RAS 4162

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

APPLICANT'S OUTLINE OF KEY DETERMINATIONS ON RAILROAD ALIGNMENT ALTERNATIVES — CONTENTION SUWA B

I. ISSUES:

A. Contention SUWA B asserts that the environmental impact statement fails to analyze a meaningful range of alternatives to the proposed alignment for the Low Corridor rail line and its associated fire buffer zone that will preserve the asserted wilderness character and the purported potential for wilderness designation of the North Cedar Mountains, which the rail line crosses.

B. PFS has evaluated three alternatives to the Low Corridor rail line alignment: (1) the East Skull Valley alternative; (2) the Central Skull Valley Alternative; and (3) the West Skull Valley Alternative. These alternatives have greater environmental impacts than the Low Corridor.

1. The East Skull Valley alternative would run along the Skull Valley Road and would have greater environmental impacts resulting from new construction to cross I-80 and from the railroad's effect on wetlands, houses, ranches and traffic along the road.

2. The Central Skull Valley alternative would run down the center of the valley and would have greater environmental impacts because it would run through the mid-valley mudflat wetlands.

3. The West Skull Valley alternative would run about half a mile east of the Low Corridor rail line, outside the North Cedar Mountains, and it would have greater environmental impacts due primarily to the raised railroad bed that would be necessary in order to route the rail line on the lower elevations toward the valley floor. These impacts include disturbing and utilizing a large quantity of earth for the railroad bed, cutting off wildlife usage and cattle grazing, and potentially restricting access for fighting wildfires which could pose a hazard to natural vegetation.

Template = SECY-055

SECY-02

C. The other environmental impacts of the alternatives are similar to the impacts of the Low Corridor rail line and are discussed in the FEIS.

D. BLM has determined that the North Cedar Mountains lack wilderness characteristics, so the impact of the Low Corridor rail line on wilderness characteristics would be small and not significantly different from the impacts of the West Skull Valley alternative.

II. CONCLUSIONS OF FACT AND LAW

A. PFS has considered a reasonable range of alternative alignments to the proposed alignment of the Low Corridor rail line.

B. The proposed alignment of the Low Corridor rail line has the least environmental impacts of the alignments considered.

C. The Low Corridor rail line would have a small impact on wilderness characteristics, considering the lack of wilderness characteristics in the North Cedar Mountains.

PFS Exhibits for Contention SUWA B

PFS Exhibit	Title
BB	Excerpts from PFS Environmental Report
CC	SWEC Drawing DY-SK-19-A
DD	SWEC Drawing DY-SK-20-A
EE	Overview of Low Corridor
FF	BLM Letter to SUWA re North Cedar Mountains (May 8, 2001)
GG	Photographs of Low Corridor Area
HH	PFSF Transportation Study (SWEC 1998) § 3.3
II	Map of "Jeep" Trails Near Low Corridor
JJ	BLM Intensive Wilderness Inventory, Final Decision on Wilderness Study Areas, Utah (Nov. 1980)
KK	Second Declaration of Jim Catlin for Petitioner
	Southern Utah Wilderness Alliance (SUWA) (Dec. 8, 1998)

March 18, 2002

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APPLICANT'S PREFACE TO THE TESTIMONY OF JOHN DONNELL ON CONTENTION SUWA B—RAILROAD ALIGNMENT ALTERNATIVES

I. WITNESS

John Donnell is the Project Director for Private Fuel Storage, L.L.C. ("PFS") and is responsible for the execution and integration of the legal and technical activities of the Private Fuel Storage Facility ("PFSF") project. He is a Licensed Professional Engineer (PE) with more than 21 years of experience in nuclear project management and engineering, specifically in the design, development and construction of Independent Spent Fuel Storage Installations (ISFSI). He is specifically knowledgeable about PFS's plan for the construction and operation of a railroad from the PFSF to the Union Pacific mainline near Low Junction, Utah. He is also knowledgeable of the alternative railroad alignments that PFS considered for transporting fuel to the PFSF.

II. TESTIMONY

Mr. Donnell will testify to the range of the alternative alignments to the Low Corridor rail line that PFS has considered that do not cross North Cedar Mountains (NCM) area, which SUWA asserts possesses wilderness characteristics. PFS considered a railroad alignment on the west side of Skull Valley, just east of the NCM area (the West Skull Valley alternative). PFS considered a potential alignment down the center of Skull Valley. PFS also considered a potential alignment alongside Skull Valley Road on the east side of Skull Valley. The alternative railroad alignments are inferior options compared to the proposed Low Corridor alignment because of the alternatives' greater environmental impact. The West Skull Valley alternative has greater environmental impacts (and construction cost) due primarily to the greater amount of earthen fill needed to construct the rail line at lower elevations in Skull Valley. The Central Skull Valley alternative has greater environmental impacts because its construction would disturb mudflat wetlands in the middle of the Valley. The East Skull Valley alternative has greater environmental impacts arising from new construction required to gain access to Skull Valley Road and the railroad's effect on wetlands, houses, ranches and traffic along the road.

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TESTIMONY OF JOHN DONNELL ON CONTENTION SUWA B—RAILROAD ALIGNMENT ALTERNATIVES

I. BACKGROUND--WITNESS

Q1. Please state your full name.

A1. John Donnell

Q2. By whom are you employed and what is your position?

A2. I am Project Director for Private Fuel Storage, L.L.C. ("PFS"). In my capacity as Project Director, I am responsible for the execution and integration of the legal and technical activities of the Private Fuel Storage Facility ("PFSF") project.

Q3. Please summarize your educational and professional qualifications.

A3. My professional and educational experience is summarized in the curriculum vitae attached to this testimony. I am knowledgeable about PFS's plan for the construction and operation of a railroad from the proposed PFSF storage site to an interconnection with the Union Pacific Railroad at Low Junction, in Utah. I am also knowledgeable of the alternative alignments for a rail line servicing the storage facility that PFS has considered. I have visited the Low Corridor area a number of times over the course of my work on the PFS project.

Q4. What is the purpose of your testimony?

A4. The purpose of my testimony is to respond to the allegation in Contention SUWA B that asserts:

> The License Application Amendment fails to develop and analyze a meaningful range of alternatives to the Low Corridor Rail Spur and the associated fire buffer zone that will preserve the wilderness character and the potential wilderness designation of a tract of roadless Bureau of Land Management (BLM) land—the North Cedar Mountains—which it crosses.

Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-3, 49 NRC 40, 53, aff'd, CLI-99-10, 49 NRC 318 (1999). The contention was admitted so far "as it seeks to explore the question of alignment alternatives to the proposed placement of the Low Junction rail spur." LBP-99-3, 49 NRC at 53.

Q5. To what will you testify?

A5. I will testify that PFS has considered a range of alternative alignments to the Low Corridor rail line that do not cross SUWA's North Cedar Mountains (NCM) area. In response to SUWA's assertion in Contention SUWA B that PFS could avoid its purported wilderness area, PFS has considered a railroad alignment just east of the NCM area that would not run a railroad through that area. PFS also considered a potential alignment down the center of Skull Valley, and alignments parallel to Skull Valley Road on the east side of Skull Valley. I will testify that considering the additional environmental impact and the additional construction costs, the alternative railroad alignments are inferior options compared to the proposed Low Corridor alignment.

II. DESCRIPTION OF THE LOW CORRIDOR RAIL LINE ALIGNMENT AND POTENTIAL ALTERNATIVE ALIGNMENTS

A. Proposed Low Corridor Alignment

Q6. Please describe the proposed Low corridor alignment.

A6. The proposed Low Corridor rail line is described in sections 3.2.1.5 and 4.4 and Figure 3.2-2 of the PFS Environmental Report (ER) (PFS Exhibit BB). The rail line will be constructed to connect the PFSF directly to the Union Pacific mainline railroad (which runs west from Salt Lake City across the north end of Skull Valley) near Low Junction, Utah at Skunk Ridge. The single track line will be

approximately 32 miles long and begin at the mainline on the south side of Interstate 80 at Skunk Ridge. From there, the rail line will proceed southeast parallel to Interstate 80 for approximately 3 miles, then turn south along the western side of Skull Valley for approximately 26 miles, and then turn east for approximately 3 miles to the PFSF. Associated sidings will be located at the PFSF and near Low Junction. ER at 3.3-6. The construction of the railroad is described in greater detail in the testimony of Douglas Hayes on Contention SUWA B.

Q7. Where is the location of the rail line relative to the location of the North Cedar Mountains area that SUWA claims should be designated as wilderness?

A7. The NCM area, which SUWA purports is suitable for consideration as wilderness, is located at the northern end of the Cedar Mountains, just west of Skull Valley and just south of I-80. It is a rough polygon about 5.5 miles wide by 7 miles long (see PFS Exhibit JJ). The proposed rail line would run through the far eastern edge of this area near an existing dirt road for less than three miles. (see PFS Exhibit EE)

Q8. Have you seen human imprints or evidence of human presence in the part of the NCM area through which the Low Corridor route would run?

A8. Yes. I have seen cattle grazing in the area between the dirt road and higher elevations toward the mountains. I have seen numerous "jeep" trails and one-track paths that cross the Low Corridor and head in the general direction of the mountains. (See PFS Exhibit II) I have occasionally seen vehicles using the trails in the area.

B. East Skull Valley Alternative Railroad Alignments

Q9. Please describe the east Skull Valley alternative railroad alignments.

A9. PFS evaluated rail line alignment alternatives to the Low Corridor rail line that run south from the Union Pacific mainline to the PFSF. As part of a comprehensive study of transportation alternatives in 1998 and in previous versions of the PFSF ER, PFS considered multiple starting points for a railroad alignment parallel to Skull Valley Road on the east side of Skull Valley as potential alternatives to the currently proposed Low Corridor alignment. PFSF Transportation Study (SWEC 1998), §3.3 (PFS Exhibit HH); ER Rev. 0, § 4.4 (see PFS Exhibit BB).

The east side alternatives are constrained by the location of the Union Pacific mainline, in that it runs on the north-side of I-80 from Salt Lake City until reaching Skunk Ridge, near Low Junction, on the west side of Skull Valley. PFSF Transportation Study at 35. To create a rail corridor along the east side of the valley would require either using the existing I-80 underpasses servicing Skull Valley Road in Skull Valley, constructing a new rail bridge over I-80, or a making rock cut through the northern Stansbury Mountains from an acceptable access point to the Union Pacific mainline railroad in the adjacent Tooele Valley. See FEIS § 2.2.4.2.

If an alternative rail line alignment on the east side of Skull Valley could be constructed to cross I-80, the rail line would be run parallel to the existing Skull Valley Road along the east side of the road until crossing it near the Reservation to run about two miles west to the PFSF. Transportation Study at 35.

Q10. Why were the East Skull Valley alternatives rejected?

A10. PFS rejected the East Skull Valley alternative alignment in favor of the proposed Low Corridor route because of the Low Corridor's lesser environmental impact (see ER Rev. 0, § 4.4) and the alternative's impracticability.

The existing I-80 overpasses crossing Skull Valley Road in Skull Valley are relatively low and would only provide 7 inches of clearance for a loaded spent fuel cask. Transportation Study §3.3. In contrast, State of Utah and private railroad standards would require closer to eight feet of clearance without a waiver. Transportation Study §3.3. PFS concluded that obtaining such a waiver was infeasible based on discussions with the railroad that indicated the clearance requirements were non-negotiable. Id. at 39. Union Pacific would only issue an "impaired clearance" to PFS if PFS would take all liability for any user of the rail line section subject to an impaired clearance. Id.

As discussed in the testimony of Susan Davis on Contention SUWA B, both constructing a rail bridge over I-80 or a making rock cut through the northern Stansbury Mountains from an acceptable access point to the Union Pacific mainline railroad in the adjacent Tooele Valley involve substantially increased environmental impacts. See also Transportation Study at 51, 56. Such construction would also add unnecessary construction costs, difficulty, and technical and busi-

ness risks to the rail line construction project. Id. Furthermore, constructing a rail bridge over I-80 would require PFS to obtain a State permit. The relative environmental impacts of the proposed Low Corridor and East Skull Valley alternatives are further discussed in the testimony of Susan Davis.

Based on these considerations, a rail route on the eastern side of Skull Valley is inferior to the proposed Low Corridor route.

C. Central Skull Valley Alternative Railroad Alignment

Q11. Please describe the central Skull Valley alternative railroad alignment.

A11. PFS also considered a potential alignment down the center of Skull Valley. A rail corridor from the Union Pacific mainline to the PFSF faces a fundamental constraint that it must run down either the west side or the east side of the valley. Alignments down the middle of the valley would cross the large mid-valley mud flat, which, as discussed in the testimony of Susan Davis on Contention SUWA B, is a wetland as defined under the Clean Water Act § 404.

Q12. Why was that alternative rejected?

A12. PFS quickly rejected the Central Skull Valley alternative alignment in favor of the Low Corridor route because of the alternative's impracticability and, as discussed in the testimony of Susan Davis, the Low Corridor's significantly lesser environmental impact. As discussed in the testimony of Susan Davis, it is doubtful that PFS could obtain an Army Corps of Engineers permit to fill relatively large tracts of the mid-valley wetland, when east and west side alternatives are feasible and do not impact a wetland. As such, mid-valley rail line alignments are not practicable alternatives to the Low Corridor rail line alignment. The relative environmental impacts of the proposed Low Corridor and Central Skull Valley alternative are discussed further in the testimony of Susan Davis on Contention SUWA B.

D. West Skull Valley Alternative Railroad Alignment

Q13. Please describe the west Skull Valley alternative alignment.

A13. In response to Contention SUWA B, PFS also considered an alignment just east of SUWA's NCM area that would not add a railroad to that area and thus would

not have any further effect on the hypothetical potential for the area's designation as wilderness.[1] The alternate alignment would run 2,000 to 3,000 feet further east than the proposed alignment in order to avoid the NCM area. The alternative alignment would rejoin the proposed alignment to the south of the NCM area, after a total distance of about six miles.

Q14. What are the consequences for rail line construction of moving the alignment 2,000 to 3,000 feet further east than the proposed Low Corridor alignment?

A14. As discussed in the testimony of Douglas Hayes on Contention SUWA B, in terms of earthwork (i.e., cut and fill), aside from the initial cut at Low for the mainline rail connection, the remaining length (31 miles) of the proposed Low Corridor 32-mile rail line alignment has a net material balance; that is, material removed to level the railroad bed ("cut") approximately equals material added ("fill"). The mainline cut at Low will result in a stockpile of approximately 300,000 cubic yards of soil. The alternative alignment, however, is built on fill for most of its six mile length, driven by the constraints of available BLM land for rail corridor through two narrow gaps near the northern and southern ends of the alternative alignment. The gaps lie between the eastern edge of SUWA's NCM area and either the western edge of a parcel of land owned by the State of Utah at the northern end or the western edge of the large mid-valley mudflat (i.e., wetlands) at the southern end. These narrow gaps operate as constraints and limit the ability of the alternative rail line alignment to follow the natural contours of the land. The space available for the alternative alignment is shown on the map which is PFS Exhibit EE. As the proposed rail line alignment lacks these constraints, it follows natural contours to balance the amount of cut and fill needed. In contrast, the alternative alignment would require a total of about 560,000 cubic yards of fill.

Q15. How much would the West Skull Valley alternative cost?

[1] Based on the Bureau of Land Management's (BLM) rejection of the North Cedar Mountains as a wilderness area for lack of wilderness characteristics in 1980 and again in 2001, see Letter from Glenn A. Carpenter, Field Office Manager, BLM, Salt Lake Field Office, to Stephen Bloch, Staff Attorney, SUWA (May 8, 2001) (PFS Exh. FF), I believe that the NCM area does not possess wilderness characteristics. PFS considered the West Skull Valley railroad alignment alternative only to address the hypothetical question of what would be the effect of moving the railroad to the east of the NCM area.

A15. The alternative alignment would be significantly more expensive than the proposed Low Corridor alignment. PFS has previously testified in this proceeding to the estimated cost of the proposed rail line. Pre-filed Testimony of Joseph F. Gase and George L. Takacs, IV on PFSF Construction Costs, June 21, 2000 (inserted into PFS Hearing Record Transcript at 1681). This alternative would increase costs by 15 to 25% by adding $5 million dollars for the fill alone, ignoring additional cost impacts for other material and related installation effects.

Q16. How was it determined that the alternative alignment would cost more than an additional $5 million to construct?

A16. As discussed in the testimony of Douglas Hayes, the anticipated construction work effort would include obtaining large quantities of fill to level the railroad bed, and some additional track and additional material needed for ballast and sub-ballast for the somewhat increased length of the rail line. The cost of this work effort is estimated based on the typical costs of labor and materials to accomplish it. Here, however, only the additional cost of obtaining, transporting, and emplacing the fill material has been evaluated, which gives a rough, but low, estimate of the total additional costs associated with the alternative alignment.

Q17. How did you determine how much additional "fill" would be required?

A17. Under the proposed rail line alignment, as noted above, excess cut material ("spoil") would be generated for the siding that is constructed near the Union Pacific mainline. As discussed in the testimony of Douglas Hayes on Contention SUWA B, this excess cut material, about 300,000 cubic yards, could be used (with BLM approval) as fill for the alternative rail alignment, but another 260,000 cubic yards would be needed. For the cost estimate, PFS assumes that the additional 260,000 cubic yards of suitable fill can be found within a 50-mile radius of the rail line construction site. If this assumption is not accurate, costs for constructing the alternative rail line alignment would be higher.

Q18. How did you calculate the cost of the West Skull Valley alternative?

A18. The cost of the alternative rail alignment, using a Salt Lake City costing basis, was estimated as follows. To load, haul and dump from the Low stockpile (at an average overall distance of 10 miles each way) 300,000 cubic yards of soil would cost $697,100, assuming $2.30 per cubic yard. To buy, load, haul and dump (at

an average radial distance of 50 miles each way) 260,000 cubic yards of soil would cost $3,120,000, assuming $12.00 per cubic yard. To place and compact (including water) 560,000 cubic yards of soil would cost $1,632,400, assuming $3.00 per cubic yard. The total cost of just this portion of the additional work would be approximately $5,000,000. As noted above, this estimate includes only the significant costs of obtaining and using additional fill material. Other costs relating to the somewhat longer track length and associated construction activities would increase this estimated cost.

Q19. Are there environmental consequences from the additional fill required?

A19. As discussed in the testimony of Susan Davis on Contention SUWA B, the additional fill required to construct the alternative rail line alignment increases the environmental impact as compared to the proposed Low Corridor alignment. The raised railroad bed required for the alternative alignment would potentially have increased impacts on wildlife, cattle grazing, visual resources and wildfire fighting capability compared to the proposed alignment, since the proposed railroad bed is not elevated.

Q20. Why would you not pursue this alternative?

A20. We would not pursue the West Skull Valley alternative because of its greater environmental impact and higher costs. The relative environmental impacts of the Low Corridor and the West Skull Valley alternative are discussed further in the testimony of Susan Davis. Considering the additional environmental impact and the additional construction costs, the alternative alignment is an inferior option compared to the proposed Low Corridor rail line.

III. CONCLUSION

Q21. In conclusion, of the railroad alignments you considered, which is preferable?

A21. The proposed Low Corridor alignment is preferable. The other alternative alignments would all have greater environmental impacts and the west Skull Valley alternative would be significantly more expensive than the proposed Low Corridor alignment.

JOHN L. DONNELL — Project Manager

EXPERIENCE SUMMARY

Mr. Donnell has 21 years of experience in nuclear project management and engineering. Currently, he is Project Manager for the Private Fuel Storage Facility project. The project is sponsored by a consortium of eleven utilities to develop a central interim storage facility for commercial spent nuclear fuel. In addition, he is the Project Manager for plant modifications work at the Prairie Island Nuclear Generating Plant for Northern States Power Company. His duties as Project Manager includes overall project direction, estimating, contract administration, controlling project costs, and scope change control.

He is also coordinating the corporate Stone and Webster Spent Independent Spent Fuel Storage Installation (ISFSI) Program and supporting all initiatives in this focus area of the power sector. In this capacity, he is responsible for project scoping, staffing, providing estimates, recommending spent fuel storage technology selection, and interfacing with client staff as well as state and federal agencies to support corporate goals for all spent fuel storage projects.

RELEVANT PROJECT EXPERIENCE

Private Fuel Storage LLC, Private Fuel Storage Facility - As Project Manager, responsible for the engineering, design, budget and schedule control for the project. Project scope includes production of all necessary federal licensing documents for submission to the NRC for this first of a kind private fuel storage facility supporting multiple nuclear utilities. The effort also includes site selection and characterization, preliminary facility engineering and design, and related facility and transportation infrastructures. The licensing documents are in compliance with the requirements of 10 CFR Part 72. Detailed engineering and design will follow the licensing effort for the storage facility, support buildings, and transportation system.

Northern States Power Goodhue County ISFSI, Prairie Island Nuclear Generating Plant - As Project Manager, responsible for overall project direction to support the site characterization study, engineering and design, and licensing for this offsite ISFSI. The licensing documents are in compliance with the requirements of 10 CFR Part 72. Duties included:

- Providing support and attending the public forum meetings.
- Participating in the site selection process and ISFSI conceptual design.
- Supervising the development of a storage technology assessment.
- Supervising the development of a storage technology bid specification.
- Supervising the development of the Minnesota State Application for Site Certificate.

He also supervised the development of the NRC License Application, inlcuding the preparation of the Safety Analysis Report (SAR), Environmental Report (ER), Emergency Plan (EP), and Security Plan (SP).

Northern States Power, Prairie Island Nuclear Generating Plant ISFSI - As Project Manager and Project Engineer, he was responsible for this project from the preparation of the license application through site operation. Project scope included:

- Generation of federal licensing documents for submission to the NRC. This effort provided the utility with a draft SAR, ER, technical specifications, and decommissioning plan.
- Engineering and design, including site selection, geotechnical studies, security system, cask monitoring system, radiation monitoring system, perimeter shielding berm, facility support

services, road access, cask transporter design review, and procurement support.

He also supervised the auxiliary building crane trolley upgrade to single-failure-proof. This project replaced the existing crane trolley with a single-failure-proof trolley operation to support the movement of the 125-ton spent fuel storage casks within the plant.

Northern States Power Company, Prairie Island Nuclear Generating Plant - As Project Manager, responsible for the overall day-to-day management of all Stone & Webster project activity at this power plant and interface with the utility management team, including departmental and project team members. Programmatic interfaces to the client project team were developed to utilize the best and most appropriate resources from both organizations. Individual task assignments include the development of more than thirty conceptual engineering studies, execution of the engineering and design for more than seventy-four modification tasks , and the preparation of Design Basis Documents.

Portland General Electric Company, Trojan Nuclear Plant - As Project Manager, responsible for all work performed by Stone & Webster at this power plant. Work included:

- Reviewing the decommissioning plan prior to submission to the NRC.
- Performing a facilities review to establish bid evaluation criteria to be used to select the storage technology vendor for an onsite ISFSI.
- Supporting the vendor selection process.
- Preparing a technical report identifying the available storage technologies, operational characteristics, and the implementation of a risk management program for the spent fuel project.
- Performing an evaluation to develop the strategy necessary to terminate the Part 50 License with the loaded ISFSI onsite.

EDUCATION

B.S., Electrical Engineering - University of Toledo

ASME Short Course Program - ASME Boiler & Pressure Vessel Code: Section III, Divisions 1 & 2, Quality Assurance for Design and Inspection of Nuclear Power Plant Components

LICENSES AND REGISTRATIONS

Professional Engineer - Colorado, Ohio, Minnesota

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APPLICANT'S PREFACE TO THE TESTIMONY OF DOUGLAS HAYES ON CONTENTION SUWA B—RAILROAD ALIGNMENT ALTERNATIVES

I. WITNESS

Douglas Hayes is employed by Stone & Webster, Inc. - a Shaw Group Company - as a Civil Design Engineer and is Lead Railroad Design Engineer on the Private Fuel Storage Facility ("PFSF") project. He is responsible for the layout and development of construction drawings and railroad construction specifications for the railroad alignment from the PFSF site to the Union Pacific Railroad at Skunk Ridge, near Low Junction, Utah. He has more than 40 years experience in surveying and engineering civil projects, including engineering and design requirements of site and corridor development. With Stone and Webster, he has worked on site road design, including earthwork, structural and drainage considerations; railroad loading, unloading and transportation for heavy and light rail; and other site developments.

II. TESTIMONY

The purpose of Mr. Hayes' testimony is to describe the layout and the construction requirements for the West Skull Valley railroad alignment that PFS considered as an alternative to its proposed Low Corridor alignment. Because it crosses into the lower elevations to the east of the Low Corridor, the West Skull Valley alternative would have to be built mostly on a raised earthen embankment. Mr. Hayes will explain the railroad design considerations and area topography constraints that require the alternative alignment to be built on that embankment. The maximum railroad grade is limited by the weight of the train and the power of the locomotive. The topography constraints arise from staying east of the North Cedar Mountains and west of the mudflat wetlands and State-owned land in Skull Valley. Mr. Hayes will explain that building the West Skull Valley alternative would require the importation of 260,000 cubic yards of earth to build the embankment, which would add environmental impacts and costs above that of the proposed Low Corridor rail line (*see* testimony of John Donnell).

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TESTIMONY OF DOUGLAS HAYES ON RAILROAD ALIGNMENT ALTERNATIVES CONTENTION SUWA B

I. BACKGROUND--WITNESS

Q1. Please state your full name.

A1. Douglas Hayes.

Q2. By whom are you employed and what is your position?

A2. I am currently employed by Stone & Webster, Inc. - a Shaw Group Company as a Civil Design Engineer.

Q3. Please summarize your educational and professional qualifications.

A3. My professional and educational experience is summarized in the curriculum vitae attached to this testimony. I have extensive experience with civil engineering and design requirements of site and corridor development. My experience with Stone & Webster include access and site road design of asphalt, concrete and gravel roads, including earthwork, structural and drainage considerations; railroad loading, unloading and transportation for heavy and light rail; and site development on a variety of projects. I have more than 40 years experience in surveying and engineering civil projects. Prior to joining Stone & Webster, I worked for the U.S. Geological Survey in the Rocky Mountain Region for eight years performing geodetic surveys. I also worked for consulting engineering firms in Colorado for ten years on

various surveying and civil engineering projects. I owned and operated my own surveying business in Colorado for approximately two years.

Q4. What has been your role in the PFS Project?

A4. I am Lead Railroad Design Engineer on the PFS project. I am responsible for the layout and development of construction drawings and railroad construction specifications for the new railroad alignment from the proposed PFSF storage site to a interconnect with the Union Pacific Railroad at Skunk Ridge, near Low Junction, Utah.

Q5. What is the purpose of your testimony?

A5. The purpose of my testimony is to respond to the allegation in Contention SUWA B that asserts:

> The License Application Amendment fails to develop and analyze a meaningful range of alternatives to the Low Corridor Rail Spur and the associated fire buffer zone that will preserve the wilderness character and the potential wilderness designation of a tract of roadless Bureau of Land Management (BLM) land—the North Cedar Mountains—which it crosses.

Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-3, 49 NRC 40, 53, aff'd, CLI-99-10, 49 NRC 318 (1999). The contention was admitted so far "as it seeks to explore the question of alignment alternatives to the proposed placement of the Low Junction rail spur." LBP-99-3, 49 NRC at 53.

Q6. To what will you testify?

A6. I will testify that PFS has considered a range of alternative alignments to the Low Corridor rail line that do not cross SUWA's North Cedar Mountains (NCM) area. In response to SUWA's claim that PFS could avoid their purported wilderness area, PFS has considered a railroad alignment just east of the NCM area, called the West Skull Valley alternative, that would not add a railroad to that area. I will testify to the consequences with respect to railroad construction of that alternative alignment.

II. DESCRIPTION OF THE PROPOSED LOW CORRIDOR ALIGNMENT

Q7. Please describe the proposed Low Corridor alignment.

A7. The proposed Low Corridor rail line is described in sections 3.2.1.5 and 4.4 and Figure 3.2-2 of the PFS Environmental Report (ER) (PFS Exhibit BB). The rail line will be constructed to connect the PFSF directly to the Union Pacific main-line railroad near Low Junction, Utah at Skunk Ridge. The single track line will be approximately 32 miles long and will begin at the mainline on the south side of Interstate 80 at Low. From the mainline at Low, the rail line will proceed south-east parallel to Interstate 80 for approximately 3 miles, then turn south along the western side of Skull Valley for approximately 26 miles, and then turn east for approximately 3 miles to the PFSF. Associated sidings will be located at the PFSF and near Low Junction. ER at 3.3-6 (see PFS Exh. BB).

III. RAIL LINE CONSTRUCTION

Q8. How will the proposed Low Corridor rail line be built?

A8. The rail line will be built using conventional construction practices. A 200-foot wide right-of-way for construction of the rail line would temporarily remove or disturb about 776 acres of greasewood and desert shrub/salt brush habitat. A 200-foot wide corridor is necessary to operate the rail line to the PFSF site. ER at 3.2-6. The approximately 36-foot wide railroad ballast and sub-ballast within the corridor will be maintained free of vegetation to allow the railroad bed to drain to protect the railroad ties from water and also to provide a buffer zone to reduce the potential for range fires that might be started by the railroad. The rail line design includes crossings identified by PFS in consultation with the Bureau of Land Management (BLM) to facilitate the crossing of the rail line by emergency fire vehicles. After construction, 621 acres of land will be actively revegetated with appropriate BLM-approved species to restore it to its prior condition; thus, approximately 155 acres of land will be permanently altered by the rail line. Id. at 4.4-1. FEIS § 9.4.2, ¶ 2.H.

