

CHAPTER FOUR IMPACTS TO LOCAL GOVERNMENTS AND NATIVE AMERICAN COMMUNITIES

4.1 Local Government Impacts

Local governments and communities throughout Nevada stand to be impacted in significant ways by the Yucca Mountain project and activities associated with the transportation of high-level radioactive waste to the facility. The many uncertainties surrounding DOE's implementation of the program and the failure to identify shipping routes and modes make impact assessment especially problematic for local governments and tribes. For the purpose of this report, it is assumed that waste shipments to Yucca Mountain would use some combination of highway and rail transport, including intermodal/heavy-haul shipments.

At least 13 Nevada counties will be adversely affected by repository construction and operations or by the transportation of SNF and HLW to the facility. The only local jurisdiction to be affected both by the repository itself and the transportation of spent fuel and high-level waste is the situs jurisdiction, Nye County. However, due to the characteristics of the State's highway and rail infrastructure and the unique nature of Nevada's economy, the largest impacts from the repository and related waste shipments are expected in Clark County and the metropolitan Las Vegas area (which includes the incorporated cities of Las Vegas, North Las Vegas, Henderson, Mesquite, and Boulder City). Other Nevada counties would be impacted in different ways as a result of the unprecedented high-level waste shipping campaign associated with the project.

Nine Nevada counties and Inyo County, California have been designated as "affective units of local government" (AULG) under the provisions of the Nuclear Waste Policy Act, as amended. In addition to the site county, the 1897 amendments to the Act authorized the Secretary of Energy to formally designate a unit of general government, such as a county or city, as "affected" if it is contiguous with the site county. After several counties initiated legal action the late 1980s, the Secretary of Energy belatedly bestowed "affected" status on each of the counties that share a common border with Nye County.

Detailed information on AULG-specific impacts is contained in the local government appendices to this report. A summary of impacts by affected county is presented in Table 4.1.1, below.

Table 4.1.1 Local Government Impacts

Topic\County	1. Nye County	2. Clark County	3. Lincoln Co.
Report	Nye County, NV: Community Protection Plan (Aug. 2001, 46 pgs)	Draft Impact Assessment Report: An Analysis of Potential Impacts to Clark County Resulting from Site Selection, Construction, and Operation of a High-Level Nuclear Waste Repository at Yucca Mtn. (Dec. 2001, 74 pgs)	In Search of Equity: A Preliminary Assessment of the Impacts of Developing and Operating the Yucca Mountain Repository on Lincoln County and the City of Caliente, Nevada (Dec. 2001, 90 pgs)
Project Description	All aspects of the YMP: Transportation, regardless of mode-route choice. Above ground waste handling & lag storage. YMP constr, emplacement, monitor & retrieval. YMP performance: pre-& post-closure.	Mainly Transportation: DOE doesn't build rail. NV doesn't designate alter- nate hwy routes. Legal-wt truck shipments on interstate system, using I-15 or Beltway route. <u>Transp. Scenarios:</u> 1. No accident, adverse publicity. 2. Accident, no release. 3. Accident, with release.	Mainly Transportation: <u>Transp. Scenarios:</u> 1. DOE builds, operates Chalk Mtn or Caliente rail spur. 2. DOE builds IMF in Caliente; heavy-haul west on US-93 & NV-375 to Yucca Mtn. 3. NV designates hwy routes for LWT shipm: US-93 &/or NV-319.
Local Vulnerabilities	Amargosa Valley groundwater: the major exposure path. Towns astride possible 2- lane transp. routes. Dominant federal land presence: 98%. Traditional DOE mgt. practices in NV. NV political structure.	LVV econ. growth depends on intricate factors. In visitor-gaming industry, perception is reality, & high fixed costs. Calif. visitors, vulnerable to I- 15 congestion, disruption. Beltway Route: major role in future growth.	The legacy of nuclear testing. Weak local economy, dependent on tourism, retirees & government. Air quality class makes industry permit easier. Most Caliente residents, business w/in 1/2 mile. Hwy routes not suitable. ER providers ill-equipped; help 3-4 hours away.
YMP Impacts	<u>Impacts Identified:</u> Transportation risk on 317 miles of county roads. Uncertain empowerment of elected site co. gov. DOE implementation vigilance, mgt. practices. Equity: transfer to a single county, already used for weapons testing.	<u>Impacts Assessed:</u> Possible stigma effects on visitation, migration, investments. Property value reduction: \$236-\$463 million No accident rad dose: 28-200 mrem @ casino site. Transp. accident cost: \$103 mil, \$31 mil unreimbursed. Public safety impacts: \$360 million Non-Public safety impacts: \$121 million.	<u>Impact Scenarios:</u> LWT/gas tanker collision. Rail collision; casks fail. Volcanic eruption at YM. <u>Impacts Described:</u> Physiographic Radiation Exposure Sociocultural Community cohesion Public infra. & services Local gov. finance Land Use Transp accident risk Public perception, stigma

Topic\County	4. White Pine County	5. Eureka County	6. Lander County
Report	DOE Yucca Mountain Repository Program: Preliminary Impact Report for White Pine County, NV (Dec. 2001, 75 pgs)	Impact Assessment Report on Proposed Shipments of Spent Nuclear Fuel and High-Level Radioactive Waste through Eureka County (Aug. 2001, 86 pgs)	Lander County Impact Report (Aug. 2001, 58 pgs)
Project Description	Mainly Transportation: DOE doesn't build rail. NV designates hwy routes for LWT shipment: US-93 to Ely, US-6 to Nye County. 55,000+ LWT shipments projected.	Mainly Transportation: DOE builds Carlin rail spur: 18 miles & terminal facility in Eureka Co./Beowawe. Possible occasional LWT shipment on I-80, US-50.	Mainly Transportation: DOE builds Carlin rail spur from Crescent Valley south to US-50 & Smoky Valley. I-80 could be used for LWT shipment to Skull Valley Interim Storage Facility.
Local Vulnerabilities	Hwy routes 2-lane, no facilities, winter weather. 50% resident pop w/in .5 miles of route. Motels, schools etc. w/in .5 miles of route. Ely: possible stopping place for LWT shipments. Inadeq. Emerg. response. Fiscal links to Las Vegas.	Humboldt River water system in northern Nevada. Crescent Valley: shallow water table, 100-year flood plain crossing, two grazing allotments, fragile soils. Private lands converted to public use. Historic western way of life.	UP & I-80 follow Humboldt River, major water system of northern NV. Mining-related hazmat uses roads crossed by rail line. Cortez Mine mineral rights. Grass Valley streams, groundwater recharge. Rail 10 miles from Austin, 3 miles from Kingston.
Yucca Mountain Project Impacts	<u>Impact Scenarios:</u> LWT/gas tanker collision: - Summer, low release - Winter, high release - Volcanic erupt at YM. <u>Impacts Described:</u> Radiation Exposure Socioeconomic Public infrastructure & services Local government. finance Transportation. accident risk Public perception, stigma	<u>Impacts Described:</u> (rail & truck shipment, accident-free & with accident): Hydrology Air Resources Vegetation & soils Wildlife & fish Range resources Scenic resources Cultural resources Population & demography Land Ownership Economy Housing Mining & minerals Infrastructure Public finance Outdoor recreation Public health & safety Noise, land use, qual. of life	<u>Impacts Assessed:</u> Five grazing allotments affected, depending on route, fencing. 10% stigma effect on visits est. at \$8 mil per year. Re: Clark survey, prop value losses est. at \$10-21 mil. (no accident) to \$34-48 mil. (accident, no release). EM/ER upgrade estimated at \$31 million. Loss in state gov. services est. at \$3.5-\$5 million. Loss in state-distributed revenues est. at \$10-21 mil. Economic benefits of rail spur uncertain & possibly contentious.

Topic\County	7. Churchill County	8. Mineral County	9. Esmeralda County
Report	Churchill County Impact Report (Aug. 2001, 59 pgs)	Mineral County Impact Report: A Preliminary Assessment of the Proposed Yucca Mountain Project and the Transportation and Socioeconomic Impacts to Mineral County (July 2001, 39 pgs)	The Long Haul to Equity: A Strategy to Protect Esmeralda County's Residents, Environment, and Economy from the Potential Adverse Effects of the Yucca Mountain Project (Dec. 2001, 36 pgs)
Project Description	Mainly Transportation: DOE doesn't build rail. NV designates hwy routes for LWT shipment: US-50A & US-95 thru Fallon. 5,450-19,200 LWT shipments projected.	Mainly Transportation: DOE doesn't build rail. NV designates hwy routes for LWT shipment: US-95 thru Hawthorne. 5,450-19,200 LWT shipments projected.	Mainly Transportation: <u>Transportation Scenarios:</u> 1. NV designates rural hwy routes (incl. US-95) for all LWT shipment. 2. DOE builds Carlin or Caliente rail spur, 10 miles east or 5 miles west of Goldfield.
Local Vulnerabilities	90% of county pop. w/in 1 mile of corridors. Motels, public facilities, resident encroachment on ROW. Fallon intersections are confined, inadequate, with high accident rates. Carson River valley one of NV's prime agric. areas. Fallon Naval Air Station.	County pop. w/in 0.5 mile of ROW est. at 4,300. Motels, public facilities, resident encroachment on ROW. Hawthorne Ammo Depot: a current hazardous activity. Route crosses Walker River Indian Reservation.	Federal land presence (98% of total), plus pop-based distrib. of PILT. Mining bust and effects on econ. & revenue base, local demographics. Tourism activity, centered in Goldfield. Emergency responders all volunteer, not prepared for radwaste shipments.
Yucca Mountain Project Impacts	<u>Impacts Assessed:</u> 10% stigma effect on visits est. at \$19 M/year. Re: Clark survey, prop value losses est. at \$29-\$186 M (no accident) to \$81-\$430 M (accident, no release). EM/ER upgrade estimated at \$30 million. Loss in state gov. serv. est. at \$47-\$92 million. Loss in state-distributed revenues est. at \$85 M.	<u>Impacts Assessed:</u> 10% stigma effect on visits est. at \$34 M/year. Re: Clark survey, prop value losses est. at \$6-\$62 M (no accident) to \$28-\$141 M (accident, no release). EM/ER upgrade estimated at \$28 million. Loss in state gov serv. est. at \$3.5-\$5 million. Loss in state-distributed revenues est. at \$11-21 M.	<u>Impacts Described:</u> Effects of contentious issue on community cohesion. Uncertain effects on future economic activity. Transportation accident in Goldfield could cause pop. exodus, tourism decline.

