

Mobile Chernobyl: ***Preventing Unnecessary Risks in Transporting Highly Radioactive Waste***

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College of Complexes
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May 18, 2024



NIRS





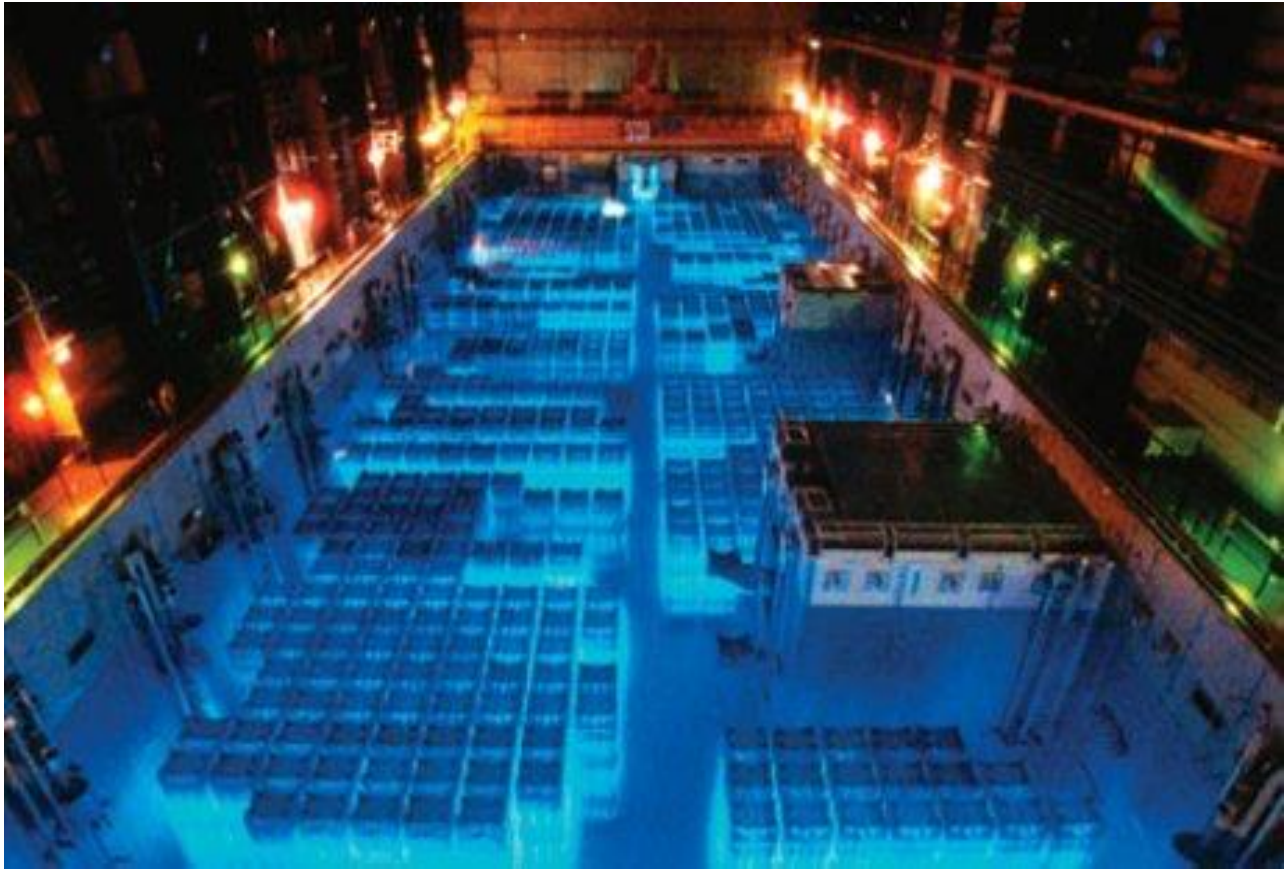
**what if this had been a
radioactive waste train?**

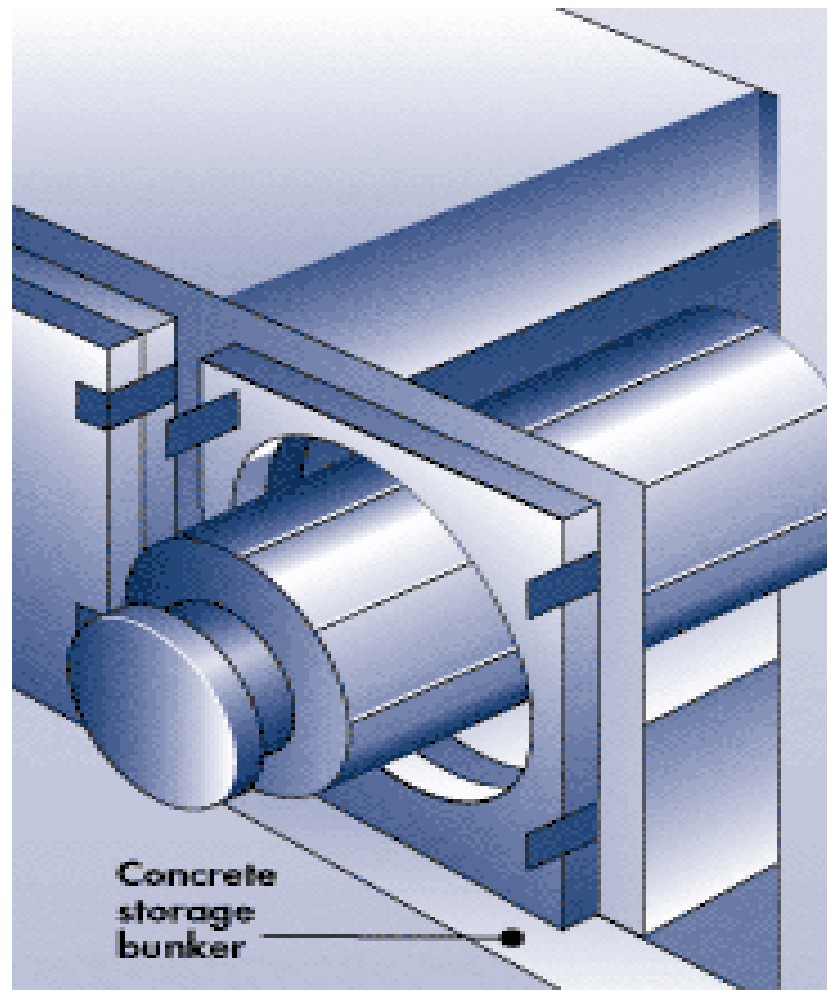
**stop a mobile chernobyl
www.nirs.org**