Q9. Will there be any access road or maintenance road along side the PFS railroad?

A9. No. After construction only the railroad will be present.

Q10. Will there be any separate fire barrier or buffer along side the railroad tracks or road bed?

A10. No. The fire buffer will consist of the railroad ballast and sub-ballast, which will be maintained free of vegetation. The railroad sub-ballast will be approximately

36 ft. wide. The tracks, which will be in the center of the railroad bed, will be approximately 5 ft. wide. Stone ballast will cover an area approximately 17 ft. wide. Thus, there will be approximately 6 ft. of stone on each side of the railroad tracks. The ballast and sub-ballast will provide a nonflammable barrier to reduce the potential for range fires.

The area that will be disturbed during construction of the railroad will be revegetated with a seed mix approved by BLM. The seed mix will be determined based on the latest BLM guidelines on revegetation in effect at that time and would be expected to include native grass species and crested wheat grass for the purpose of preventing the incursion of foreign plant species (e.g., cheat grass), as well as reducing the potential for range fires. FEIS § 5.4.1.1.

Q11. In evaluating the west Skull Valley alternative alignment, did you consider the same construction techniques as you did for the proposed Low Corridor alignment?

A11. Yes. The alternative alignment on the west side of Skull Valley has been laid out using the same typical track section as the proposed alignment, approximately 36 feet wide for the sub-ballast, 17 feet wide for the ballast on the top of subballast, and 10.5 feet wide at the top of the ballast section. The same design basis for the proposed alignment in the horizontal and vertical direction (for example, a minimum horizontal curvature of 3 degrees, (1,908 ft. radius) and vertical grade changes using the same rate of change as the proposed alignment), have been used to create the alternative alignment. Drawing DY-SK-19-A is PFS Exhibit CC and is an overall alignment plan that shows both the proposed alignment and the alternative alignment. Drawing DY-SK-20-A, Exhibit DD, shows cross sections along the alignment and graphically indicates the amount of cut or fill at various Stations. PFS Exhibit EE is another map providing an overview of the rail alignments and the region around the NCM area.

Q12. What are the constraints on the railroad slope (maximum railroad grade) for the PFS railroad?

A12. At the siding next to the Union Pacific mainline at Low Junction, the maximum acceptable railroad grade (i.e., slope) is 0.4% and zero grade is the preferred condition. The Union Pacific Railroad Co., Industry Standards, Preferred Layout Standards for Industrial Tracks, Exhibit A-1 (rev. Oct. 30, 1991). This requirement is to minimize effort and risk during train switching operations and to ensure

that cars uncoupled from their locomotive can be held by setting their brakes. The design basis of the rail line is not to have a grade that exceeds 1.5%. Maximum rail line grade is set based on the best fit of locomotive tractive effort and horsepower. For example to start a PFSF train on the maximum 1.5% grade requires two locomotives weighing in excess of 100 tons each (the weight is required for the locomotives to obtain traction on the rails), which would convert to 1,500 hp locomotives. However, to move this same train on a 1.5% uphill grade at 25 MPH requires a minimum of 5,200 horsepower. The 1.5% maximum grade is set to enable PFS trains to move at a reasonable, but reduced, speed on the sections of track with maximum grade.

Q13. Was the railroad bed for the alternative alignment different from the proposed Low Corridor alignment in any respect?

A13. Only in one respect. The alternative alignment passes closer to the western edge of the Skull Valley mudflats than the proposed alignment. Conservatively, to minimize any potential for water to damage the railroad bed, the alternative railroad alignment maintains a minimum vertical alignment approximately 3 to 5 feet above existing grade. This height is considered as a minimum in order to engineer a suitable base for the railroad bed.

Q14. What is the effect of this conservatism?

A14. The impact of this conservatism is to slightly increase the amount of fill as more fill is required in a few spots (where the minimum vertical alignment occurs) to maintain this height. This increase is small since most of the alternative alignment is built on fill anyway. Where fill is required to maintain grade in the first place, which is over the course of most of the alternative alignment, no extra fill is required for this function.

IV. THE WEST SKULL VALLEY ALTERNATIVE ALIGNMENT

Q15. Where is the North Cedar Mountains Area that SUWA claims is suitable for wilderness designation?

A15. The North Cedar Mountain area, which SUWA purports is suitable for consideration as wilderness, is located at the northern end of the Cedar Mountains. Second Declaration of Jim Catlin for Petitioner Southern Utah Wilderness Alliance (SUWA) (Dec. 8, 1998) (PFS Exhibit KK). It is a rough polygon about 5.5 miles

wide by 7 miles long (see PFS Exh. JJ). The proposed rail line would run through the eastern edge of the NCM area traversing a small segment at most a half mile wide and three miles long. See PFS Exhibits CC and EE.

Q16. Please describe the West Skull Valley alternative railroad alignment.

A16. In response to SUWA's claim that PFS could avoid their purported wilderness area, PFS considered an alternative alignment that does not cross the NCM area but rather passes just to the east of it. See PFS Exhibits CC and EE. The alternative follows the proposed Low Corridor rail line parallel to I-80 for about three miles, but at the curve south would turn less sharply so the alternative rail line would proceed more to the east than the proposed rail line route. After proceeding southeast for about two miles, the alternative rail line would curve south just east of the eastern edge of the NCM area (which is bounded by a dirt road) and just west of a parcel of land owned by the State of Utah. The alternative rail line would parallel the eastern edge of the NCM area (the dirt road) for about three miles. At that point, the edge of the NCM area (the road) turns southwest and so would the alternative rail line alignment. After a mile heading southwest, the alternative alignment would rejoin the proposed alignment somewhat south and east of the NCM area. The net result is the alternative rail line would be about 2,000 to 3,000 feet east of the alignment of the proposed rail line for about 6.5 miles.

Q17. How did you choose the route for the alternative alignment?

A17. Pushing the horizontal alignment of the Low Corridor rail line about 2,000 to 3,000 feet east presents challenges in that its location is constrained by two narrow gaps on BLM land through which it must pass, that are not encountered by the proposed Low Corridor alignment. As shown on the map (PFS Exhibit EE), the first gap is at the northern end of the alternative alignment; it passes east of the NCM area but stays west of the parcel of land owned by the State of Utah. The second gap is at the southern end of the alternative alignment; it must not go too far east to avoid impacting the large mud flat (i.e., wetland) in the middle of Skull Valley before rejoining the proposed rail line alignment. Even if PFS were to route the rail line across State-owned land, as shown on the map, the rail line would still have to remain west of the environmentally-sensitive mud flat.

Q18. What changes would be needed to construct the alternative rail line 2,000 to 3,000 feet east of the proposed Low Corridor rail line?

A18. In terms of earthwork (i.e., cut and fill), aside from the first mile of corridor which will generate a large pile of stockpiled earth at Low Junction, the remaining 31 mile length of the proposed Low Corridor rail line alignment has a balance, that is material removed to level the rail road bed ("cut") approximately equals material added ("fill"). On the other hand, because of its constrained location, the alternative alignment heads over terrain that falls at a steeper grade than the maximum acceptable grade for the PFS rail line. Thus, the alternative alignment requires additional fill material to maintain a practical grade for PFS trains as they thread their way through the two narrow gaps. See Table 1 for a summary of the grades along the alternative alignment.

TABLE 1

SUMMARY OF PROFILE OF ALTERNATIVE RAIL LINE SEGMENTS

Distance from Low Junction where each grade change starts (feet to the nearest hundred)	Grade of Climb [negative number is falling grade]	Length of segment that is the distance the grade is maintained (feet to the nearest hundred)	Railroad bed height over this segment (to the closest 5 foot increment) [negative height indicates a cut]
14,400	-1.11%	3100	0 to 15 feet
17,500	-1.5%	3700	15 to 20 to 0 feet
21,200	-1.34%	7200	0 to –5 to 0 to 20 to 5 feet
28,400	+0.34%	1900	5 to 0 to 5 feet
30,300	-0.66%	2700	5 to 10 to 5 feet
33,000	+0.56%	1800	5 to 10 feet
34,800	flat	2200	10 to 0 feet
37,000	+0.99%	6000	0 to 10 to 0 feet
43,000	-1.5%	1500	0 to 10 feet
44,500	+1.5%	3200	10 to 20 feet
47,700	+0.26%	800	20 to 0 feet

Q19. Starting at the northern end of the rail line, please describe in greater detail why the alternative alignment must be built on more fill than the proposed alignment.

A19. The requirement for more fill starts when the proposed rail line curves south away from paralleling I-80. The hill in this area slopes down toward the east at a sharper grade than the maximum permissible grade of the rail line. The proposed route avoids this problem by making a sharper curve so the rail line runs more toward the southwest and can follow the contours of the existing land. The alternative, on the other hand, must go more to the southeast to avoid the NCM area. Along the first two miles of the alternative alignment, the elevation of the ground decreases about 175 feet, which is approximately the theoretical maximum grade the rail line could descend. In fact, the rail line is constrained from decreasing in

elevation that rapidly due to the hill's naturally undulating contour; only an average grade of about 1.33% can be achieved compared to a maximum permissible of 1.5%. To account for this contour, the alternative alignment requires fill throughout almost all of its initial two mile length from the curve to the gap. In fact, the construction requires the rail line to be built on an embankment varying in height up to 20 feet. Only over a few hundred feet is any cut (i.e., removal of earth) required over the two mile descent.

This need for more fill is exacerbated as the alternative rail line must thread the narrow gap between the dirt "jeep" road that bounds the NCM area and the land owned by the State of Utah near the northeastern corner of the NCM area (or alternatively, it must remain west of the mud flat) as shown in PFS Exhibits CC and EE. The proposed rail line avoids this problem by staying further west of the State land and following the hill's natural contours. The alternative alignment is constrained to pass through a gap that is quite narrow and restricting for a railroad corridor. The gap between the dirt road and the western boundary of the State land at the point where the alternative alignment would enter the gap is approximately 500 feet wide.[1] Since the elevation of the alternative alignment is still about 15 feet above the ground at this point (because of the need to maintain steady descents, which average about 1.33% in grade), there must be fill added to construct an embankment about 20 feet high. This amount of fill requires a right of way (ROW) of approximately 300 feet wide, to allow the earthen embankment to be self-supporting, plus 50 feet on each side of the ROW for temporary construction easement. This does not include the ROW width required for unimproved road crossing approach ramps. The rail line must be laid out with a total ROW width of 400 feet to fit through a gap that may be no more than 450 feet wide.

Running a rail line through the gap between the dirt road and the State land imposes vertical constraints as well as tight horizontal constraints. In addition to constraints on horizontal alignment requiring the rail line to fit through a gap with as little as 50 feet of margin, the vertical alignment of the alternative route decreases about 175 feet along its first two miles. As the average grade that can be

[1] The 500 foot distance is scaled from 1"=2,000' USGS 7 ½ Min. Topographic Map with a margin of error approaching 10%.

achieved is about 1.33%, the rail line only descends about 160 feet. Consequently, the rail line would be built at the top of an earthen embankment that would be constructed on what is naturally a hill sloping downward to the east. The tracks of the alternative rail line would be about 17 feet above the uphill (western) side and closer to 25 feet above the downhill (eastern) of the base of the road bed.

Furthermore, the roughly two story embankment where the alternative rail line crosses the dirt road here, as the road turns away from the NCM area, is an imposing obstacle to the use of the road. Approximately 1,400 feet of the road will have to be realigned horizontally and vertically to make a crossing at this location (approximately 450 feet in a northeasterly direction and approximately 950 feet in a southerly and westerly direction) which dramatically increase the width of the ROW. The maximum vertical grade used for the road relocation would be 6%. The proposed alignment avoids this problem as it follows the hill contours; where the proposed alignment crosses the road further south, the crossings can be at or near the existing grade.

Q20. What happens as the alternative alignment continues to the south?

A20. The alignment of the alternative is constrained by another narrow gap at its southern end, where the alternative alignment stops paralleling the dirt road. At that point, the road, which is also the boundary of SUWA's NCM area, turns west, and crosses back over to the west of the proposed PFS rail line alignment. At that point, the proposed alignment no longer crosses the NCM area and thus the alternative alignment is free to rejoin the proposed alignment and continue south to the PFSF. The narrow gap is created because the alternative alignment runs within two tenths of a mile of the western edge of the large mud flats that cover the center of Skull Valley. In other words, the alternative alignment must run between the road (before it turns west) and the mudflats.

At this point, the elevation of the proposed rail line alignment is approximately 100 feet higher than the alternative alignment. Under ideal topography, this requires a minimum of 6,700 feet of travel to get the alternative alignment back to the proposed rail line alignment elevation at the maximum permissible grade of 1.5%. However, the actual topography is undulating and the alternative rail line alignment follows the hill contour with a steady 1% rise for 6,000 feet. Following

the hill contour minimizes the amount of fill needed and minimizes the impacts of this alternative alignment. Over the last mile the alternative rail line first falls and then rises with the bumpy hill contour at the maximum grade of 1.5 %, finally rising at 0.26% for the last 800 feet to match up with the proposed rail line alignment. Even incorporating the maximum rate of rising and falling in rail line elevation over the last mile, considerable fill is still required to build the railroad embankment as high as 20 feet over the last mile to avoid exceeding the maximum allowable grade.

Q21. Overall, how much of the alternative alignment is built on fill?

A21. In order to produce a workable horizontal alignment, as described above, the total length of the realignment is approximately 6 miles. This reflects following the topography as much as possible while threading the narrow corridors near the northern and southern ends of the alternative alignment section. Because of the constraints caused by these narrow corridors and their associated elevations, the great majority of the six miles is built on fill. See Table 1.

Q22. How much fill material would be needed for the West Skull Valley alternative?

A22. Ignoring the stockpile (300,000 cubic yards.) at Low Junction in the first mile, the proposed remaining Low Corridor 31-mile railroad alignment has a balance of earth work, that is material cut approximately equals fill. The alternative railroad alignment, over its 6-mile length, requires a net of approximately 560,000 cubic yards of fill. This means that 560,000 cubic yards of fill material would need to be imported from another location to build the alternative. The Low Junction stockpile (300,000 cubic yards) could be used for 56% of the required fill.

Q23. If you moved the alternative alignment farther to the east, across the State-owned land but still west of the mud flat, what effect would it have on fill requirements?

A23. It would make things worse. As shown in the map that is PFS Exhibit EE, as one moves to the east of the route of the West Skull Valley alternative that I have described, the elevation of the ground descends toward the floor of Skull Valley. Therefore, because of the railroad grade limitations I discussed, more fill would be required to run the rail line down to those lower elevations. Furthermore, more fill would be required to get back up to the elevation where the alternative would have to pass between the dirt road and the mud flat (as I discussed above). There-

fore, even if PFS were to route the west Skull Valley alternative over the State-owned land, that would not reduce the fill requirements for the alternative and hence it would still require more cut and fill than the proposed Low Corridor alignment.

Q24. How did you calculate how much fill would be needed for the West Skull Valley alternative?

A24. After laying out the route of the rail line, all earthwork calculations were developed from 3D digital models using the INROADS computer program. This program is commonly used by civil engineers for the purpose of designing linear features, such as roads and railroads, along with site grading and drainage.

Q25. Where would the fill come from?

A25. The railroad siding for the PFS rail line constructed at Low Junction would have a surplus of cut material at the Low Pass siding area of approximately 300,000 cubic yards. As proposed, this material would be added to the natural contours around the siding and stabilized with BLM-approved vegetation. If the alternative rail line alignment were built instead, the surplus cut material could be used (with BLM approval) for fill on the alternative rail line. This would require stockpiling the 300,000 cubic yards of material, protecting the pile to control fugitive dust emissions, and require moving the material from the Low Pass siding area to the locations needing the fill, which would make the alternative more expensive. In addition, the balance of any material not coming from the Low Pass siding area would need to be imported from an offsite location; i.e., about 260,000 cubic yards. This would increase the cost of the alternative further. The cost estimate below only considers the cost of the additional fill used for the alternative and so is probably an underestimate.

Q26. How much more would you estimate the West Skull Valley alternative alignment would cost compared to the proposed Low Corridor alignment?

A26. As described in the testimony of John Donnell on Contention SUWA B, the alternative rail line alignment would increase the costs of constructing the rail line by $5 million, driven primarily by the costs associated with the need for more fill. This cost would include loading, hauling, and installing the fill from the Low stockpile and procuring, loading , hauling, and installing additional fill (260,000 cubic yards) from a location within a 50-mile radius of the alternative route.

Experience Summary

Mr. Hayes is a Civil Design Engineer in the Denver office of Stone & Webster Inc. He joined Stone & Webster in 1980 and is responsible for civil engineering and design requirements of site and corridor development. His assignments include access and site road design of asphalt, concrete and gravel roads, including earthwork, structural and drainage considerations, railroad loading, unloading and transportation for heavy and light rail and site development on a variety of projects. He has more than 40 years experience in surveying and engineering civil projects. Prior to joining Stone & Webster, Mr. Hayes worked for the U.S. Geological Survey in the Rocky Mountain Region for eight years performing geodetic surveys. Mr. Hayes also worked for consulting engineering firms in Colorado for ten years on various surveying and civil engineering projects. He owned and operated his own surveying business in Colorado for approximately two years.

Education

Industrial Engineering – (Course Work – No Degree) Fresno City College, Fresno, California

Licenses, Registrations, and Certifications

Certified Engineering Technician - 1968
Registered Land Surveyor - Colorado - 1971

Experience History

STONE & WEBSTER ENGINEERING CORPORATION, DENVER, COLORADO
(JUN 1980 - PRESENT)

Private Fuels Storage Facility, Skull Valley, Utah
(May 2000 - Present)

As Lead Railroad Design Engineer responsible for the layout and development of construction drawings and railroad construction specifications for the new railroad alignment from the proposed PFSF storage site to a interconnect with the Union Pacific Railroad at Low Pass, in Utah. Comprising a total length of approximately 32 miles and maximum vertical grades of 1.5%.

Great River Energy, Pleasant Valley Station, Minn.
(Jan 2000 - May 2000)

As Lead Civil Design Engineer responsible for the layout and development of construction drawings for a new peaking power station located in Minnesota. Developed site access road, on site roads, grading and drainage including calculations and construction specifications.

Monticello, Martin Lake and Big Brown Stations, Texas Utilities
(Jun 1996 - Jan 2000)

As Lead Civil Design Engineer developed bypass and unloading loop for switching fuel delivery from existing 14 car lignite trains to proposed 140 car Powder River Basin coal trains for the three generating stations. Provided cost studies, traction studies and unloading time line studies for unloading 140 car unit coal trains at the three stations. The projects included railroad plans, site plans, calculations, drainage and realignment of existing roads, including the crossing of Interstate 45 with a new rail line.

Monticello - North Interchange, Texas, Utilities
(Apr 1996 - Jan 1997)

As Lead Civil Design Engineer responsible for the layout and development of construction drawings for approximate 2 mile spur track connecting Southern Pacific Railroad with existing TU track to allow receiving Western coal unit trains at Monticello Station. Project includes construction drawings, construction specifications, grading and drainage.

Northern States Power Company, Mescalero, New Mexico
(Feb 1996 - Apr 1996)

As Lead Civil Design Engineer provided conceptual railroad routing from existing SP mainline to several sites under consideration for independent spent fuel storage site on or near the Mescalero Indian Reservation in New Mexico. The railroad spur was to accommodate heavy rail loads having grades of 2% ± over lengths of 2 to 10 miles and considered grading and drainage.

Northern States Power Company, Goodhue County, Minnesota
(Nov 1995 - Feb 1996)

As Lead Civil Design Engineer developed rail spur of approximately 2 miles from existing CTX mainline to independent spent fuel storage site for Prairie Island Nuclear Generation Plant. Mr. Hayes performed the necessary alignment, grading and drainage calculations and produced design drawings for submission to the NRC.

Stanton Station, Ash Haul Rosa, United Power Association
(May 1995 - Oct 1995)

As Lead Civil Design Engineer, Mr. Hayes was responsible for the final design and grading of an Ash loading loop road and Ash Haul Road capable of handling CAT 773B off highway trucks. The loaded gross weight of this vehicle is approximately 186,000 lbs with approximately 125,000 lbs on the rear axle. The design period was 20 years, and the design included crossing of 2 existing railroad spurs, 13 buried utilities, the design of a concrete road crossing at an existing main access road to an adjacent power plant. The design also included the surface drainage features along the haul road alignment.

Hampton Corners Mine Site, Akzo Nobel Salt, Inc.
(Dec 1994 - May 1995)

As Lead Civil Design Engineer, Mr. Hayes was responsible for the conceptual layout and design of the surface facilities of a new salt mine and processing facility. His area of responsibility included roads and access, site grading, railroad access, loading and car storage for 100 car unit trains, surface runoff detention highway access improvements and building, parking, working and storage pad development. All design and drawings for the site work was created using AutoCad and ADCADD.

Tesla Hydroelectric Project, City of Colorado Springs
(Jun 1994 - Dec 1994

As Lead Civil Design Engineer, Mr. Hayes was responsible for development of an AutoCad, AdCADD final design of a 15 acre regulating reservoir and approximately 0.85 mi of access and maintenance roads in a mountainous area. The grading design includes a balanced earthwork scheme for the 250,000 cubic yards of earthwork excavation.

Banfield LRT System Improvements, Tri-County Metropolitan Transportation District of Oregon
(Nov 1993 - Jun 1994)

As Lead Civil Design Engineer, Mr. Hayes' responsibilities include design of two and one-half miles of double tracking for an existing light rail transit system mainline. The work includes preparing horizontal and vertical alignments using AutoCad and preparing special trackwork details. He is also responsible for design of an expansion to an existing maintenance and storage yard.

Three - 750 MW Coal-Fired, Navajo Generating Station, Salt River Project
(Aug 1993 - Oct 1993)

As Lead Civil Design Engineer, Mr. Hayes supervised final design of site preparation for the addition of scrubbers to the three - 750 MW coal-fired Navajo Generating Station. The work included modifying one mile of Arizona State Highway 98, upgrading three existing intersections, and adding one new

intersection. The work also included site grading and layout and design of on-site plant roads. He was responsible for coordinating and interfacing with the Arizona Department of Transportation

Thompson Falls Hydroelectric Project, Montana Power Company
(May 1993 - Aug 1993)

As Lead Civil Design Engineer, Mr. Hayes supervised final design of an Intergraph CAD grading, dredging, drainage design for a new 50 MW powerhouse at Thompson Falls Hydroelectric Plant. Grading included removal of 100,000 cubic yards of rock excavation, including one-quarter mile of river channel tailrace excavation, using a current diversion dike. Tailrace excavation was accomplished using a moving rockfill work pad.

Keahole Combined Cycle Project Company, Hawaiian Electric Light Company
(Jan 1993 - Apr 1993)

As Civil Design Engineer, Mr. Hayes provided final design of an Intergraph CAD grading and drainage design for a two-unit expansion of the existing Keahole power plant site. Design included site grading, site roads, and site drainage, including storm water detention and stormwater reinjection.

NO_x Abatement Project, Idaho National Engineering Laboratory
(Sep 1992 - Dec 1992)

As Civil Design Supervisor, Mr. Hayes supervised final design of an AutoCad grading, excavation, and draining design for a NO_x abatement process at an existing site, including grading, excavation, utility relocation, emergency fire access, and ammonia storage on a very congested area of Idaho National Engineering Laboratory.

Rosario Dominicana, Dominican Republic
(Jun 1992 - Aug 1992)

As Civil Design Supervisor, Mr. Hayes supervised preliminary design of an 85 million metric tonne per year tailings reservoir, decant reservoir, drainage diversion system, drainage capture and treatment system, and drainage capture around a planned, expanded open pit mining operation. The total area was 1241 hectors with drainage to handle 14.5 million cubic meters of annual runoff. All design and drawings were produced using Microstation, Version 4.0, and Inroads/Insite, Version 4.

Pathfinder Combined Cycle Expansion, Northern States Power Company
(Apr 1992 - Jun 1992)

As Civil Design Supervisor, Mr. Hayes supervised final design of an Intergraph CAD grading and drainage design for a combined cycle facility on the existing Pathfinder generation site. All civil design and construction drawings were produced using Microstation, Version 4.0. and Inroads/Insite, Version 4.0. They included site grading, drainage, road improvements, contractors parking and laydown, and wetlands improvement areas.

Prairie Island Nuclear Generation Plant, Northern States Power Company
(Feb 1992 - Apr 1993)

As Civil Design Supervisor, Mr. Hayes supervised Intergraph CAD civil design of an independent spent fuel storage installation site at Prairie Island Nuclear Plant. The design included grading and drainage, 18-foot high, earth protection berms, spent fuel cask transport vehicle access road, security fencing, and drainage from the site to existing off-site drainage facilities.

Healy Clean Coal Project, Alaska Industrial Development and Export Authority
(Aug 1991 - Feb 1992)

As Civil Design Supervisor, Mr. Hayes supervised final design of an Intergraph CAD grading and drainage site design for a second unit at the Healy Power Plant site. The design included excavation, grading and drainage, bottom ash settling pond, fly ash haul road, new access road, and plant parking lot.

Thompson Falls Hydroelectric Project, Montana Power Company
(Oct 1991 - Apr 1992)

As Civil Engineer, Mr. Hayes performed Intergraph CAD grading and quantity development for a detailed cost analysis of a proposed 50 MW second powerhouse at Thompson Falls Power Plant. All civil design and drawings were produced on an Intergraph 32C workstation, using Intergraph's Insite/Inroads civil design program. Work consisted of intake excavation, tailrace excavation, cofferdam quantities, powerhouse excavation, access road, and development of powerhouse concrete quantities.

Miscellaneous Architect/Engineer Services, Lowry Air Force Base
(Jun 1991 - Oct 1991)

As Civil Design Supervisor, Mr. Hayes coordinated mapping, surveying, CAD design, and manual design drafting of a relief storm sewer line approximately two miles in length for a portion of Lowry Air Force Base.

Engineering Design Services, Department of Defense
(Jun 1991 - Oct 1991)

As Civil Design Supervisor, Mr. Hayes supervised final design of Intergraph CAD grading and drainage design of a site for a 17,000 square foot warehouse addition. Design included grading and drainage, excavation of old landfill trash under structure, concrete access road design, asphalt POV parking, and vehicle staging area.

Public Utility District No. 2 of Grant County, Washington
(Mar 1991 - Apr 1991)

As Civil Design Supervisor, Mr. Hayes used Intergraph's site design program and Interview 32C workstation to three-dimensionally model a hydro turbine blade from manufacturer's supplied information. He was responsible for extracting cross sections at specific locations to analyze potential surface wear problems of in-service blades.

Steamboat Hills Geothermal, Yankee-Caithness Joint Venture
(Dec 1990 - May 1991)

As Civil Design Supervisor, Mr. Hayes supervised Intergraph CAD civil design of the site work for a geothermal site near Reno, Nevada. All design and drawings were produced on Intergraph Interview 32C workstation, using Microstation and Inroads/Insite software packages.

Bradley Lake Hydroelectric Project, Alaska Energy Authority
(Dec 1990 - Apr 1991)

As Civil Design Supervisor, Mr. Hayes supervised Intergraph CAD civil design of a rehabilitation contract, including waterfowl nesting area, fish rearing area, and construction camp rehabilitation.

Engineering Design Services, Department of Defense
(Sep 1990 - Dec 1990)

As Civil Design Supervisor, Mr. Hayes supervised Intergraph CAD grading and drainage design of two warehouse sites. One was a general purpose warehouse of approximately 101,000 square feet, and the other was a warehouse addition of approximately 17,000 square feet. Design included grading and drainage, new road design, tank road relocation, and parking.

Thousand Springs Project Unit No. 1, Great Basin Energy
(Jan 1990 - Aug 1990)

As Civil Design Supervisor, Mr. Hayes supervised Intergraph CAD civil design of the site work for a coal-fired power plant site near Wells, Nevada. All design and drawings were produced on Intergraph Interview 32C workstation using Microstation and Inroads software packages. Design included grading and drainage for a 160 acre plant site, 14-mile main access road, five miles of plant site roads, 14 mile railroad spur for unit train delivery of coal, evaporation ponds, and ash disposal area.

Colorado River Water Supply, Unocal
(Sep 1989 - Nov 1989)

As Civil Design Supervisor, Mr. Hayes supervised Intergraph CAD grading and drainage design of a 14-acre site to accommodate two settling ponds, site access road, and electrical substation. In addition two 5-acre sites located at an existing oil shale processing plant site were designed to accommodate mobile water filter units, access road, backwash pond, and surge basin.

Denver International Airport, City and County of Denver
(Dec 1988 - Aug 1989)

As Lead Civil Engineer, Mr. Hayes was responsible for civil design of Runway 8L-26R site preparation for the new Denver International Airport. The area designed included the main terminal and parking area, a three concourse configuration apron area, Ramp Taxiways K, M and Q, Parallel Taxiway J, Crossfield Taxiways XT-5, XT-4, and XT-H, along with Runway 8L-26R and Parallel Taxiway 3. All design and drawings were done on a VAX 8550 Intergraph CAD system using ESP software. Earthwork volume calculations generated by the Intergraph system were checked using a 80386 PC with DCA V10 software. All construction drawings were translated using a VAX based OCTAL translator to an Autotrol Series 5000 Apollo system per client requirements.

Additionally, Mr. Hayes provided a mass earthwork balance for the entire Phase I Airport Project

(approximately 20 square miles), which included six runways, all associated taxiways, maintenance and support area, terminal area, and concourse-apron area. The total earthwork volume for Phase 1 is approximately 113,000,000 cubic yards.