In addition to the counties formally designated as AULGs, several other Nevada counties that are not contiguous with Nye County also stand to be significantly impacted by shipments of radioactive waste to a Yucca Mountain repository. Nevada's second largest county, Washoe, and the metropolitan areas of the cities of Reno and Sparks

straddle both Interstate 80 and the northern Union Pacific mainline, both of which are potential SNF/HLW shipping routes. In addition, Pershing, Humbolt, and Elko counties all lie along both potential rail and highway corridors. Impacts to these other counties are addressed in the Section 3.2 (Property Value Impacts) and Section 3.8 (Nevada Transportation Impacts) of this report.

Specific findings for each individual formally designated “affected” county are discussed below, beginning with the site county (Nye County) and proceeding counterclockwise from the south around the site county.

4.1.1 Nye County, Nevada

The site county’s perspective regarding the Yucca Mountain Project (YMP) is described in Appendix VII, “Nye County, Nevada: Community Protection Plan” (46 pgs), adopted by the Board of County Commissioners in August 2001. After an introduction, the Plan includes sections on the effects of the YMP, the rationale and objectives of the proposed protections and ten proposed “protections,” presented in summary form.

Project Description

The Plan states that the site county would prefer a future without the proposed repository. Yet Nye County is the single local jurisdiction selected by the federal government to receive the nation’s entire inventory of highly radioactive wastes. Should the federal government site the repository at Yucca Mountain, the Plan states all aspects of the federal program would affect the site county:

- The transportation (mode, route, and operations) of highly radioactive wastes in an unprecedented cross-country shipment campaign. Regardless of the choices, Nye County would be the destination for all shipments.
- The above ground lag storage and waste handling activities. All risks in 30 years of above ground operations would be concentrated in the site county.
- The construction of the repository, the emplacement of highly radioactive wastes, and the monitoring and, potentially, the retrieval of such wastes. All risks and uncertainties in these activities are concentrated in the site county.
- The performance of the repository system, both pre- and post-closure. Again, the risks and uncertainties are concentrated in the site county.

Local Vulnerabilities

The Plan refers to several special vulnerabilities of the site county:

- The major exposure pathway is the groundwater system down-gradient from the proposed repository, in the Nye County community of Amargosa Valley, a system on

which current and proposed economic and community development in the area are completely dependent (p. 13).

- Several site county communities, included the county seat, are located astride two-lane rural roads, which are currently used for shipment of low-level radioactive wastes to the Nevada Test Site and which could, in the absence of DOE action to create an alternative, may also be used for shipment of high-level radioactive wastes (p. 17).
- The dominant federal presence in the site county and the legacy of DOE use of the Nevada Test Site for 40 years of nuclear weapons testing have frustrated the county's efforts to develop a viable revenue base and to promote economic and community development along one of the county's major infrastructure assets—the US-95 corridor linking Nevada's two major metro areas. Almost 98% of the county's land area is managed by federal agencies, and 2.7 million centrally located acres have been withdrawn for special federal purposes (p. 29).
- DOE management has used its Nevada site county for field activities only and has encouraged its workforce to commute from Las Vegas. As a result, the contribution to the site county economy of a \$17 million local dairy operation is 50% greater than the \$250 million DOE site characterization project (p. 23, 25). The Plan views this as an outdated legacy of the Cold War.
- The Plan views the political structure of Nevada as a site county vulnerability. Of 42 representatives in the State Assembly, Nye County shares a single representative to the state legislature with three other central Nevada counties (p. 26). The Nye County Commissioners are the only elected officials whose first and only responsibility is the safety and welfare of the site county. Other state or national interests dominate other levels of government.

Impacts of the Yucca Mountain Project

The Plan describes the effects of the Yucca Mountain Project in several categories:

- Transportation effects include the radiological exposure of incident-free shipment along up to 317 miles of two-lane rural roads in the site county, the risks of transport accidents and incidents, the inadequate local radiological emergency response capability, the uncertainty of DOE mode-route transportation decisions, and the possibility of politicized intrastate routing (p. 10-11).
- Another category of effects is the uncertainty of whether the site county would be empowered to conduct rigorous independent oversight and monitoring during implementation of a prospective Yucca Mountain Project and the resulting site county concerns regarding safety of the Yucca Mountain Project (p. 14).

- A third category is the future threat of contamination to groundwater systems in the Amargosa Valley, combined with the prospective threat of contamination from underground nuclear weapons tests at the Nevada Test Site (NTS). The threat includes the stigma threat to property values and development potentials as well as the threat to health (p. 14, 16).
- A fourth category of effects is the prospect that the vigilance of DOE implementation of the Yucca Mountain Project, perhaps due to federal funding constraints, may fall short of the representations made in site recommendation and licensing (p. 16, 18).
- Another category is the prospect that, due to bureaucratic inertia or intrastate politics, DOE would continue its Cold War patterns in the management of its activities in Nevada. The Plan states that the federal withdrawal of 2.7 million centrally located acres in the site county has caused major disruption of its development potentials, while DOE management practices have provided meager economic benefits for its Nevada site county (p. 18, 20).
- A final category is the inequity of requiring the county used for 40 years of nuclear weapons testing to now provide the site for disposal of the nation's unwanted highly radioactive wastes (p. 20).

4.1.2 Clark County, Nevada

The Clark County perspective is presented in Appendix VII, "Draft Impact Assessment Report: An Analysis of Potential Impacts to Clark County Resulting from the Site Selection, Construction, and Operation of a High-Level Nuclear Waste Repository at Yucca Mountain, Nevada" (74 pgs). The Report "is intended to address the interests of not only unincorporated Clark County, but also, wherever possible and appropriate, the interests of the Cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite, as well as the Las Vegas Band of Paiutes and the Moapa Band of Paiutes" (p. 6). Supplementary reports present details of the County's assessments of property value and public safety impacts.

Project Description

The Report states "Congress identified the interstate highway system as the default route for the transportation of HLW" (p. 40). While the State of Nevada may designate alternative routes (based on an analysis that demonstrates no negative effect on public health and safety), it is unclear whether the State would conduct such an analysis or what the findings might show (p. 40, footnote). Furthermore, "In this region of the country, no practical alternatives to I-15 and US 93/95 are available for transit (to Yucca Mountain) from Los Angeles, Salt Lake City, Phoenix, or Reno (p. 18). Therefore, the Report assumes that the interstate highway system through Clark County would be the primary route used to transport waste to Yucca Mountain (p. 41). If DOE's 'mostly highway' scenario is selected, almost 93,000 shipments would traverse through Clark County over 24 years" (p. 18).

In its assessment of property value impacts, the Report makes the further assumption that highway shipments through Clark County could be routed either on I-15 and US-95 (the "I-15 Route") or on the northern and western segments of the Las Vegas Valley Beltway (the "Beltway Route").

To assess the severity of property value impacts, the Report posits three transportation operations scenarios: Scenario 1 assumes no accident of any kind. However, there is "adverse publicity, particularly at the onset of the shipment campaign" (p. 25); Scenario 2 assumes one accident involving a truck shipment on I-15 in North Las Vegas. No radiation is released, but there is heavy national media coverage (p. 11); Scenario 3 assumes an accident involving a high-level waste shipment and a gasoline tanker on I-15 near the Las Vegas Strip. The truck drivers are killed; radiation is released; emergency service workers are hospitalized; I-15 is closed for four days; many lawsuits are filed; and cleanup and economic costs total \$1 billion (p. 11).

Generally, the impact assessment assumes legal-weight truck transport, generally on the I-15 route. However, to assess routine radiation exposure from HLW transport and potential impacts to endangered species, the Report considers rail transport via the Jean corridor from the Union Pacific (UP) railroad to Yucca Mountain (p. 51). This route requires "about 87% of all rail shipments to Yucca Mountain (to) use the UP mainline through downtown Las Vegas" (p. 42), and allows evaluation of "a maximum credible incident-free scenario" (p. 42) for these impact categories.

Local Vulnerabilities

While the Report does not include a section describing the "affected environment," it refers to several special Clark County vulnerabilities:

- "Clark County ...has been the fastest growing county (of its size) in the United States for many years. Over 5,000 new residents per month have been arriving here to live, work, and play since the early 1990s. (p. 5) The continued economic viability of the Southern Nevada region depends on an intricate balance of factors¹ Any threat to that balance could topple the region's economy like the proverbial 'house of cards'." (p. 72).
- The visitor-gaming industry and its related services—the "primary engine that drives our economic growth" (p. 5)—has developed along the Las Vegas Strip and in downtown Las Vegas, locations adjacent to the I-15 Route. Due to the dominance of this industry, "the doctrine of 'perception is reality' applies to Las Vegas like no other region in the world" (p. 17).

¹ Factors mentioned include gaming and related service and construction oriented businesses, the pro-business climate, the diversity of lifestyle choices (p. 5), and the effective management of energy costs, road congestion, air pollution, education systems, and immigration (p. 14-15).

- Up to 30% of Las Vegas visitors come from California, many by auto using I-15. Congestion on I-15 makes it vulnerable to traffic disruptions that could directly affect visitation (p. 15).
- The visitor-gaming industry has a high level of fixed costs (p. 16) that makes it particularly vulnerable to downturns in revenues.
- The Beltway Route is “not expected to be completed before HLW shipments are to commence” (p. 24). As it is developed, however, the Beltway “is expected to play a major role in the Valley’s future development” (p. 31).

Impacts of the Yucca Mountain Project

The Report states, “The DOE must address the direct, indirect, and cumulative impacts of transporting waste through Clark County to Yucca Mountain. All other impacts ... dovetail from the issues surrounding the transportation of high-level waste through Clark County” (p. 73). The Report defines “cumulative impacts” as those “caused by the DOE’s use of the NTS as a disposal site for the ongoing program to clean up nuclear weapons production facilities ... For the foreseeable future, the most likely mode of transport for these wastes is by legal-weight truck on the highway system” (p. 40). The major impacts assessed include:

- Impacts on the gaming industry are based on “confidential interviews ... conducted with 14 key leaders representing 10 (Strip and downtown) casinos, and one of the leading (Clark County) industry associations” (p. 13). The respondents indicated, “the most serious risk is from the stigma that would result if there is any kind of accident involving the shipment of HLW” (p. 15). The stigma could make “convention planners less likely to hold a convention in Las Vegas” (p. 15), and reduce the “attractiveness of Clark County as a place for families (and retirees) to live, ... (and as an) area for investment” (p. 16).
- The assessment of property value impacts “is not based upon the formal appraisal of specific properties ... (but) on the opinions, perceptions, and beliefs of Clark County residents, lenders, and appraisers” (p. 18). The Report states “knowledge of an undesirable environmental condition (and the perceived risk from that condition) is closely associated with declines in property values” (p. 34). The rate of diminution is associated with distance from the undesirable environmental condition (p. 34).

