Nuclear Waste Transportation Critical Issues

- Rail and Highway Access to Yucca Mountain
- Outlook for Shipments to a Repository and/or Storage Facility in Nevada
- Unresolved Safety Issues
- State of Nevada Recommendations to DOE

Rail and Highway Access to Yucca Mountain

- DOE Initial Plan for Yucca Mountain Transportation Access
- Current Highway Access Options
- Current Rail Access Options
- Proposed Heavy Haul Transport

Transportation Access:
DOE 1986 EA Identified Most Direct Routes to Yucca Mtn

- Highway Access: Construct access road from US 95 west of Amargosa Valley; Use US 95 from I-15, via Las Vegas
- Rail Access: Construct rail access spur from Union Pacific mainline at Dike Siding, North Las Vegas

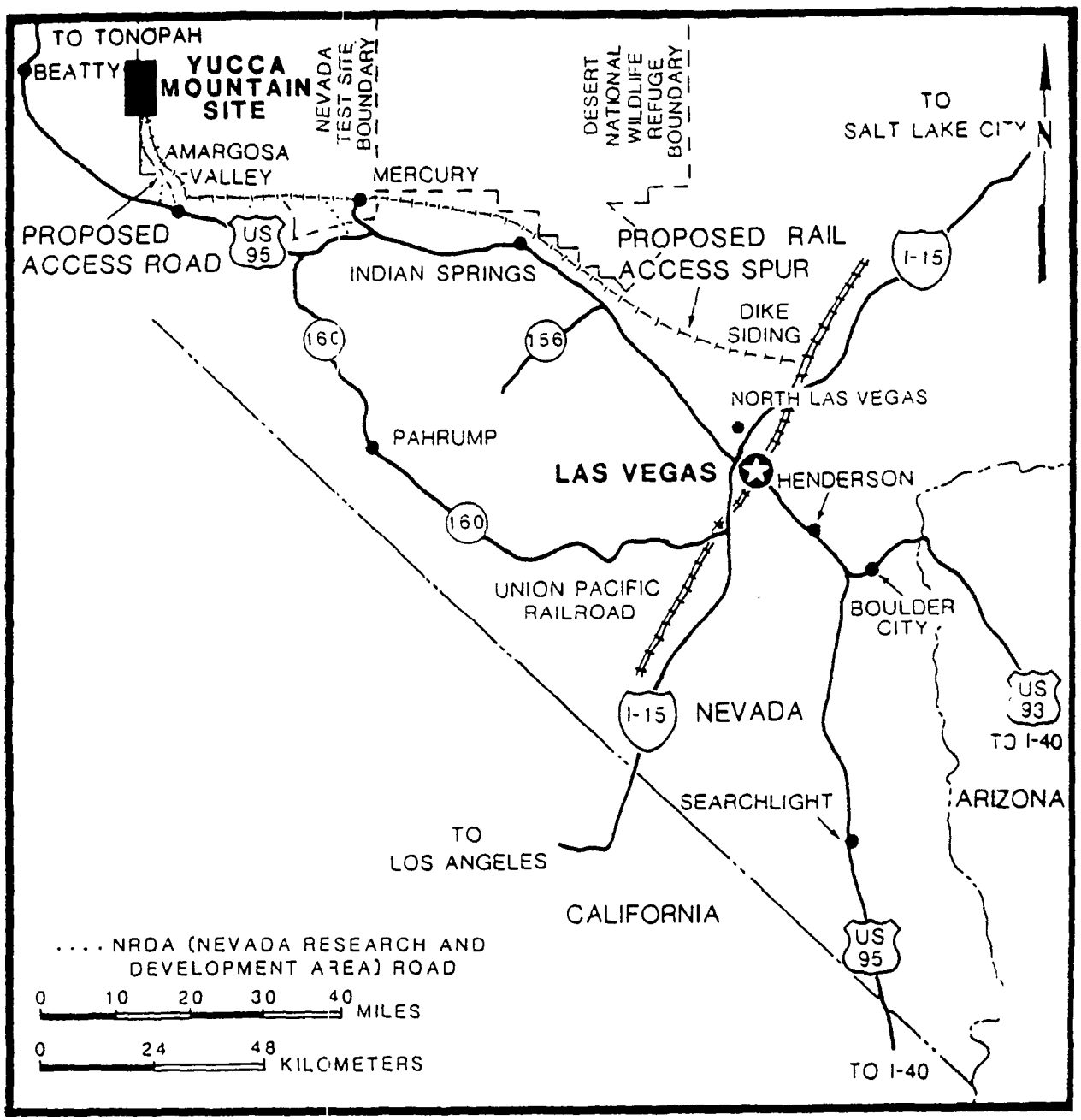


Figure 3-20. Regional transportation network and proposed road and rail access to the Yucca Mountain site.

Proximity to National Transportation Network: Yucca Mountain Ranked Last Among First Repository Candidate Sites

Site	Miles to Mainline Railway	Miles to Interstate Highway
• Richton, MS	17	26
• Deaf Smith, TX	25	14
• Hanford, WA	51	28
• Davis Canyon,UT	74	89
• **Yucca Mtn, NV**	**100**	**100**

Source: DOE Repository Candidate Site EAs(1986)

Nuclear Waste Transportation System Impacts: Yucca Mountain Ranked Last On Key Impacts Measures

- Total Cask Shipment Miles : 26.3 million (one-way miles)
- Total Transportation Costs: $974 million(1985 dollars)
- Rail Access Cost: $151 million(1985 dollars)
- Nonradiological Accident Risk: 266 injuries, 25 fatalities (SNF shipments only)
- Distance to Nearest Alternative Mainline Rail Connection: 265 miles
- Distance to Nearest Alternative Interstate Highway: 208 miles

Source: DOE Repository Candidate Site EAs(1986)

Yucca Mountain Rail Access Route:
Siting Guidelines
Potentially Adverse Conditions

- Local Conditions present "that could cause the transportation-related costs, environmental impacts, or risk to public health and safety from waste transportation operations to be significantly greater than those projected for other comparable siting options."

- "...the rail spur as currently envisioned will pass close to U.S. Air Force(USAF) bombing ranges in the vicinity of Indian Springs. Although there is no evidence to suggest that this poses a significantly greater risk than other comparable siting options, a detailed study will be conducted during site characterization to examine the potential risk associated with the relative location of the propsed rail spur and military activities in the area."

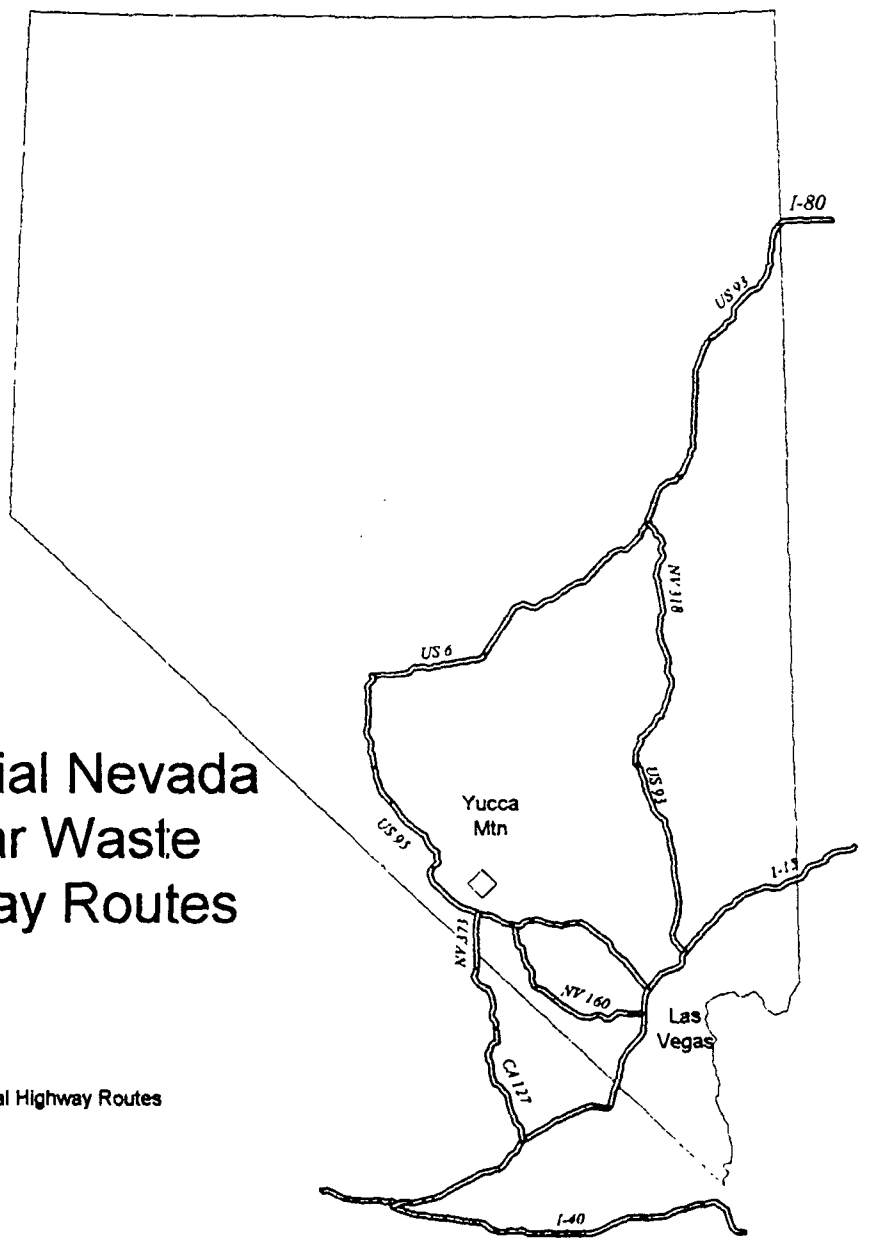
DOE Current Plans for Yucca Mountain Transportation Access