Teberebie Goldfield Ltd.
(Jul 1988 - Nov 1988)

As Civil Design Supervisor, Mr. Hayes supervised Intergraph CAD civil design of a new open pit gold mining operation in Ghana, Africa. The design included location and grading for a 19-unit family housing area and mess hall. Also included was location and grading of separate sites for an administration and office building with a helicopter landing pad, a maintenance facility, and grading for a 5000 metric ton per day ore crushing plant. In addition, 6200 meters of 9-meter wide access roads and 1600 meters of 24-meter wide heavy vehicle maintenance and ore hauling road was designed using Intergraph's ESP package.

Southern Pacific Railroad Spur, Lower Colorado River Authority
(Nov 1987 - May 1988)

As Lead Civil Engineer, Mr. Hayes was responsible for civil effort of a five route alignment study and CAD-produced preliminary civil design of two twenty-mile rail alignments connecting the Southern Pacific main line near La Grange, Texas with an existing rail unloading loop at Fayette Power Plant.

Salton Sea Unit 3 Geothermal Power Project, Unocal
(Mar 1987 - Nov 1987)

As Civil Design Supervisor, Mr. Hayes was responsible for civil design of the plant site for a geothermal power plant. Site drawings for this project were produced on the Intergraph CAD System.

Bear Canyon Geothermal Power Project, Freeport
(Jun 1986 - Jan 1987)

As Civil Design Supervisor, Mr. Hayes was responsible for civil design of the plant site for a geothermal power plant, including site grading, site drainage, and site access. Design of this plant site was created on the CAD system utilizing IGDS, digital terrain modeling, and earthwork software.

Land Base Mapping, City of Aurora, Colorado
(Jan 1987 - Feb 1987)

As Civil Design Supervisor, Mr. Hayes was responsible for a test project creating CAD-produced base maps for the Public Works Department. Input data was client-supplied recorded subdivision plats and engineering drawings. The graphics files were created using customized Land Base Mapping software to produce a series of base maps for various public works departments.

Land Base Mapping, Salt River Project
(Nov 1986 - Dec 1986)

As Civil Design Supervisor, Mr. Hayes was responsible for creating Intergraph CAD files from client-supplied planimetric mapping, including recorded subdivision plats, quarter-section assessor's maps,

address and street name plats, city street maps, and aerial photography. Graphics files were created using customized Land Base Mapping software to produce a series of base maps for various utility uses.

Assessor's Mapping, Town of Winchester, Connecticut
(Apr 1986 - Aug 1986)

As Civil Design Supervisor, Mr. Hayes was responsible for creating Intergraph CAD files from a combination of stero-digitized data and planimetric base maps to produce assessor maps in and around Winchester, Connecticut.

Cloverdale-Geysers Road Improvement, Central California Power Agency
(Sep 1985 - Apr 1986)

As Civil Design Engineer, Mr. Hayes was responsible for civil design of highway improvements to two and one-half miles of existing Sonoma County Highway to eliminate substandard alignment conditions.

Ramsey/Washington Waste to Energy Project, Northern States Power Company
(Jan 1985 - Aug 1985)

As Civil Design Engineer, Mr. Hayes was responsible for civil engineering design of a plant site for a refuse derived fuel processing plant. The design included site access and on site roadways capable of handling 500 trucks per day, site grading, and site drainage. The design for this job was developed on Intergraph CAD using IGDS graphics.

Coldwater Creek Geothermal Power Plant, Central California Power Agency
(Mar 1984 - Jan 1985)

As Civil Design Engineer, Mr. Hayes was responsible for civil engineering design of a 13-acre plant site for a geothermal power plant, including site grading, site drainage, and site access. Approximately one-half of the civil drawings on this job were developed on the CALMA CAD System.

Aidlin Geothermal Project, Geothermal Resources International
(Jul 1984 - Sep 1984)

As Civil Design Engineer, Mr. Hayes was responsible for civil engineering design of a 3-acre plant site for a 12.5 MW geothermal power plant in a mountainous region of California, including site grading, site drainage, and site access.

Fluid Gas Desulfurization Retrofit Project, Wyodak
(Feb 1984 - May 1984)

As Civil Design Engineer, Mr. Hayes was responsible for civil engineering design of site modifications to an existing plant site to accommodate installation of a flue gas scrubber, including new roads, site grading, and site drainage.

Salem Station, Montana Power Company
(Nov 1983 - Jan 1984)

As Design Engineer, Mr. Hayes was responsible for supervision of preliminary civil engineering design of nine miles of railroad and the relocation of approximately one-half mile of county road.

Biomass Combined Cycle Power Plant, OPC Bio-Energy Corporation
(Jun 1983 - Jul 1983)

As Design Engineer, Mr. Hayes was responsible for supervision of civil engineering design of the plant site and main access road.

Sage Point, Dugout Canyon Project, SUNEDCO
(Oct 1982 - Jan 1983)

As Lead Civil Engineer, Mr. Hayes was responsible for supervision of the preliminary civil engineering design of twelve miles of railroad, railroad loading loop, and site grading of central facilities area. He also supervised preparation of the plant area, raw coal and clean coal storage areas, two mine portal areas, and one portal area being capable of supporting facilities for miners and equipment to mine 6.7 million tons of coal per year. In addition, he was responsible for preliminary design of 16 miles of main access and maintenance roads to service portal areas and refuge disposal areas.

Western Fuels Project
(Jun 1980 - Jan 1983)

As Design Engineer, Mr. Hayes was responsible for supervision of civil engineering design of three and one-half miles of overland conveyor pad and maintenance road, site grading around transfer buildings, site grading of slot coal storage area, and civil design of 35 miles of electric railroad, railroad loading loop, and maintenance facility area.

Sacramento Municipal Utility District Geothermal Project
(Jun 1980 - Jun 1981)

As Design Engineer, Mr. Hayes was responsible for design of the main access road approximately two miles long through a mountainous region.

Southeast Project, Public Service Company of Colorado
(Jun 1980 - Apr 1982)

As Design Engineer, Mr. Hayes was responsible for supervision of civil engineering functions of the plant site and a 2-mile railroad unloading loop, access roads, etc.

March 18, 2002

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

APPLICANT'S PREFACE TO THE TESTIMONY OF SUSAN DAVIS ON CONTENTION SUWA B—RAILROAD ALIGNMENT ALTERNATIVES

I. WITNESS

Susan Davis is currently employed by Stone & Webster, Inc. - a Shaw Group Company - as a Senior Environmental Scientist. She has assessed the environmental impacts associated with the Private Fuel Storage Facility ("PFSF") project since September 1996, including the impacts of the PFSF and PFS transportation options. She has visited the PFS site and the Low Corridor rail line alignment at least six times over the course of her work. She has a B.S. in wildlife management from the University of New Hampshire.

II. TESTIMONY

Ms. Davis will testify as to her evaluation of the environmental impacts of the range of alternative alignments to the Low Corridor rail line that PFS has considered (the alternatives are described in the testimony of John Donnell). The West Skull Valley alternative, because of its raised railroad bed, results in greater environmental impacts from disturbing and utilizing earth for the railroad bed, cutting off wildlife movement and cattle grazing, and potentially restricting access for fighting wildfires. The Central Skull Valley has greater environmental impacts because its construction would disturb mudflat wetlands in the middle of the valley. The East Skull Valley alternative has greater environmental impacts arising from the railroad's effect on wetlands, houses, ranches and traffic along Skull Valley Road and from the construction that would be necessary to gain access to the road. Ms. Davis concluded that the alternatives' impacts would be greater than those of the proposed Low Corridor alignment. Ms. Davis' will also testify to evidence of human activity and human presence near the Low Corridor and that BLM's finding that the North Cedar Mountains area lacked wilderness characteristics is consistent with her observations of the Low Corridor area.

March 18, 2002

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
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(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

TESTIMONY OF SUSAN DAVIS ON RAILROAD ALIGNMENT ALTERNATIVES CONTENTION SUWA B

I. BACKGROUND--WITNESS

Q1. Please state your full name.

A1. Susan Davis

Q2. By whom are you employed and what is your position?

A2. I am currently employed by Stone & Webster, Inc. - a Shaw Group Company, as a Senior Environmental Scientist.

Q3. Please summarize your educational and professional qualifications.

A3. My professional and educational experience is summarized in the curriculum vitae attached to this testimony. I have extensive experience in environmental research and consulting, including providing environmental assessments for several types of construction projects, such as dams, spent fuel storage facilities, combustion turbine power plants, and pipelines and transmission lines. Environmental resource areas I have analyzed for these projects include wetlands, wildlife habitat, rare species assessments, and visual resources.

Q4. What has been your role in the PFS project?

A4. I have conducted studies analyzing environmental impacts associated with the PFSF since September of 1996, including vegetation, wildlife, threatened and endangered species. Specifically, I have assessed the impacts of the PFS facility and PFS transportation options, including those on vegetation, wildlife, threatened and endangered species (raptors). I am familiar with the portions of the PFS Environmental Report (ER) and the NRC Final Environmental Impact Statement (FEIS) relevant to PFS rail transportation options. I have visited the proposed Low rail corridor and the western side of Skull Valley, Utah at least six times in the course of my work.

Q5. What is the purpose of your testimony?

A5. The purpose of my testimony is to respond to the allegation in Contention SUWA B that asserts:

> The License Application Amendment fails to develop and analyze a meaningful range of alternatives to the Low Corridor Rail Spur and the associated fire buffer zone that will preserve the wilderness character and the potential wilderness designation of a tract of roadless Bureau of Land Management (BLM) land—the North Cedar Mountains—which it crosses.

Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-3, 49 NRC 40, 53, aff'd, CLI-99-10, 49 NRC 318 (1999). The contention was admitted so far "as it seeks to explore the question of alignment alternatives to the proposed placement of the Low Junction rail spur." LBP-99-3, 49 NRC at 53.

Q6. To what will you testify?

A6. As set forth in the testimony of John Donnell on Contention SUWA B, PFS has considered a range of alternative alignments to the Low Corridor rail line that do not cross SUWA's North Cedar Mountains (NCM) area. In response to the contention of SUWA that PFS could avoid their purported wilderness area, PFS has considered the "West Skull Valley Alternative" railroad alignment just east of the NCM area that would not add a railroad to that area. PFS also considered a potential alignment down the center of Skull Valley, and alignments parallel to Skull Valley Road on the east side of Skull Valley. I will testify as to my evaluation of the environmental impacts of the alternatives and my conclusion that their impacts would be greater that those of the proposed Low Corridor alignment.

II. ENVIRONMENTAL IMPACTS OF POTENTIAL ALTERNATIVE ALIGNMENTS FOR THE LOW CORRIDOR RAIL LINE ALIGNMENT

A. West Skull Valley Alternative

Q7. How would you compare the environment of the proposed Low Corridor alignment and the West Skull Valley alternative alignment?

A7. Both the proposed and the alternative alignments traverse virtually identical habitat, as both are primarily greasewood vegetation, intermixed with cheatgrass. Both alignments pass near mudflats in the lower elevations in Skull Valley to the east, however the West Skull Valley alternative alignment is closer to these mudflats. Because the West Skull Valley alternative alignment is closer to the center of the valley, and lower gradient, it is slightly more within the greasewood habitat, than the proposed alignment. The area around both alignments is shown in the photographs in PFS Exhibit GG.

Q8. How would you describe the human activity or evidence of human presence along the routes of the proposed alignment and the West Skull Valley alternative alignment?

A8. As described in the testimony of Douglas Hayes on Contention SUWA B, both the proposed Low Corridor route and the West Skull Valley alternative route would begin at the Union Pacific mainline railroad at Skunk Ridge, near Low Junction. The Union Pacific mainline runs west from Salt Lake City across the north end of Skull Valley and passes just north of the NCM area. Interstate 80 runs parallel to the Union Pacific line, also passing across the north end of the valley and just north of the mountains. The West Skull Valley alternative rail line and the proposed Low Corridor line would take the same route from Skunk Ridge, parallel to I-80, for about three miles, before heading south.

In my visits to the Low Corridor area, I have observed that in addition to the Union Pacific line and I-80 at the northern end of the corridor, there are multiple "jeep" trails and single-track paths crossing both alignments to provide vehicle access to the North Cedar Mountains. There is also a well-defined dirt road that runs north to south, roughly parallel to both of the alignments, in the northern portion of the Valley. Evidence of recreational use of these trails and roads, and neighboring lands is present. I have seen vehicles using them when I have visited the area. I have also occasionally seen shell casings and other trash left by people

who have been in the area. Cheatgrass, an invasive species, is prevalent throughout the area. Cheatgrass invasion is often the result of human activities such as overgrazing and fire.

Q9. Has the Bureau of Land Management (BLM) evaluated the wilderness characteristics of the area around the proposed Low Corridor route and the West Skull Valley alternative route?

A9. Yes. In 1979-80, BLM reviewed and conducted an "intensive inventory" of the North Cedar Mountains pursuant to the Federal Land Policy and Management Act of 1976 ("FLPMA") and "dropped [them] from further consideration as wilderness because of lack of wilderness characteristics. . . ." 45 Fed. Reg. 75,602, 75,603-04 (1980) (emphasis added). In doing so, BLM reasoned and concluded as follows:

> The lack of "outstanding" potential, or opportunity for solitude and/or primitive and unconfined recreational experience should drop [the North Cedar Mountains area] from further wilderness inventory consideration. Man's imprints are substantially noticeable within the unit. Natural screening contributes little to hide or enclose man and his contrasting influences. Recreation opportunities exist but all are encumbered by man's developments.[1]

Q10. How does BLM define wilderness?

A10. BLM characterizes a wilderness, as defined by Congress in the Wilderness Act, as an area "which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." 16 U.S.C. § 1131(c).

Q11. What did BLM say in 1980 about the individual characteristics of the North Cedar Mountains?

[1] BLM Intensive Wilderness Inventory, Final Decision on Wilderness Study Areas, Utah (November 1980) ("Wilderness Inventory"), relevant excerpts attached as PFS Exhibit JJ.

A11. Regarding the "naturalness" of the area, BLM stated that, "The imprint of man's work is substantially noticeable in the North Cedar Mountains. The cumulative effect of many minor and some large impacts are considerably evident within the relatively small unit." Wilderness Inventory.

Regarding "opportunities for solitude" in the lower portions of the area near where the Low Corridor and the West Skull Valley alternative would be located, BLM stated that, "The lower, outside portions of the unit lack outstanding opportunities for solitude due to the sparse vegetative cover, relative open terrain and the cumulative effect of many impacts in the unit." Id.

Concerning "opportunities for recreation," BLM stated that:

> Opportunities for a primitive and unconfined type of recreation which exist in the North Cedars are hunting, horseback riding, hiking, wildlife observation and sightseeing. However, these opportunities are not considered "outstanding" by the wilderness inventory teams. Wildlife populations and numbers are few. Terrain for hiking and horseback riding is not unique in nature and does not provide outstanding opportunities for these recreation types. Sightseeing is encumbered by many outside activities and interior impacts of man.

Id. BLM did not state that the portion of the North Cedar Mountains area in the vicinity of the Low Corridor route contained any ecological, geological, or other features of value. Id.

Q12. As far as the area in the vicinity of the Low Corridor and the West Skull Valley alternative rail route is concerned, do you agree with BLM's characterization?

A12. Yes. It is consistent with what I have observed in my visits to the area.

Q13. Has BLM evaluated the wilderness characteristics or the evidence of human activity in the North Cedar Mountains area since 1980?

A13. Yes. In April 2001, SUWA requested BLM to reconsider its determination that the North Cedar Mountains were not suitable for wilderness designation. In a May 8, 2001 letter to SUWA, BLM denied SUWA's request and identified further human activities and imprints that have occurred within the North Cedar Mountains within the last 20 years. Letter from Glenn A. Carpenter, Field Office Manager, Salt Lake Field Office, BLM, to Stephen Bloch, Staff Attorney, SUWA (May 8, 2001) (PFS Exhibit FF). The activities include drill seeding as part of

emergency fire rehabilitation projects, non native vegetation resulting from an emergency fire rehabilitation project, a wildlife guzzler (a device used to provide a constant source of water to wildlife) and maintenance route, and several existing mining claims. The BLM also references "numerous quarries, livestock trails, motorcycle paths, heavy sheep grazing, and other minor extensions of "ways" used primarily by 4X4 wheeled vehicles", as occurring within the North Cedar Mountain area.

Q14. Would there be any difference between the area immediately around the Low Corridor and the area immediately around the West Skull Valley alternative route with respect to wilderness characteristics?

A14. No. The two alignments are only 2,000 to 3,000 feet apart. The Low Corridor route runs just to the west of and parallel to the "jeep" road that forms the eastern boundary for the North Cedar Mountains area evaluated by BLM and proposed as wilderness by SUWA. The West Skull Valley alternative route runs further to the east and also parallel to the same road. The terrain through which both routes run is practically the same. As I discuss below, the difference between the proposed route and the West Skull Valley alternative route is that the West Skull Valley route is at a lower elevation and thus it would require the railroad to be built on a significantly raised roadbed, while the proposed Low Corridor would not. The raised roadbed would cause significant environmental impacts that the Low Corridor rail line would not. Other than that, there is no difference between the two routes.

Q15. Given what BLM determined regarding the wilderness characteristics of the area, would the Low Corridor route have a significant impact on wilderness characteristics?

A15. No. BLM stated that it found that the North Cedar Mountains lacked wilderness characteristics. 45 Fed. Reg. at 75,603-04. Further, the Union Pacific mainline and I-80 both pass close by the North Cedar Mountains to the north. Therefore, while the PFS railroad would be a visible human imprint, it would not have a significant impact on wilderness characteristics in this area.

Q16. What would be the environmental impacts of the Low Corridor rail route and the West Skull Valley alternative alignment?

A16. The environmental impacts of the Low Corridor alignment and the West Skull Valley alternative alignment, with one significant exception, will be similar and

small. The impacts of the two alignments on ecological resources generally are described in FEIS § 5.4. They are likely to be similar because of their proximity to each other. Any effects on the wildlife that uses the mudflats, and neighboring uplands, is likely to be the same for both alignments (other than the impacts of the railroad bed required to build the West Skull Valley alternative alignment discussed below), due to the alignments' proximity and continued avoidance of the mudflat habitat itself, although the alternative alignment comes closer to the mudflats than the proposed alignment. The proposed rail line is not expected to result in habitat fragmentation; FEIS §§ 5.4.1.2, 5.4.2.2; and neither the proposed nor alternative alignment would impact biodiversity. Because invasive species, such as cheatgrass, are already prevalent along both alignments, the revegetation of BLM-approved species following construction of the rail line and the firebreak created by the rail line are expected to improve, not detract from the surrounding ecosystem. FEIS §§ 5.4.1.1, 5.4.2.1.

Because of their similar concept and location, the proposed Low Corridor alignment and the West Skull Valley alternative alignment would have similar (small) impacts on water resources, FEIS § 5.2, air quality, id. § 5.3, socioeconomic and community resources (other than the impacts of the railroad bed outlined below), id. § 5.5, cultural resources, id. § 5.6, and recreation (other than the impacts of the railroad bed), id. § 5.8.3. As there will be no maintenance roads paralleling the proposed rail line, no increase in access to the NCM area is expected and no increase in recreational use of or intrusion into the area is expected. Id. § 2.1.1.3. Since either railroad alignment would use the same train configuration, the proposed alignment and the West Skull Valley alternative would have similar (small) impacts in terms of human health, id. § 5.7, and noise, id. § 5.8.1.

Q17. In what ways would the environmental impacts of the Low Corridor and West Skull Valley alignments differ?

A17. As described in the testimony of Douglas Hayes on Contention SUWA B, the West Skull Valley alternative alignment results in more significant environmental impacts due to the need to maintain the appropriate railroad grade. This will require about 560,000 cubic yards of fill along its six mile length. This additional fill also produces a railroad bed as high as twenty feet along the alternative rail line alignment. This railroad bed creates obstacles where the alternative rail line crosses existing "jeep" trails. The railroad bed will cut off the lower elevations of

the NCM area from Skull Valley for wildlife and cattle grazing and could possibly result in habitat fragmentation. See FEIS at 5-28 (the alternative would have significantly greater impact than the proposed alignment on grazing and wildlife use patterns). The railroad bed will create a greater visual impact especially when viewed from lower elevations to the east. By contrast, the proposed Low Corridor alignment follows more closely the natural contour of the land and thus does not require the use of a high and obstructing railroad bed. The alternative alignment railroad bed could also restrict access for fire fighters combating wildfires in the NCM area. See FEIS § 5.8.4. Wildfires pose a hazard to natural vegetation directly and indirectly as foreign invasive species like cheatgrass typically revegetate the area following a wild fire. Id. Much more of the proposed alignment, by contrast, will be constructed near existing grade, which will more easily provide access for firefighters across the rail line. Id. § 2.1.1.3. The plan for the proposed alignment promotes native species of vegetation to mitigate potential environmental impacts on vegetative resources from its construction. Id. §§ 5.4.1.1 and 5.4.4.1. As set forth in the testimony of Douglas Hayes on Contention SUWA B, PFS will use a seed mixture specifically approved by BLM to revegetate the area next to the railroad that will be cleared during construction. To the extent the raised railroad bed of the alternative rail line alignment would inhibit fighting wild fires it would have a greater negative impact than the proposed alignment.

Q18. What is your conclusion regarding the relative environmental impacts of the Low Corridor alignment and the West Skull Valley alternative alignment?

A18. For the reasons I discussed above, the West Skull Valley alternative rail line just to the east of SUWA's NCM area would have greater environmental impacts than the proposed Low Corridor rail line.

B. Central Skull Valley Alternative

Q19. Please describe the environment of the Central Skull Valley alternative railroad alignment.

A19. The northern end of Skull Valley is covered by mudflat wetlands, which provides a specialized habitat for a variety of shorebirds and other animals. A center of the valley railroad route would require the mudflats to be bisected by a rail line, disrupting the habitat and requiring fill. All of the mudflat habitat is classified and protected as waters of the United States under section 404 of the Clean Water Act,

because of their hydrologic connection to the Great Salt Lake. The Central Skull Valley alternative alignment would also have to cross Interstate 80 (I-80) at the Delle, Utah interchange utilizing the existing overpasses.

Q20. Is the Central Skull Valley alternative feasible from an environmental perspective?

A20. Probably not. It is improbable that PFS would be able obtain an Army Corps of Engineers permit to fill long tracts of the mid-valley mudflats when alternatives on the east and west side of Skull Valley are physically feasible (albeit, in the case of the East Skull Valley alternative, not environmentally desirable) and would not impact any wetlands or waters of the United States. 33 C.F.R. §§ 330.4(a) and (e). The alignment down the middle of the valley would only be feasible once the rail line was south of the mid-valley mud flats, which is over ten miles south of the NCM area.

Q21. What would be the environmental impacts of the Central Skull Valley alternative alignment compared to the impacts of the proposed Low Corridor alignment?

A21. Based on the significant amount of mudflats that would need to be filled to construct a rail line in the center of Skull Valley and the impacts that could result from the crossing of I-80, this alternative alignment would have much greater environmental impacts than the proposed Low Corridor alignment. In addition, while the proposed Low Corridor alignment (and the West Skull Valley alternative) would have a moderate impact on some scenic qualities both to its east and to its west, FEIS § 5.8.2, the Central Skull Valley alternative would pass through barren mudflats rather than rolling terrain covered by greasewood and grassland vegetation and would also be expected to have higher visual impacts.

Q22. In what ways are the environmental impacts of the Low Corridor and Central Skull Valley alternative alignments similar?

A22. Because of their similar concepts, the proposed Low Corridor alignment and the Central Skull Valley alternative alignment would have similar (small) impacts on geology, minerals and soils, FEIS § 5.1, water resources (other than wetlands as described above), id. § 5.2, air quality, id. § 5.3, socioeconomic and community resources, id. § 5.5, cultural resources, id. § 5.6, and recreation, id. § 5.8.3. As the train configuration is independent of the railroad alignment, the proposed alignment and the Central Skull Valley alternative would have similar (small) impacts in terms of human health, id. § 5.7, and noise, id. § 5.8.1.

Q23. What is your conclusion regarding the relative environmental impacts of the Low Corridor alignment and the Central Skull Valley alternative alignment?

A23. For the reasons I discussed above, the Central Skull Valley alternative alignment would have greater environmental impacts than the proposed Low Corridor rail line.

C. East Skull Valley Alternatives

Q24. In what ways do the environmental impacts of the proposed Low Corridor alignment and the East Skull Valley alternative alignments differ?

A24. PFS considered an alternative rail alignment along Skull Valley Road on the east side of Skull Valley with multiple starting points at the Union Pacific mainline in its 1998 transportation study and earlier versions of its ER. PFSF Transportation Study (SWEC 1998), §3.3; ER Rev. 0, § 4.4. As discussed in the transportation study, the ER, and the FEIS § 2.2.4.2, the East Skull Valley alternatives would have environmental impacts that the proposed Low Corridor alignment would not. Based on these additional environmental impacts, the East Skull Valley alignment alternatives are environmentally inferior to the proposed Low Corridor alignment.

First, either constructing a rail bridge over I-80 or a making rock cut through the northern Stansbury Mountains from an acceptable access point to the Union Pacific mainline railroad in the adjacent Tooele Valley involve substantially increased environmental impacts. Transportation Study at 39. Once south of I-80, the alternative alignment, by its proximity to the wetlands near Horseshoe Springs, would likely adversely impact those wetlands. FEIS § 2.2.4.2. Compared to the proposed alignment from Low Junction that requires only obtaining a right of way from BLM, an alignment along Skull Valley Road would also require right of way agreements with other land-owners along the road, particularly private and State of Utah interests. Id. As discussed in the FEIS, a rail line on the eastern side of Skull Valley would be likely to directly adversely impact wetlands, existing houses and ranches, and traffic on Skull Valley Road. Id.

Q25. In what ways are the environmental impacts of these two alignments similar?

A25. The proposed Low Corridor alignment and the eastern Skull Valley alternative alignments would have similar (small) impacts on geology, minerals and soils, FEIS § 5.1, water resources (other than wetlands), id. § 5.2 and air quality, id. §

5.3. As the train configuration is independent of the railroad alignment, the proposed alignment and the alternative would have similar (small) impacts on human health. Id. § 5.7.

Q26. What is your conclusion regarding the relative environmental impacts of the Low Corridor alignment and the East Skull Valley alternative alignments?

A26. For the reasons I discussed above, the East Skull Valley alternative alignments would have greater environmental impacts than the proposed Low Corridor rail line.

III. CONCLUSION

Q27. What is your conclusion in your professional judgment as an environmental scientist about the relative environmental impacts of the alternative alignments considered?

A27. The greater environmental impacts of the alternative rail line alignments make them environmentally inferior to the proposed Low Corridor alignment.

Experience Summary

Ms. Davis has six years of experience in environmental research and consulting preparing environmental impact assessments for a variety of infrastructure development projects. She has had responsibility for preparation of impact assessments of the following resource areas: wetlands, forests, other vegetation, wildlife, fisheries and state and federally listed threatened and endangered species. She has prepared impact assessments for sites in mountain, desert, coastal, and marine environments.

Ms. Davis was responsible for field data collection, impact analysis, and preparation of sections of Environmental Resource Reports evaluating impacts of construction and operation of natural gas pipelines on wetlands, vegetation, wildlife, fisheries, and threatened and endangered species. These reports were submitted to the Federal Energy Regulatory Commission (FERC) as part of an Application for a Certificate of Public Convenience and Necessity and to state agencies as part of the permitting of state regulated activities. Ms. Davis has participated in alternatives analysis for new natural gas pipeline routing, including performing wetland function and value assessments.

On behalf of the FERC, Ms. Davis has prepared terrestrial resource and endangered species sections of Environmental Assessments (EA's) and Environmental Impact Assessments (EIS's) for relicensing or compliance actions on a dozen hydroelectric projects located throughout the U.S. Ms. Davis also prepared biological assessments for Section 7 consultation under the Endangered Species Act.

Ms. Davis has been responsible for evaluating ecological impacts of construction and operation of two interim spent fuel storage installations (ISFSI's) and preparing an Environmental Report for submittal to the Nuclear Regulatory Commission (NRC). She developed breadth of understanding of the scope of submittals required by the NRC for two very different (private vs. commercial) types of projects in different states (Utah vs. Minnesota) with different biological communities.

Other environmental permitting experience includes assisting in the preparation of Environmental Notification Forms (ENF's), Draft Environmental Impact Reports (DEIR's), Army Corps of Engineers Section 404 permit applications, and applications for Water Quality Certification (WQC) for public and private clients. She has also been responsible for the preparation of Notice of Intents (NOIs) for state wetlands permits for construction bridge repair construction projects.

Ms. Davis's field work experience includes wetland delineations, wildlife habitat evaluations, and wetland function and value assessments using the Corps of Engineers Highway Methodology and Vermont ANR methodology. She also participated in rare species surveys for reptiles, amphibians and insects. This field work was performed to support state and federal permit applications for proposed natural gas pipelines and compressor stations. Additional field

work includes site visits for relicensing hydropower projects on behalf of FERC and transportation corridor evaluation studies for a nuclear spent fuel facility.

