no current land base. Police and fire protection is provided by the Nye County Sheriff's Department and the Pahrump Valley Volunteer Fire Department.

The Yomba Shoshone Tribe has approximately 4,700 acres of tribal land. It is located approximately 55 miles south of Austin at Reese River on State Route 21. Police protection is provided through the Nye County Dispatch with a separate tribal court and judicial system. Fire and ambulance services are provided through the Gabbs Fire Protection and Gabbs Ambulance.

The CGTO has identified a much expanded American Indian region of influence based on traditional use area and the collective wisdom of its elders (Figure 1).

### 2.6.2 American Indian Education

Under federal and tribal law, American Indian children can be educated in tribally controlled and federally certified schools located on Indian reservations. Federal funds are available through the Indian Education Act for the education of Indian children. Compensation from the federal government is provided to any school district that has entered into a cooperative agreement with federally recognized tribes, whether it be public, private, or an Indian-controlled school.

One tribally controlled elementary school is in Nye County. It is operated by the Duckwater Shoshone Tribe. In 1995, the school had 32 students enrolled from preschool to 8th grade, who were taught by 3 full-time certified teachers; these included 2 certified elementary teachers, 2 teaching assistants, 1 preschool teacher, and 1 teacher under Chapter 1 Program. Using these numbers, the student-to-teacher ratio was 10.66:1 (Duckwater Shoshone Tribe, 1996).

A tribally operated Headstart Program is located on the Moapa Paiute Indian reservation. The program is open to all eligible preschool students including Indian students and non-Indian students from nearby communities. This program is funded through the Inter-Tribal Council of Nevada, which operates Headstart sites elsewhere in Nevada. Indian students also attend non-Indian public schools.

### 2.6.3 Farming and Ranching

The YMP area contains valuable resources for American Indian economy that were lost not only to Euroamerican encroachment but also to land withdrawal, pollution, and radioactive contamination. The area is in a desert region where water is the most crucial resource. Water sources located within the YMP study area and in its immediate vicinity were the places of Indian settlement and traditional farming until the first half of this century. Although much of the well-watered land in the aboriginal territory was lost to Euroamerican settlers, by the turn of the century, American Indian families owned small farms in the area both for their own consumption and for commercial purposes. Livestock was also a part of the Indian economy. Foodstuffs and stock forage were grown and sold by Indian people to supplement wage labor

(Stoffle et al., 1990a). With decreased access to spring and agricultural fields, and with some pollution of land and water, traditional Indian farming was seriously impacted.

### 2.6.4 Mining

American Indian people played a major role in the development of mining in the region near the YMP study area. Many local American Indians were active prospectors on their own behalf, establishing their own mining claims. Many of the producing mines in southern Nye County, for example, were located by local American Indian people, whose knowledge of minerals had been developed throughout centuries of mineral collecting. The YMP study area was one of the areas where Indian people conducted their mining activities. Several American Indian people guided Euroamerican prospectors to valuable ore deposits, providing them with transportation, food and lodging, and teaching them about minerals, water resources, and trails. Yet, American Indians were not made equal partners in mineral development as they may have expected and may have been promised (Stoffle et al., 1990a). Perhaps because mining was seen as a primarily Euroamerican economic activity, the rights of American Indians to stake mining claims was never made explicit. Mining was further precluded when the YMP land was temporarily reserved for a right-of-way to conduct site characterization activities. Thus, Euroamerican settlers began a land-use process that was continued by the YMP right-of-way reservation.

### 2.6.5 Political Integration and Community Cohesion

The process of fragmentation of Indian nations into small, increasingly isolated communities began with Euroamerican settlement and continued with the right-of-way reservation of YMP lands. The loss of cohesion has lowered the ability of Indian people to (1) negotiate, (2) resolve conflicts, (3) keep peace, and (4) share resources. Certain areas of the YMP study region were traditionally where all activities promoting community cohesion and political integration took place. When Indian people were denied free access to these places, they lost a central place shared by the three ethnic groups. Without this central place, the three ethnic groups did not meet as often. Eventually, the lack of contact weakened interethnic relationships and contributed to an overall loss of political power and skills among the groups. The political strength of the three ethnic groups, to some extent, has been restored through the NAIP which has provided the opportunity for the three ethnic groups to meet on a regular basis, work together, find common ground, and speak with one voice.

### 2.6.6 Transportation and Tribal Enterprises

Other major concerns of the CGTO are the perceived impacts and cumulative effects of YMP operations on tribal economies, particularly regarding the issue of high-level nuclear waste and spent nuclear fuel being transported across or near reservation lands. To date, only minimal efforts have been made to investigate socioeconomic impacts of YMP activities on Indian tribes and organizations. Ongoing research by the AIWS on such effects suggests, for example, that waste transportation would potentially be detrimental to the economic success of tribal-owned businesses and may increase the cost of insurance policies. Currently, there are no compensation measures planned nor mitigation efforts taken by the federal government to improve the

socioeconomic problems of tribes and organizations that may be directly affected by YMP operations. Similarly, no efforts have been made to distribute equally the benefits and losses caused by YMP operations among Indian and non-Indian populations. Please refer to Sections 4.4 and 4.6 for additional information concerning transportation issues

### 2.6.7 Hazardous Materials and Waste

The storage of hazardous materials and wastes are those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (42 USC 9601 et seq.) and the Resource Conservation and Recovery Act (42 USC 6901 et seq.). In general, hazardous materials include substances that, due to their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health, welfare, or the environment if released into the environment. The resource is typically discussed under four primary categories: hazardous materials, installation restoration program sites, hazardous waste, and solid waste.

Indian people hold both traditional and scientific views of hazardous materials and waste. As an example, the former builds on the view that all resources including the rocks are alive; radioactive rocks are powerful, but they can become "angry rocks" if they are removed without proper ceremony, used in a culturally inappropriate way, disposed of without ceremony, and placed where they do not want to be (Stoffle et al., 1989a and 1990c). In general, after properly removed rocks have been used, they are either returned to their place of origin or to a place of cultural significance. The practice of dealing with "bad medicine" or neutralizing negative forces was a part of the traditional culture. So, the question of "how to dispose of hazardous materials and waste in a culturally appropriate manner" could be resolved if the time and resources were provided to tribes to participate in a formal study of this issue. Indian people have not studied the cultural impacts of siting any of the existing waste facilities. So, Indian people would like to become a part of a retrospective assessment of these facilities, as well as to participate in the assessment of siting all new waste facilities. The CGTO recommends that adequate funds and time be provided so that Indian people can conduct systematic studies of waste management programs.

### 2.6.8 Environmental Restoration Program

An environmental restoration program involves actions that would return disturbed lands to their natural condition. Indian people believe that the natural condition of the land existed before European contact. The land was in a natural condition when it was managed and used by Indian people. For example, Indian plant management techniques involved spiritual interactions like praying and conducting ceremonies for the plants, as well as physical actions like selective burning, transplanting cuttings and seeds, pruning of plants like Tumar (*Stanleya pinnata)* and willow, and "whipping" pine nut trees to make them fuller. Indian water management techniques involved spiritual interactions that satisfied the water and its occupants like *water babies*, who need to know why Indian people are using the water. Water ceremonies assured both rain and snowfall; for example, by praying for a continued relationship between wet snow and the little black bugs who are responsible for making the snow become wet. Generally, Indian people

managed the land according to religious teachings. From the Indian perspective, environmental restoration should proceed according to Indian culture and with the participation of Indian people. The CGTO recommends that adequate funds and time be provided so that Indian people can conduct systematic studies of environmental restoration actions.

Only Indian people know which places are appropriate for visits by non-Indian people and how to collect plants, animals, and soil samples so that these activities do not disrupt the land and its associated spirituality. Only Indian people can provide guidance for proper behavior; however, a guidance document has not been collectively produced and approved by the CGTO. On the other hand, with proper guidance by Indian people, university students and other members of the public may learn about the beauty and cultural significance of these lands and begin to change national perceptions of these lands from one of a "wasteland" to one of an Indian holy land.

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## 3.0 SUMMARY OF AMERICAN INDIAN RESPONSES TO THE YMP EIS

The response of the CGTO to the proposed action and alternative of the DOE YMP is summarized in the following sections.

### 3.1 PROPOSED ACTION

The DOE proposes to construct, operate, and eventually close a repository at Yucca Mountain, Nevada, for the geologic disposal of up to 70,000 metric tons of heavy metal commercial and DOE-owned spent nuclear fuel and high-level radioactive waste.

#### 3.1.1 CGTO Response to Proposed Action

*The CGTO opposes the proposed action because of strong cultural ties to the land.* The YMP operations have adversely impacted the land, causing irreparable damage to traditional resources. If the YMP operations continue, it is expected that damage will be increased and more land will be wasted. Access to culturally significant spiritual places and use of animals, plants, water, and lands may cease because Indian people's perception of health and spiritual risks will increase if a repository is constructed. Any programs that are expected to cause adverse impacts if they produce more ground disturbance or if they bring in people who trample and destroy traditional resources, would be considered unacceptable by Indian people.

The CGTO is further aware that although access to cultural resources, sacred sites, and potential TCPs by Indian people has been limited, protective measures may be more easily instituted while remaining within the boundaries of the YMP. These restrictions have led to the protection and preservation of numerous areas. Provisions for Indian people to assess these culturally important areas must be initiated in cooperation with affiliated tribes and organizations. Indian people must be granted access to cultural resources, sacred sites, and potential TCPs, consistent with applicable federal laws, executive orders and agency policies. A co-management plan and a Memorandum of Understanding (MOU), should be developed between the YMP and the CGTO through the existing NAIP. This will provide a vehicle for a long-term commitment for consultation with Indian tribes and organizations on a government-to-government basis. The YMP must continue to protect cultural resources, sacred sites, and potential TCPs in cooperation with the CGTO and consistent with federal mandates.

### 3.2 NO ACTION ALTERNATIVE

Under this alternative, the land would not be reserved for the YMP. The lands within the existing DOE boundary would most likely be managed by the DOE. The No Action Alternative would result in the fragmentation or cancellation of the YMP. The DOE would prepare appropriate environmental documentation to continue to use the area for other scientific studies.

### 3.2.1 CGTO Response to the No Action Alternative

*The CGTO does not support the No Action Alternative, as proposed, because of the possible threat to American Indian cultural resources, sacred sites, and potential TCPs located within the existing boundaries of the YMP.* Clearly, evidence and past experience exists which would lead Indian people to believe that lands managed by the Bureau of Land Management and the U.S. Fish and Wildlife Service may not provide the level of protection and preservation currently available on the YMP. This is primarily due to the limited resources and open access by the general public. The CGTO would recommend that an evaluation and systematic study of culturally significant places be conducted consistent with applicable federal laws, EOs, and agency policies. The CGTO recommends that the YMP continue to protect cultural resources, sacred sites, and potential TCPs in cooperation with the CGTO. The CGTO would request first right of refusal, in the event that the YMP lands are made available for public use.

The CGTO is further aware, that although access by Indian people to cultural resources, sacred sites, and potential TCPs has been limited, protective measures may be more easily instituted, while remaining within the boundaries of the YMP. These restrictions have led to the protection and preservation of cultural resources, sacred sites, and potential TCPs cooperatively by the CGTO and the YMP through the existing NAIP. This access must be consistent with applicable federal laws, EOs, and agency policies. A co-management plan and a MOU should be developed between the YMP and the CGTO. This approach will provide a mechanism for insuring the long-term commitment for consultation with Indian people on a government-to-government basis.

# 4.0 SUMMARY OF FINDINGS / RECOMMENDATIONS

## 4.1 IMPACTS TO AMERICAN INDIAN CULTURAL RESOURCES

The proposed action and alternative considered for a potential repository at Yucca Mountain contain certain provisions which are considered detrimental or beneficial to cultural resources, sacred sites, and potential TCPs important to Indian people. Therefore, it is virtually impossible to support the proposed action or alternative at this time, without the provisions of systematic studies, proper assessments and considerations to the cultural dynamics involved.

Under the *Proposed Action*, the CGTO would recommend that a MOU be developed between the CGTO and the YMP. This document would reflect the mission of the YMP-related activities authorized by Congress and incorporate culturally sensitive approaches used to further expand the focus of a continued long-term commitment of the NAIP. This program would lead to the further protection and access to culturally important areas by incorporating systematic studies designed by American Indians and the inclusion of American Indian monitors. This approach would assist in the identification, evaluation and monitoring of cultural resources, sacred sites, and potential TCPs located within the boundaries of the YMP.

A co-management plan and the MOU would identify the roles and responsibilities necessary for the co-stewardship and protection of the land and its resources. This plan and memorandum would promote a government-to-government relationship between the culturally affiliated tribes and organization represented by the CGTO. Further, the documents would contain provisions for access and monitoring by Indian people of important cultural resources, sacred sites, and potential TCPs located in the YMP study area.

Should Yucca Mountain be found to be a suitable site for a repository, the CGTO would recommend that important cultural and/or ceremonial areas be set aside and designated as American Indian Cultural Resource Areas (AICRA). These areas would be used exclusively by Indian people from the culturally affiliated tribes and organizations to conduct ceremonies, collect foods and medicines, and serve as educational resources necessary for perpetuating American Indian culture. No characterization studies or ground-disturbing activities should be permitted within the AICRA. The YMP should initiate protective measures to avoid further disturbance of culturally sensitive areas both within the AICRA and the YMP study area.

Since Indian people have traditionally practiced horticulture, provisions should be made to allow Indian people to assist in environmental restoration programs conducted or planned by the YMP. Revegetation and reclamation programs should incorporate Indian plant experts and spiritual people to insure compliance with cultural traditions and protocol. Prior to implementation, the YMP should conduct systematic ethnographic studies to document the design and incorporate an appropriate American Indian cultural dimension. Access to culturally significant places would be increased if environmental restoration were successful, thus reducing Indian peoples' perception of health and spiritual risks associated with this area. Indian people wish to be

involved in identifying environmental restoration methods and in the evaluation of restoration success.

## 4.2 NATIVE AMERICAN PERCEPTIONS OF DOE ACTIVITIES

Perceptions of the effects of DOE activities are well known among the Western Shoshone, Southern Paiute, and Owens Valley Paiute and Shoshone people of this region as is apparent in the following passage.

> *"These perceptions of risks are frightening, and remain an important part of our lives. We will always carry these thoughts with us. Today, people are afraid of many things and places in this whole area, but we still love to come out and see our land. We worry about more destruction being brought to this land. If the YMP wants to better understand our feelings about the impacts of their activities on our cultures, they should support expanded ethnographic studies designed, conducted, and produced by the CGTO. At this time there has been limited studies of American Indians' perceptions of risk. Therefore, it is not possible to provide action-by-action estimations of risk perception impacts. We believe it is a topic that urgently needs to be studied so that Indian people may better address the actual cultural impacts of YMP activities. There have been recent workshops funded by the National Science Foundation to understand how to research the special issue of culturally based risk perception among American Indian communities, and at least one major project has been funded. Although this is a relatively new topic of research, it is one that can be more fully understood by research that deeply involves the people being considered. To understand our view of radiation is to begin to understand why we responded in certain ways to past and present activities, and why we will continue to respond to future YMP activities."*

## 4.3 SOCIAL AND ECONOMIC IMPACTS OF IMPLEMENTING THE PROPOSED ACTION

Indian people prefer to live in their traditional homelands. One reason for this preference is that Indian people have special ties to their traditional lands and a unique relationship with each other. When Indian people receive employment near their reservations, they can remain on the reservation while commuting to work. This pattern of employment tends to have positive benefits for both the Indian community and tribal enterprises, like housing. The reservation Indian community has the participation of the individual and his/her financial contribution. The individual payment for housing is tied to income levels, so the more a person earns with a job, the more they pay to the tribal housing authority, thus making tribally sponsored housing more economically viable.

When local employment opportunities decline on reservations, Indian people must move away from the reservation to seek employment. These situations have resulted in approximately one-half to two-thirds of the tribal members in the CGTO moving away from their reservations. As

these situations occur, services will decline to both the people who move away from the reservation and those tribal members who choose to stay.

Tribal members employed in occupations with transferrable skills may move away because of their marketable skills. With local employment opportunities such as those offered by the YMP to neighboring tribes, prices for tribal housing may rise because of the increased income. If a positive balance between increased income and cost of living on tribal reservations is achieved, then both individual members and the tribe benefit from employment opportunities. However, continued salary raises may tip the balance toward a sharp increase in the cost of living, making it less desirable for tribal members to continue living on the reservation.

Tribal housing programs become jeopardized if vacancies occur in tribal housing projects and cannot be reoccupied. If vacancies occur, tribal revenues and federal funding will be adversely impacted and will make it more difficult to expand housing programs in future years. Additionally, vacant units require more maintenance at the expense of the tribal housing authority. If tribal members are unavailable to occupy a tribal housing unit, then tribes make units available to non-Indians, thus further impacting Indian culture. The increased presence of non-Indians on reservations or in an Indian community reduces the privacy needed for the conduct of certain ceremonies and traditional practices. When non-Indian children are in constant interaction with Indian children, it creates a situation that potentially disrupts cultural learning opportunities that occur in everyday life.

As Indian people move away from the reservations due to employment opportunities, Indian culture is threatened because of the number of families living on reservation is reduced, thus minimizing participation in ceremonies and exposure to native languages and value systems. Tribal members who choose to relocate from their reservations, impact reservation economies, revenues for administration, school, housing, and emergency services will be reduced accordingly, due to a decline in population size which impacts funding levels.

When Indian people move away from their reservations several dilemmas occur. Typically, Indian people experience a feeling of isolation from their tribe, culture, and family. When an Indian person relocates to an off-reservation area, the individual finds that there are fewer people of their tribe and culture around them. As a result, Indian people must decide on the appropriateness of practicing traditional ceremonies in the presence of non-Indian people. Indian people are continually torn between the decision to stay in the city or return to the reservation to participate in traditional ceremonies and interact with other tribal members. This dilemma occurs on a regular basis and potentially impacts the livelihood and cultural well-being of off-reservation employees and their families. When off-reservation individuals choose to return to their homelands to participate in traditional ceremonies, they risk their jobs or disciplinary actions against their children who attend public schools due to excessive absenteeism.

Should an emergency situation resulting from YMP-related activities occur, including those related to the transportation of waste, it could result in the closure of a major reservation road. Many of the Indian reservations within the region of influence are located in remote areas with limited access by standard and substandard roads. Were a major (only) road into a reservation to

be closed, numerous adverse social and economic impacts could occur. For example, Indian students who have to travel an unusually high number of miles to or from school could realize delays. These delays also could occur for regular deliveries of necessary supplies for inventories needed by tribal enterprises and personal use. Purchases by patrons of tribal enterprises and emergency medical services in route to or from the reservation could be dramatically impeded. Potential investors interested in expanding tribal enterprises and ongoing considerations by tribal governments for future tribal developments may significantly diminish because of the perceived risks associated with YMP-related activities including the transportation of high-level radioactive waste or spent nuclear fuel on or near reservations.

## 4.4 AMERICAN INDIAN TRANSPORTATION ISSUES

American Indian transportation issues were discussed during the YMP EIS scoping period and again raised in the CGTO meetings. Therefore, it is important to include these issues in the EIS. Despite a record of meetings with American Indian people, groups, and tribes, the AIWS believes that studies will not present critical American Indian concerns. These include, among others, the impact of radioactive and hazardous waste travel along rail and highway routes on or near existing and planned American Indian businesses. Of particular concern are the impacts to the Moapa Paiute Tribe and the Las Vegas Paiute Tribe. American Indian people, especially elders, express a fear of radiation as an "angry rock" which can impact people as it travels. These impacts can occur even if the waste remains packaged and no transportation accidents occur to spill the contents of the package. American Indian people have communicated their perception of radiation, and the nature and extent of this fear should be addressed in the YMP EIS. American Indian people also express concern that places of spiritual power could be harmed by the transportation or storage of high-level radioactive waste or spent nuclear fuel. The CGTO recommends that the cultural concerns of American Indian tribes and organizations be included in the study of potential impacts of transporting high-level radioactive waste or spent nuclear fuel through culturally sensitive areas.

Transportation of high-level radioactive waste and spent nuclear fuel has been identified as a tremendous concern to Indian people, with far reaching implications and impacts to the environment and Indian culture. The EIS should reflect American Indian transportation concerns as they relate to Environmental Justice and socioeconomic issues including affected environments and cumulative affects, access to sacred sites, AIRFA, and NAGPRA. Each one of the proposed routes and/or transportation corridors being considered will pass through the traditional holy lands of the Southern Paiute, Western Shoshone, and the Owens Valley Paiute and Shoshone people. Many of these routes correspond, or are adjacent, to ancient pathways and complex trail systems known to Indian people. The information contained in this section is based on the traditional knowledge that was used collectively to make comparisons of the proposed transportation routes.

### 4.4.1 AIWS Transportation Analysis

The AIWS convened to review pre-decisional working draft maps illustrating proposed rail alignment designs and preferred routes for consideration by the YMP. Other maps that were reviewed identified the locations for the proposed Caliente/Las Vegas ITF, the Dry Lake ITF, and the Sloan/Jean ITF.

The AIWS, in cooperation with the CGTO, has chosen not to identify nor recommend a preferred transportation route because of the cultural inappropriateness of passing this adverse material near other Indian tribes and impacting their traditional use areas and tribal economies. The CGTO is aware of important cultural use areas, sacred sites, and other significant resources that fall within the proposed corridors and will present information when appropriate for consideration into the development of the YMP EIS.

The CGTO further recognizes the complexities of issues related to the transportation of high-level waste and spent nuclear fuel. In 1997, the CGTO appointed its first American Indian Transportation Committee to systematically evaluate various modes of transportation relating to the transportation of low-level radioactive waste to the NTS. At the request of the CGTO, the first American Indian Transportation Study was conducted in cooperation with the DOE/NV. This study should serve as a model that could be adapted to the YMP, if the study were allowed to be expanded and adequate funding was provided. The YMP should immediately embark on a similar undertaking to properly evaluate the proposed modes of transportation, the corresponding routes and options, and the construction of a proposed ITF.

#### 4.4.1.1 Legal-Weight Shipping and Heavy-Haul Transportation

The AIWS has examined pre-decisional working draft maps illustrating routes for legal-weight and heavy-haul truck shipments of high-level waste and spent nuclear fuel to Yucca Mountain. To date, there has been no systematic ethnographic studies conducted on these routes to ascertain cultural impacts. The proposed routes pass directly through the Moapa Indian Reservation and the Las Vegas Paiute Tribe. Both Indian tribes are federally recognized tribal governments that have substantial land bases and proposed master plans for their respective communities.

To date, there has been no analysis or consultation specifically focusing on Environmental Justice impacts to these two and other Indian communities located near proposed transportation corridors. The CGTO recommends that a systematic cultural analysis be conducted to identify situations that fall within the definition of Environmental Justice impacts. Furthermore, the AIWS recommends that these two tribes and other CGTO member tribes and organizations be contacted directly throughout the design and potential operational phase of the YMP repository in regards to transportation issues. Other tribal groups not included in the CGTO that are impacted by legal-weight or heavy-haul shipments should also be involved.

#### 4.4.1.2 Rail Shipments

The AIWS has examined maps illustrating Nevada rail corridors under evaluation for rail shipments of high-level waste and spent nuclear fuel to Yucca Mountain. The maps illustrate primary and secondary transportation corridors that would be associated with either a Caliente/Las Vegas ITF, a Dry Lake ITF, or a Sloan/Jean ITF. The proposed rail routes travel through culturally sensitive areas that have not been systematically evaluated. Prior to any final route or mode of travel selections, the DOE must conduct systematic ethnographic studies, and initiate an American Indian transportation study with the assistance of the CGTO's American Indian Transportation Committee. The committee is aware of the abundance of wetlands and washes and other engineering barriers located in the area of the proposed northern routes. Associated with these wetlands are important cultural resources that are tied to traditional stories of Indian people.

Currently, several routes are being considered that would consist of new routes or spurs being constructed to the potential repository site at Yucca Mountain. The routes are identified as the Carlin Route with a Monitor Valley Option, the Caliente Route with the Crestline Option, the Caliente/Chalk Mountain Route, the Caliente/Carlin Route, the Valley Modified Route, and the Jean Route with the Stateline Pass Option. The CGTO does not support the further disturbance of the land and its resources associated with the construction of proposed rail corridors. Although, the Caliente/Chalk Mountain route that is proposed to pass through the Nellis Air Force Range may be the most desirable due to the restricted access and minimal impacts to surrounding communities, without proper cultural analysis and studies, no route can be recommended at this time.

To date, no studies involving Indian people have been conducted in the areas associated with the routes identified above to ascertain their cultural significance. Nevertheless, these areas are known to contain important sacred sites that have not been evaluated and have possible NAGPRA, AIRFA and EO 13007 implications. Moreover, there has been no analysis of Environmental Justice issues that may be present in nearby tribal communities. As mandated by the DOE American Indian Policy, the DOE must thoroughly evaluate these impacts in cooperation with other federal establishments such as the Nellis Air Force Base when necessary. Efforts should be undertaken to immediately consult with the CGTO and any other culturally affiliated tribes who may have demonstrated ties to the proposed transportation corridor locations.

#### 4.4.1.3 Intermodal Transfer Facility

The AIWS examined preliminary maps identifying areas for a proposed ITF. The proposed sites are identified as the Caliente/Las Vegas ITF, the Dry Lake ITF, and the Sloan/Jean ITF. The facility would be fenced and contain approximately 2 buildings and multiple tracks. It is anticipated that a minimal number of employees will be retained and may include armed security forces.

The CGTO does not support any further ground-disturbing activities or destruction of important cultural resources that may result upon construction of an ITF. As previously mentioned, no systematic studies have been conducted which evaluate the resources and perceived risks associated with the transportation of high-level waste and spent nuclear fuel. Additionally, no analysis of Environmental Justice issues have been performed in relation to impacts to tribal communities. The DOE, therefore, must consult with the CGTO and fund studies to analyze these important areas prior to ground disturbance and construction of an ITF. Each of the proposed locations being considered for the facility contain culturally important areas that could have implications associated with various federal legislation including AIRFA, NAGPRA, and EO 13007. Some of the areas are commonly visited and utilized by Indian people today in the perpetuation of their culture.

It is important to note that ethnographic studies have been previously conducted in the Sloan/Jean area to evaluate the impacts to cultural resources from the construction of nearby powerlines.

### 4.4.2 Notification to Tribes of High-Level Waste and Spent Nuclear Fuel Shipments

The CGTO has identified potential concerns about the lack of shipping notification of various materials that are considered dangerous and hazardous. Due to jurisdictional oversights and dilemmas, those tribes that are geographically located on or near any proposed transportation corridors must be properly notified in advance of any shipments. Serious consideration must be given to scheduling so as to not disrupt any sensitive cultural ceremonies that are essential to the perpetuation of the American Indian culture. These events should be considered when designing proposed shipping schedules, primary routes, or alternate routes. Actual shipping notification should be given to all Indian communities that have cultural ties to any lands within the transportation corridors.

Historically, shipping notification has been provided to the State and sometimes the corresponding municipality. Tribes are typically not notified due to inadvertent oversights; these situations must be considered and corrected. In the event of an accident within tribal boundaries, tribal police departments would be the first to respond. State and local officials often do not want to interfere or enter an area outside of their official jurisdiction due to their lack of authority. Therefore, in the event of an accident on or near tribal boundaries, procedures must be in place so that those tribal communities can be immediately notified to assist when needed, and to inform their respective tribal members as appropriate.

### 4.4.3 Emergency Response Training

The CGTO has been actively involved with the YMP for over 10 years. The primary focus has been limited to examining cultural resources within the study area and making formal recommendations on how best to protect them. No efforts have been made to understand the complex interrelationship with other areas and more importantly, no discussions and/or training has occurred relating to emergency response and related action plans that could potentially

impact culturally sensitive areas and tribal communities. At present, none of the tribes belonging to the CGTO have the financial resources for training emergency personnel and purchasing equipment necessary to adequately respond to a hazardous material/waste transportation-related emergency.

The DOE should develop formal cooperative agreements on a government-to-government basis as mandated in a Presidential Memorandum and the DOE's American Indian Policy. This action should be initiated as soon as possible to allow for adequate preparation.

## 4.5 FUNDING

The CGTO has requested funding from the DOE on numerous occasions for project oversight and to conduct the necessary studies to determine the impacts to tribal communities and preparations necessary should Yucca Mountain be found suitable to serve as a geologic repository. Federally recognized tribes are concerned about the lack of preparation, personnel, and equipment needed to respond to accidents and emergencies associated with the transportation of high-level radioactive waste and spent nuclear fuel on or near their respective reservations. Impacts to tribal enterprises resulting in financial strains on existing infrastructures or economies are considered equally important. Additionally, it is critical to conduct long-term comprehensive planning to include systematic ethnographic studies for all activities both on and off-site associated with the YMP, including transportation issues and the construction of an ITF. The DOE must immediately commit to providing equitable and adequate funding for those culturally affiliated tribes who have been and will continue to be impacted by the YMP. This funding should be designated for emergency response and preparedness and other oversight activities.

## 4.6 MITIGATION RECOMMENDATIONS

The AIWS understands that mitigation recommendations may be divided between YMP EIS chapters associated with the proposed action and alternative discussions. Despite the need for breaking this section into its component parts, the AIWS wanted their thoughts on mitigation to be held together in this, their own, document. The following discussion is consistent with the Council on Environmental Quality's definition of mitigation (40 CFR Part 1508.19), which guides EIS actions.

Federal and state agencies that must comply with legal requirements for the management and protection of American Indian cultural resources have developed, in the last few years, fairly standard procedures for funding and implementing present and future mitigation programs. The vast majority of these programs have focused on mitigating archaeological and historic sites to the exclusion of other resources found in the American Indian cultural landscape. Recently American Indian plants have been incorporated into mitigation programs, but these have concentrated mostly on endangered plant species. Animal studies, which require a more complex methodology, are only now being developed. Other components of the cultural landscape, such

as geological formations, are not systematically considered for mitigation unless they have potential for tourism.

A key problem of existing procedures for implementing mitigation is the lack of an integrated approach to resources that takes into consideration the functional and reproductive interdependence of American Indian cultural resources. In the view of the CGTO, there is not one type of resource that can continue to reproduce and be of use to the American Indian people without the continuation of all other resources. For Indian people, an adversely impacted resource will most certainly affect the spiritual harmony of the land as a whole. Unfortunately, laws and regulations designed to protect American Indian cultural resources such as the National Historic Preservation Act (16 USC 470 et seq.) treat each resource in isolation, without considering the interrelationship within an American Indian cultural landscape.

The CGTO is aware of numerous sacred sites and important irreplaceable cultural resources both within the Yucca Mountain study area and near the corresponding repository transportation corridors which are now under consideration. The DOE must develop and adopt a mitigation plan and RMP that is consistent with the DOE American Indian Policy, EO 13007, EO 12898, NAGPRA and AIRFA. This plan must be developed in cooperation with the culturally affiliated tribes and organizations making up the CGTO. To date, no formal discussions have occurred which identify how important sites and resources will be mitigated. The plan must also consider the use of American Indian monitors in the event of any pre-activity or data recovery efforts.

The use of American Indian monitors must be allowed when considering any ground-disturbing activities. Currently, the DOE has adopted a "preservation-in-place policy" within the YMP study area. The American Indian monitors have been called in as representatives of the CGTO to evaluate archaeological sites for cultural sensitivities. American Indian spiritual leaders have also been permitted to visit important cultural areas to conduct traditional prayers or ceremonies. The same provisions must be continued to promote consistency and compliance with the numerous federal drivers that are the foundation of the NAIP. It would be unreasonable to expect that the DOE would consider separate policies inconsistent with this long-standing precedent.

### 4.6.1 American Indian Cultural Resources

The CGTO recommends that mitigation programs implemented at the YMP fully incorporate the assistance of American Indian people so that adverse impacts on American Indian resources can be efficiently averted. American Indian people know the YMP landscape in great depth and thus can help scientists with the identification of plants, animals, geography, archaeological sites, and TCPs that have been, or will be adversely impacted by YMP programs and activities.

The CGTO believes that the natural and spiritual balance of the YMP landscape has been profoundly upset by prolonged misuse of the land by the DOE and that the land must be purified and the spirits appeased in order to fully restore the environment to its previous condition.

Through ceremonies, prayer, and offerings, American Indian people will contribute to increase the benefits of mitigation and will aid in restoring the spiritual harmony of impacted landscapes.

There are a number of proposed YMP activities that are of great concern to Indian people because of their adverse impact on the American Indian landscape. To avert or mitigate such impacts, the CGTO recommends that the YMP fund systematic American Indian studies to:

- Identify those areas/resources that will be irreparably damaged, as well as areas/resources that can be restored for human use
- Avoid further ground-disturbing activities
- Make mitigation of restorable areas a top priority
- Replace lost plant and animal species integral to the spiritual landscape
- Avert or minimize damage to geological formations important to the spiritual landscape
- Implement environmental restoration techniques that require minimum ground-disturbing activities
- Continue systematic consultation with American Indians so that potentially impacted resources can be identified, alternative solutions discussed, and adverse impacts averted
- Give American Indian people access to adversely impacted areas so that they can contribute their knowledge, purification ceremonies, prayers, and offerings to the restoration of the natural and spiritual harmony of the YMP landscape.