A survey of 512 Clark County residents was conducted in August 2000.² “Of the 369 ... respondents who expect lower selling prices for homes near shipment routes, the mean expected drop in selling price ... is estimated at approximately 25% compared to identical homes not near a highway (used for transport of) high-level nuclear waste” (p. 21). “When the mean diminution rate ... is applied to (current) residential

² Details are presented in “Clark County Residents and Key Informant Surveys: Beliefs, Opinions, and Perceptions about Property Values Impacts from Shipment of High-Level Waste through Clark County, Nevada,” May 2000.

properties ... the resulting diminution of assessed property values is \$492.3 million (within one mile of the Beltway Route) or \$604.6 million (within one mile of the I-15 Route)” (p. 24).

Another survey, “of 18 Clark County lenders and 35 certified appraisers” (p. 25), was conducted in May 2000. These respondents were asked to distinguish expected property value effects between three classes of property (residential, commercial, and industrial) located within one or three miles of a HLW route under the three operations scenarios. When the Scenario 1 responses are applied to the current valuation of residential property, the estimated diminution is about \$39-\$69 million within one mile of the Beltway Route, or about \$48-\$85 million within one mile of the I-15 Route (p. 27, 28). When the Scenario 2 responses are applied to the current valuation of all property, the estimated diminution is about \$236-\$463 million within three miles of the Beltway Route, or about \$316-\$579 million within three miles of the I-15 Route (p. 29, 30). The ranges in the above figures reflect the differing percentage estimates of lenders and appraisers.

- The assessment of transportation impacts states “not enough is known about the DOE transportation program to assess it” (p. 37). Doses from a “maximum credible incident-free scenario (are estimated assuming that) each rail cask is shipped through Las Vegas (via the Jean corridor) separately by general service in a different train ... (with) stops for carrier interchange or train assembly (ranging from) 2 to 24 hours” (p. 42). At a selected casino location, the maximum dose is estimated at 28 to 200 mrem (at distances of 40 to 15 meters). At the Clark County Government Center, the dose is estimated at 3 to 114 mrem (at distances of 100 to 20 meters) (p. 43).
- The cost impacts of transportation accidents are based on a 1997 Federal Highway Administration study, which estimated the “costs for combination trucks on urban highways (at) \$1.24 per vehicle mile” (p. 43). Applied to rail shipment miles via the Jean corridor in Clark County, the estimated accident costs are \$103 million, of which \$31 million would not be reimbursed (p. 44).
- Estimates of public safety impacts use “a case study approach that provides each county and local government public safety personnel with three scenarios describing a ‘future’ shipping campaign, and asks ... how the events would impact their agency” (p. 53). The finding is that “Despite a very high degree of professionalism and effort, none of the public safety agencies are currently adequately prepared, trained, or equipped to respond to any of the three HLW shipping scenarios ... The total projected costs ... to be adequately prepared for (Scenario 3) is \$360 million” (p. 54).
- Estimates of non-public safety impacts use the same case study approach (p. 57). The Scenario 3 estimate is \$121 million and includes personnel, equipment, training and planning, and loss revenue costs to social services, park and recreation, the county clerk, and other agencies (p. 66).

4.1.3 *Lincoln County, Nevada*

The Lincoln County perspective is presented in Appendix VII, "In Search of Equity: A Preliminary Assessment of the Impacts of Developing and Operating the Yucca Mountain Repository on Lincoln County and the City of Caliente, Nevada" (90 pgs).

Project Description

The Report addresses "the burden if Lincoln County is selected as part of a transport route to bring ... high-level nuclear waste to Yucca Mountain" (p. ES 2). The Report identifies three possible ways that Lincoln County could be selected:

- "If DOE builds a rail line between the City of Caliente and the Yucca Mountain repository" (p. ES 2). Such a rail line would depart from the Union Pacific mainline at Caliente and extend west to Yucca Mountain, either on the "Chalk Mountain Route" across the Nevada Test Site, or on the "Caliente Route" around the Nellis Air Force Range.
- "If the DOE sites an intermodal transfer facility near the City of Caliente" (p. ES 2). At such a facility, rail casks arriving via the Union Pacific mainline would be transferred to heavy-haul trucks for shipment on US-93 west from Caliente and (probably) SR-375 around the Nellis Air Force Range.
- "If the State of Nevada designates a ... legal-weight truck route through Lincoln County" (p. ES 2). While US Department of Transportation "regulations require that truck transport of ... high-level radioactive waste occur along the U.S. interstate system to the maximum extent possible ... a desire to protect the State's gaming-based tourist economy would likely result in Nevada's governor recommending that the shipments utilize routes that impact rural locations such as Lincoln County" (p. ES 1). While "the legal-weight route that DOE is presently considering does not pass through Lincoln County" (p. 49), possible routes include US-93, north and west of Caliente, SR-319, which extends from Panaca east to the Utah state line, and SR-375, which extends northwest from Ash Springs-Hiko to the Nye County line (p. 9).

Local Vulnerabilities

The Report's major sections are a characterization of impacts and a discussion of mitigation options. However, in these and other sections, the Report refers to several special Lincoln County vulnerabilities:

- During weapons testing at NTS, the objective was "to minimize the aggregate dose received by the population in the region" by directing "the plume of radioactivity toward low population areas" (p. 20) such as Lincoln County. Further, "much of Lincoln County was designated as an 'Offsite Uncontrollable Area,' meaning that (its) communities could not be effectively evacuated in the event of an unanticipated

atmospheric venting” (p. 20). As a consequence, “Many area citizens have ... feelings of powerlessness in the face of government, and a sense of injustice. (Further,) there is a long-standing distrust of the federal government and dissatisfaction with its responses to residents’ concerns about the effects of nuclear weapons programs” (p. 21).

- Like other rural counties, Lincoln County is “already vulnerable to economic adjustments, (and thus is) ill-equipped to deal with even minor disturbances to the local economic base. As a consequence, Lincoln County views any (negative) repository system related impact, regardless of scale, to require mitigation” (p. ES 1).
- “Since the early 1960s, the economy of the County has become highly dependent on government-related employment, tourism, and retirees” (p. 8). Growth of the County and City would likely depend on the success of efforts to attract new business to the area. Expansion of tourist related visitation is also viewed as key to the area’s future” (p. 9).
- “At this time, permitting for new industries is not difficult” (p. 16) in Lincoln County, since its Class 2 designation under Nevada’s air quality classification system “allows for moderate degradation” (p. 16). “If repository related activities result in unmitigated declines in area air quality, the County or the City may find it more difficult to attract desirable businesses into the region” (p. 17). In addition, “current residents may feel compelled to move away and prospective new residents may pass up Lincoln County in favor of areas with lesser levels of emissions” (p. 17).
- “Most of the City of Caliente, including the higher density residential neighborhoods, fall within (the) ½ mile (non-incident exposure) zone” (p. 22) assumed in transportation assessment models. Also, “Kershaw-Ryan State Park is ... ¼ mile from the proposed site for the intermodal facility (p. 22).
- “The viewshed in the vicinity of the entrance to Rainbow Canyon may be altered” and the “viewshed surrounding the Kershaw-Ryan State Park ... might be impacted” (p. 19) if DOE locates an intermodal facility in Caliente.
- All Lincoln County highway routes that might be designated for high-level waste shipment “are two-lane with minimal availability of pullout areas, rest stops, or service facilities” (p. 9). Portions of US-93 and SR-375 have high crash rates (p. 49).
- Approximately 100 miles of possible rail route in Lincoln County is in “rugged terrain ... that results in 40% of the track alignment being curved ... (and requires) 44 bridges and cuts through 14 tunnels” (p. 52).
- Local emergency response providers include 4 local fire departments, 2 ambulance associations, 2 medical centers (in Caliente and Alamo), and the County’s Sheriff Department. However, “much of the equipment currently in service is outdated and unreliable” (p. 34). Emergency response providers also include the Union Pacific

Railroad, the Nevada Highway Patrol, and the U.S. Bureau of Land Management. However, "based upon current facility locations, additional state and/or federal support may not arrive for 3 to 4 hours" (p. 35).

- "Many of the communities in Lincoln County, particularly Alamo and Panaca, experience reduced water pressure during the summer months, with insufficient flow for fire fighting" (p. 36).

Impacts of the Yucca Mountain Project

The Report describes three scenarios to "illustrate the types of events and consequences of possible DOE action" (p. 12) in Lincoln County:

- One scenario involves a collision of a legal-weight truck shipment of spent nuclear fuel with a gasoline tanker truck approximately 6 miles west of Caliente on US-93. The accident occurs in late June, the height of the local tourist season (p. 12). "The two drivers of the spent fuel truck and the driver of the tanker are killed" (p. 13). The resulting fire damages shipping cask seals, allowing small amounts of radiation to escape. "Wind patterns carry the radionuclides toward the City of Caliente" (p. 12), where residents are told to stay indoors. Highway 93 is closed "for many days." Intensive media reporting results in mass cancellations of hotel-motel reservations, and "visitation to Lincoln County during the following four weeks is off by an estimated 30 to 40 percent" (p. 13).
- A second scenario involves a collision of "a westbound train carrying spent fuel shipments to the intermodal facility (with) "an eastbound train carrying a flammable, explosive chemical ... parked on a siding approximately 5 miles east of ... Caliente" (p. 14). The resulting fire "burns out of control for three hours, causing the seals on the casks to fail" (p. 14), releasing radiation and initiating evacuation of Caliente, Panaca, Pioche, and "the five state parks that are within thirty miles of the accident" (p. 14). "The UP mainline is closed for several days" (p. 14). Intensive media coverage results in mass cancellations of hotel-motel reservations, and visitation to Lincoln County "is substantially less than normal for the summer months, resulting in lost revenue for local merchants, (and) reduced tax revenue for ... local governments." (p. 15).
- A third scenario involves "A volcanic eruption ... beneath the Yucca Mountain repository site (in which) the containment capability of one or more waste canisters is compromised, resulting in radionuclides being transported in the ash plume" (p. 14) and settling in downwind communities, including Alamo, Hiko, Caliente, Panaca, and Pioche. "Most Lincoln County residents evacuate north to White Pine and Elko counties, which are "quickly overwhelmed with the need to provide emergency shelter and assistance" (p. 14).