- Highway Access: Considering several potential state-designated alternative routes to avoid shipping through downtown Las Vegas (preferred route remains I-15 & US 95)
- Rail Access: Recommended four routes for detailed evaluation based on screening of 13 options

Current Highway Access Options: Potential State-designated Alternative Routes

- NDOT "B" Route(US 93, US 6, US 95)
- NDOT "A" Route(US 93, SR 318, I-15, Craig Road, US 95)
- SR 160 (from I-15 southwest of Las Vegas)
- SR 373 (from I-15 at Barstow, CA, via CA SR 127)

Potential Nevada Nuclear Waste Highway Routes



Potential Highway Routes

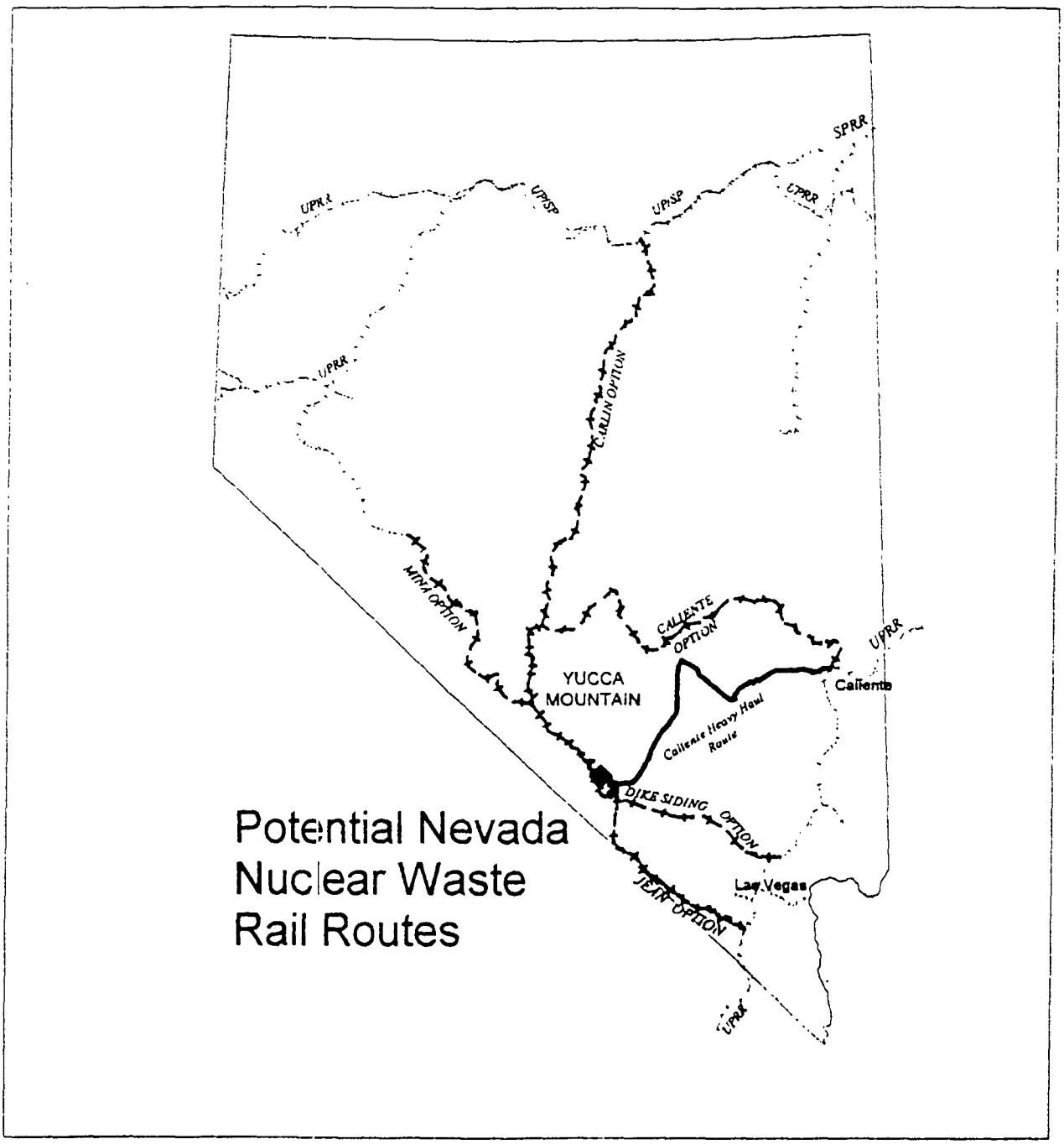
Current Highway Access Options: Risk and Impact Trade-Offs

- Highly Populated Areas
- Native American Lands and Cultural Resources
- Highway Infrastructure (especially safety design features)
- Traffic Conditions and Accident Histories
- Bad Weather Conditions
- Environmentally Sensitive Areas
- Socioeconomic Impacts of Perceived Risk

Current Rail Access Options: Routes Recommended for Detailed Evaluation

- Caliente (340 miles, $1,056 million))
- Carlin (330-365 miles, $945-1,060 million)
- Jean (115-130 miles, $470-485 million)
- Valley Modified (95-100 miles, $304-312 million)