In addition to these recommendations that derive from analysis of proposed action and alternative impacts to American Indian cultural resources, the CGTO discussed and agreed to the following issues at meetings with the YMP:

1. Consultation with the CGTO does not relieve the YMP of its obligation to maintain a government-to-government relationship with American Indian tribes.
2. The YMP must continue to consult with all culturally affiliated tribes and organizations belonging to the CGTO.
3. The YMP should incorporate other American Indian tribes and organizations when considering activities away from (i.e., outside the American Indian region of influence) the YMP, such as transportation.
4. The CGTO recommends that the YMP incorporate wherever possible in the EIS, the text from the AIRD and final tribal recommendations to the YMP prepared at YMP Tribal Update Meetings.

5. The CGTO recommends the continuance and expansion of the American Indian consultation program.

6. The CGTO recommends that they be actively involved in the planning, developing, and monitoring of all future YMP ground-disturbing activities.

7. Public meetings are not the proper way to consult with tribes and organizations. Tribes should not be considered "stakeholders" as defined by the DOE.

8. All Indian spiritual leaders and other involved Indian people should be afforded the opportunity to conduct land restoration ceremonies.

9. Access to culturally sensitive areas should be provided to the CGTO and limited to others.

10. Provisions for American Indian monitors needed for cultural resources investigations should be incorporated.

### 4.6.2 American Indian Socioeconomics

As described earlier, in regards to the employment of tribal members, special problems emerge for the individual, families, and reservation communities. The YMP can assist in mitigating these problems by recognizing the exact nature of the problems and developing a culturally responsive approach to mitigating the problem. For example, an Indian employee may be required to attend a ceremony on the reservation. When this situation occurs, the YMP should grant special leave status to the employee to participate in the ceremony. Children of the Indian employee may go to non-Indian schools, causing cross-cultural stresses. Reservation problems resulting from the loss of tribal members to external employment with the YMP cannot be fully identified without a systematic study of these issues involving the tribes. It is recommended that this issue be mitigated by the YMP. The CGTO potentially can serve as a management consultant to the YMP for the development and implementation of culturally specific programs that address the unique issues that may arise due to off-reservation migration caused by the employment of Indian people.

### 4.6.3 American Indian Transportation Concerns

Now that the AIWS has learned about the possibility of construction of an ITF within their designated region of influence and in light of the lack of systematic ethnographic studies to determine AIRFA, NAGPRA, EO 13007, and DOE American Indian Policy compliance, the CGTO must seriously consider and make arrangements to ascertain the cultural significance along the proposed transportation corridors. A Rapid Cultural Assessment Team must be called upon to begin ascertaining the level of cultural significance to these newly proposed areas. If a sacred site, potential TCP, or other important cultural resource would be adversely impacted, the DOE must make arrangements to minimize impacts and mitigate these issues with the CGTO. Mitigation should include expanding a Rapid Cultural Assessment to include a comprehensive

ethnographic study with field visits by tribal elders and knowledgeable tribal representatives. It may be further appropriate to call upon an American Indian Ethnographic Team in conjunction with this effort to begin recording information.

The issue of transporting high-level nuclear waste and spent nuclear fuel via rail or truck and the proposed construction of an ITF requires further analysis of the impacts to Indian tribes and the associated perceived risks. As mentioned earlier, the CGTO's American Indian Transportation Committee for the NTS is conducting an American Indian transportation study to evaluate the associated perceived risks and potential impacts on cultural resources and tribal communities from legal-weight truck shipments of low-level radioactive waste via several proposed transportation routes. Not all of these routes coincide with transportation corridors being considered by the YMP. Therefore, just as there are distinct differences between low-level radioactive waste and high-level waste and spent nuclear fuel that require unique and separate studies, the same logic needs to be applied to the impacts and cultural analysis associated with these different categories. Therefore, the CGTO recommends that the DOE fund a similar collaborative approach to ascertain the impacts to tribal communities and irreplaceable cultural resources.

## 4.7 SUPPLEMENTAL CONCERNS

### 4.7.1 Access to Cultural Resources, Sacred Sites, and Potential TCPs

In consideration of the development of a geologic repository, the construction of an ITF and the proposed transportation corridors that have not been evaluated for important cultural properties, there has been little discussion regarding access to these vitally important areas. The CGTO has not reviewed any provisions regarding ongoing visitation to important cultural resources, sacred sites, or potential TCPs throughout the life of the YMP. An RMP should be developed collaboratively with the CGTO to begin addressing access and monitoring issues of various resources beyond artifacts.

### 4.7.2 Text Revisions or Supplements

The CGTO recognizes that throughout the life of site characterization and the exploration of various alternatives associated with the impending EIS, it will become necessary for the CGTO to make additional recommendations to the DOE regarding Native American issues and concerns. The DOE must make arrangements to provide funding to reconvene the AIWS to review additional materials and develop responses for review and approval of the CGTO and their respective tribes and organizations. The CGTO is the official body of the duly appointed tribal representatives who serve as points of contact and provide comments as appropriate. The AIWS does not have authority to express or represent specific concerns on behalf of the culturally affiliated tribes and organizations without their expressed consent and approval. Therefore, the DOE must also continue to support the NAIP through special meetings of the CGTO when deemed necessary.

## 5.0 AMERICAN INDIAN CONSULTATION PROCEDURES

American Indian tribes are sovereign nations who acknowledge the U.S. Government and expect that, in return, the U.S. Government will recognize tribal sovereignty. In a memorandum dated April 29, 1994, President William J. Clinton wrote "I am strongly committed to building a more effective day-to-day working relationship reflecting respect for the rights of self-government due the sovereign tribal rights governments" (White House, 1994). American Indian governments expect that federal agencies and state officials will honor President Clinton's explicit commitment to building such a relationship and follow his mandate (EOs 12866 and 12875). Accordingly, government officials must implement comprehensive consultation policies that take into consideration the vast cultural, social, and political diversity of American Indians, as well as the needs, concerns, and impacts that are shared by our nations.

American Indian tribes are not considered as, nor do they fit the definition of, businesses or "stakeholders." Formal government-to-government consultation with tribal governments requires diplomacy. U.S. government officials who are in charge of maintaining friendly and productive day-to-day relationships with foreign countries, such as Japan, Mexico, or Germany, must acquire knowledge on the languages, culture, and politics of those countries in order to best represent the interests of the United States of America and to achieve success in international economic and political negotiations. Yet, there is little or no interest among government officials to educate themselves as to how American Indians living in their own country, organize themselves culturally and politically. How, we ask, are federal agencies and state officials going to succeed in following President Clinton's mandate if they do not work at improving their knowledge of American Indian ways of life?

The AIWS, who represents the concerns of the CGTO for the YMP EIS, suggests a series of procedures for implementing a comprehensive, day-to-day consultation relationship with the YMP. The DOE has maintained its commitment to consultation and has established a working relationship with culturally affiliated American Indian tribes regarding cultural resources in the Yucca Mountain area since 1987. There are, however, numerous other areas of great concern for tribal governments that will be addressed in the YMP EIS, but that have not been explored or systematically subjected to consultation with tribal governments. Some of these areas are:

- Land use
- Risk assessment
- Socioeconomic issues
- Transportation of high-level nuclear waste and spent nuclear fuel
- Environmental restoration
- Mitigation.

The AIWS is aware that at present the YMP is considering incorporating American Indian concerns identified in this resource document into the EIS. This involvement is a positive step for involving culturally affiliated tribes and organizations on a government-to-government basis. The gravity of past and proposed future DOE programs and activities at Yucca Mountain and other areas withdrawn by the DOE, calls for a broadening of the scope of American Indian

consultation programs. The CGTO believes that the YMP must identify and seek to remove impediments to working directly and effectively with tribal governments on YMP programs and activities. The YMP has already recognized that there may be certain procedural impediments which limit or restrict the ability to work effectively and consistently with American Indian tribes. In keeping with this government-to-government philosophy, the YMP must make every effort to remove such impediments.

Consultation procedures have been used drawing from past and current consultation relationships between other federal agencies and the CGTO, and have been systematically adapted to the YMP NAIP. This section not only highlights the accomplishments of these consultation programs with tribal governments, but also points out procedures that have yet to be developed and implemented. Because this AIRD will be read by government officials from sister DOE facilities and perhaps by other federal and state agencies as well, the AIWS expects that the following consultation procedures will serve as a model for future interaction between tribal governments and federal and state agencies. It is important to note that specific consultation procedures should be approved by tribal governments at the onset of each consultation process.

## 5.1 OUTLINE OF CONSULTATION PROCEDURES

- *Initial Notification.* A formal letter addressed to the tribal government head or chairperson must be sent to inform the tribe of any proposed action that may affect American Indian resources and/or may impact the well-being of tribal members. Initial formal letters must be followed up to ensure that the tribal government is aware of the proposed action and has received copies of all pertinent documentation. When a Notice of Intent is part of an ongoing consultation relationship, it should also be sent to Official Tribal Contact Representatives (OTCR).

- *Pertinent Documentation.* A non-technical document that clearly and concisely presents the scope and goals of the proposed action, including an explanation of potential effects and consequences of such action, both positive and negative, should accompany the Notice of Intent.

- *Formal Visitation.* A request for a formal visitation with the tribal government(s) to make an oral presentation of the proposed action and its effects and consequences should follow a Notice of Intent. Presentations must be concise and no more than 15 minutes. Visual aids and non-technical language will greatly facilitate communication.

- *Official Tribal Contact Representative.* For new proposed actions, the federal agency should request that the tribal governments review this information and appoint an OTCR(s) who will directly interact with officials. If representatives have already been appointed, then the agency has the responsibility to keep the tribal contacts informed and periodically double-check whether new representatives have been appointed by the tribal government.

- *Agency Point-of-Contact.* A permanent agency point-of-contact should be appointed for all consultation activities (e.g., cultural resource management and environmental documentation). This individual(s) must have prior knowledge of consultation procedures and American Indian culture, long-range vision, and be responsible for maintaining long-term consultation with the tribes. Continuity in consultation relationships achieved and maintained between the agency and the OTCRs could not have been possible without the commitment of responsible and knowledgeable agency officials.

- *Memorandum of Agreement.* Consultation with tribal representatives is a productive opportunity for sharing information and voicing common tribal concerns regarding programs and activities. However, there are more specific impacts of these programs and activities that directly affect those tribes that live in the vicinity of a proposed project. A Memorandum of Agreement between the federal agency and the affected tribal governments should be signed before implementing a proposed action.

- *Information Updates.* Tribal governments involved in consultation with the agency must be kept informed of the progress of programs and activities, modifications of the original action plans, and changes of agency personnel that may affect the consultation relationship. Draft reports should be sent to the tribal governments for review and comment.

- *Indian Monitoring Program.* Appointing Indian monitors is essential for ensuring that cultural resource management and mitigation of adverse impacts of project activities on American Indian cultural resources is conducted in an appropriate manner. The involvement of officially appointed Indian monitors in archaeological research, for example, has been successful and will continue to be so in the immediate future. Monitoring should be expanded to other areas of potential impact to American Indian culture and well-being.

- *Formation of American Indian Task Subgroups.* Ideally, tribal governments should be directly involved in the design and implementation of programs and activities that could potentially impact Indian culture and society. This involvement can be made possible if task subgroups formed by OTCRs are allowed to work alongside federal agency planners or managers. It is expected that Indian task subgroups will become an established consultation procedure.

- *Regular Meetings Between Agency Managers and Official Tribal Contact Representatives.* Periodically, project personnel should agree to a formal meeting with tribal representatives to share information on current and future plans, ongoing consultation, needs and concerns of both the tribes and the agency, and policy updates. These meetings are useful for reassuring both agency managers and tribal governments that consultation is being conducted in a culturally and politically appropriate manner and for mutual benefit.

- *Co-management.* Ideally, tribal governments who are involved in consultation with an agency should share tasks and responsibilities in the management of resources that are significant for Indian people. Future agency efforts should target the development of a resource co-management plan.

- *Funding.* Funding for consultation, including OTCR meetings, site visits, task subgroups, and monitoring should be provided for the continuation of current compliance programs and future projects.

- *Time Allowance.* Tribal governments are often overworked and understaffed. Proposal reviews by the tribal council, personnel appointments, and review and comment of draft documents take time. Agencies should send notices of intent and any other documentation within a reasonable timeframe so that tribes can respond on a timely basis. Proposal and document review periods should be 30 to 45 days.

## 5.2 YMP AND REPOSITORY CONSULTATION ISSUES

- *Land Use.* Land has no monetary value for Indian tribes. Indian people do not recognize boundaries other than their traditional territories. Land was traditionally respected for its ability to sustain the people economically, spiritually, and socially. American Indian perspectives on land use should be incorporated into all federal agency programs and activities that will potentially transform the natural landscape of traditional Indian land or impact its biological resources.

- *Biological Resources.* The YMP's projects and activities have impacted the region's plant and animal species. A number of them are currently candidates for listings as either threatened or endangered. Indian people have deep knowledge of the biological resources of the area and should participate directly with scientists responsible for the protection of its biological resources. Although limited systematic traditional-use plant studies have been conducted for the YMP, American Indians would like to see the YMP take a step further and invite them to assist the agency in the planning and implementing of ecosystem management programs at the YMP.

- *Air Quality and Climate.* The YMP should make an effort to record systematically the potential adverse effects of waste transportation and storage on the air quality of American Indian communities located near Yucca Mountain.

- *Visual Resources.* All land forms within the YMP study area have high sensitivity levels for American Indians. The ability to see the land without the distraction of buildings, towers, cables, roads, and other objects is essential for the spiritual interaction between Indian people and their traditional lands. Landscape modifications should be done in consultation with American Indians.

- *Occupational and Public Health and Safety.* The YMP's programs and activities are performed in accordance with the regulations of the Occupational Safety and Health Administration. Tribes that live near the YMP would like to be included in systematic research aimed at ensuring that public health and safety measures devised by the YMP extend into tribal lands and communities.

- *High-Level Radioactive and Nuclear Waste Transportation.* Portions of the current road system within the western United States is based on ancient pathways and trails of Indian people. The Southwest Desert Trail System was not used for trivial activities but for trade, commerce, pilgrimage, and often for a hasty retreat or to pursue an enemy in the act of warfare. Trails were used to relay important messages to distant tribal groups.

  Tribal governments would like to cooperate with the YMP in the development and implementation of safe transportation policies. However, no systematic consultation with tribal governments has been conducted to date. Indian communities located along transportation routes are continuously exposed to risks of accidents, spills, and adverse impacts of transportation on tribal economies. The cumulative effects of long-term radioactive waste transportation through tribal lands would be traumatic and potentially life-threatening to the well-being of the Indian people.

  The YMP has the responsibility to assist neighboring tribes in developing an emergency response management program in regard to transportation of high-level radioactive waste and spent nuclear fuel as it passes through tribal lands. A Memorandum of Agreement should be developed and signed by all parties.

- *Geology and Soils.* Severe disturbance of the geology and soils on large portions of YMP land has been caused by site characterization activities. These impacts have made certain areas unfit for human use. These areas are no longer freely accessible to American Indians for religious purposes.

- *Surface Hydrology and Groundwater.* Surface and subsurface water in the YMP area may potentially become contaminated. Animals in these regions must drink this water, they do not have a choice. Potential water pollution also puts plant communities in jeopardy. Tribal governments are concerned that the potential migration of polluted water from contaminated areas into land outside the YMP will have long-term adverse effects.

The AIWS reviewed and edited the Consultation Model produced for the DOE Legacy Project (Stoffle et al., 1994c). A detailed version of this American Indian Consultation Model, which has been tailored to meet current NAIP consultation procedures, is included in Appendix A.

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# 6.0 DEVELOPMENT OF A RESOURCE MANAGEMENT PLAN

## 6.1 AMERICAN INDIAN PARTICIPATION

American Indian ethnic groups whose aboriginal territories included the YMP lands have accumulated centuries of knowledge on the resources present at this site. Through continued use, Indian people developed a profound understanding of the cycles of resource renewal and natural transformation of the landscape, the relationships between plants, animals, minerals, water, air, and landforms that form the ecosystem, and the spiritual and healing power of this land. Elders describe their relationship with the YMP lands:

> *"When you come to this land you feel at home, it gives you a peaceful feeling, the land, the mountains, the birds. Like when I cross over the mountains and see Owens Valley. In the old times the people used to come together and have ceremonies, social gatherings, and pow-wows. When we get the opportunity to revisit many of these places, it was the first time in at least 50 years that the three ethnic groups have the opportunity to get together. It's very peaceful to be back home among Indian people. This opportunity for tribal elders to return to this holy place is an important pilgrimage after being kept forcefully away from this land for all these years. It is a special gift for tribal elders who still remember the area and its importance, and for the younger people who will experience this pilgrimage with us."*

Should an RMP be prepared for the YMP, American Indians can contribute their knowledge to insure that the document is comprehensive and culturally sensitive by:

- Assisting the YMP in the development of methods of identification, inventory, and preservation of American Indian resources
- Sharing values and perceptions that Indian people place on the resources at the YMP
- Broadening and refining the goals that the YMP will use to guide the conservation and culturally appropriate use of those resources
- Identifying American Indian priorities and constraints on resource management goals
- Bringing American Indian views on traditional ecosystems so that the principles of ecosystem management can be incorporated into an RMP in a culturally sensitive manner

Ultimately, the goal of American Indian participation in an RMP is to develop a long-term co-management plan for the cultural resources present in the YMP area.

## 6.2 HOW AMERICAN INDIAN PARTICIPATION MAY BE INCORPORATED INTO AN RMP

Following are proposed steps for development of an RMP to offer a framework for American Indian participation:

**Step 1. Review Information and Identify Resources**. Since 1987, the YMP has worked with the CGTO to identify American Indian resources on or near Yucca Mountain. Systematic studies of American Indian resources should be expanded to include archaeological sites, TCPs, and plant resources on YMP lands. These studies will demonstrate not only how important this land and its resources are for Indian people but also how valuable traditional knowledge can be for developing an RMP. Other American Indian resources present at the YMP that need to be systematically investigated include animals, minerals, rock art, water, soils, and landforms.

**Step 2. Develop Management Goals for Resource Issues and Constraints.** Throughout the years of site characterization activities conducted for the YMP, American Indians were extremely concerned by the federal government's lack of regard for the effects that these activities had on cultural and environmental resources and the minimal response to public concerns on these activities. The CGTO is concerned that the YMP activities may continue to negatively impact Indian resources in the area. The goal of the CGTO is to participate as a partner in the development of strategies that the YMP could use to minimize or even completely eliminate impacts to their critical resources.

**Step 3. Develop Management Actions to Reach the Goals.** The CGTO is concerned that the sovereign nations have not been included in the drafting of the list of management actions that the YMP may take during land-use planning and resource management. The CGTO expects that its member tribes and organizations will be invited to coordinate and cooperate with the YMP to reach this goal. A critical issue that must be addressed in the future is the socioeconomic impact that YMP and repository activities have had and will have on neighboring tribal lands. The CGTO considers that an expansion of YMP's existing working relationships and a negotiation of agreements with neighboring tribal governments is essential for developing a positive and effective co-management strategy.

**Step 4. Identify, Collect, and Summarize Data Needed to Implement the Management Actions.** A comprehensive and culturally sensitive RMP should include systematic identification and data collection on American Indian resources and on contemporary issues of concern for tribal governments, such as health and safety, Environmental Justice, socioeconomic impacts, and risk assessment of nuclear waste transportation. The current working relationship between the YMP and the CGTO includes the identification and partial data collection on American Indian cultural resources. However, issues of concern for the contemporary well-being of Indian people have yet to be addressed. American Indians would like to participate in the identification, collection, and summary of data needed to implement management actions.

**Step 5. Develop the Land-Use Planning Tools.** American Indian resources should be systematically incorporated into the evaluation of management actions and mapping of data

collected through Step 4. At least one member organization of the CGTO, the Kaibab Band of Southern Paiutes, is currently developing a multimedia management plan for their own resources along the Colorado River Corridor, including resource identification, data collection, field monitoring, and long-term education programs on the conservation management of resources by tribal people. In the near future, American Indians will have the technical knowledge and tools to actively collaborate with the YMP in the development of land-use planning tools. An agreement which includes YMP's sponsorship of technical training of Indian people on this step would greatly accelerate learning and improve collaborative efforts.

American Indians would like to be invited to examine, discuss, and provide recommendations on suitable land uses and compatibility between future land-use alternatives and cultural concerns of Indian people. It is important for the YMP to understand that, in the American Indian point of view, "land-disturbing activities" are not limited to construction or land restoration, but include geologic disposal and transportation of high-level radioactive waste and spent nuclear fuel.

**Step 6. Implement the RMP During Land-Use Planning.** American Indian governments would like the YMP to engage in government-to-government consultation during the selection and design of new projects, so that Indian people can evaluate in detail and follow closely the development and progress of projects that can potentially affect their traditional resources. American Indians consider the selection of suitable locations for new projects a critical step in all YMP proposed programs and activities and thus would like to be directly involved during the evaluation, decision-making, and implementation stages.

**Step 7. Monitor Resources and Adaptively Manage.** The American Indian monitoring program should be expanded by the YMP. This monitoring program should not be limited to archaeological research at the site. Indian tribes would like to expand the monitoring program to other ground-disturbing activities that may affect wildlife, forestry, water, air, soils, and minerals of importance to Indian people. Ideally, a training program to provide American Indians with background knowledge and monitoring skills would complement traditional knowledge on ecosystems and would help implement a culturally sensitive monitoring strategy that is positive and feasible for both the YMP and tribal governments. Expanding the American Indian monitoring program to include other resources and training Indian monitors would greatly enhance the YMP's ability to identify, collect, and summarize the data needed to implement an RMP (Step 4).

A long-term goal of the CGTO has been to achieve co-management of the YMP. Co-management is a term that seems to best describe the relationship between the YMP and the CGTO who have come together to jointly identify and suggest mitigation recommendations to protect American Indian cultural resources. This co-management relationship must be identified and addressed in detail during the implementation of an RMP. Tribal governments would like to continue having the opportunity to voice their concerns whenever culturally and socially unacceptable proposals are being evaluated by the YMP.

**Step 8. Periodically Review and Update the Plan.** American Indians are not just one more resource within the YMP lands, nor are they independent "stakeholders." Tribal governments are

sovereign nations which, under President Clinton's mandate, must be addressed in a government-to-government consultation. Tribal governments would like the opportunity to follow up the development and implementation of an RMP, engage in formal consultation whenever new programs and activities are being evaluated, and participate in land-use management strategies, including mapping and inventory of resources, monitoring, and risk assessment evaluations. Maintaining communication between the YMP and tribal governments will ensure that an RMP is responsive to cultural concerns and the well-being of Indian people.

## 6.3 AMERICAN INDIAN ECOSYSTEM PERSPECTIVES

Ecosystem management is a term that is being used in the current framework for the development of an RMP in response to recent federal guidelines. Indian people have a unique view of ecosystems and culturally established procedures for using them in a sustainable manner. These cultural ways, which could be called *ecosystem management strategies*, have been developed from thousands of years of experience living on and learning from the YMP ecosystems. The Indian ecosystem approach reflects what is being called *cultural landscapes* (Stoffle et al. 1996b) elsewhere in cultural resource management.

The meaning of a natural ecosystem is a key issue within the Indian people's view of ecosystem management. According to traditional ecosystem management perspectives, natural ecosystems contain Indian people interacting with the physical environment, plants, and animals. After thousands of years of interacting with American Indians, the plants, animals, and physical resources on the YMP have adjusted to this relationship. Indian people believe that the land is to be used in a culturally appropriate manner or it becomes infertile. "Talk to it" is what Indian people say. The plant to be picked, the animal to be hunted, the mineral to be mined, the water to be drunk, all need to be talked to so they understand why they are being used and so they can willingly give themselves over to the service of Indian people. In return, the picked plant comes back thicker, the animal herd is larger and stronger, the mineral deposits are used in religious ceremonies, and the water satisfies one of its purposes. The view of a natural landscape containing Indian people interacting with the landscape is already expressed in previous comments as well as in previous documents deriving from interactions with the CGTO.

Defining an American Indian ecological unit is a critical issue for implementing an ecosystem management strategy that includes cultural resources. Indian people often accept geographically unique units like hydrological basins as reflecting traditional adaptive units. However, these geographically unique units are bound together into larger culturally-based units. Ultimately it is cultural, not natural geography that reflect the mind of Indian peoples' adaptation. Cultural-geographic units identified by past studies are the (1) local use area, (2) district, and (3) holy land or nation. Additional cultural-geographic units are the (1) regional landscape, (2) ecoscape, (3) story-scape, and (4) landmarks (Stoffle et al. 1996b). The AIWS would like an RMP to consider using American Indian cultural-geographic units as part of the base management plan.

## 6.4 SUMMARY STATEMENTS

American Indian participation in the protection and management of resources at the YMP is not limited to compliance with Section 106 of the National Historic Preservation Act but includes 10 years of consultation with other federal agencies, including the AIRFA compliance program, the NAGPRA compliance program, and the direct participation of American Indians in the writing of various resource documents. Consultation that may be implemented in the future, specifically that related to an RMP, will be successful if it is built on past and present relationships between the YMP and the CGTO.

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# 7.0 ACRONYMS

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|---|---|
| AICRA | American Indian Cultural Resource Area |
| AIRD | American Indian Resource Document |
| AIRFA | American Indian Religious Freedom Act |
| AIWS | American Indian Writers Subgroup |
| CGTO | Consolidated Group of Tribes and Organizations |
| DOD | U.S. Department of Defense |
| DOE | U.S. Department of Energy |
| DOE/NV | U.S. Department of Energy/Nevada Operations Office |
| EIS | Environmental Impact Statement |
| EO | Executive Order |
| GC | Colorado River Corridor Study |
| ITF | Intermodal Transfer Facility |
| IWGEJ | Interagency Work Group on Environmental Justice |
| MOU | Memorandum of Understanding |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NAIP | Native American Interaction Program |
| NTS | Nevada Test Site |
| OTCR | Official Tribal Contact Representative |
| PM/RM | Pahute Mesa/Rainier Mesa |
| RMP | Resource Management Plan |
| TCP | Traditional Cultural Property |
| UTTR | Utah Test and Training Range |
| YM | Yucca Mountain |
| YMP | Yucca Mountain Site Characterization Project |

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# 8.0 REFERENCES

## REGULATION, ORDER, LAW


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| 16 USC 470 et seq. | National Historic Preservation Act (36 CFR 60, 63, and 800; EO 11593) |
| 25 USC 3001-13 | Native American Graves Protection and Repatriation Act (P.L. 101-6010) |
| 42 USC 1996 | American Indian Religious Freedom Act (P.L. 95-341; 36 CFR 196, 43 CFR 7) |
| 42 USC 6901 | Resource Conservation and Recovery Act (P.L. 94-580; 40 CFR 124, 240-247, 260-264, 266, 270, 271, and 280; NRS 459.400, et seq.; NAC 444.570 through 444.478, and 444.842 through 444.9335) |
| 42 USC 9601 | Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (40 CFR 300, 302, 355, 370, and 372; EOs 12286, 12288, 12580, and 12856) |
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| EO 12875 | Executive Order, *"Enhancing the Intergovernmental Partnership,"* Office of the President, Washington, DC, 1993. |
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| EO 13007 | Executive Order, "Indian Sacred Sites", Office of the President, Washington, DC, 1996. |

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# APPENDIX A

# AN AMERICAN INDIAN CONSULTATION MODEL

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## APPENDIX A

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# APPENDIX A

## AN AMERICAN INDIAN CONSULTATION MODEL

This attachment has been reviewed and edited by the American Indian Writers Subgroup (AIWS) from the original source entitled, "A Consultation Model" by Richard Stoffle. This original article was published in *Sacred Sites Protection Strategies - Legacy Project*, a preliminary report prepared for the National Park Service and the U.S. Army Environmental Center, edited by Vine Deloria, Jr., and Richard Stoffle, produced by the Bureau of Applied Research in Anthropology, University of Arizona, in 1994.

Appendix A presents an American Indian consultation model, a version of which was originally developed for the U.S. Department of Defense Legacy Project (Deloria and Stoffle [eds.], 1994). This model is based to a great extent on the history of consultation relationships between the 17 tribes and organizations in the Southern Nevada area, and also includes published and unpublished information on American Indian consultation procedures across the country. As such, it describes nine ideal steps for developing a consultation relationship with American Indians who are culturally affiliated with lands held by the U.S. Department of Energy (DOE) Yucca Mountain Site Characterization Project (YMP). These steps are suggested on the basis of the past history of consultations with various federal agencies and on an analysis of other consultation relationships. Examples of relationships between American Indians and other federal agencies are used throughout so that the model will be as instructive as possible. These steps suggest how a process might occur, but they need not always be followed to achieve an acceptable consultation. Instead the nine steps suggest a logical sequence of decisions and actions that normally would be involved in developing a consultation relationship. It is important that the YMP work with the involved Indian tribes to design a consultation relationship reflecting their needs, the needs of the YMP, and the protection requirements of the cultural resources under consideration. The ideal steps are:

Step 1: Defining Consultation

Step 2: Establishing Cultural Affiliation

Step 3: Contacting the Tribes

Step 4: Having An Orientation Meeting

Step 5: Forming A Consultation Committee

Step 6: Conducting Site Visits

Step 7: Developing Mitigation Recommendations

Step 8: Maintaining On-going Interactions and Monitoring

Step 9: Bringing a Consultation Process to Closure.

These consultation steps are discussed in their logical sequence of occurrence. The first consultation step is to decide what type of consultation relationship is desired. The second step is to specify, using cultural and historical research, which American Indian people or peoples have traditional ties to the YMP. The third step is to establish government-to-government relationships between formally recognized American Indian tribes and American Indians with special federal standing and the YMP. The fourth step is to have an orientation meeting, where the YMP begins to meet and talk with American Indians. The fifth step is to form an American Indian consultation committee and establish mutually agreed upon procedures for its operation. The sixth step is to bring American Indian cultural resource experts to the YMP, so that traditional cultural resources can be identified, related to sites, and initial management recommendations can be made. Mitigation recommendations are the seventh step, followed by ongoing interactions and monitoring as the eighth step. Finally, because some consultation relationships do not last, the ninth step involves bringing the consultation relationship to a closure.

The following model for developing a consultation relationship is presented here on the assumption that there is no pre-existing relationship. While the YMP currently has initiated consultation relationships with American Indians, there are specific programs and activities, such as systematic cultural resource studies, which have yet to enter into formal consultation with tribal governments. Thus, at the suggestion of the AIWS, this consultation model was edited and formatted as an appendix to the resource document, so that it can be used as a guide for future YMP and American Indian consultation processes.

**Defining Consultation**

"Consultation" is a term that is commonly used to describe a process by which American Indian peoples with traditional ties are identified and brought into discussions about cultural resources on the YMP. Consultation involves a fundamental decision on the part of the DOE to share some decision making with American Indians. American Indians are asked to share in the decision to identify resources needing protection. They are also asked to share in the decision to prioritize which cultural resources will be protected first. Indian people are asked to share in the decision to select from among a variety of management practices those that most appropriately protect the cultural resources in the context of other resource uses. Indian people are asked to share in the long-range planning and monitoring of these cultural resources and lands that hold them.

According to scholars who study consultation (Cernea, 1991; Dobyns, 1951; Parenteau, 1988), the quality and success of the consultation process depends directly on the degree to which decision making power is shared. Arnstein's (1969) studies demonstrate that any consultation process can be characterized as falling on a scale from 1 to 8 where participation without shared power is called "manipulation" and where sharing power, even to the point of negotiating with the agency, is called "partnership." The primary decision that a DOE facility must make is how much decision making power can and will be shared with Indian people. Once the range of

decision making sharing is established, it should be clearly identified at the outset of the consultation so that it can become a part of the American Indian people's decision to participate in the consultation.

**General Consultation**

More U.S. federal agencies (including the DOE) are becoming involved in general consultation with American Indians. This establishes a permanent relationship with American Indian groups that have cultural ties to the lands and resources managed or affected by the federal agency or DOE installation. General consultation should be based on extensive research concerning cultural resources that Native groups identify as being located on lands of concern. Cultural resource studies should consider at least the following (1) archaeology sites, (2) petroglyphs, (3) human burials, (4) Traditional Cultural Properties, (5) plants, (6) animals, (7) minerals, and (8) water. Cultural resource studies also can consider impacts to American Indian cultural practices (like a traditional healing ceremony) that are not tied to specific places. Each of these cultural resources should become the subject of a separate study so that Native groups can contribute persons with special knowledge about the topic. General consultation should be based on a strong information foundation.