Aside from the worst case scenarios, the Report finds that "Lincoln County can expect a broad range of impacts, including negative impacts on community cohesion,

population driven effects, emergency management, highway accident risk, and impacts from stigma that may reduce the desirability of Lincoln County as a place to live and as a destination for tourists” (p. ES 2). At the same time, it states that “the lack of specific transportation plans and policy for Yucca Mountain, ...the magnitude of uncertainty associated with DOE’s analysis of risk, and the unique nature of the repository system make any definitive statement about the safety of the system and (its) impacts impossible” (p. ES 4). The Report then describes impacts in the following categories:

- Air Quality: Unmitigated reductions make business attraction more difficult.
- Hydrology: Proposed facilities/routes close to perennial streams and resources.
- Noise: Construction and operations noise vs. current and EPA recognized levels.
- Viewshed: Possible effects at Rainbow Canyon and Kershaw-Ryan State Park.
- Radiation Exposure: Especially if rail shipments stalled due to congestion at the Intermodal Facility (IMF).
- Community Cohesion: Disagreements stimulate internal community conflict.
- Political Divisiveness: Polarization. High levels of emotion, divergent opinion.
- Employment: Jobs in IMF construction and operation, also NTS and YMP.
- Income: Re: IMF operations ... from \$2.6 increasing to \$11.7 million.
- Population: 110-130 new residents re: IMF, plus others re: NTS and YMP.
- Emergency Management: Need for vehicles, staff, training, and communications.
- Emergency Medical: Need for staff training and equipment.
- Schools: 24 students, at \$8044 operations and \$10,630 capital per student.
- Streets: Annual maintenance costs would increase.
- Wastewater: IMF location at or adjacent to current treatment facility.
- Municipal Water: Demands of involuntary activity on existing resources.
- Local Oversight: Joint Committee meeting time; prospective PETT requests.
- Local Gov. Finance: Local revenues do not cover costs; intergov. revenue precarious.
- Land Use: Rail construction and operation would disturb livestock and wildlife.
- Highway Transportation Risk: 4 crashes involving loaded/empty heavy-haul trucks.
- Rail Transportation Risk: 4 derailments expected in Lincoln County over 24 years.
- Public Perception & Stigma: Possible out-migration, business closures, etc.
- Tourism: State Parks and wildlife areas near IMF and transportation routes.
- Economic Development: Increased difficulty to attract desired development.
- Property Values: Some factors may increase; others could reduce.

4.1.4 White Pine County, Nevada

The perspective of White Pine County is presented in its November 2001 “White Pine County Impact Report” (Appendix VII).

Project Description

The Report notes that “DOE did not include (the US-93/6 route for legal-weight truck shipment of HLW) as an analyzed alternative in the DEIS” (p. 10), but that this route “has been designated by the Nevada Department of Transportation as an

'alternative route' permissible for interstate trucking, including all classes of hazardous materials except route-controlled high-level waste shipments" (p. 9). Should a repository be sited at Yucca Mountain, the State would face "the necessity to protect the State's gaming-based tourist economy" (p. 3). Under these circumstances, "it is possible, if not likely, that the Governor of Nevada would designate US-93/6 through White Pine County as Nevada's preferred route for spent nuclear fuel shipments (as the State has done for LLW shipments)" (p. 10).

Based on these assumptions, the Report estimates that high-level waste shipments through White Pine County could number 55,000, and an additional 19,000 spent fuel shipments could be routed through the county if a private storage facility is developed at Skull Valley, Utah. These high-level waste shipments are in addition to about 12,000 expected shipments of low-level wastes for disposal at the Nevada Test Site (p. 42).

The specific White Pine highway segments are "US Highway 93 south to Ely from the Elko County line (approximately 64 miles, and) ... US Highway 6 from Ely south to the border with Nye County (approximately 39 miles)" (p. 42-43).

Local Vulnerabilities

The Report refers to several special vulnerabilities in White Pine County:

- "The US-93/6 corridor route through Elko, White Pine, and Nye Counties is two-lane with minimal availability of pullout areas, rest stops, or service facilities. There are no safe haven areas.... Road conditions in the winter normally include snow and ice, particularly in the mountain passes" (p. 9).
- US-6 south of Ely "is characterized as mostly mountainous, where grades can reach 7 percent in the vicinity of Murry Summit, ... (and where) severe winter storms can result in highway closures" (p. 43).
- "Approximately half of the population of White Pine County lives in the US Highway 93 corridor (21 miles) between McGill and Ely, within (a) .5 mile exposure zone" (p. 23). In particular, the McGill/Ely Corridor has a "high concentration of residences, businesses, and schools in very close proximity to US-93/6" (p. 10). In this section, the density and land uses "are similar to (those) of the potential route for high-level nuclear waste near Las Vegas, (and) the distances between commercial and residential uses and the actual roadway may be less than (those) in the Las Vegas corridor" (p. 10).
- In addition, many of the motels and schools in the Ely area are located adjacent to the highway or within the .5 mile exposure zone (p. 23). DOE's "DEIS analysis of radiological risks ... and estimates of the consequences of maximum reasonably foreseeable accidents did not explicitly address local, difficult-to-evacuate populations such as those in prisons, hospitals, nursing homes, or schools" (p. 24).

- “Ely, the principle city and county seat (of White Pine County), serves a large geographic area including local and transient populations with essential services ... The nearest alternative availability of these types of services is often two hundred miles distant” (p. 6). Thus, “Ely is a gathering place for transient(s) and locals, well isolated from other population centers (p. 9). Truck drivers would need to rest, refuel their vehicles, and have meals as they travel along the route through Nevada. Unless DOE designates otherwise, some ... may choose Ely as the best location for these functions” (p. 23).
- For emergency response, “White Pine County and the City of Ely rely on volunteer and professional fire fighters, and emergency medical technicians (who) are not adequately trained in the event of a radiological accident.” Furthermore, “Incompatible radio and communication equipment between emergency response agencies hinders optimal communication” (p. 37).
- “White Pine County is characterized by an abundance of outdoor recreation activities” (p. 46), which include two state parks (Cave Lake and Ward Charcoal) and the Great Basin National Park. As a result, “tourism has begun to emerge as a significant component of the White Pine economy” (p. 8), and “the County is seeing more and more residents of Clark county elect to purchase second homes in the Ely area” (p. 9).
- Two local vulnerabilities involve linkages with the Las Vegas Valley metro area: a) “Local government finances in Nevada involve distribution to rural areas of tax revenues derived in the State’s metropolitan areas. Any stigma-induced downturn in the economy of the Las Vegas metropolitan area could have direct consequences upon the fiscal health of White Pine County” (p. 13). “The Las Vegas Valley Water District has filed for groundwater rights in White Pine County. Degradation of southern Nevada water supplies (due to the YMP) could increase demand by Las Vegas for White Pine County water” (p. 13).

Impacts of the Yucca Mountain Project

The Report describes three scenarios to “reflect what might be considered ‘worst case’ situations and outcomes” (p. 16):

- One scenario involves a collision of a spent fuel shipment with a gasoline tanker truck approximately ½ mile south of Ely on US-6. The accident occurs in late June, the height of the local tourist season (p. 16). The resulting fire damages shipping cask seals, allowing small amounts of radiation to escape. The Murry Canyon area of Ely is evacuated. Intensive media reporting results in mass cancellations of hotel-motel reservations, and “a sixty percent reduction in direct visitor spending for a period of four weeks (p. 17). In addition to tourism impacts, demand for real estate in the area (particularly from second home buyers) declines dramatically” (p. 18).

- A second scenario involves a collision of a spent fuel shipment with “a double trailer tanker containing 10,000 gallons of gasoline heading down Murry Canyon on US-6 at 55-mph in a light winter snowstorm ... The vehicles interlock and ... careen off the highway and smash forty feet vertically into Murry Canyon (p. 19). A 30-mph wind blowing down Murry Canyon increases the temperature of the fire, and the intensive heat and smoke impedes local emergency response. Since weather “has forced closure of the small county airport” (p. 20), the DOE radiological response team and the nearest large-scale petroleum fire fighting capabilities (at Nellis AFB) are at least 4 hours away. “Most of Ely is sufficiently contaminated to preclude reoccupation anytime in the near future (p. 20). Worse yet, radionuclides have been found in Murry Spring, which was up to now Ely’s water supply source” (p. 21).
- A third scenario involves “A volcanic eruption ... beneath the Yucca Mountain repository site (in which) the containment capability of one or more waste canisters is compromised, resulting in radionuclides being transported in the ash plume” (p. 18) and settling in downwind communities, including Ely and McGill. This adds to the effects of DOE’s weapons testing program (p. 22).

Aside from the worst case scenarios, the Report anticipates the following types of impacts:

- A comparison of “transportation risks in the County with nationwide risk studies conducted by DOE indicates that incident-free risks in White Pine County (are) slightly greater for rural segments than those for the nation as a whole, but lower for suburban and urban segments” (p. 23).
- “A severe accident which results in the breach of a containment cask finds the risk substantially greater than the risks outlined in DOE’s DEIS” (p. 24).
- Stigma effects could cause out-migration, reduced property values, and reduced second home development (p. 25). Conversely, DOE could locate ancillary functions or manufacturing facilities in White Pine County, “generating a positive employment effect” (p. 25).
- Effective evacuation plans would be needed for the City of Ely, the White Pine County School District, the W.B. Ririe Hospital, and the Ely Maximum Security Prison (p. 34-35).
- “Emergency medical systems ... would need to be enhanced in order to handle additional incidents ... without compromising service to the existing resident population” (p. 37).
- An indirect impact is “the heightened costs of encouraging economic development in view of possible negative public perceptions of the region due to its location on a designated highway route for the transport of high-level nuclear waste.”

- “Current residents may view the area as less attractive, and this may ultimately lead to an out-migration of residents....potential retiree in-migrants may chose to locate elsewhere if they view White Pine County as having lesser appeal or quality of life” (p. 44).

The Report reviews studies of property value effects at other DOE sites, Superfund sites, and “a nuclear transportation route in South Carolina” (p. 50-51). It then notes that the 1997 Interim Nuclear Waste Storage Bill (H.R. 1270) “was amended to require compensation for land owners if transport of the waste could be shown to have devalued their properties by at least 20%” (p. 52). Applied to property values in the City of Ely, the Report estimates the uncompensated reduction in property value at \$8.4 million (p. 53).

4.1.5 Eureka County, Nevada

The Eureka County assessment is presented in its August 2001 “Impact Assessment Report on Proposed Shipments of Spent Nuclear Fuel and High-Level Radioactive Waste through Eureka County, Nevada” (Appendix VII).

Project Description

The Report addresses the possibility that the Carlin rail route (one of DOE’s five options for rail transport in Nevada) would be developed and used for transport of high-level waste and other materials to the Yucca Mountain site. In addition, the report assumes that “since all scenarios involve some transport by legal-weight truck, (and) since no specific alternative route has yet been designated ... weather or other operational variables could force the use of ... I-80, US-50, and SR-278 in Eureka County (to) be used periodically or regularly to transport SNF or HLW to Yucca Mountain” (p. 3).