Source: TRW ESS, February, 1996

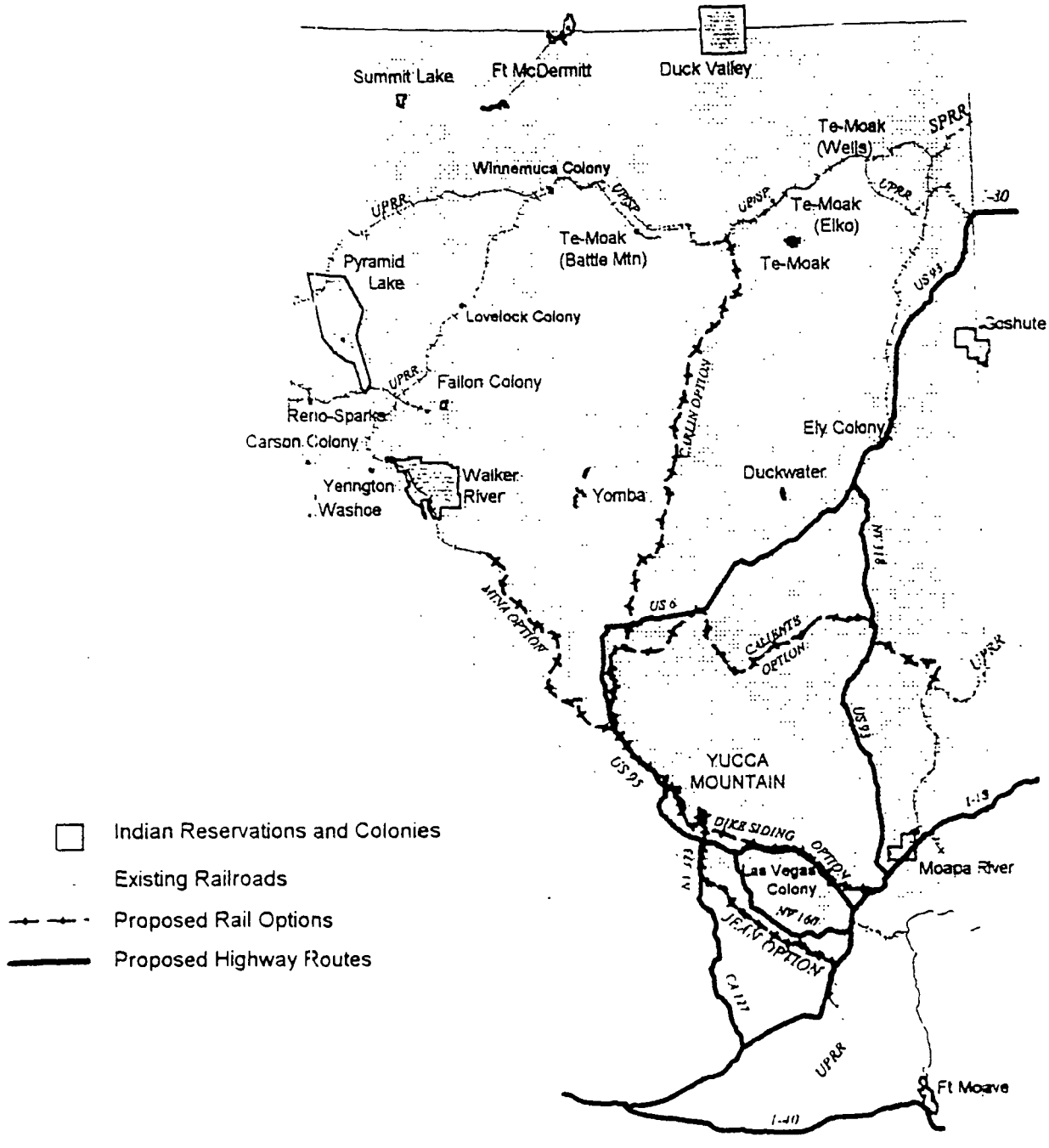

SPRR
UPRR
UPSP
UPSP
UPRR
UPRR
CARLIN OPTION
MINA OPTION
CALIENTE OPTION
UPRR
YUCCA MOUNTAIN
Caliente
Caliente Heavy Haul Route
DIKE SIDING OPTION
Las Vegas
TERN OPTION
UPRR
Potential Nevada Nuclear Waste Rail Routes

Current Rail Access Options:
Engineering Design Considerations

- Long Distances
- Mountainous Terrain
- River and Stream Crossings
- Unstable Soils
- Earthquake Hazards
- Flood Hazards

Current Rail Access Options:
Risk and Impact Trade-Offs

- Highly Populated Areas, especially Las Vegas
- Native American Land Claims and Cultural Resources
- Environmentally Sensitive Areas
- Land Use Economic Conflicts
- Cost of Acquisition and Construction
- Limited Economic Development Opportunities
- Air Force Overflights



Nuclear Waste Transportation Options and Indian Reservations and Colonies in Nevada (Potential Highway and Rail Routes)

Proposed Heavy Haul Transport: Routes to Yucca Mtn and NTS

- Public Highways from Caliente
- Public Highways from North Las Vegas
- Public Highways from west of Las Vegas
- Dedicated Heavy Haul Road - Chalk Mountain Route across Area 51 and NTS

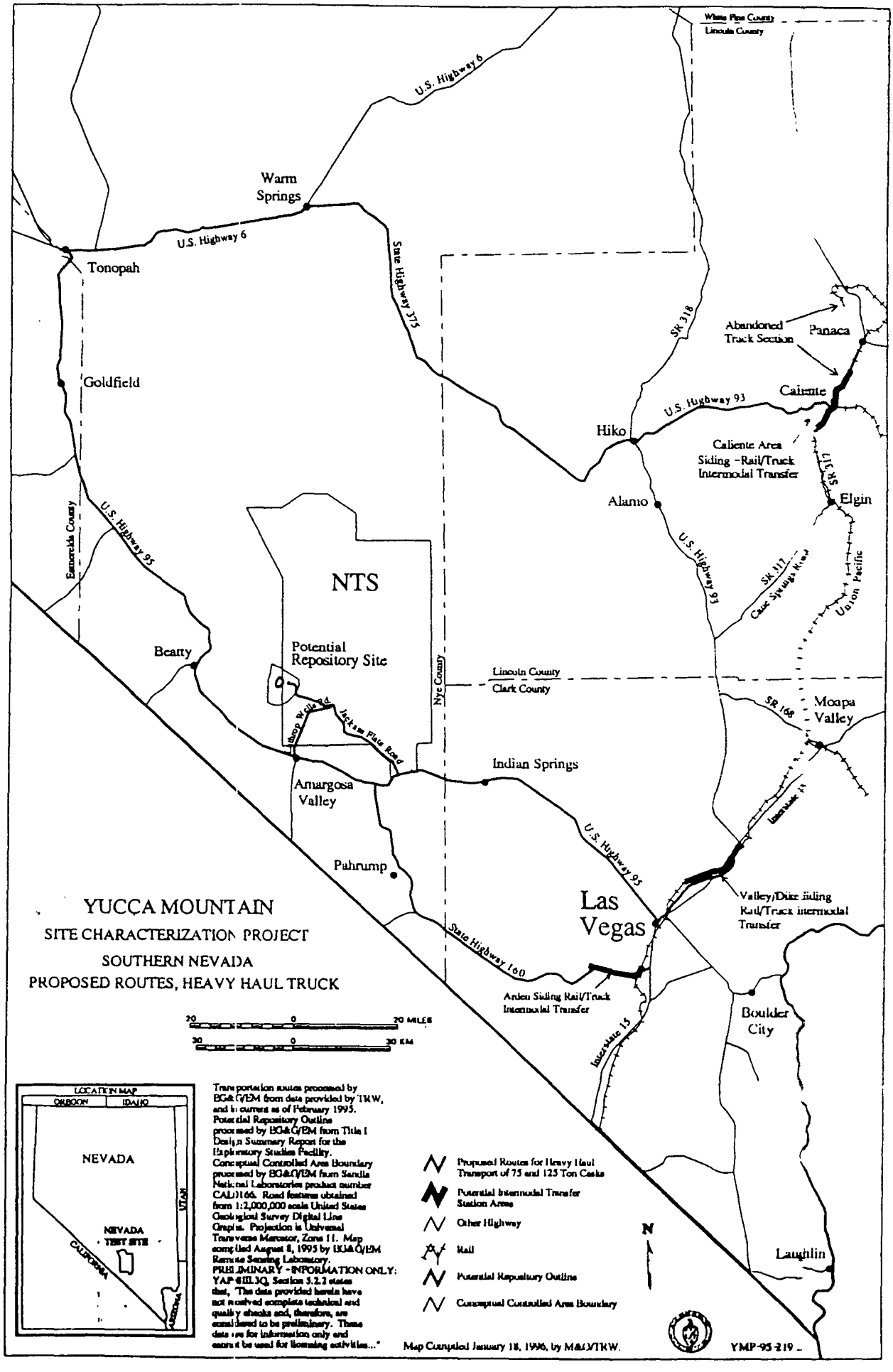
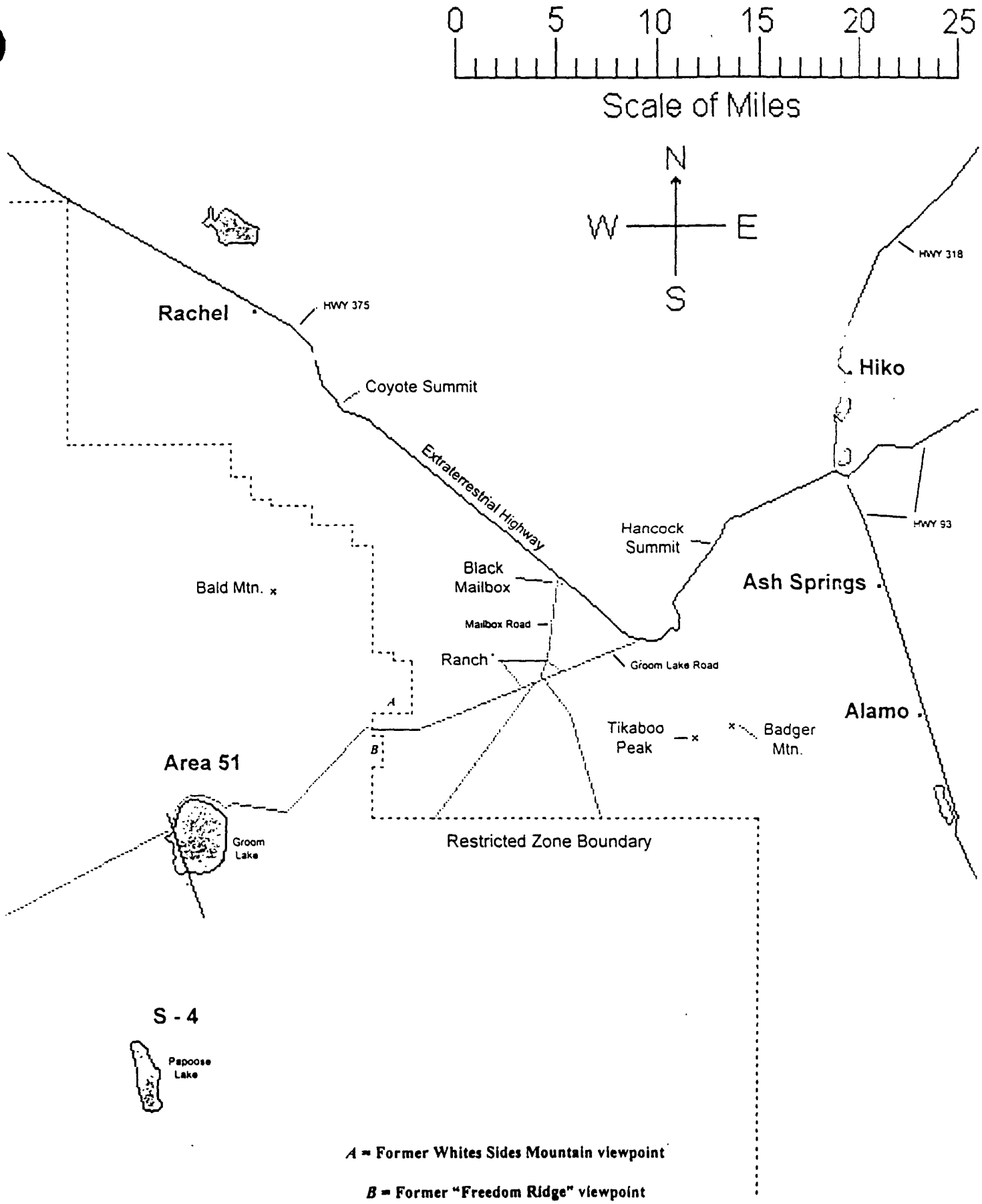