East Palestine, Ohio, Feb. 2023







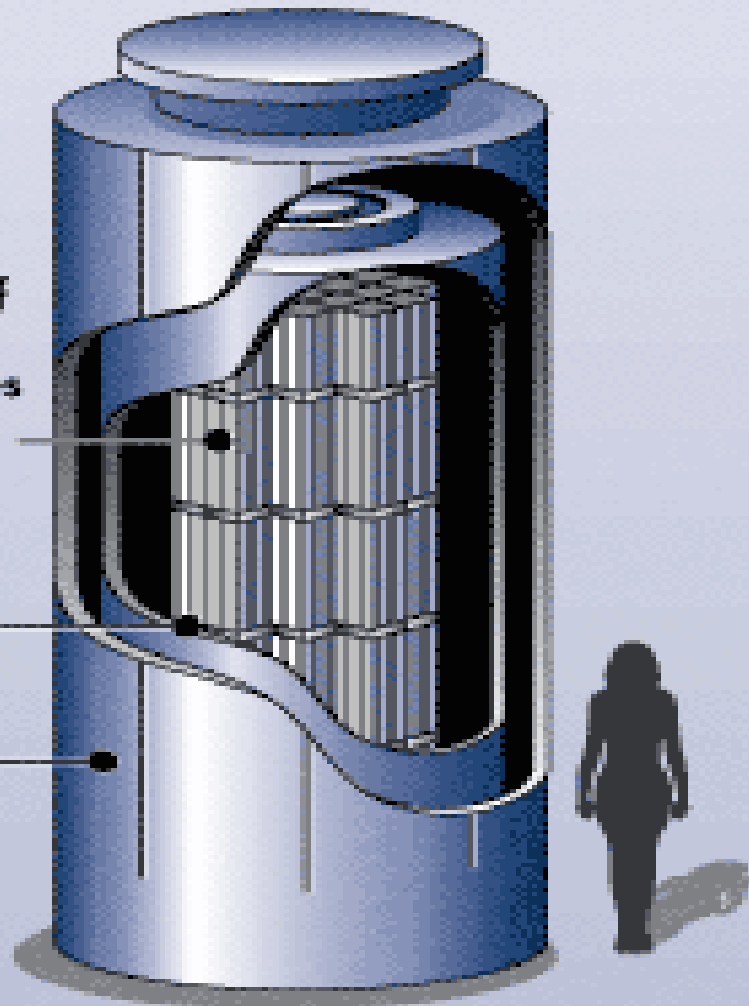


Concrete
storage
bunker

**Bundle of
used fuel
assemblies**

Canister

**Storage
cask**



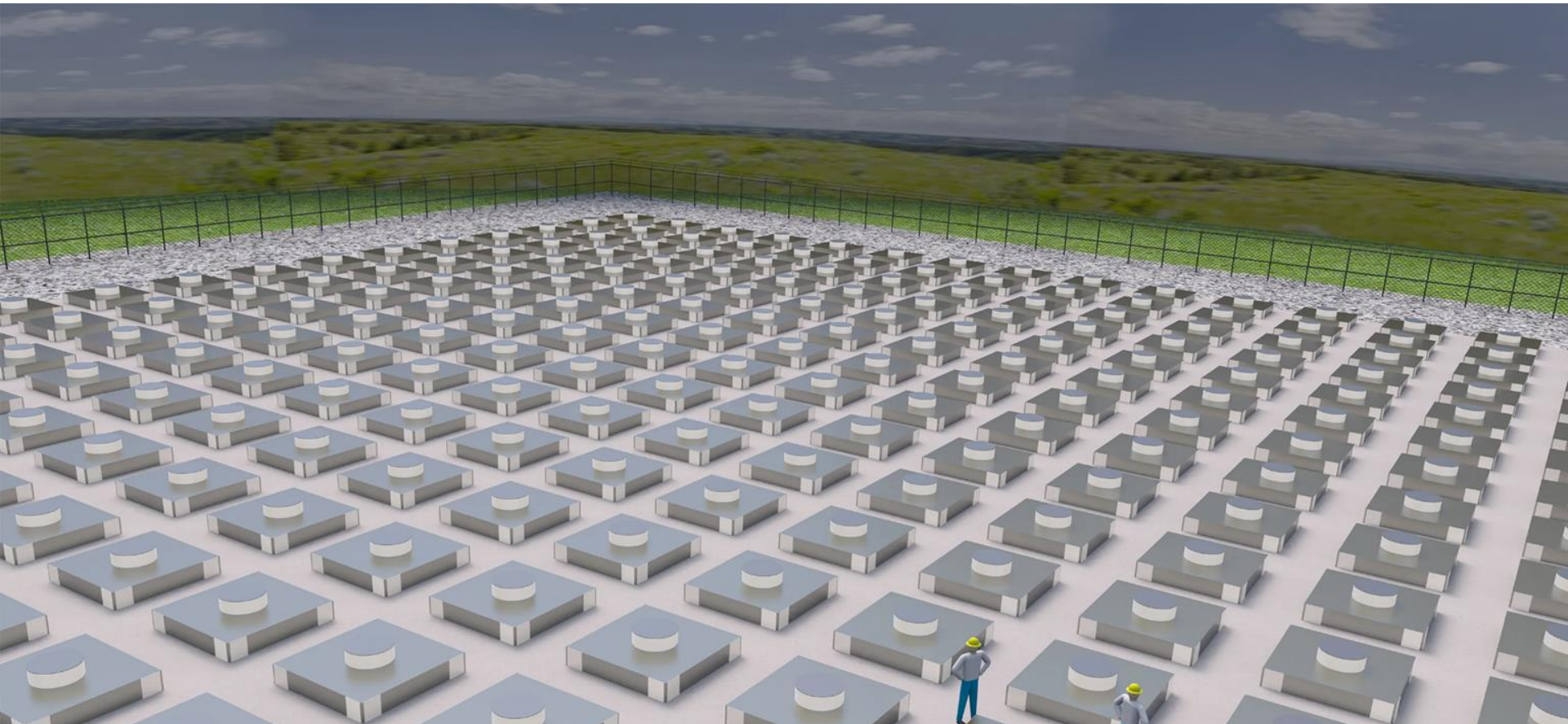
Dry Cask Storage at Big Rock Point, Michigan