Education

B. S., Wildlife Management - Univ. of New Hampshire - 1995

Training

OSHA 40 hour HAZWOPER training, Institute for Environmental Education - December 1997
Annual 8 Hour Refresher
OSHA 8 Hour Supervisor training, April 1998
FERC Environmental Report Preparation Course, Washington D.C. - 1996

Experience History

STONE & WEBSTER ENGINEERING CORPORATION, BOSTON, MASSACHUSETTS -1995 TO PRESENT

Sumpter Combustion Power Plant, Sumpter Township, Michigan
First Energy Corporation (May 2000 to Present)

Responsible for the wetland permitting for this simple cycle combustion turbine power plant. Conducted wetland delineations using the Army Corps Methodology for the 15 acre site, adjacent transmission corridor, and bisecting stream. Coordinated with the Michigan Department of Environmental Quality to prepare, submit and obtain approval for a Joint (State of Michigan and Army Corps) wetland permit. Attended and presented the project at public meetings.

Designed a 1 acre wetland replication area to provide mitigation for filled wetlands. Created finished and sub-grade designs along with planting plans for both the wetland replication area and stormwater detention basins. Oversaw the implementation of these plans and the actual construction of the wetland.

Stony Brook Pipeline Project, Hampden County, MA (October 1996 to January 1997; April 1997 to January 1998; September 2000 to Present)
Massachusetts Municipal Wholesale Electric Company (MMWEC)

As part of the Alternatives Analysis to be submitted to the Army Corps of Engineers, Ms. Davis performed a Wetland Functions and Values Assessment of three potential corridors for a 24-inch proposed natural gas pipeline. The Assessment criteria were based on the Army Corps of Engineers Highway Methodology and included the use of MassGIS data layers, NWI maps, Soil Survey maps, USGS topographic maps, and state records. Key issues of the Alternatives Analysis were minimizing forest fragmentation and wetland impact.

1. Ms. Davis also prepared portions of the ENF and the Draft Environmental Impact Report (DEIR) for submittal to the MEPA Unit. She prepared and reviewed sections relating to fisheries, wildlife, and threatened and endangered species. She also participated in threatened and endangered reptile, amphibian, and insect surveys and wildlife habitat assessments along the proposed pipeline route to satisfy MEPA requirements.

2. Conducted wetland delineations for 5.6 miles of pipeline to satisfy MEPA and ACOE requirements. Provided response to comments on the DEIR and prepared the Final FIR.

I. CONFIDENTIAL CLIENT (MARCH 2000 TO MAY 2000), SITING STUDY

Assessed numerous sites to determine preferred locations of potential gas-fired power plants. The sites were assessed for impacts to wetlands, residential areas, visual resources, recreational areas, geological conditions, and other exclusionary factors.

II. CONFIDENTIAL CLIENT (SEPTEMBER 1999 TO MARCH 2000), SITING STUDY

Assessed over 60 potential sites to determine preferred locations of potential gas-fired power plants. The sites were assessed for impacts to wetlands, residential areas, visual resources, recreational areas, geological conditions, and other exclusionary factors.

Private Fuel Storage Facility, Tooele County, UT (September 1996 to Present)
Private Fuel Storage L.L.C.

Evaluated ecological resources of a proposed site for an interim spent fuel storage facility. Developed an Environmental Report and associated documents for submittal to the NRC. Assessed impacts to vegetation, wildlife, threatened and endangered species, and sensitive areas following NUREG 1567. Researched existing conditions through consultation with federal and state agencies and local experts, summarized existing studies and literature, and participated in site visits. Conducted an on-site environmental assessment of fuel transportation options on wildlife, vegetation, endangered species, and raptors in the project area. Conducted wildlife and endangered species surveys for the transportation corridor and site. Responded to and resolved State and NRC comments and Requests for Additional Information.

Maine Yankee Nuclear Facility (May to July 1999)

Conducted wetland delineations using the Army Corps methodology along the coastline of the facility. Prepared terrestrial resource sections of the Maine Site Location of Development and Maine Natural Resource Protection Act permits.

III. EASTERN SHORES NATURAL GAS, CORRIDOR PROJECTS, DELAWARE (MARCH 1998-SEPTEMBER 1998)

Conducted wetland delineations and wildlife habitat assessments for two corridors in Delaware. Prepared Resource Report 3, Fish and Wildlife of the FERC Application for a Certificate of Public Convenience and Necessity for these corridors. Consulted with state, local, and federal agencies regarding impacts to wildlife, fisheries, threatened and endangered species, and wetlands.

Eastern Shores Natural Gas, Corridor Projects, Delaware and Pennsylvania (May 1998 to December 1998)

Prepared Resource Report 3, Fish and Wildlife of the FERC Application for a Certificate of Public Convenience and Necessity for two corridors in Delaware and Pennsylvania. Consulted with state, local, and federal agencies regarding impacts to wildlife, fisheries, threatened and endangered species, and wetlands.

Braintree/Weymouth Tunnel and Intermediate Pump Station (June 1997 to January 1998)
Massachusetts Water Resources Authority

Ms. Davis is responsible for preparing applications and securing federal and state environmental permits for construction of a proposed sewage pumping facility in Quincy, Massachusetts. The permits include Wetlands Conservation Board Notice of Intents (NOI) and an Army Corps of Engineers' Section 404 Dredge and Fill Permit.

Longfellow Bridge Remedial Repair Project, Boston/Cambridge, MA (October 1996 to November 1997)
Metropolitan District Commission

Ms. Davis is responsible for all environmental permitting issues addressed on state and local levels. Ms. Davis has prepared NOIs for submittal to the Boston and Cambridge Conservation Commissions and made a public presentation on the proposed project at public meetings. The NOIs included analysis based on the Riverfront Protection Act and the DEP Stormwater Management Guidelines. Other state and federal agencies have also been consulted throughout this project.

Interim Spent Fuel Storage Installation, Goodhue County, MN (March 1996 to June 1996)
Northern States Power

Participated in the evaluation of ecological resources for development of Environmental Report and associated documents for permitting an ISFSI with the NRC. Assessed impacts to vegetation, wildlife, threatened and endangered species, wetlands and sensitive areas. Calculated total wetland and rare community acreages within 5 miles of the site, which included areas of Minnesota and Wisconsin, along the Mississippi River. Assessed locations of rare species within a 5 mile radius of site based on the Minnesota and Wisconsin Natural Heritage Databases.

Consulted with both the Minnesota and Wisconsin Department of Natural Resources as part of the preparation of this report.

Licensing and Compliance Support
Federal Energy Regulatory Commission (FERC) - Office of Hydro Licensing (July 1995 to Present)

Prepared Environmental Assessments (EA's) and Environmental Impact Statements (EIS's) on behalf of the FERC and in conformance with FERC's NEPA requirements for relicensing of hydroelectric plants in several states. Responsible for all aspects of terrestrial sections including construction and operational impact assessment and mitigation for the following resource areas: vegetation, wetlands, wildlife, and threatened and endangered species. Responsible for identifying key resource issues at each project, determining appropriate mitigation, and responding to agency and public comments on draft EA's and EIS's. Task assignments include:

Relicensing of Existing Licensed Projects:

Flagstaff Project EA, ME

Prepared the terrestrial resources section of the EA for this storage reservoir that is a part of the Kennebec River Basin system. Addressed agency comments on potential impacts and developed recommendations to minimize adverse impacts and enhance existing resources. Recommended enhancements include the development of a Loon Monitoring Plan, a Bald Eagle Management Plan, and instituting minimum drawdowns in spring and summer months for the enhancement and protection of wetland habitat and waterfowl nesting.

Kennebec River Basin EIS, ME

Revised the terrestrial resources section of this multi-project EIS following a new analysis of the removal of Edwards Dam and assisted in preparation of draft license orders. Key issues were the effects of dam removal on wildlife habitat, wetlands, and threatened and endangered species.

Haas-Kings Hydroelectric Project Biological Assessments, CA

Prepared Additional Information Requests to the license applicant regarding threatened and endangered species information to be used in the preparation of Biological Assessments under section 7 of the Endangered Species Act. Species of interest include the bald eagle, peregrine falcon, California red-legged frog, and valley elderberry longhorn beetle.

Mokelumne Hydroelectric Project EA and Biological Assessments, CA

Addressed comments of conservation groups, the utility, and state and federal agencies in preparing the impact analysis of the hydroelectric project on terrestrial resources. Identified suitable enhancements for terrestrial resources and incorporated comments and information on terrestrial and threatened/endangered species resources into the comprehensive analysis portion

of the EA where appropriate. Ms. Davis also prepared Additional Information Requests regarding threatened and endangered species information to be used in the preparation of Biological Assessments under section 7 of the Endangered Species Act. Ms. Davis prepared draft Biological Assessments for the bald eagle, peregrine falcon, California red-legged frog, valley elderberry longhorn beetle, and delta smelt.

Santa Ana Hydroelectric Projects EA, CA

Responsible for preparing terrestrial section of the EA for multiple projects in the Lytle Creek, Mill Creek, and Santa Ana River Basins. These projects are partially in the San Bernardino National Forest. Issues include effects of minimum flows on riparian habitat, wildlife, wetlands, and rare species. Prepared Additional Information Requests for threatened and endangered species surveys. Attended site visit and participated in public scoping meeting.

Waterloo-Seneca Falls Hydroelectric Project EA, NY

Prepared terrestrial and wetland portions of the impact assessment and provided recommendations including a minimum flow for the bypassed reach and a wetland monitoring plan to maintain a wetland that could be at risk during construction for dam repairs.

Beaver River Hydroelectric Project EA, NY

Prepared terrestrial resource impact assessment including effects of large potential impoundment fluctuations that could affect nesting waterfowl, denning furbearers, hibernating reptiles and amphibians, plant species composition, and wetlands.

Oswego River Hydroelectric Project EA, NY

Prepared terrestrial resource impact assessment and provided recommendations including installation of inflatable dam crests to limit impoundment fluctuations from flashboard breakage.

Compliance Actions on Existing Licensed or Exempt Projects:

Old Mill Hydroelectric Project EA for Surrender of Exemption, VA

Assessed the impacts on terrestrial resources of the removal of a small hydroelectric project which was damaged in a flood.

Consumers Power Au Sable, Muskegon, and Manistee Hydroelectric Projects Assessment of Land Management Plans (LMPs) and Biological Assessment of the Karner Blue Butterfly MI

Assessed three river-based LMPs for technical adequacy including plans for: Bald Eagle Management, Buffer Zone Management, Wildlife and Forestry Management, Karner Blue Butterfly Management, and Indiana Bat Management. Also prepared a Biological Assessment for Karner Blue Butterfly pursuant to a formal section 7 consultation under the Endangered

Species Act. The purpose of the Biological Assessment is to determine the effects of the proposed land management actions on this federally endangered species.

Pensacola Hydroelectric Project Compliance EA, OK

Prepared the terrestrial and threatened and endangered species sections for this compliance EA that assessed the impacts of a proposed impoundment level rule curve change. Key issues involved the effect of seasonal changes in impoundment water levels on a Japanese millet seeding program ordered under the existing license as mitigation for project impacts on waterfowl food and cover.

Summersville Hydroelectric Project, WV

Prepared the terrestrial and threatened and endangered species sections for this compliance EA that assessed the impacts of a new 9.6 mile electric transmission line.

Portland Natural Gas Transmission System, VT, NH, ME, MA (August 1995 to January 1997)
Consortium of Companies

Prepared portions of the Environmental Report for an application for a FERC license for a new 240 mile natural gas pipeline stretching from the Canadian border in Vermont to Haverhill, Massachusetts. Produced a resource report on vegetation and wildlife, which included research and agency correspondence on fisheries, wildlife habitat, vegetative cover, threatened and endangered species, and wetlands resources for the states of Vermont, New Hampshire, Maine, and Massachusetts. Assisted in the coordinating of the final production of the approximately 1,000 page document, including editing, QA/QC, layout, and printing.

Participated in wetland delineations in Vermont, performing function and value assessments using Vermont ANR methodology and recording locations and boundaries collecting data points using a Geographic Positioning System (GPS). Prepared functional analyses covering over 60 separate wetlands for the VT Water Quality Certificate application. Assisted in the preparation of the Threatened and Endangered Species Report. Also prepared text descriptions of wetlands and coordinated compilation of field data collected by three biological field survey crews.

LNG Facility, Wells, ME (May 1996)
Granite State Gas Transmission Co.

Conducted wetland function and value assessments using the Army Corps of Engineers Highway Methodology along a proposed access road and for a 80 acre site. Prepared the written functional assessments for use in the preparation of a wetland replication plan.

Tennessee Gas Pipeline Company, Beverly-Salem Colonial Delivery, Lynnfield, MA
(August 1995 to October 1995)
Colonial Gas Company, Colonial Lateral Project

Prepared Environmental Notification Forms (ENF's) in accordance with Massachusetts Environmental Policy Act (MEPA) protocols for two natural gas pipeline projects.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

CERTIFICATE OF SERVICE

I hereby certify that copies of the "Testimony of John Donnell on Contention SUWA B—Railroad Alignment Alternatives," the "Testimony of Douglas Hayes on Contention SUWA B—Railroad Alignment Alternatives," the "Testimony of Susan Davis on Contention SUWA B—Railroad Alignment Alternatives," the "Testimony of George H.C. Liang and Donald Wayne Lewis on Contention Utah O—Hydrology," Applicant's prefaces to witness testimony, Applicant's outlines of key determinations on Contentions SUWA B and Utah O, and PFS Exhibits AA through KK, were served on the persons listed below (unless otherwise noted) by e-mail with conforming copies by U.S. mail, first class, postage prepaid, this 18th day of March, 2002.

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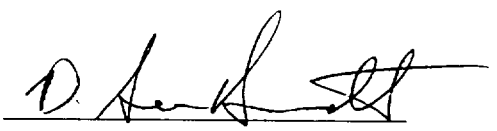

D. Sean Barnett

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PFS Exhibit BB

Excerpts from PFS Environmental Report

3.2.1.5 Low Corridor Rail Line

A new rail line, the preferred transportation method, will be constructed by the PFSLLC to connect the PFSF directly to the Union Pacific mainline railroad at Low. The rail line will be approximately 32 miles long and will originate from the mainline on the south side of Interstate highway 80 at Low (Figure 3.2-2). From the mainline at Low, the rail line will proceed southeast parallel to Interstate highway 80 for approximately 3 miles, then turn south along the western side of Skull Valley for approximately 26 miles, and then turn east for approximately 3 miles to the PFSF. The rail line will consist of a single track installed on undeveloped public rangeland administered by the BLM.

Construction activities will begin at Low Junction where excavation will be required to connect the new line to the existing mainline railroad and to provide the required sidings. The existing grades are elevated where the railroad and interstate highway cross the north end of the Cedar Mountains. The mainline is depressed beneath the two Interstate highway 80 overpasses at Low Junction. The excavated soils will be stockpiled for use as fill for rail line construction in Skull Valley.

Construction of the rail line beyond the Low Junction will be on the relatively flat terrain of Skull Valley. Approximately 65 dry arroyos cross the transportation corridor. Sufficient culverts will be provided in the design to facilitate drainage from these arroyos and to allow passage of the 100-year flood. Construction will begin with clearing and grubbing activities as necessary to accommodate a 40 ft wide rail bed. The upper 6-in. of soil (topsoil) will then be excavated for a width of approximately 10-ft. (5-ft. on both sides of rail line centerline) and stockpiled for later use. The roadbed will be proof-rolled and backfilled with 1-ft. of compacted fill material (excavated or imported). A minimum of eight inches of sub-ballast will be placed on the prepared surface. The ties and rail will be laid on top of the sub-ballast and a rail construction machine will travel along the previously laid track and install the remaining crushed gravel or rock ballast (approximately 8 inches) beneath

and around the wooden ties. The construction machine will also attach the rails to the ties using spikes and tie plates. The rail will be spliced with bolts for ease of assembly.

Construction of the new rail line will take place during Phase 1 to support testing and startup of the PFSF.

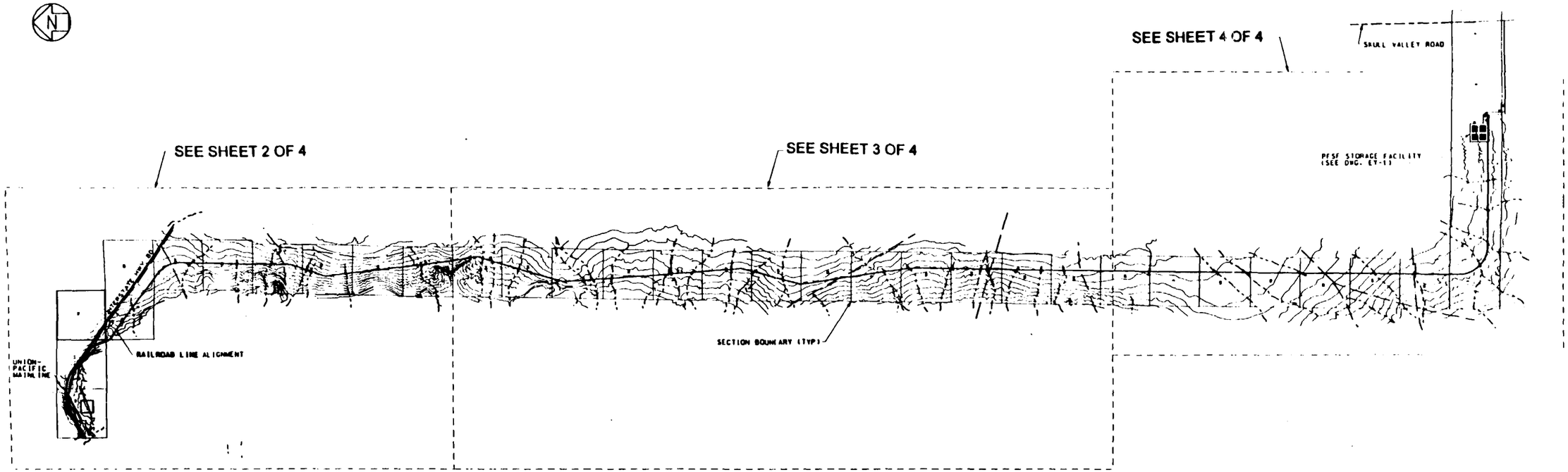
3.3.1 Direct Rail Delivery of Shipping Casks to the PFSF

The preferred mode of "direct rail" utilizes a new 32-mile long rail-line originating at Low, Utah and terminating at the PFSF. At Low, adjacent to the mainline, multiple sidings are provided to facilitate the arrival of each single purpose train transporting SNF to the PFSF and for the cars "out-bound" from the PFSF for the start of another SNF delivery cycle. At the PFSF, rail sidings are also provided within the protected area. These sidings facilitate the receipt of single purpose SNF trains and the return of empty cask cars for the start of another spent fuel delivery cycle.

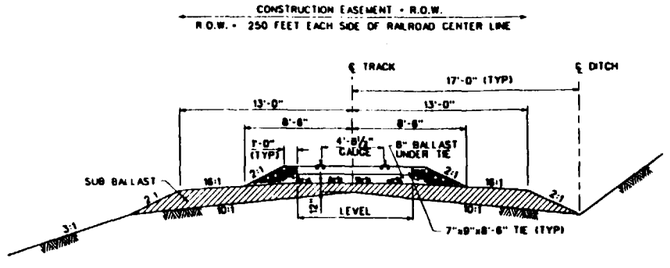
Regardless of the mode of transportation, the ultimate capacity of the PFS storage facility is based on 4000 casks received over 20 years. This translates to an average receipt rate of 200 loaded casks per year (4 casks per week). For the preferred mode of transportation, direct rail, PFS intends to procure and use two single purpose trains carrying a maximum of 6 casks per train. On average, PFS would receive one train a week carrying 4 loaded casks per train, which would result in PFS reaching its ultimate storage capacity in 20 years. If needed, a larger capacity single train could be assembled utilizing the necessary rail equipment from the two planned trains but the average weekly receipt rate would be maintained.

The operating scenario for an incoming train to PFS with SNF is as follows:

The single purpose train carrying the loaded cask cars will arrive at Low, Utah, at a coordinated time with PFS. The train, operated by Union Pacific personnel utilizing rail equipment provided by PFS, will then leave the mainline and stop at the Low siding area provided adjacent to the new rail-line. The mainline locomotives will then be disconnected from the balance of the train (containing the loaded cask cars, security car and buffer cars). A PFS provided short-line locomotive and crew will then pick-up the incoming train, excluding the mainline



KEY PLAN



LOW RAILROAD LINE
TYPICAL SECTION

NOT TO SCALE

LEGEND:

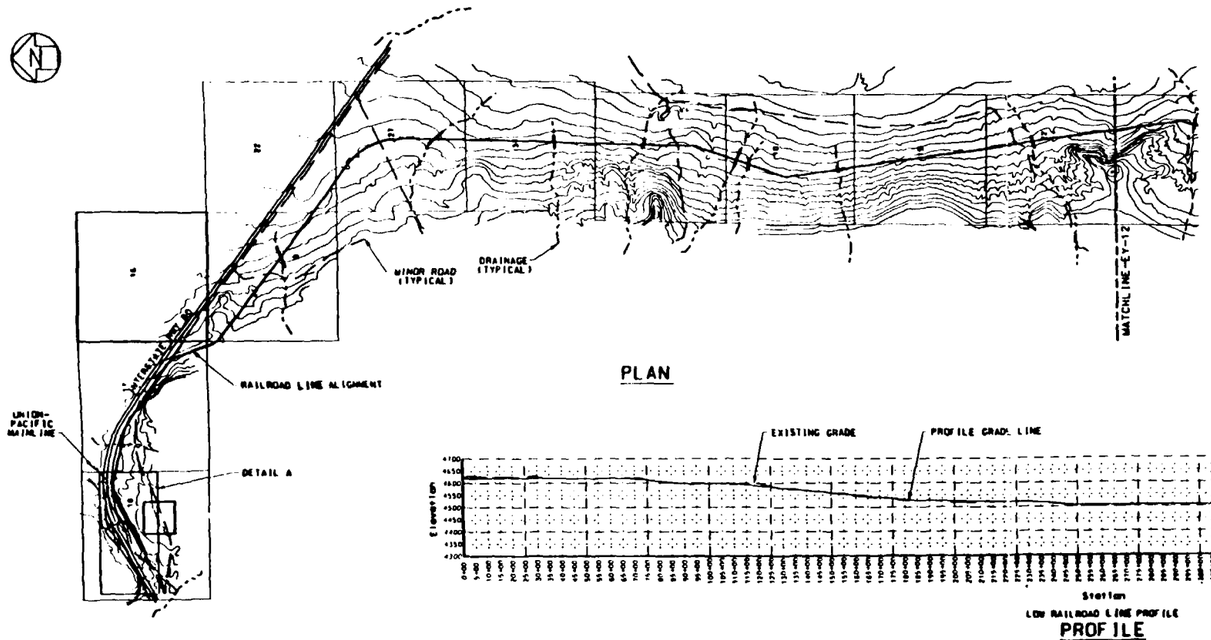
- DRAINAGE PATH
- EXISTING CONTOUR
- EXISTING DIRT ROAD

Figure 3.2-2

LOW CORRIDOR RAIL LINE
Sheet 1 of 4

PRIVATE FUEL STORAGE FACILITY
ENVIRONMENTAL REPORT

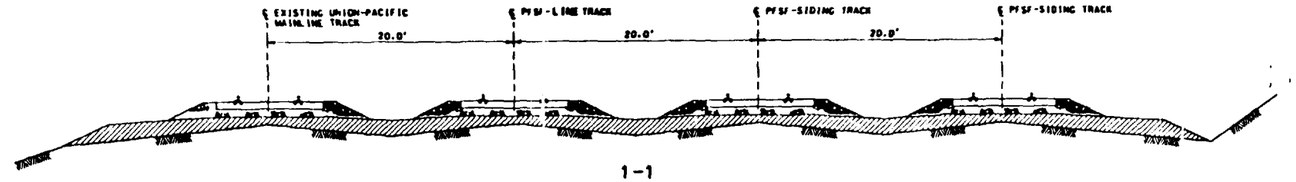
Revision 2



PLAN

LOW RAILROAD LINE PROFILE

PROFILE



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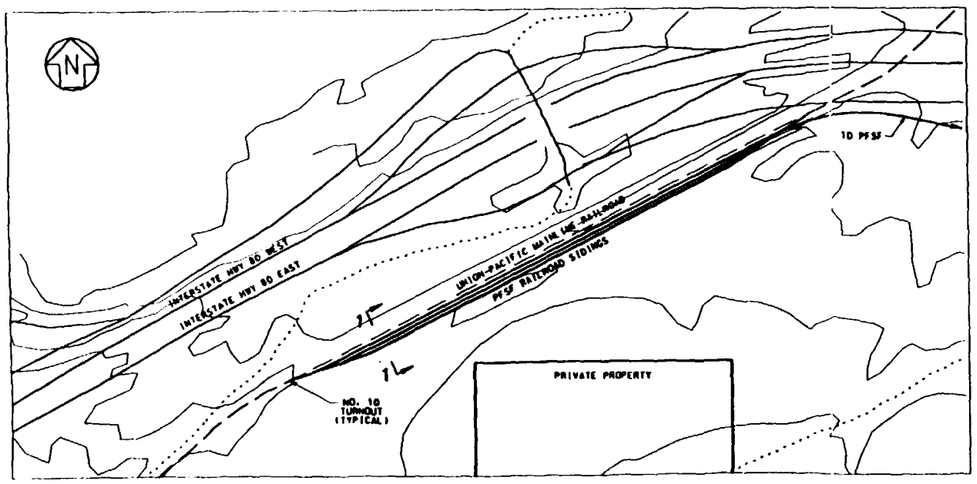


DETAIL A
SCALE: 1" = 500'

LEGEND:

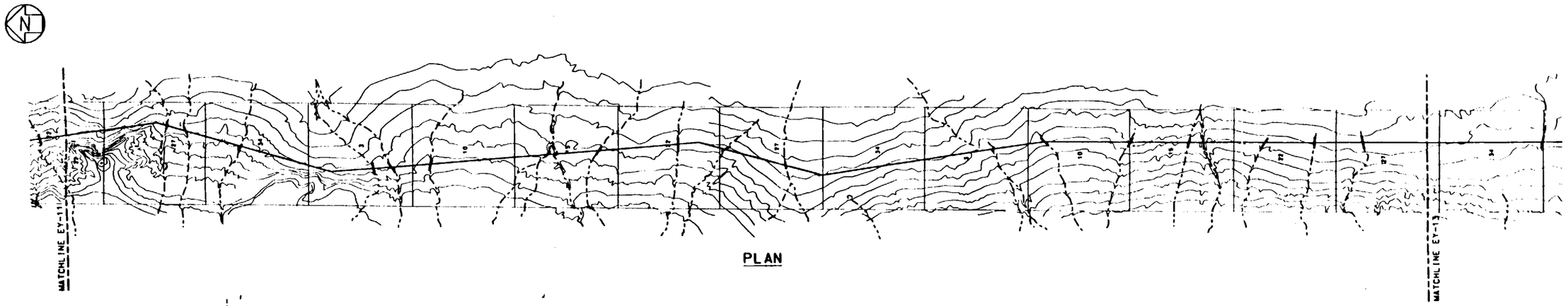
- DRAINAGE PATH
- EXISTING CONTOUR
- EXISTING DIRT ROAD
- EXISTING GRADE (PROFILE ONLY)
- PROPOSED VERTICAL ALIGNMENT (PROFILE GRADE LINE)