White Pine County
Lincoln County
U.S. Highway 6
Warm Springs
U.S. Highway 6
Tonopah
State Highway 375
SR 318
Abandoned Truck Section
Panaca
Goldfield
Caliente
U.S. Highway 93
Hiko
Caliente Area Siding - Rail/Truck Intermodal Transfer
SR 317
Elgin
Alamo
Esmeralda County
U.S. Highway 95
U.S. Highway 93
SR 317
Clover Springs Road
Union Pacific
NTS
Potential Repository Site
Beatty
Nye County
Lincoln County
Clark County
SR 168
Moapa Valley
Jackass Flats Road
Indian Springs
Amargosa Valley
Interstate 15
U.S. Highway 95
Pahrump
Las Vegas
Valley/Dike Siding Rail/Truck Intermodal Transfer
YUCCA MOUNTAIN
SITE CHARACTERIZATION PROJECT
SOUTHERN NEVADA
PROPOSED ROUTES, HEAVY HAUL TRUCK
State Highway 160
Arden Siding Rail/Truck Intermodal Transfer
Boulder City
Interstate 15
20 0 20 MILES
30 0 30 KM
LOCATION MAP
OREGON
IDAHO
NEVADA
UTAH
NEVADA TEST SITE
CALIFORNIA
ARIZONA
Transportation routes processed by BG&C/EM from data provided by TRW, and is current as of February 1995.
Potential Repository Outline processed by BG&C/EM from Title I Design Summary Report for the Exploratory Studies Facility.
Conceptual Controlled Area Boundary processed by BG&C/EM from Sandia National Laboratories product number CAL)1166. Road features obtained from 1:2,000,000 scale United States Geological Survey Digital Line Graphs. Projection is Universal Transverse Mercator, Zone 11. Map compiled August 8, 1995 by BG&C/EM Remote Sensing Laboratory.
PRELIMINARY - INFORMATION ONLY: YAP-SIII.3Q, Section 5.2.2 states that, "The data provided herein have not received complete technical and quality checks and, therefore, are considered to be preliminary. These data are for information only and cannot be used for licensing activities..."
Proposed Routes for Heavy Haul Transport of 75 and 125 Ton Casks
Potential Intermodal Transfer Station Areas
Other Highway
Rail
Potential Repository Outline
Conceptual Controlled Area Boundary
N
Map Compiled January 18, 1996, by M&O/TRW.
YMP-95-219

Figure 6

Proposed Heavy Haul Transport: Risk and Impact Trade-Offs

- Highly Populated Areas
- Native American Lands and Cultural Resources
- Highway Infrastructure (especially safety design features)
- Traffic Conditions and Accident Histories
- Bad Weather Conditions
- Environmentally Sensitive Areas
- Socioeconomic Impacts of Perceived Risk
- Limited Economic Development Opportunities
- Air Force Overflights


0 5 10 15 20 25
Scale of Miles
N
W E
S
Rachel
HWY 375
Coyote Summit
Extraterrestrial Highway
Hancock Summit
HWY 318
Hiko
HWY 93
Ash Springs
Alamo
Black Mailbox
Mailbox Road
Ranch
Groom Lake Road
Bald Mtn.
Tikaboo Peak
Badger Mtn.
A
B
Area 51
Groom Lake
Restricted Zone Boundary
S - 4
Papoose Lake
A = Former Whites Sides Mountain viewpoint
B = Former "Freedom Ridge" viewpoint

Outlook for Shipments to a Repository and/or Storage Facility in Nevada

- Modal Choice and Shipment Numbers for 2 Scenarios
- Primary Routes to Nevada
- Primary Routes within Nevada

Modal Choice and Shipment Numbers for 2 Scenarios

- Repository at Yucca Mountain (Current Plan)
- Interim Storage Facility at Nevada Test Site and Repository at Yucca Mountain (Proposed in S. 1936 and H.R.1020)

Repository at Yucca Mountain (Current Plan)

- **Shipments Begin: 2010**
- SNF Modal Mix: 12% Truck, 88% Rail
- Casks: New Designs, High-Capacity
- Rail Access to Repository: Yes
- Intermodal Transfer Facility: No
- Total Cask Shipments
  - Legal-Weight Truck: 6,200
  - Rail: 12,200
- **Combined Total: 18,400**

Interim Storage Facility and Repository

(Proposed in S. 1936 and H.R. 1020)

- **Shipments Begin: 1999**
- SNF Modal Mix: 35% Truck, 65% Rail
- Casks: Current Designs, Capacity
- Rail Access to Repository: No
- Intermodal Transfer: At Caliente
- Total Cask Shipments
  - Legal-Wt Truck: 79,300 (31,400)
  - Rail: 12,600 (12,600)
  - Heavy Haul: 12,600 (12,600)
- **Combined Total: 104,500 (56,000)**

Outlook for Shipments

Interim Storage Facility and Repository

(Proposed in S. 1936 and H.R. 1020)

Primary Routes to Nevada

- **HIGHWAY**
- Base Case: I-80, I-70, I-15 from UT/AZ
- Southern: I-40, I-15 from CA
- **RAIL**
- Base Case: Union Pacific from IL/MO/NE
- Southern: Union Pacific from CA, Burlington
  Northern/Santa Fe from MO

Figure 18-1a. Life of Operations Rail and Highway Cask Shipments Current Capabilities Transportation Choices/Default Routing