A major advantage of general consultation is that it can occur in the absence of a specific project proposal, which is evaluated under specific laws and, usually, as part of an environmental impact statement. Often, the laws that govern specific project studies add third parties to discussions between the DOE and American Indian peoples, which can confuse and limit discussions. General consultation occurs when it is desired by the DOE and the Indian people and is not limited by time or issue. It is the perfect environment for discussing a complex relationship designed to protect cultural items of greatest significance. Another advantage of general consultation is that it produces a strong information base for identifying cultural resources for both the DOE and American Indian people.

Through various cultural studies, the Indian people have developed a set of recommendations that suggest how to best manage these resources. Most American Indian cultural resources located on or affected by the DOE will become known through the process of general consultation. This will reduce the number of times that DOE activities will have to be stopped and modified because of unanticipated discoveries of cultural resources. If YMP activities were to impact cultural resources not previously identified, procedures would be in place for informing the Native people about the discovery, and those Native people would have procedures in place for helping the DOE minimize adverse impacts to the newly discovered cultural resources.

General consultation is the only way to build true and stable partnerships between U.S. federal agencies and American Indians. Often, project-driven environmental assessments bring federal agencies and Native people together, and afterwards they decide to move to general consultation as a means of resolving problems before projects precipitate specific cultural resource decisions. Native people approach cultural resource management from what has been termed "holistic conservation" (Stoffle and Evans, 1990). They respond positively to holistic studies that bring into consideration as many factors as possible, so the DOE can better understand the complex

inter-relationship between cultural resources and other aspects of Native lifeways. Interestingly, the new U.S. federal initiative for "ecosystem management" closely reflects the philosophical orientation of Indian people. According to Gore (1993) "... some people now define themselves in terms of an ecological criterion rather than a political subdivision." For example, the people of the Aral Sea and the Amazonian Rain Forest define themselves in terms of these all-important ecosystems. In March 1994, 18 U.S. federal agencies demonstrated their ecosystem management activities to the U.S. Congress (Morrissey et al., 1994). Native people have responded in a positive way to federal agencies who are willing to consider cultural resources from an ecosystem perspective.

**Specific Consultation**

There is always the need for conducting specific consultation regarding cultural resource issues associated with DOE facilities and activities. For example, when general consultation has identified all types of cultural resources, ground-disturbing activities may unexpectedly unearth a human burial or an object of great Native ceremonial significance. The YMP may wish to use some portion of their reserve lands for an activity that was not considered during general consultation. Also, the U.S. Congress may pass new laws regarding the management of cultural resources that potentially would alter the existing relationship between the American Indian people and the YMP. One such law is the Native American Graves Protection and Repatriation Act which specifically requires certain types of information to flow between the DOE as a federal land manager and American Indian people with ties to those lands.

Specific consultation is limited by the scope of the specific law that is being complied with and the proposed activity that is being evaluated. Native people often are frustrated by specific consultations because they are limited to those project-specific issues and cultural resources that are being assessed. Typically most federal agencies' responses are too often limited by third parties who legally participate in the assessment. Nonetheless, a series of specific consultations can produce the foundation from which to build general consultation. For a DOE facility that currently lacks any kind of relationship with American Indian peoples, general consultation is recommended as the initial step in the consultation process.

**Establishing Cultural Affiliation**

There are many ways that American Indians have established cultural affiliations to lands held or affected by the DOE. At the general level, American Indians established these ties because they lived on the land long enough for a culturally shared connection to occur. The basic question asked regarding cultural affiliation is, "What American Indian peoples or ethnic groups lived here?"

The nature of the relationship between American Indians and the land is cultural. The concept of culture (LeVine and Schweder, 1984) implies that a phenomena (1) is shared in that it represents a consensus on a wide variety of meanings among members of an interaction community, (2) that it is connected and ultimately comprehensible only as a part of a larger organization of beliefs, norms, and values, and (3) that people who share a culture make sense of new information in

terms of a cultural rationale founded on a single collective formula. Simply, the connection between American Indians and lands held or affected by DOE facilities is abstract, complex, and non-trivial. Assessing this relationship is best accomplished by professionals trained in the study of cultural systems, in consultation with potentially culturally affiliated American Indian people.

Most laws, regulations, and guidelines that cause federal land-holding agencies to consult with American Indians do not define what is meant by the term "cultural affiliation." Some laws do define this concept; for example, the term is defined very specifically by the Native American Graves Protection and Repatriation Act. It is important to note that when a DOE facility adopts a broad definition of cultural affiliation for most kinds of cultural resource studies, they can still narrow the consultation process when needed for the Native American Graves Protection and Repatriation Act and then resume American Indian interactions based on the broader definition. Flexibility is needed when establishing consultation relationships with American Indians.

Cultural affiliation to the YMP was established at the onset of the YMP Native American Interaction Program (NAIP) in 1987. Sixteen tribes belonging to three ethnic groups (Western Shoshone, Southern Paiute, and Owens Valley Paiute) and one organization were found to be culturally affiliated with YMP lands. A decade of consultation with these ethnic groups and other nearby federal installations, forms the foundation of a successful relationship between the YMP and American Indians.

**Contacting the Tribes**

Cultural affiliation studies basically establish which American Indian ethnic groups potentially have traditional, aboriginal, or historic period ties to lands held or affected by the DOE. The term "ethnic group" means people who share a common culture. Perhaps an example will serve to clarify the complexity of moving from ethnic affiliation to that of contemporary American Indian organizations which actually would be contacted about the consultation.

Officially, the U.S. government prefers to deal with American Indian groups on a government-to-government basis. The well-established federal position was recently reaffirmed by the President in a memorandum of April 29, 1994, entitled Government-to-Government Relations With American Indian Tribal Governments (White House, 1994). The National Congress of American Indians, also supports government-to-government relationships. Such a relationship recognizes the "dependent nations-within-the-nation" status of American Indian tribes (Deloria, 1985). This relationship should be the foundation of all consultation. The consultation will be incomplete, as discussed above, without a procedure for additional ethnic group inputs from non-tribal government sources. It is suggested, therefore, that federally unrecognized Native groups, American Indian organizations, and pan-Indian organizations be added to the consultation when it can be demonstrated that they do represent special ethnic group perspectives relevant to the cultural resource management issues of concern to the DOE. Finally, individuals from the Native ethnic group who otherwise would not be able to share important cultural insight, can be added to the consultation as "interested parties." The recommendations of interested parties and non-tribal Indian organizations, however, must be subsumed under the recommendations of the officially recognized tribal governments.

## Having an Orientation Meeting

Contacting potential culturally affiliated tribes and American Indian organizations should be conducted in a manner appropriate to the consultation. If it is to be a project-specific consultation, the information given to Native people should reflect that project. On the other hand, if a general consultation is desired, then a very different essay and set of materials is needed. Although project-specific consultation can lead to a mutual decision to begin general consultation, the orientation meeting should have a clear purpose and deal only with the issues actually under consideration at the time.

In general, letters, maps, and diagrams appropriate to the issues to be discussed should accompany the initial communication with American Indian groups and tribes. Such letters describe the agency that is making the contact and the purpose of the contact. Recently, a video letter was used to inform almost 24 tribes about an assessment of cultural affiliation and concerns for Chaco Culture National Historical Park (Stoffle et al., 1994c). The video letter was about 17 minutes long and began with the park superintendent discussing the goals of the study. This was followed by photos of places in the park which were the focus of the study. Clear instructions for becoming involved in the study closed the video. The video letter was well- received by the American Indian government leaders, who said it permitted them to make an informed decision about whether or not to send representatives to the park.

Letters alone generally are inadequate for most tribal governments to gain sufficient understanding of an issue under discussion so that the government can respond to a project. Many letters therefore are not answered. Follow-up telephone calls are always necessary to provide further information, but most tribal governments require that a consultation request for their people's time, and perhaps, tribal resources, be made in person. Cultural resource specialists and agency personnel should meet with tribal councils (or their officially chosen representatives) to explain the project and answer questions.

The members of tribal governments and American Indian organizations tend to be unfamiliar with the legal aspects of cultural resource questions, although they generally believe decisions about such issues to be highly significant. This presents an information gap problem for most Native government leaders. One solution to the information gap is for the U.S. federal agency to invite government leaders to visit a portion of the study area as part of an orientation meeting. During the meeting, government leaders can learn firsthand about what is being discussed and have the opportunity to exchange cultural resource views and strategies with other Native leaders. The Native government's need-to-know before making key cultural resource decisions should be respected and addressed in the consultation process.

## Forming a Consultation Committee

The decision to form an American Indian consultation committee has been the key to the success of the consultation when many tribes and American Indian groups are culturally affiliated with federal lands under consideration. The consultation committee stands as a meta-organization

between the tribal governments and the federal agency managers. The committee is composed of and chaired by Indian people. As such, the consultation committee is able to resolve certain issues relating to the process of consulting. In the early stages of consultation, for example, the committee may resolve issues such as how many days are needed to complete an ethnobotany study, or it may decide how best to prepare progress reports to be submitted back to Native governments. By meeting together and acting in unison, native people belonging to different tribes and ethnic groups are able to draw on common information and to speak with a single voice. The clarity and consistency of the American Indian requests will influence the DOE's ability to respond effectively and acceptably.

The consultation committee may be asked to resolve problems that would otherwise be impossible for either the YMP or the tribal governments. After the consultation committee understands both the laws that are driving the consultation process and the management needs of the YMP, the committee may be asked to determine when sufficient information has been collected so that recommendations can be made to both the tribes and the agency. If there are disagreements among the tribes or ethnic groups, the consultation committee can be asked to resolve these in closed executive session. Halmo (1994) has recently studied the benefits of a consultation committee participating with the DOE to understand the cultural resource impacts of the underground atomic testing program on the Nevada Test Site. He concludes that this program's success came largely because of the consultation committee's efforts to adjust the process to meet the needs of 3 major ethnic groups represented by 16 tribes and 3 Indian organizations.

**YMP and Indian Consultation**

The YMP NAIP was initiated by the DOE in 1987. The goal of the program was to bring the agency into compliance with the provisions of the American Indian Religious Freedom Act, which was passed in 1978. Compliance has been achieved by the establishment of consultation relationships with seventeen tribal governments and Indian organizations whose members have historic and current cultural ties to the lands in south-central Nevada. The NAIP helps document tribal and ethnic concerns pertaining to cultural resources that would potentially be adversely affected by ground-disturbing activities associated with the YMP.

While, U.S. federal cultural resource laws require government-to-government relationships, the YMP consults with federally recognized tribes, unrecognized tribal groups, and Indian organizations such as the Las Vegas Indian Center and pan-ethnic associations. Thus, the open policy of the YMP moves beyond the letter of the cultural resource laws to reflect their spirit. The YMP has been engaged in a continuous program of consultation with the culturally affiliated tribes and organizations since 1987.

The nature of the consultation process led this program to be successful from both a human relations and policy standpoint. One feature of that success has been the coalescence of several tribes and Indian organizations into a group that could speak with one voice (Halmo, 1994) when talking to federal agencies. Several features in the consultation process including systematic,

regular social interaction, combined with a respect for Indian autonomy in decision making, has shaped the context that allowed a new corporate group to evolve.

**The Consolidated Group of Tribes and Organizations**

Indian tribal governments are inundated with projects, requests, and paperwork, all needing attention. Many tribal government officials, therefore, simply do not have the time or energy to be involved in every activity that affects various aspects of the lives of their people. For this reason, officials appoint representatives and confer responsibility to them to participate in the project, obtain information, and keep the tribal council up to date on the progress of the project.

Tribal representatives involved in YMP NAIP decided by consensus to "incorporate" themselves as a unit, called the Consolidated Group of Tribes and Organizations (CGTO) to more accurately reflect the group's corporatism in representing the interests of seventeen tribes and Indian organizations (Halmo, 1994). In taking this action, members bear the responsibility for representing the interests of not only their own tribes, but of all the other tribes and Indian organizations involved in the CGTO. Today, the YMP explicitly recognizes the CGTO as the vehicle for consultation. Consultation presently occurs directly with the members of the CGTO with the approval of tribal leaders who are fully cognizant that duly appointed individuals represent their interests regarding cultural resources on the YMP.

The CGTO emerged from existing tribes and American Indian organizations who collectively conceived and created it. The CGTO is not, however, a homogeneous, harmonious collection of individuals who uniformly share the same conventional understandings. Members of the group have contending and sometimes conflicting interests regarding the cultural resources located on what can best be described as the intertribal lands that are now incorporated as the YMP study area. In mitigating the disposition of YMP cultural resources, however, Indian rather than tribal-specific concerns are represented by the CGTO. CGTO members have decided to take action in concert and speak with a common voice whenever such an action is appropriate; this seems the best way to provide information to the YMP for consideration and policy implementation.

Face-to-face meetings are an important component of the consultation strategy and were routinely scheduled throughout the duration of the YMP NAIP. These meetings provide the context in which tribal representatives and the YMP, each with its own agendas and interests, could negotiate and reach compromise solutions that were acceptable to all involved parties. Such intimate forms of consultation are likely to bring about the formation of new corporate groups that have the purpose of resolving issues and defending common interests in cultural preservation.

**American Indian Monitors**

As a result of a CGTO recommendation, Indian monitors from each of the involved ethnic groups have participated in data recovery activities at archaeological sites that were slated for

ground-disturbing activities. As part of the American Indian monitors program, Indian monitors received training in archaeological survey, collection, and analytical techniques.

**The Native American Graves Protection and Repatriation Act Subgroup**

That the CGTO will continue to function in the future is evidenced by the fact that the YMP NAIP continues to open the door to other phases of consultation such as that concerning archaeological materials related to the Native American Graves Protection and Repatriation Act.

A Native American Graves Protection and Repatriation Act "subgroup" has been established by the CGTO in 1994 for similar projects. This was the first time that the CGTO had appointed a subgroup to conduct any significant business and, therefore, marked a point at which sufficient confidence was reached in both a federal agency and the CGTO itself. The six members of the Native American Graves Protection and Repatriation Act subgroup represent the Owens Valley Paiute, Western Shoshone, and Southern Paiute ethnic groups. The subgroup have experience evaluating and selecting potential Native American Graves Protection and Repatriation Act items from large collections.

The new challenge of the Native American Graves Protection and Repatriation Act has been successfully met by the members of the subgroup in a series of meetings. Subgroup members now possess the expertise to sufficiently distinguish items that are potentially (1) unassociated funerary objects or (2) sacred objects as these concepts are defined in the legislation. The subgroup also structured the Native American Graves Protection and Repatriation Act viewing procedures so that consultation occurred in a culturally appropriate manner.

The CGTO serves in a review and advisory capacity to their respective tribes regarding Native American Graves Protection and Repatriation Act recommendations on the disposition of items from collections. In the future, it is anticipated that the CGTO will be involved in studies of Traditional Cultural Properties, animals, petroglyphs, and other types of cultural resources in the YMP area.

**The American Indian Writers Subgroup**

Stimulated by the success of the Native American Graves Protection and Repatriation Act subgroup, YMP agreed to sponsor the formation of an AIWS which produced a resource document to be referenced in the YMP Environmental Impact Statement (EIS). Public response to this unique DOE initiative has been highly positive and may open the door to future participation of Indian people in the production of EISs throughout the country.

**Future Subgroups**

To continue with the YMP NAIP, the CGTO has expressed interest in evaluating and providing the Indian perspective to cultural resources located in the YMP study area. This should be accomplished by site visits to a variety of areas within the boundaries of the YMP.

## Conducting Site Visits

"What is out there?" This is the fundamental question that must be addressed in any consultation. The answer will not come directly from tribal governments, but they will send cultural experts who can identify various cultural resources located on the YMP. Native government leaders can appoint representatives to a consultation committee, and during the operation of that committee, a Native based inventory of cultural resources can be planned.

American Indian cultural resource studies should be conducted separately, whenever possible, because tribes and Native groups will send different types of cultural specialists depending on what is to be studied. The Native person who can speak at length about archaeological sites may know little about the traditional use of plants. A Native person who specializes in fishing ceremonies may have little knowledge of petroglyphs and curing ceremonies. Native cultures, like all cultures, are differentially held in the minds of specialists.

The term "study" is used to separate research that is needed to prepare a cultural resource inventory from what are sometimes described as American Indian "tours." Occasionally, federal agencies will simply bring American Indians to the lands under discussion and ask them individually or in a group what is out there. These tours are usually organized and conducted by agency personnel who are not professionally trained in scientific methods associated with cultural resource studies. The agency tour guides rarely have a hypothesis about what resources may be present and so, naively believe, that they can simply ask for information and the American Indian will completely share all pertinent information. American Indian tours were more common decades ago before there was an extensive body of research about how to conduct studies with American Indians and what to expect from such studies.

## Forming a Study Design

Since American Indians have become aware of the quality of information that is needed to make convincing policy recommendations on federal lands, they are demanding to participate in the formulation of study designs that are culturally and scientifically valid. A recent analysis of American Indian research studies suggests that the design of the study can directly influence the findings and the recommendations (Stoffle and Evans, 1990). An analysis of 11 projects suggests that Indian people will have greater impacts on land use decisions if the study design permits them to identify and select for special protection those places, plants, and archaeology sites that have the highest cultural significance; this process has been called "cultural triage" (Stoffle and Evans, 1990). When it is difficult for Indian people to demonstrate how to move from cultural concerns to land management recommendations that protect the most cultural items, it becomes the responsibility of the scientist to help make this translation. For example, it is possible to calculate the cultural significance of individual Indian plants so that specific places where the plants grow can be assigned value, and protection can be afforded to those places with the highest plant scores (Stoffle et al., 1990b).

## Defining Basic Concepts

It is essential that all parties to a study agree on what is to be studied. It is common for Indian people, agency personnel, and study scientists to assign different meanings to the same term. One of the most commonly misunderstood terms is "sacred." The concept of sacred is really a non-Indian concept that creates a division between the sacred and the profane. Most Indian people do not believe such a division exists. Indian cultures, and there are hundreds of variations, contain many ceremonies designed to assure proper behavior towards and communication with the natural environment, other humans, and the supernatural. These ceremonies literally translate everything touched by an Indian person into a sacred object. For example, a Shoshone Indian woman who makes willow baskets will keep the shavings that have been produced by smoothing the split willows. Eventually, she prays over these shavings and returns them to a natural area near her camp. The Shoshone woman considers these willow shavings as sacred. Indian people also have ceremonies associated with great life transitions—birth, first menses, death—that use and create sacred objects that are more generally recognized by others, such as Euroamericans. Finally, there are sacred objects that are specifically defined by U.S. federal laws such as Native American Graves Protection and Repatriation Act. So the concept "sacred" could refer in any given discussion to many categories of items, some defined by law, some defined and mutually recognized by Indian and non-Indian alike, and some exclusively perceived as sacred by Indian people.

Great care must be taken in the formulation of study concepts and when discussing the meaning of these concepts with Native government representatives. If someone asks a Native person to come to the YMP and identify places and things that are sacred, this person is likely to respond that all is sacred. If on the other hand, the Indian person is asked to identify which objects in a museum collection are needed in a current religious ceremony as defined by Native American Graves Protection and Repatriation Act, the person will be able to make a discriminate decision. The answer is often framed by the question, but it can also be influenced by the amount of time the Native person has to share her/his cultural resource perspective and her/his confidence that deeper cultural resource insights will have more protective influence than simple "holistic conservation" statements.

## Assuring Participation

The federal agency must approach the study of cultural resources with caution when seeking American Indian participation in land management decisions. This is because American Indians will weigh the potential benefits from increased protection against the potential that if cultural resources become known they will be threatened. A Kaibab Paiute elder, for example, indicated that he wanted to protect traditional trails, but that he would not reveal their location because once known they could be followed to previously undiscovered Indian camps. Native people often say that revealing Indian plant usages causes the plants to be taken by non-natives who profit from sale of the plants. The curing power associated with certain places can be reduced if the place and its function becomes known to other ethnic groups, including other Indian people. Agency personnel should be aware that Native experts who are sent to identify cultural resources are subject to ethical conflicts, emotional stress, and even fear of reprisal. Indian experts express

concern about violating traditional norms against sharing knowledge with outsiders. Concern is also expressed over how other tribal members and even future generations of tribal members will evaluate the sharing of information. Basically, the question they ask is whether or not more good than harm will come from sharing cultural knowledge (Greaves, 1994).

When American Indian tribes and organizations send experts to represent cultural concerns, they expect that the shared information will be used to set policies to better protect cultural resources. To accomplish this, the identifications of the experts must be systematically recorded so they can be written into a scientifically and ethnically acceptable report. In general, interviews should be conducted in private so that the Native person does not have to share the information with others. An interview form should be prepared in advance with the assistance of the consultation committee or informed Native people so that similar questions are asked of each expert and there is a place to record their answers. Tape recorders can be used as backup, but only used with the expert's permission. Experts' confidentiality should be assured, unless they wish to go on the record regarding some aspect of the study.

Group interviews can be conducted when individual interviews are either not desired or impossible to conduct. Group interviews tend to produce "consensus data" which means that members of the group discuss possible answers and provide one answer to the interviewer. The weakness of group interviews is that some people are not willing to express their opinions in the presence of others. The strength of group interviews is that people have the opportunity to talk over a response while in the field. Focus group interviews are a special type of group interview and they require special preparation and training for the focus group facilitator.

**Presenting the Findings**

The report presenting the findings of the consultation process being discussed should be more than a pure description of what was said by the Native experts. Some attempt should be made to translate the thoughts of Native experts into information that can be used by federal agency land managers. In general, Native concerns should be contextualized by providing findings from published historical and ethnographic literature that demonstrate how the expressed cultural concerns fit into the overall culture of the ethnic group. Translation into management information and contextualization will help achieve the goals of building American Indian concerns into land management policies.

The report should receive a technical review by the Native experts and members of the consultation committee before being sent for draft review by the federal agency. This will assure that the report does not contain information that should not be revealed, and that the information it does contain is accurate. When the technical review is complete the report should be given a draft review by the federal agency. Then the draft report should be sent to the American Indian group or tribal government for official review and approval. Final reports should be available to other federal agencies seeking to achieve similar goals and in need of case data for developing or refining their own consultation processes. The public has a right to know about significant land management decisions made by federal agencies, even if these are in consultation with American Indians and have some element of confidentiality that will continue to be respected. The final

report and perhaps portions of the information (not the data) used to make the decision (Ruppert, 1994) should be available to the public.

**Developing Native Mitigation Recommendations**

Cultural resource technical reports should focus on the cultural resources under study and should not attempt to make government-level policy recommendations. Technical reports are the basis for proceeding with mitigation discussions and eventual recommendations from the American Indian governments to the YMP. Policy decisions occur after the Native recommendations are combined with what the land management agency can and will do to incorporate American Indian recommendations. It is important that this point in the decision making process has been thoroughly considered by the agency before the consultation began .

Native policy recommendations should derive from three sources: (1) Native experts during the on-site interviews, (2) consultation committee, and (3) Native organizations and tribal governments. These three sources of recommendations represent a hierarchy of decision making authority that is inversely related to the degree of information about the resource. Native experts are knowledgeable about the cultural resource and, because of their on-site experiences, are aware of factors that could have either adverse or positive impacts on its protection. Native experts are charged by their tribes and organizations with identifying what is out there and making preliminary recommendations. The report should consolidate all Native expert recommendations by place and resource, and these should be presented to the consultation committee. Committee members have a long-term relationship with the project and are generally aware of what is possible in terms of resource management on the DOE facility. It is up to them to consider the recommendations of the Native expert; if possible, resolve conflicting recommendations and add recommendations. The final cultural resource decision recommendations in a government-to-government relationship belongs to the tribal council and advisory board of a Native organization. They tend to follow the advice of their appointed Native experts and consultation committee members; however, they can add or modify recommendations.

Recommendations that have passed with some consensus through this hierarchy of Native decision making should be seriously considered by the YMP. The strength of the recommendations depends, in part, on whether or not they remain within federal laws that govern land management decisions on the YMP. In addition, the Native recommendations should be within the agreed upon limits of power sharing decided upon by the facility when the consultation process began. If the recommendations are within these limits, then credible cultural resource recommendations should be adopted by the YMP.

**Maintaining Ongoing Interactions and Monitoring**

"Partnership" is a term often used to described the desired outcomes of consultation relationships between American Indians and the YMP. Partnerships require shared power, mutual respect, and mechanisms for sustaining a long-term relationship. Partnerships can be established when the

American Indian people and the YMP establish (1) mutual trust, (2) a common knowledge base, (3) a cultural resource management plan, and (4) a monitoring plan.

**Mutual Trust**

When people get to know each other through face-to-face interactions, they create a basis of understanding that can be used to establish what is called "trust." The term "trust" is not being used here to refer to the legal "trust relationship" that exists between the U.S. government and American Indian peoples. Instead, the term "trust" is used as it is more generally understood, as confidence in the honesty, integrity, reliability and justice of another person or organization.

People do meet, but the YMP and American Indian consultation occurs within the context of government-to-government relationships. One of the great dynamics of mutual trust is differences between the people and the agency relationships. First and foremost, Indian people must believe that their participation in consultation is more likely to protect cultural resources than would saying nothing at all. Decision making should be shared (insofar as it is appropriate and possible), and the decisions must have some identifiable positive impacts .

Trust derives from the history of relationships between the federal agencies and its personnel, and American Indians. This history may go back to a time when the Indian people were at odds with the federal government during early land withdrawals in the 1940's. Trust also derives from more recent interactions associated with the YMP NAIP. It is important to address these issues early in the consultation process. In fact, it is likely that Indian people will raise these issues as stipulations before they are willing to proceed with consultation. Concerns about past relationships are often raised in holistic conservation statements made by Native elders and leaders in early consultation meetings. Stipulations are not debatable by the YMP, which instead will have its own stipulations it may wish to express at this time. Trust cannot be negotiated. Trust can emerge from long-term interactions especially when consultation begins with clearly expressed stipulations. Trust must be earned and mutually shared.

Any consultation relationship will depend, in part, on the individuals involved. Friendly and professional relationships have the potential of overcoming any negative historic relationships between the American Indian people and the YMP. Unfortunately, personnel changes in both Native organizations and the YMP often occur. Mechanisms should be in place to assure that consultation partnerships can survive personnel change.

**A Common Knowledge Base**

A primary goal for YMP and American Indian consultation is to create or contribute to a common knowledge base that is shared by both. Native groups send their most knowledgeable experts to the DOE facility to identify cultural resources. These thoughts should not be lost. Federal agencies cannot afford to forget what has been told to them by Native groups. Similarly, most federal facilities have initial archaeology, botany, and animal studies that can be shared and used by Native groups. The challenge is to develop a single, shared pool of information that can

be used by both the YMP and the Indian people to know what is out there and to understand what is happening.

Geographic information systems are being used by many federal agencies and Native groups to inventory and keep track of resources distributed across an extensive landscape. Geographic information systems are expensive and difficult to use, but innovative interactive multimedia data systems that can draw on some similar information systems components are being developed. An ideal data base could be used simultaneously by the Native people at their homes and the YMP. This is likely to require that a multimedia program be developed that can use and make easily accessible the products of the geographic information systems data analysis. The geographic information systems and multimedia system should be updated easily when new information comes from Native expert visits or science studies. It should contain photos, video, sound clips, maps, and text. Finally the geographic information systems and multimedia system should restrict access to certain portions of the database to reflect both the YMP and the Native concerns for selective distribution of data and information.

**Cultural Resource Management Plan**

Federal facilities produce overall land-use plans usually including specific plans for wildlife, plants, and cultural resources. An American Indian cultural resource management component could be developed in each of these plans. Possibly more difficult, but nonetheless important, would be to include American Indian cultural resource management comments in discussions of minerals and water.

The recommendations produced by the hierarchy of American Indian decisions (experts, consultation committee, tribal governments) should be organized to reflect how the information can be incorporated into facility management plans. Early coordination with the consultation committee should produce both information and recommendations that fit how the facility manages natural and cultural resources.

**Monitoring Plan**

There must be some way of knowing whether or not American Indian consultation has influenced the condition of cultural resources contained on the YMP. Because it is impossible to constantly monitor all cultural resources located on the YMP, monitoring timeframes and monitoring locations must be chosen. Basically, the timeframe questions are: How fast are culturally significant changes occurring to any specific cultural resource? Does the quality, quantity, or distribution of medicine plants change seasonally, annually, or over a period of years? Damage due to erosion or vandalism to archaeology sites may be occurring sporadically; monitoring should occur at least once a year, and more sensitive sites monitored more often.

Monitoring locations should be decided in terms of how well they represent a certain cultural resource. Monitoring samples should be selected with full input from the Indian people. Monitoring techniques will vary, from ground level photography of petroglyph panels to remotely sensed data from satellites showing the distribution of plants. When ground

disturbance is to occur, Native monitors may be hired to oversee activities. The results of all monitoring efforts should be provided to the members of the consultation committee and Native governments at regular intervals. Regular feedback on the condition of cultural resources is the only way to maintain an ongoing relationship with Indian people.

**Closing a Consultation**

Today, most U.S. land-managing agency initiatives to establish American Indian consultation relationships are intended to be ongoing because Native people's views will become part of the information base for making, monitoring, and adjusting on-going land management decisions. Still, some consultations are designed to end. These may be project-specific consultations designed to provide a narrow range of findings for the evaluations of a project or action proposal. Sometimes a federal facility may itself be closing. Whatever the reason for termination, how it occurs has implications for both the involved Indian people and the U.S. federal agency.

**Making Analogs**

Anyone who has made a presentation before a tribal council or Native governmental body has experienced some council or audience member standing up and talking at length about some other project that occurred many years in the past that did not end in a positive way. Most presenters want to say, "That is not what I am talking about, it occurred a long time ago and I (or my agency) was not involved." The point presented by the American Indian, however, is well taken; "We have seen your kind before and here is the summation of those experiences." In most cases, Native people lump most federal agencies together, so the mistakes of one agency are transferred to another.

**Maintaining Positive Relations**

Relations between the DOE and American Indians began 50 years ago and is often recounted by the Indian people as a history of adversarial relationships. All lands currently held or affected by the DOE once belonged to an American Indian ethnic group. Nonetheless, many Indian people have been employed by the DOE and have begun to establish positive relationships with Native people focused on cultural resources. It is important at this moment in the history of relations between American Indians and the DOE to create positive interactions, so each effort is important. No positive action of the YMP will go unrewarded, because American Indians respond well to being involved in decisions about their traditional resources. There are small and terminal consultations, but each has the potential of being a positive analog.

## LIST OF ACRONYMS
### Appendix A

| | |
|---|---|
| AIWS | American Indian Writers Subgroup |
| DOE | U.S. Department of Energy |
| CGTO | Consolidated Group of Tribes and Organizations |
| EIS | Environmental Impact Statement |
| NAIP | Native American Interaction Program |
| YMP | Yucca Mountain Site Characterization Project |

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# APPENDIX B

## RECOMMENDATIONS AND COMMITMENTS REGARDING NATIVE AMERICAN CULTURAL RESOURCES

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# RECOMMENDATIONS AND COMMITMENTS REGARDING NATIVE AMERICAN CULTURAL RESOURCES

The Native American consultation program occurs between the U.S. Department of Energy and its contractors and 16 involved Indian tribes and organizations. The tribes and organizations are simply referred to as "tribes" hereafter.

## A. NATIVE AMERICAN ARTIFACTS

1. Recommendation:

"Leave the artifacts in place. Any site characterization activity that is located in an area which contains artifacts or an activity that uncovers artifacts by accident should be moved to another location."

Response:

The Yucca Mountain Site Characterization Project (YMP) adopted a policy that all artifacts will be left in place to the extent possible, and all proposed activities are reviewed with this policy in mind. Wherever possible, activities that potentially disturb artifacts are modified to avoid disturbing them. In situations where such avoidance is not possible, artifacts are protected through description and/or collection. Formal procedures for identification of archaeological sites, monitoring of effects, and data recovery have been instituted and are carried out in advance of any land-disturbing activities.

2. Recommendation:

"Any artifacts that have been removed by archaeologists or others should be placed in a cultural information center built and funded by DOE, and operated by Native American people. Possible locations for this museum include Death Valley, Ash Meadows, Las Vegas, Pahrump, and Moapa."

Response:

The YMP is committed to make every effort to provide access to such artifacts to Native Americans. Artifacts collected from archaeological sites as part of the YMP are currently maintained and stored by the Desert Research Institute in Las Vegas, Nevada. Access to these collections is made available by the DOE to interested Native American groups via the provisions of 36 CFR Part 79 ("Curation of Federally-Owned and Administered Archaeological Collections") and P.L. 101-601 ("Native American Graves Protection and Repatriation Act"). Access to other collections has been implemented in part through public displays of artifacts at the Yucca Mountain Information Office, through traveling displays shown at public meetings and hearings, and through displays shown during public tours of the Yucca Mountain area.

At the present time, there are not plans to build a cultural information center. However, Nye County has future plans to build a Southern Nevada Science Museum in Amargosa Valley. As the museum plans develop, we will investigate the possibility of incorporating this recommendation.