The Carlin rail corridor would depart from the Union Pacific/Southern Pacific (UP/SP) rail tracks at Beowawe and extend south through the Crescent Valley and into Lander County. Of the 317-mile route, 18.25 miles would be in Eureka County. Terminal facilities (wye turnouts; interchange, turning, and emergency materials storage tracks; a crew station and office; a locomotive service facility; and an emergency station and garage) would be located at Beowawe. Other facilities that might be located at Beowawe include “an operations center; maintenance headquarters; (vehicle) maintenance facility; dormitory; fueling station; and rail car repair shop” (p. 8).

The assessment assumes that the Carlin corridor would have a 1300-foot federally-owned and fenced right-of-way, within which the disturbed area would be 200 feet. It further assumes that the Eureka County segment would include a grade-separated crossing of County Road M-115, just east of the Town of Crescent Valley, and one signaled at-grade crossing at an unspecified location (p. 8).

Construction of the Carlin branch line might require a workforce of about 500, divided into 50-person roadbed and bridge construction crews (p. 14). Construction

materials would include “10 million gallons of diesel fuel, 210,000 gallons of gasoline, 79,000 tons of steel, and 440,000 tons of concrete” (p. 13), most of which would be delivered via Beowawe. Also required would be 660 acre-feet of water drawn (under temporary permits from the State of Nevada) from 67 wells along the corridor route (p. 12).

Operations of the Carlin branch rail line might require about 50 contract operator employees, who would be based in Elko or the Town of Crescent Valley (p. 14). Though owned by DOE, use of the line could be shared with mine operators, general freight operators, and the NTS (e.g., for LLW shipments) (p. 15).

Local Vulnerabilities

The special vulnerabilities of Eureka County to the prospective transportation program include:

- An existing bulk propane facility at Beowawe and a proposed ethanol production plant at Dunphy could exacerbate the effects of an accident in the vicinity (p. 2).
- The Humboldt River (the major water system of north central Nevada, and the route for I-80 and the UP/SP railroad) could be damaged by accidents involving releases from shipments of HLW, LLW, or other materials.
- The Carlin route would cross the 100-year flood plain in the Crescent Valley. The generally shallow water table in the valley could exacerbate the effects of borrow pits or complicate the provision of underpasses for livestock or equipment. (p. 3).
- Private land within the Carlin corridor, which comprises up to 59% of the Eureka segment, would be converted to public (federal) use, thus removing it from the local tax roles (p. 3).
- Two grazing allotments in the Crescent Valley would be affected by the Carlin rail corridor with effects dependent on the specific route and the fencing (p. 3).
- The value of private property along the corridor and tourist visitation to Eureka County could be damaged by incident-free transport of HLW and severely damaged by an accident (p. 3).
- The historic way of life in the West, as it is practiced in Eureka County, could be affected by rail corridor construction and operations (p. 3).
- The soils in the (Crescent) Valley are fragile and easily disturbed, difficult to revegetate, and vulnerable to invasion by noxious weeds (p. 2).

Impacts of the Yucca Mountain Project

After stating that a complete assessment of impacts “is not possible until the DOE provides more detailed information on construction and operations” (p. 52), the Report elaborates on the types of impacts on the natural and human environment anticipated as a result of rail or truck transportation of HLW, under accident-free and accident conditions. Accidents are differentiated between those in which a cask “hits the ground” without radioactive release, and “severe accidents” involving the release of radioactivity.

Impacts to the natural environment (Part 4A, p. 52-59) include those to:

- Hydrology and water resources (e.g., the 100-year flood plain in Crescent Valley)
- Air resources (e.g., vehicle emissions)
- Vegetation and soils (e.g., 1.6 million cubic yards of fill material, in excess of cut.)
- Wildlife and fish (e.g., fencing effects on movement of pronghorn antelope)
- Range resources (e.g., destruction of forage and invasion by noxious weeds)
- Scenic resources (e.g., views of and views from the historic Maiden’s Grave)

Impacts to the human environment (Part 4B, p. 60-73) include those to:

- Cultural resources (e.g., archeological sites, sacred springs, and burial sites)
- Population and demographics (e.g., the families of direct employees)
- Land ownership (e.g., conversion of private land to public use)
- Economy (e.g., direct jobs during construction and operations)
- Housing (e.g., housing in communities and at work camps)
- Mining and minerals (e.g., potentially lower transportation costs)
- Infrastructure (e.g., disposal of liquid and solid construction wastes)
- Public finance (e.g., the costs for emergency management and response)
- Outdoor recreation (e.g., limitations of public access, decreases in visitation)
- Public health & safety (e.g., radiation and related impacts on workers and public)
- Noise, land use, and the quality of life (e.g., noise during construction and operation)

4.1.6 Lander County, Nevada

The perspective of Lander County is presented in its August 2001 “Lander County Impact Report” (Appendix VII).

Project Description

The Report “considers direct, indirect, and risk induced impacts ... primarily related to transportation” (p. 4) elements of the Yucca Mountain Project. Among the transportation options being considered “... is a rail access spur through north central Nevada, (in particular,) a rail alignment that leaves the Union Pacific mainline at Beowawe ... and heads south past Crescent Valley into eastern Lander County. The proposed rail spur could carry as many as 19,000 ... shipments of spent nuclear fuel and

high-level nuclear waste to a (Yucca Mountain) repository over a period of 24 to 38 years” (p. 4, 6).

Since the Lander County community of Battle Mountain is located on the UP mainline, eastbound rail shipments to Beowawe would pass to the north of town, and the more numerous westbound shipments would be diverted 30 miles east of Battle Mountain. “As a result, rail operations would not directly affect the Town of Battle Mountain” (p. 9).

“From the connection at Beowawe, the proposed rail route travels southwesterly following the alignment of Coyote Creek and State Highway 306” (p. 11), and continues through Dry Canyon, Grass Valley, and Rye Patch Canyon to the Nye County line near the head of the Big Smoky Valley (p. 11).

The Report observes that a rail spur might also be used for LLW shipments to the NTS. “It is possible that some LLW shipments may travel by rail, if a spur were constructed through northern Nevada” (p. 5).

Though the focus is on rail shipments, the Report notes that I-80 in northern Lander County could be used for legal-weight truck shipments of HLW. This could occur due to shipments east on I-80 to a private spent fuel storage facility in Skull Valley, Utah or to an intermodal transfer station (not proposed by DOE) at Beowawe. Legal-weight truck shipments could also occur due to shipments west on I-80 to a State-designated highway route (e.g., US-95) for HLW shipments (p. 8).

Local Vulnerabilities

The Report refers to several local vulnerabilities to HLW transportation impacts:

- “The Union Pacific railroad parallels (the Humboldt River) nearly the entire length of the route...Speeds along the track can reach 70 miles per hour in certain areas. An accident or derailment ... in this area has the potential to contaminate surface water resources in the Humboldt River Basin (p. 12). Along many areas of the Humboldt River Basin, there is direct interaction between surface and ground waters. Surface water contamination can directly intercept groundwater leading to a direct contamination of the groundwater reservoir (p. 13). Surface water is not currently used for human consumption. However, it is a major component of groundwater recharge that is ultimately available for domestic wells and municipal and industrial water supplies” (p. 12-13).
- “Irrigation diversions occur off the Humboldt, (supporting) surrounding ... pastures utilized by grazing livestock” (p. 12).
- Along the Coyote Creek and State Highway 306 sections, “There is bottomland to the east of the route, and there is mining activity in the area, with several mine access roads crisscrossing the valley” (p. 11).

- “Road crossings in Lander County, particularly those in Battle Mountain, are heavily traversed by trucks hauling materials of a toxic and explosive nature. Additionally, there are several at-grade crossings along the rail routes in northern Lander County that have limited safety and warning devices” (p. 9).
- “Current mining operations at Cortez are expected to continue beyond 2010. The proposed rail route would pass directly through the pipeline and south pipeline project area.... A development of a rail line could cause serious conflicts, particularly with respect to the value of mineral rights in the Pipeline and Cortez Mining areas” (p. 21).
- “During nearly the entire length through Grass Valley, the proposed rail spur either crosses or follows principle surface water drainages, (which are) the primary sources of recharge for groundwater in Grass Valley” (p. 16).
- The Lander County town of Austin is located “about 10 miles west of the proposed rail line through the Big Smoky Valley,” and the communities of “Kingston and Gilman Springs are located in the Big Smoky valley approximately 3 miles from the proposed rail route” (p. 3).

Impacts of the Yucca Mountain Project

The impacts identified in the Report are associated with the resource and stigma effects of a prolonged high-level waste shipment campaign:

- “The effect of (railroad) construction and operation ... on livestock grazing depends primarily on whether or not the right-of-way is fenced and where the fence (is) located... (Regarding unfenced rights-of-way,) we would assign an arbitrary 0.1% reduction in AUMs (Animal Unit Months) to reflect the effect on (livestock) management.... (Regarding fenced rights-of-way,) we would assume an arbitrary 0.5% minimum reduction of AUMs” (p. 24-25). The allotments potentially affected include the Carico Lake, Grass Valley, Simpson Park, Kingston, and Potts Allotments (p. 25-31), and several US Bureau of Land Management wild horse herd management areas within these areas (p. 32).
- The Report estimates the consequences of a stigma-related reduction in “overnight travelers staying in ... motels in Battle Mountain and Austin, and recreation users in areas near the proposed Crescent Valley rail spur” (p. 34). Assuming a “10 percent decline in visitor volume annually over the course of (a 38-year) shipment campaign through Lander County” (p. 35), the Report estimates losses of \$306 million in economic activity and \$12 million in state/local tax revenues (p. 36).
- The Report estimates “total property value along the transportation corridors (at) just over \$150 million” (p. 40). Stigma-related losses over a 38-year rail shipment campaign (no accidents) are estimated at \$10-\$21 million in property value and \$2-\$4 million in property tax revenues. Should an accident with no radiation release occur,

the losses over a 38-year rail shipment campaign are estimated at \$34-\$48 million in property value and \$7-\$10 million in property tax revenues (p. 41).

- The cost to upgrade and maintain local emergency response capabilities over a 38-year rail shipment campaign is estimated at \$31 million (p. 45).
- Assuming that additional state government expenditures in response to the Yucca Mountain Project result in reductions of state services to local governments, the Report estimates the Lander County portion of the “lost benefit” at \$3.5 to \$5.0 million (p. 45).
- Assuming HLW shipments are also routed through the Las Vegas Valley, the Report estimates that the “cumulative losses (of state-distributed local revenues) to Lander County residents over the course of the shipping campaign could range from “\$10.9 to \$21.3 million” (p. 46).

The Report concludes that economic benefits of the proposed rail spur are uncertain and potentially contentious. “Unlike the 1880s, when the railroad so thoroughly complimented the development of lands for mining and associated uses, the proposed rail spur to Yucca Mountain has only speculative secondary benefits that may or may not be achieved” (p. 53)

4.1.7 Churchill County, Nevada

The Churchill County assessment is presented in its August 2001 “Churchill County Impact Report” (Appendix VII).