ISP, LLC's "Private" CISF at WCS, TX



Holtec International/ELEA's "Private" CISF in s.e. NM



Federal Consolidated Interim Storage Facilities

Consent-Based Siting





Video/fact sheets about EJ burden of nuke waste dumps, transport

<https://beyondnuclear.org/video-fact-sheets-about-ej-burden-of-nuke-waste-dumps-transport/>

Four-minute video, featuring verbal interviews with Ian Zabarte and Mustafa Santiago Ali, as well as quotes from Patricia Cardona and Laura Watchempino

Andrews, TX, Feb. 2017–WCS CISF NRC env’l scoping



“Don’t Waste NM”--Alliance for Environmental Strategies



WIEB 2020

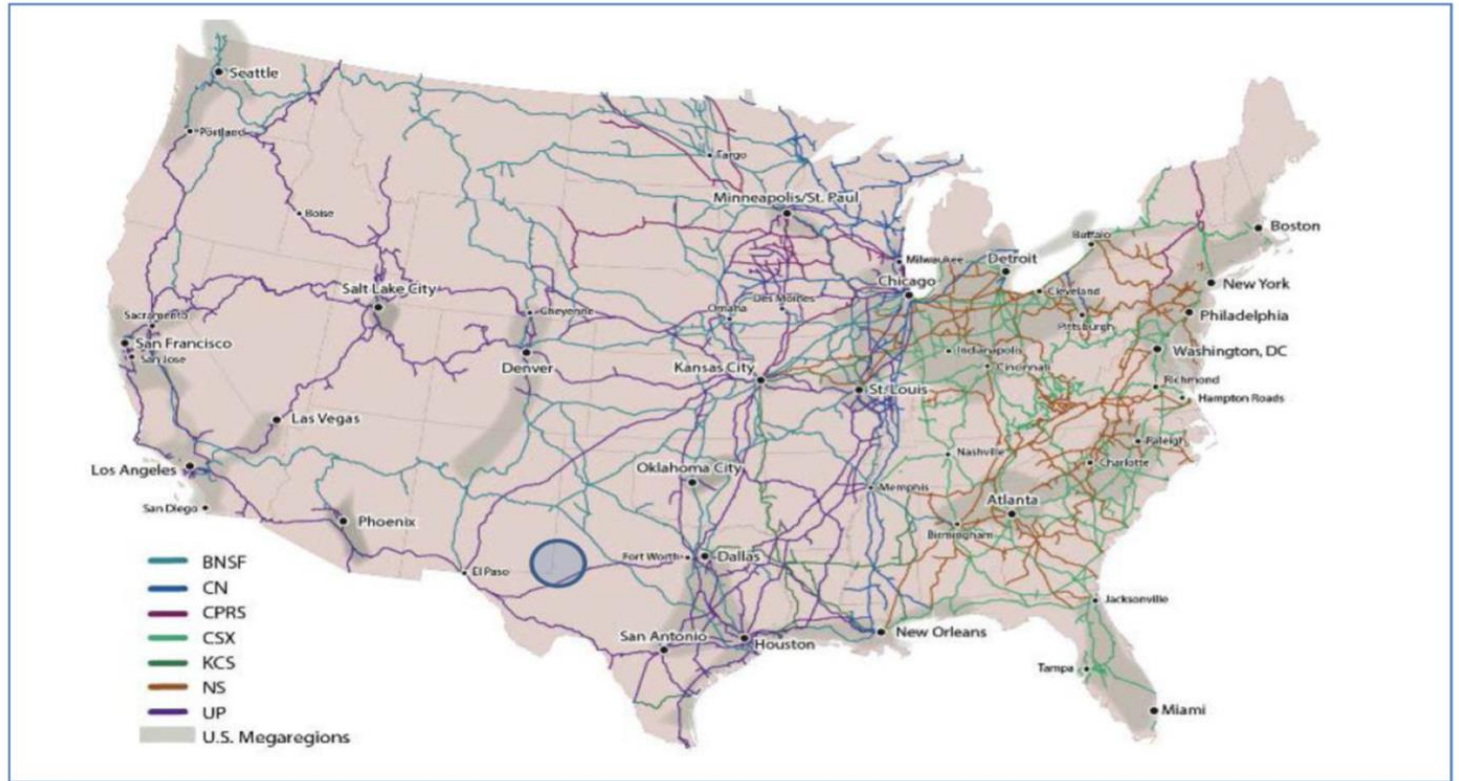
*ISP import
shipments*




Figure 2: All routes to ISP CISF

ISP

LA



<p>Title:</p> <p>RAIL LINES MAP</p>	<p>Figure:</p> <p>2.2-4</p>	<p>Date:</p> <p>11/16/2015</p>	
		<p>Scale:</p> <p>NONE</p>	

ISP

LA

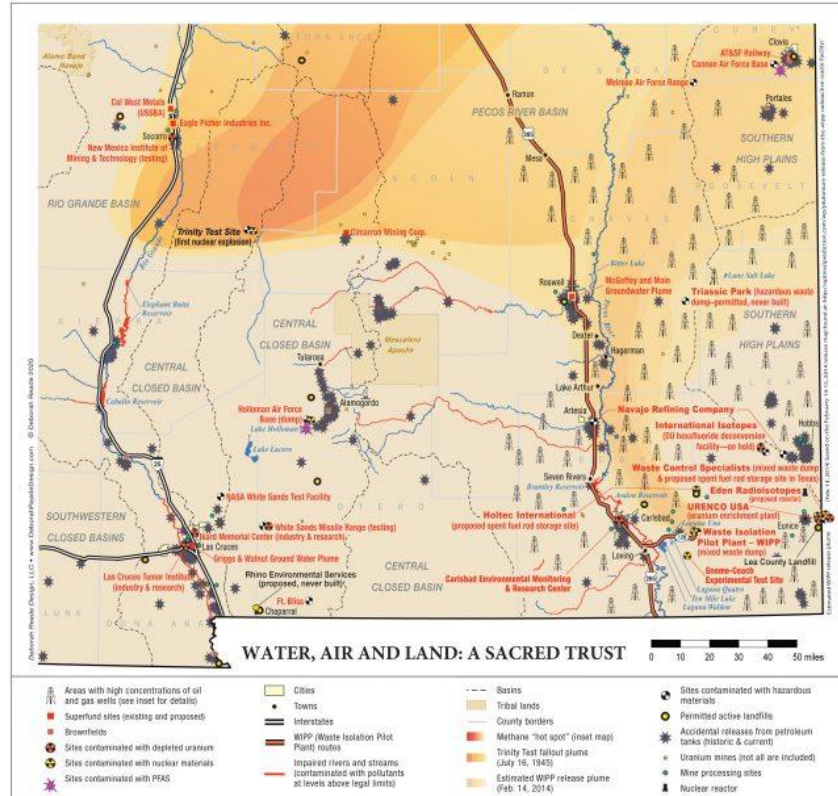


Title: Figure 4.2-3
Transportation Routes



- Explanation:
- Blue line: Maine Yankee to WCS
 - Green line: WCS to Yucca Mountain
 - Red line: San Onofre to WCS