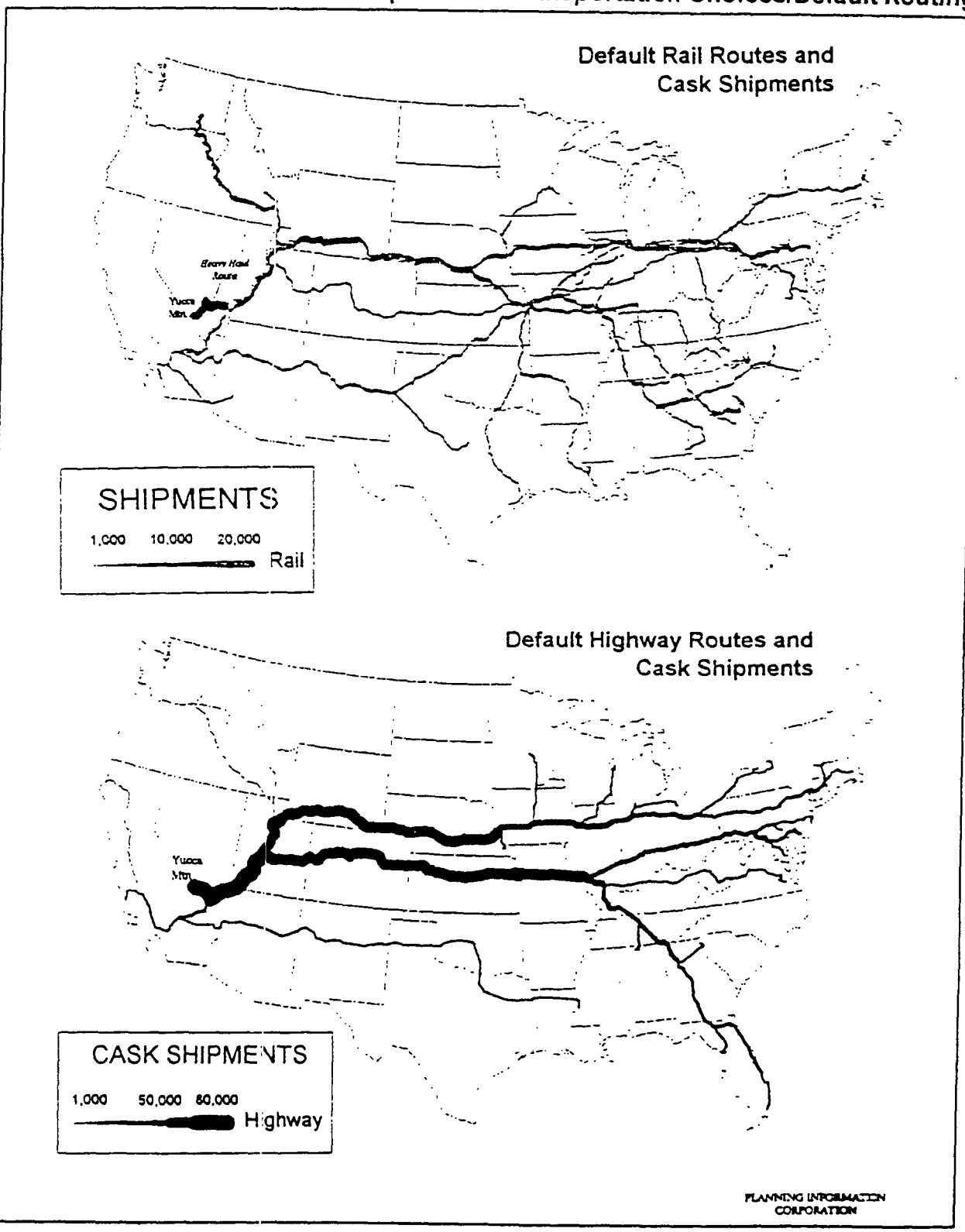
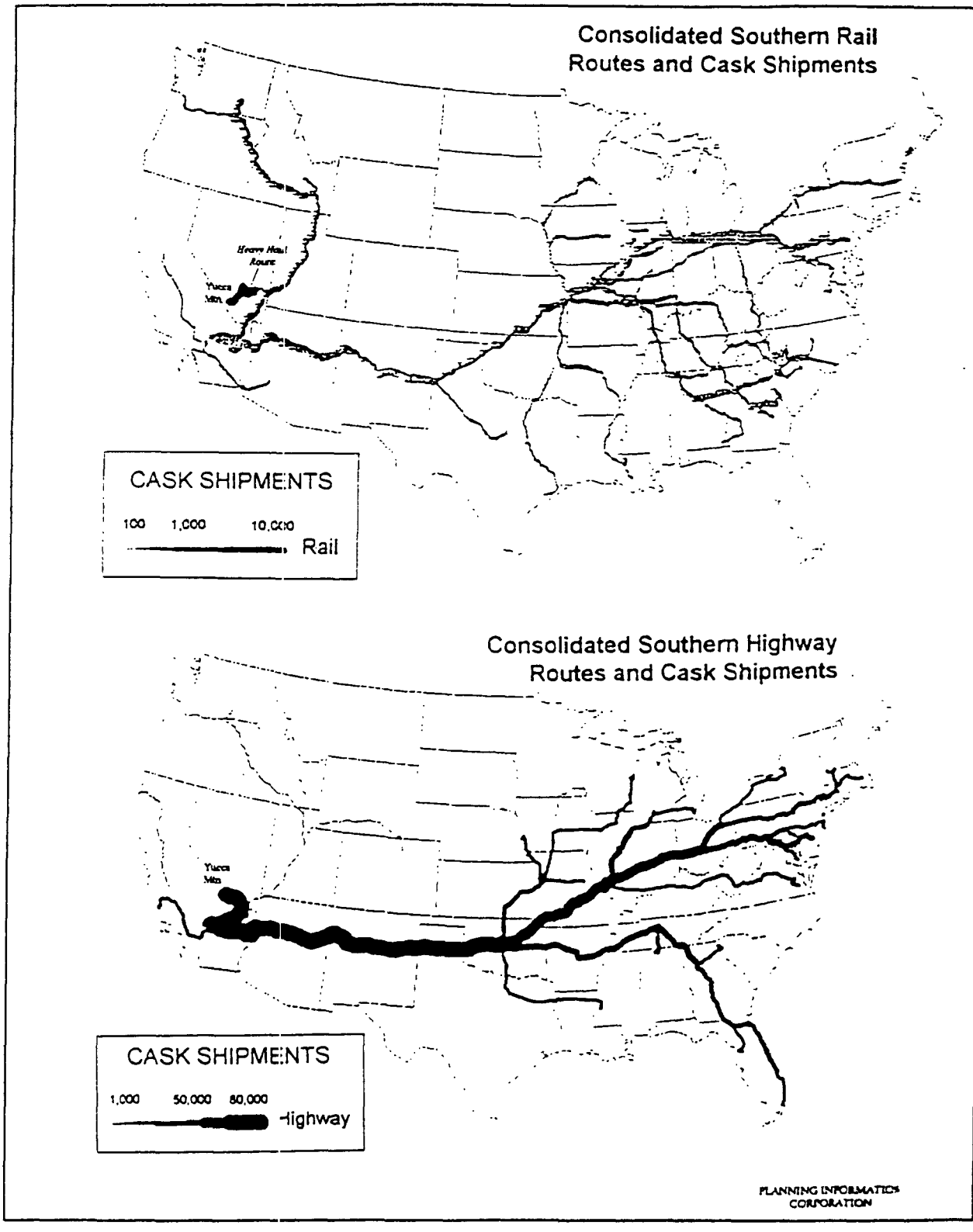


Figure 18-1b. Life of Operations Rail and Highway Cask Shipments Current Capabilities Transportation Choices/Consolidated Southern Routing



Outlook for Shipments Interim Storage Facility and Repository (Proposed in S. 1936 and H.R. 1020)

Primary Routes within Nevada

- **HIGHWAY**
- Base Case: I-15 from UT/AZ, US 95
- Southern: I-15 from CA, US 95
- **RAIL**
- Base Case: Union Pacific from UT
- Southern: Union Pacific from CA
- **HEAVY HAUL TRUCK**
- Base Case: US 93, SR 375, Chalk Mt.. Dedicated Road
- Alternative: US 93, SR 375, US 6, US 95

Figure 18-1a (NV). Life of Operations Rail and Highway Cask Shipments in (NV) Current Capabilities Transportation Choices/Default Routing