Project Description

The Report assumes that “use of rail through Churchill County (the Mina route) is not considered a viable transportation option (for shipments of high-level waste to Yucca Mountain) at this time” (p. 5). However, “states have the ability to select alternative highway routes that could place waste shipments to Yucca Mountain on a host of alternative routes other than U.S. Department of Transportation preferred transportation routes” (i.e., the interstate highway system) (p. 1). “The central theme of the WIPP transportation program (for shipments of transuranic wastes to Carlsbad, New Mexico) is the avoidance of major metropolitan areas,”...and the DOE program for shipment of low-level wastes for disposal at NTS has diverted shipments to a variety of routes through rural Nevada “in order to avoid the Las Vegas Valley.... (These) low-level waste routes are being treated as a precursor for high-level waste shipments to Yucca Mountain. If and when Yucca Mountain shipments begin, the State of Nevada would probably designate alternative routes similar to those now being used by the LLW program” (p. 6).

The Report estimates that, under these assumptions, shipments of SNF from four commercial sites in northern California, Oregon, and Washington, as well as shipments of HLW from Hanford and the Idaho National Engineering and Environmental

Laboratory (INEEL) could travel along US-50A and/or US-95 through Churchill County. Under DOE's "mostly truck" scenario, the number of shipments could range from 5,450 (11% of the Proposed Action total) to 19,193 (20% of DOE's "module 1&2" total) (p. 8).

The Report notes that an interim storage facility in Skull Valley, Utah could reduce the number of spent fuel shipments on US-50A/US-95, while increasing the number of eastbound shipments on the I-80 or the UP railroad routes, which cross the northwest corner of Churchill County (p. 10).

Local Vulnerabilities

The Report identifies several local vulnerabilities to YMP impacts:

- "Just over 90 percent of the Churchill County population is located in the Fallon urban area" (p. 1), where US-95 (extending south from I-80) and US-50A (extending east from I-80) intersect. The corridor population (within one mile on each side of the highway centerline) is estimated at 19,014, and is projected to increase to 23,650 by 2010 (p. 13).
- Fallon has approximately 350 motel rooms and 100 RV spaces, all located within the corridor (p. 36). Considering occupancy, these add about 550 persons to the resident population.
- Commercial and residential development within the corridor encroaches on the highway, "in some cases at a distance of less than 30 feet, and sometimes less than 15 feet (p. 16), much closer than default assumed distances for the RADTRAN analysis used in the Yucca Mountain DEIS" (p. 18).
- In addition, the Report inventories 23 public facilities (schools, hospitals, community centers, parks, libraries, etc.), most of which "are located within one-quarter mile of the highway corridor" (p. 18).
- The intersections of the major highways in the center of Fallon are "a physically confined and busy center of urban commerce" (p. 23), where the lane widths and turning radii are "not adequate to handle ... tractor-trailer vehicle types" (p. 23).
- Both US-50A and US-95 have high accident locations near the in-town intersections, and "significant portions of (both roads) project to be operating at a level of service D or F soon after waste shipments begin" (p. 24).
- The valley of the Carson River, which flows just north of the City of Fallon, is "one of the primary agricultural regions in the state" (p. 1).
- The Fallon Naval Air Station, located southeast of the city, "is the primary training facility for the U.S. Navy's Advanced Fighter Weapons School" (p. 1).

Impacts of the Yucca Mountain Project

The socioeconomic impacts identified in the Report are associated with the stigma effects of a prolonged high-level waste shipment campaign:

- A potential 10% decline in annual visitor volume could cause losses of \$726 million in economic activity and \$30 million in state/local taxes over the course of a 38-year shipment campaign (p. 38).
- Applying the findings of a Clark County survey of real estate appraisers and lenders to Churchill County property within 3 miles of US-95 and US-50, the Report estimates that the property value diminution could range from \$29-\$186 million over a 38-year accident-free shipment campaign, while a no-release accident scenario could cause diminution of \$81-\$430 million. The associated property tax losses are estimated at about 21% of the property value diminution (p. 44).
- The costs of upgrading and maintaining the County's emergency management and response capability is estimated at \$30 million over a 38-year shipment campaign (p. 48).
- Assuming that additional costs of the YMP to state government agencies (as estimated in a 1998 report³ and projected forward as recurring costs) would correspondingly reduce state services to local governments, the Report estimates a loss of \$47-\$92 million in state government services over a 38-year shipment campaign (p. 49).
- Assuming that nuclear waste shipments would also be routed through Clark County and cause stigma effects to its substantial state-distributed tax revenues, the Report estimates that Churchill County's share of the losses would total \$85 million over a 38-year shipment campaign (p. 50-54).

4.1.8 Mineral County, Nevada

The Mineral County assessment is presented in its July 2001 "Mineral County Impact Report: A Preliminary Assessment of the Proposed Yucca Mountain Project and the Transportation and Socioeconomic Impacts to Mineral County" (Appendix VII).

Project Description

The Report states that, while "use of rail (the Mina route) through Mineral County is not considered a viable transportation option at this time... The (legal-weight truck) routes used for LLW shipments could become (the routes used for) high-level waste/spent nuclear fuel shipments to Yucca Mountain" (p. 4). This judgment is based on the observations that "the central theme of the WIPP transportation program is the

³ "The Fiscal Effects of Proposed Transportation of Spent Nuclear Fuel on Nevada State Agencies" NV-NWPO, 1998.

avoidance of major metropolitan areas" (p. 4), that the recent rerouting of LLW shipments to NTS has made I-80 and US-95 the principle routes for such shipments from the northwest, and that "the State of Nevada would probably designate alternative routes (for legal-weight truck shipments of high-level wastes) similar to those now being used by the LLW program" (p. 6).

The Report estimates that, under these assumptions, shipments of SNF from four commercial sites in northern California, Oregon, and Washington, as well as shipments of HLW from Hanford and INEEL could travel along US-95 through Mineral County. Under DOE's "mostly truck" scenario, the number of shipments could range from 5,450 (11% of the Proposed Action total) to 19,193 (20% of DOE's "module 1&2" total). The Report notes that the number of shipments through Mineral County would be reduced if portions of the SNF from the above sites were stored on an interim basis at Skull Valley, Utah.

Local Vulnerabilities

The Report identifies several local vulnerabilities to YMP impacts:

- "Total population in the 1-mile corridor area (.5 miles on each side of the US-95 centerline) is estimated to be approximately 4,287" (p. 9), and is projected to increase to 5,228 by 2010. "Within the ... Hawthorne area, (current) population density reaches 4,778 persons per square mile... values similar to the suburban population densities used by RADTRAN" (the model used to estimate doses from transportation of radioactive materials) (p. 16).
- The Report counts 276 motel rooms in Hawthorne and estimates that the average occupancy of motels and RV parks increases the corridor population by about 500 persons (p. 10).
- Much of the residential and commercial development in the Town of Hawthorne encroaches within 15-30 feet of US-95, increasing the potential exposure from incident-free radioactive waste shipments (p. 10).
- The Hawthorne Army Ammunition Depot (HWAAD: a 147,000-acre government-owned contractor facility between Hawthorne and Walker Lake), "stores (and produces, assembles, and tests) approximately 300,000 to 400,000 tons of primarily conventional munitions. An accident involving HWAAD activities with a truck hauling radioactive waste to Yucca Mountain could potentially have severe consequences for the Hawthorne area" (p. 21).
- The Report inventories 24 public facilities (schools, libraries, parks, hospitals, etc.) in Mineral County, finding that 21 are located within .5 mile of US-95 (p. 12).
- Though standard applications of RADTRAN would assume that the Mineral County segments of US-95 are rural areas, the Report's assessment of traffic volumes and

speeds suggests that portions of the corridor, such as the Hawthorne area, are suburban or urban in character (p. 17).

Impacts of the Yucca Mountain Project

The Report links nuclear waste transport to several types of socioeconomic and fiscal impacts:

- The Report estimates that the use of US-95 for shipments of highly radioactive wastes could reduce travelers and special event visitors to Mineral County by 10% over the 23-38 year shipment campaign. The impact on the local economy is estimated at \$390-\$900 million; the impact on state and local taxes is estimated at \$15-\$39 million (p. 24).
- The Report applies the findings of a survey of Clark County real estate appraisers and lenders⁴ to property within 3 miles of US-95 in Mineral County, estimating that a no-accident scenario could result in property value losses of \$6-\$62 million and property tax losses of \$2-\$13 million over a 38-year shipment campaign. A no-release accident scenario could double or triple these figures (p. 29).
- The Report estimates the cost to improve and maintain local emergency response capability over a 38-year shipment campaign at \$28 million (p. 30-33). In addition to equipment and staffing in the local emergency management, sheriff, and fire departments, the estimate includes lost wages and travel reimbursement for annual training for volunteer responders (awareness, operations, and technician level), and hospital, radiology, and other personnel.
- Assuming that transportation-related costs to Nevada state agencies would require cut-backs of current state services to local communities, the Report estimates that Mineral County would lose \$3.5-\$5 million in current state government programs (p. 33).
- Assuming that repository-related transportation would also affect Clark County and its visitor-gaming economy, the Report estimates that the loss to Mineral County in state-distributed revenues could be \$11-\$21 million over a 38-year shipment campaign (p. 34).

⁴ "Clark County Results and Key Informant Surveys: Beliefs, Opinions, and Perceptions about Property Value Impacts from the Shipment of High-Level Nuclear Waste through Clark County, Nevada," Urban Environmental Research, LLC (Feb. 2000).

4.1.9 *Esmeralda County, Nevada*

The Esmeralda County impact report is contained in Appendix VII.

Project Description

The Report assumes that “Due the precedent set by the (DOE) low-level waste transportation campaign, and the political clout of southern Nevada, all highway shipments of high-level waste (to Yucca Mountain) would be routed through rural communities in Nevada” (p. 4).

The Report also considers potential rail transport along the Carlin or Caliente routes. Depending on the alignment chosen, the route could pass 10 miles east of Goldfield, along the western edge of the Nellis Air Force Range, or about 5 miles west of Goldfield, closely following an abandoned north-south rail corridor through Esmeralda County.