“Private” CISFs violate EJ – Permian Basin/TX-NM border

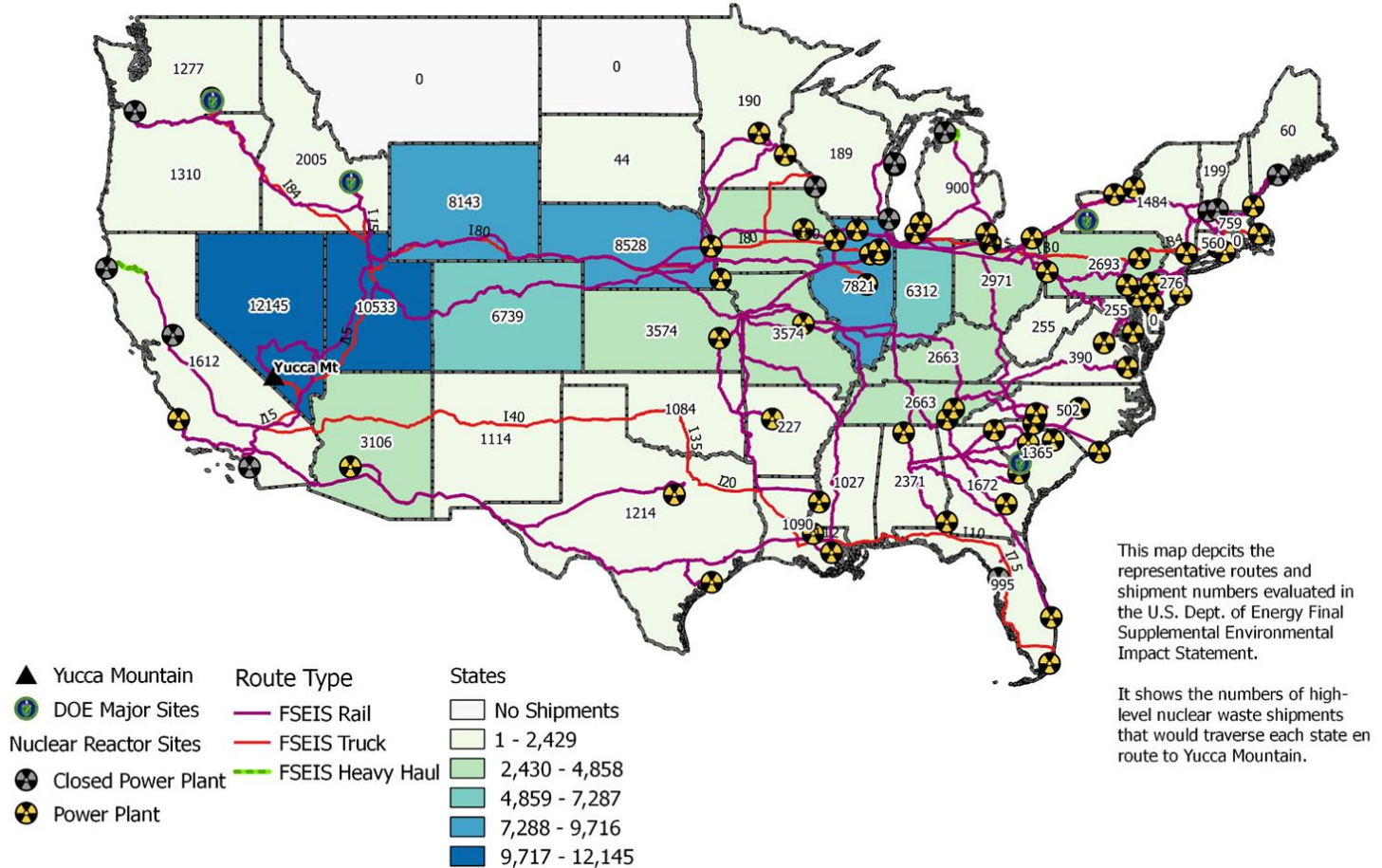


The uses of water, air and land are diverse in New Mexico and will change dramatically with climate change. For caretakers of this sacred trust, this map offers a bird's eye view of the health of our environment

Representative Transportation Routes to Yucca Mountain and Transportation Impacts (Cask Shipments by State)

Dilger
2017

*Yucca-
bound
shipments*



This map depicts the representative routes and shipment numbers evaluated in the U.S. Dept. of Energy Final Supplemental Environmental Impact Statement.

It shows the numbers of high-level nuclear waste shipments that would traverse each state en route to Yucca Mountain.

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https://web.archive.org/web/20180718201903/http://www.state.nv.us/nucwaste/trans.htm

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INTERNET ARCHIVE Wayback Machine http://www.state.nv.us/nucwaste/trans.htm 164 captures 3 Oct 1999 - 5 Oct 2022

Go JUN JUL SEP 2017 18 2018 2019 About this capture

Nuclear Waste Project Office • What's News • Yucca Mountain EIS • About the NWPO • Policy and Legal Issues • Nevada Test Site Issues • Key Technical Issues • Nuclear Waste Project Office News • Nuclear Waste Transportation • Socioeconomics and Health Effects • State of Nevada Comments: EIS • State of Nevada Comments: Federal Agency Planning Documents • Of Interest • Links