## B. NATIVE AMERICAN PLANTS

1. Recommendation:
"Plant species identified as important to Native American cultures and religions should be avoided and/or protected from all site characterization activities."

Response:

It is understood that numerous plant species in the Yucca Mountain area are important to Native Americans. In general, the plant species at Yucca Mountain are fairly common and widespread and avoidance/protection of these species may not be possible. When surface-disturbing activities are necessary, vegetation disturbance is minimized to the extent practicable. Plant species listings are conducted prior to surface disturbance for reseeding or replanting efforts associated with reclamation of the area on completion of the activity. Important species which are removed during the activity will receive the highest priority during reclamation activities.

2. Recommendation:

"In the event that a particular stand of any plant identified as important to Native Americans cannot be avoided or protected, then a similar stand of the same species located elsewhere should be preserved. Native American people should be granted access to this area at any time they choose."

Response:

The intent of the terrestrial ecosystem tasks (including preactivity surveys) is to ensure the continued existence of plant and animal populations and communities in the Yucca Mountain area. All plant species found at the Yucca Mountain area are found elsewhere on public lands. Thus, similar stands exist and will continue to exist in the area. Again, reclamation of disturbed areas will be accomplished using native vegetation that was present prior to disturbance.

3. Recommendation:

"If a similar stand of plants cannot be found, then the plant species should be transplanted to a similar environmental habitat, with adequate funding and study to ensure that the plant species transplanted survive in the new location."

Response:

Since all species in the Yucca Mountain area are found on other public lands, transplanting probably will not be required to meet the recommendation.

Transplanting will be evaluated and considered as a mitigation tool for ecological reasons. The YMP Reclamation Feasibility Plan and Reclamation Implementation Plan describe evaluating transplants from areas to be disturbed. Transplanting greenhouse-grown seedlings of native species also is addressed.

The preactivity survey process will identify important species that may be transplanted prior to disturbance. However, given the current state of knowledge on transplanting wild species, only a few species could be successfully transplanted.

## C. PETROGLYPHS AND PICTOGRAPHS

1. Recommendation:

"Petroglyphs and pictographs have been discovered in several different locations in the cultural resources study area. Due to the relatively immovable nature of petroglyphs and pictographs, they, along, with the area in which they are located should be avoided and made off-limits to all YMP personnel. When appropriate, these areas should be documented for inclusion in the National Register of Historic Places."

Response:

The YMP is presently following this recommendation to the extent practicable. Currently, few petroglyphs or pictographs are known specifically from YMP-managed lands, although extensive sites are known nearby. All efforts will be made to protect such sites from YMP activities.

## D. NATIVE AMERICAN BURIALS

1. Recommendation:

"Native Americans own all burials of Indian people. Because it is the right and duty of Native American people to make any decision concerning an Indian burial, the 16 involved tribes should be notified immediately and all work stopped upon the discovery of any burials during site characterization activities. The 16 involved tribes strongly recommend that any burial found during site characterization activities be left completely undisturbed. Any site characterization activity at the location should be moved somewhere else."

Response:

The YMP is presently following this recommendation. This policy will be adhered to in the event Native American burials are positively identified.

2. Recommendation:

"If the 16 involved tribes decide that a known burial cannot be protected from vandalism or destruction, then the tribes will select a mutually suitable burial location for the reburial of the remains."

Response:

The YMP will notify the 16 tribes of such a site, and will allow for a fair and reasonable time for consultations. Consultations and disposition will follow the provisions of the Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601). Disposition will be determined on a case-by-case basis. This recommendation will be adhered to in the event Native American burials are positively identified.

E. ANIMALS

1. Recommendation:

"All site characterization activities should be kept away from known animal habitats. In the event that new animal habitats are discovered during site characterization activities, these new habitats should also be made off-limits to site characterization activities."

Response:

Where possible, the YMP will avoid animal species and habitat through use of the preactivity survey process and recommendations developed during the process. Recommendations may include minor alteration of the activity through redesign/relocation of the activity. Avoidance of abundant and widely-distributed species/habitat may not be possible. In these situations, reclamation of the area on completion of the activity will be recommended.

F. SACRED PLACES

1. Recommendation:

"The Native American representative who visited the cultural resources study area in 1987 identified places of religious and/or historic importance to Native American people. Since it is impossible to move a 'place,' such as a spring, these sacred areas should be completely avoided. Any site characterization activity that is to occur at one of these locations should be moved to a different location."

Response:

The YMP will avoid land disturbance of spring areas, if at all practicable, and will consult the 16 tribes prior to initiating surface-disturbing activities in the Prow Pass area. Existing springs have been mapped in the project area and no land disturbance has occurred in the vicinity of these springs. Burials are treated as described in Part D, above.

## G. INFORMATION DISSEMINATION

1. Recommendation:

"Each of the 16 involved tribes should receive copies of all archaeology reports written by the archaeology contractors who have worked, are currently working, or will work in the future, on any lands connected with the YMP. These reports should include, but not be limited to, those published as public documents and those published as interim reports for the DOE."

Response:

The YMP will send copies of annual reports in the areas of terrestrial ecosystem and archaeological studies, and a copy of the Annual Report for the Programmatic Agreement on Historic Preservation to all 16 tribes. In the summer and fall of 1991, the above reports were delivered to all involved tribes for the current reporting period. In addition, quarterly reports on preactivity surveys conducted by the Desert Research Institute in the Yucca Mountain area will be provided.

## H. NATIVE AMERICAN CONSULTANTS/MONITORS

1. Recommendation:

"Three Native American monitors should be hired as functional working members of all archaeology survey and/or excavation crews active on any land connected with the YMP. These Native American monitors should be full-time, salaried employees, paid out of existing and future YMP funds. These Native American monitors will be responsible for issuing separate reports about any activity they are involved in. These reports will be transmitted to the tribal councils of the 16 involved tribes, as well as the DOE. In order to facilitate the transmittal of these reports, an independent budget and secretarial help will be provided from existing and future YMP funds."

Response:

Three Native American monitors representing the three ethnic groups of the 16 tribes and Indian organizations have been hired by the Desert Research Institute to work on any data recovery efforts associated with the YMP. The three monitors were chosen by the 16 tribes and Indian organizations and are responsible for providing reports of the data recovery activities to the tribes they represent.

# RECOMMENDATIONS AND COMMITMENTS REGARDING NATIVE AMERICAN CULTURAL RESOURCES

The following information was prepared as a result of a Yucca Mountain site and Desert Research Institute laboratory visit by involved Indian tribes on May 29-31, 1992.

1. Recommendation:

   "Update meetings should be conducted on a quarterly basis."

   Response:

   The Yucca Mountain Site Characterization Project Office (YMPO) has considered the recommendation and can logistically conduct a site visit to Yucca Mountain three times a year. Two of the visits can serve to update the Official Tribal Contact Representatives (OTCRs) on the Yucca Mountain Site Characterization Project (YMP) and provide the OTCRs the opportunity to monitor cultural resource sites at Yucca Mountain, Nevada. The other visit can provide an educational opportunity involving both adults and youths as recommended by the tribes. With the approval of the tribes, the YMP staff will visit each tribal location as needed, a minimum of once a year, in order to address the Tribal Councils and provide them with an update on the YMP. Such visits will afford the opportunity for Council members and any interested tribal members to ask questions and interact directly with YMP representatives.

2. Recommendation:

   "Tribal youths should be invited to meetings and visits to serve as a culturally specific educational experience."

   Response:

   Tribal youths will be invited to participate in an annual site visit to Yucca Mountain. Youths will be provided the necessary lodging and meals. Due to budget constraints, youths will not receive an honorarium fee as provided to the OTCRs on the annual site visit.

3. Recommendation:

"An opportunity should be provided on an individual tribe by tribe basis to those groups desiring to schedule intermittent visits to the Desert Research Institute (DRI), Las Vegas facility or Yucca Mountain to view artifacts or cultural resource areas of tribal importance."

Response:

Any tribe wishing to visit the DRI facility in Las Vegas or Yucca Mountain will be afforded the opportunity to do so. Arrangements can be made by contacting the YMPO at (702) 794-7906.

4. Recommendation:

"A detailed inventory of artifacts collected from Yucca Mountain by DRI is requested."

Response:

An inventory of artifacts has been prepared and provided to the tribes.

5. Recommendation:

"Progress reports of proposed data recovery with results of actual recovery are requested."

Response:

Data recovery plans will be provided to the tribes prior to the initiation of data recovery efforts. The actual recovery results will also be provided to the tribes. The documents will be provided to the tribes within thirty days of publication. In addition, the YMP will provide reports of any data recovery which took place prior to receiving this recommendation.

6. Recommendation:

"All archaeological sites previously excavated should be reclaimed immediately. This process should be implemented for any future excavation on Yucca Mountain. Efforts should be made to relocate telephone wires crossing through the rock ring site."

Response:

Reclamation of the excavated areas at the rock ring site was completed on June 4, 1992. Reclamation efforts will continue as needed in the future. Telephone wires crossing through the rock ring site have been removed.

7. Recommendation:

"Prior to data recovery, tribes should be advised and invited to view the area to learn about the recovery and the types of artifacts or items to be recovered."

Response:

Tribes will be notified at least thirty days prior to major data recovery and arrangements will be made for the OTCRs to view the area, to the extent practicable, before recovery is initiated. However, should the OTCRs not be able to view a data recovery site in a timely manner, the Native American monitors are employed to be involved in all data recovery at Yucca Mountain and will serve to inform tribes on the details of data recovery programs. Due to YMP's "preservation in place" policy, major data recovery efforts are not conducted on a routine basis.

8. Recommendation:

"All artifacts currently housed at DRI should be maintained there until such time as an appropriate cultural information center could be developed for possible curation and display. If one is to be built, Pahrump and Moapa, Nevada, should be included in the original tribal recommendation of Las Vegas, Ash Meadows or Death Valley as possible locations."

Response:

All of the artifacts currently housed at DRI in Las Vegas will remain at DRI as recommended. The additional cultural information center sites will be added to the original list for future consideration. As written in the revised recommendations/commitments from April 1992, there are no plans to build a cultural information center, however other options such as utilizing space in a potential future museum built by Nye County can be explored.

9. Recommendation:

"Monitors are requested to be on-site for ground disturbance activities, i.e., horizontal drilling, in case of accidental discovery of artifacts, funerary objects or other culturally important items."

Response:

There are not plans for Native American monitors to be on site for all surface-disturbing site characterization activities. The monitors will participate, however, in all major cultural resource data recovery efforts. In addition, the YMP will conduct site visits twice a year in order to afford the OTCRs a chance to oversee the work being performed during site characterization efforts in the Yucca Mountain area. These visits will include trips to cultural resource sites where the policy of "preservation in place" is being carried out. The YMP will continue to conduct preactivity surveys prior to initiation of ground disturbance activities. The results of preactivity surveys will be provided to the tribes in a quarterly progress report prepared by DRI. The OTCRs will also be advised of the discovery of culturally important items as identified by the tribes. In the event that a burial is identified, all work will stop and the tribes will be notified immediately as stipulated in the original tribal recommendations.

# RECOMMENDATIONS AND COMMITMENTS REGARDING NATIVE AMERICAN CULTURAL RESOURCES

The following information was prepared as a result of a Department of Energy (DOE) Yucca Mountain Site Characterization Project (YMP) site visit by involved Indian tribes on December 11-13, 1992.

1. Recommendation:

   "The YMP Native American Policy Implementation Plan should be reviewed and re-evaluated by the Official Tribal Contact Representatives (OTCRs) on an annual basis."

   Response:

   The YMP will incorporate an annual review of the YMP Native American Policy Implementation Plan into one of the regularly scheduled site visits to Yucca Mountain, Nevada.

2. Recommendation:

   "Additional ethnographic studies should be conducted for those areas not previously visited or included in prior work."

   Response:

   The YMP would like to pursue further ethnographic studies and this recommendation will be kept in consideration as plans for future interactions in the YMP Native American/Cultural Resources Program are developed in accordance with available budget.

3. Recommendation:

   "Any artifacts collected through approved data recovery should be placed in proper storage and returned to a designated area when specified by involved tribal groups."

Response:

For the present time, all artifacts collected from the Yucca Mountain area will be placed in proper storage at the Desert Research Institute (DRI) facility in Las Vegas, NV. The DRI facility was approved by the OTCRs as an appropriate storage facility after visiting it in May of 1992. Further discussions on this recommendation will be held in the future as locations are specified by involved tribal groups.

4. Recommendation:

"Information should be provided on the definition of 'affected status' including applicable regulations and allowable activities."

Response:

The Nuclear Waste Policy Act and Amendments defines 'affected status' in relation to Indian tribes as follows:

"The term 'affected Indian tribe' means any Indian tribe- (A) within whose reservation boundaries a monitored retrievable storage facility, test and evaluation facility, or a repository for high-level radioactive waste or spent fuel is proposed to be located; (B) whose federally defined possessory or usage rights to other lands outside of the reservation's boundaries arising out of congressionally ratified treaties may be substantially and adversely affected by the locating of such a facility: *Provided*, That the Secretary of the Interior finds, upon petition of the appropriate governmental officials of the tribe, that such effects are both substantial and adverse to the tribe."

Petitions for 'affected status' must be filed with the Department of Interior. To date, no Indian tribe has been granted 'affected status' in relation to the YMP and as a result, additional guidelines have not been established.

5. Recommendation:

"Updated DOE responses to recommendations received from the OTCRs should be discussed at each tribal update meeting."

Response:

Time will be allotted at each OTCR site visit to Yucca Mountain to review and discuss the OTCR recommendations and DOE responses.

6. Recommendation:

"Three Native American monitors should be retained for work on the YMP Data Recovery Program. Duties of the monitors should be consistent with the DOE Nevada Test Site Native American Monitor Program."

Response:

This recommendation is currently being implemented in accordance with the guidelines established for the NTS monitors.

7. Recommendation:

"The OTCRs should be afforded the continued opportunity to visit cultural resource sites prior to data recovery."

Response:

The concept of hiring Native American monitors to be present during data recovery on the YMP is such that the monitor, chosen by his/her ethnic group, is a representative of the tribes including the OTCRs and is entrusted to convey the thoughts and concerns of those he/she represents. The monitors are expected to in turn report back to the tribes their interpretations of the data recovery sites. If a proposed data recovery site may be visited during a regularly scheduled OTCR site visit, then arrangements will be made to view the area. However, the two events may not always coincide and as a result, the OTCRs will have to rely on their chosen monitors to represent them.

8. Recommendation:

"Funding should be provided to tribes and Indian organizations for training, information gathering, and other YMP related activities. This recommendation does not preclude any group from applying for 'affected status'."

Response:

Currently, the YMP Native American/Cultural Resources Program is primarily focused on the protection of cultural resources in the Yucca Mountain area. Funding for activities beyond the current scope of work is not available at the present time. However, this issue is continually being addressed and the recommendation will be kept in mind as future discussions on this subject take place.

9. Recommendation:

"All recommendations and responses should be adhered to properly."

Response:

The YMP intends to follow all commitments to the OTCR's recommendations established through the YMP Native American Consultation/Interaction Program.

10. Recommendation:

"The YMP Native American Policy Implementation Plan should be expanded to include areas other than cultural resources."

Response:

The YMP Native American Policy Implementation Plan is being incorporated into an overall Office of Civilian Radioactive Waste Management (OCRWM) American Indian Policy Implementation Plan which will address other areas such as Transportation and Monitored Retrievable Storage. The YMP portion of the plan speaks to the program as it is currently implemented which primarily focuses on cultural resources protection. If the scope of the YMP Native American/Cultural resources Program changes in the future to include other areas then the Implementation Plan will be revised accordingly.

## RECOMMENDATIONS AND COMMITMENTS REGARDING NATIVE AMERICAN CULTURAL RESOURCES

The following information was prepared as a result of a Department of Energy (DOE) Yucca Mountain Site Characterization Project (YMP) tribal update meeting and site visit by involved Indian tribes on May 14-16, 1993.

Native American Position Statement

"The 16 tribal groups have gone on record as not supporting the concept of a high-level nuclear waste repository in the Yucca Mountain area. The tribes are actively involved in the YMP Native American Cultural Resources Program through the efforts of the Official Tribal Contact Representatives (OTCRs). Our purpose is to insure proper dialogue with the DOE about YMP activities on traditional Southern Paiute and Western Shoshone lands. This participation should in no way be construed as supporting or endorsing the proposed repository project."

1. Recommendation:

   "The Native American monitors should be included in preactivity surveys during construction phases in case of unexpected discoveries of cultural resource sites."

   Response:

   During on-season field work (i.e., data recovery projects), the monitors will be included in preactivity surveys on a rotational basis. One of the three monitors will have the option to participate in preactivity surveys while the other two monitors remain at the data recovery site. The monitors may agree to rotate the personnel coverage of the preactivity surveys as long as there is adequate coverage of the primary data recovery activities as well. In areas which may appear to have subsurface cultural resources, a Desert Research Institute archaeologist will be present during construction phases. If significant items are uncovered during construction phases, the Native American monitors will be notified immediately.

2. Recommendation:

   "Native American monitors should be notified and incorporated in off-season work for any pre-activity surveys which might occur."

   Response:

   Preactivity surveys occur periodically with short notice and must be performed immediately. This format does not provide sufficient notice to call in the monitors as needed as most must travel a long distance in order to get to the Yucca Mountain site. At the present time, the budget does not allow for full-time coverage of the Native American monitors. The monitors will be included in the preactivity surveys during on-season field work.

3. Recommendation:

"The YMP Native American Monitoring Program has proven to be effective and has become an integral part of the Native American/Cultural Resources Program and should continue as recommended."

Response:

The YMP Native American Monitoring Program will continue as recommended with the monitors being involved in all major data recovery projects at Yucca Mountain as long as the budget is able to support such an effort.

4. Recommendation:

"Native American monitor alternates should be used when primary monitors are unavailable for work."

Response:

The YMP requests that the appropriate tribes select an alternate person from each of the tribal groups (Southern Paiute, Western Shoshone, Owens Valley Paiute/Shoshone) to fulfill the duties of the primary Native American monitors if they are unable to complete their tasks. Should the monitor be unavailable for only a portion of the data recovery project (i.e., a day, or a week), the other two monitors will be expected to cover the work for the absent monitor and an alternate would not be utilized. An appropriate alternate will be called for work only if the primary monitor cannot complete the work.

5. Recommendation:

"Native American monitor alternates should be processed for proper clearances in case of being called for work."

Response:

The Native American monitor alternates will be badged and trained when called upon for their services. The budget does not provide for the training and employment of 3 additional monitors.

6. Recommendation:

"Photographer passes should be issued to the Native American monitors and their alternates. Film processing and distribution of photos to the tribes should be absorbed by the YMP Native American/Cultural Resources Program."

Response:

Camera passes have been and will be issued to the primary Native American monitors for documentation of the YMP data recovery projects. Upon consulting with the monitors, the YMP will absorb the cost of film processing and distribution of the photos. A representative sample of photos documenting data recovery projects will be mailed to the tribes while the monitors are working on the data recovery projects. A complete set of data recovery photos will also be incorporated into the yearly YMP Native American Program photo album.

7. Recommendation:

"Clarification should be provided about the rights of usage and restriction of project photographs by involved tribal groups and YMP personnel."

Response:

Tribal groups may use photographs from the YMP Native American Program in any manner they would like as there are no formal restrictions to tribal usage. However, use of the photographs by YMP personnel may be restricted. Photos documenting the YMP Native American Program are under restricted access available only to the staff working on the program. In addition, the photos are not viewed or portrayed as Native American "approval" of the use of Yucca Mountain as a potential repository site for high-level nuclear waste.

8. Recommendation:

"A video tape should be developed explaining the Native American Monitoring Program and distributed to the involved tribal groups. Restrictions should be imposed as it relates to public access."

Response:

The YMP agrees that such a video tape would be useful and will be pursuing this recommendation in the future.

9. Recommendation:

"All project related correspondence should be sent to both the tribal office and to the attention of the OTCRs and/or tribal cultural groups."

Response:

The YMP has adopted this recommendation.

10. Recommendation:

"YMP personnel should provide a written report about the Tribal Update Meetings and submit it to the OTCRs for presentation to their tribes."

Response:

The YMP has implemented this recommendation.

11. Recommendation:

"The Native American monitors should develop a quarterly status report summarizing activities for their respective tribal group (i.e., Southern Paiute, Western Shoshone, and Owens Valley Paiute/Shoshone). A comprehensive Annual Report will be developed describing the Native American Program activities including OTCR activities. YMP personnel will assist in the development and distribution of the report as requested."

Response:

The Native American monitors are responsible for the development of the quarterly status report. Upon completion, the YMP will assist in the distribution of the report to the tribal office and the OTCRs. In addition, the YMP will assist in the development and distribution of a comprehensive Annual Report documenting the activities of the YMP Native American Program as requested.

12. Recommendation:

"Due to the extreme sensitivity of the Prow Pass area, general access should be restricted from YMP personnel."

Response:

The YMP supports this recommendation. Currently, no work is being performed in the Prow Pass area nor is any work planned for the area in the near future. The YMP is investigating additional options for restriction of general access to the area. These options will be discussed with the OTCRs during the next site visit to Yucca Mountain.

13. Recommendation:

"General access should be restricted to all areas not included in the YMP study area or where no work is scheduled or anticipated."

Response:

YMP administrative procedures require that YMP personnel notify the Project Operations and Control Division Office managed by Ms. Wendy Dixon prior to the start of any work planned for the Yucca Mountain area. The area of work must be approved by Ms. Dixon's office before any YMP work can be initiated at the site.

14. Recommendation:

"No individual is authorized to speak on behalf of the 16 tribal groups represented through their OTCRs without proper authorization or consensus of the group."

Response:

Comment noted.

15. Recommendation:

"No organization is authorized to speak on behalf of the 16 tribal groups represented through their OTCRs without proper authorization or consensus of the group."

Response:

Comment noted.

16. "Personnel associated with the YMP Native American Program should not be altered in order to insure continuity and increased tribal involvement."

Response:

At this time, the team coordinating the YMP Native American Program will continue as recommended.

## TRIBAL RECOMMENDATIONS AND YUCCA MOUNTAIN PROJECT RESPONSES REGARDING NATIVE AMERICAN ISSUES DISCUSSED DURING THE OCTOBER 27-29, 1993 SITE VISIT

Recommendation:

On October 29, 1993, Official Tribal Contact Representatives (OTCRs) met with Yucca Mountain Site Characterization Project (YMP) representatives to discuss a recently discovered archaeological site. The site contains various materials including a conical burden basket, one wooden staff and miscellaneous basket materials. Although this site is located in a remote area, several concerns were expressed by the OTCRs about the inadvertent discovery and disturbance of the site.

Due to these concerns and the lack of assurances to insure that the site can be adequately protected, the tribal groups recommend the following:

1. Those specific items found on the surface (within the site), namely the conical burden basket, wooden staff and basket materials, are to be removed from the site if there is the potential danger of unauthorized removal or inadvertent discovery.
2. If physical removal of these items from the site is necessary, the removal must be conducted by the three designated Native American Monitors. It is further recommended that the Monitors be accompanied by three designated alternates representing the Southern Paiutes and Shoshones, along with a designated spiritual person.

3. Prior to the removal of any artifacts from the site, a spiritual person is requested to properly bless the area and provide interpretation and guidance to the tribal representatives.
4. Monitors should be provided access to cameras to properly photograph the site as determined necessary.
5. If necessary, collection of this site should happen as soon as possible to insure that no unauthorized removal occurs.
6. Native American Monitors and YMP archaeologists should visit the site prior to the removal process to properly record the site.
7. If collected, all artifacts are to be promptly stored at the Desert Research Institute (DRI) facilities in Las Vegas, until such time as the tribal groups request that they be relocated to another suitable location.
8. Due to the remoteness of the site, Native American Monitors, alternates and those OTCRs who are physically able to visit the site, should be permitted to view the site if removal is necessary.
9. Should it be determined that the artifacts not be collected and/or removed, the OTCRs should be immediately contacted to re-evaluate the recommendation for removal.

All tribal groups having cultural, historic and religious ties to the Yucca Mountain study area have continuously gone down on record to strongly recommend the protection and preservation in

place of cultural resource sites, particularly those containing artifacts. This recommendation continues to be strongly supported and endorsed by each tribal group through their OTCRs.

Should the tribes decide that the removal of any culturally significant items is necessary, it does not in any manner abrogate the original tribal recommendation of protection and preservation in place. Any future consideration of artifacts removal must be thoroughly reviewed and approved by the YMP tribal groups, including adequate review and response time to allow the OTCRs and their respective tribal groups to properly assess its appropriateness.

Response:

The discussions that occurred at the tribal update meeting on October 29, 1993 suggested that there may have been potential imminent danger (from military rather than YMP activities) to the artifacts in question. Upon further investigation, it has been determined (during an additional site visit with the Native American Monitors on December 13, 1993) that the site may not be in immediate danger and indeed safer than originally thought. However, ongoing discussions amongst YMP staff and the OTCRs will determine final disposition of the artifacts.

If removal of the artifacts is to occur, it will be conducted by the Native American Monitors that have been designated by the tribes at the time. Such an effort will be conducted along with a

chosen spiritual person who may perform any blessings of areas, sites, artifacts, or persons deemed necessary by tribal representatives. In addition, the Native American Monitors will be provided access to cameras to photograph desired cultural subjects as recommended.

As soon as a final determination and understanding of potentially disturbing activities is known, final disposition of the site will be determined in consultation with tribal representatives. Such an effort was begun by visiting the site, as requested, with the Native American Monitors and YMP archaeologists and staff on December 13, 1993. This visit served to discuss potential artifact preservation alternatives and to properly record the site.

If the artifacts are collected, they will be curated appropriately at the DRI facilities in Las Vegas until such time that tribal representatives identify other alternatives.

Additional discussions are underway to evaluate the potential for the OTCRs to visit the site whether it is collected or not. Any decisions as to the disposition of the site will be made in consultation with tribal representatives.

**Recommendation:**

The OTCRs strongly support the continuance of the Native American youth tours for their respective tribal members. It is recommended that the next Native American youth tour be held in March or April, 1994.

**Response**:

The YMP is also interested in continuing the Native American youth tours in the Yucca Mountain area. Plans for conducting the next and future such tours will be presented to tribal representatives in a timely fashion.

**Recommendation**:

The tribal representatives in attendance support the concept of a Department of Energy (DOE) sponsored scholarship. However, it is recommended that the scholarship be available to any person from the sixteen tribal groups.

Input into any policy regarding the development of a Native American scholarship program must be provided to the sixteen tribal groups prior to implementation.

**Response**:

The DOE Office of Civilian Radioactive Waste Management (OCRWM) in Washington, D.C. is pursuing different educational funding options for Native Americans. These pursuits are in planning phases only and are obviously dependent on finding appropriate funds. However, such an effort is a priority item at OCRWM and the YMP Office and more information is forthcoming. Native American comments regarding scope of the effort and eligibility of people to apply to such a program are being taken into consideration in designing an educational program.

# RESPONSES TO RECOMMENDATIONS/NOTICES REGARDING NATIVE AMERICAN CULTURAL RESOURCES

The following information was prepared as a result of a Department of Energy (DOE) Yucca Mountain Site Characterization Project (YMP) Official Tribal Contact Representative (OTCR) Tribal Update Meeting, April 14-16, 1994.

1. Recommendation:

   The name, Consolidated Group, should be formally adopted and used on all correspondence from, and to, the group.

   Response:

   The Yucca Mountain Site Characterization Office (YMSCO) shall, in the future, refer to the representatives of the 16 tribes involved in the YMP Native American Program, as the "Consolidated Group."

2. Notice:

   A letter will be sent to the U.S. Department of Energy/Yucca Mountain Site Characterization Project (DOE/YMP) detailing our continued interests in, and intent to, apply for funding.

   Response:

   YMSCO acknowledges this notice. The letter has been received.

3. Recommendation:

   The DOE/YMP should provide immediate funding to the member tribes and organizations of the Consolidated Group for expanded program involvement, project oversight, and public education.

   Response:

   This issue has been brought to the attention of, and is currently under consideration by, YMSCO. The Department of Energy (DOE) is currently investigating the possibility of publishing a notice in the Federal Register. This notice would provide the opportunity for interested parties to respond and would potentially give DOE the mechanism to make funding available to the Native American community.

4. Notice:

The Consolidated Group will send letters to the Nevada Indian Environmental Coalition and the National Congress of American Indians (NCAI) to advise them of our concerns about their funding initiatives, lack of communication, and failure to recognize and include the Consolidated Group in their YMP-related initiatives.

Response:

YMSCO acknowledges this notice, and has received copies of these letters.

5. Recommendation:

The DOE/YMP should inform the Ely Shoshone Tribe that they will be included in the Consolidated Group to add uniformity with the DOE Nevada Test Site, Native American program.

Response:

YMSCO has formally informed the Ely Shoshone Tribe that they are welcome and encouraged to participate in the YMP Native American Program through the Consolidated Group.

6. Recommendation:

Any tribes, organizations, or interested individuals from the Consolidated Group, should be permitted to attend the NCAI meeting scheduled for April 26, 1994 at the Las Vegas Paiute Indian Colony.

Response:

YMSCO informed representatives of the Consolidated Group that because this was an NCAI meeting, rather than DOE, YMSCO could not mandate that the Consolidated Group be permitted to attend. However, YMSCO indicated that if the Consolidated Group chose to attend the meeting on their own, YMSCO would support this effort. NCAI canceled the meeting due to other commitments.

7. Recommendation:

The three appointed YMP Native American Monitors, three alternates, and Richard Arnold should attend the NCAI Tour scheduled for April 27, 1994 at the Yucca Mountain site.

Response:

YMCSO agreed to support the attendance of the three appointed YMP Native American Monitors, three alternates, and Richard Arnold, on the NCAI Tour scheduled for April 27, 1994. The tour was ultimately canceled by NCAI due to other commitments.

8. Recommendation:

The Consolidated Group approves the proposed YMP Native American Activity Day and wishes to restrict the use of the word "discovery" in its title. It is further recommended that this day be included as part of the next regularly scheduled YMP/Native American Tribal Youth Tour.

Response:

YMSCO acknowledges this recommendation. The word "discovery" will not be used in the title of the proposed YMP Native American Activity Day. The Activity Day, as well as the YMP/Native American Tribal Youth Tour, are scheduled to occur this summer.

9. Notice:

Richard Arnold will be the designated spokesman for the Consolidated Group as approved through a general consensus of the Group.

Response:

YMSCO acknowledges Richard Arnold as the designated spokesman for the Consolidated Group.

10. Recommendation:

DOE/YMP should provide surplus computers to each tribe and organization within the Consolidated Group for their immediate use on YMP and other tribal activities.

Response:

This issue has been brought to the attention of, and is currently under consideration by, YMSCO.

11. Notice:

Ms. Peggy Vega, Official Tribal Contact Representative, will develop a plan designed to provide educational opportunities for Native Americans as described by Robert Nelson of DOE/YMP.

Response:

YMSCO acknowledges the intent of Peggy Vega, OTCR, to develop a plan designed to provide educational opportunities for Native Americans.

12. Notice:

Richard Arnold will represent and serve as the designated spokesperson for the Consolidated Group at the DOE/YMP Transportation Workshop in Las Vegas, Nevada on June 7-8, 1994.

Response:

YMCSO acknowledges, and will support, Richard Arnold as the representative and designated spokesperson for the Consolidated Group at the DOE/YMP Transportation Workshop in Las Vegas, Nevada on June 7-8, 1994.

13. Notice:

The Consolidated Group will temporarily use the address of the Las Vegas Indian Center.

Response:

YMSCO acknowledges the Consolidated Group's desire to temporarily use the address of the Las Vegas Indian Center for correspondence concerning the YMP Native American Program.

RECOMMENDATIONS AND COMMITMENTS REGARDING
NATIVE AMERICAN CULTURAL RESOURCES

The following information was prepared as a result of a Department of Energy (DOE) Yucca Mountain Site Characterization Project (YMP) Official Tribal Contact Representative (OTCR) Tribal Update Meeting, February 10-12, 1995.

The following recommendations were made through a consensus of the Consolidated Group of Tribes and Organization (CGTO), representing tribes and organizations with cultural and historic ties to the Yucca Mountain area.

1. Recommendation:

All notices published in the Federal Register, in association with the YMP, be sent simultaneously to the involved tribes and organizations.

Response:

The YMP will send to the CGTO all notices published in the Federal Register that are directly associated with the YMP Cultural Resources Program and American Indian issues.

2. Recommendation:

An increase in the OTCR honorarium amount to $150.00 per day.

Response:

The OTCR honorarium amount will remain $100.00 per day. However, in the future, all OTCRs will receive the honorarium for a half day on Friday, and a full day for both Saturday and Sunday. As a result, the honorarium amount for the typical YMP Tribal Update meeting will be $250.00.

3. Recommendation:

Any current (and future) medical services and/or facilities made available to the YMP personnel and contractors should be provided to tribes and organizations represented by the CGTO.