Figure 3.2-2

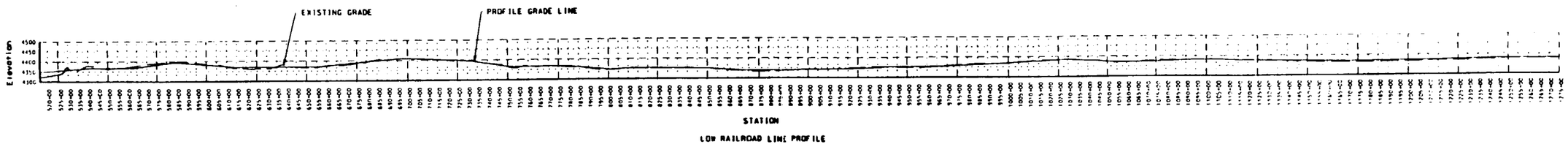
LOW CORRIDOR RAIL LINE
Sheet 2 of 4

PRIVATE FUEL STORAGE FACILITY
ENVIRONMENTAL REPORT

Revision 2



PLAN



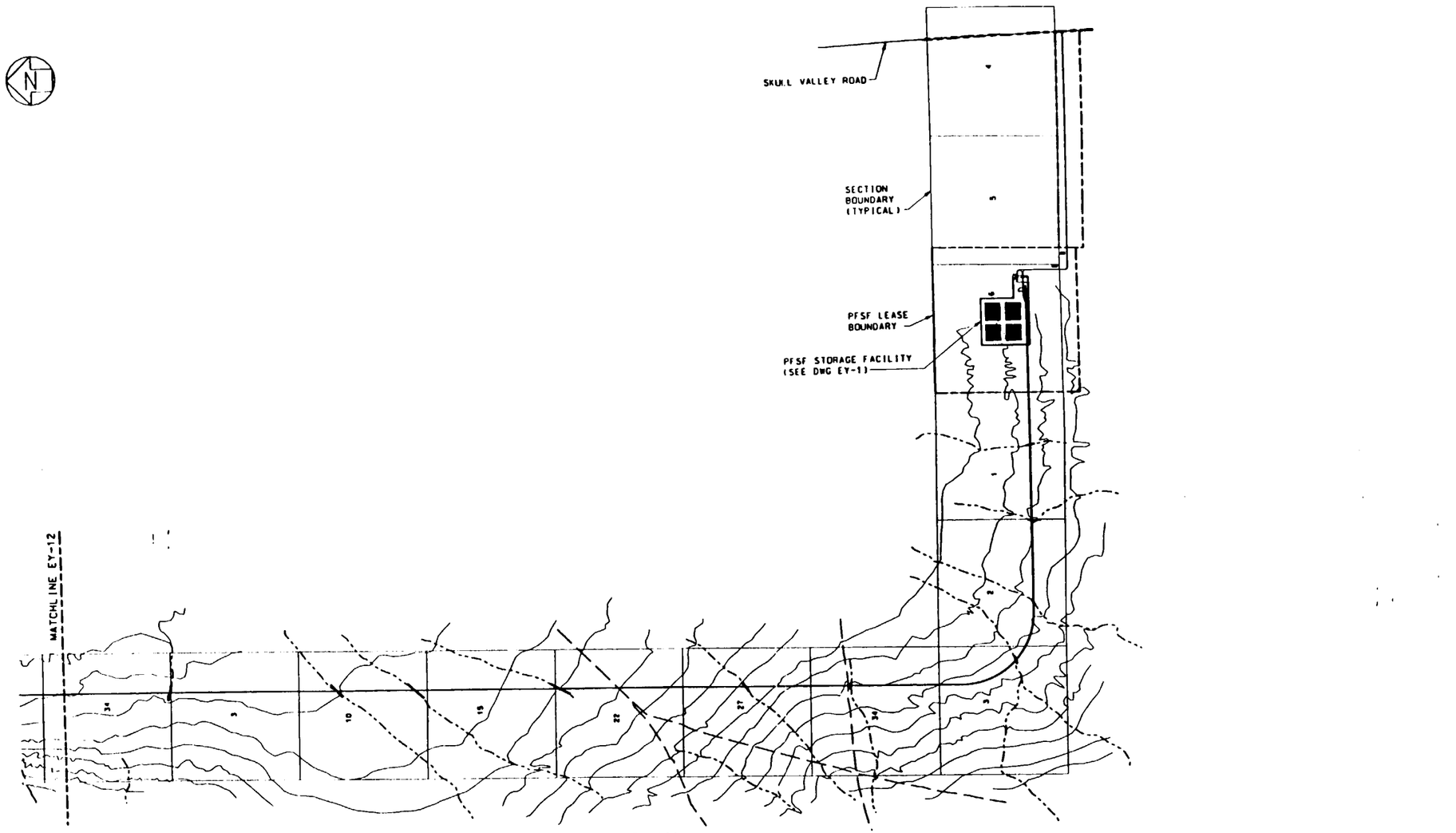
PROFILE

Figure 3.2-2

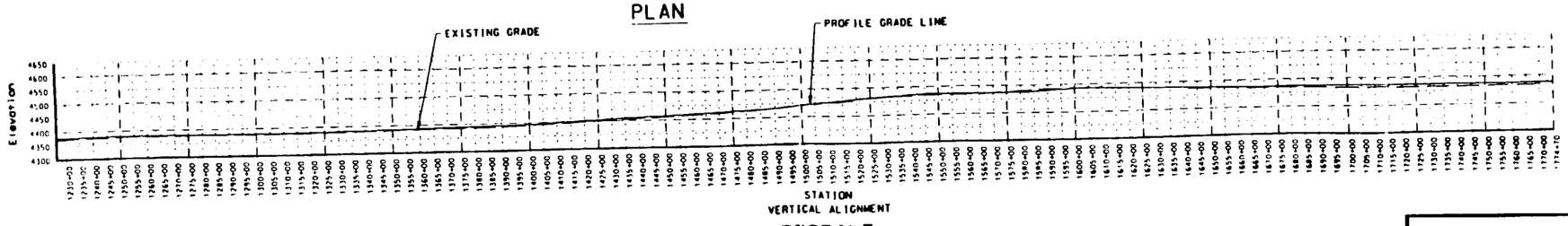
LOW CORRIDOR RAIL LINE
Sheet 3 of 4

PRIVATE FUEL STORAGE FACILITY
ENVIRONMENTAL REPORT

Revision 2



PLAN



PROFILE

Figure 3.2-2

LOW CORRIDOR RAIL LINE
Sheet 4 of 4

PRIVATE FUEL STORAGE FACILITY
ENVIRONMENTAL REPORT

Revision 2

4.4 EFFECTS OF CONSTRUCTION AND OPERATION OF THE RAILROAD SPUR ALTERNATIVE

A new railroad spur may be constructed by the Private Fuel Storage L.L.C. (PFSLLC) to connect the PFSF directly to the Union Pacific railroad mainline. Skull Valley Road improvements (road widening) will not be required if this alternative were implemented. The rail spur will be approximately 24 miles long, beginning at the railroad mainline and continuing south to the PFSF site. The railroad will consist of a single track installed parallel to the existing Skull Valley Road.

The railroad feasibility study will determine on which side of Skull Valley Road the track will be located. A preliminary estimate of the railroad cross-section shows the overall railroad width (toe to toe of ballast) to be approximately 16 feet. The toe of the ballast will be located 6 feet (minimum) from the edge of the existing road pavement and 6 feet (minimum) from the right-of-way on the other side to accommodate a new replacement drainage ditch. Thus, the minimum required width for the railroad will be 28 feet and will be located adjacent to the edge of the existing road pavement. This alternative will require the permanent alteration of approximately 81.5 acres of land adjacent to the roadway.

4.4.1 Effects on Geography, Land Use, and Demography

Construction of a new railroad spur will require the alteration of approximately 81.5 acres of land adjacent to the existing Skull Valley Road. This estimate assumes that conventional construction practices will occur within the existing Skull Valley road right-of-way and that no additional land acquisition will be required. This alternative will result in the permanent alteration of approximately 52.5 acres more than the road expansion. However, because of the sparse population in Skull Valley, it is anticipated that only minor realignment of range fencing, driveways, and other roadside utilities that

are present within the existing Skull Valley Road right-of-way will be required. No relocation of residential, commercial, or industrial structures is anticipated under this alternative.

Operation of a rail spur for cask transport to the PFSF could result in locomotives and casks passing closer to two residences located adjacent to the Skull Valley Road right-of-way than equipment used by the heavy-haul transport method. Additional survey work is required prior to final design and alignment of the railroad spur and to develop any necessary mitigation measures for these two residences.

4.4.2 Effects on Ecological Resources

The railroad spur alternative will require alteration of land adjacent to the existing Skull Valley Road. Construction of a new railroad spur will require the permanent alteration of approximately 81.5 acres of land. This estimate assumes that normal construction practices will occur within the existing road right-of-way and that no additional land acquisition will be required. This alternative will result in the permanent alteration of approximately 52.5 acres more than the road expansion. The intermodal transfer point will not be built with the railroad alternative. The small amount of vegetation lost is minor compared to the overall availability of similar communities and habitat types in Skull Valley. Environmentally sensitive areas (e.g., raptor nests, WMA's, ACEC's) and species discussed in Section 4.3.2 will require the development of similar construction mitigation techniques described in that section of this Environmental Report.

Mitigation measures, developed in consultation with BLM, will ensure that the Horseshoe Springs area is not adversely impacted by railroad construction. Construction plans will consider access to the Horseshoe Springs and will include measures to ensure that any resident BLM-sensitive species or UDWR "high interest" species will not be adversely affected by construction activities.

4.4.3 Effects on Air Quality

The construction and operational impacts of the railroad spur alternative will be similar to those described for heavy haul transport, given that the railroad spur will also parallel Skull Valley Road. The construction activities associated with the railroad spur will essentially be the same as heavy haul transport relative to the types and quantities of pollutant emissions and in regard to mitigation techniques. Operational impacts will also consist of localized increases in concentrations of the same pollutants emitted by the heavy haul trucks. Individual diesel locomotive pollutant emissions will be higher than from individual trucks but this alternative will involve fewer train trips than truck trips, with each train hauling several casks compared to one cask per truck trip. In any event, air quality impacts from the railroad spur alternative will also be very localized and transient in nature, affecting few residences and having no effect on air quality attainment goals.

4.4.4 Effects on Hydrological Resources

As discussed in Section 4.3.4, hydrological resources along the Skull Valley Road right-of-way consist of intermittent drainages conveyed from east to west by culverts beneath the road and several series of springs west of the road. As the railroad spur requires a slightly wider right-of-way than the heavy haul road, the locations of the springs need to be evaluated in order to preclude any incursion to those areas.

Based on examination of aerial photographs, it appears that the springs at Salt Mountain may be within 150 ft of the existing Skull Valley Road and Burnt Spring may be within 250 ft. Preliminary plans for the railroad spur indicate that a minimum of an additional 28 ft of land will be required from the edge of the existing Skull Valley Road to accommodate the railroad.

Because there are no existing surface water bodies and ground water is over 100 ft below the surface, it is unlikely that the railroad spur will have any impact on hydrological resources.

4.4.5 Effects on Mineral Resources

No mineral resources have been identified along the Skull Valley Road corridor. Therefore, no impact to this resource is expected from the construction of a railroad spur along the existing road corridor.

4.4.6 Effects on Socioeconomics

No adverse impacts on socioeconomic resources are anticipated under this alternative. Minor short-term employment will result from construction activities associated with the railroad spur alternative. These activities will utilize a local labor force commuting daily to the project area and will therefore not induce relocation of families and associated impacts on local government services. Due to the lack of resources in Skull Valley, no increase of industrial development is foreseen as a result of the railroad installation.

4.4.7 Effects of Noise and Traffic

Installation of a new railroad spur parallel to Skull Valley Road will not affect existing traffic patterns or levels of service because construction activities will occur outside of the flow of traffic. Where required, at-grade rail crossings will be installed to allow continued entrance and egress from intersecting roadways and private drives. Railway construction will occur near the two residential receptors located close to the edge of Skull Valley Road. However, because construction will take place during daytime hours, there will be no impact on ambient nighttime sound levels.

Cask transport by rail will have no impact on traffic volumes an Skull Valley Road. Cask transport by rail could have adverse impacts on sensitive residential receptors along Skull Valley Road. However, these impacts would be localized and transient in nature, minimizing the effects on residents of Skull Valley.

4.4.8 Effects on Regional Historical, Cultural, Scenic, and Natural Features

The SHPO indicates that only 5 percent of the land in the area of potential effect from the 24-mile track spur has been subject to cultural resource surveys and suggests that additional survey may yield new information about prehistoric inhabitants of the Skull Valley (letter from J. L. Dykmann, Compliance Archaeologist, Utah State Historical Society, to N.T. Georges, SWEC, April 30, 1997). The SHPO notes nine canyons, knolls, or places that have high potential for the location of other historic properties. These locations include the historic village of Iosepa, Antelope, Indian Hickman, and Muskrat Canyons, Salt Mountain, Ranch Knoll, Horseshoe Spring, Lone Rock, and springs in section 34. These places are located from 500 ft to several miles from the PFSF site and transportation corridor. The rail spur construction area is situated at a considerable distance from the areas with high potential for containing archeological sites.

A Class III cultural resource survey will be performed in the area potentially affected by the railroad spur alternative. In Utah, a Class III survey includes a literature search of prior surveys, a walkover of the project area, and sufficient subsurface testing to determine whether any potentially significant sites meet the criteria for listing in the National Register of Historic Places. The survey will be conducted in consultation with the SHPO in a manner consistent with SHPO and BLM guidelines and regulations. The survey will be conducted by an archaeological firm holding an active joint archeologcai survey permit issued by these two agencies.

A new railroad spur along Skull Valley Road will introduce new visual elements to the Skull Valley landscape. Railroad tracks are familiar linear features located adjacent to roadways and will not cause a significant negative impact to the scenic environment. Depending on which side of Skull Valley Road the rail is constructed, access will have to be maintained to the Horseshoe Springs WMA during construction.

4.4 EFFECTS OF CONSTRUCTION AND OPERATION OF THE LOW CORRIDOR RAIL LINE

A new rail line will be constructed to connect the PFSF directly to the Union Pacific mainline railroad at Low. The single track rail line will be approximately 32 miles long and will originate from the mainline on the south side of Interstate 80 at Low. From the mainline at Low, the rail line will proceed southeast parallel to Interstate 80 for approximately 3 miles, then turn south along the western side of Skull Valley for approximately 26 miles, and then turn east for approximately 3 miles to the PFSF. Associated sidings will be located either at the PFSF or near Low Junction.

A 200 foot wide right-of-way for construction of the Low Corridor would temporarily remove or disturb about 776 acres of greasewood and desert shrub salt/brush habitat. A 40 foot wide rail line width is necessary to operate the rail line to the PFSF site; therefore approximately 155 acres would be permanently altered, and about 621 acres would be actively revegetated with appropriate naturally occurring species and restored to previous conditions following construction.

4.4.1 Effects on Geography, Land Use, and Demography

Construction of a new rail line will require the alteration of approximately 776 acres of land along the rail line. This estimate assumes that conventional construction practices will occur and that no additional land acquisition will be required. The rail line will result in the permanent alteration of approximately 155 acres.

The railroad turnout would be located on public land administered by the BLM, with right-of-way granted for the railroad. The full length of the rail line would require the granting of Right-of-Way from the BLM.

The Low Corridor rail line would cross the Eightmile and Black Knoll Pastures which are part of the Skull Valley grazing allotment. Construction activities related to the Low Corridor will temporarily disturb resident livestock and cause them to avoid the construction area. Impacts from the removal of habitat (776 acres temporarily and 155 acres permanently) is minimal when compared to the 271,00 acres of rangeland in Skull Valley. Operation of the rail line is not expected to adversely affect the use of the area for livestock grazing. Livestock will be able to freely cross the rail line tracks accessing rangeland on either side. Due to the infrequent number of trips (1-2 round trips/week) and the slow train speed (20 mph), collisions with livestock are not anticipated. Further consultation with BLM will be conducted to determine if any additional measures are required to insure livestock access and safety.

Recreational use for the land on either side of the rail line will be maintained by providing crossings where the rail line intersects off-highway vehicle trails or dirt roads.

There are no known wetlands or other environmentally sensitive areas along the entire 32-mile rail line. Horseshoe Springs and other local Skull Valley wetlands are well outside of the Low Corridor. The rail line will cross approximately 65 small and large dry arroyos. Small, medium, and large culverts; as well as short bridge crossings, will be constructed over these arroyos. Sufficient culverts will be provided in the design to facilitate drainage from these arroyos and to allow passage of the 100-year flood.

There are no demographic impacts along the entire rail corridor since the route does not encounter any private ranches or other members of the public. State inholdings along the route and a small piece of private land near Low Junction will be avoided. Therefore, relocation of residential structures, or realignment of fencing, driveways, and roadside utilities will not be required. In addition, all construction activity is south of Interstate 80 which eliminates any conflicts associated with the highway, such as overpass/underpass construction.

4.4.2 Effects on Ecological Resources

The Low Corridor rail line will require alteration of 155 acres of public land administered by the BLM for the life of the PFSF. Generally, the ecological resources in the vicinity of the Low transportation corridor are similar to those found in the Skull Valley transportation corridor and at the PFSF site. No federal or state-listed threatened or endangered plant species are known to occur within the Low Corridor transportation area (letters from USFWS, Utah Field Office, dated February 10, 1997, February 27, 1997, and July 31, 1998 and UDWR, 1997).

Ecological resources potentially affected by construction of the Low Corridor rail line include both terrestrial vegetation and wildlife. Within the 200-foot right-of-way, construction activities would temporarily remove 776 acres of greasewood and desert shrub/saltbrush habitat. The 40-foot wide permanent rail line width required for operation will result in the permanent loss of approximately 155 acres while approximately 621 acres would be actively revegetated and restored to previous conditions after construction. This small amount of vegetation is minor compared to the over 1 million acres of desert shrub/saltbrush within Tooele County. There are also no unique vegetation habitat features in areas proposed for vegetation removal. A detailed revegetation plan will be developed in consultation with the BLM for the rail line. The plan will be developed during construction and will incorporate the latest requirements/recommendations for soil preparation, type of seed mix, time of year to plant, watering frequency, etc. The revegetation plan will follow guidelines currently used by the BLM such as the Interagency Forage and Conservation, Planting Guide for Utah, EC 433, or later documents in effect at the time the plan is developed.

Construction activities related to the Low Corridor will temporarily disturb resident wildlife species. Larger mammals would temporarily avoid the construction area, but likely return following the completion of construction. Prior to construction, a comprehensive wildlife survey should be conducted to assure that no kit fox, burrowing

owls, northern harriers, or ferruginous hawks are nesting (or denning) within 0.5 mile of the rail line. If any animals are located, mitigation plans such as construction timing restrictions should be implemented and alternative nest (or den) site locations should be established in consultation with the BLM, UDWR, and FWS to offset the loss of these sites due to construction and improve habitat for local populations.

Impacts to wild horses, mule deer and pronghorn antelope could occur if rail cars traveling the corridor collide with these animals. In addition, the rail corridor has the potential to divide natural wildlife travel corridors between the west and east sides of Skull Valley during construction. Because most of the water resources are concentrated on the east side of Skull Valley, construction and operation of the rail line could cause some wild horses, mule deer, and pronghorn antelope to avoid the area. Other animals may habituate to the noise of new construction and continue to cross the rail corridor. The level of impact to the local population of these species from construction and operation is expected to be minimal.

All other ecological resources identified in Section 2.3.3, such as migratory peregrine falcons, should not be adversely affected by construction activities, since these activities are temporary in nature. Additional consultation relative to threatened and endangered species may be required with the BLM and USFWS.

4.4.3 Effects on Air Quality

Although the construction of the Low Corridor rail line will require a significant amount of alteration of public land administered by the BLM, the overall impacts on air quality from construction and operation will be minor and limited to the general vicinity of the corridor. Any impacts will mainly be associated with emissions of fugitive dust from construction activities and from locomotive emissions during cask transport operations. No long-term impacts on the local meteorology/climatology will result from these activities.

Emissions of particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns (PM-10) are estimated for activities related to the construction of the Low Corridor Railroad Line including: clearing/grubbing; vehicular traffic on unpaved roads; wind erosion from temporary topsoil piles; material handling; bulldozing; compacting; scraping and grading. Emissions of total particulate matter (PM), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC) are also estimated from construction vehicle operation and locomotive use for the installation of ballast, ties, and rail. Calculations of concentrations of these pollutants in ambient air are not meaningful as there are no sensitive receptors in the vicinity of the rail corridor that can be impacted by these emissions.

Estimates of air pollutant emissions due to construction activities are determined on the basis of estimated material handling (e.g., cubic yards of topsoil and cut moved) and reasonable assumptions regarding construction equipment mileage and hours of operation during the construction period. PM-10 emissions estimates are provided for fugitive dust caused by clearing/grubbing; vehicular traffic on unpaved roads; wind erosion from temporary topsoil piles; material handling; bulldozing; compacting; scraping and grading. Applicable gaseous criteria pollutant emissions from equipment use (i.e., NO_x, $CO_,$, PM, and VOC) are also provided. Most of the construction activities are assumed to be occurring simultaneously during any given construction month for purposes of ensuring conservatism in these emissions estimates.

The emission factors used in the estimates for construction activities are taken from the 5th edition of EPA's AP-42 document (EPA, 1998) assuming reasonable levels of emissions control as needed to satisfy DEQ requirements.

On-road dump truck exhaust emissions are based on emission factors taken from the pending 5th edition of EPA's AP-42 document (EPA, 1998a). These factors apply to heavy duty diesel powered vehicles (HDDV) operated at high altitudes (~5,550 ft MSL) for model year 1996 or later at the federal test method speed of 19.6 mph. Non-road

construction equipment exhaust emission factors are taken from EPA's Nonroad Emissions Model (EPA, 1998b). The locomotive emission factors used are conservatively based on 1997 estimates provided by the Internet Web site DieselNet (http://www.dieselnet.com). The construction equipment exhaust emission factors (E) used in this calculation are as follows:

On-Road Dump Truck and Watering Truck Exhaust (grams/mile @ 19.6 mph):

$E(NO_x)$ = 6.5

E(CO) = 17.2

E(VOC) = 4.7

E(PM) = N/A

Non-Road Construction Equipment Exhaust (grams/bhp-hr):

Graders: $E(NO_x)$ = 9.5
E(CO) = 2.4
E(VOC) = 1.0
E(PM) = 0.76

Scrapers: $E(NO_x)$ = 8.6
E(CO) = 3.9
E(VOC) = 0.47
E(PM) = 0.96

Bulldozers: $E(NO_x)$ = 10.4
E(CO) = 1.8
E(VOC) = 0.56
E(PM) = 0.50

Roller: $E(NO_x)$ = 9.2
E(CO) = 3.9
E(VOC) = 0.74
E(PM) = 0.94

Locomotive Operation (grams/bhp-hr):

$E(NO_x)$ = 13.5
E(CO) = 1.5
E(VOC) = 0.5
E(PM) = 0.34

The estimated air pollutant emissions associated with the construction of the Low Corridor Rail Line are summarized in Table 4.4-1.

Similarly, the effects on air quality of the Low Corridor rail line cask transport between Low and the PFSF were assessed relative to annual air pollutant emissions since there are no residences to be impacted along the entire corridor. This assessment considers the total locomotive mileage, vehicle speed, and appropriate locomotive air pollutant emission factors. Generally, there will be 1-2 locomotive round trips per week; with each trip transporting full casks to PFSF, and returning back to Low Junction with empty casks. It is also possible that additional trips would be required to deliver empty casks to the mainline rail siding for pickup by the mainline train. The additional 2 round trips results in a bounding case of a maximum of 4 round trips per week, yielding 13,312 vehicle miles of rail travel per year. The largest train is expected to consist of 2 1500-horsepower locomotives with 6 cars containing casks, 2 empty cars, and a security car. The maximum train speed is expected to be 20 miles per hour.

The annual air pollutant emissions potential are estimated on the basis of annual vehicle miles traveled and emissions of current model diesel locomotive engines. The latter were based on current estimates (1997) from the Internet web site DieselNet. EPA standards were not applicable since they only apply to remanufactured engines, which may not be the case for the Low Corridor rail system. The criteria air pollutants for which emissions are provided include HC, CO, NO_x, and PM, expressed as grams per brake horsepower per hour and are summarized below for line haul locomotives:

Pollutant	Emission Rate, g/bhp-hr
HC	0.5
CO	1.5

NO_x	13.5
PM	0.34

At an average speed of 20 mph, the annual hours of locomotive operation, for 13,312 miles traveled, is 665.6 hours. Therefore, assuming 3,000 bhp locomotive for the two locomotives, the annual air pollutant emissions potential in tons/year is:

Pollutant	Emissions, tons/yr
HC	1.1
CO	3.3
NO_x	29.7
PM	0.7

It can be concluded that the emissions from the rail transport operations are trivial, when compared to existing (1994) Tooele County emissions that are 3-4 orders of magnitude higher.

4.4.4 Effects on Hydrological Resources

Because there are no existing surface water bodies and ground water is over 100 ft below the surface, it is unlikely that the rail line will have any impact on hydrological resources.

4.4.5 Effects on Mineral Resources

No mineral resources have been identified along the rail line corridor. Therefore, no impact to this resource is expected from the construction of a rail line. Refer to Section 4.1.5 for additional discussion on Skull Valley mineral resources, claims and leases.

4.4.5.1 Imported Materials Required for Construction

The type and quantity of required imported materials necessary for construction of the rail line are provided in Table 4.1-6. PFS does not intend to obtain any required imported construction materials from Federal or Tribal lands, but plans to obtain materials from private, commercial sources in and around the Skull Valley area. Refer to Section 4.1.5.1 for additional information on aggregate sources located in and near Skull Valley in Tooele County, Utah.

4.4.5.2 Excess Materials Resulting from Construction Activities

The rail line will generate excess material from stripping operations, approx. 125,000 cubic yards (40' x 169,127' x 0.5'). This material will be used to stabilize side slopes. Assuming a length of slope of 11.2' (for a 5' high embankment) and a length of 169,127 feet and both a left and right embankment, the depth of "excess" soil works out to be less than one foot (10.5"). The rail line as currently designed will also generate approx. 131,000 cubic yards of excess common fill. As the design is refined during final design, this quantity will be reduced. Any remaining excess material will be used as embankment material. No material will be disposed of off site.

Consideration was given as to whether the excess material generated from stripping operations will be suitable for fill. While a geotechnical program along the Low Corridor has not yet been implemented (but will be prior to start of railroad construction), PFS is confident that the cut generated along the route is suitable for fill. As indicated in Section 2.5.5, the valley-fill deposits in Skull Valley consist of inter-stratified colluvium, alluvium, lacustrine, and fluvial deposits with minor basalt and ash, and some eolian material. In general, these deposits are coarser near the perimeter of the valley, grading into well-sorted sand and gravel, and they are interlayered with lacustrine silt and clay towards the center of the valley. The major cuts are located near the northern end of the proposed route, where it skirts the northeastern flank of the Cedar

Mountains. It is anticipated that the deposits in this area will be colluvial and alluvial deposits, which are expected to be coarser sands and gravels near the base of the mountains. Such soils will be suitable for use as fill wherever needed. Even finer grained soils, such as the silts and clays that are expected to be encountered along portions of the route, can be used to construct the interior portions of the embankments that are required. Techniques may be required to compact these and protect them from erosion should it be economical to use them as fills, rather than spoiling them and importing better quality fills.

4.4.6 Effects on Socioeconomics

No adverse impacts on socioeconomic resources are anticipated as a result of the new rail line. Minor short-term employment will result from construction activities associated with the rail line. These activities will utilize a local labor force commuting daily to the project area and will therefore not induce relocation of families and associated impacts on local government services.

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Number of Workers for Activities at the Low Corridor Rail Line

Construction

The estimate of 130 workers from Section 4.1.1 applies to construction of the storage facility and not the Low Corridor Rail siding or rail line. The rail siding consists of three siding tracks just off the UP mainline approximately 2400 ft long. The rail line consists of 32 miles of railroad track. Both the rail siding and rail line will be constructed as one project utilizing the same construction crews. Construction activities will be conducted primarily during daylight hours and will be completed in approximately one-year.

During construction of the rail line, an estimated peak work force of 125 workers will be required for various tasks. The bulk of the manpower will be for the earthwork. This work will involve clearing, cutting and filling, installing culverts, contouring the ground for the required profile, finish grading, and seeding. The equipment will include bulldozers, scrapers, dump trucks, front-end loaders, compactors, graders, and water trucks. This portion of the work is estimated to take approximately 109 workers including equipment operators, laborers, electricians, iron workers, concrete finishers, and construction supervision staff.

The remainder of the work involves laying the sub ballast, ballast, ties, track, and spikes. A track-laying machine with dedicated work locomotives will be utilized. Approximately 16 workers will be required to support the track-laying machine.

Operation

The number of workers stated in ER Section 4.2.6 for operation of the storage facility (42 workers) does include the workers required for operation of the rail line. As noted in Section 4.4.7, there will generally be 1-2 locomotive round trips per week. Typically, 2 personnel will be required to operate the locomotives and perform the necessary coupling and uncoupling operations at the siding. The delivery of a train to the PFSF

from the siding area could occur at any time of the day although daytime hours are preferred in order to minimize shift schedule impacts.

4.4.7 Effects of Noise and Traffic

The distances between the proposed rail line and the residences along Skull Valley Road are on the order of 5 to 10 miles. The construction noise is not expected to be audible along Skull Valley Road.

Sound level predictions were made for the locomotive and rail cars delivering the casks to the site. The train noise predictions were based upon methodologies outlined in C.M. Harris's Handbook of Noise Control. The propagation calculations were made using atmospheric absorption at standard conditions. No credit was taken for ground absorption or wind and thermal gradients. The levels predicted are maximum levels which could occur with the receptor down wind. During calm clear days or receptor upwind conditions, the levels would be at least 20 dBA less than indicated.

There are some ranches and residences along Skull Valley Road between I-80 and the PFSF site. The proposed rail line parallels Skull Valley Road from the site northward to Low Junction. The distance between the rail alignment and Skull Valley Road in this region is approximately 5 miles. The maximum locomotive and rail car noise would be 31 dBA at Skull Valley Road, which may occasionally be just audible if the ambient sound level drops into the 20s dBA. Where the alignment turns east to the site, the levels may occasional reach 45 dBA and be audible.

North of 8 Mile Spring Road, Skull Valley Road veers north-northeast and the distance from the rail line increases to 7 miles at Horseshoe Springs, and to 10 miles where Skull Valley road intersects I-80. The predicted maximum rail noise to receptors along Skull Valley Road (near Eight Mile Spring Road) is 26 dBA, and 19 dBA at the

intersection of I-80 and Skull Valley Road. The train is not expected to be generally audible in this area.

Traffic on east-west roads is not expected to be affected or public safety threatened. The proposed new rail line will cross several roads. Most of the roads are little more than dirt jeep trails that are subject to little, if any, use. Eight Mile Spring Road, however, is graded. It appears that ranchers use the road to access the interior of Skull Valley, and that hunters and other recreationists travel the road on an infrequent basis to gain access to the southern end of the Cedar Mountains. Because of the unimproved nature of the roads, traffic usually proceeds at a reduced speed. The new rail line will be used only once or twice a week, with the trains traveling at approximately 20 miles per hour. Because the area is flat, unoccupied and unwooded, users of both the roads and rail line will have a virtually unlimited field of vision. Based on these factors, it is unlikely that the rail line will have any impact on traffic or vehicular safety.