Nuclear Waste Transportation

- *Nevada Agency for Nuclear Projects* - [WM 2012 Conference, February 26-March 1, 2012, Phoenix, Arizona, USA: PHYSICAL PROTECTION OF SPENT FUEL SHIPMENTS: RESOLUTION OF STAKEHOLDER CONCERNS THROUGH RULEMAKING- 12284](#) - James D. Ballard, PhD, Robert J. Halstead, Fred Dilger, PhD
- *Nevada Agency for Nuclear Projects* - [Representative Transportation Routes to Yucca Mountain and Transportation Impacts \(Cask Shipments by State\)](#) - Fred Dilger PhD
- *Nevada Agency for Nuclear Projects* - [States Potentially Affected by Shipments to Yucca Mountain, Nevada](#) - Fred Dilger PhD
- *Nevada Agency for Nuclear Projects* - [Yucca Mountain, Transportation Issues, University of Nevada -Las Vegas February 19, 2015](#) - Fred C. Dilger, PhD
- *Nevada Agency for Nuclear Projects* - [Stakeholder Transportation Scorecard: Reviewing Nevada's Recommendations for Enhancing the Safety and Security of Nuclear Waste Shipments – 13518](#) - Fred C. Dilger PhD, Black Mountain Research, James D. Ballard, PhD, Department of Sociology, California State University, Northridge Robert J. Halstead, State of Nevada Agency for Nuclear Projects
- *Nevada Agency for Nuclear Projects* - [Stakeholder Transportation Scorecard: Reviewing Nevada's Recommendations for Enhancing the Safety and Security of Nuclear Waste Shipments](#) - Fred C. Dilger PhD, Black Mountain Research, James D. Ballard, PhD, Department of Sociology, California State University, Northridge, Robert J. Halstead
- *Nevada Agency for Nuclear Projects* - [YUCCA MOUNTAIN TRANSPORTATION IMPACTS IN NEVADA](#) - Fred C. Dilger, PhD., Black Mountain Research
- *State of Nevada* - [American Nuclear Society International High Level Radioactive Waste Management Conference: Repository Transportation Planning, Risk Management, and Public Acceptance: Lessons Learned](#) - Bob Halstead, Fred Dilger, PhD (pdf-182K)
- *State of Nevada* - [Slides: American Nuclear Society International High Level Radioactive Waste Management Conference: Repository Transportation Planning, Risk Management, and Public Acceptance: Lessons Learned](#) - Bob Halstead, Fred Dilger, PhD (pdf-2.4M)
- *State of Nevada* - [WM2011 Conference--Yucca Mountain Transportation Planning: Lessons Learned, 1984-2009](#) - Robert J. Halstead, Fred Dilger, James D. Ballard (pdf-1.26M)
- *State of Nevada* - [Waste Management 2011: Yucca Mountain Transportation Lessons Learned -11256](#) - Bob Halstead; Fred Dilger, PhD; Dave Ballard, PhD (pdf-1.8M)

2017 -----

- *Nevada Agency for Nuclear Projects* - [Representative Transportation Routes to Yucca Mountain and Transportation Impacts \(Cask Shipments by State\)](#) - Fred Dilger PhD
- *Nevada Agency for Nuclear Projects* - [Cities Potentially Affected by Shipments to Yucca Mountain](#) (pdf-2.45M)
- *Nevada Agency for Nuclear Projects* - [States Potentially Affected by Shipments to Yucca Mountain with Congressional Districts](#) (pdf-7.05M)
- *Nevada Agency for Nuclear Projects* - [Congressional Districts Potentially Affected by Shipments to Yucca Mountain - 115th Congress](#) (pdf-882K)

2012 -----

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Wayback Machine

https://web.archive.org/web/20180903060822/http://www.state.nv.us/nucwaste/news2017/pdf/Congressional_Districts_Affected.pdf

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Yucca Mountain Estimated Transportation Impacts by State
Shipments of Spent Nuclear Fuel and High-Level Radioactive Waste

State	Rail Casks	Truck Casks	Total Casks
Alabama	1,514	857	2,371
Arizona	456	2,650	3,106
Arkansas	227	0	227
California	755	857	1,612
Colorado	6,739	0	6,739
Connecticut	216	344	560
District of Columbia	255	0	255
Florida	138	857	995
Georgia	1,672	0	1,672
Idaho	2,001	4	2,005
Illinois	6,069	1,752	7,821
Indiana	4,887	1,425	6,312
Iowa	3,066	1,789	4,855
Kansas	3,574	0	3,574
Kentucky	2,663	0	2,663
Louisiana	233	857	1,090
Maine	60	0	60
Maryland	255	0	255

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https://web.archive.org/web/20180903060822/http://www.state.nv.us/nucwaste/news2017/pdf/Congressional_Districts_Affected.pdf

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2d Simpson, Mike

IL

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State	District	Name
	1st	Rush, Bobby L.
	2d	Kelly, Robin L.
	3d	Lipinski, Daniel
	4th	Gutiérrez, Luis V.
	5th	Quigley, Mike
	6th	Roskam, Peter J.
	7th	Davis, Danny K.
	8th	Krishnamoorthi, Raja
	9th	Schakowsky, Janice D.

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https://web.archive.org/web/20180903060822/http://www.state.nv.us/nucwaste/news2017/pdf/Congressional_Districts_Affected.pdf