Response:

Presently, medical services are available to site workers for work related injury and emergency cases. The facilities consist of a small medical trailer and an ambulance for emergency response. The YMP does not have a hospital on site nor are there plans for one in the future. However, current medical services are extended to all OTCRs during YMP Tribal Update meetings in case of emergency.

4. Recommendation:

The YMP hold a meeting specifically for the Native American Graves Protection and Repatriation Act (NAGPRA) to allow viewing of the collection at Desert Research Institute (DRI), and review reports to determine NAGPRA eligibility.

Response:

The YMP will be sending a NAGPRA plan of action to the CGTO in the near future. This plan will be discussed at the next YMP Tribal Update Meeting planned for October 1995. Upon discussion with and recommendation from the CGTO, the YMP will plan a separate NAGPRA meeting with a designated subgroup to view the collection at DRI and to discuss NAGPRA eligibility.

5. Recommendation:

The U.S. Department of Energy (DOE) send out detailed site reports (describing artifacts housed at DRI) prior to the NAGPRA meeting.

Response:

DRI inventories and annual updates have been sent out to the CGTO. These inventories along with information related to the actual recovery sites will also be made available to the designated subgroup.

6. Recommendation:

The Native American Monitors be permitted to accompany DRI archaeologist(s) when monitoring archaeological sites. (Recommended for protection by the CGTO.)

Response:

At this time, budget restrictions will not allow for the Native American Monitors to accompany DRI archaeologist(s) when monitoring archaeological sites. However, the Native American Monitor Program will be maintained and utilized for any major data recovery efforts in the future. In addition, the OTCRs will continue to visit and monitor various archaeological sites as part of the YMP Tribal Update Meetings.

7. Recommendation:

No photographs be taken at archaeological sites (by unauthorized individuals) without the approval of the CGTO due to the sensitivity related to such sites.

Response:

The YMP respects this recommendation and will implement it to the extent it can be controlled in the future. Current YMP policy states the no unauthorized individuals are allowed to take photographs at Yucca Mountain.

8. Recommendation:

Any unauthorized prints and negatives of the basket site area be returned to the CGTO.

Response:

In the future, any unauthorized photographs and negatives taken of the basket site area by individuals not involved with the YMP Native American/Cultural Resources Program will be returned to the CGTO.

9. Recommendation:

The YMP provide training for Native American Monitors for future oversight activities.

Response:

Budget constraints will not allow for training since data recovery efforts are not presently being conducted. When Native American Monitors are again needed for data recovery projects in the future, appropriate training will be available at that time.

10. Recommendation:

The YMP provide scholarships to Native American students from tribes and organizations represented by the CGTO.

Response:

The YMP currently sponsors grants and cooperative efforts through the University of Nevada system. Qualified Native American students are encouraged to apply and would certainly be considered for such financial aid. The YMP also just recently granted full scholarships to three Native American representatives from the CGTO to attend an archaeological field school conducted in Hurricane, Utah, in association with the Desert Research Institute (DRI).

11. Recommendation:

The YMP provide math and science programs to Native American students from tribes and organizations represented by the CGTO.

Response:

The YMP would be interested in future cooperative agreements with various school systems in accordance with budget allocations. Interested parties are encouraged to submit proposals for consideration.

12. Recommendation:

The YMP hire Native American interns from tribes and organizations to work on the YMP.

Response:

The DOE currently has intern programs available; Native American students in the local university system who meet eligibility requirements are encouraged to apply.

13. Recommendation:

Updated ethnobotany, animal, archaeological, and Traditional Cultural Properties studies be conducted. These studies minimally must incorporate participation from the tribes and organizations represented by the CGTO.

Response:

The YMP, in association with the DRI, is interested in updating and extending research in the above areas as the budget allows. If and when further studies are pursued, the CGTO will be asked to participate.

14. Recommendation:

Complete analyses of all plant studies and submit findings to the CGTO for their review and information.

Response:

The DRI is working on the completion of a plant nutritional analysis which will be sent to the CGTO for their review and information. A summary of a poster presentation on the subject titled Harvest and Yield Studies Of Some Ethnographic Food Plants in the Yucca Mountain Area was recently mailed to the CGTO. The YMP will continue to provide to the CGTO, on an annual basis, copies of the Yucca Mountain Biological Resources Monitor Program Progress Report which includes various plant studies. Any related plant studies conducted in the future will also be provided to the CGTO.

15. Recommendation:

Prow Pass be visited at the next YMP Tribal Update Meeting.

Response:

A visit to Prow Pass will be scheduled for either the Fall of 1995 or Spring of 1996 YMP Tribal Update Meeting.

16. Recommendation:

The Native American Monitors attend the next Tribal Update Meeting to provide update reports on monitoring activities to the CGTO.

Response:

The YMP has not conducted any major data recovery efforts since the Bare Mountain Date Recovery Project completed in 1993. Therefore, the Native American Monitors have not been involved in any new monitoring activities. However, the Native American Monitors will be invited to attend the next Tribal Update Meeting to discuss their involvement in the data recovery efforts in Midway Valley and Bare Mountain.

17. Recommendation:

A representative from the Nevada Indian Environmental Coalition (NIEC) be invited to the next YMP Tribal Update Meeting to provide an overview and update of NIEC organizational activities and initiatives.

Response:

A representative from the NIEC will be invited to attend either the Fall of 1995 or Spring of 1996 YMP Tribal Update Meeting.

18. Recommendation:

A representative from the Western Shoshone National Council (WSNC) be invited to attend the next YMP Tribal Update Meeting to provide an overview and update of WSNC organizational activities and initiatives.

Response:

A representative from the WSNC will be invited to attend either the Fall of 1995 or Spring of 1996 YMP Tribal Update Meeting.

19. Notice:

It was further agreed, through the consensus of the group, that interactions or consultation with the CGTO does not relieve the U. S. Department of Energy of their obligation to maintain their government-to-government relationship with tribal governments.

Response:

The YMSCO acknowledges their obligation to maintain a government-to-government relationship with tribal governments. All correspondence and information regarding Native American issues at Yucca Mountain is simultaneously provided to both the Tribal Chairpersons and the OTCRs from the CGTO. In addition, the OTCRs are asked to be designated representatives of their tribe and to share information from YMP Tribal Update Meetings with their Tribal Council and interested tribal members.

## RECOMMENDATIONS AND COMMITMENTS REGARDING NATIVE AMERICAN CULTURAL RESOURCES

The following information was prepared as a result of a Department of Energy (DOE) Yucca Mountain Site Characterization Project (YMP) Official Tribal Contact Representative (OTCR) Tribal Update Meeting , May 8-10, 1996.

The following recommendations were made through a consensus of the Consolidated Group of Tribes and Organizations (CGTO), representing tribes and organizations with cultural and historic ties to the Yucca Mountain area.

1. Recommendation:

   The YMP American Indian involvement on the upcoming Environmental Impact Statement (EIS) should be similar to that implemented by the DOE/NV program. The American Indian Writers Subgroup should consist of two representatives from each ethnic group for a total of six writers. The American Indian Writers Subgroup should be adequately compensated for their efforts.

   Response:

   The YMP is committed to obtaining valuable American Indian insight to the YMP EIS process. The details of the EIS are currently being evaluated. As more information becomes available, the plans for American Indian involvement will be discussed with the CGTO.

2. Recommendation:

   The YMP develop an implementation plan for compliance with the Native American Graves Protection and Repatriation Act (NAGPRA). A meeting devoted solely to discussion of NAGPRA initiatives should be scheduled with the CGTO.

   Response:

   The YMP is currently working on the implementation of NAGPRA. The next YMP tribal update meeting, currently being planned for mid-November 1996, will primarily be devoted to NAGPRA discussions.

3. Recommendation:

   The YMP and DOE/NV work cooperatively to conduct joint ethnographic projects for purposes of cost effectiveness and resource efficiency. This effort should include the

American Indian Rock Art Study being undertaken by the DOE/NV. This study should include the only known rock art site located near Yucca Mountain.

Response:

The YMP and DOE/NV operate under completely separate budgets. Therefore, joint projects between the two departments may not be logistically possible. However, when similar efforts are being conducted that involve the same designated Native American representatives, efforts will be made to effectively coordinate the projects. With regard to rock art sites near Yucca Mountain, the DOE/NV program has committed to including those locations in their ongoing rock art study effort.

4. Recommendation:

The Ash Meadows area be included into the scope of any future ethnographic studies as part of the cultural landscape and ecosystem.

Response:

The YMP understands the viewpoint by the Native Americans that all surrounding areas near Yucca Mountain are integral parts of the landscape and ecosystem. However, conducting ethnographic studies in Ash Meadows is probably not feasible due to budget constraints and the fact that program directives focus primarily on conducting studies in the immediate vicinity of Yucca Mountain.

5. Recommendation:

The YMP host two regular tribal update meetings of the CGTO and one youth tour each year. The regular meetings should be scheduled in the spring and fall of each year, while the youth tour should occur during the summer.

Response:

As long as required budgets are available, the YMP will hold two tribal update meetings per year. These meetings will be scheduled in the spring and fall months of each year. If additional budgets are available, the YMP will attempt to periodically host a tribal youth tour.

6. Recommendation:

The OTCR honorarium should be increased to $200.00 per day with consideration given to the fact that no honorarium increases have been granted by the YMP during the 10 continuous years of involvement by the tribes and organizations.

Response:

As stated previously, the OTCR honorarium amount will remain $100.00 per day. However, OTCRs will receive the honorarium for a half day on Friday, and a full day for both Saturday and Sunday. As a result, the honorarium amount of the typical YMP tribal update meeting will now be $250.00 representing a $50.00 increase relative to previous meetings. Further increases will be evaluated as budgets allow.

7. Recommendation:

The YMP conduct ethnobotany studies to include representatives from each of the tribes and organizations belonging to the CGTO. An ethnobotany subgroup, comprised of two representatives from each of the three ethnic groups, should assist in the development of the study design.

Response:

YMP ethnobotany studies are currently planned for fiscal year 1997. The details of the study design will be discussed at the upcoming tribal update meeting.

8. Recommendation:

All individuals attending and participating in YMP tribal update meetings should be housed together in the upgraded housing in Mercury, Nevada. Downstairs rooms with refrigerators needed to store medical supplies and food items are preferred. Each attendee should be provided a list of individuals attending the tribal update meeting with their assigned room numbers at the start of each meeting.

Response:

The YMP will continue to make every effort to obtain upgraded Mercury housing for the tribal update meeting attendees. In addition, efforts will be made to reserve the downstairs rooms with refrigerators. If the upgraded housing is not available, all attendees will be housed together in alternate accommodations. A list of attendees with assigned room numbers will be provided to participants at the start of the meeting.

9. Recommendation:

The CGTO be provided current lists of available surplus equipment. Each member tribal group must be provided the opportunity to view any and all surplus equipment currently available. First priority for the acquisition of any surplus equipment must be given to those member tribes and organizations of the CGTO. Should member tribes and organizations not be interested in responding to any notices of disposition of surplus

property, the YMP should advise other parties, including tribal groups, interested in acquiring such property.

It is further recommended that the YMP work with each member tribe on a government-to-government basis, rather than the Bureau of Indian Affairs, for the distribution of surplus property. Should it become absolutely necessary for the BIA to become involved, the YMP must interface with the appropriate field office upon the approval of each tribe.

Response:

The YMP has attempted to facilitate the acquisition of surplus equipment for interested member tribes and organizations of the CGTO. In the future the CGTO will be given first priority for acquisition of surplus equipment which will then be offered to other interested parties if necessary. However, such interactions will include using the Bureau of Indian Affairs as the organization to help effect equipment transfers.

Regarding the surplus portable camp units discussed at the May 1996 tribal update meeting, a telefax was sent in August 1996 to each member tribe and organization of the CGTO with the details of the available equipment; there were no interested parties. As additional surplus equipment becomes available, the YMP will make concerted attempts to keep the CGTO informed.

## RECOMMENDATIONS AND COMMITMENTS REGARDING NATIVE AMERICAN CULTURAL RESOURCES

The following information was prepared as a result of a Department of Energy (DOE) Yucca Mountain Site Characterization Project (YMP) Official Tribal Contact Representative (OTCR) Tribal Update Meeting, November 22-24, 1996.

The following recommendations were made through a consensus of the Consolidated Group of Tribes and Organizations (CGTO), representing tribes and organizations with cultural and historic ties to the Yucca Mountain area.

1. Recommendation:

   The YMP should provide appropriate responses to the recommendations made by the CGTO immediately after such responses have been formulated by the DOE.

   Response:

   The YMP will provide timely responses to the CGTO recommendations.

2. Recommendation:

   The YMP should incorporate the use of six plant experts, two from each ethnic group, designated by the respective ethnic groups to participate in the YMP Ethnobotany Study.

   Response:

   The YMP will utilize two plant experts from each of the following ethnic groups for the YMP Ethnobotany Study: Southern Paiute, Western Shoshone and Owens Valley Paiute and Shoshone. The YMP requests that the names of the plant experts be submitted by the tribes and organizations as soon as possible so that work on the ethnobotany study may begin in the Spring of 1997.

3. Recommendation:

   The YMP should utilize a CGTO Native American Graves Protection and Repatriation Act (NAGPRA) Subgroup consisting of six members, two from each ethnic group. The NAGPRA Subgroup should be comprised of Gaylene Moose and Bertha Moose, representing the Owens Valley Paiutes; Benn Pikayvit and Richard Arnold representing the Southern Paiutes; and Pauline Esteves and Jerry Charles representing the Western Shoshones. The Subgroup should meet prior to tribal interviews to review and approve the study design. In addition, the Subgroup should review all archaeological collections originating from the Yucca Mountain study area to determine which items should be

viewed by additional tribal representatives.

Response:

The YMP will utilize the above-mentioned NAGPRA Subgroup for the initial NAGPRA consultations expected to begin in February of 1997. Letters outlining the identification of the Subgroup and plans for NAGPRA consultations will be mailed to all tribes and organizations.

4. Recommendation:

The YMP must use the CGTO American Indian Writer's Subgroup (AIWS) to develop and write text for a resource document to be used in the development of the upcoming YMP Environmental Impact Statement (EIS). The AIWS members will consist of Betty Cornelius representing the Southern Paiutes; Gaylene Moose and Neddeen Naylor representing the Owens Valley Paiutes; two Western Shoshone representatives to be identified at a later date; and Don Cloquet representing the Las Vegas Indian Center. Richard Arnold will serve as a coordinator for this effort.

Response:

The YMP supports the preparation of a reference document addressing Native American views and perspectives regarding the Yucca Mountain area. Direct inclusion of the document in the EIS is not anticipated. This document would be used as a reference report to assure DOE comprehension of Native American views, concerns, and opinions during the preparation of the YMP EIS. A CGTO AIWS is a useful tool for preparing such a document and the individuals identified as members of this Subgroup are acknowledged. Schedules and pertinent information regarding this effort will be transmitted to the tribes and organizations when available.

5. Recommendation:

The YMP must provide at least two weeks prior notice to all committee members for any activities to allow for proper scheduling and participation.

Response:

The YMP will notify all Subgroup members at least two weeks in advance of proposed work for scheduling purposes.

6. Recommendation:

The YMP must restrict the use of any information provided by the OTCRs or other designated tribal members about sensitive cultural issues for any purposes other than that which was originally intended. The release of such information should not be allowed

and the identity of individuals involved should be kept confidential. Any request for this information must be approved by the informant and their respective tribal group.

Response:

The YMP is committed to protecting sensitive information obtained through the consultations associated with the Native American Interaction Program (NAIP). Sensitive information is currently restricted for use only by individuals associated with the NAIP. In addition, the YMP will keep the identity of individuals involved in the NAIP as confidential information. Any requests for such information will only be granted with the approval of the individuals involved and/or their respective tribe or organization. However, it may be necessary at times to discuss certain related issues with the spokesperson of the CGTO.

7. Recommendation:

The YMP must attempt to secure the necessary funding needed to carry out the mission and purpose of the YMP NAIP. The absence of funding should not prevent the YMP from fulfilling its programmatic and legislative obligations.

Response:

The YMP will continue to make every attempt to obtain funding required to support the ongoing NAIP. The YMP does not foresee any near-term difficulties associated with fulfilling its programmatic and legislative obligations. However, the YMP is always bound by congressional and other programmatic budgeting processes and cannot guarantee that those processes will not have a fiscal impact on the NAIP in the future.

8. Recommendation:

Any individuals selected by the YMP to interview tribal representatives must be familiar with and knowledgeable about local history and Indian culture. These individuals should be well acquainted with the participating tribes and organizations as a means of obtaining valuable and sensitive cultural information important to the YMP NAIP. The YMP should hire qualified American Indians to support this effort. The YMP should consider incorporating designated tribal representatives from each ethnic group to serve as recorders to provide information that could then be condensed into written text.

Response:

If formal interviews are to occur, all attempts will be made to secure the services of knowledgeable people to conduct the efforts, as requested. The YMP will attempt to identify American Indians who could be used for such study efforts. Any individuals who perform work and who contribute to written documents on the YMP, will be compensated for their efforts.

9. Recommendation:

The YMP should allow OTCRs and Indian monitors to use cameras and binoculars when visiting cultural resource sites within the YMP study area. This will allow for photo documentation to observe protection measures and project progress. This information would be included into written reports developed by Indian writers belonging to the CGTO.

Response:

For future site visits, OTCRs and Indian monitors (if utilized) will be allowed to bring and use cameras within the YMP study area provided that an escort with proper clearance accompanies the group. At this time binoculars are still not allowed in the Yucca Mountain area without each individual possessing an appropriate clearance. However, an escort with the group may allow individuals to use his/her binoculars if necessary.

10. Recommendation:

The YMP should develop a master calendar identifying dates and times of CGTO and subgroup meetings and/or activities pertaining to the YMP, Nellis Air Force Base (AFB), and the Nevada Test Site (NTS) NAIPs.

Response:

The YMP will not be able to continually provide a master calendar for the three referenced programs since updates and changes happen constantly and because two of the three programs are not in the management control of the YMP. However, as YMP personnel are made aware of potential conflicts between the programs, those issues will be addressed and/or be made available to OTCRs.

## RECOMMENDATIONS AND COMMITMENTS REGARDING NATIVE AMERICAN CULTURAL RESOURCES

The following information was prepared as a result of a Department of Energy (DOE) Yucca Mountain Site Characterization Project (YMP) Official Tribal Contact Representative (OTCR) Tribal Update Meeting, September 19-21, 1997.

The following recommendations were made through a consensus of the Consolidated Group of Tribes and Organizations (CGTO), representing tribes and organizations with cultural and historic ties to the Yucca Mountain area. Responses from the YMP are also included.

1. Recommendation:

   The YMP should plan, as part of the next regularly scheduled Tribal Update Meeting, a site visit to Rockshelter Ridge and Hummingbird Rockshelter.

   Response:

   The YMP will incorporate a visit to Rockshelter Ridge and Hummingbird Rockshelter as part of the next Tribal Update Meeting.

2. Recommendation:

   The American Indian Writers Subgroup (AIWS) should convene another meeting to finalize the American Indian resource document for the YMP Environmental Impact Statement.

   Response:

   The AIWS will meet again during Fiscal Year (FY) 1998 to incorporate comments and finalize the resource document titled *American Indian Perspectives on the Environmental Impact Statement for the U. S. Department of Energy's Yucca Mountain Site Characterization Project.*

3. Recommendation:

   The YMP should continue Native American Graves Protection and Repatriation Act (NAGPRA) consultations with member tribes and organizations.

Response:

The YMP plans to continue NAGPRA consultations during FY 1998. The YMP requests that the CGTO provide the names of appropriate individuals to be contacted for additional NAGPRA interviews.

4. Recommendation:

The YMP should convene a meeting of the NAGPRA Subgroup to develop repatriation guidelines for those items considered eligible for repatriation.

Response:

If it is determined that items are to be repatriated in accordance with the provisions of NAGPRA and its implementing regulations, the NAGPRA Subgroup will meet to develop guidelines for the repatriation process.

5. Recommendation:

The CGTO recommends that two elders plus one driver from each tribe be invited to view the items which were selected by the NAGPRA Subgroup for determination of NAGPRA applicability.

Response:

As outlined above in the response to Recommendation #3, the YMP asks that the CGTO provide names of knowledgeable individuals to be contacted for NAGPRA interviews. Appropriate logistical coordinations for these individuals will be arranged as needed.

6. Recommendation:

The YMP should provide adequate compensation for those individuals participating in the NAGPRA consultations.

Response:

The YMP will compensate individuals participating in NAGPRA interviews.

7. Recommendation:

The YMP should adhere to the previous recommendation of convening a minimum of two Tribal Update Meetings each fiscal year.

Response:

In accordance with budgets and logistical constraints, the YMP will attempt to hold two Tribal Update Meetings each fiscal year.

8. Recommendation:

The YMP should provide portable steps for elders which allow for easy access to vans and other similar vehicles during site visits.

Response:

The YMP will provide portable steps for vans used during site visits.

9. Recommendation:

The CGTO recommends that arrangements be made to visit the Exploratory Studies Facility (ESF) Tunnel at the next regularly scheduled Tribal Update Meeting.

Response:

The YMP will try to make arrangements for a visit to the ESF during the next Tribal Update Meeting.

10. Recommendation:

The CGTO recommends that the Desert Research Institute (DRI) return all artifacts that were sent out for obsidian hydration studies to the DRI Curation Facility.

Response:

All artifacts sent out for obsidian hydration studies have been returned to the DRI Curation Facility.

11. Notice:

The CGTO recommends that CGTO member tribes develop and approve tribal resolutions which create Nuclear Free Zones within their respective reservation boundaries.