4.4.8 Effects on Regional Historical, Cultural, Scenic, and Natural Features

The Class I cultural resource inventory for the Low Corridor rail line conducted in May 1998 included a study area of a mile wide corridor centered over the proposed rail line. The Class I Survey concluded that there is only a low probability of encountering archeological or historical sites in the proposed rail line corridor or ITP area.

A Class III Cultural Resource Inventory has been completed for the Low Transportation Corridor (P-III Associates, Inc., 1999a). In Utah, a Class III survey includes a literature search of prior surveys, a walkover of the project area, and sufficient subsurface testing to determine whether any potentially significant sites meet the criteria for listing in the National Register of Historic Places. The Class III inventory confirmed the location of the Hastings Cutoff (site 42T0709) along the Low Transportation Corridor, and resulted in the discovery of an additional site (42T01187) and eight isolated finds. None of the

isolated finds are considered eligible for inclusion in the National Register of Historic Places (NRHP).

Site 42T01187 is a rock alignment and cairn. The rock alignment is located approximately 550-ft East of the rail line centerline and therefore will be avoided by construction activities and operation of the rail line. Site 42T0709 is the Hastings Cutoff Trail in the immediate vicinity of the Low Transportation Corridor. This portion of the trail cannot be avoided by the Low Corridor rail line and therefore a Treatment Plan to preserve the significant historical data of the Hastings Cutoff in Skull Valley has been prepared (P-III Associates, Inc., 1999b.)

The Low Corridor rail line will add a visual element to Skull Valley. However, due to the variations in the rolling topography and the low profile of the rail line (essentially at grade level), the rail line will not be obviously visible from most locations in the valley. The Low Corridor rail line will be an apparent change in the visual landscape only in the developed areas near I-80 and from high elevations in the Cedar Mountains. Although the rail line represents a change in the landscape, it will be consistent with the visual resource management classification (VRM Class IV) established by BLM for the Low Corridor and with other developments in the area, such as I-80, the mainline railroad along I-80, and the Skull Valley Road. Because of the low level of recreational use of the area and lack of nearby residences, the Low Corridor is not expected to be a significant impact to the scenic environment.

To reduce the potential for increased range fires that may be caused by rail transport, the 40 ft wide rail line corridor will be cleared of vegetation to provide a buffer zone in preventing fires. Also the elevation of the rail line will be constructed close to grade to allow emergency fire vehicles access over the rail bed.

Section 3.3.1 describes operations involving the preferred mode of "direct rail" transport of shipping casks to the PFSF, utilizing a new 32-mile long rail-line originating at Low, Utah and terminating at the PFSF. At Low, adjacent to the mainline, multiple sidings are provided to facilitate the arrival of each single purpose train transporting SNF to the PFSF and for the cars "out-bound" from the PFSF for the start of another SNF delivery cycle. At the PFSF, rail sidings are also provided within the protected area. These sidings facilitate the receipt of single purpose SNF trains and the return of empty cask cars for the start of another spent fuel delivery cycle.

Westbound I-80 vehicular traffic, traveling at the posted speed limit of 75-mph, approaching the Low siding area, would have a limited opportunity for viewing a SNF train or empty cars that are stationary at the siding area. Since the siding area is substantially below grade (at grade to 27' deep), the stationary SNF train or parked empty cars would be hidden from view or partially visible due to the natural topography of the siding area. Eastbound I-80 traffic approaching the Low area would be visually blocked from seeing the siding area until after passing the highway overpass crossing I-80 at which point the siding area would be adjacent to or behind the viewing public. Again, the stationary SNF train or empty cars would be hidden or only partially visible due to the topography of the area and the fact that the siding area will be substantially below grade. The view of any of the rail equipment on the sidings would be limited to the upper portion of a car or locomotive.

The only other vehicular roads in the area from which members of the public could potentially see the Low rail siding area are two unimproved roads and one improved road. One of the unimproved roads is north of I-80, starting at the vehicle overpass crossing I-80 and heading north and east away from the Low siding area. The traveling public would not typically use this unimproved road and further the rail equipment on the Low siding cannot clearly be seen from the road due to natural topography, the presence of I-80, and the fact that the siding area will be substantially below grade.

A second unimproved road, a short portion of which is a remnant of the abandoned old US 40, exists south and immediately adjacent to the Low siding area. This unimproved road crosses the new rail-line near the Cedar Mountains heading east and follows the rail corridor until the road turns south along the base of the Cedar Mountains. This unimproved road provides only a partial view of the rail equipment on the Low siding, due to natural topography and the fact that the siding area will be substantially below grade. This road is not used by the traveling public but provides off road access to the Western region of Skull Valley from the north.

The only improved (paved) road in the vicinity of the Low siding area heads west and north from the vehicular overpass crossing I-80. This improved road would have a short vantage point for observation of the start of the siding area at the mainline railroad before "rounding the mountain" heading north. This view provides a minimum viewing opportunity to the traveling public due to natural topography and distance to the siding area.

In comparison, the Low siding area offers less of a viewing vista than other existing industrial areas along I-80 including the two salt plants (Morton and Cargil) and the existing rail sidings at Timpie, Utah.

Appendix 4A presents artist's concepts of the PFS rail siding area at Low as viewed from the I-80 off-ramp, and of the Low Corridor rail line as viewed from a number of vantage points accessible to the viewing public, including I-80, the I-80 off-ramp, the I-80 frontage road west of Low, the old US 40, and from the Cedar Mountains near the middle of Skull Valley.

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SWEC Drawing DY-SK-19-A

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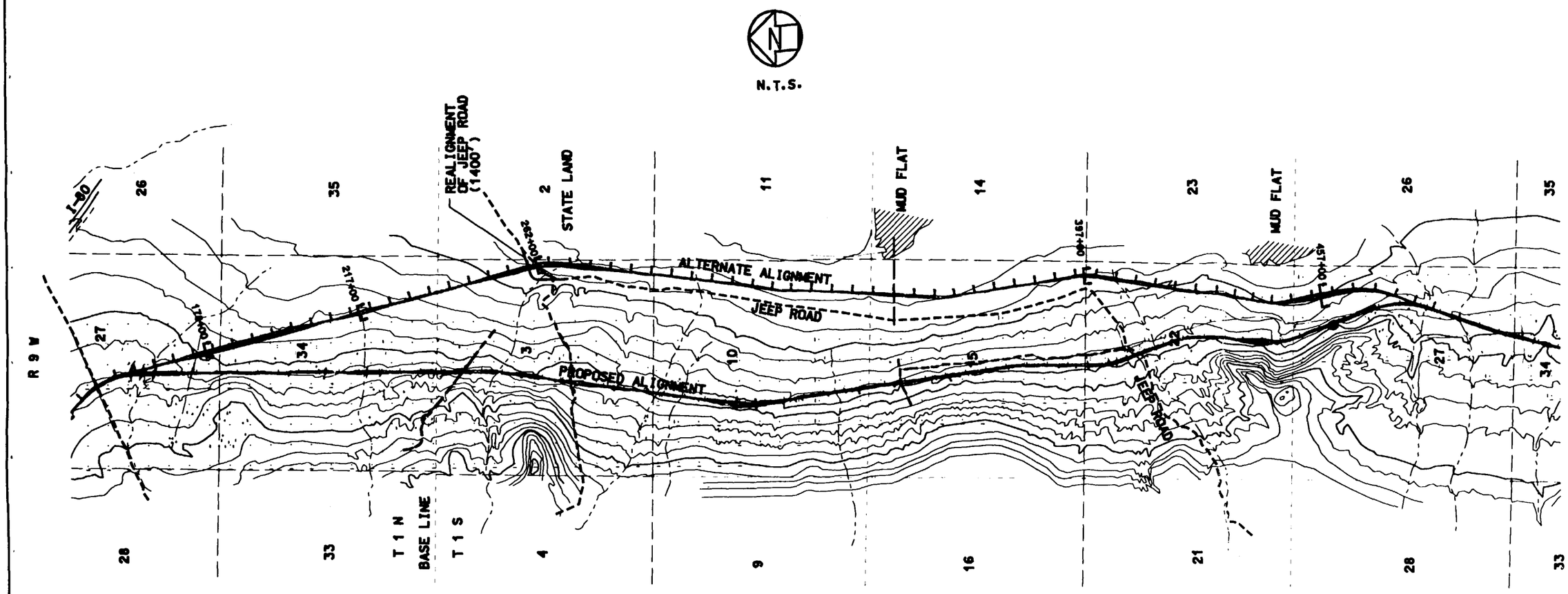

QA CATEGORY III

ALIGNMENT PLAN

PRIVATE FUEL STORAGE FACILITY
PRIVATE FUEL STORAGE, LLC
STONE & WEBSTER INC. - A SHAW GROUP COMPANY
DENVER, COLORADO

DECLARATION EXHIBIT

DRAWING NUMBER 0599602-DY-SK-19-A

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PFS Exhibit DD

SWEC Drawing DY-SK-20-A

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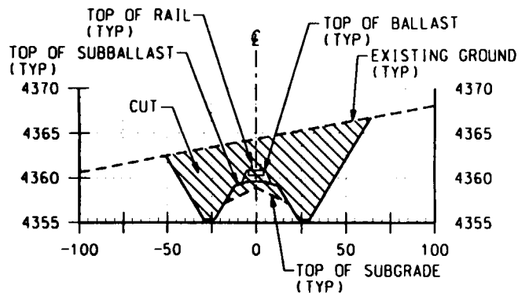

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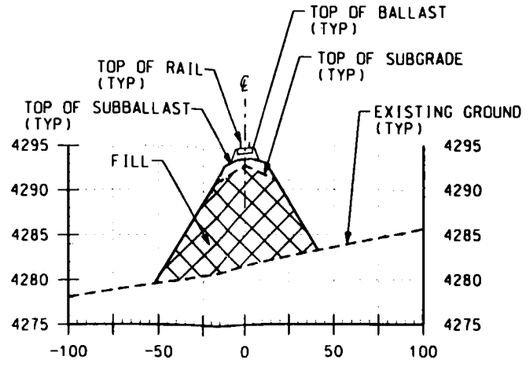

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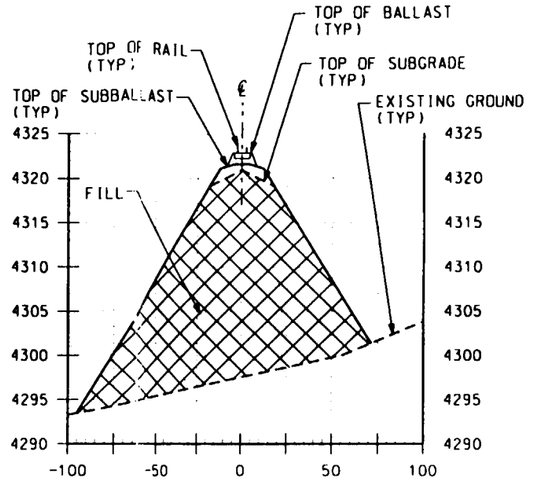

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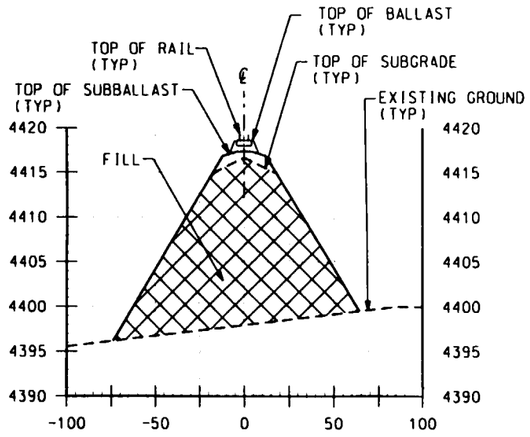

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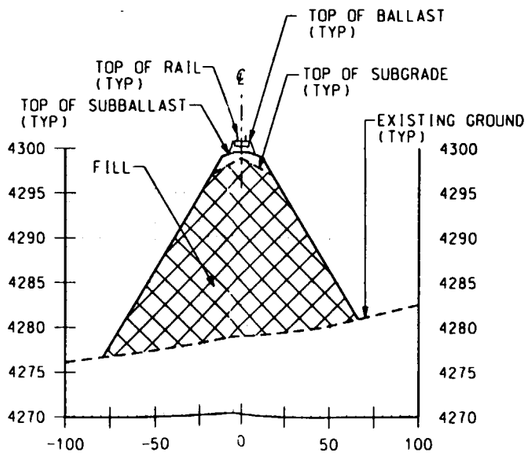

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QA CATEGORY III

ALTERNATE ALIGNMENT SECTIONS

PRIVATE FUEL STORAGE FACILITY
PRIVATE FUEL STORAGE, LLC
STONE & WEBSTER INC. - A SHAW GROUP COMPANY
DENVER, COLORADO

DECLARATION EXHIBIT

DRAWING NUMBER 0599602-DY-SK-20-A

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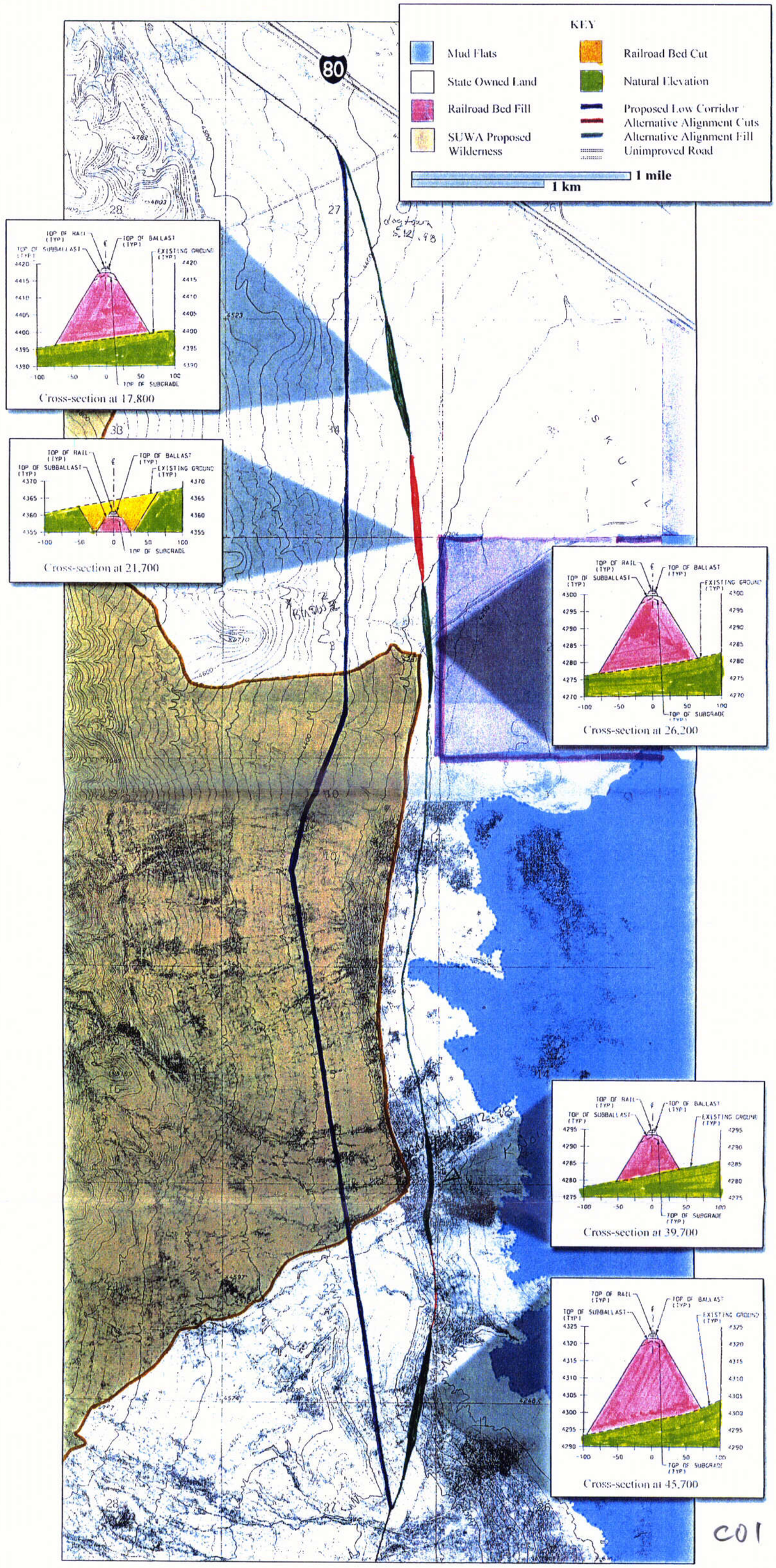
PFS Exhibit EE

Overview of Low Corridor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Mud Flats
State Owned Land
Railroad Bed Fill
SUWA Proposed Wilderness
Railroad Bed Cut
Natural Elevation
Proposed Low Corridor
Alternative Alignment Cuts
Alternative Alignment Fill
Unimproved Road
1 mile
1 km
80
Cross-section at 17,800
Cross-section at 21,700
Cross-section at 26,200
Cross-section at 39,700
Cross-section at 45,700
TOP OF RAIL (TYP)
TOP OF BALLAST (TYP)
TOP OF SUBBALLAST (TYP)
EXISTING GROUND (TYP)
TOP OF SUBGRADE
C01

PFS Exhibit FF

BLM Letter to SUWA re North Cedar Mountains (May 8, 2001)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Salt Lake Field Office
2370 South 2300 West
Salt Lake City, Utah 84119

IN REPLY REFER TO:

8510
(UT-023)

MAY 8 2001

Certified Mail Number 7000 1670 0006 2991 2615
Return Receipt Requested

Stephen Bloch, Staff Attorney
Southern Utah Wilderness Alliance
1471 South 1100 East
Salt Lake City, Utah 84105

Dear Steve:

Thank you for providing the Salt Lake Field Office, BLM with your wilderness proposal and accompanying information for the North Cedar Mountains. I have carefully reviewed the submitted documentation and have determined that the information provided does not significantly differ from the information in prior BLM inventories regarding the wilderness values of the area. Therefore, the conclusion reached for this area in previous BLM inventories remains valid and no further review is warranted at this time.

Please contact me if you have any questions or concerns at (801) 977-4300.

Sincerely,

Glenn A. Carpenter
Field Office Manager

BLM EVALUATION OF EXTERNALLY GENERATED PROPOSALS THAT SUGGEST AN AREA OF PUBLIC LAND HAS WILDERNESS CHARACTERISTICS

Proponent Name: Southern Utah Wilderness Alliance (SUWA)

Name of Area Identified By the Proponent: North Cedar Mountains

Brief Description of the Location in Relation to Existing WSAs or Areas Found to Have Wilderness Character in the Utah 1999 Wilderness Inventory: Although the proposal area is not contiguous to a WSA, SUWA claims it is contiguous to the Cedar Mountain WSA (see page 11 and 19, SUWA proposal). The proposal area is approximately one mile north of the Cedar Mountain WSA. The WSA and proposal area are separated by Hastings Pass, a road maintained by Tooele County; and BLM reinventory unit one (see attachment A and B, SUWA proposal).

BLM Field Office: Salt Lake Field Office

Date of Submission: April 11, 2001

ANALYSIS OF EXTERNALLY GENERATED PROPOSAL

1. Does the submission include the required:

   A. Map which identifies specific boundaries?

      Yes X No ____

   B. A detailed narrative that describes the suggested wilderness characteristics of the area?

      Yes X No ____

   C. Photographic documentation?

      Yes X No ____

2. Does the proponent's submission describe how its information significantly differs from the information in prior inventories conducted by BLM regarding the wilderness values of the area?

   Yes ____ No X

Explanation: The proponent's submission primarily disagrees with a prior BLM wilderness inventory. The proponent repeatedly suggests that BLM's 1980 intensive inventory was flawed. Rationale given by proponent include: adjectives used in 1980 intensive inventory report (sublime), application of naturalness evaluation, outside sights and sounds evaluation, boundary selection, solitude test, assessment of outstanding opportunities for solitude and/or primitive and unconfined recreation, solitude determination, wording of intensive inventory summary, assessment methodology for outstanding opportunities for solitude, conclusions of outstanding opportunities, recreational qualities comparison, cultural resources discussion, or, virtually every aspect of the 1980 intensive inventory. Primarily, the proponent reinterprets the 1980 intensive inventory results by assuming the inventory should have been conducted according to the 2001 Wilderness Manual, a manual which was developed 21 years after the public comment period closed on the intensive inventory.

The proponent claims four items as new information. These are itemized in the following list, followed by BLM's response.

1.) Change of southern boundary from Hastings Pass to Lees Canyon. This is not new information. The BLM inventoried both canyons as part of the intensive inventory and found intrusions along both routes. In fact, the majority of intrusions lie north of Lees Canyon and include quarries, livestock trails, motorcycle paths, heavy sheep grazing, and other minor extensions of "ways" used primarily by 4X4 wheeled vehicles.

2.) Supplemental values, wild horses inhabiting the proposal area. This is not new information. In 1971, data was generated describing the distribution of wild horses within the SLFO. The Bureau recognized at that time that wild horses inhabited the North Cedar Mountains. Existence of wild horses within the area was also cited within the North Cedar Mountain intensive inventory file through reference to the Skull Valley-Lakeside Management Framework Plan Summary and Highlights (1976). The Skull Valley-Lakeside Management Framework Plan Summary and Highlights discusses the presence of wild horses on the Cedar Mountains within both the recreation and wild horse sections.

3.) Supplemental values, cultural resources within the area. Cultural resource inventories have been conducted after the time of the intensive inventory and sites have been found. The number of archaeological sites found in the area represent a ratio of approximately one site per hundred acres, which is not a high site density for the West Desert as a whole. This is new information, but is not significant.

4.) SUWA presents as new information the following paragraph (see page 16): "...because of its proximity to the Wasatch Front and Tooele Valley, the North Cedar Mountains have a particularly high value as an urban-interface non-motorized recreation area. The Wasatch Front and Tooele Valley have witnessed a remarkable explosion in urban population, a level that was not anticipated when the BLM's intensive inventory was completed." Anticipated and/or existing population numbers and proximity to urban centers were not factors used in the analysis of an areas wilderness characteristics. This is not applicable new information. The paragraph continues on to state "The BLM's Salt Lake Field Office has undertaken a role, as apart of its

multiple-use mission, of providing quality non-motorized recreation and wilderness experiences to the Wasatch Front; the reinventory and ultimate decision to designate this unit for wilderness study, would provide an excellent opportunity for BLM to continue this practice." While the SLFO appreciates SUWA's recognition of the Bureau's multiple-use mandate which includes opportunities for non-motorized, motorized and other forms of recreation use, the SLFO has not actively chosen one use which it has been tasked to manage, over another. Further, the SLFO does not cater to one population center, but rather treats all public land users as equals.

The following activities have occurred in the North Cedar Mountains subsequent to the 1980 intensive inventory:

1.) T.1S, R.9W. sec. 3 and 4 have been drill seeded as part of an emergency fire rehabilitation project for both the Redlam and Tooele fires (1983, 1984);

2.) T.1N., R.9W. sec. 33 was drill seeded as part of an emergency fire rehabilitation project for a wildland fire which occurred in 1983;

3.) T.1S, R.10W. sec. 13. Non-native vegetation occurring due to emergency fire rehabilitation project;

4.) T.1S., R.9W. sec. 29. Wildlife guzzler and maintenance route; and

5.) Several existing mining claims exist within the North Cedar Mountains.

In summary, the proponent has not provided significant new information that would change the 1980 intensive inventory determination. The proponent has not provided information to support a re-evaluation of the area. Aside from the lack of significant new information provided by the proponent, the SLFO has documentation on intrusions and developments within the unit which further supports the intensive inventory's determination.

3. Please describe all of the information, documentation, and evidence on which you relied to determine that the submission does or does not provide significantly different information, including but not limited to, the original inventory from 1979-1980 conducted pursuant to § 603 of the Federal Land Policy and Management Act (FLMPA), the 1996-1999 BLM reinventory, maps generated through planning or GIS data, any field observations, any applicable NEPA documentation, and any other relevant information.

North Cedar Mountain Intensive Inventory Unit, UT-020-087 file (1980);
1996-1999 BLM re-inventory map of Cedar Mountains;
Range Improvement Projects database (form 4120-8);
Skull Valley-Lakeside Management Framework Plan Summary and Highlights (1976);
Wilderness Inventory and Study Handbook, H-6310-1;
GIS coverage (map) of 1971 Wild Horse Distribution within the Salt Lake Field Office;

Conversation with Peter Ainsworth, SLFO Archaeologist (05-04-01);
Conversation with Kyle Hansen, SLFO Wild Horse and Burro Specialist (05-04-01);
Conversation with Michael G. Nelson, SLFO Acting Assistant Field Manager for Non-renewable Resources (05-03-01);
Conversation with Dan Washington, SLFO Natural Resources Specialist (05-03-01); and
Conversation with Kevin Edinger, SLFO Rangeland Management Specialist (05-03-01).

DETERMINATION

The material provided ____ does, X does not, constitute significantly different information to warrant further review at this time.

Glenn A Carpenter
Field Office Manager

5/7/00
Date

The determination on this form is part of an interim step in the BLM's internal decision making process and does not constitute an appealable decision.

PFS Exhibit GG

Photographs of Low Corridor Area

PFS Exhibit GG—Photographs of Low Corridor Area

File names (DSCN___) indicate individual photographs. "Map location" gives the point at which the photograph was taken and the direction the photographer was looking, as shown on the attached map (each number indicates an arrow on the map).

DSCN1361 (map location 2): Taken from the proposed Low Corridor route, in front of a jeep trail at the point where the proposed route just crosses the northern edge of the North Cedar Mountains area, looking south-southeast. The view looks down into Skull Valley, with the Stansbury Mountains in the background. The West Skull Valley alternative route would be seen in this picture, roughly half a mile from the proposed route.

DSCN1363 (map location 4): Taken from the same point on the proposed route as DSCN1361, looking southwest, toward the Cedar Mountains. Cattle are shown in the background. The dirt road that forms the northern boundary of the North Cedar Mountains is in the foreground.

DSCN1366 (map location 7): Taken from the proposed Low Corridor route, approximately 0.3 miles south of the point where the route crosses the northern edge of the North Cedar Mountains area, looking east-southeast. The West Skull Valley alternative route and the Skull Valley mudflats are shown roughly half a mile from where the photo was taken. The Stansbury Mountains are in the background.

DSCN1367 (map location 8): Taken from the same point as DSCN1366 above, looking southwest. Cattle and the distance from the North Cedar Mountains are shown.

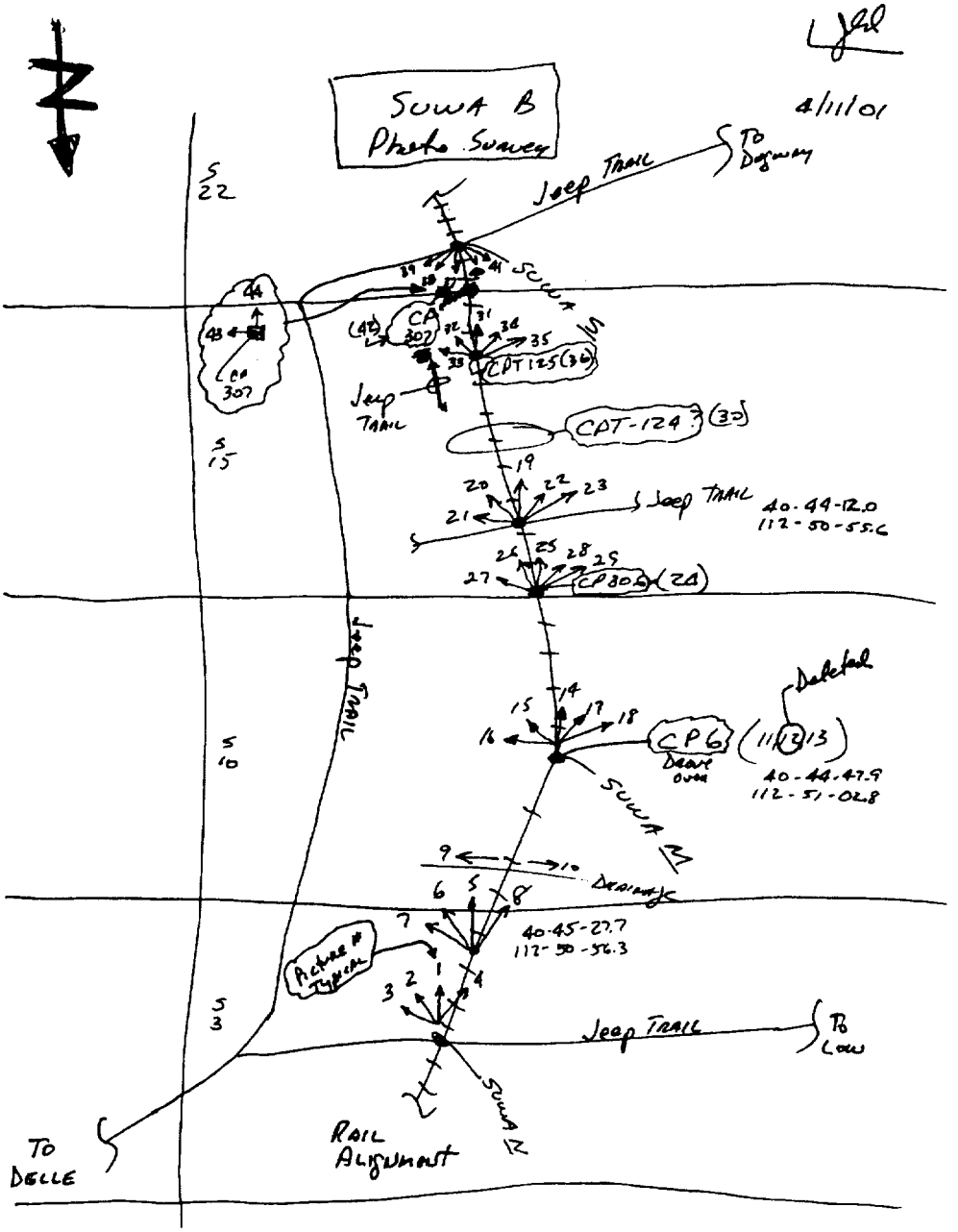
DSCN1375 (map location 16): Taken from the proposed Low Corridor route, approximately one mile south of the point where the route crosses the northern edge of the North Cedar Mountains area, looking east. The photo shows the West Skull Valley alternative route and the Skull Valley mudflats, roughly half a mile from the point where the photo was taken. It shows Skull Valley and the Stansbury Mountains in the distance.