Local Vulnerabilities

The Report refers to several special local vulnerabilities to impacts from the YMP:

- Over 98% of Esmeralda County’s land area (3570 sq. mi.) is controlled and managed by the federal government. The recent decline in the mining industry, combined with the population-based distribution federal Payments-in-Lieu-of-Taxes, results in a very meager local revenue base (p. 7, 14).
- The mining industry in Esmeralda County, which has a long history of “boom and bust” cycles, “is currently in the midst of a lengthy ‘bust’” (p. 8), which has severely affected the county’s economic and revenue base.
- The county’s tourism and recreation activity is centered in Goldfield, a national historic site, with the historic Goldfield Hotel (p. 7). US-95, with its well-known 90-degree ‘critical curve,’ “bisects Goldfield and provides the right-of-way for the community’s major water and sewer lines” (p. 23).
- Due to its economic decline, Esmeralda County has a significant indigent and senior population. “A large percentage of county resources are dedicated to assisted living and senior care programs” (p. 12).
- “Esmeralda County’s emergency responders are all volunteers. They are not equipped, trained, or willing to take on the additional responsibility of responding to high-level waste emergencies” (p. 16).

Impacts of the Yucca Mountain Project

The Report states “the County does not feel that attempting to identify each potential impact and address it individually is feasible or realistic” (p. 3). Even so, it identifies several potential health-related, social, and financial impacts on the County and its residents.

- The Report states, “perhaps the most important and ignored impacts to rural counties in Nevada are those having to do with cultural cohesion.... The costs to the community due to the highly emotional conflicts associated with the (YMP) issue, the time invested by community leadership, and the breakdown in community cohesion are very real, already present, and impossible to quantify” (p. 8).
- The Report points to “possible impacts on future economic activity, including current restoration efforts on historic buildings, improvements to build community capacity, and efforts to make mining in the county more economically feasible” (p. 9). On the other hand, if the Carlin or Caliente rail line were constructed in the County, exploitation of (the County’s mineral resources), which are not “presently economically feasible to ship ... by truck” (p. 19), could become feasible and may benefit the local economy.

A transportation accident in Goldfield could cause loss of life, overwhelm the County’s emergency response capacity, and cause a decline in tourism, an exodus of population, and declines in property value and tax revenue (p. 10).

4.1.10 Inyo County, California

Inyo County has not prepared an assessment of the impacts of the Yucca Mountain Project. However, like other affected units of government, Inyo County prepared comments on various DOE assessments, including:

1. The Draft Environmental Impact Statement (Jan. 24, 2000)
2. The Supplement to the Draft Environmental Impact Statement (June 19, 2001)
3. The Yucca Mountain Preliminary Site Suitability Evaluation (Sept. 18, 2001)

A few quotes from these response documents indicate Inyo County concerns:

- The border of Inyo County “lies just 17 miles from the Yucca Mountain site.” Inyo County “would receive via groundwater radioactive materials leaking from Yucca Mountain” (#3, p. 3).
- “The EPA’s radiation protection standards allow for the destruction of those aquifers that provide sustenance for humans and Federally-protected natural habitat in both the Amargosa Valley and Death Valley National Park” (#3, p. 4).

- “The DEIS lacks mitigation measures adequate to address the contamination of the regional aquifer and associated demise of the economy of the Amargosa Valley, the communities of Death Valley Junction, Shoshone, and Tecopa and the destruction of surface and groundwater sources crucial to Death Valley National Park” (#1, cover letter, p. 2).
- “The 1996 (Inyo and Esmeralda County) study of the Lower Carbonate Aquifer suggests a significant degree of hydrologic connectivity between the Lower Carbonate Aquifer lying beneath the proposed repository and surface manifestations of the same formation within Death Valley National Park” (#1, p. 8).
- “Given that Low-Level Nuclear Waste is currently being transported on State Route 127 through Inyo and San Bernadino counties, ...a precedent is now being set for expanded use of the route for high-level waste and spent fuel” (#1, p. 5).
- “Currently, the State Route 127 towns of Tecopa, Shoshone, and Death Valley Junction are served by a single Volunteer Fire Protection District that is without adequate funding. In case of a serious toxic or radiological release in Inyo County, specialist response teams must be brought in from either San Bernadino or Bakersfield, a process which takes a minimum of three to four hours” (#1, p. 6).
- “Due to the lack of information in the DEIS on the relative risks posed by the possible range of rail-truck transportation scenarios, it is impossible at this time to determine whether a rail or truck-focused transportation campaign would best serve the need to mitigate the risks associated with the proposed repository. Inyo County does, however, have a preference for development and use of the Chalk Mountain Route for waste shipments originating east of California” (#1, p. 7).
- “Inyo County, with its tourism-based economy revolving around the use of Death Valley National Park, is particularly vulnerable to the economic impacts of stigma. The same holds true for risks associated with possible contamination of the regional aquifer serving commercial uses in Death Valley” (#1, p. 12).

4.2 Impacts To Native American Communities

The proposed site of the Yucca Mountain high-level nuclear waste repository is astride a very old border between the Western Shoshone (Newe) and the Southern Paiute (Nuwuvi), two large Native American entities whose aboriginal territories once covered much of what now are central and southern Nevada as well as adjacent southern Utah and southern California (see Appendix VIII for details). Within these entities in the immediate area are several federally recognized tribes and their reservation communities (Yomba Shoshone Tribe, Duckwater Shoshone Tribe, Timbisha Shoshone Tribe, Las Vegas Paiute Tribe, Moapa Band of Paiute Indians), as well as other urban and rural Native American residents and organizations (people in Pahrump, Beatty, Tonopah, Caliente, Las Vegas, and the Western Shoshone National Council, etc.).

Given the potential impacts of the transportation of nuclear waste to this proposed facility, an even broader area of concern encompassing many more Native American tribes and communities (e.g., Battle Mountain, Elko, Wells, South Fork, Ely, etc.) needs to be considered, which to date DOE has failed to do. DOE has dealt thus far only with the immediate site at Yucca Mountain and only with cultural resources at that site (see Stoffle, Halmo, Olmstead, and Evans, 1990). There has been no attempt to assess the broader socioeconomic or health impacts, or any of the special impacts that flow from the abrogation of treaty rights and the deep cultural attitudes of stewardship and custodianship that these groups feel toward their reserved lands and their larger aboriginal holdings. Furthermore, given that most tribes and other entities do not have either the in-house technical expertise or financial resources to conduct their own oversight and independent evaluations of potential impacts, they have had very little opportunity to voice their concerns and get directly involved in the decision making process on this highly significant project.

Indian tribes have unique standing under various environmental and cultural protection acts (National Environmental Policy Act, National Historic Preservation Act, American Indian Religious Freedom Act, etc.). The Nuclear Waste Policy Act officially recognized their status when it wrote into the legislation special provisions for consultation with tribes equivalent to that of states. The Act also defined the additional status of "affected Indian tribe(s)" as flowing from construction of a repository (or MRS) on reservation lands, or on lands covered by a ratified treaty. Although Yucca Mountain is not located on a reservation, tribes would argue that it is within lands covered by the Treaty of Ruby Valley of 1863, a ratified treaty (18 Stat. 689-92; see Western Shoshone Claims Issues, below). DOE has recognized "affected counties" and supplied them with monies for preparatory studies. But thus far, the status of "affected Indian tribe(s)" has not been awarded, although at least one tribe formally applied and was rejected. The Timbisha Shoshone Tribe has recently applied for affected Indian tribe status. That application is pending. Tribal assertions of broader existing tribal rights and interests have been ignored.

Native American Socioeconomic and Health Issues

Native American populations, especially reservation populations, in the immediate vicinity of Yucca Mountain and at a greater distance, are poorly positioned to withstand any economic difficulties that might arise from the siting of this repository. They are, for the most part, economically disadvantaged when compared to their urban and rural neighbors. In 1990, of the 550 (900 + enrolled) persons residing on the four reservations in Nye and Clark counties (+ Timbisha, CA), average incomes were one-third to one-half lower than those of their non-Indian neighbors [Nye County, 1990: reservation incomes, \$18,646; county as a whole, \$34,196. Clark County, 1990: reservation incomes, \$20,000; county as a whole \$35,172 (see Table 7.2 in Fowler 1995:109)]. Unemployment rates were also much higher, with Nye County reservations (Yomba, Duckwater) showing on average 26% unemployment (as compared to 7% for Indians in the county and 5.4% for the county as a whole); and Clark County at 14.7% for the Las Vegas and Moapa reservations (9.7 for Indians in the county and 6.7 for the county as a whole). These profiles are likely quite applicable to other rural and urban reservation situations in the State. Although comparable figures are not yet available for the 2000 U.S. census, it is doubtful that the figures have changed appreciably. Only the Las Vegas Paiute Tribe, which, since 1990, has been involved in a vigorous economic development strategy, is predicted to show much improvement. However, given that this success is based on tourism, they are now vulnerable to the same factors that can affect an economic downturn for the entire Las Vegas Valley, such as the stigma of a nearby repository and the negative economic effects of the HLW shipping campaign.

Native American communities and individuals are also poorly positioned to profit from potential employment that might come from jobs generated by the repository, unless these jobs are largely for unskilled workers. Roughly 2% of individuals on reservations have any college education. The figures for urban Las Vegas are better (30%), but many of these individuals are already employed. Reservation and urban populations alike see high-risk health factors as particularly disturbing. Reservation residents feel particularly vulnerable to past and future contamination of the land, water, and plant and animal resources because their present subsistence strategies involve all of these (cattle, hunting, gathering). They have participated, and continue to participate, in studies by the Childhood Cancer Research Institute, the Native American Radiation Health Network, the Citizen Alert Native American Program, and others involved in assessing past and potential dangers from radiation, out of deep-seated fear that they are already contaminated. They continue to be part of anti-nuclear protest demonstrations on the local, national, and international levels, and the Western Shoshone National Council has declared their lands a Nuclear Free Zone. They have very low levels of trust in government to build and run this project safely and see threats to personal and family health, water contamination, general damage to lands, air, and traditional teachings, and a worsening of their economic well-being as the outcome of construction and operation of the site (see Appendix VII for details).

Transportation Issues

Native Americans are very vulnerable populations when transportation of nuclear waste to the proposed repository is considered. All of the communities listed are on existing or proposed transportation corridors: 1) the Moapa Reservation is transected by I-15 and also by a main north-south rail line from Utah; 2) the Las Vegas Colony is on the edge of I-15 and astride the same railroad tracks - and close to a major downtown Las Vegas switching yard. Their Snow Mountain lands are cut by U.S. 95 between Las Vegas and Yucca Mountain and by one of the potential rail lines; 3) the Duckwater Reservation is very close to U.S. 6, as is the Ely Colony, and to several of the proposed rail spurs that access the NTS from the east; 4) the Timbisha Shoshone Tribe has lands at Scotty's Junction on U.S. 95 and on the proposed Carlin/Caliente/Bonnie Claire rail line; 5) Wells, Elko, Winnemucca, Battle Mountain, and Lovelock are on I-80 to the north and existing rail lines; and 6) Yomba is close to a proposed rail spur from the north. Only Duckwater has any personnel with EMT training, and they are not prepared for nuclear disasters.