# APPENDIX C

# AMERICAN INDIAN TRADITIONAL-USE PLANTS PRESENT IN THE SOUTHERN NEVADA AREA

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## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Abies concolor* | White fir | ca-ta-vee[8] | wong-govie[8] | |
| *Abronia turbinata* | White sand verbena | | nut-zooh-boh-hombe[8] | |
| *Abronia* sp. | White sand verbena | | bah-gun-boh-hombe[8] | |
| *Achillea millefolium* | Milfoil yarrow | i'itsikwasipi[f] | | |
| *Achillea* sp. | Yarrow | i'itsikwasipi[f]<br>todze-tonega[8]<br>toe-tee-tone-ga[8]<br>wats-ov[8]<br>toh-tee-tone-e-gah[8]<br>toh-tee-tonega[8] | coo-see-pah-wah-zip[8]<br>dogowah-wan-guh[8]<br>donzee-anga[8]<br>pah-ronzee-ah[8] | |
| *Agave utahensis* var. *kaibabhensis* | Kaibab agave | kaiva uusiv[b] | | |
| *Agave utahensis* var. *utahensis* | Utah agave | yaant[b]<br>nanta[f]<br>yant[f] | | |
| *Agave* sp. | Agave, Mescal | yant (mp)[f] | | |
| *Agropyron smithii* | Western wheat grass | paxankwa[f] | | |
| *Agropyron* sp. | Wheat grass | paxankwa[f] | | |
| *Agrostis exarata* | Spike bentgrass | NF[f] | | |
| *Allium* sp. | Wild onion | kwichasi[f] | bah-zuh-see[g] | un-zee[g] |
| *Amaranthus albus* | Pale amaranth | toki-mont[f]<br>tokimont[f] | | |
| *Amaranthus retroflexus* | Redroot pigweed | kumutu[f] | | |
| *Amaranthus powellii* | Powell's amaranth, Pigweed | kumutu[f]<br>pun-kont[f] | | |
| *Amaranthus* sp. | Pigweed | toki-mont[f]<br>ku-mont[f]<br>camoot[f]<br>kumutu[f]<br>tokimont[f]<br>pun-kont[f]<br>punkont[f] | | |
| *Ambrosia dumosa* | White bursage, Burrobush | kutsiav[f]<br>tumpisangwav[b] | | |
| *Ambrosia artemisiifolia* | Ragweed | NF[f] | | |
| *Amelanchier alnifolia* | Saskatoon service-berry | toyabe[f]<br>tuvwampu[f] | | |
| *Amelanchier utahensis* | Utah serviceberry | tungwump[f]<br>tuvwampu[f]<br>NF[e]<br>kwiyav[f]<br>toyaba[f] | duh-hee yemba[8] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Amelanchier* sp. | Serviceberry | tū-ab´ (k)[4]<br>kwiyav[f]<br>tungwump[f]<br>kwiyav[f]<br>toyabe[f]<br>tuvwampu[f]<br>toyaba[f]<br>tungwump[f] | | |
| *Amsinkia tesselata* | Fiddleneck | NF[e] | | kua[e] |
| *Androstephium breviflorum* | Funnel-lily | NF[f] | | |
| *Anemopsis californica* | Yerba mansa | cheu-pahn-iv (mp)[8]<br>tchupaniv[e]<br>NF[f] | chew-pon-iv[8]<br>NF[e] | tchawanav[e]<br>tsawaniv[e] |
| *Anemone tuberosa* | Desert thimbleweed, Windflower | NF[f] | | |
| *Angelica* sp. | Angelica | to'nchavi[f]<br>kibah na-tizuah[8]<br>tontsabi[f]<br>bogo[8] | bee-ah-bogo[8]<br>be-ah boquah[8] | |
| *Apocynum cannabinum* | Dogbane, Indian hemp | NF[1] | | |
| *Arabis pulchra* | Pretty rockcress | ak[e]<br>ahk[e] | | |
| *Arabis* sp. | Rockcress | toxopakuv[f] | don-zeah[8] | |
| *Arceuthobium* sp. | Mistletoe | San-hap´ o-tsav[4] | Not-toí-yum | |
| *Arctostaphylos patula* | Green-leaf manzanita | ararumpipi[f] | | |
| *Arctostaphylos pungens* | Pointleaf manzanita, Mexican manzanita | ararumpipi[f]<br>ada'dimpipi[f] | | |
| *Arctostaphylos* sp. | Manzanita | ki´-app´e (k)[4]<br>a-rai´-um-pīv (k)[6]<br>tim-go´-op (lv)[6]<br>ararumpipi[f]<br>ada'dimpipi[f] | yah-he-wat-um[8] | |
| *Arenaria* sp. | Sandwort | | boo-ee nut-zoo[8] | |
| *Argemone* sp. | Prickly poppy | esha-ah-goo-wha[8] | sag-ee-da[8]<br>sag-ee-dump[8]<br>wya-sag-wee-duh[8]<br>wya-sag-gee-gee[8] | |
| *Artemisia bigelovii* | Bigelow sagebrush | sangwav[b] | | NF[9] |
| *Artemisia dracunculus* | Tarragon | sangwavi[f]<br>pas[f] | | |
| *Artemisia ludoviciana* | Water sage, Louisiana wormwood, Sage herb | huipata-sangwav[b, c]<br>sangwa[f]<br>sangwavi[f]<br>pass-pahs[f]<br>pa'sangwav[e] | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Artemisia nova* | Black sagebrush | sangwav[d]<br>sangwav[c] | sua'piv[c] | bah-que-numb[8]<br>boh-hoe-be[8]<br>du-boh-hobe[8]<br>toyabe-behobe[8]<br>bahopi[c] | |
| *Artemisia spinescens* | Bud sage, Button brush | kuh-eeb tah-cun-oh-guah[8] | kuh-wepit-tuh-cun-o-guah[8] | doot-see-ab[8]<br>dootsie-up[8]<br>koo-buh tah-cun-o-quah[8]<br>ku-ba-tah-cun-oh-quah[8] | |
| *Artemisia tridentata* | Big sagebrush | po-ho´-be (lv)[4]<br>sahng-wav´ [4]<br>sah-wahb´ (k)[4]<br>sangwav[c, e]<br>pah-eesh sah-wavvy[8]<br>pah-hoe-be[8] | sangwavi[f]<br>sangwa[f]<br>sanwa'bi[f]<br>pah-wavvy[8]<br>sah-wah-be[8]<br>sah-wavvy[8] | bah-guh-yoom[8]<br>bah-hoe-be[8]<br>bah-vah-hoe-be[8]<br>boh-hoe-be[8]<br>boh-ombe[8]<br>sah-wah-be[8]<br>wah-gup-pee[8]<br>povi[c]<br>pohovi[c]<br>bahopi[c]<br>povi[c]<br>po-hó-be (ps)[4] | NF[c, c] |
| *Artemisia* sp. | Sagebrush | ïnáp´[u 1]<br>po-ho´-be (lv)[4]<br>sahng-wav´ [4]<br>sah-wahb´ (k)[4]<br>sangwav[c, e]<br>pa'sangwav[c]<br>huipata-sangwav[b, c]<br>wadzo-ba[8]<br>coo-see pah-wah-zip[8]<br>coo-see quatz-oh-bah[8]<br>coo-see-sah-wah-be[8]<br>coo-see sah-wavvy[8] | chumav[b]<br>sangwa[f]<br>sangwavi[f]<br>sanwa'bi[f]<br>pas[f]<br>pass-pahs[f]<br>salmapweep[f]<br>salm-ap-weep[f]<br>coo-see-wy-up[8]<br>koh-see-wah-ah[8]<br>pah-wadz-oh-buh[8]<br>wat-sob[8]<br>whood-see-tah-cun-oh-quah[8] | bah-vah-hoe-be[8]<br>bav-oh-hoe[8]<br>coo-see-pah-zip[8]<br>coo-see-pah-wah-zip[8]<br>pah-vah-hobe: pava-hobe[8] | |
| *Asclepias speciosa* | Milkweed | nah-quee-dah nat-tizuah[8]<br>toh-hawk-quee[8] | ut-sah-av[8]<br>wee-ab-a-nuh[8] | be-ah bee-sha divo-oh-wip[8]<br>be-jah-no-ko[8]<br>be-sha-no-ko[8]<br>bee-sha-wannup[8]<br>pee-gee-wanna[8] | |
| *Asclepias* sp. | Milkweed, broad leaf | hewovey[8]<br>NF[1] | wa-na[8] | we-ā´-vimp (ps)[4] | |
| *Aster frondosus* | Leafy aster | tods-e-tonega[8] | | | |
| *Aster* sp. | Aster | NF[f] | | hoo-nut-zoo[8]<br>dimbe-be-ett-zee[8]<br>duh-na-eye-go[8] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Astragalus praelongus* | Milkvetch | NF[b] | | |
| *Astragalus purshii* | Milkvetch | NF[f] | | |
| *Astragalus* spp. | Locoweed | NF[b] | tim-bah-hay nut-zoo[8]<br>coopi-joomb[8]<br>gup-wuh-ghu[8]<br>tok-quee[8] | |
| *Atriplex canescens* | Four-wing saltbush | skump[b]<br>tono[b]<br>murunibi[f] | noo-roon-up[8] | tonoh[e] |
| *Atriplex confertifolia* | Shadscale | NF[2]<br>oavi[f]<br>kakumb[e] | | |
| *Atriplex lentiformis* | Big saltbush | NF[f] | | |
| *Atriplex* sp. | Saltbush | kakumb[e]<br>skump[b]<br>tono[b]<br>oari[f]<br>oavi[f]<br>que-aheque[f]<br>murunibi[f] | | |
| *Avena sativa* | Wild oats | hoo-wēv´ (c)[4] | | |
| *Baccharis* sp. | Seepwillow | koauw[b]<br>kanav[b] | | |
| *Balsamorhiza* sp. | Balsamroot | key-gah-da-goop[8]<br>ah-ku-pah[8]<br>coo-see quah-soop[8]<br>pah-kuk[8] | ah-kuk[8]<br>coo-see ah-kuh[8] | |
| *Berberis fremontii* | Freemont's barberry | tonip[f] | | |
| *Berberis repens* | Creeping barberry | cor-ren-nup pah-vee[8]<br>poo-heg-wee-dah[8]<br>NF[f] | so-go-diem[8]<br>so-go-du-yembe[8]<br>toh-yuh-tu-yuh-bu-huh[8] | |
| *Berberis* sp. | Oregon grape, Barberry | tonip[f] | | |
| *Betula* sp. | Birch | un-gai´-yu-nin-jump (lv)[6]<br>kai´-shu-imp (k)[6] | who-ghee-juup[8] | |
| *Brickellia oblongifolia* | Mohave Brickell bush | | sahn-a wap[8] | |
| *Brodiaea pulchella* | Desert hyacinth | NF[e] | sigo[e] | |
| *Bryophytes* | Moss | NF[f] | | |
| *Calochortus bruneaunis* | Sego lily | sixo'o[c] | se'go[c] | |
| *Calochortus flexuosus* | Weakstem mariposa | sixo'o[f]<br>sixo'o[e] | sigo[e] | kogi[e] |
| *Calochortus nuttallii* | Sego lily | sigo'o[f] | | |
| *Calochortus* sp. | Sego lily, Mariposa lily | sixo'o[f]<br>sigo'o[f] | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Carex douglasii* | Sedge | NF[f] | | |
| *Carex* sp. | Sedge | sambiv[d] NF[f] | | |
| *Castilleja chromosa* | Early Indian paintbrush | NF[e] | angawitambu[c] | NF[e] |
| *Castilleja linariaefolia* | Paintbrush | | anga-quee-ah-wee-tumb[8]<br>dogowah-die-um[8] | |
| *Castilleja martinii* | Narrowleaf paintbrush | | | NF[c] |
| *Castilleja* sp. | Indian paintbrush | NF[d] | | |
| *Caulanthus crassicaulis* | Squaw cabbage | NF[f] | wah-numb[8] | |
| *Ceratoides lanata* | Winterfat | | NF[c] | |
| Cercoparpus ledifolius | Curl-leaf mountain mahogany | tonumpi[f]<br>dunumbe[f](mp)[8]<br>toobe-[8]<br>Dunumbe[f]<br>too-pee[8]<br>toobe-buh-ah[8] | doh-numbe[8]<br>toh-nombe[8]<br>toobap-ee[8]<br>too-be[8]<br>too-bee-boh-ah[8]<br>too-nambe[8]<br>too-pee[8] | |
| *Cercocarpus* sp. | Mountain-mahogany | to-namp´ (k)[4]<br>tonumpi[f]<br>dunumbe[f]<br>dunumbe[f] | too-num´-be (ps)[4]<br>too-namp´-pe[4]<br>toó-nam-be[4] | NF[9] |
| *Chaenactis douglasii* | Douglas dusty-maiden | hoot-see-eva[8]<br>si-af-iv[8]<br>toh-hoe-quah[8] | witch-ah das-ah-dee-ah[8]<br>witch-ah-numba[8]<br>yahn-gan-gooie[8] | |
| *Chamaebatiaria millefolium* | Fernbush | par-o-wah tah-cun-o-quah[8] | ting-wee-buh[8] | |
| *Chenopodium fremontii* | Fremont goosefoot | sax'watikup[c] | u'uphi[c] | |
| *Chenopodium* sp. | Goosefoot | sax'watikup[c] | | |
| *Chorizanthe rigida* | Rigid spine-flower | sanuv[f]<br>kamuhurusanuv[f]<br>kanumuvusanuv[f] | | |
| *Chorizanthe* sp. | Spine-flower | sanuv[f]<br>kamunuru[f] | | |
| *Chrysothamnus nauseosus* | Rubber rabbitbrush | s'kump[c, e]<br>sikomp[b]<br>sikump[f]<br>sikump[f]<br>pantus'kump[d] | see-bape[8]<br>su'pimba[c]<br>NF[e] | |
| *Chrysothamnus viscidiflorus* | Little rabbitbrush | see-gu-pee[8]<br>tah-bee-she-goop[8]<br>tah-beese-see-goop[8] | nagaha-see-bup-ee[8]<br>oh-ha-see-bup-e[8] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Chrysothamnus* sp. | Rabbitbrush | koo-chum´-ahv (lv)[4]<br>koo-tsam´-mah<br>hav´ (c)[4]<br>sikomp[f]<br>sikump[f]<br>sikump[f]<br>s'kump[c, e] | sig̃-um-bip´ (ps)[4] | |
| *Cirsium mohavense* | Desert thistle | tsiev[e] | | |
| *Cirsium* sp. | Pink thistle | manavip[b] | | |
| *Claytonia* sp. | Spring beauty | NF[f, 8] | | |
| *Clematis ligusticifolia* | Virgin's bower, Wild clematis | esha-wanna[8] | esha-wanna[8]<br>esha-wannup[8] | |
| *Coleogyne ramosissima* | Blackbrush | NF[f, e] | | |
| *Comandra umbellata* | Bastard toad-flax | NF[f] | | |
| *Cordylanthus* sp. | Birdsbeak | | tim-bah-hay nut-zoo[8] | |
| *Cornus stolinifera* | Dogwood | NF[f] | | |
| *Cornus* sp. | Dogwood | NF[f] | | |
| *Coryphantha vivipara* var. *desertii* | Fishhook cactus, Coryphanth cactus | manav[d] | | NF[e] |
| *Coryphantha vivipara* var. *rosea* | Foxtail cactus | manav[d]<br>manav[c]<br>yuav[c] | NF[c] | |
| *Cowania mexicana* (see *Purshia stansburiana*) | Cliffrose | | | |
| *Crepis* sp. | Hawksbeard | | ah-zah-div-o-wip[8]<br>bee-sha-no-go[8]<br>bee-jee div-o-wip[8] | |
| *Cryptantha* sp. | Cryptantha | NF[f] | | |
| *Cucurbita foetidissima* | Coyote gourd, Missouri gourd | ankompi[f]<br>ahn-no-quav (mp)[8, f]<br>arno-cup[f, 8]<br>ahn-noquav[f]<br>arnocup[f] | poo-nono[8] | |
| *Cuscuta* spp. | Dodder | canaza-kwee-sha[8]<br>too-vah-saah[8] | | |
| *Cymopterus globosus* | Golfball spring-parsley | ye-duts[8]<br>ye-luts[8] | | |
| *Cymopterus* sp. | Spring-parsley | nampip[f] | | |
| *Dalea fremontii* (see *Psorothamnus fremontii*) | Fremont indigo bush | | | |
| *Dalea polyadenia* | Smokebush | ma-good-du-hoo[8]<br>ma-good-tu-hoo[8]<br>moh-goon-du-hoop[8]<br>moh-goon-du-hoopie[8] | ma-good-tu-hoo[8]<br>moh-goon-du-hu[8] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Dalea* sp. | Indigobush | kaatamonup[f]<br>i-era-midja[f] | i-eramidja[f] | | |
| *Datura meteloides* | Sacred thorn-apple, Sacred datura, Jimsonweed | moa-nump[7]<br>momomp[b, e]<br>momompu[f]<br>mimip[f]<br>man-op-weep[f] | main-oph-weep[f]<br>mainophweep[f]<br>manopweep[f]<br>moh-mope (mp)[8] | moh-eep[8] | |
| *Datura* sp. | Jimsonweed | mu-maup´ (k)[6]<br>moa-nump[7]<br>momomp[b, e]<br>momompu[f]<br>mimip[f] | main-oph-weep[f]<br>man-op-weep[f]<br>mainophweep[f]<br>manopweep[f] | | |
| *Delphinium parishii* | Larkspur | NF[e] | | | |
| *Descurainia pinnata* | Tansy mustard | aku[f]<br>aku[f]<br>NF[b] | hahck[f]<br>ku'u[e] | poyah[e] | |
| *Descurainia sophia* | Tansy mustard, Herb sophia | ahk[e] | | poyah[e] | |
| *Descurainia* sp. | Tansy mustard | ahk[e]<br>ku'u[e]<br>aku[f]<br>aku[f] | hahck[f]<br>ak[f]<br>ok[f] | | |
| *Dichelostemma pulchellum* | Bluedicks | NF[f] | | | |
| *Distichlis spicata* | Saltgrass | ẽ´-shŭ (lv)[4]<br>e-soov´ (c)[4] | Nf[f]<br>mo-nump´ (k)[4] | pas-shoo-tum (ps)[4]<br>ó-hah só-nīp[4]<br>õ-hah só-nip[4] | ongavi[e] |
| *Dyssodia pentachaeta* (=*D. thurberi*) | Scale glandweed | sakwapi[b] | NF[f] | ahn-dah-gah nut-tah-zoom[8] | |
| *Echinocactus polycephalus* | Cotton-top cactus | tash[e] | | NF[e] | NF[e] |
| *Echinocactus* sp. | Barrel cactus | pavio[f]<br>tamar (lv)(p)[f] | tumar (mp)[f] | | |
| *Echinocereus engelmannii* | Engelmann hedgehog cactus | usivwuits[f]<br>tule[e] | manav[d] | | |
| *Echinocereus triglochidiatus* | Claretcup cactus | chuamanav<br>i'mamanavi[b]<br>ova'xobi[f] | cacuusov'xobi[f] | | |
| *Echinocereus* sp. | Hedgehog, Tule cactus | tule[e]<br>chuamanav<br>i'mamanavi[b]<br>usivwuits[f] | ova'xobi[f]<br>cacuusov'xobi[f]<br>usirwuits (lv)(p)[f]<br>NF[d] | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Echinochloa* sp. | Cockspur | NF[f] | | |
| *Eleocharis palustris* | Spikerush | NF[c, f] | | |
| *Eleocharis sp.* | Spike rush | pahrasiev[c] | bumohap[c] | NF[9] |
| *Elymus cinereus* | Wild rye | | | NF[9] |
| *Elymus elymoides* | Squirrel tail | saxwanartotsivuaium[c] | | |
| *Elymus triticoides* | Beardless wildrye, Creeping wildrye | NF[f] | | |
| *Elymus* sp. | Wildrye, Wheatgrass | ph-hoe-buh wah-hava[8]<br>sah-wah-havva[8]<br>wah-havva[8]<br>saxwanartotsivuaium[c]<br>NF[f] | pay-wah-guave[8]<br>wy-ron-zip[8] | |
| *Encelia farinosa* | White brittlebrush | NF[b] | | |
| *Encelia frutescens var. resinosa* | Brittlebush | sana ich[b]<br>tuwich[b] | | |
| *Encelia virginensis* (all varieties) | Virgin encelia, Brittlebush | sana ich[b]<br>suopiv[e]<br>tuwich[b] | | |
| *Enceliopsis nudicaulis* | Nakedstem | | anga-go-ahp[8]<br>coo-see ah-kuk[8] | |
| *Ephedra nevadensis* | Nevada Indian tea | tup, tup[b]<br>hutuup[c]<br>tutupe[f]<br>utuupi[f] | coo-see too-roombe[8]<br>tutumbi[c] | turup[c]<br>tutuup[c] |
| | | tu'up[c]<br>tutuupi[f]<br>tutupi[f, e]<br>tu-tupe (mp)[8]<br>u'tuup[c]<br>yatup[c]<br>NF[d] | turundi[c] | |
| *Ephedra torreyana* | Torrey Indian tea | tutuupi[f]<br>tutu'pi[f]<br>tu-tupe[f]<br>u'tup[b]<br>tupi[b] | | |
| *Ephedra viridis* | Indian tea | tup[b]<br>tup[b]<br>tutuupi[f]<br>soo-roop-ee[8]<br>too-roop-ee[8]<br>NF[c]<br>tutu'pi[f]<br>utuupi[f]<br>u'tuup[c]<br>too-toop-ee[8] | too-roombe[8]<br>too-toom-be[8]<br>tutumbi[c]<br>NF[c] | turup[c]<br>NF[c] |
| *Ephedra* sp. | Mormon tea, Jointfir, Indian tea | too-troop' (c)[4]<br>hoo-toop' (k)[4]<br>tup, tup[b]<br>u'tuup[c]<br>yatup[c]<br>hutuup[c]<br>tu'up[c]<br>tutuupi[f]<br>utuupi[f]<br>tutu'pi[f]<br>tutupi[c, f]<br>tutupe[f]<br>tu-tupe[f] | too-toom'-bip (ps)[4] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Equisetum laevigatum* | Smooth scouring rush | sakwa-'ivi-p[b] paxwav[f] | | |
| *Equisetum* sp. | Scouringrush | | bah-see-noo[8] kah-wah-quah-see[8] | |
| *Eragrostis* sp. | Love grass | NF[f] | | NF[9] |
| *Eriastrum eremicum* | Mohave eriastrum | NF[c] | | NF[c] |
| *Erigeron* sp. | Daisy | booie na-tizuah[8] kah-noop-ah[8] dootsie tah-bah-she-up[8] too-bee-man-ob[8] | boo-ee nut-zoo[8] | |
| *Eriodictyon angustifolium* | Narrow-leaf yerba santa | wee-poo-en-ub (mp)[8,] kutsa'rimpi[f] weepoo-enub[f] pa'sinipi[f] | wee-pah-got-um[8] | |
| *Eriogonum inflatum* | Desert trumpet, Bladderstem, Indian pipeweed | papakurum[f] papakurum(p)[c] papakurum[f,c] | tusarambokup[c] | |
| *Eriogonum microthecum* | Wild | pee-wee-guy-womb-mutz-zee[8] | ahn-ga-see-ga wee-anga-kah-sah-rumba[8] | |
| *Eriogonum ovalifolium* | Butterballs | ya-paw-taw-the[8] | naka-donup[8] | |
| *Eriogonum caespitosum* | Buckwheat brush | NF[f] | | |
| *Eriogonum umbellatum* | Sulphur flower | na-ka-donip[8] wadda-e-goh[8] | bah-hoe-zee[8] naka-donup[8] | |
| *Eriogonum* sp. | Buckwheat | ya-paw-taw-the[8] | | |
| *Erodium cicutarium* | Storksbill, Heronbill | wyuvimp[c] | | |
| *Euphorbia albomarginata* | Rattlesnake weed | tuvika'xaiv[c] tava'namu'obi[f] tuvipukaxi[f] tuvipaxghaiv[c] tuvipukaxi[f] | nah-com-boot-zip[8] | |
| *Euphorbia* sp. | Spurge | tuvipaxghaiv[c] tava'namu'obi[f] tuvika'xaiv[c] tuvipukaxi[f] tuvipukaxi[f] tah-wee-carib[f] tah-wee-carib (mp)[8] | nah-comb-boh-zip[8] nah-wah-go bud-zip[8] | |
| *Eurotia lanata* | White sage, Winter fat | boo-see-ah-wah-be[8] she-shu-bah[8] | shee-shub[8] tuh-veep[8] | |
| *Fallugia paradoxa* | Apache plume | muup[b] | | |
| *Forsellesia nevadensis* | Nevada greasebush | bas-un-dook nut-zoo[8] | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Frasera albomarginata* (see *Swertia albomarginata*) | White-margined swertia | | | | |
| *Fraxinus anomala* | Singleleaf ash | tuav[f] | tuav[f] | | |
| *Fraxinus* sp. | Ash | wam-pīp (k)[6]<br>wan-pimp´ (lv)[6] | tuav[f]<br>NF[b] | | |
| *Fritillaria atropurpurea* | Spotted missionbells, Leopard-lily | NF[f] | | | |
| *Garrya flavescens* | Ashy silktassel | ka'ninkwap[f] | | | |
| *Gaura coccinea* | Scarlet beeblossom | NF[f] | | | |
| *Gilia aggregata* (see *Ipomopsis aggregata*) | Scarlet gilia, Skyrocket | | | | |
| *Gilia congesta* (see *Ipomopsis congesta*) | Ballhead gilia | | | | |
| *Gilia inconspicua* (see *Ipomopsis inconspicua*) | Floccose gilia | | | | |
| *Glycyrrhiza lepidota* | Desert root, American licorice | NF[f] | | | |
| *Grayia spinosa* | Spiny hop sage | | | | NF[c] |
| *Grindelia squarrosa* | Gum plant | oha tonega[8] | sah-nah tonegan[8] | sah-nah cav-oh-no-ah[8]<br>sah-nah-goop-ah-rah[8]<br>woh-ah-gum[8] | |
| *Gutierrezia microcephala* | Matchweed, Small-head snakeweed | NF[e] | yainup[b]<br>waarump[b] | tavishepi[e] | |
| *Gutierrezia sarothrae* | Snakeweed, Matchweed | s'kump[d] | | see-gupe[8]<br>too-goot-se-ooh-goope[8]<br>toom-bee-see-bupe[8] | |
| *Haplopappus acaulis* | Stemless Goldenweed | pau'p[f] | apu'p[f] | | |
| *Haplopappus* sp. | Goldenweed | pau'p[f] | apu'p[f] | | |
| *Helianthus annuus* | Common sunflower | ah-kump´ (k)[4] | bah-kuk[8] | | |
| *Helianthus* sp. | Sunflower | ah-kump´ (k)[4] | akump[f] | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Heliotropium curassavicum* | Heliotrope | tube-manabe[8]<br>wa'ateyowimpi[f]<br>tu-ma-nabe[8] | i-yah-oh-ho[8]<br>i-yah-oh-ho[8]<br>tu-man-ah-be[8] | |
| *Hermidium alipes* | Four-o'clock | he-wov-bee[8]<br>hewovey[8] | | |
| *Heuchera rubescens* | Alum root | | toya-dimba-wah-rumb[8]<br>zee-guoy[8] | |
| *Hilaria rigida* | Big galleta | NF[f] | | |
| *Holodiscus dumomus* | Mountain spray | oh-na-nut-tiz-u-wabbe[8]<br>tah-see-vuh[8]<br>wah-poose-oh-guay[8] | tot-zip[8]<br>toya-huhnabbe[8] | |
| *Hymenoclea salsola* | White cheesebush, Burrobush | paiab[f] | | |
| *Ipomoea* sp. | Morning glory | NF[f] | | |
| *Ipomopsis aggregata* | Scarlet gilia, Skyrocket Skyrocket | anka'siti[f]<br>soh-nov tah-cun-oh-quah[8]<br>pah-wah-gopish[8]<br>para-give[8] | enga-mo-wanya[8]<br>enga-mutz-oh-y-newie[8]<br>tem-piute[8]<br>tin-ah-piute[8] | |
| *Ipomopsis congesta* | Ballhead gilia | quoy-hee nooma natiz-u-ah[8] | bas-oh-nup[8]<br>be-he-vah[8]<br>bee-ah-du-hu[8]<br>bee-hee-vah[8]<br>hoe-ni[8]<br>hoo-na[8]<br>hoo-ni[8]<br>sah-tone-zee[8]<br>sah-tone-zee-yung[8] | |
| *Ipomopsis inconspicua* | Floccose gilia | | | NF[c] |
| *Ipomopsis* sp. | Gilia | eck-quee-hu-binga[8]<br>sigh-yah-gava[8]<br>si-yah-gum[8]<br>too-bee man-a-ba[8]<br>too-bee too-ben-aba[8]<br>too-man-aba[8] | din-ah-ee-goom[8]<br>duh-na-ee-go[8]<br>duh-nah-eye-go[8]<br>duh-nah-eye-gum[8]<br>tin-ah-ee-go[8]<br>NF[c] | |
| *Iris missouriensis* | Wild iris | pah-see-toob-ah[8]<br>poo-gooey-rub[8]<br>poo-gooey-roop[8] | pah-sag-ee-dah[8]<br>pah-sag-ee-duh[8]<br>pah-sag-e-dump[8]<br>pah-sag-gee-gee[8]<br>sag-e-dump[8] | |
| *Iris* sp. | Iris | NF[f] | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Iva axillaris* | Poverty weed | quee-duh-tee-nava[8] | too-ha-babba[8] | du-du-zip[8]<br>too-du-zip[8] | |
| *Juncus mexicanus* | Wire grass | NF[d] | pa'sip[e] | sonophi[e] | NF[e] |
| *Juncus* sp. | Rush | paxwav[f] | pauv[b] | | |
| *Juniperus communis* | Common juniper | pawa'apu[f]<br>pah-wap-o-ruit[f]<br>dootsie pah-wap-pee[8] | pahwaporuit[f]<br>pah-wap-o-ruitz (mp)[8]<br>wap-pee[8] | mah-hav-wa[8] | |
| *Juniperus osteosperma* | Utah juniper, Cedar | wa'ap[c, d, e]<br>wa'apu[f]<br>wa'apu[f]<br>wa'apumpi[f] | wa'apumpi[f]<br>noo-ahntup[f]<br>noo-ahn-tup[f]<br>NF[d] | sahwavi[e]<br>suwavi[c] | hunuvu[e]<br>hunuvu[c] |
| *Juniperus scopulorum* | Rocky mountain red cedar | bah-sah-mabe[8] | bas-um-ah-be[8] | | |
| *Juniperus* sp. | Juniper, Cedar | wah-ahp´ (lv)[4]<br>che-emp´ (c)[4]<br>pah-wahp´ (k)[4]<br>wahp´[4]<br>wap (k)[6]<br>wa-op (lv)[6]<br>wa'ap[c, e]<br>pahwaporuit[f]<br>noo-ahntup[f]<br>wah-pee[8] | noo-ahn-tup[f]<br>wa'apu[f]<br>wa'apumpi[f]<br>pawa'apu[f]<br>wa'-pi[f]<br>wap[f]<br>wa'apu[f]<br>wa'apumpi[f]<br>pah-wap-o-ruit[f]<br>wah-puee[8] | sah-mah-be[8]<br>sam-ah-bee[8]<br>sahn-ah-poh[8]<br>sam-ah-bee[8]<br>sahm-wah´-be[4]<br>tsé-kev-ve[4]<br>sah´-nah-be[4] | NF[9] |
| *Krameria parvifolia* | Range ratany | nagavaronump[e] | NF[f] | | |
| *Krameria* sp. | Ratany | nah-kah-vah dah-tohnub (mp)[8, f] | | nah-gee too-nah-nib[8] | |
| *Lappula occidentalis* | Stickseed | NF[f] | | | |
| *Larrea divaricata* | Creosote bush | yah-temp (mp)[8] | | ya-temp[8] | |
| *Larrea tridentata* | Creosote bush | yatumpi[f]<br>yatump[f]<br>yatump[f, e] | yah-temp[f]<br>yahtemp[f]<br>ys'ya'mip[f] | yatumbi[e] | NF[e] |
| *Larrea tridentata* | Creosote bush | yatamp[f, e]<br>ya'tampi[f]<br>yatumb[b] | ya'ta'mpi[f]<br>yatampi[f] | | |
| *Lepidium fremontii* | Fremont's peppergrass | NF[f] | | | |
| *Lepidium lasiocarpum* | Desert pepperweed | NF[f] | | | |
| *Lepidium Montanum* | Mountain Pepperplant | NF[a] | | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Lewisia rediviva* | Bitter root | NF[f] | | gungah[c] | |
| *Lichen* | Lichen | NF[f] | timpapsuchicu[c] | | |
| *Linum lewisii* | Blue flax, Wild flax | booie-ah-nooma[8]<br>booie na-tizuah[8] | po-eena-tiz-uah[8]<br>NF[f] | boo-ee nut-tah-zoom[8]<br>boo-ee nut-zoo[8]<br>boo-eep nut-zoo[8]<br>poo-ena nut-tiz-zooh[8] | |
| *Lithospermum ruderale* | Gromwell, Stoneseed | | | nem-ish-aw[8]<br>nom-ish-aw[8] | |
| *Lomatium* sp. | Biscuitroot, Indianroot | NF[f] | | | |
| *Lupinus* spp. | Lupine | quee-duh-kwana[8] | | quee-duh-quen-ah[8] | |
| *Lycium andersonii* | Anderson wolfberry | u'upwivi[b]<br>u'up[d, f]<br>pa'up[d] | u'upi[f]<br>hu'up[e]<br>u'up[e] | huupi[e] | huupia[e] |
| *Lycium pallidum* | Pale wolfberry | u'upi[f] | pa'up[e] | huupi[e] | huupia[e] |
| *Lycium* sp. | Squawberry, Wolfberry | u'up[f]<br>pa'up[d, f]<br>hu'up[e]<br>u'upwivi[b]<br>u'up[b] | u'up[f]<br>u'upi[f]<br>pa'up[e, f]<br>u?upi[2] | | |
| *Lygodesmia spinosa* | Indian gum plant, Skeleton weed | i-goon-zon-um[8]<br>pee-ee-ah-gub[8]<br>see-ko-pe[8] | too-man-abbe[8]<br>too-wan-oo-pah[8] | | |
| *Mahonia repens* (see *Berberis repens*) | Creeping barberry | | | | |
| *Marrubium vulgare* | Common horehound | quee-ban-oob[8] | NF[a] | | |
| *Melilotus alba* | White sweet-clover | NF[2] | | | |
| *Melilotus indicus* | Yellow sweet-clover | NF[2] | | | |
| *Menodora spinescens* | Spiny Menodora | NF[e, f] | | huupi[e] | |
| *Menodora* sp. | Menodora | NF[f] | | | |
| *Mentha arvensis* | Field mint, American wild mint | NF[b] | | | |
| *Mentha* sp. | Mint | paxwa'nanimpi[f]<br>pah-quanna[8]<br>pah-quanna-ah[8]<br>pah-quanna-ah[8] | paxananumpi[f]<br>pah-quanna-av[8]<br>quee-boh-nay[8]<br>toh-see-ten-ava[8] | pah-guanna[8] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Mentzelia albicaulis* | Desert corsage, White-stem blazingstar | ku'u[f]<br>ku'u[c] | NF[e] | pacita[c]<br>kua[c, e] | kua[c]<br>ma'kua[c] |
| *Mentzelia laevicaulis* | Blazing star | | | | NF[9] |
| *Mentzelia oreophila* | Blazing star, Stickleaf | ku'u[f] | | | |
| *Mentzelia* sp. | Stickleaf, Desert corsage | ku'u[c, f] | | | |
| *Mimulus guttatus* | Monkey flower | | | unda-vitch-quanna[8]<br>pahn-zah-quatum[8] | |
| *Mirabilis multiflora* | Colorado four-o'clock | toxo'owatsiv[c] | tukwivi[b] | | |
| *Monardella odoratissima* | Western bee balm | see-boo moh-goon-up[8] | too-buzz-see-be[8] | guy-moh[8]<br>toya-abba-hobe[8] | |
| *Muhlenbergia asperfolia* | Scratchgrass | wichavi ma'ap[b] | | | |
| *Muhlenbergia* sp. | Muhly | nutavi[f] | | | |
| *Nasturtium officinale* | Watercress | pamavu[b]<br>paunaxunanar[b] | | | |
| *Nicotiana attenuata* | Coyote tobacco | koapi[f]<br>koap[f]<br>koaop[f]<br>tsaw-wap[f]<br>koap[c] | bah-moh[8]<br>poo-ee-bah-hoon[8]<br>poo-ee-bah-moh[8]<br>poo-wee-buh-hoon[8]<br>toh-quoh-quah[8] | new-wha bah-hoon[8]<br>poo-ee-pah[8]<br>pue-bax[8]<br>NF[c] | NF[c] |
| *Nicotiana trigonophylla* | Indian tobacco, Desert tobacco | koapi[f]<br>nungwukoap[f]<br>nungwukoap[f] | saxwaxwapi[c]<br>koap[b]<br>nungwukoap[b] | pombi[c] | |
| *Nicotiana* sp. | Tobacco, Wild tobacco | ko-op´[6]<br>sĕ-wah´-wahp (lv)[4]<br>ko-ahp´ (c)[4]<br>sow-wow´-wahp (k)[4]<br>sĕ-wah´-gwah'b[4]<br>koapi[f] | koap[f]<br>koaop[f]<br>saxwaxwapi[c]<br>nungwukoap[f]<br>nungwukoap[f]<br>tsaw-wap[f] | pah-hum´-be (ps)[4] | |
| *Oenothera pallida* | Pale evening-primrose | sixo[b] | | | |
| *Opuntia basilaris* | Beavertail cactus | manav[b]<br>yuavi[f]<br>yuavimp[f]<br>NF[e] | yuavimpu[f]<br>yuavimpi[f]<br>navump[f] | nugwia[c]<br>nah-vomb[8]<br>wo-gay-be[8] | |
| *Opuntia echinocarpa* | Golden cholla, Silver cholla | NF[e] | | wiatimbu[c] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Opuntia erinacea* | Mohave prickly pear, Grizzly bear cactus | yuavip[b]<br>manavi[e]<br>manav[d] | | |
| *Opuntia phaeacantha* | Engelmann prickly pear | manav[b] | | |
| *Opuntia polyacantha* | Central prickly pear | usivuwits[c] | NF[c] | |
| *Opuntia* spp. | Tuna, "Tule" cactus | manav[b]<br>yuavimpi[f]<br>yuavip[b]<br>usivwuits[f]<br>navump[f]<br>manavimpi[f]<br>manavi[f]<br>yuavimpu[f]<br>yuavimpu[f]<br>yuavimp[f]<br>yuavi[f]<br>manavimp[f] | | |
| *Orobanche cooperi* | Broomrape | tu'u[f] | | |
| *Orobanche corymbosa* | Broomrape, Wild asparagus | tu'u[c] | tu'tum[c]<br>tu'du[c] | |
| *Orobanche fasciculata* | Broomrape | tu'u[f] | | |
| *Orobanche* sp. | Broomrape, Indian asparagus | tu'u[f]<br>tue-hoo[8]<br>too-hoo[8]<br>NF[a] | doo[8]<br>too-ee[8] | |
| *Oryzopsis hymenoides* | Indian ricegrass | wa-i[7]<br>wa'iv[b]<br>wa'ir[e]<br>wa'ai[d,e,f] | wai[e] | wai[e]<br>NF[9] |
| *Osmorhiza occidentalis* | Sweetroot | pah-wah-cape[8]<br>pah-wah-capish[8]<br>pah-wah-gah-bish[8]<br>wadda-eye-gop[8]<br>worra-eye-gob[8] | bah-soh-wip[8]<br>bas-oh-gway[8]<br>bas-oh-wip[8] | |
| *Panicum* sp. | Panic grass | NF[f] | | |
| *Parthenocissus* sp. | Virginia creeper | patowanamauv[b] | | |
| *Pedicularis* sp. | Lousewort, Elephant head | | gooie-took-ie[8] | |
| *Penstemon eatonii* | Red penstemon | | toh-quoh-bag-um[8] | |
| *Penstemon floridus* | Panamint beard tongue | | | NF[c] |
| *Penstemon pahutensis* | Pahute beard tongue | NF[c] | | NF[c] |
| *Penstemon palmeri* | Palmer beardtongue | toxo'awatsip[f] | | |
| *Penstemon* sp. | Beardtongue | toxoawatsip[f]<br>too-buzz-sah-wop[8]<br>toh-quoh-wat-ziv[8]<br>toxo'awatsip[f]<br>toe-buzz-see-bee[8] | dim-bah-sego[8]<br>dim-bah-shego[8]<br>too-buzz-see-bee[8] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Peraphyllum ramosissimum* | Squawapple | suovi[e] | | |
| *Phacelia* sp. | Phacelia | NF[f] | | |
| *Phlox* sp. | Phlox | moh-goon-zee-eye-ah[8]<br>quee-duh-too-nabba[8]<br>NF[f]<br>toh-hah-tonegan[8]<br>tu-be-man-up[8] | din-ah-ee-go[8]<br>eye-go-dun-um[8]<br>so-go-div-oh-sah[8]<br>so-go-ron-zee-ah[8] | |
| *Phragmites australis* | Common reed, Giant common reed, Cane, Honey dew | po´-ru (k)[6]<br>pa-gump (lv)[6]<br>paxamp[b, f]<br>pa'xamp[e]<br>pah-gump[f] | NF[e] | pihavi[e] |
| *Phragmites communis* | Common reed, Honey dew | moh-goh-koh (mp)[8]<br>pahgump[f]<br>pa-hump'<br>wo-cau-cau-pu[8]<br>hohgohkoh[f] | | |
| *Phragmites* sp. | Reed | po´-ru (k)[6]<br>pa-gump (lv)[6]<br>pahgump[f]<br>hoh-goh-koh[f]<br>paxamp[b, f]<br>hohgohkoh[f] | | |
| *Physalis crassifolia* | Groundcherry | NF[f] | | |
| *Physalis* sp. | Groundcherry | NF[f] | | |
| *Physaria chambersii* | Chambers' twinpod | tah-rah-gee-noob[8]<br>NF[f] | tah-pah-day[8] | |
| *Pinus monophylla* | Singleleaf pinyon, Pinyon, Nut pine | tu-vap´ (lv)[4]<br>toov´ (c)[4]<br>tŭ-bah´-kah-bub (k)[4]<br>tuvap[c, e]<br>sahn-a-pah wah-pee[8]<br>too-bee[8]<br>tu-ba[8]<br>tu'uv[c]<br>tuva[f]<br>tuva[f]<br>tuvwap[e]<br>tu-bap-ee[8]<br>wah-pee[8] | wahpi[c, e]<br>tuvah[e]<br>wah-pee[8]<br>wahp´ (ps)[4]<br>wah´-pe[4]<br>sah´-nah-wah´-pe[4]<br>tipa[9] | tuvap[c]<br>tuva[c]<br>tiba[9] |
| *Pinus ponderosa* | Ponderosa pine | yu-vim´ (lv)[4]<br>ŏ-gump´ (k)[4]<br>yu-wim´p [4] | wung-gah-be[4]<br>wun-kó-be (ps)[4] | |
| *Pinus* sp. | Pinyon | tu-wop´ (k), (lv)[6]<br>tu-vap´ (lv)[4]<br>toov´ (c)[4]<br>tŭ-bah´-kah-bub (k)[4]<br>yu-vim´ (lv)[4]<br>ŏ-gump´ (k)[4]<br>yu-wim´p[4]<br>tuva[f]<br>tivah[f]<br>tuva[f]<br>tuvap[c, e]<br>tu'uv[c]<br>tuvwap[e] | wong-govie[8] | |
| *Pinus* sp. | Sugar pine | | wi-ah´-kah-tum (ps)[4] | |
| *Plantago major* | Common plantain | | wee-dee[8]<br>woo-dee[8] | |
| *Pluchea sericea* (see *Tessaria sericea*) | Arrow weed | | | |
| *Poa bigelovii* | Bluegrass | NF[f] | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Poa fendleriana* | Muttongrass, Bluegrass | uxwishuv[f] | | |
| *Populus fremontii* | Fremont cottonwood | sovip[b] | | |
| *Populus tremuloides* | Quaking aspen | | sing-gah-ve[8]<br>sung-up[8] | |
| *Populus trichocarpa* | Black cottonwood | | sing-gah-ve[8]<br>sing-gop[8]<br>so-ho-be[8]<br>su-nabbe[8]<br>toya-soo-nap[8] | |
| *Populus* sp. | Cottonwood | sho-wīp´ (k)[6]<br>so-vwīp (lv)[6]<br>sovip[b]<br>só-vip (k)[4]<br>sah´-vip (lv)[4]<br>sah´-vip´ (c)[4] | só-o-vimp´ (ps)[4]<br>sah´-hah-be[4]<br>sig´-ge[4] | |
| *Porophyllum gracile* | Odora | pa'kwitupip[f] | | |
| *Porophyllum* sp. | Odora | pa-guidobe (mp)[8] | | |
| *Portulaca* sp. | Purslane | topuene[f]<br>to-puene[f] | | |
| *Prosopis glandulosa* var. *torreyana* | Torrey mesquite | opimp[b]<br>'opimpu[f]<br>'op[f]<br>o'pimb[e] | o'phi[e] | |
| *Prosopis pubescens* | Screwbean | kwiyaru[f]<br>wi'ump[e]<br>kwierum[e]<br>'opimpu (mp)[f]<br>quee-et-umb[8] | | |
| *Prosopis* spp. | Mesquite | 'Op[f]<br>opimp[b]<br>'opimpu[f]<br>kwiyaru[f]<br>quee-et-umb[f]<br>quee-etumb[f] | | |
| *Prunus andersonii* | Desert peach | sahn-avvie[8]<br>sahn-nab-bee[8]<br>NF[f] | bahn-zon-ip[8] | |
| *Prunus fasciculata* | Desert almond | tonopi[f]<br>tonapi[f] | | |
| *Prunus virginiana* | Chokecherry | tonap[f]<br>doh-ish-ah-boo-e[8]<br>tonapi[f]<br>toh-ish-a-booe[8] | | |
| *Prunus* sp. | Chokecherry | tonap[f]<br>tonopi[f]<br>tonapi[f] | | |
| *Psathyrotes annua* | Turtle back | sebu-moh-goon-a-bu[8] | yoh-nip[8] | |
| *Psathyrotes ramosissima* | Turtle back | ka-sigh-yah-gave[8]<br>see-boh mo-goon-ub[8]<br>sebu-moh-goon-a-bu[8]<br>sigh-yah-gava[8] | quov-hee nut-zoo[8] | |
| *Psoralea* sp. | Scruf-pea | kwaovi[f] | | |
| *Psorothamnus fremontii* | Fremont indigo-bush | kaatamonup[f]<br>i-era-midja (mp)[8]<br>i-eramidjar | quee-um-be[8]<br>tuh-goo-buss-e-emp[8] | |
| *Psorothamnus polydenius* | Dotted dalea | | muipuh[e] | NF[e] |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Purshia glandulosa* | Buckbrush | u'nup[c] | | hunavi[c] | |
| *Purshia stansburiana* (=*Purshia mexicana* and *Cowania mexicana*) | Cliffrose | unapu[f]<br>uh-nop (mp)[8]<br>hunap[c] | uhnop[f]<br>NF[d] | hunavi[c]<br>be-ah-huh-nabbe[8]<br>huh-nabbe[8] | |
| *Purshia tridentata* | Bitterbrush, Buckbrush | unap[c]<br>NF[f] | huh-na-bee[8] | huh-nabbe[8]<br>linna-huh-nabbe[8] | |
| *Purshia sp.* | Cliffrose | hunap[c] | | hunavi[c] | |
| *Quercus gambelii* | Gambel oak, Scrub oak | tuav[c] | kwiav[c] | | tsiginoh[c]<br>tsigino[c]<br>we'a[c] |
| *Quercus* sp. | Oak | kwi´-uv (k)[6]<br>to-mum-pīv (lv)[6]<br>hēm´-pah (c)[4]<br>kwe´-av[4]<br>we-am´-pe (c)[4]<br>hēm´-pah (c)[4] | tomumpi[f]<br>tuav[c]<br>kwiav[c]<br>tomump[f]<br>tomumpi[f] | wé-ah (ps)[4] | wiya[9] |
| *Rhus aromatica* | Skunkbush, Sumac | i'is[c] | su'uv[c]<br>u'up[c] | | |
| *Rhus trilobata* (all varieties) | Squawbush | e-is´[4]<br>i'isi[f]<br>i-siv´ (lv)[6]<br>shen-pimp´ (lv)[6]<br>suuv[b]<br>shuuvi[b]<br>siuvimpu[f]<br>huupi[f]<br>see-a-wimp (mp)[8] | huiupi[f]<br>su'uvimpu[f]<br>i'isi[f]<br>suuvimp[f]<br>i'is[f]<br>see-a-wimp[f]<br>see-awimp[f]<br>su'uv[d, f]<br>su'uv[c] | | |
| *Rhus sp.* | Skunkbush, Lemonade-berry, Sumac, Poison oak | i'is[c] | su'uv[c] | nat´-soo ō'k[4] | |
| *Ribes aureum* | Golden currant | bo-gumbe[8]<br>poh-oh-bis[8] | NF[f] | bo-gumbe[8] | |
| *Ribes cereum* | White squaw currant | NF[1] | NF[c] | bogombi[c] | |
| *Ribes velutinum* | Desert gooseberry | NF[c] | | NF[c] | NF[c] |
| *Rorippa* sp. | Watercress | NF[d] | | | |
| *Rosa woodsii* | Woods wild rose | pikikurump[c] | see-avvie[8] | siwa'vit[c]<br>cimbi[c]<br>see-avvie[8]<br>see-am-bip[8] | NF[c] |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Rosa* sp. | Wild rose | tsi-am-pīv (lv)[6]<br>pikikurump[c] | su'impipi[f] | tsé-ab[1b 4] | |
| *Rubus* sp. | Raspberry | nagauvwunatumpipi[f] | | see-am-bip[8] | |
| *Rumex crispus* | Curly dock, Wild rhubarb | nambitu[c]<br>enga-pah-wee-ub[8] | pah-wee-ah[8]<br>pah-wee-ub[8] | be-ja-no-ko[8]<br>dim-woo-ee[8]<br>enga-pa-wee-ah[8]<br>new-wha no-ko[8] | |
| *Rumex* sp. | Rhubarb | nambitu[c]<br>tuha-kono-be[8] | ku'u[b]<br>tuha-kono-gip[8] | bah-rah-zip[8]<br>tuha-konobe[8] | si-yah-gum[8] |
| *Salazaria mexicana* | Bladder sage | NF[f] | | | |
| *Salix exigua* | Coyote willow | kanav[b, e]<br>kah-nav (mp)[8]<br>coo-see suh-ee-be[8] | soo-vee[8]<br>suh-ee-be[8]<br>suh-ee-wee[8] | kwishisuuvi[c]<br>coo-see see-bupe[8]<br>soo-vee[8]<br>suh-ee-be[8] | su'huva[c] |
| *Salix gooddingii* | Goodding willow | pakanav[b] | pawaxanav[c] | suuvi[c] | |
| *Salix* sp. | Willow | kahn-nahv (lv)[4]<br>sah'b (c)[4]<br>kah-nahv´ [4]<br>sah-kahv´ [4]<br>kan-av´ (k)[4]<br>ka-nav (lv)[6] | kanavi[f]<br>kah-nav[f]<br>kahnav[f]<br>pakanav[b]<br>pawaxanav[c] | se-oó-be (ps)[4]<br>sē-yu'b[4]<br>sē-yu-be[4]<br>soó-be[4] | su-hu-vee[c] |
| *Salsola iberica* | Russian thistle, Tumbleweed | manavip[b] | manav[c] | | |
| *Salvia columbariae* | Chia sage, California sage | sangwav[f]<br>saywav[f] | pasiits[c]<br>patsits[f] | pacita[c] | pacita[c] |
| *Salvia dorrii* | Purple sage, Indian tobacco | nungwukoap[c]<br>kwatamanum[c] | NF[c]<br>kanarukoap[b] | | |
| *Salvia* sp. | Sage | siguwiipi[f]<br>pasiits[c]<br>sangwav[f]<br>see-goo-we-up[f]<br>seegoowe-up[f]<br>see-goo-we-up (mp)[8]<br>nungwukoap[b] | nungwukoap[c]<br>kwatamanum[c]<br>saywav[f]<br>sigimwiap[f]<br>kung-nuh sah-wabbe[8]<br>too-bee she-gin-oop[8] | kahn-gwanna[8]<br>suh-goo-wee-up[8]<br>toya-abba-hobe[8]<br>toya-tim-ba-zip[8] | |
| *Sambucus* sp. | Elderberry | koo-booie-du-ney[8]<br>koon-oo-gip[8]<br>ko-nó-wip´ (c)[4] | who-booie[8]<br>hoo-boo[8]<br>koo-noo[ch4]<br>kunukwi[f]<br>kunuxwi[f] | duh-he-yemba[8]<br>du-yembe[8]<br>hoh-tiem[8] | |
| *Sarcobatus vermiculatus* | Greasewood | yah-tahmp´ (lv)[4]<br>tah-uh-be[8]<br>toh-no-be[8] | yah-tamp´[4]<br>tone-oh-bee[8]<br>NF[f] | to-nó-be (ps)[4] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Scirpus acutus* | Hard-stem bulrush | to'oivi[f] | | | |
| *Scirpus validus* | Soft stem bulrush, Tule | to'oivi[f] | | | |
| *Scirpus* sp. | Bullrush, Big round tule | he´- taw (lv)[4]<br>pow-ahv´ (k)[4] | to'oivi[f]<br>manav[d] | sī'n-vib'[4]<br>pah sīp[4]<br>bah-sī´'p[4] | |
| *Sclerocactus* sp. | Fishhook cactus, Pineapple cactus | manav[d] | NF[b] | | |
| *Selinocarpus diffusus* | Moonpod | NF[f] | | | |
| *Senecio* sp. | Groundsel | NF[f] | | | |
| *Sisymbrium altissimum* | Tumble mustard | wa'ai[c] | | | |
| *Smilacina stellata* | Solomon-seal | esha-tone-ub[8]<br>pee-havvie[8] | quoh-quavvie[8]<br>quoy-quavvie[8] | wah-toh-voh[8]<br>wom-boh-nomb[8] | |
| *Smilacina* sp. | False solomon-seal, Coyote berry | NF[f] | | | |
| *Solanum* sp. | Nightshade | ah-dye-ee na-tizuah[8] | | | |
| *Solidago* sp. | Goldenrod | NF[2] | | | |
| *Sonchus oleraceus* | Common sow-thistle | mamoiv[b] | mamuiv[b] | | |
| *Sphaeralcea ambigua* | Apricot globemallow, Desert globemallow | tupwiv[b, c] | NF[e] | | |
| *Sphaeralcea* sp. | Globemallow | tupwiv[c]<br>kupinav[f] | ku'pinav (mp)[f]<br>NF[b] | quoin-oh-combee[8]<br>quoya-no-comb[8]<br>see-quoy no-ko[8]<br>wee-dah-gom[8]<br>wee-doh-comb[8] | |
| *Sporobolus airoides* | Bunchgrass, Alkali sacton | NF[f] | | | |
| *Sporobolus* sp. | Dropseed | postushukunt[f]<br>pas-tu-shu-kunt[f] | kwakwai[f] | | |
| *Stanleya pinnata* | Prince's-plume, Indian spinach | tumar[b, f]<br>namvit[f]<br>tumar[c, e]<br>tumaru[f]<br>who-goo-buh[8] | nambitu[f]<br>tumaru[f]<br>nambitu[f]<br>tumaru[f]<br>whoo-goop[8] | tuhuara[e]<br>tu'mara[c]<br>woy-boh-numb[8] | yuhuara[e]<br>NF[c] |
| *Stephanomeria exigua* | Wire lettuce | NF[b] | | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| *Stephanomeria* sp. *spinosa* | Spiny wire lettuce, Gum bush | NF[e] | NF[c] | |
| *Stephanomeria tenuifolia* | Slender wirelettuce | tuwishanakup[b] NF[8] | NF[8] | |
| *Stipa comata* | Needle-and-th read grass | NF[a] | | |
| *Stipa hymenoides* (see *Oryzopsis hymenoides*) | Indian ricegrass | wa'ai[c] | wai[c] | pacita[c] |
| *Stipa speciosa* | Desert needlegrass | NF[e] | | NF[9] |
| *Stipa* sp. | Indian ricegrass | wa'aiv[c] | | |
| *Streptanthella longirostris* | Wild mustard, Long-beak fiddle-mustard | NF[c, f] | | |
| *Streptanthus cordatus* | Heartleaf twistflower, Wild mustard | NF[c, f] | | |
| *Suaeda torreyana* | Seepweed | NF[e] ah-rumb (mp)[8] | attem[8] | |
| *Suaeda* sp. | Seepweed | ahrr[f] sah-ap-weep[f]<br>aah-ap-weep[f] NF (lv)(p)[f] | | |
| *Swertia albomarginata* | White-margined swertia | NF[8] | | |
| *Swertia* sp. | Swertia | kwiu[f] | coo-see div-oh-savva[8] | |
| *Symphoricarpos longiflorus* | Long-flower snowberry | NF[c, f] sahn-ah-vee[8] | | |
| *Tamarix* sp. | Tamarisk | pantumaavu[b] | | |
| *Tessaria sericea* | Arrow weed | sah-wape (mp)[8] NF[b, c, f] | | |
| *Tetradymia canescens* | Gray horsebrush | | nah-ga-ha-boh-be[8]<br>pah-vah-bah-hoe-be[8]<br>tah-beese-ee-goop[8] | |
| *Tetradymia* sp. | Horsebrush | coo-see see-bupe[8] too-hah-see-goop-ee[8]<br>see-goop-e[8] | coo-see see-bup[8]<br>coo-see see-bup-e[8] | |
| *Thalictrum fendleri* | Meadow rue | | boss-oo-guay[8] | |
| *Thamnosma montana* | Turpentine bush | NF[f, c] kaiva sixwana[b] | mo-gun-du[8]<br>moh-goon-du-oop[8] | |
| *Thelypodium integrifolium* | Wild cabbage | nambitu[e] NF[f] | | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Townsendia scapigera* | Eaton's townsendia | NF[f] | | | |
| *Townsendia* sp. | Townsendia | NF[f] | | | |
| *Typha domingensis* | Cattail, Southern cattail | NF[e,f] | | toyh[e] | NF[e] |
| *Typha latifolia* | Cattail, Broad-leaf cattail | taw-e´-vah (lv)[4]<br>to-oiv (k)[4]<br>tø'iv[b] | pantusahwav[b]<br>NF[e] | toyh[e]<br>taw´-e[4]<br>toí[4] | NF[e] |
| *Typha* sp. | Cattail | taw-e´-vah (lv)[4]<br>to-oiv (k)[4]<br>ta-oiv[7] | tonovi[f]<br>tonoz[f] | | |
| *Urtica* sp. | Nettle | quee-bah-noop[8] | quee-quawn-oop[8] | by-wee-ah[8] | |
| *Valeriana* sp. | Valerian, Tobacco root | NF[f] | | | |
| *Veronica anagallis-aquatica* | Speedwell | NF[e] | | | NF[e] |
| *Viguiera multiflora* | Showy goldeneye | NF[f] | | | |
| *Vitis arizonica* | Canyon grape, Wild grape | i'av[e]<br>kuripsup[e] | NF[b] | muvasi[e] | |
| *Vitis* spp. | Grape | we'ump[f] | | | |
| *Wyethia* sp. | Mules' ear | taxuichaxantiip[f]<br>tixu'si taxanti[f]<br>taxu'itcaxantip[f] | tikoitcixantipi[f]<br>tixu'si taxantip[f] | | |
| *Yucca baccata* | Banana yucca, Blue yucca | uusiv[b, c]<br>wiisiv[b]<br>tachumpi[f]<br>tachumpi[f] | uusi[f]<br>tcimpi[f]<br>o-u-se[f]<br>u'wivi[e] | NF[e] | |
| *Yucca brevifolia* | Joshua tree | tachumpi[f]<br>NF[e] | | umpu[e] | |
| *Yucca kanabensis* | Kanab yucca | NF[a] | | | |
| *Yucca schidigera* | Mojave yucca, Spanish bayonet | tachump[e]<br>u'vimp[e]<br>tachumpi[f] | uusivi[f]<br>uusiv[f] | NF[e] | |
| *Yucca* sp. | Yucca | cho-ram´-pik (k)[6]<br>sam-ah´-vip (k)[4]<br>tsam-a-vip[7]<br>tcimpi[f]<br>u'wivi[e]<br>wiisiv[b]<br>tachumpi[f] | uusi[f]<br>o-u-se[f]<br>uusivi[f]<br>tachumpi[f]<br>uusiv[f]<br>uus[f] | | |
| *Zigadenus paniculatus* | Foothill death camas | koggie-a-den-up[8]<br>see-goh-oh[8] | tah-beese-e-goh[8] | tah-bah-she-go[8]<br>tah-vah-see-go[8] | |