DSCN1380 (map location 21): Taken from the proposed Low Corridor route, approximately 1.8 miles south of the point where the route crosses the northern edge of the North Cedar Mountains area, looking east-southeast. The photo shows the Skull Valley mudflats, the Stansbury Mountains in the distance, and a jeep trail that cuts across the North Cedar Mountains in the foreground. This photo also shows the West Skull Valley alternative route, which would be located roughly half a mile from the point where the photo was taken.

DSCN1382 (map location 23): Taken from the same point as DSCN1380 above, looking west-southwest into the Cedar Mountains. It shows the North Cedar Mountains in the distance and the jeep trails that cross the North Cedar Mountains area as they go up into the mountains.

DSCN1396 (map location 37): Taken at the point where the proposed Low Corridor route exits the North Cedar Mountains area at its southern edge, looking north back along the proposed route. The photo shows a jeep trail, with Skull Valley and the Stansbury Mountains to the right.

DSCN1397 (map location 38): Taken at the same point as DSCN1396 above, looking northeast, showing the dirt road that forms the southern boundary of the North Cedar Mountains area and the West Skull Valley alternative route as well, roughly one-third of a mile from where the photo was taken. Skull Valley and the Stansbury Mountains are in the background.


SUWA B
Photo Survey
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Jeep TRAIL
To Dogway
SUWA
CA 307
CPT 125 (36)
CPT-124 (30)
CP 307
CP 306 (24)
Jeep TRAIL
40-44-12.0
112-50-55.6
Deleted
CP6
Deleted
40-44-47.9
112-51-02.8
SUWA
Deleted
40-45-27.7
112-50-56.3
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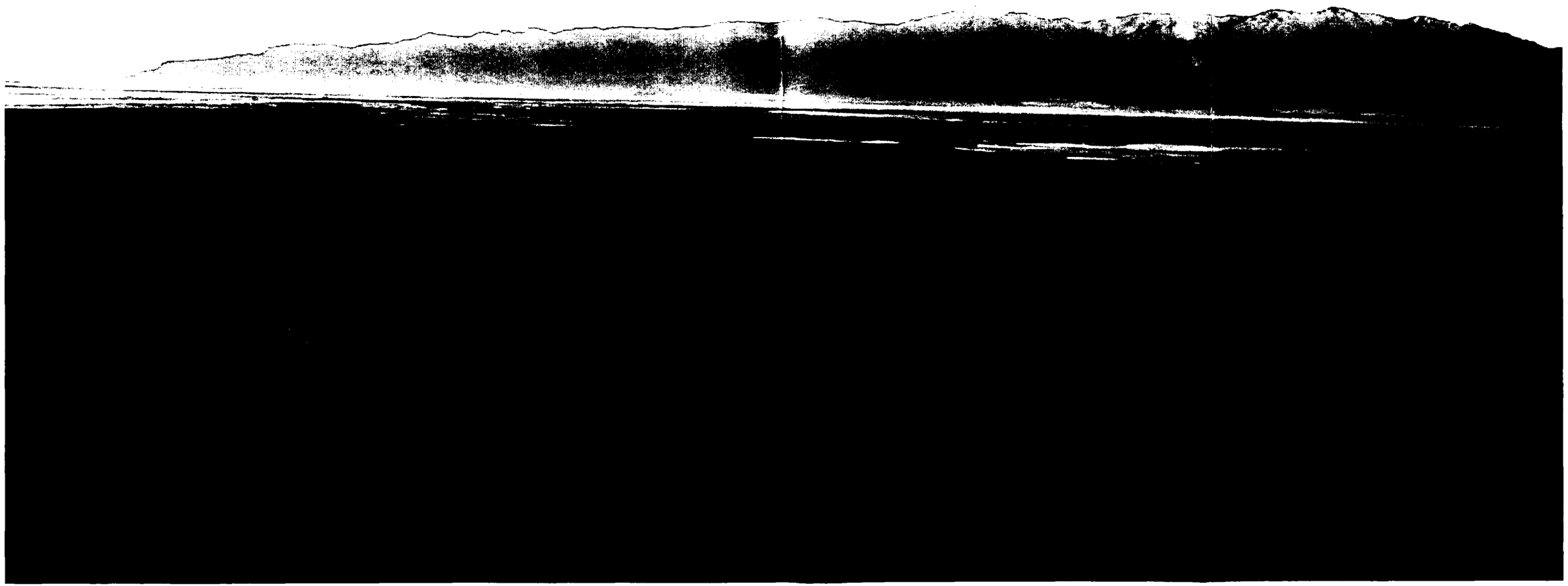
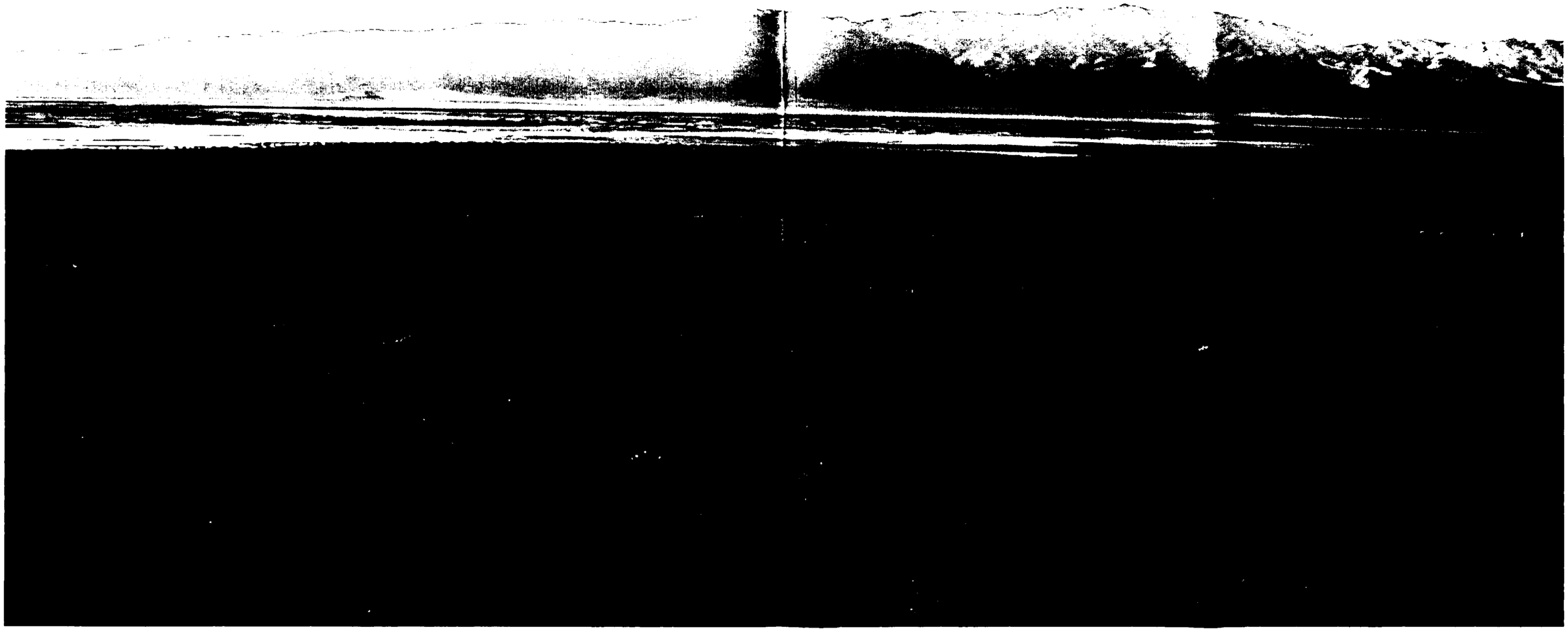




3/18/2002

PFS Exhibit HH

PFSF Transportation Study (SWEC 1998) § 3.3

SWEC Project No. 05996.02

REPORT NO. 05996.02-Y(D)-2 REV. 0

PRIVATE FUEL STORAGE FACILITY

TRANSPORTATION STUDY

Prepared for:
Private Fuel Storage L.L.C.
Private Fuel Storage Facility

February 13, 1998

3.3 DIRECT RAIL TRANSPORT OPTIONS

Direct rail transportation will utilize standard size equipment (engines and cars) for hauling the spent fuel shipping casks. A typical rail car used to haul the shipping casks (145 ton flat bed rail car) is shown on Figure 6-7.

Direct rail transport of shipping casks between the mainline railroad and the PFSF will require construction of a new railroad turnout and parking siding at the mainline and a new railroad spur approximately 24 miles in length (except option DR-5). A route for the new railroad spur must also be selected. Each of these items are described as follows:

Mainline Turnout and Rail Spur: A new turnout will be required at the mainline railroad to tie the railroad parking siding and spur into the main track. The turnout will require a switch and associated controls. The rail parking siding and spur will be of standard railroad construction.

The use of used (relay) rail is a consideration when attempting to lower construction costs. The decision to use new or used rail depends on the following:

- availability and location of relay rail that meets or exceeds the design capacity needed. Used bolted rail is more readily available as there is more of it and railroads are more willing to sell it.

- scheduled availability of the special rail transport trains that are set up to handle long strings of continuously welded relay rail.

- quality assurance measures that must be taken to assure that the relay rail meets the specified criteria. These include the use of a Sperry car to initially x-ray the rail in place to form a baseline condition. Imperfections in the rail will require repair.

- If the available relay rail comes in short lengths to be welded into continuous welded rail (CWR), there will be more repair and welding work.

While the initial cost of relay rail is less (approximately 40% less than new), additional costs and schedule impacts may be a factor in selecting this source over new rail.

The use of bolted vs. CWR rail depends on a number of factors. CWR has the advantage of being quieter with a better ride quality due to elimination of joints. It also requires less maintenance, since the welded joints will not loosen and require realignment. Also, the spikes require less maintenance since they are not vibrated loose from the joint impact experienced in bolted rail. Inspection of CWR is quicker and easier as well.

A comparison of costs for bolted vs. CWR rail must consider total costs, including initial installation and long-term maintenance. CWR typically has a higher initial cost, but a lower overall cost due to reduced lifetime maintenance. However, the PFSF project requires a choice with the lowest initial cost and as such, bolted rail is recommended.

Also, the PFSF rail spur favors the use of bolted rail, since it will carry infrequent traffic at relatively low speeds, which will reduce lifetime maintenance.

Concrete ties cost more initially but last longer than wood ties. Concrete ties are louder, provide more wear on rolling stock due to their more rigid support of the rails, and are more difficult to handle due to their weight of 900 lb. per tie. The life cycle cost of concrete ties vs. wood ties depends on the environmental and service conditions. In Utah, there is little wet/dry cycling of the ties which is detrimental to the wood. There were no concrete ties witnessed in service in the Salt Lake City area indicating that for the main lines carrying more rail traffic, Union Pacific does not feel that concrete ties are warranted. For the spur to the site, there are no overwhelming reasons to use anything but wood ties.

Direct Rail Route: Options DR-1 through DR-4 would utilize the Skull Valley road corridor for most of the route. Option DR-5 would be located on a new (proposed) corridor on the west side of Skull Valley.

For all of the options, the new rail spur will require obtaining a right of way for its entire length. For options DR-1 through DR-4, it is assumed the new rail spur could be constructed adjacent to the Skull Valley Road (preferably on the east side) and within the existing road right of way. Nevertheless, it would require obtaining a new and separate railroad right of way, because the existing right of way is granted exclusively for highway use. For option DR-5, a new right of way or easement granted by the BLM would be required for its entire length.

The remainder of Section 3.3 will describe the Skull Valley Road corridor, as it applies to Options DR-1 through DR-4, and each of the five direct rail options in detail.

Skull Valley Road Corridor (Applies to Options DR-1 Through DR-4)

Description: Options DR-1 through DR-4 would utilize the Skull Valley Road corridor for all or most of the route to the PFSF. The new railroad spur would be located parallel to the Skull Valley Road (on the east side) and within the road right of way. The railroad track would cross a number of private driveways and dirt roads along the route and would eventually cross the Skull Valley Road as it turns west on the reservation toward the PFSF. The spur would continue approximately 2-miles west to the PFSF.

The direct rail route for options DR-1 and DR-2 would require the new railroad spur to go beneath the existing Interstate 80 bridges, alongside the Skull Valley Road, since the mainline railroad is on the north side of the interstate. A significant consideration for these two options are the clearances currently available beneath the Interstate 80 bridges. Both bridges (eastbound and westbound) are posted with a 15'-8" vertical clearance above the Skull Valley Road. A PFSF rail car, loaded with a shipping cask in the horizontal position and with impact limters attached, is estimated to have a maximum height of 15'-1" (refer to Assumptions, page 4). As such, minimal clearance is available for the rail car to pass beneath the bridges. The Union Pacific and UDOT require a minimum of 23'-0" of vertical clearance when railroad tracks are located beneath bridges. A lesser vertical clearance can be authorized from Union Pacific through an impaired clearance waiver and from the State through an oversized/overweight permit. The horizontal clearances beneath the bridges are also an issue. Since the required radius of turn for railroad track is large (approximately 450-ft), there is limited space between the mainline railroad and the bridges to accommodate the turn.

Direct rail option DR-3 would require a new bridge over Interstate 80 just east of Timpie. The south bridge termination would be on the west edge of the Stansbury Mountains, where it would run along the side of the mountains for a short distance (avoiding wetlands) and turn west to connect with the Skull Valley Road. Direct rail option DR-4 would also come from east of Timpie, but on the south side of Interstate 80, from Dolomite. The new rail spur would go around the north end of the Stansbury Mountains and run along the side of the mountains for a short distance (avoiding wetlands) and turn west to connect with the Skull Valley Road.

Improvements: The new railroad spur would require a minimum of 22 feet between the outside edges of the subballast. Along the Skull Valley Road, a guardrail would be placed at appropriate locations at the edge of the rail bed for safety purposes.

A description of the required earthwork is as follows:

- The track area would be graded to the specified elevations keeping the alignment at a maximum 1% slope.
- Drainage structures (existing culverts) would be extended from the higher elevations on the east side of the track to lower elevations on the west side of the road.
- Granular fill (well draining) would be installed beneath the subballast.

- subballast (minimum 8" layer) consisting of crushed limestone (or equal) would be installed.

A description of the required trackwork is as follows:

- Placing 8" of ballast
- Wood ties
- Relay or new rail with the associated hardware (plates, spikes, anchors, etc.)
- Road crossings
- Signals, where required
- Signage

Environmental Setting: By using the existing Skull Valley Road corridor, there will be relatively low vegetation and habitat disturbance associated with the new rail spur. A significant environmental area located near the Skull Valley Road is the Horseshoe Springs Wildlife Management Area controlled by the BLM. Horseshoe Springs is located approximately 14 miles south of Timpie on the west side of Skull Valley Road. The Horseshoe Springs Recreational Knoll is located across the road from Horseshoe Springs and provides an area for overnight camping behind this knoll. To the east side of the road at Horseshoe Springs there is a knoll that extends down to the road. BLM restricts disturbing activities within 1200 feet of all riparian/aquatic habitats. The route is to the east of the 1200 foot buffer zone, however in order to put the railroad on the east side of the road, a rock cut through a portion of the knoll would be required.

Additional work is required to more fully characterize the environmental setting of the entire Skull Valley Road corridor. Raptor nest surveys will need to be conducted along the Skull Valley Road corridor. There is one known raptor nest located at one of the ranches to the west of Skull Valley Road. This nest and any other active nests (to be determined during the surveys) are protected by BLM and the State of Utah. Disturbing activities (construction) should not occur within 0.5 miles of any active raptor nest during the nesting season. BLM places this restriction from March 1 to July 15.

Cultural Resources: The old Mormon settlement community of Iosepa (1889-1917) was located near the Skull Valley Road approximately 15 miles south of Timpie. A cemetery, approximately 1 mile east of the Skull Valley Road, is all that remains of the settlement. The cemetery is a State of Utah historic site and is listed on the National Register of Historic Places.

Existing Land Ownership and Right of Way: The Skull Valley Road is located on land owned by the BLM and private ranchers. The right of way along the Skull Valley Road varies between 100-ft (50-ft each side of road centerline) and 200-ft (100-ft each side of road centerline) for most of its length with smaller right of ways (70-ft total) located at 2 ranches with buildings close to the road.

Skull Valley Road Corridor Summary (Applies to Options DR-1 Through DR-4)

The option is viable, provided the following issues are resolved:

- BLM approval of the plan and activities near the Horseshoe Springs Wildlife Management Area and the Horseshoe Springs Recreational Knoll.
- Rail spur near the Horseshoe Springs Recreational Knoll requires partial rock cut of the knoll and temporary disturbance to recreation area.
- Obtain impaired clearance waiver(s) from Union Pacific to pass under the Interstate 80 bridges (options DR-1 and DR-2).
- State approval (waiver) for oversize load to pass under the Interstate 80 bridges (options DR-1 and DR-2).

Advantages of Skull Valley Road Corridor for Direct Rail:

- Would minimize environmental disturbance to the Skull Valley by staying close to the existing Skull Valley Road.

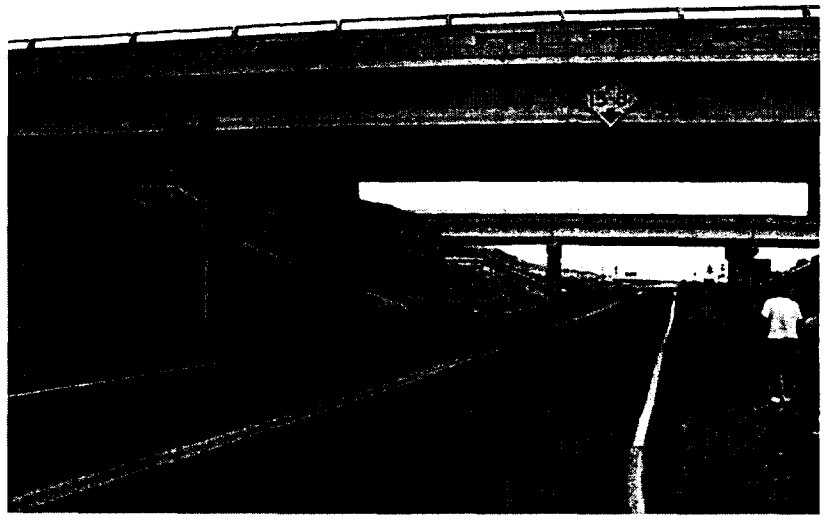
Disadvantages of Skull Valley Road Corridor for Direct Rail:

- Potential disturbance to ranches alongside the road during railroad construction and operation.
- Railroad would be close to existing ranch buildings on the east side of the Skull Valley Road and the railroad would require crossings at ranch driveways and dirt roads.
- Railroad would require crossing the Skull Valley Road near the PFSF.

Direct Rail Option DR-1
Rail Spur from Timpie Junction

Description: At Timpie, the Union Pacific east-west main line has a 2 track siding on the south side adjacent to Interstate 80. The turnout would come off of the southernmost siding from the east into a curve and proceed south beneath both bridges which carry Interstate 80 east and west. The track would run parallel to Skull Valley Road for a distance of approximately 24 miles to the PFSF access road. The track would then cross Skull Valley Road and proceed westerly approximately 2 miles to the storage site.

Photograph 10- Siding at Timpie looking west.



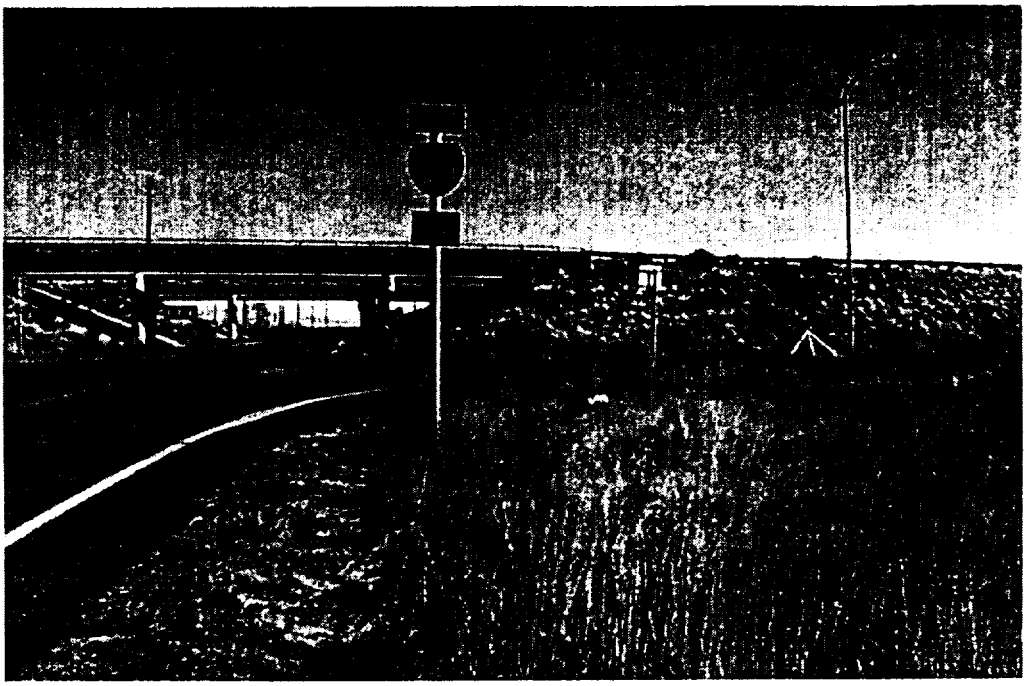
Photograph 11 - Interstate 80 bridges at Timpie looking south.

At the Timpie siding, there are 2 existing siding tracks south of the main track. The southernmost siding track would be modified to include a No. 8 turnout. The track would then curve to the south from the east and go between the eastern bridge abutment and the eastern pier columns. The track would then parallel Skull Valley Road on the east side. Along the road corridor, the drainage ditch would be moved to the east side of the track and culverts would be lengthened or added where required. Driveways and roads that are intersected would be crossed at grade. Fill and sub-ballast would be added and graded to bring the railbed elevation up to approximately equal to the roadway. Signals and crossbucks would be required at the Interstate 80 ramps and where the track crosses the Skull Valley Road.

The distance from the siding's south track to the Interstate 80 bridge is approximately 328 feet and the bridge is 44 feet wide. Therefore, the curve would extend beneath the northernmost bridge. The concrete slope protection would be removed and a vertical retaining wall would be constructed to retain the earth around the abutment pile caps. The track would go between the abutment and the columns on the east end of the bridges.

Horizontal clearance requirements are 8'-2" on both sides of the track centerline. The distance from the abutment to the pier column is approximately 28 feet which would leave approximately 6 feet on both sides of the clearance envelope to adjust the horizontal alignment to fit the curve in the opening.

As can be seen in Photograph 11, the vertical clearance is 15'-8" above the Skull Valley Road centerline. The minimum required vertical clearance is 23'-0" per Union Pacific and the UDOT, which is non-negotiable. Union Pacific can issue an "impaired clearance" to a private railroad in which case all of the liability, no matter who travels on the track, falls to the private railroad. Lowering the track beneath the bridges will not work for the present configuration of the intersection, because the track would still have to meet the ramp grades at both sides of the interstate. In addition, the elevation of the tracks beneath the bridges is governed by the elevation of the mainline track and limiting the spur track slope to about 1%.



Photograph 12 - Timpie interchange looking north.

The use of the presently configured Timpie interchange as the Interstate 80 crossing point requires at-grade crossings at the bottom of the eastbound entrance ramp and the westbound exit ramp. Crossbucks and signals would be required at both of these locations. It is Union Pacific's opinion that the UDOT will not approve of these crossings at the bottom of their interstate ramps due to safety issues. Therefore, the eastbound entrance ramp and the westbound exit ramp would be relocated to the west side of the interchange. The westbound exit ramp would be relocated to the west approximately 1000 feet west of the entrance ramp which would allow for weaving distance between the two access points. The relocated exit would terminate on the surface road. The eastbound entrance ramp would be moved to the southwest quadrant of the interchange and would be a quarter cloverleaf with the eastbound exit ramp. This would eliminate the two at-grade crossings at the railroad and the associated crossbuck/signal requirements. Also, the eastbound exit ramp would be relocated to avoid the new eastbound entrance cloverleaf ramp. This type of interchange is called a partial cloverleaf.

Environmental Setting: The siding is adjacent to Timpie Springs Waterfowl Management Area. Wetland areas occur along both the north and south side of the existing rail lines in the far eastern end of the intermodal site. Formal wetland delineations need to be done to ensure that the third siding can be installed without wetland impacts. If it is impossible to avoid wetland impacts, a Section 404 dredge and fill permit would have to be obtained from the Army Corps of Engineers. The Corps will require an alternatives analysis as part of this permit. The basis for their alternative analysis is first avoidance, then minimization, and finally mitigation for wetlands. Wetland impacts associated with this option would likely be a relatively small acreage of

fill along the existing railroad berm. Although mitigation would be required in the form of wetland replication, the ACOE could view this option favorably because of the smaller impact area.

Existing Land Ownership and Right of Way: The land in the proposed siting area is owned by the State (east side) and Cargill (west side), with right of ways granted for the railroad, interstate, and frontage road. A portion of the site area is within the boundary of the State-owned Timpie Springs Waterfowl Management Area. The new rail spur would be located on the Union Pacific right of way (200-ft ROW). It is assumed the frontage road ROW can be used for access to the Union Pacific ROW, but accessing the mainline will most likely require traversing a small isolated portion of Cargill's property.

Estimated Cost of Option DR-1: The estimated total life-cycle cost of Option DR-1 is $85,317,000 in 1998 dollars. The total cost includes both capital construction costs ($29,395,000) and life-cycle operating and maintenance costs ($55,922,000) and is based on a 40,000 MTU facility with a 40-year life.

Summary of Direct Rail Option DR-1
Rail Spur from Timpie Junction

The option is viable, provided the following issues are resolved:

- Reconfiguration of the Interstate 80 interchange. Relocate the eastbound entrance ramp and the westbound exit ramp. This could be done on the north side of the interstate by moving the westbound exit ramp to the west and terminating it on the surface road. Vehicles could then follow the surface road to the underpass in order to go south on Skull Valley Road. This would eliminate the at-grade crossing at the bottom of the westbound exit ramp. The eastbound entrance ramp could be moved to the southwest quadrant of the interchange and constructed with a new eastbound exit ramp on privately owned land presently occupied by an abandoned truck stop.

- An impaired clearance waiver is required from Union Pacific.

- Easement, lease, or purchase of an isolated small piece (6,000 SF) of Cargill property.

- Ownership of the southwest quadrant of the interchange.

- State concurrence (if required) for construction and operation of the rail siding and rail spur in close proximity to the Timpie Springs Waterfowl Management Area. It is likely the State will impose construction timing restrictions based on waterfowl and endangered species (peregrine falcon) nesting seasons.

- Army Corps of Engineers Section 404 permit obtained if there are any wetland impacts.

Advantages of Option DR-1:

- The Union Pacific rail would be accessed at the closest point to the north-south Skull Valley Road corridor thereby minimizing the amount of required track.

- The effect on Interstate 80 through traffic could be minimized. The existing westbound and eastbound ramps could remain in service while the new ramps are being constructed. The traffic is such that the eastbound bridge and approaches could be reconstructed while both directions use the westbound bridge and vice versa.

- There would be no handling of the casks at Timpie as the cask stays on the rail car.

- Possibility of avoiding wetland impacts.

Disadvantages of Option DR-1:

- Requires resolution of the issues described above in a reasonable amount of time and at cost acceptable to the PFSLLC.

Direct Rail Option DR-2
Rail Spur from West of Timpie Junction

Description: Rather than approach the Timpie interchange from the east, the rail spur could be configured such that the trains approach Timpie on a siding from the west approximately 0.9 miles from Timpie and turn south beneath the bridges at Timpie. Similar issues as in option DR-1 exist, such as:

- the interchange ramps on the east side of the Skull Valley Road would have to be moved as there cannot be at-grade crossings at the bottom of highway ramps.
- the available clearance would be at the same 15'-8" height with the track passing between the east abutment and the east bridge piers.
- the curve would be approximately a 450' radius (12.73 degrees) curve.

Photograph 13 - Looking west from the Cargill Salt access road.