The State of Nevada has defined transportation-affected Native American lands and resources to include the following:

- (1) reservations crossed by potential shipping routes;
- (2) off-reservation ceded lands, where Tribes retain treaty rights or other legally-recognized user rights, crossed by potential shipping routes;
- (3) reservation lands and off-reservation lands within transportation emergency evacuation zones along potential shipping routes;
- (4) reservation and off-reservation lands that could be contaminated by air or water transport of radioactive materials released in a severe transportation accident or terrorist incident (generally within 50 miles down-wind, downstream, or down-gradient of a potential shipping route);
- (5) reservations whose highway access would be disrupted by a nuclear waste transportation emergency; and
- (6) off-reservation lands along potential shipping routes where Tribal personnel would likely be involved in transportation emergency response.

The Yucca Mountain DEIS ignores the major concerns identified by potentially affected Indian Tribes in Nevada, the Western Shoshone National Council, and organizations such as the Nevada Indian Environmental Coalition and the Inter-Tribal Council of Nevada. These concerns include:

- (1) Tribal authority to regulate shipments across reservations;
- (2) emergency response planning and training for Tribal personnel;
- (3) advance notification of shipments and shipment monitoring;
- (4) protection of Native American religious and cultural sites, plants, and animals, both on and off reservations;
- (5) cultural implications of potential radiological contamination of Indian lands and the cultural implications of cleanup activities involving non-tribal personnel; and
- (6) adverse economic impacts of public perception of risk, especially adverse impacts on tribal tourism and recreation businesses.

DOE's proposal to construct a rail spur to Yucca Mountain creates special concerns about right-of-way acquisition implications for Western Shoshone land claims (Ruby Valley Treaty) and about protection of graves, religious sites, and other cultural resources within the potential rail corridors identified in the DEIS.

Moreover, DOE failed to provide financial assistance to facilitate independent technical review of the DEIS by potentially affected Indian Tribes in Nevada.

Western Shoshone Claims Issues

As noted above, the NWPA allows qualification as "affected Indian tribe" of any federally recognized tribe that has a ratified treaty covering lands being considered for a high-level nuclear waste repository. The Western Shoshone (several federally recognized tribes) have such a treaty, the Treaty of Ruby Valley of 1863, which did not cede lands. In 1985, the U.S. Supreme Court held that an award to the Western Shoshone people of monies by the Indian Claims Commission in 1979 constituted payment for their lands, regardless of the fact that the Western Shoshone people for more than 20 years have refused to accept these monies. But the decision was ambiguous enough to allow pursuit by the Western Shoshone National Council (an overarching governmental body that includes several constituent tribes) and several Shoshone individuals of other legal options. In 1999, the Yomba Shoshone Tribe entered a "Request for Urgent Action" to the United Nation's Committee for the Elimination of Racial Discrimination (CERD). The request asked CERD to direct the United States to halt all actions that do irreparable harm to the Western Shoshone and to enter into negotiations with the tribe to solve land rights issues. After hearing direct testimony in August 2001, the CERD expressed concern over the situation and recommended that the U.S. address the Western Shoshone's concerns. Thus, potential legal issues remain.

Summary of Native American Impacts

Most Native Americans in Nevada do not want the disturbance of cultural resources that they see as the inevitable outcome of the Yucca Mountain project. Mitigation of disturbed archaeological sites is seen as an unacceptable alternative. They would prefer that no disturbance take place at all.

Native American tribes in the immediate vicinity of the Yucca Mountain project area and along potential transportation routes are, for the most part, economically disadvantaged. Reservations and communities in Nye, Lincoln, Clark, and Inyo counties are rural and isolated and either lack a land base or have land bases too small to support their populations by ranching or other locally common means. A large number of people are unemployed, underemployed, poorly educated, and/or are living below the poverty level. Any negative statewide economic impacts associated with or caused by the repository or repository-related nuclear waste transportation would have a disproportionate impact on such communities because of these depressed baseline conditions.

Table 4.2.1 below summarizes, by area, the various impacts on Native American communities identified in studies undertaken by the State of Nevada between 1987 and 2001.

Table 4.2.1 Native American Impacts: Transportation

Area	Source	Data Base	Information	Major Results	Type/Range of Impacts
Moapa Paiute Reservation I-15, SPRR cross tribal land	Rusco 1989 NA0013 Dufort 1995	Interviews extensive interviews	attitudes to accident scenarios health assessments, general ethnography	order of concerns: tribal/personal health; tribal economy worse; cultural resources damaged; infrastructure cannot cope; downwinder effects already perceived; worsening with repository	severe in all accidents, also just presence potentially severe; mental anguish; loss of quality of life
Las Vegas Paiute Colony/Snow Mountain Reservation; SPRR immediately adjacent; US 95 crosses lands	Fowler 1995 Fowler and Zabarte 2001	Interviews	attitudes to crossing tribal lands, accident scenarios	major health impacts perceived; major economic impacts, especially to Snow Mountain economics; drop in tourism	severe in all categories
Timbisha Shoshone Tribe US 95 crosses tribal lands	Fowler and Zabarte 2001	Interviews	attitudes to crossing tribal lands	severe; would not be able to develop property just obtained due to economic impacts; no housing because of health concerns	severe in all categories
Yomba Shoshone Reservation, Duckwater Shoshone Res., Ely, Elko, Timoak, Battle Mountain Res.	Fowler and Zabarte 2001	Interviews	alternative transportation routes in north and central areas would all impact tribal lands	health; lack of infrastructure for EMT response; economic impacts	severe for all groups

Table 4.2.1 Native American Impacts: Legal

Area	Source	Data Base	Information	Major Results	Type/Range of Impacts
Western Shoshone	Rusco, E. 1991 NA0022	Literature review	legal history of Western Shoshone Claims; State of Nevada hunting and fishing laws and Western Shoshone	ambiguity of claims decision; Supreme Court response; State response by allowing W. Shoshone to monitor hunting and fishing in State	severe lack of trust in government; US and international law implications
	Fowler 1995 Fowler and Zabarte 2001	update of literature reviews	present standing of Claim	continuing the battle over Western Shoshone Claim, including international tribunals	severe lack of trust in government continues; international law implications
Western Shoshone and Southern Paiute governments	Fowler and Zabarte 2001	interviews with tribal governments	lack of "affected tribe" status under NWPA	tribes have received no funding to plan, develop infrastructure for monitoring; considering health and economic consequences	severe; tribes cannot afford to be involved in the planning that is necessary

Table 4.2.1 Native American Impacts: Cultural

Area	Source	Data Base	Information	Results	Type/Range of Impacts
Las Vegas, Moapa, Panaca, Pahranaagat Southern Paiute; Yomba, Duckwater Shoshone	Fowler, Rusco and Hamby 1988 NA003	literature review	location, subsistence, resources, settlements, sociopolitical, ceremony, ritual practices	baseline data	none involved
Southern Paiute, Shoshone tribes	Cultural Resources Consultants 1988; NA005	Archaeological site visits, Yucca Mountain	attitudes, interpretation of site	area of cultural and spiritual importance	sites would be destroyed, disturbed; must be mitigated; no real mitigation possible.
Southern Paiute Western Shoshone Tribes	Hamby and Rusco 1988 NA009	questionnaire on risk perception	perceptions of damage to land, water, cultural resources	scaled responses; much stronger than general population	severe; cannot be mitigated
Timbisha Shoshone	Hamby 1989 NA0015	intensive field studies	demographic, economic; cultural attitudes	high negative responses to project, transportation would damage environment and cultural resources	severe; cannot be mitigated
All Native American groups	Fowler (with Hamby and E and M. Rusco 1991 NA0021	summary statement	AIRFA, NHPA, cultural resources; cultural themes and values	project disastrous to cultural resources, values, quality of life	

Table 4.2.1 Native American Impacts: Economic

Area	Source	Data Base	Information	Results	Type/Range of Impacts
Las Vegas Colony, Snow Mountain Reservation	Fowler and Zabarte 2001 Cultural Resources Consultants 1988 NA004	Informal interviews socioeconomic surveys	economic on tribal golf courses, tribal smoke shops household composition; education levels; family composition	decline with fall in tourism, comparable to Las Vegas baseline data	Severe not part of study
Pahrump - Amargosa Valley	Fowler, Hamby and Rusco 1987 NA0001	survey, field studies	labor force statistics; education levels; income; tribal enterprises	baseline	fiscal impact to individuals, tribes
All Native Americans in study area	Fowler, Hamby and Rusco 1987 NA0001	literature review	economic characteristic sociopolitical features; settlement patterns	baseline	fiscal impact to tribes, individuals
Esmeralda Co., Lincoln Co. and Death Valley	Hamby 1988 NA0006	survey	demographics, household composition, education, labor force, income	baseline	not part of study
Western Shoshone, Southern Paiute	Hamby and Rusco 1988 NA0009	questionnaire, risk perception	employment opportunities lacking	negative on NTS testing to date; negative on improvement of employment opportunities with project	higher negative values than same survey with rural, urban non-Indian people
Duckwater Reservation	Hamby 1991 NA0024	field work	socioeconomic, demographic, income, education, health care	baseline	present services would be inadequate to cope with emergencies, quality of life issues
Las Vegas Tribe	Rusco, 1991 NA0023	field work	socioeconomic, demographic, income, education, health care	baseline	present services would be inadequate to cope with emergencies, quality of life issues
Yomba Reservation	Rusco, E. 1988 NA0008 Hamby 1991 NA0025	literature review field work	history, economy, socioeconomic, education, labor force, community services	baseline baseline	not part of study, conditions very poor; would worsen with project

Moapa Reservation	Rusco and Hamby 1988 NA0007	literature review, interviews, 1980 census	housing, health care, education levels, labor force, income,	baseline	economic conditions poor; would worsen with project
Moapa, Las Vegas, Yomba, Duckwater	Fowler 1995	1990 census, BIA work force reports	unemployment statistics; education levels, income levels	unemployment averages 12-28%; education levels on res. 1/3 of Indians in counties, which are well below average	conditions are improving slowly; reservation people, non-reservation unlikely to be advantaged in getting jobs because of ed. levels

Table 4.2.1 Native American Impacts: Health

Area	Source	Data Base	Information	Results	Type/Range of Impacts
Southern Paiute, Western Shoshone	Fowler, Hamby, Rusco and Rusco 1991	questionnaire	risk perceptions	personal and family health threats 7.7 on 10 pt. scale; contamination of food supply because of subsistence level	severe
Moapa	Dufort 1995	field work	health studies	characterizes present health status, delivery of health care; emergency preparedness	would be severe impacts in any type of accident; worsening of all health conditions
All areas	see all baseline documents	field work	health studies	gives baseline health care, delivery system for each community in study area	emergency preparedness very low; EMT required and aid to all communities