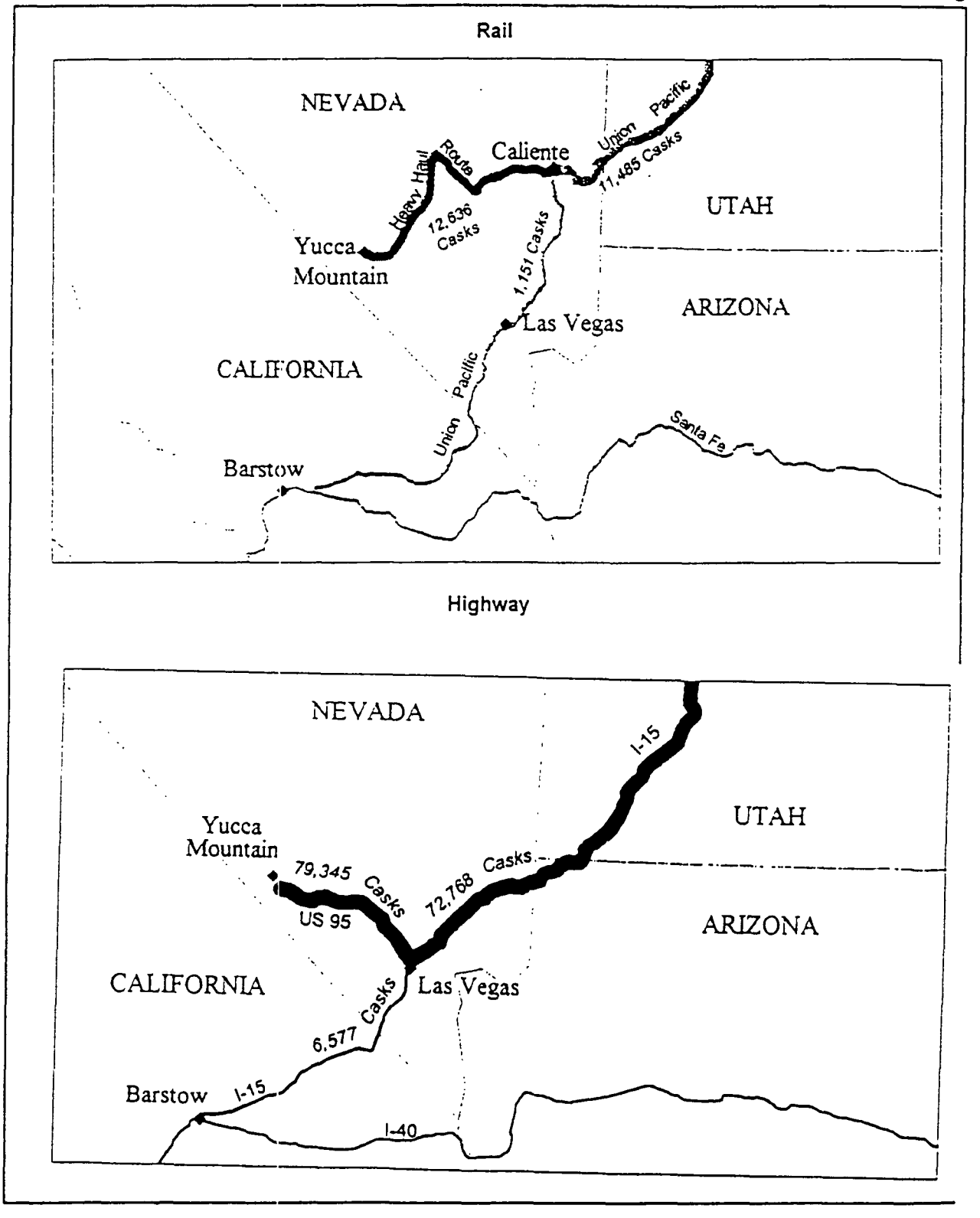
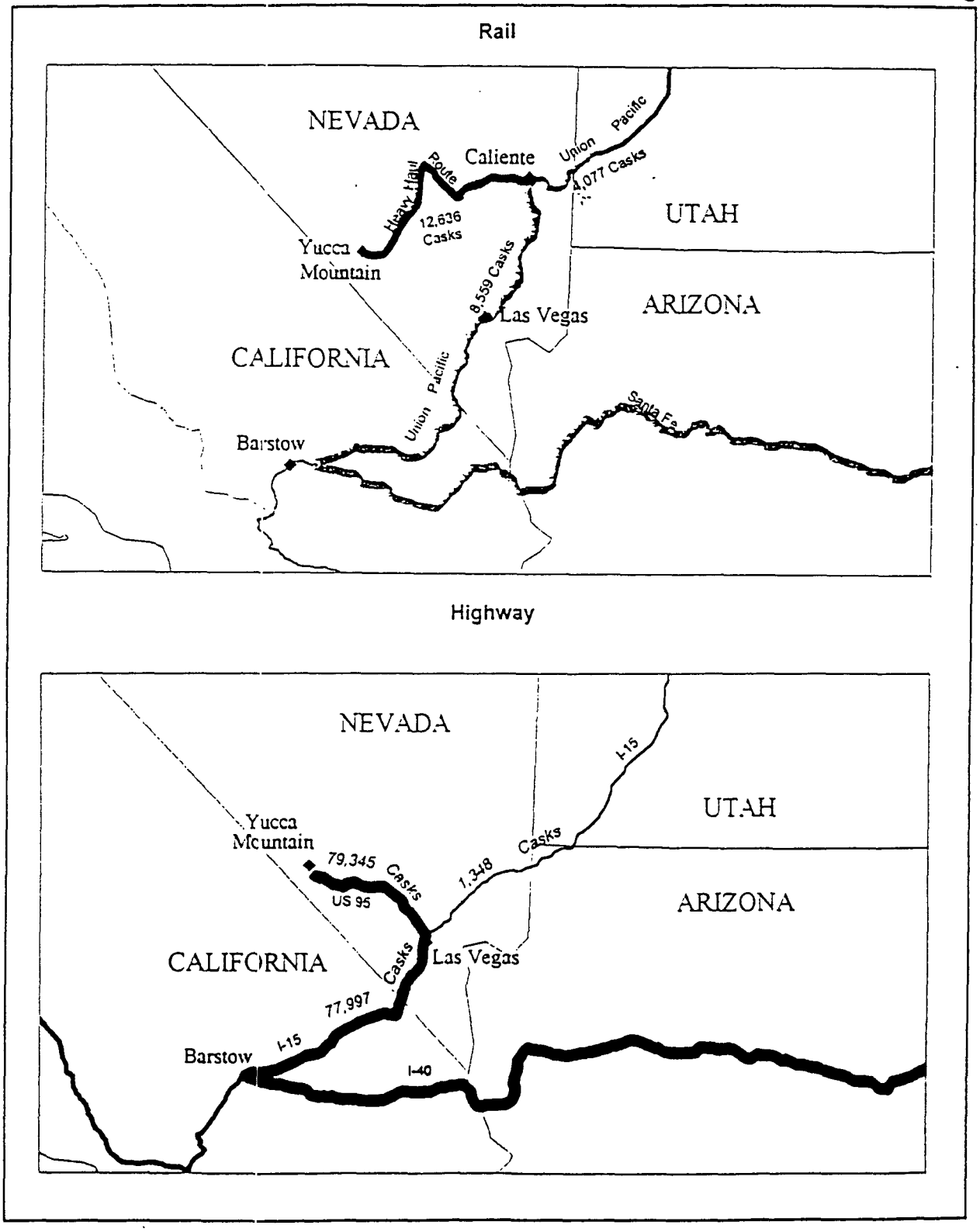


Figure 18-1b (NV). Life of Operations Rail and Highway Cask Shipments in (NV) Current Capabilities Transportation Choices/Consolidated Southern Routing



Year 1 Routes and Cask Shipments

Figure 19-1 shows the likely pattern of shipments comprising the 1,200 MTU first-year requirement of S. 1936, assuming the oldest-fuel-first priority acceptance ranking described above. The default routing is essentially unconstrained, as might be developed by an RSA or by DOE contract carriers. Shipments would be made from 8 sites with rail access and 20 sites with truck-only access:

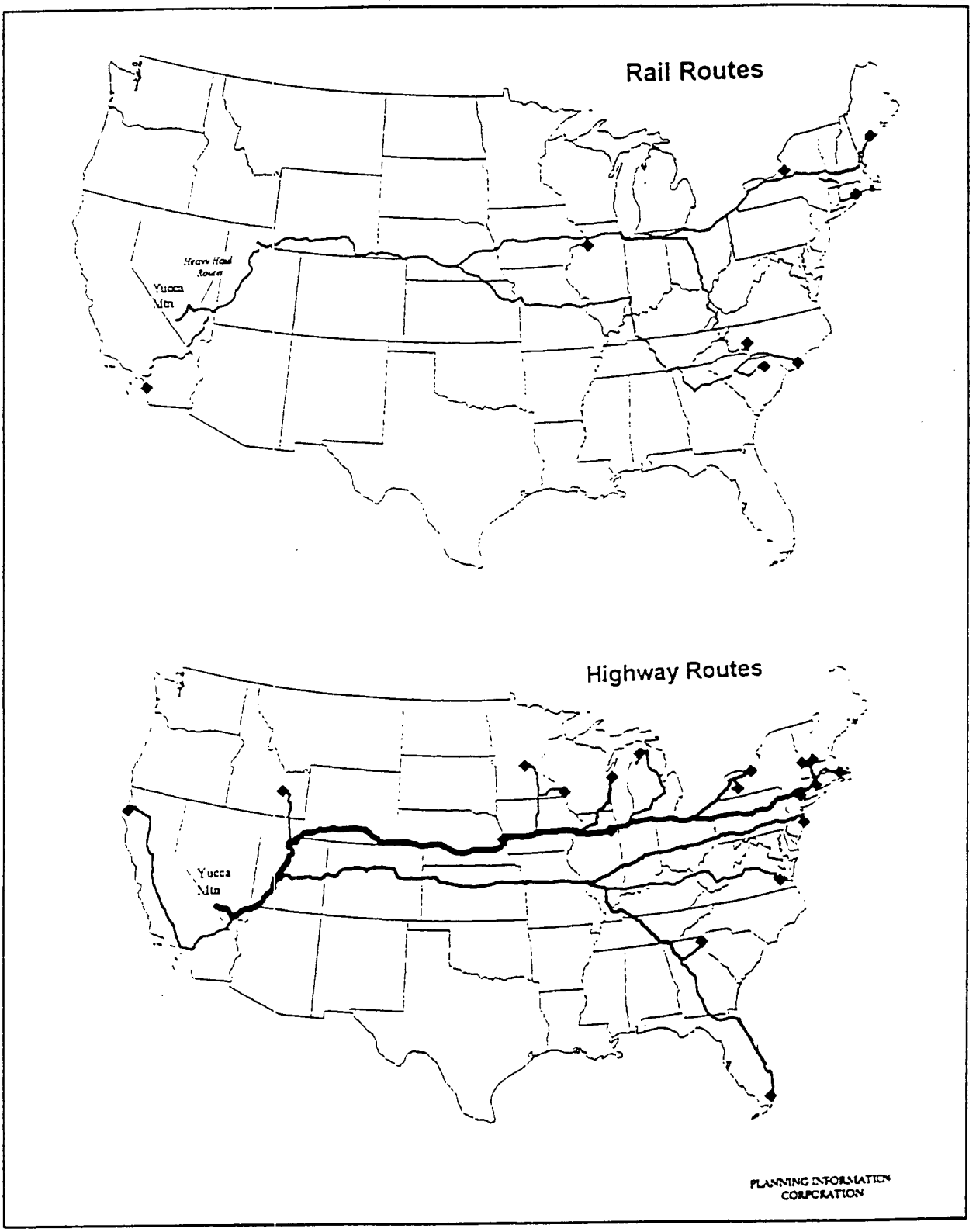
Rail Shipments

Origin	Casks
CA: San Onofre	2
CT: Millstone	12
IL: Quad Cities	7
NC: Brunswick	14
NC: McGuire	2
ME: Maine Yankee	11
NY: Nine Mile Point	15
SC: Robinson	1
TOTAL	64

Truck Shipments

Origin	Casks
CA: Humboldt Bay	87
CT: Haddam Neck	131
FL: Turkey Point	90
ID: INEL	6
IL: Braidwood	9
IL: Dresden	344
IL: Morris	755
MA: Pilgrim	10
MA: Yankee Rowe	73
MI: Big Rock Point	9
MN: Monticello	12
NE: Ft. Calhoun	25
NJ: Oyster Creek	246
NY: Ginna	118
NY: Indian Point	160
NY: West Valley	83
SC: Oconee	35
VA: Surry	44
VT: Vermont Yankee	189
WI: LaCrosse	28
WI: Point Beach	151
TOTAL	2,605

Figure 19-1. Year 1 Cask Shipments by Route and Origin
Current Capabilities Transportation Choices/Default Routing



Outlook for Shipments Interim Storage Facility and Repository (Proposed in S. 1936 and H.R. 1020)

Designation of Alternative Highway Routes within Nevada Changes Routes to Nevada

- NDOT Route B : Entry from Utah via I-80
- NDOT Route C: Entry from California via SR127
- NDOT Route E: Entry from California via US95

Unresolved Safety Issues

- Relevance of Nuclear Industry's Past Safety Record
- Radiological Risks of Routine Transportation Operations
- Probability and Severity of Transportation Accidents
- Adequacy and Enforcement of Federal Regulations
- Cask Performance in Sever Accidents and Terrorist Incidents

Relevance of Nuclear Industry's Past Safety Record

- Past Shipments and Private Industry Safety Record
- DOE's Past Record as Shipper
- Future Shipments: Significant Increase in Amount and Numbers
- Future Shipments: Significantly Different Characteristics
- New Financial Pressures on Nuclear Utilities and U.S. DOE

Radiological Risks of Routine Transportation Operations

- Gamma and Neutron Radiation Emitted from Cask (Regulations allow10 mrem/hr at 2 meters)
- Shipment Frequency Over 30 Years (Almost 11,000 Days)
- Exposure to Workers
- Exposure to Members of the Public
- "Gridlock" Incident
- Adverse Socioeconomic Impacts

Radiation Exposures From Routine Operations: Conclusions of Sandquist, 1985

- To general public, from trucks caught in traffic or truck tire repair: doses per event on the order of 5 mrem or less
- To workers, from truck refueling, rest stops, inspections: doses per event range downward from a few mrem

Radiation Exposures From Routine Operations: Conclusions of Sandquist, 1985

- "Situations that may occur repeatedly, such as the slowing or stopping of a waste transportation vehicle near an occupied building, can produce doses approaching the order of one mrem per truck or rail car. While there can be hundreds or thousands of spent fuel transport movements in a year, they will not necessarily pass the same geographic point. Concentration of the movements to one or two routes will only take place close to the repository." [RAE-8339/12-1, p.4-1]

Exposure to Members of Public in "Gridlock" Incident

- DOE Assumptions:
  - Group located 1m from vertical plane of trailer
  - 4 - 8 people in vehicles closest to trailer
  - Gridlock lasts 2 - 4 hours
  - No remedial action to move group members
  - Exposure rate to group, 5 - 10 mrem/hr
- DOE Conclusions:
  - Exposure to group member, 10 - 40 mrem

(E. Darrow, OCRWM, NWTRB Mtg., Oct. 22, 1990)

Routine Operations Risk Reduction Strategies

- Reduce Allowable Emission Rate
- Increase Cask Shielding (reduces emission rate but increases number of shipments)
- Avoid Traffic Congestion (route and time-of day restrictions)
- Minimize shipment by truck (reduces public exposures but may increase worker exposures)

Probability and Severity of Transportation Accidents

- Use and Misuse of the NRC Modal Study
- Probability of Accidents and Incidents during Shipments to Repository
- Recent Severe Accidents which created conditions that could have threatened Cask Integrity
- Need to reexamine the Modal Study

Adequacy and Enforcement of Federal Regulations

- NRC and DOT Regulations
- Inadequate resources and personnel for enforcement
- Federal Preemption of State and local regulations
- Uncertainties about Future Regulatory Environment

Cask Performance in Severe Accidents

- Loss of Shielding (Exposure)
- Loss of Containment (Release)
- Damage to Spent Fuel (Fine Particles)
- Atmospheric Transport (Widespread Dispersal)
- Adverse Socioeconomic Impacts

Risks Resulting from Severe Accidents: Continuing Debate

- Probabilistic Risk Analysis Models (RADTRAN, RISKIND)
- Probability of Transportation Accidents Resulting in Release (Modal Study, NRC, 1987)
- Consequences of Transportation Accident Resulting in Release (Sandquist Report, DOE, 1985)

Consequences of Rural Transportation Accident Resulting in Release

- Scenario: Rail Cask Involved in High-Speed Impact, Long-Duration Fire, Fuel Oxidation
- Release : 1380 curies of Co-60, Cs-134, Cs-137
- Area Contaminated: 42 Square Miles
- Clean-up Time: 460 Days
- Clean-up Cost: $620 Million
  (Sandquist, 1985)

Radiation Exposures From Worst Case Accidents: Conclusions of Sandquist, 1985

- Emergency responder could receive dose of up to 10 rem in a few hours
- Population within contaminated area, assuming no cleanup, would expect 22 latent health effects (11 cancers, 11 serious genetic health problems) over 50 years

Radiation Exposures From Worst Case Accidents: Conclusions of Sandquist, 1985

- "While cleanup of contaminated soil near the rail accident studied could reduce the 50-year exposures and health effects to the surrounding populace, over the range of likely cleanup levels the reduction is not dramatic(from 24 to 17 latent cancer fatalities) and is highly insensitive to the cleanup level used." [RAE-8339/12-1, p.4-2]

Cask Performance in Successful Terrorist Attack or Sabotage

- Loss of Shielding (Exposure)
- Loss of Containment (Release)
- Non-radiological Injury or Property Damage (e.g., Blast effects)
- Adverse Socioeconomic Impacts

Recent Debate Over Terrorism Risks

- U.S. Senate Debate on S. 1936, July 31, 1996
- Both Sides Agree Terrorists Can Breach Nuclear Waste Shipping Casks With Explosives
- Disagreement Is Over Consequences of Successful Terrorist Attack on Nuclear Waste Shipment
- Debate Renews Discussion Started by Publication of NRC Proposed Rule (10 CFR 73) To Reduce Shipment Protection Requirements, June 8, 1984

Attack Scenarios and Consequences SANDIA Full-Scale Test Results

- Scenario: Terrorists Attack Truck Cask Containing 1 PWR Assembly with HED(M3A1)
- Hole Diameter: 152.5 mm (6.0 inches)
- Fuel Rods Damaged: 111 of 223 (50%)
- Fuel Mass Fractured: 20.82 kg (10%)
- Fuel Mass Released: 2.55 kg (5.6 pounds) (1%)
- Released as Aerosal: 2.94 g (1/10 ounce)
- Blast Effect/Shrapnel Zone: 100+ meters