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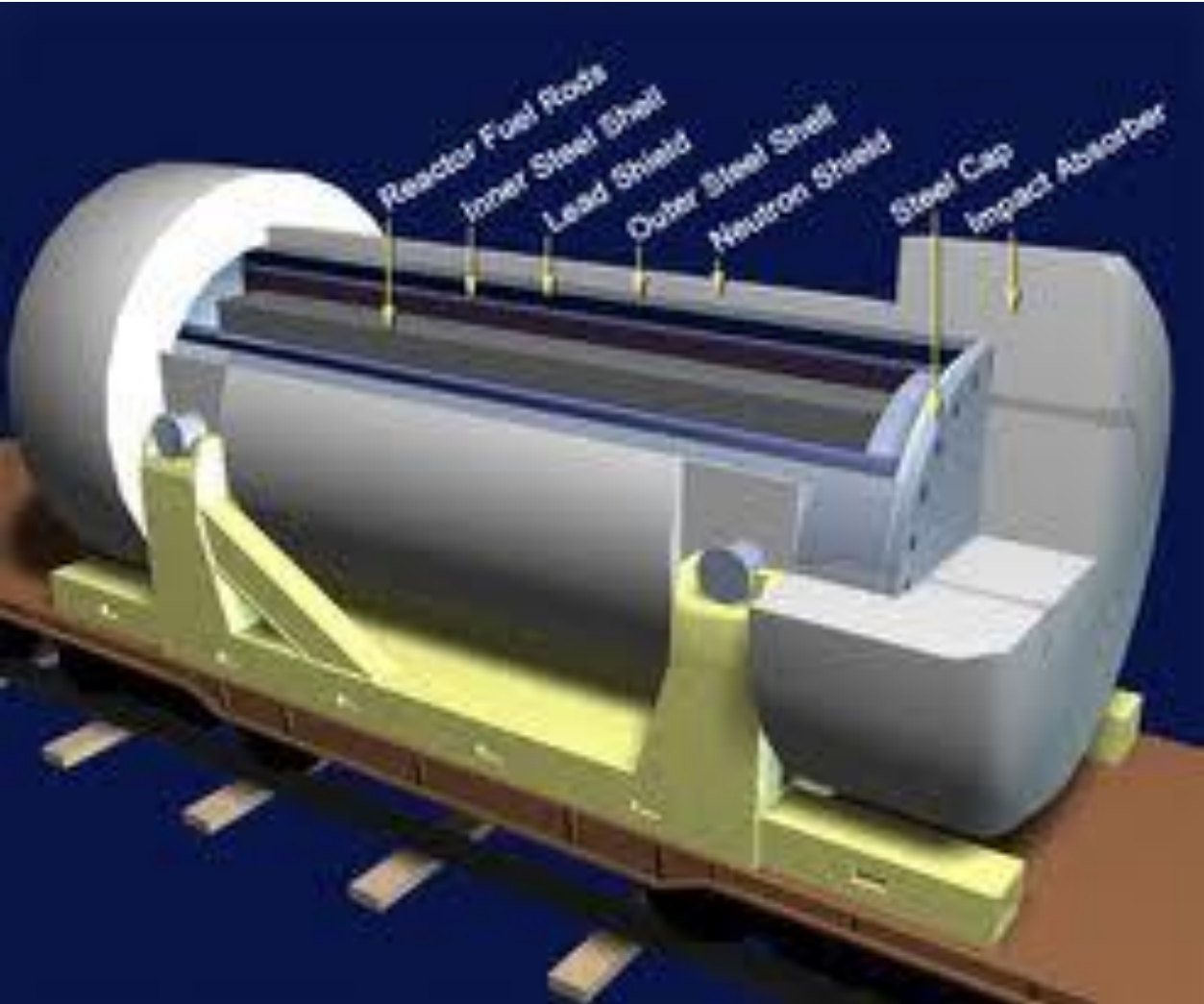
http://www.state.nv.us/nucwaste/news2017/pdf/Congressional_Districts_Affected.pdf

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10th	Schneider, Bradley Scott
11th	Foster, Bill
12th	Bost, Mike
13th	Davis, Rodney
14th	Hultgren, Randy
15th	Shimkus, John
16th	Kinzinger, Adam
17th	Bustos, Cheri
18th	LaHood, Darin
IN	
1st	Visclosky, Peter J.
2d	Walorski, Jackie
3d	Banks, Jim
8th	Bucshon, Larry
9th	Hollingsworth, Trey
KS	

Rail



LWT

Legal

Weight

Trucks

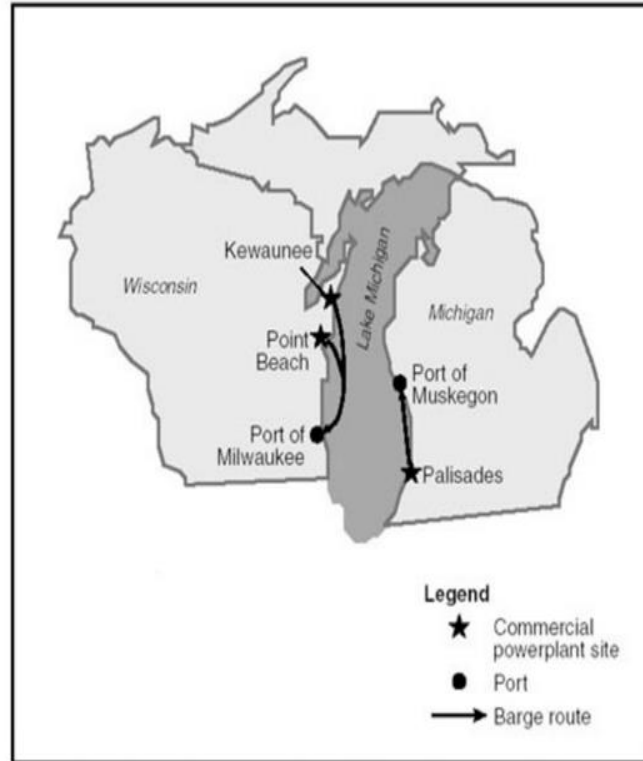


Ships

Barges



Barge Shipments of High-Level Radioactive Waste on Lake Michigan Proposed by U.S. Dept. of Energy under its Yucca Mountain Plan



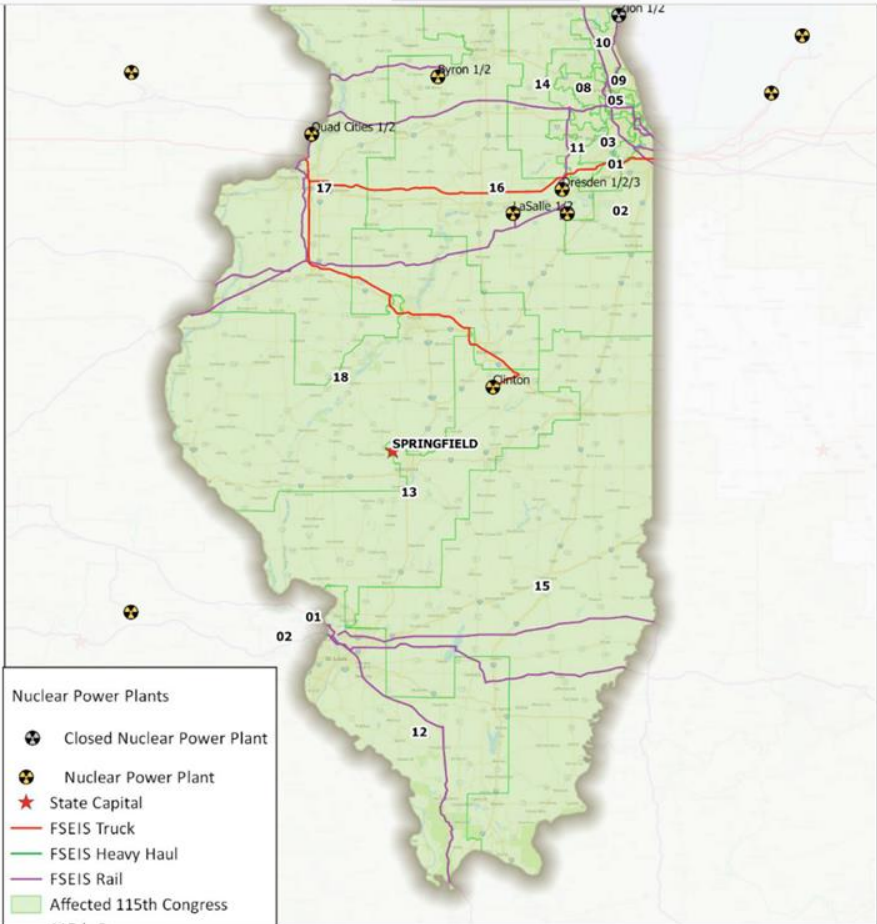
Map taken from Figure J-9, Routes analyzed for barge transportation from sites to nearby railheads, page J-80.