## Three Hundred and Sixty-Four American Indian Traditional-use Plants Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Zigadenus* sp. | Meadow death camas | koggie-a-den-up[8] | see-go oh-buh[8] | | |
| Gramineae (grass family) | Grass | pa-wah´ (lv)[4]<br>hoo-wēv´ (c)[4]<br>u-gwīv´ (k) (lv)[6] | o-gweeb´ (k)[4]<br>u-gu´-siv (k)[6]<br>oo-kwiv´[4] | Sah´-nip[4]<br>Só-nip[4]<br>Só-nīp[4]<br>Pah´-mah-hap[4] | |

[1] Work done by Powell between 1867-1880: (Fowler and Matley, 1979)
[2] Work done by Euler between 1956-1966: (Euler, 1966)
[3] Work done by Palmer before 1946: (Palmer, 1978)
[4] Work done by Merriam between 1902-1935: (Merriam, 1979)
[5] Work done by Sapir in 1910: (Sapir, 1910)
[6] Work done by Powell in 1873: (Fowler and Fowler, 1971)
[7] Work done by Presnall in 1936: (Presnall, 1936)
[8] Work done by Train between 1935-1941: (Train, 1957)
[9] Handbook of North American Indians-Great Basin (Vol. 11, "Owens Valley Paiute") D'Azevedo, 1986

[a] Stoffle et al., 1996
[b] Stoffle et al., 1994d
[c] Stoffle et al., 1994b
[d] Stoffle et al., 1989b
[e] Stoffle et al., 1990
[f] Stoffle and Dobyns, 1982
Stoffle and Dobyns, 1983
Stoffle et al., 1983
[g] Names by CGTO members; April 1996 NTS-EIS meeting.

NF = Not found; mentioned in text but no Indian name given.
(c) = Chemehuevi
(k) = Kaibab
(lv) = Las Vegas
(mp) = Moapa Paiute
(p) = Pahrump Paiute
(ps) = Panamint Shoshone