Source: SAND82 - 2365 (June, 1983)

NRC Conclusion: Terrorist Attack Using Explosives Results in Small Respirable Release

- "A shipping cask has been subjected to attack by explosive to evaluate cask and spent fuel response to a device 30 times larger in explosive weight than a typical anti-tank weapon. This device would carve an approximately 3-inch diameter hole through the cask wall and the contained spent fuel and is estimated to cause the release of 2/100,000 of the total fuel weight (~10 grams of fuel) in an inhalable form."[Transporting Spent Fuel(March, 1987)]

NRC Conclusion: Terrorist Attack Poses Small Risk

- "...average radiological consequence of a release in a heavily populated urban area such as New York City would be no early fatalities and less than one(0.4) latent cancer fatality."
- Assuming attack at rush hour in most unfavorable location would result in "no early fatalities and less than three(2.9) latent cancer fatalities."
- DOE studies confirmed that a 17 gram release would result in "no early fatalities and about 7 latent cancer fatalities."[Federal Register, Vol.. 49, No. 112(June 8, 1984), Pp. 23868 - 23869]

NRC 1984 Proposed Rule: For Most Spent Fuel Shipments, Eliminate:

- Armed Guard Requirements
- NRC Review and Approval of Shipping Routes
- Advance Notice to Local Law Enforcement Agencies along Routes
- Periodic Communications between Escorts and Communications Center

Critique of the NRC Position on Terrorist Threat

- NRC terminated rulemaking without explanation
- NRC, DOE, and nuclear industry continue to use study conclusions as basis of terrorism threat assessment
- NRC underestimated potential damage to cask and spent fuel
- NRC underestimated potential health effects of attack resulting in release
- NRC did not evaluate standard economic impacts of attack resulting in release
- NRC did not evaluate special social and economic impacts of attack resulting in release

Terrorism Scenario Assessment

Consider Relevant Shipment Characteristics

- Multiple Modes and Routes
- Long Distance Shipments (>2,000 miles)
- Daily Shipments (3 - 9 per day)
- Routes through Highly Populated Areas
- Routes which place shipments in tactically disadvantageous positions
- Routes with marginal safety design features

Terrorism Scenario Assessment
Consider Potential Attack Scenarios

- Intentional Actions to Disrupt Shipments or Induce Accidents Without Causing Release of Contents
- Intentional Actions to Induce Severe Accidents Causing Release of Contents
- Attacks on Shipping Casks Using High-Energy Explosives or Armor-Piercing Weapons

Terrorism Scenario Assessment
Consider Current and Projected Cask Designs and Weapons

- **Assume Range of New and Currently Available Cask Designs**
  - Large MPC or NAC S/T Rail Cask
  - GA-4/9 Truck Casks
  - NAC Legal Weight Truck Cask
- **Assume Range of Currently Available Weapons**
  - Soviet RPG-7 and clones
  - US M 72 66mm and clones
  - German Panzerfaust 3
  - US Superdragon
  - French Milan 3

State of Nevada Recommendations to U.S. DOE Regarding Nuclear Waste Transportation System

- Comprehensive Risk Assessment, Risk Management and Risk Communication
- Maximum Use of Rail Transportation, Large Dual-Purpose Casks, and Dedicated Trains
- Full-scale Testing of Shipping Casks
- Comprehensive Safety Program Modelled on WGA-DOE-State WIPP Program
- Implementation of Section 180(c) of NWPAA
- Privatization of Transportation Services

Comprehensive Risk Assessment, Risk Management and Risk Communication

- Transportation Comprehensive Risk Assessment(CRA) should be prepared as part of the Yucca Mountain EIS
- CRA should be used as a working risk management tool throughout the life of the project
- CRA process must encourage public participation and address public concerns
- CRA should be the basis of risk communication throughout the life of the project

Comprehensive Risk Assessment (CRA) Methodological Guidelines

(Golding & White, 1990)

- A Comprehensive Risk Assessment (CRA) is preferred to a Probabilistic Risk Assessment (PRA).
- A CRA should calculate probabilities only where existing data, theories, and models are sufficient to support the use of rigorous quantitative methods.
- The use and limitations of expert judgment should be clearly indicated, & such judgment should be used only where more adequately derived estimates are impossible.
- Sensitivity analysis should be used to illustrate the impact of differing assumptions & variations in the quality of data.
- A CRA should cover all the sequences & phases of the transportation system for both defense & commercial wastes, & consider the full range of plausible technological configurations such as new cask designs, modal mix, & routing choices.
- A CRA should consider the likely risks involved in waste retrieval.
- The full range of initiating events should be evaluated, with particular attention to human & organizational factors, external initiating events, & sabotage & terrorism.
- The full spectrum of consequences should be carefully evaluated, with articulate attention to "signal" events & social amplification.

YM EIS Scoping: Transportation Truth in Risk Assessment Checklist

- What types of waste will be shipped?
- How hazardous are these wastes?
- How many shipments by rail? By truck?
- What rail routes to and within Nevada?
- What highway routes to and within Nevada?
- How many accidents can be expected?
- What are the consequences of a very severe accident? Of a successful terrorist attack?
- How does DOE propose to reduce risks?
- What are DOE's emergency response plans?
- What is DOE's liability for accidents?

Maximum Use of Rail Transportation, Large Dual-Purpose Casks, and Dedicated Trains

- Maximize overall nuclear waste system reliance on rail shipments (mode of choice)
- Reduce number of shipments through use of dedicated trains & large-capacity dual purpose rail casks
- Operate under "special train" protocols as recommended by Association of American Railroads
- Early DOE and/or carrier identification of preferred cross-country mainline rail routes
- Early involvement of transportation corridor states, including financial assistance under Section 180(c)
- Adequate funding for inspections & emergency preparedness

Full-scale Testing of Shipping Casks

- Provide meaningful stakeholder role in development of cask testing protocols, & in selection of test facilities & test personnel
- Commit DOE to full-scale physical testing of cask prototypes, preferrably prior to Nuclear Regulatory Commission certification (sequential drop, fire, puncture & immersion tests)
- Re-evaluate Modal Study findings, with meaningful stakeholder participation, using DOE repository system assumptions
- Evaluate potential benefits of testing a randomly-selected production-model cask to ensure regulatory compliance & to determine failure thresholds.

Comprehensive Safety Program Modelled after WGA-DOE-State WIPP Program

- Develop comprehensive program of campaign-specific (and where appropriate mode- and route-specific) safety protocols
- Develop program cooperatively and implement through MOU or MOA
- Work through regional organizations such as Western Governors Association(WGA)
- Coordinate with Indian Tribes and local governments

Components of WGA-DOE-State WIPP Transportation Safety Program

- Drivers/Carrier Compliance
- Independent Inspections
- Bad Weather/ Road Conditions
- Safe Parking
- Advance Notice/Tracking
- Medical Preparedness
- Mutual Aid Agreements
- Emergency Response
- Equipment
- Training/Exercises
- Public Information
- Routing
- Program Evaluation

Implementation of Section 180(c) NWPAA: General Principles

- Use direct grants to states as mechanism for funding training
- Base program funding level on assessment of states' needs
- Train for safe routine transportation and emergency response
- Implement policies and procedures through rulemaking
- Base program on WGA's 1994 "Strawman Regulations"

Implementation of Section 180(c) NWPAA: Specific Concerns

- Identify modes/routes and begin assistance 3-5 years before shipments begin
- No shipments through a jurisdiction unless adequate training assistance has been provided
- Cover full cost of emergency preparedness and safe routine transportation capabilities along NWPA transportation routes
- Facilitate reasonable equipment purchases and transfers
- Fund drills and exercises
- Apply program to all NWPA shipments, including Defense HLW/SNF, and SNF shipments to private storage facilities
- Coordinate training with other state, tribe, and federally-supported HazMat/RAM response training

Privatization of Transportation Services: General Concerns

- Privatization of services is required under NWPA and is appropriate for program implementation
- OCRWM's Draft(12/27/96) RFP for Acquistion of Waste Acceptance and Transportation Services exceeds congressional intent that DOE utilize private industry to fullest extent possible
- Draft RFP unilaterally abandons key policies such as maximum use of rail and high-capacity casks to reduce number of shipments
- Draft RFP ignores concerns previously raised by states and local governments, Indian tribes, and other stakeholders

Privatization of Transportation Services: Specific Concerns

- Potential for greater reliance on truck transport, icreased number of shipments, and resulting impacts
- Uncertainty about state oversight rights and opportunity for stakeholder involvement
- Regional approach to contracting (minimum 4 regions, 2 contractors)
- Coordination with other repository shipments(DOE SNF, HLW) and other DOE RAM shipments(WIPP) along same corridors
- Unresolved safety issues and Yucca Mountain access issues