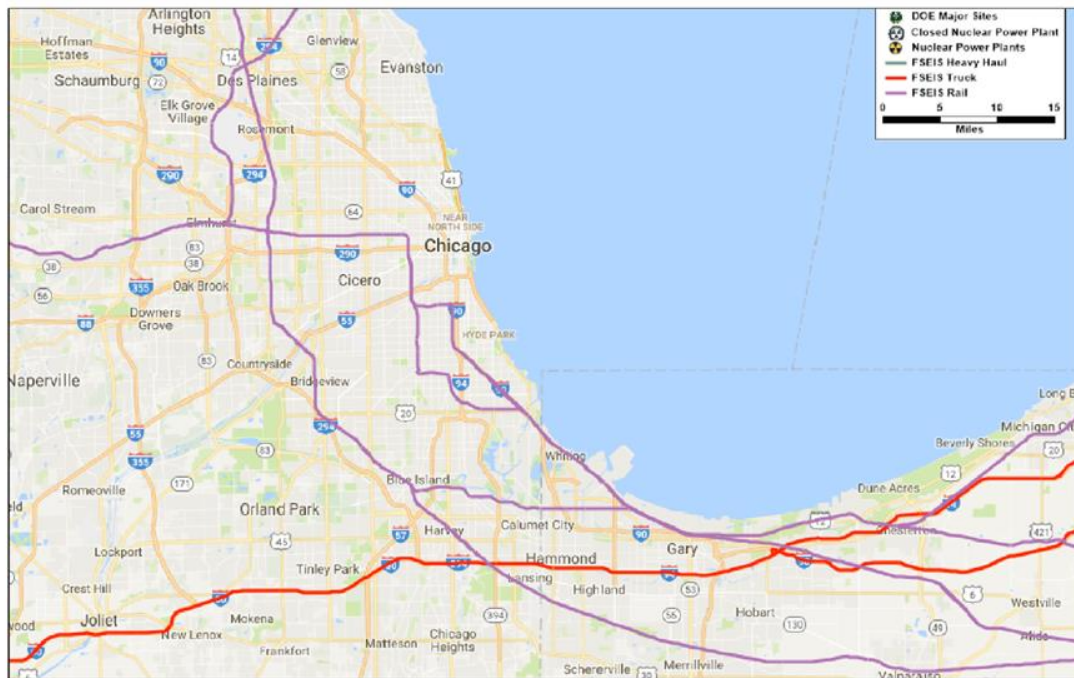
Map taken from Figure J-9, Routes analyzed for barge transportation from sites to nearby railheads, page J-80.

<u>Nuclear Plant</u>	<u>Location</u>	<u>Number of Shipments Proposed</u>	<u>Barges offloaded at:</u>
Palisades	Covert, MI	Up to 125	Port of Muskegon, MI
Kewaunee	Carlton, WI	Up to 111	Port of Milwaukee, WI
Point Beach 1/Two Rivers, WI		Up to 215	Port of Milwaukee, WI
Point Beach 2/Two Rivers, WI		Up to 2	Port of Milwaukee, WI
Totals		Up to 453	

Table taken from Table J-27, Barge shipments and ports, page J-83.

Map and table taken from U.S. Department of Energy, "Final Environmental Impact Statement for Yucca Mountain," Appendix J ("Transportation"), Feb. 2002.






Everyone knows that accidents happen: Nuclear Waste Transport Casks

Everyone knows that accidents happen...

The nuclear industry wants you to believe that shipping nuclear waste to a dump at Yucca Mountain is safe. But current nuclear waste transport casks have never been physically tested! The Nuclear Regulatory Commission's performance requirements are outdated and dangerously underestimate today's worst-case accident scenarios.

NAME OF TEST	REGULATORY REQUIREMENTS	SAFETY THREATENED
Drop Test 	Casks must withstand a 30-foot fall onto an essentially unyielding surface, simulating the impact of a crash.	In this test, cask speed at the moment of impact is only 30 miles per hour. Highway speed limits typically 65-75 mph have increased since this regulation was written. A crash into a bridge abutment or an oncoming heavy vehicle could exceed test conditions.
Run Test	Casks must withstand an equivalent	Other materials that show evidence

Burn Test

cask2

Casks must withstand an engulfing fire at 1475° F for 30 minutes.

Other materials that share roadways burn at much hotter temperatures (diesel burns at 1800° F) and for longer than 30 minutes.

The 2001 train fire in Baltimore burned for more than 3 days and probably reached temperatures hotter than 1500° F.

Puncture Test

cask3

Cask must withstand a free-fall from 40 inches onto an 8-inch long spike.

Many of the bridges along transport routes are considerably taller than 40 inches.

A train derailment or truck crash on a bridge could cause puncture damage to the casks shield and release radiation.

Water Submersion Test

cask4

A cask that has undergone the puncture test must withstand submersion under 3 feet of water.

An undamaged cask must withstand submersion under 200 meters (656 feet) of water for 1 hour.

A damaged cask submerged in water deeper than 3 feet could contaminate water supplies.

Casks can weigh as much as 125 tons and would be extremely difficult to rescue in 1 hour, especially in remote areas.

Water pressure over long periods of time could cause radiation to be released.