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# APPENDIX D

## AMERICAN INDIAN TRADITIONAL-USE ANIMALS PRESENT IN THE SOUTHERN NEVADA AREA

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## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| **Mammals** | | | | | |
| Family Antilocapridae | | | | | |
| *Antilocapra americana* | Pronghorn Antelope | Won'-sits (k)[6]<br>Wants [5] (lv)[6]<br>Wahn-ze[4]<br>Wongs[4] | Wahntz (k)[4]<br>Waknch[4]<br>Waantsi[f] | Wan-zee[g] | |
| Family Bovidae | | | | | |
| *Ovis canadensis* | Desert Bighorn Sheep | Na´-guts (k)[6]<br>Na´-k[w] (lv)[6]<br>Naaxa[5]<br>Nahk (k)[4] | Nah[ch4]<br>Nahk[4]<br>Nah-gah[4]<br>Naax[b] | | |
| *Ovis* sp. | Bighorn Sheep | Nah´-gah (lv)[4] | Nah[ch4] (c)[4]<br>Nahk´ (k)[4] | Wah´-soo-be (ps)[4]<br>Wah´-sūp[4]<br>Wah´-soo-pe[4]<br>Wahs-pe[4] | |
| Family Canidae | | | | | |
| *Canis latrans* | Coyote | Yo-go-wo´-tsi (k)[6]<br>Yoxovwits[5]<br>Yoxovutsis<br>Sunangwavis<br>Turasunavs<br>Turasinavs<br>Tā´-rā-shin´-nav (lv)[4] | Sin-nav[4]<br>Shin-nah-ab[4]<br>Turasuna'avb<br>Turahsunavc<br>Sin-nav´ (c)[4]<br>Yo-go´-bits (k)[4] | E-shah-wi´-pah (ps)[4]<br>Ē-jap´-pah[4]<br>E´-jah[4]<br>E´-chah[4]<br>It´-za´[6] | |
| *Canis* sp. | Coyote | tu-er-shin-avi[7] | | Duhvoe-ee-jah[g] | Ee-sha[g] |
| *Vulpes maerotis* | Kit fox | | | Kuida moss-suguee[g] | |
| *Vulpes* sp. | Fox | Yú-īp (lv)[4] | Yó-putch (lv)[4]<br>Yu-pats (c)[4] | Ye-putch-ah (ps)[4]<br>Yu-pitch´-e[4]<br>Wah´-ne[4] | |
| -- | Fox | Sah-vi´-puts (k)[4]<br>Hú-pats (k)[6]<br>Un-si´-ats (k)[6]<br>Hunt-si´ (lv)[6]<br>Tavangwaimpitsi[5]<br>Hon-zā´ (lv)[4] | Sin-nants[4]<br>Tah-vahn-set[4]<br>Hon-za[4]<br>Onsi'its[b]<br>Onsi'ikarum[b]<br>Hon-ze (c)[4] | Wo´-tse-ah (ps)[4]<br>Wah´-ne[4]<br>Wah-je´-ah[4]<br>Wo´-tse-ah[4]<br>Wa-ni[6]<br>Wo-tsi-a[6] (small) | |
| Family Cervidae | | | | | |
| *Odocoileus hemionus* | Mule Deer | Tu-we-ah[4]<br>Yu-oo-e[4]<br>Too-hoo´-e (lv)[4] | Too-hoo-e[4]<br>Tuxia[b]<br>Tŭ-hē´[4]<br>Tŭ-ē´ (k)[4] | Dŭ-yah (ps)[4]<br>Dū´-he[4]<br>Tŭ-hē´-yah[4]<br>Toó-ho´-yah[4] | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| Family Cricetidae | | | | | |
| *Odocoileus* sp. | Deer | Ti´-ats (k)[6]<br>Tu-i (lv)[6]<br>Tuxia[5]<br>Tuuyi[f] | Tuhi[c]<br>Tuhuya[c]<br>Tĕ-he´ (lv)[4]<br>NF[b] | Duhayet[c]<br>Ti-hi[6] | Tahenah[c]<br>Tuh'ena[c]<br>Tu-he-nah[g] |
| *Neotoma* sp. | Wood Rat | Kats (k)[6, 4]<br>Kaatsi[5]<br>Kaht´ (k)[4] | Kahts[4]<br>Kaats[b]<br>Kahts´ (lv), (c)[4] | Kow´-wah (ps)[4]<br>Kah´[4] | |
| -- | Wood Rat | | | Gah"[4] | |
| -- | Rat | Kāts (lv)[6] | | | |
| *Peromyscus* sp. | Mouse | Poo-e´-chet (k)[4]<br>Poo-e-tsets[4]<br>Poo-in´-chets (lv)[4] | Poo-e-chet[4]<br>Poo-in-chets[4]<br>Poo-in´-jets (c)[4] | Poo´-ī (ps)[4]<br>Bo´-ni[4]<br>Po´-ni[4]<br>Poo´-nah[4] | |
| -- | Mouse | Pu'ichats[5, b]<br>Pŏm poo´-e-chet (k)[4] | Moi (s)[4] | Po-an´-chah (ps)[4] | Poong-way-szhee[g] |
| Family Equidae | | | | | |
| *Equus* sp. | Horse | Kah-wi´-yu (ps)[4]<br>Wah-af-ar (c)[4] | Kah-vah´[4] | Poo'nk[4]<br>Bun´-go[4] | |
| Family Erethizontidae | | | | | |
| *Erethizon dorsatum* | Porcupine | Yungumputsi[5]<br>Ye-num-puts (k)[4]<br>Ye-hum-puts[4] | Ye-num-puts[4]<br>Yu[ch 4]<br>NF[b] | | |
| *Erethizon* sp. | Porcupine | Yú[ch] (lv)[4] | Yŭńg (c)[4]<br>Ye-num´-puts (k)[4] | Yŭ´-hŭ (ps)[4]<br>Yen"[4]<br>Yŭ´-hŭ[4]<br>Yo´-hah[4]<br>Tsa´-gwit[6] | |
| Family Felidae | | | | | |
| *Felis concolor* | Mountain Lion | Tu-ma´-mu-ints (lv)[6]<br>Tukumumutsi[5]<br>Piaruku[5]<br>'Kummo-muts (k)[4]<br>Too-koó-mo-munch (lv)[4] | Too-koo-puts[4]<br>To-ko-mo-muts[4]<br>Too-koo-mo-munch[4]<br>Piaruk[b]<br>Tŏ-koo´-muts (c)[4] | Too-koo´-muts (ps)[4]<br>Toi-yă-too´-koo[4]<br>To-ko-bitch[4]<br>Mi´-yum-be[4]<br>Kong´-gwi-tu-nu[6] | Too-ku-vitchs[g] |
| *Lynx rufus* | Bobcat, Wildcat | Tukuputs[b] | Tukuvits[c] | NF[c] | |
| *Lynx* sp. | Bobcat, Wildcat | To-ko´-puts (k)[6]<br>Tōk (lv)[6]<br>Tukutsi[5]<br>Tukuputs[5]<br>NF[b] | Took[4]<br>Took[4]<br>Mo-sahts[4]<br>Tukuvits[c]<br>Too-koo´-puts (k)[4] | Too´-koo´-vitch (ps)[4]<br>Doo´-ko-vitch[4]<br>Too´-ko-vitch[4]<br>Too´-ko-bitch[4]<br>To´-ko-pik[6] | Too-ku-vitchs[g] |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| Family Geomyidae | | | | | |
| *Lynx* sp. | Bobcat, Wildcat | | | NF[c] | |
| *Thomomys* sp. | Pocket Gopher | Muyumpitsi[5]<br>Mŭ´-e (c)[4] | Mwe-em-puts[4]<br>Mŭ-e (lv)[4]<br>Me-im´-put (k)[4] | Yu-ab´-bitch (ps)[4]<br>Yĕ´-hah-vitch[4]<br>Yĕ´-hah´-vitch[4]<br>Ye-hah´-vitch-e[4] | |
| -- | Gopher | NF[f] | | | |
| Family Heteromyidae | | | | | |
| *Dipodomys* sp. | Kangaroo Rat | Pi-yu-ah[4]<br>Pi´-ah (c)[4]<br>Tă-wā´-tet (k)[4]<br>Pi´ (lv)[4] | Tah-we-tat[4]<br>Pi-im´-buts[4]<br>tom-we-a-tats[7] | Pi´-yu (ps)[4]<br>Bi´-e[4]<br>Pi´-yu[4] | |
| *Perognathus* sp. | Pocket Mouse | Pi-im-buts (k)[4] | | | |
| Family Leporidae | | | | | |
| *Lepus californicus* | Black-tailed Jackrabbit | Ka-mu (k)[6]<br>Kam (k), (lv)[6]<br>Kaamu[5] | Kahm (k)[4]<br>Kaam[b]<br>Kamuntsi[f] | | |
| *Lepus* sp. | Rabbit | Tă-voots´ (lv)[4]<br>Tah-voots´ (c)[4]<br>Tah-wuts´ (k)[4] | Kahm´ (lv), (c), (k)[4] | Kah´-moo (ps)[4]<br>Tă´-boo´-tse (ps)[4]<br>Tah´-bo[4]<br>Tah´-bot-se[4]<br>Gah´-mo[4]<br>Kah´-mo[4]<br>Kah´-mah[4]<br>Be´-ah gah´-mo[4]<br>Be´-ah qah´-mo[4]<br>Ta-vut´-si[6]<br>Tsi-gut´-si[6] | |
| *Lepus* sp. | Rabbit | | | Ka-mut´-si[6]<br>To-ha´-kum[6] | |
| -- | Jackrabbit | Kamb[c] | | Kamusi[c]<br>Tavusi[c] | Kuma[c]<br>Ka-mua[g] |
| -- | Rabbit | Tsok-um (k)[6]<br>Kamb[c] | NF[b] | | |
| *Sylvilagus audubonii* | Desert Cottontail | Ta-vwōts´ (k)[6]<br>Ta-vōts (lv)[6]<br>Tavutsi[5]<br>Tah-wuts (k)[4]<br>Tah-boots[4] | Tah-vuts[4]<br>Ta-voots[4]<br>Tavuts[b]<br>Tavuuts[f] | | |
| *Sylvilagus* sp. | Cottontail | Taviti[c] | Tavuuts[c] | Dah-voo[g] | Taputsi[c]<br>Ta-votsi[g] |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| Family Mustelidae | | | | | |
| *Spilogale putorius* | Western Spotted Skunk | Kah'bo-ne (k)[4]<br>Kah Bo-na[4] | Kah-bo-na[4] | | |
| *Spilogale* sp. | Skunk | Kah´-bo-nā (lv)[4]<br>Kah´bo-nĕ (k)[4] | Kah´-bo-ne (c)[4] | Yu-hah[4] | |
| -- | Skunk | Pu´-ni (k)[6]<br>Poni'a[5]<br>Po-nĕ´ (k)[4]<br>Po-ne-ets (lv)[4] | Po-na[4]<br>Po-ne-ets[4]<br>Poni[b]<br>Pŏ-ne´ (c)[4] | Po-nē´-ĕtś (ps)[4]<br>Bō'n-he-atz[4]<br>Baw´-ne-yăts[4]<br>Po-hoi´-ats[4]<br>Po´-nint[6]<br>bo-ho-yetz[g] | |
| *Taxidea taxus* | Badger | Hūn (lv)[6]<br>~~Unamputsi~~[5]<br>Un-nam-but (k)[4] | Hoon[4]<br>To-chi-e[4]<br>~~Unamputs~~[b] | | |
| *Taxidea* sp. | Badger | Hoon´ (lv), (c)[4] | Un-nam´-but (k)[4] | Ho´-nah[4]<br>Hoo´-nah[4]<br>Hoo-nah[4]<br>Ho´-nan[6]<br>Hoo´-nah (ps)[4] | |
| -- | Weasel | Sŭ-sŭg (lv)[4] | Pah-rook´ (c)[4]<br>Pah-ve´-chit (k)[4] | Bah´-bitch-ē't[4]<br>Bah´-tsoo-goo[4]<br>Pah´-moo-kah´[4]<br>Soo´-soo-gah (ps)[4] | |
| Family Procyonidae | | | | | |
| *Bassariscus astutus* | Ringtail | Kah-goots[4]<br>te-av-ats[7] | | | |
| *Bassariscus* sp. | Ringtail | Hŏ-run´-tah-vahts (c)[4] | | Kah´-wo-dze´-ah (ps)[4] | |
| Family Sciuridae | | | | | |
| *Ammospermophilus leucurus* | White-tailed Antelope Squirrel | Tava'atsi[5]<br>Tav-vat (k)[4] | Ta-bats[4]<br>Ta-vats[4] | | |
| *Eutamias* sp. | Chipmunk | Ta-vwōts (k)[6]<br>O'gun´-to-ats (k)[6]<br>O´-i-chots (lv)[6]<br>Oxontava'atsi[5]<br>Tava'atsi[5]<br>Ho-ă´-tsits (lv)[4] | Tavarungkwits[5]<br>Oi-chits (k)[4]<br>O-gon tav-vah-ats[4]<br>Ho-a-tsits[4]<br>Tavarungkwits[b]<br>Ko-e´-tsets (c)[4]<br>a-oits-its[7] | Woi-che (ps)[4]<br>Woi´[4]<br>Wah´-oi[4]<br>Woh´-oi[4]<br>Wo-i´-tsi[6] | |
| *Citellus* sp. | Ground Squirrel | O'itsitsi[5]<br>Aw-oi-chits (k)[4] | Ki-vah skoots[4]<br>Skwe-ets[4] | Ing'wa[c]<br>Zip-pe (field dwelling)[g]<br>Guhm-be (white belly, lives in desert)[g] | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| – | Squirrel | Skāts (k)[6]<br>O-'gun´-to-ats (k)[6]<br>Si-kuts´ (lv)[6]<br>Sé-koots (lv)[4]<br>Su-koots´ (c)[4]<br>Skoot´ (k)[4]<br>Skwe´-ēts (lv)[4]<br>Sŭ-pe´ (c)[4]<br>Aw-oi´-chits (k)[4]<br>Ye-we´-set (k)[4]<br>u-wish-its[7] | Skuts[5, b]<br>Sikuts[5, b]<br>Skuuts[c]<br>Un-tsup´ (k)[4]<br>Tah-vats´ (lv)[4]<br>Tah-vahts (c)[4]<br>Tav-vat´ (k)[4]<br>Ho-uń-tă-vats (c)[4]<br>Ah-wun´ tah-vat (k)[4]<br>NF[f] | Hoo´-kŏn-tah-bi´ (ps)[4]<br>Tă-vah´-che (ps)[4]<br>Kŏng´-ah (ps)[4]<br>O-wun´-dah-vi (ps)[4]<br>Eng´-wah (ps)[4]<br>Tseep´[4]<br>Che´-gah[4]<br>Kŭmp[4]<br>Wung-gwah´-rah-bi[4]<br>Koom´-pi[4]<br>Che´-gă[4]<br>Woh´-i[4]<br>Dah´-wah-ni[4]<br>Tah´-bi-i[4]<br>Tsi´-pish[6]<br>Tav´-a[6]<br>Ko´-gwi[6] | |
| Family Vespertilionidae | | | | | |
| – | Bat | Pacha'ats[5]<br>Pat-sats[4]<br>Paht-sats (c)[4]<br>Pă´-tsats (k)[4] | Pah-chats[4]<br>Pats-ats (lv)[4]<br>Pacha'ats[b] | Ho´-no-vitch[4]<br>Ho-no-bitch (ps)[4]<br>Ho´-e-nah vitch´-e[4] | |
| **Reptiles** | | | | | |
| Family Iguanidae | Iguanids | | | | |
| *Crotaphytus collaris* | Collared Lizard | Kan´-ne moi-kar-rat´ (k)[4]<br>pomp-ots-ats[7] | Tom-po´-tsat´ (lv)[4]<br>Tum-bo-tats (ps)[4]<br>Towm-po´-tsuts (c)[4] | Tum´-bo-tats´ (ps)[4]<br>Po´-go-che[4]<br>Tem´-im-boi[4] | |
| *Crotaphytus collaris* | Collard Lizard | | | Doo-kor´-a-ke[4] | |
| *Gambelia wislizenia* | Leopard Lizard | Chah-a-mi-ahv (k)[4]<br>Too-ar-rah[4]<br>Sah-we´-vah (c)[4] | Neu-mah-zing-ahts[4]<br>Si-vah (lv)[4] | Sow´-we-vah´[4]<br>Sah´-we-vah[4] | |
| *Sauromalus obesus* | Chuckwalla | Saxwaru[5]<br>Chah-kwar-rah (k)[4]<br>Tsah-wahr´ (lv)[4]<br>Sow-wahr´ (c)[4] | Sahk-war-rah[4]<br>Tsah wahr[4]<br>sa-wha-rha[7]<br>Chah-kwar´-rah (k)[4] | Sow-war´-rah (ps)[4]<br>Sah-gwar´-rah[4] | |
| *Sceloporus magister* | Desert Spiny Lizard | Tsahng-ahv (k)[4]<br>Chahng-ahnts[4]<br>tsang-ā[7] | Ching-ki-ahng-ah[4]<br>Tsang-ants[4] | | |
| *Sceloporus* sp. | Lizard | Changa´[5]<br>Tsahng-ahv (k)[4]<br>Chahng-ahnts[4] | Ching-ki-ahng-ah[4]<br>Tsang-ants[4]<br>Changa' changats[f] | | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| -- | Lizard | Su-gu´-pits (k)[6]<br>Mu-gwi´ (lv)[6]<br>Pompotsatsi[5]<br>Tsang-ants (lv)[4]<br>Tsang-ah´ (c)[4] | Moxwia[5]<br>Suxuputsi[5]<br>Mow´-wav´-ve (c)[4]<br>Tsahng-ahv´[4] | Tim´-puts[6]<br>Pa´-vo-go-nai[6]<br>Poh-gwua-gee[g]<br>Po-goi´-che (ps)[4]<br>Ah-wah´-poi (ps)[4]<br>Ki´-e-too-ar (ps)[4]<br>Tŭ´-moi[4]<br>Dĕ´-hoi[4]<br>Dem´-mon-zah[4] | |
| Family Colubridae | Colubrids | | | | |
| *Lampropeltus* | Common Kingsnake | Sing-ump (k)[4]<br>Sung[4] | Shing-aht[4]<br>Nun-too-nav[4] | | |
| *Pituophis melanoleucus* | Gopher Snake, Pine Snake | Oxomputsi[5]<br>Ko-hum-buts (k)[4]<br>Kaw´ (c)[4] | Kaw-kum-puts[4]<br>Oxoputs[b]<br>Ko-hum´-buts[4] | Ko´-go (ps)[4]<br>Pas´-să-wah´-kah[4] | |
| -- | Snake | Ta-na´-kuts (lv)[6]<br>Pah´-we-ĕts (lv)[4]<br>Nun´-too-nav´ (lv)[4]<br>Nin-din´-av (lv)[4]<br>Pah-we´-ets (c)[4]<br>Sing´-ump (k)[4] | Kwi´-uts (lv)[6]<br>Sĕu-ung´-ah (c)[4]<br>Ah-wah-rum pă-at (c)[4]<br>Pah´-ro ahv´ (k)[4] | Pah-soo´-go (ps)[4]<br>Ki´-ar-răr´-rah (ps)[4]<br>Nă-boo´-ah-gwah-tsoo´ (ps)[4]<br>Paś-se-neu[4]<br>Gawk´[4]<br>Pah´-rah go-ah[4]<br>Ki´-yă gar´-rah[4]<br>Wun´-gah-rah[4] | Tah-go-ah[g] |
| Family Viperidae | Pit Vipers | | | | |
| *Crotalus* sp. | Rattlesnake | To-go´-avw (k)[6]<br>O-lo´-ga (lv)[6]<br>Toxoavi[5]<br>Tanakitsi[5]<br>To´-go-av´-ve (lv)[4] | To-go-ahb (k)[4]<br>To-ko-ahv[4]<br>To-go-av-ve[4]<br>Kwe-ets (c)[4]<br>To-go-ahb´ (k)[4] | To-to´-a[6]<br>Do-gowah[g]<br>To-go´-ah (ps)[4]<br>To´-gwah[4]<br>To-qo´-ah[4]<br>To´-go-ah[4] | |
| **Birds** | | | | | |
| -- | Bird | Wi´-chits (k), (lv)[6]<br>Witsi´tsi[5] | Witsi'tsi[b] | Ko´-cho[6]<br>who-choo[g] | Chee-pah[g] |
| Family Accipitridae | Hawks, Kites, Eagles | | | | |
| *Accipiter cooperii* | Cooper's Hawk | Wit se-mor-rat (k)[4]<br>Kwe-sahp[4] | Pah-rahm-puts[4]<br>Kwe-sahp[4] | | |
| *Accipiter* sp. | Hawk, goshawk | Kwen-noonts-a-mord (k)[4] | Ku-shav-i[7] | | |
| *Aquila chrysaetos* | Golden Eagle | Kwahn-ants (k)[4]<br>Mung[4] | Kwanants[b] | | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Buteo jamaicensis* | Red-tailed Hawk | Kwī-nat´-sits (k)[6]<br>Kwanantsits[5, c]<br>Kwah-nah-tsits (k)[4]<br>Se-kan-na kwahn-ant[4]<br>Qua-nats-its[7] | Ta-ah kwah-nahts[4]<br>Kwen-nan-zits[4]<br>Kusav[b]<br>Quinnah[c] | NF[c] | |
| *Circus* sp. | Hawk, Harrier | Oong-aur-ats[7] | | | |
| *Haliaeetus leucocephalus* | Bald Eagle | Si-kwah (k)[4]<br>Piakwanants[b] | Piasakwanants[b] | | |
| -- | Eagle | Kwi´-nants (k)[6]<br>Mung-i´-puts (lv)[6] | Kwanants[5]<br>Kwanantsi[f] | Kwi´-na[6]<br>Kivi-na[6]<br>Bia' quinah[g] | Quing-ah[g] |
| -- | Hawk | | | G'in-nee[g]<br>Ing´-a-kwi-na[6]<br>Sah-na qui-na[g]<br>Ki´-ni[6] | |
| Family Alaudidae | Larks | | | | |
| *Eremophila alpestris* | Horned Lark | Turanwintsi´tsi[5]<br>Nuva witsi´ts[5]<br>Ter-rah-we-che (k)[4] | Te-we-wit-se[4]<br>Te-rah we-cha-its[4]<br>Ne-vow-we-tsits[4] | | |
| Family Alcedinidae | Kingfishers | | | | |
| *Ceryle* sp. | Kingfisher | Wun-na-tus (k)[4] | Wun-nah-taht[4] | | |
| Family Anatidae | Swans, Geese, Ducks | | | | |
| *Anas clypeata* | Shoveler | Pa choog (k)[4] | | | |
| *Anas platyrhynchos* | Mallard Duck | Oo-chuxa[5]<br>Pe-at choog (k)[4]<br>Choo[ch4] | Choog[4]<br>Paruv[b]<br>Uuchuxa[b] | | |
| *Anas* sp. | Duck | Chuxa[5] | Chux[b] | Pu´-yan[6]<br>Buhn'yeeh[g] | NF[c]<br>Puh-yuh-ah[g] |
| *Branta canadensis* | Canada Goose | Chakoaru[6]<br>Ah-vin-kay-raht (k)[4] | To-o-pah[4]<br>Koo-res-sen[4] | | |
| -- | Goose | | | Nu´-gud[6] | |
| *Oxyura jamaicensis* | Ruddy Duck | Pi-ah-kwits (k)[4] | | | |
| Family Ardeidae | Herons, Egrets, Bitterns | | | | |
| *Ardea herodias* | Great Blue Heron | Pah-too-koo ko-vah kahnt[4] | Pah-koor-kuv[4]<br>Nah-kwah[4] | Wus´-sa[6] | |
| -- | Bittern | Tah-wah woo-ne-ker-rit (k)[4] | Choo-goob (n)[4] | | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| Family Caprimulgidae | Nightjars | | | | |
| *Chordeiles acutipennis* | Lesser Nighthawk | Tuwawitsi'ts[b] | | | |
| *Chordeiles* sp. | Nighthawk | Mono´opangwits[5]<br>Pe-utch (k)[4]<br>Too-gow-wit-se[4] | Mo-mo-pits[4]<br>Mum-mo-paht[4] | Du-va-go[g] | |
| *Phalaenoptilus* sp. | Poorwill | Pan-no-witch (k)[4]<br>Pah-nah-kwits[4] | Pi-na-wits[4] | | |
| Family Cathartidae | American vultures | | | | |
| *Cathartes aura* | Turkey Vulture | Whu-gump´-uts (k)[6]<br>Whi-ku´-puts (lv)[6]<br>Wikumputsi[5]<br>We-kum-buts (k)[4] | We-koo-puts[4]<br>Week[4]<br>NF[b] | | |
| -- | Vulture | | | Wi´-ho[6]<br>Wee-whom-binch[g] | Wee-hoo[g] |
| Family Charadriidae | Plovers | | | | |
| *Charadrius vociferus* | Killdeer | Pantuxuits[5]<br>Pan-te-geetch (k)[4]<br>Pahn-tig-wits[4] | Pah-re koo-its[4]<br>Pa-roo-goo-e'ts[4] | Bah-zah-wee[g] | |
| Family Columbidae | Pigeons and Doves | | | | |
| *Zenaida macroura* | Mourning Dove | Iyov[b] | Ayov[b] | | |
| -- | Dove | Ai´-yuv (k)[6]<br>Iyovi[5]<br>Oi-uv (k)[4]<br>Ha-o'v[4] | Che-yu'ch[4]<br>He-ov[4]<br>Hiav[c]<br>Hiuv[c] | High-wee[g] | Hay-wee[g] |
| -- | Pigeon | I-yov[4] | | | |
| Family Corvidae | Jay, Magpies, Crows | | | | |
| *Aphelocoma coerulescens* | Scrub Jay | NF[b] | | | |
| *Corvus brachyrhynchos* | American Crow | Paht-kot[4] | Ah-tah-bits[4] | | |
| -- | Crow | | | A´-ta[6]<br>Hi[g] | Cuta-puzee[g] |
| *Corvus corax* | Common Raven | A-ta´-puts (k)[6]<br>A-ta´-puts (lv)[6]<br>Ataputs[5]<br>Atakots[5]<br>Tah-kwots (k)[4]<br>Ha-ta-puits[7] | Ah-tah-pah-ki'p[4]<br>Tah-kwahts[4]<br>Ah-tah-pwits[4]<br>Ataputs[b]<br>Atakots[b] | | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Cyanocitta* sp. | Jay | O-go´-chi-ok (k)[6]<br>Oxo-chayaku[5]<br>Ah-run Chi-ahk (k)[4] | Sik-koo-ra-gwuts[4]<br>Ho-gon Tsi-ahk[4] | | |
| *Gymnorhinus cyanocephala* | Pinyon Jay | Aanga[5]<br>Ahng Uv-ve (k)[4]<br>Ki-vah witch et[4]<br>Ahng-av[4]<br>Ahng[4] | Tuvawitsi´ts[b]<br>Tuvavwitsiits[c]<br>Tuuv watsits[c]<br>Yamp[c] | Guy-nutz[g] | |
| -- | Jay | Ong´-a (k)[6] | | Wi-at´-si[6] | |
| *Pica* sp. | Magpie | Mama´kwa´yavi[5]<br>Mah-kwi-ahv (k)[4]<br>Mah-mah-kwe-as[4] | Mah-mahk kwi-ahv[4]<br>Mah-mah-kew-ahs[4] | Kwi´-da-wo-i[6]<br>Qwithe-woy-yoh[g] | Cui-ta' go'ya[g] |
| Family Cuculidae | Cuckoos, Roadrunners, Anis | | | | |
| *Geococcyx* sp. | Roadrunner | Nants (k)[5]<br>Wuts (k)[4] | Ko cha bo'ki[4]<br>Oo'ts[4] | | Unnup-pi[g] |
| Family Emberizidae | Emberizid Finches and Allies | | | | |
| Subfamily Cardinalinae | Cardinal-Grosbeaks | | | | |
| *Passerinea cyanea* | Indigo Bunting | NF[b] | | | |
| Subfamily Emberizinae | American Sparrows and Towhees | | | | |
| *Amphispiza bilineata* | Black-throated Sparrow | NF[b] | | | |
| *Junco* sp. | Junco | Ne-war-rum po-kuts (k)[4]<br>Nu-wer-rowk[4] | Noo-war-rum po-koots[4] | | |
| *Pipilo chlorurus* | Green-tailed Towhee | Tam pe-ats (k)[4] | | | |
| *Pipilo* sp. | Towhee | E-se-voo-it (k)[4]<br>Ke-we-rit-se[4] | Tim-mah-tin[4] | | |
| *Spizella passerina* | Chipping Sparrow | Kam pe-ats (k)[4] | Yu-oo-ro-whats[4] | | |
| *Zonotrichia leucophrys* | White-crowned Sparrow | Yu-rah-vaht (k)[4]<br>Se-we-cha-et[4] | We-tsids[4] | | |
| -- | Sparrow | Wu'iatsi[5]<br>Kam pe-ats (k)[4] | Yu-oo-ro-whats[4] | | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| Subfamily Icterinae | American Blackbirds and Orioles | | | | |
| *Agelaius phoeniceus* | Red-winged Blackbird | Paxachakapi[5]<br>Pah rahts-kahp[4] | Pah-ran-to-twit[4] | | |
| *Euphagus cyanocephalus* | Brewer's Blackbird | Pah-ranch Che-kahp (k)[4]<br>Too we-tse[4] | Cha-kahp[4]<br>Pah-ran-zu-wit[4] | | |
| -- | Blackbird | | | Bah-gan-zuk-qwue[8] | |
| *Icterus* sp. | Oriole | Oangwintsi´ts (yellow bird)[5]<br>Kah-ni-amp (k)[4] | O-ow-wit-se[4]<br>Wahts-ke-it[4]<br>O-ah-we-tsits[4] | | |
| *Sturnella* sp. | Meadowlark | Iitotsi[5]<br>A-tawt (k)[4]<br>Tu-we-uk[4] | Kah-nah-we tse-its[4]<br>Te-ve-uk[4] | Pa´-tsi-ton[6] | |
| Subfamily Parulinae | Wood-Warblers | | | | |
| *Dendroica petechia* | Yellow Warbler | Ka-na-wits-its[7] | | | |
| Subfamily Thraupinae | Tanagers | | | | |
| *Piranga ludoviciana* | Western Tanager, Mountain Tanager | Oo-win-nt (k)[4] | | | |
| Family Falconidae | Falcons and Carcaras | | | | |
| *Falco sparverius* | Sparrow Hawk, American Kestrel | Kurin´ang kats[5]<br>Ku-we-nah-kut (k)[4] | Te-ze-nah-kahts[4]<br>Kwan-an-tsits[4] | Ku-ti´-ta[6] | |
| Family Fringillidae | Old World Finches and Allies | | | | |
| *Carpodacus purpureus* | Purple Finch | We-etch (k)[4]<br>Waw[4] | We-ets[4]<br>We-we-ets[4] | | |
| *Carpodacus* sp. | Finch | We-etch (k)[4]<br>Waw[4] | We-ets[4]<br>We-we-ets[4] | | |
| -- | Grosbeak | Wah-pum-wer-rah-ka (k)[4]<br>Gus-se-nav (k)[4] | Ker-re-tsawt[4]<br>Kan-now we-tse-its[4] | | |
| Family Hirundinidae | Swallows | | | | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Hirundo pyrrhonota* | Cliff Swallow | Pah-sah-rok-pets[4] | Wah-pas-so-pe[4] | | |
| *Hirundo rustica* | Barn Swallow | Tim-pow-we-ger-rit (k)[4]<br>Tim-pah-ro-we-it[4] | Pas-ser-ro-pe'ts[4] | | |
| *Tachycineta thalassina* | Violet-green Swallow | Pas-ser-ro-it (k)[4] | Pan-no-av[4] | | |
| Family Laniidae | Shrikes | | | | |
| *Lanius ludovicianus* | Loggerhead Shrike | Tah-tso-noint (k)[4]<br>Tah-cho-noint[4] | Tun-dun-nois[4] | | |
| *Lanius* sp. | Shrike | Tah-tso-noint (k)[4]<br>Tah-cho-noint[4] | Tun-dun-nois[4]<br>NF[f] | | |
| Family Laridae | Gulls, Terns, Allies | | | | |
| *Larus* sp. | Gull | Tosa payamputsi (white gull)[5]<br>Che-yu[ch 4] | Pi-yam'b[4]<br>NF[b] | | |
| Family Mimidae | Mockingbirds and Thrashers | | | | |
| *Mimus polyglottos* | Northern Mockingbird | Yamp[b] | | | |
| *Mimus* sp. | Mockingbird | Yampa[5]<br>Yamp (k)[4] | Yahmp[4]<br>Yam'p[4] | | |
| *Toxostoma* sp. | Thrasher | Sah-wah-goo-et (k)[4] | Mo-e-pah-num-bits[4] | | |
| Family Muscicapidae | Old World Flycatchers and Allies | | | | |
| *Sialia* sp. | Bluebird | Shok´-wai´ants (k)[6]<br>Nung-un´-chots (lv)[6]<br>Saxwang wintsi´ts[5] | San-nap-po-chet (k)[4]<br>Sa-kwahn at-so-its[4]<br>Sah-wah-wits[4] | | |
| *Turdus migratorius* | American Robin | Angka-kwaa´nangwants[5]<br>Se-kon kno-av (k)[4]<br>Sin-kum[4] | Sko-we-che-it[4]<br>Se-kin-kon-av[4]<br>Say-kung-quav[7] | | |
| *Turdus* sp. | Robin | | | Sue-gwee-cok-coo[g] | |
| Family Paridae | Chickadees and Titmice | | | | |
| *Parus gambeli* | Mountain Chickadee | Tse-gut (k)[4] | Mo-che-et[4] | | |
| Family Pelecanidae | Pelicans | | | | |
| *Pelecanus erythrorhynchos* | American White Pelican | Pa-go-moo-e-nav (k)[4] | | | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| Family Phalacrocoracidae | Cormorants | | | | |
| *Phalacrocorax* sp. | Cormorant | Pa-at-kut (k)[4] | Pah-wung zits[4] | | |
| Family Phasianidae | Pheasants, Grouse, Quail | | | | |
| *Callipepla gambelii* | Gambel's Quail | Akar[b] | | | |
| -- | Quail | Ka´-ka (k)[6] | Ka-ka (lv)[6] | | Tounga-ah-hah[g] |
| Family Picidae | Woodpeckers and Wrynecks | | | | |
| *Colaptes auratus* | Northern Flicker | Un-ka-kwo-nau-ants (k)[6] | Kah-kwah-nah-ahts[4] | | |
| | | Anyka-kwanangwav[5]<br>Un-kah (k)[4] | Kwah-nah-vant[4]<br>Ungkakwa-nangwav[b]<br>Kwar-nah-kits[4] | | |
| *Colaptes* sp. | Flicker | Angka-qua-no-wunco[7] | | | |
| *Melanerpes lewis* | Lewis' Woodpecker | Po-wah-che-nint (k)[4]<br>Ahn-kah-pi-ah we-tse[4] | So-wan-nat[4] | | |
| *Picoides villosus* | Hairy Woodpecker | Peep-e-wor-et (k)[4] | Pe-pe-po-wunts[4] | | |
| -- | Woodpecker | Piipung' wantsi[5]<br>Pe-po-wuntz (s)[4] | Pe-po wantz (k)[4]<br>Peep-wunts[7] | Du-ga-hâi[6] | |
| Family Podicipedidae | Grebes | | | | |
| *Podilymbus* sp. | Grebe | Koo-hoot-kit (k)[4] | | | |
| Family Rallidae | Rails, Gallinules, Coots | | | | |
| *Fulica americana* | American Coot | Sah-sit (k)[4]<br>Sahts[4] | Ke-yu[ch 4]<br>Sats[4] | | |
| Family Recurvirostridae | Avocets and Stilts | | | | |
| *Himantopus mexicanus* | Black-necked Stilt | Too-we-e-yoot (k)[4] | | | |
| *Recurvirostra americana* | American Avocet | Tuviyuyu´tsi[5]<br>Koo-weet (k)[4] | Mi-an Koo-wit[4] | | |
| Family Sittidae | | | | | |
| *Sitta* sp. | Nuthatch | Kan-ka-rik-ket (k)[4]<br>To-pah-we-kent[4] | Yu-ve-nants[4] | | |
| Family Strigidae | Typical Owls | | | | |
| *Athene cunicularia* | Burrowing Owl | Muku'uts[f] | | Ku´-hu[6] | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| *Bubo virginianus* | Great Horned Owl | Mo´-puts (k)[6]<br>Mo-o´-puts (lv)[6]<br>Mooputs[5]<br>Mo-puts (k)[4] | Moo-oo-put[4]<br>Mo-o-puts[4]<br>Moo-e-pwits[4]<br>Muuputs[b] | | |
| -- | Owl | Muuputsi[f]<br>Muku´uts[f]<br>Wah-now-kwits (k)[4]<br>Wanakwitsi[5] | Am-mo-puts[4]<br>Mo-se-ah-kaw-bits[4]<br>Ahn-kah-re Mo-put (k)[4] | Mu-hu[6]<br>Muum-bitch[g] | Moohoo[g] |
| Family Trochilidae | Hummingbirds | | | | |
| -- | Hummingbird | Mu´-tu-chats (k)[6]<br>Mootuchats[5]<br>Mo-te-tcheh (k)[4]<br>Mo-too-tsahts[4] | Ah-to-e-tsets[4]<br>Moo-tin-zits[4]<br>Mutuchuts[b] | Bi'si'i[c]<br>Pi-a-gun´to-wit-si[6]<br>Sung´-o-wit-si[6] | Pish-coot[g] |
| Family Troglodytidae | Wrens | | | | |
| *Catherpes mexicanus* | Canyon Wren | Tumpikia hoxotsi[5]<br>Tim-pe-ah-soot (k)[4]<br>Tim-pe-its[4] | Timp-pe-ke yah-hots[4]<br>Toom-pe-tah ah-bit[4]<br>Tom-pike-aw-sauts[7] | | |
| *Salpinctes obsoletus* | Rock Wren | Too-ching-ing[4]<br>Tumpikixots[b] | NF[c] | | |
| *Troglodytes* sp. | House Wren | Wu-nat tim-be ro-put (k)[4] | T'kes-se chim-mits[4] | | |
| Family Tyrannidae | Tyrant Flycatchers | | | | |
| *Tyrannus verticalis* | Western Kingbird | Chuxu´uvi[5]<br>Che-goo-ritch (k)[4] | Wahts-koo-its[4]<br>Too-pe-wats[4] | | |
| *Sayornis saya* | Say's Phoebe | Chu-huv[7] | | | |
| **Amphibians** | | | | | |
| -- | Frog | Wah´-gah´-tsets (lv)[4]<br>Wah-raht´ (k)[4] | Hah´-pah wah´-ah-tuts (c)[4] | Pah-woo´-go´ (ps)[4]<br>Wah´-ko-ah[4]<br>Bi´-yah-qwat-sah[4]<br>Pi´-ah guz-zah[4] | Yha-gua-zah[g] |
| **Arachnids** | | | | | |
| -- | Scorpion | Wah´-wah-tsets (lv)[4]<br>Wahm´-bah-kwits (c)[4] | Tah-wur´-rum-kwe-pitch (k)[4] | Woo´-vah-tah (ps)[4]<br>Gwe´-buntz[4]<br>Kwe´-bentz[4] | |
| -- | Spider | Mo-kwam´-be (lv)[4]<br>Hoo-kwahmp´ (c)[4] | Mo-kwahmp´ (k)[4] | Ku´-kwats[6]<br>So-wats´ (ps)[4]<br>Ah´-mah-so´-ans[4]<br>So´-wants[4]<br>So-ar´-rah[4] | NF[g] |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|---|
| -- | Tarantula | Nŭ´-e-saw´-bits (lv)[4]<br>We-gaht´-sawt k)[4] | Noo´-wĕ-saw´-pig (c)[4] | Nah´-soo-waht´ (ps)[4]<br>Nah´-we-tsoi'm-bitch[4]<br>Nă´-soo-ar´-rah[4] | |
| **Insects** | | | | | |
| *Mutillidae* sp. | Velvet ant | | | | Togo[8] |
| -- | Ant | T'siev (wood)[c]<br>Tuhsiev (wood)[c]<br>Tu'siev[c]<br>Tas´-se-av (lv)[4]<br>Ang-av´ (c)[4]<br>Tas-se´-av (k)[4]<br>Wahnts (red) (c)[4]<br>Pas-se´-av (red) (k)[4] | Ahng-ahv´ (black) (k)[4]<br>Ahng-e-ve (black) (lv)[4]<br>On´-tat (black) (c)[4]<br>Tas´-se´-ev (red) (lv)[4] | Hu-wīt´ (large red)[6]<br>To´-ats (small black)[6]<br>A´-ni (mound building)[6]<br>Ani'e (wood)[c]<br>On'nee (wood)[c]<br>Ta´-siv-av[6]<br>Un-kav´-tu-si (red)[6]<br>Tas´-se-wuts-tse (ps)[4]<br>Ah´-ne[4]<br>Ho´-we-dah[4]<br>Hó-e-dah[4]<br>Tun-gah´-vitch (black) (ps)[4]<br>Ho´-we-dah (black)[4]<br>Too-kah-pe´-pah (red)[4] | Ah-see-ah[8] |
| -- | Beetle | Kan-nav´-ve-tets (lv)[4]<br>We-po´-set (c)[4] | Wēv-haht (k)[4] | Shun-goo´-ah (ps)[4]<br>Pe´-bos´-se[4] | Huga-pish-ah[8] |
| -- | Bumblebee | See-moo´-rahm (lv)[4]<br>Se´-moo-rahmp (k)[4] | Sho-em´ mo-ro-ram (c)[4] | O´-be-wo[4]<br>Be´-hah-moo[4] | |
| -- | Butterfly | As´-se-wuts (lv)[4]<br>Ah´-se-ruts´ (c)[4] | Yas´-se-wut (k)[4] | Ah´-se-wer-run´ (ps)<br>Ă-ă´-per-rum<br>I´-yup-pur-ruq´-ă<br>Ap´-per-roo´-ge<br>Wi´-ah-bos´-se | |
| -- | Centipede | Sing-ump (k)[4] | | | |
| -- | Cricket | Mă-kaht´-sah-roo´-bit (lv)[4]<br>Chĕ-roots´ (k)[4] | Sow-wah´-ar-rum (c)[4] | Thin´-ă-pitch (ps)[4] | |

## One Hundred and Seventy American Indian Traditional-use Animals Present in the Southern Nevada Area (Continued)

| Scientific Name | Common Name | Southern Paiute Ethnic Group Names | Western Shoshone Ethnic Group Names | Owens Valley Ethnic Group Names |
|---|---|---|---|---|
| -- | Dragonfly | We-wing´-ga-rits (lv)[4] Ah´-witch (k)[4]<br>We-win´-koo-rets (c)[4] | Pă-ran´-doo-no (ps)[4]<br>He´-tso-saw[4]<br>Bah´-qah-mo´-anz[4]<br>Pah´-ran-do´-ro[4] | |
| -- | Flea | Po´-ahv (k)[4] | | |
| -- | Fly | Mo´-pits (lv)[4] Mo´-pitch-ă (k)[4]<br>Mo´-bits (c)[4] | Mo-e´-ve-hah (ps)[4]<br>Ah´-ne-moi[4]<br>Ah´-nah-woi´[4]<br>Mo´-pits[6]<br>Mu´-īv[6]<br>A´-nīv (sand)[6] | Mu'e-vee-ha[8] |
| -- | Grasshopper | At´-tah-kah-peets (lv)[4] Ar´-ron-kah´-pit (k)[4]<br>Ah´-tah-kah-bits´ (c)[4] | Ah-tung´-ge (ps)[4]<br>Ah´-ting[4]<br>Ah´-tunq-que[4]<br>At´-tan´-ge´[4] | |
| -- | Lice | Se-ap´-pit (k)[4] | Bo´-see-ĕts (ps)[4] | Pooh-ze-ah[8] |
| -- | Louse | | Pu-si´-a[6] | |
| -- | Mosquito | Mo-oo´-av´-ve (lv)[4] Mo-ahv´ (k)[4]<br>Mo´-av (c)[4] | Mo´-vo[6]<br>Mo-avw[6]<br>Wah-war´-rah (ps)[4]<br>Maw´-paw[4]<br>Ahng-ē´-ve[4] | NF[8] |
| -- | Moth | Moo-goo´-run-zits (lv)[4] Mo-woo´-ran-tut (k)[4]<br>Mo-goo´-ro-tsats (c)[4] | Pe-ag´-gah moo-rung-we (ps)[4]<br>Pe-ag´-gah[4]<br>Pe´-ag´-gah[4] | |
| -- | Stink Bug | | Ku´-i-tsat[6] | |
| -- | Tick | | | Pooh-ze-ah[8] |
| -- | Worm | Pĕ-av´ (k)[4] | Pish-shā-war´-rah (ps)[4]<br>Wo´-ah-be[4]<br>Woo-ah´-be[4] | |
| -- | Yellowjacket | We-koots (lv)[4] Pah-watch´-av (k)[4] | Pi´-yah (ps)[4]<br>O´-hah ben[4]<br>Pi´-nah[4]<br>Be´-hah-moo[4] | |

[1] Work done by Powell between 1867-1880: (Fowler and Matley, 1979)
[2] Work done by Euler between 1956-1966: (Euler, 1966)
[3] Work done by Palmer before 1946: (Palmer, 1978)
[4] Work done by Merriam between 1902-1935: (Merriam, 1979)
[5] Work done by Sapir in 1910: (Sapir, 1910)
[6] Work done by Powell in 1873: (Fowler and Fowler, 1971)
[7] Work done by Presnall in 1936: (Presnall, 1936)

[g] Work done by Train between 1935-1941: (Train, 1957)
[g] Handbook of North American Indians-Great Basin (Vol. 11, "Owens Valley Paiute") D'Azevedo, 1986

[a] Stoffle et al., 1996
[b] Stoffle et al., 1994d
[c] Stoffle et al., 1994b
[d] Stoffle et al., 1989b
[e] Stoffle et al., 1990
[f] Stoffle and Dobyns, 1982
Stoffle and Dobyns, 1983
Stoffle et al., 1983
[g] Names by CGTO members; April 1996 NTS-EIS meeting.

NF = Not found; mentioned in text but no Indian name given.
(c) = Chemehuevi
(k) = Kaibab
(lv) = Las Vegas
(mp) = Moapa Paiute
(p) = Pahrump Paiute
(ps) = Panamint Shoshone

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## APPENDIX D


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