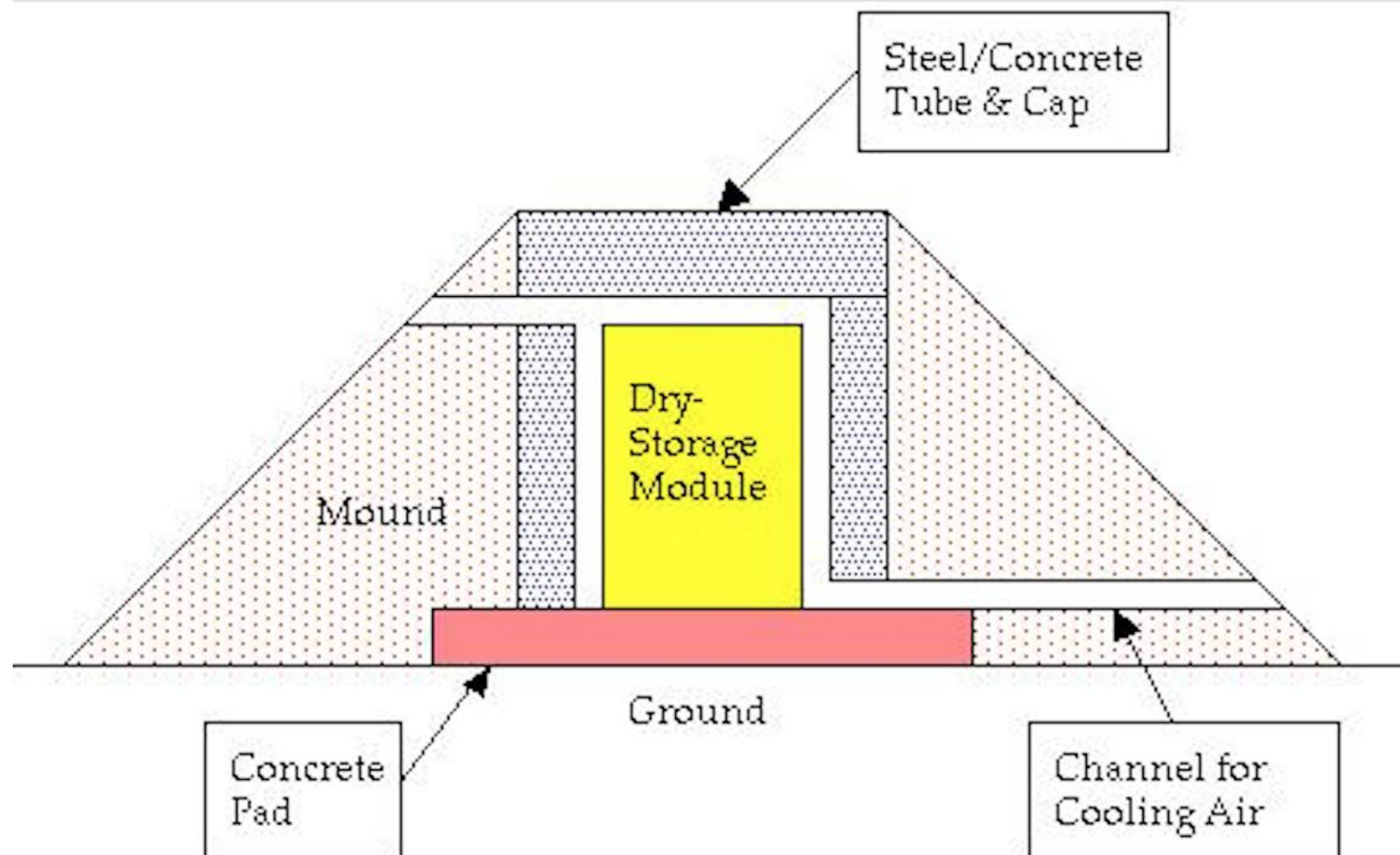
OPPOSE risky radioactive waste transport to Yucca Mountain.

If not CISFs, then what?

–**STOP MAKING IT!** (ANA et al. anti-SMNR campaigns; resistance to old/dead reactor bailouts)

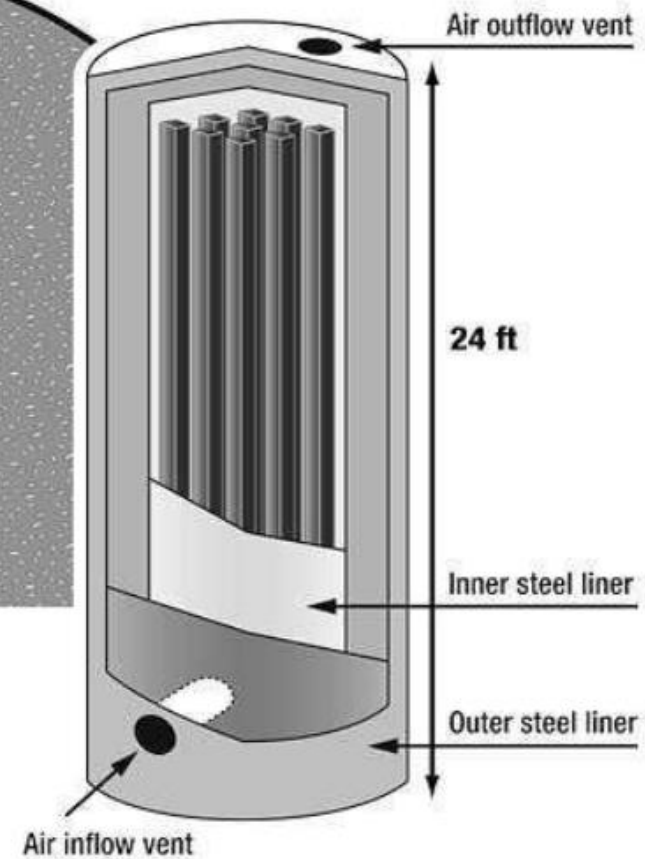
–**Hardened On-Site Storage (HOSS)**, or Hardened *Very Near-Site* Storage, to address current indoor wet storage pool fire risks, as well as dry cask storage risks.

–Permanent geological disposal repository: about one-third of ANA member organizations are also member groups of the National Radioactive Waste Coalition, which is discussing the “Principles for Safe Management and Geological Isolation of Irradiated Nuclear Fuel” (Dr. Arjun Makhijani, et al., Dec. 2016); Beyond Nuclear, an ANA member organization, has published “**Stringent Criteria for a Highly Radioactive Waste Geologic Repository**” (May 2020), including legality, consent-based siting, scientific suitability, environmental justice, regional equity, mitigation of transport risks, inter-generational equity, non-proliferation (pre-disposal reprocessing is unacceptable).



Earth/gravel berms should surround each cask and hide from ground-level view.

Nuclear rods cooled by simple air convection.



Potential Target: 24 to 36 Bundles of Nuclear Rods