Since the curve is coming from the west, the existing frontage road would have to be realigned to match the curve of the track. Also, the westbound entrance ramp would have to be realigned at the bottom along with frontage road in order to make a better entrance to the ramp once the road is realigned

Photograph 14- looking northwest at the north side of the Timpie interchange.

The only difference between DR-1 and DR-2 is the additional realignment work on frontage road and the westbound entrance ramp to Interstate 80.

Environmental Setting: The site for the rail siding occurs on a high point on the railroad right of way between the main Union Pacific rail line and the frontage road. The rail spur would then be routed along the existing railroad right of way, crossing through one low, mudflat area.

Formal wetland delineations would be required. If it is impossible to avoid wetland impacts, a Section 404 dredge and fill permit would have to be obtained from the Army Corps of Engineers. The Corps will require an alternatives analysis as part of this permit. The basis for their alternative analysis is first avoidance, then minimization, and finally mitigation for wetlands. Mitigation would be required for the wetland impacts by wetland replication.

Threatened and endangered species consultation is required with the State, BLM, and USFWS.

Existing Land Ownership and Right of Way: The rail spur would be located within the railroad right of way to Timpie, where it would turn south, pass under the Interstate 80 bridges, and follow the Skull Valley Road corridor to the PFSF.

Estimated Cost of Option DR-2: The estimated total life-cycle cost of Option DR-2 is $85,968,000 in 1998 dollars. The total cost includes both capital construction costs

($29,980,000) and life-cycle operating and maintenance costs ($55,988,000) and is based on a 40,000 MTU facility with a 40-year life.

Summary of Direct Rail Option DR-2
Rail Spur from West of Timpie Junction

The option is viable, provided the following issues are resolved:

- Reconfiguration of the Interstate 80 interchange. Relocate the eastbound entrance ramp and the westbound exit ramp. This could be done on the north side of the interstate by moving the westbound exit ramp to the west and terminating it on the surface road. Vehicles could then follow the surface road to the underpass in order to go south on Skull Valley Road. This would eliminate the at-grade crossing at the bottom of the westbound exit ramp. The eastbound entrance ramp could be moved to the southwest quadrant of the interchange and constructed with a new eastbound exit ramp on privately owned land presently occupied by an abandoned truck stop.

- An impaired clearance waiver is required from Union Pacific.

- Ownership of the southwest quadrant of the interchange.

- Army Corps of Engineers Section 404 permit obtained if there are any wetland impacts.

Advantages of Option DR-2:

- The Union Pacific rail would be accessed at the closest point to the north-south Skull Valley Road corridor thereby minimizing the amount of required track.

- The effect on Interstate 80 through traffic could be minimized. The existing westbound and eastbound ramps could remain in service while the new ramps are being constructed. The traffic is such that the eastbound bridge and approaches could be reconstructed while both directions use the westbound bridge and vice versa.

- There would be no handling of the casks at Timpie as the cask stays on the rail car.

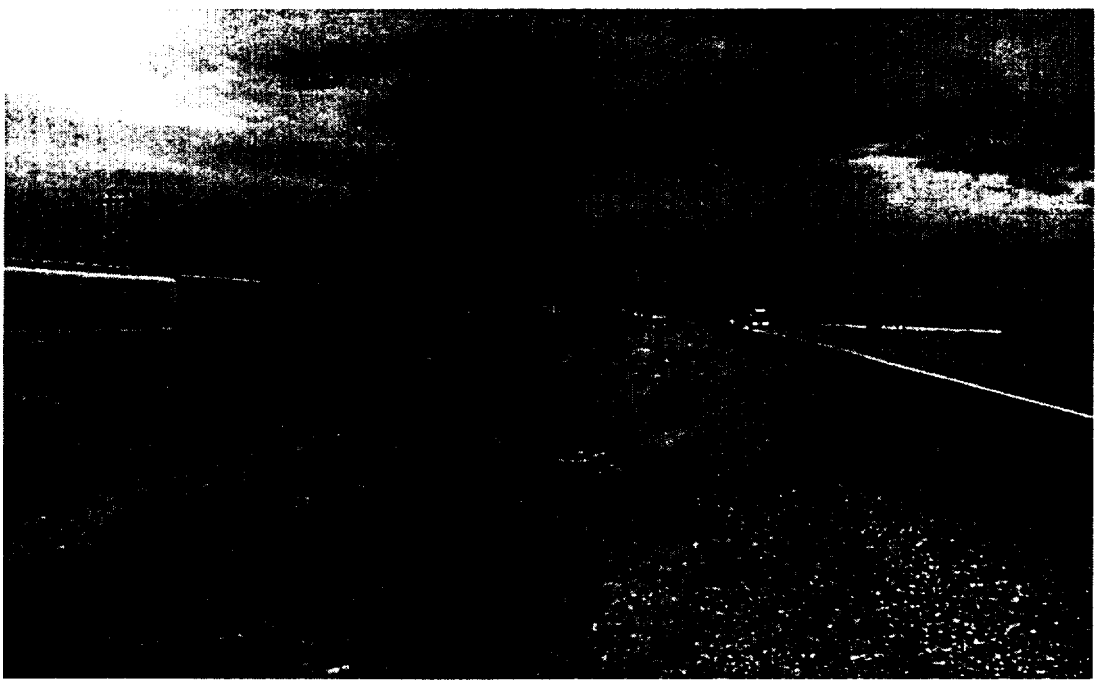
- Avoids Timpie Springs Waterfowl Management Area.

Disadvantages of Option DR-2:

- Requires resolution of the issues described above in a reasonable amount of time and at cost acceptable to the PFSLLC.

Direct Rail Option DR-3
Rail Spur and Flyover Bridge East of Timpie Junction

Description: As an alternative to using the existing highway bridges for the trains to pass beneath Interstate 80, this option features the construction of a railroad bridge to cross over Interstate 80 between the Stansbury Mountains and Timpie. A siding would be constructed east of Timpie on the south side of the Union Pacific east-west track. Heading west, the track would go up a slope turning onto the bridge over Interstate 80 and proceed south along the west side of the Stansbury Mountains for a short distance in order to avoid wetlands adjacent to Interstate 80.



Photograph 15 - Looking east with Union Pacific on the left and the Stansbury Mountains on the right.

The track would then turn west to join the Skull Valley Road corridor heading south parallel to the road (on the east side) and crossing the road on the Reservation to continue west to the PFSF site.

Photograph 16 - Looking west from siding (bridge would cross Interstate 80 where the rock is notched and travel on the west side of the Stansbury Mtns before heading west to Skull Valley Road.

Photograph 17 - looking northeast along Stansbury Mountains toward I-80. The bridge would travel close to the rock outcrop on the right and descend to the left to Skull Valley Road.

The railroad right of way on the south side of the Union Pacific line is level for a distance sufficient to provide for placement of the new rail spur. The existing rail is approximately 2 feet below the level of Interstate 80 and the clearance needed over Interstate 80 would be approximately 16 feet. For the spans needed to cross I-80 at the desired skew angle, the depth of the bridge members would be approximately 10 feet. By using a through girder bridge, the bottom of bridge to top of rail dimension is approximately 6 feet instead of the 10 feet. This is accomplished by framing the railbed support steel into the webs of the main bridge girders, thereby having the track run through the bridge and not on top of the bridge. Therefore, the track would be elevated a total of 24 feet above the existing rails. At a 1% slope, this would require a 2400 foot long slope before and after the bridge. The bridge would be skewed at an angle of approximately 40 degrees to Interstate 80 resulting in spans of approximately 175 feet.

The approach on the east end of the bridge would be constructed on an earthen berm until the elevation causes the toe of slope to exceed the rail right of way or the track clearance envelope on the track side. From these points to the bridge abutments, concrete retaining walls would be required. A pier bent would be constructed between the eastbound and westbound lanes and an abutment at the south side of Interstate 80. From that point toward the south, the track would be on a down slope supported on the rock and eventually back onto an earthen berm with the track kept above surrounding grade by approximately 5 feet. At grade crossings would be needed where the existing gravel roads cross the proposed track location.

Environmental Setting: The rail spur would come off of the existing railroad east of Timpie. Wetlands (mudflats) occur at the far eastern end of the siding. The siding would be likely to occur primarily on the existing railroad berm, however in places the berm will need to be widened and wetland areas will need to be filled. In addition, bridge abutments and supports would have to be constructed in wetland areas. The railroad would go over Interstate 80 via a bridge and would follow the base of the mountains to avoid the spring and wetland complex (Big Spring) on the west side of the mountains. After passing this area the railroad would then run parallel to Skull Valley Road.

Formal wetland delineations are needed to determine the extent of wetland impacts and a Section 404 dredge and fill permit would have to be obtained from the Army Corps of Engineers. The Corps will require an alternatives analysis as part of this permit. The basis for their alternative analysis is first avoidance, then minimization, and finally mitigation for wetlands. Wetland replication will be required to mitigate for filled wetlands.

Threatened and endangered species consultation needs to occur with the State, BLM, and USFWS.

Existing Land Ownership and Right of Way: The siding and approach to the bridge would be within the railroad right of way. The bridge crossing Interstate 80 would require intermediate supports located in the Interstate 80 right of way. An easement for the land between the highway, the Stansbury Mountains and the Skull Valley Road would be required. The track would parallel the Skull Valley Road within the road right of way.

Estimated Cost of Option DR-3: The estimated total life-cycle cost of Option DR-3 is $89,466,000 in 1998 dollars. The total cost includes both capital construction costs ($33,485,000) and life-cycle operating and maintenance costs ($55,981,000) and is based on a 40,000 MTU facility with a 40-year life.

Summary of Direct Rail Option DR-3
Rail Spur and Flyover Bridge East of Timpie Junction

The option is viable, provided the following issues are resolved:

- Obtain approvals (Federal, state, etc.) to build the rail spur bridge over Interstate 80. The bridge would require support piers located between the east and west roadways.
- Obtain a railroad right of way across private and BLM land to access the Skull Valley Road right of way.
- Obtain an ACOE Section 404 Permit.

Advantages of Option DR-3:

- All physical clearances could be achieved for both highway and rail.
- Union Pacific would own the rail down to the site thereby reducing maintenance costs.
- Interstate 80 through traffic would not be affected. The construction of the bridge and approaches could be done while traffic continues to operate.
- There would be no handling of the casks at an intermodal exchange as the cask stays on the rail car.

Disadvantages of Option DR-3:

- The expense of the approaches and the bridge itself.
- Close proximity to Timpie Springs Waterfowl Management Area.
- Potentially large acreage of wetland impacts.

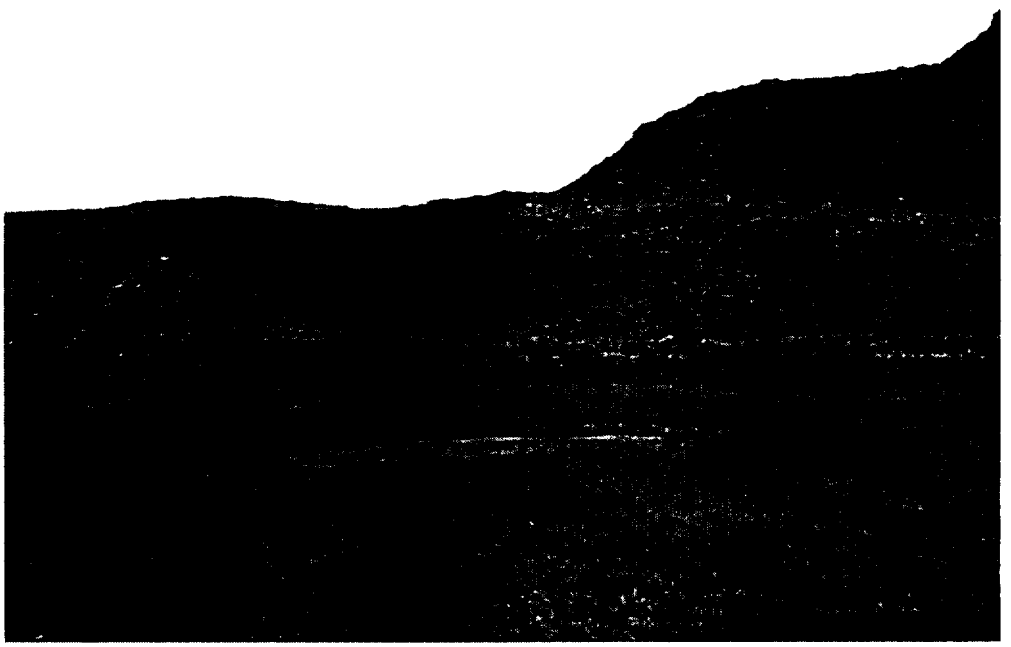
Direct Rail Option DR-4
Rail Spur from Dolomite

Description: Option DR-4 would include the extension of an existing railroad spur located on the east side of the Stansbury Mountains. The railroad spur extension would go through the north end of the Stansbury Mountains and continue southwest to meet the Skull Valley Road corridor. The existing railroad spur provides service to a lime production plant operated by the Chemical Lime Company and ends approximately 6 miles southeast of the interchange of Interstate 80 and the Skull Valley Road. A new turnout would be installed at the plant and a new railroad would be constructed adjacent to the existing road (old County Route 40) west to the point where the Stansbury Mountains meet Interstate 80. A rock cut would be made at the location where the mountain is the narrowest in width.

Photograph 18 - Looking west along county road from the lime production plant. The track would run parallel to the road on left side.

The new railroad extension would pass through the cut in the Stansbury Mountains and proceed westerly to the Skull Valley Road corridor. The railroad would then turn south and run parallel to the Skull Valley Road (on the east side) crossing the road on the Goshute Reservation and running west to the PFSF site.

Photograph 19- Looking west toward proposed rock cut in Stansbury Mountains. The rock cut would be located near the center of the photograph.



Photograph 20 - Looking east at the area of the rock cut through the Stansbury Mountains.

From the turnout at the lime production plant, the track would be located adjacent to the roadway on the south side. Top of rail would be approximately 2' above the level of the roadway. The railbed would be constructed on the south side of the road adjacent to

the 40 foot roadway width. The area adjacent to the road on the south side is wet and may be a problem regarding wetlands.

The track would curve to the south as it approached the Stansbury Mountains and rise at a 1% slope to the rock cut. This will reduce the amount of excavation needed. The sides of the rock cut will be at a 1:1 slope and the width of the cut at the track bed will be 30 feet providing sufficient space for an access road adjacent to the track thereby keeping the county road right of way (existing jeep trail over the mountains) open to vehicle traffic.

The track would curve to the south as it leaves the rock cut in order to avoid the wet areas directly west of the Stansbury Mountains. From that point toward the south, the track would be on a down slope supported on the rock and eventually back onto an earthen berm with the track kept above surrounding grade by approximately 5 feet until reaching the Skull Valley Road. At-grade crossings would be needed where the existing gravel roads cross the proposed track location prior to the Skull Valley Road.

Environmental Setting: The rail spur would come off of the existing railroad before the lime production plant. Emergent marsh wetlands occur along both sides of the railroad from south of the lime production plant north for most of the way to Interstate 80. A pond fed by springs occurs adjacent to the existing County road, in front of the lime production plant. The railroad would go through the tip of the Stansbury Mountains. On the west side of the mountains there is a spring and wetland complex (Big Spring). The route would avoid this area by following the contours of the mountain until it has passed this area and then turning west to connect with the Skull Valley Road. It would then run parallel to Skull Valley Road to the reservation. The railroad would have to cross wetlands both at the lime production plant and along the entire route north of the plant, along the existing road.

Formal wetland delineations need to occur to determine the extent of the wetland impacts. Since it is impossible to avoid wetland impacts, a Section 404 dredge and fill permit would have to be obtained from the Army Corps of Engineers. The Corps will require an alternatives analysis as part of this permit. The basis for their alternative analysis is first avoidance, then minimization, and finally mitigation for wetlands. This route would require a large amount of wetland fill. Because of this, the ACOE is unlikely to prefer this route over the alternatives.

Threatened and endangered species consultation needs to occur with the State, BLM, and USFWS. In addition, further information needs to be obtained about the ecological resources found in Rush Valley and the Stansbury Mountains. Raptor nest surveys would need to be conducted at the site and along the entire route.

Existing Land Ownership and Right of Way: Property between the end of the existing railroad spur and the Stansbury Mountains is owned by the BLM, State, and a private party (Gemstar Lime Co.). The rail spur extension would travel west alongside the existing highway (old County Route 40) up to the end of the Stansbury Mountains, where it would require extension over a short length of State-owned land and through a rock cut on private land to pass through the Stansbury Mountains. From this point, the

rail spur extension would be constructed southeast to the Skull Valley Road on BLM land. The land in the area proposed for the new railroad is owned by BLM, State, and private parties. Easements or right of ways would be required over the entire length of new railroad through and west of the Stansbury Mountains.

Estimated Cost of Option DR-4: The estimated total life-cycle cost of Option DR-4 is $91,262,000 in 1998 dollars. The total cost includes both capital construction costs ($34,711,000) and life-cycle operating and maintenance costs ($56,551,000) and is based on a 40,000 MTU facility with a 40-year life.

Summary of Direct Rail Option DR-4
Rail Spur from Dolomite

The option is viable, provided the following issues are resolved:

- Use of the County Route 40 "corridor" and ability to obtain additional ROW adjacent to the County Route 40 ROW.
- Leasing or purchasing land from private landowners and BLM.
- Army Corps of Engineers Section 404 permit obtained.

Advantages of Option DR-4:

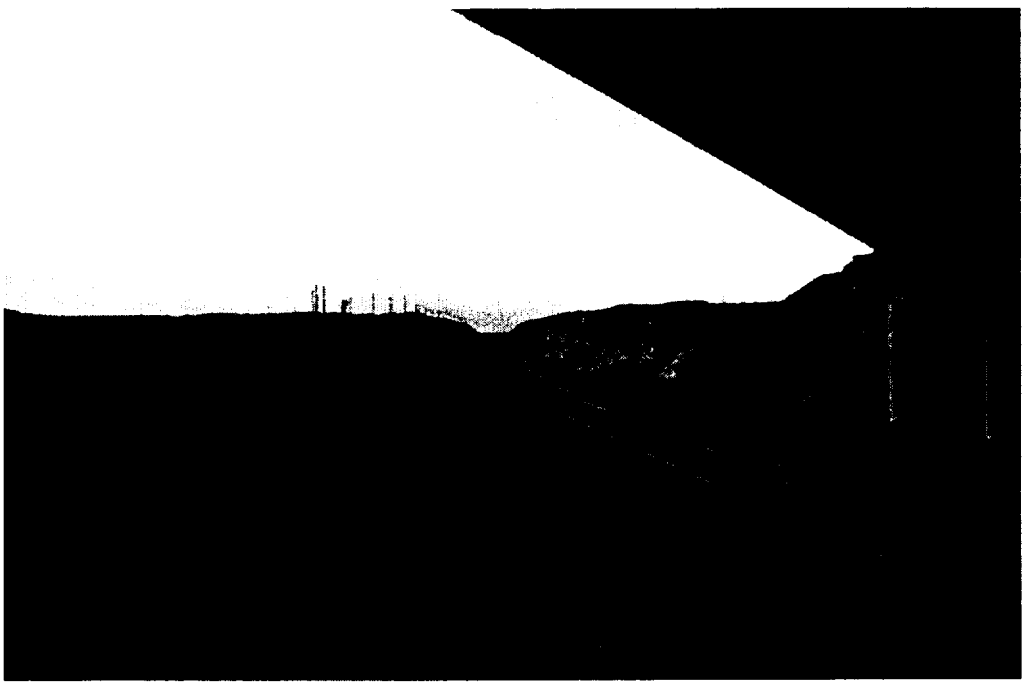
- All activity is south of Interstate 80 which eliminates approvals associated with the highway.
- The use of the existing County Route 40 corridor for a portion of the route.
- Timpie Springs Waterfowl Management Area is avoided.

Disadvantages of Option DR-4:

- The rock cut will add a degree of difficulty to the construction but the material can be used to construct the approaches on both sides.
- A large amount of wetland impacts.
- Major land/habitat disturbance associated with a rock cut through the mountain.

Direct Rail Option DR-5
Rail Spur from Low Junction

Description: The Union Pacific line passing through Low Junction would provide access to the west side of Skull Valley. The mainline railroad is on the south side of the Interstate at Low, so there no crossing of Interstate 80 required. The new rail spur would run solely on BLM land along the base of the Cedar Mountains. The PFSF has clear access from the west.



Photograph 21 - Looking southwest from beneath the I-80 bridges, the siding at Low Junction would be on the left side of the existing tracks.

The proposed transportation corridor is currently undeveloped range land. Grades along the alignment range from 1.5% at the Low interchange to 0.0% (level) along the Skull Valley floor. For the railroad, a maximum grade of 1.0% is desirable and would require earthwork (cut and fill) along portions of the route to meet this criteria.

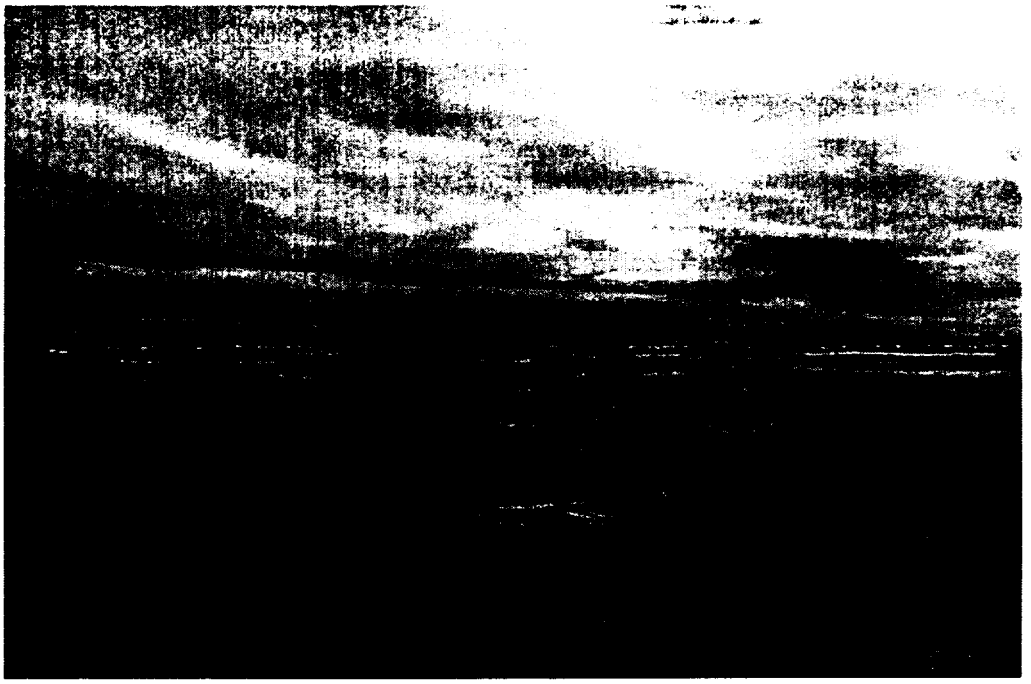
Photograph 22 - Valley floor looking south.

Numerous small and large arroyos (dry watercourses) cross the transportation corridor where runoff from the Cedar mountains flows intermittently. None of the arroyos carried water during a field survey of the corridor, but each would require installation of a culvert to allow flows to pass. Larger drainage basins may require construction of a small bridge or trestle.

Approximately 56 arroyos occur within the transportation corridor. The following is an estimate of the culverts and bridges which would be required:

Type and size	Number Required
Small culverts (18" to 36" diameter)	22
Medium culverts (42" to 60" diameter)	22
Large culverts (60"x 80" box culvert)	10
Short bridge crossings	2

Small and medium culverts would be corrugated metal or concrete pipe. Large culverts would be reinforced concrete box sections.



Photograph 23 - Looking southeast toward the PFSF. The railroad spur would cross the valley floor to the site.

Environmental Setting: The rail spur would begin at Low Junction, which is an upland community just south of Interstate 80. The rail spur would continue south along the west side of Skull Valley, at the base of the Cedar Mountains, to the PFSF. There are no known wetlands or other environmentally sensitive areas along this route. A number of arroyos do occur in the corridor but do not pose any significant concerns. However, consultation with the State needs to occur to determine if crossing some of these drainages would require a Stream Alteration Permit.

Threatened and endangered species consultation will be required with the State, BLM, and USFWS. Raptor nest surveys will need to be performed along the entire route. In addition, further information needs to be obtained about the ecological resources found in the western portion of Skull Valley and the Cedar Mountains.

Existing Land Ownership and Right of Way: The land where the railroad turnout and sidings would be located is owned by the BLM, with right of way granted for the railroad. The railroad turnout and sidings would be located on th railroad right of way. The new 32-mile railroad spur would cross the valley entirely on BLM land and would require an easement or right of way granted for the full length.

Estimated Cost of Option DR-5: The estimated total life-cycle cost of Option DR-5 is $91,410,000 in 1998 dollars. The total cost includes both capital construction costs ($34,823,000) and life-cycle operating and maintenance costs ($56,587,000) and is based on a 40,000 MTU facility with a 40-year life.

Summary of Direct Rail Option DR-5
Rail Spur from Low Junction

The option is viable, provided the following issues are resolved:

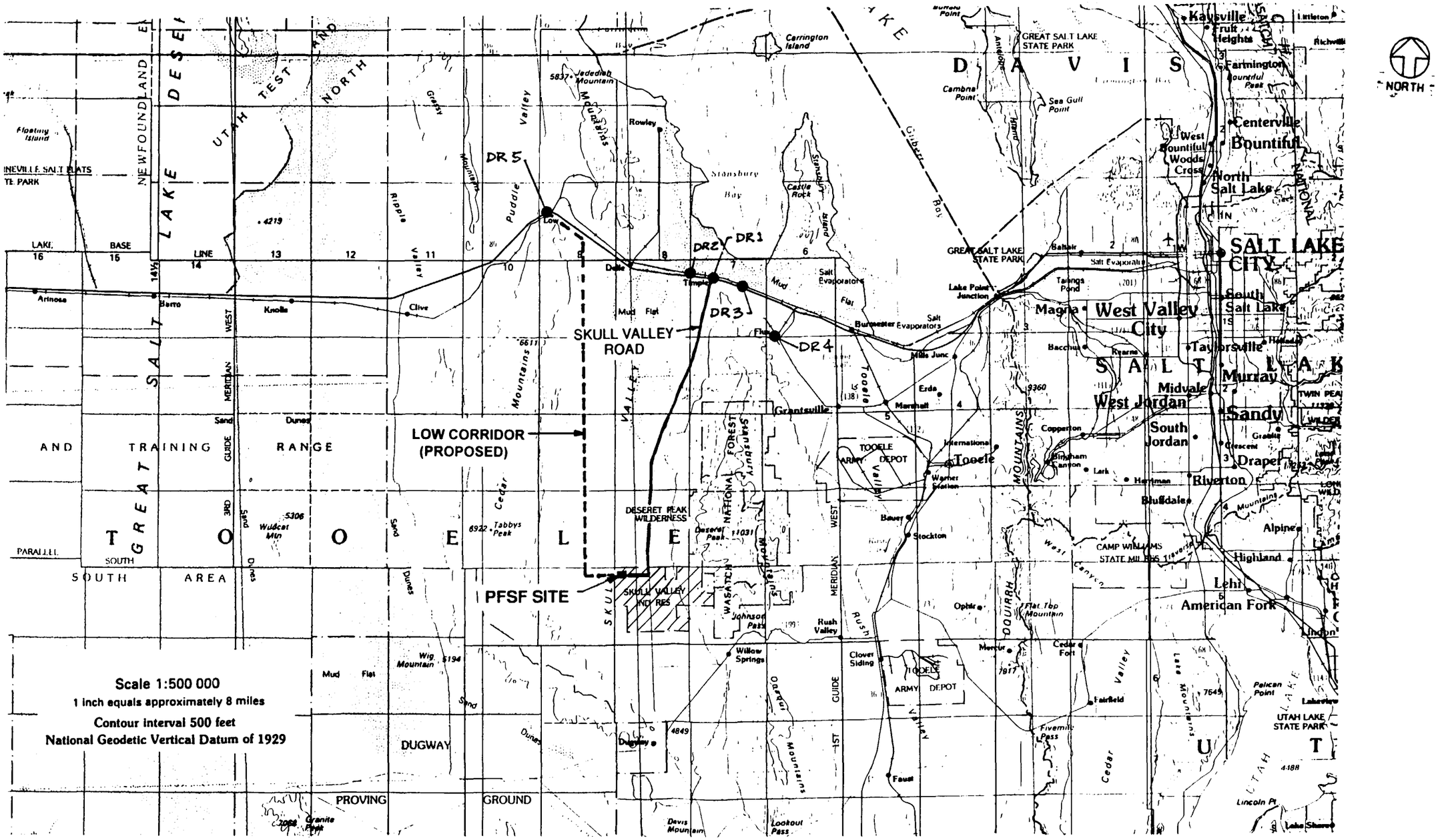
- Obtain a right of way or easement from the BLM for the transportation corridor.
- Determine the need and obtain Stream Alteration permits, if necessary.
- Completion of a detailed environmental evaluation of the railroad corridor.

Advantages of Option DR-5:

- All activity is south of Interstate 80 which eliminates conflicts associated with the highway.
- There are no major landforms that must be circumnavigated.
- Avoidance of Horseshoe Springs and other wetlands areas.
- Avoidance of private ranches and the existing Skull Valley Road traffic.

Disadvantages of Option DR-5:

- New rail construction would result in vegetation/habitat disturbance for the entire route in a previously undeveloped corridor.

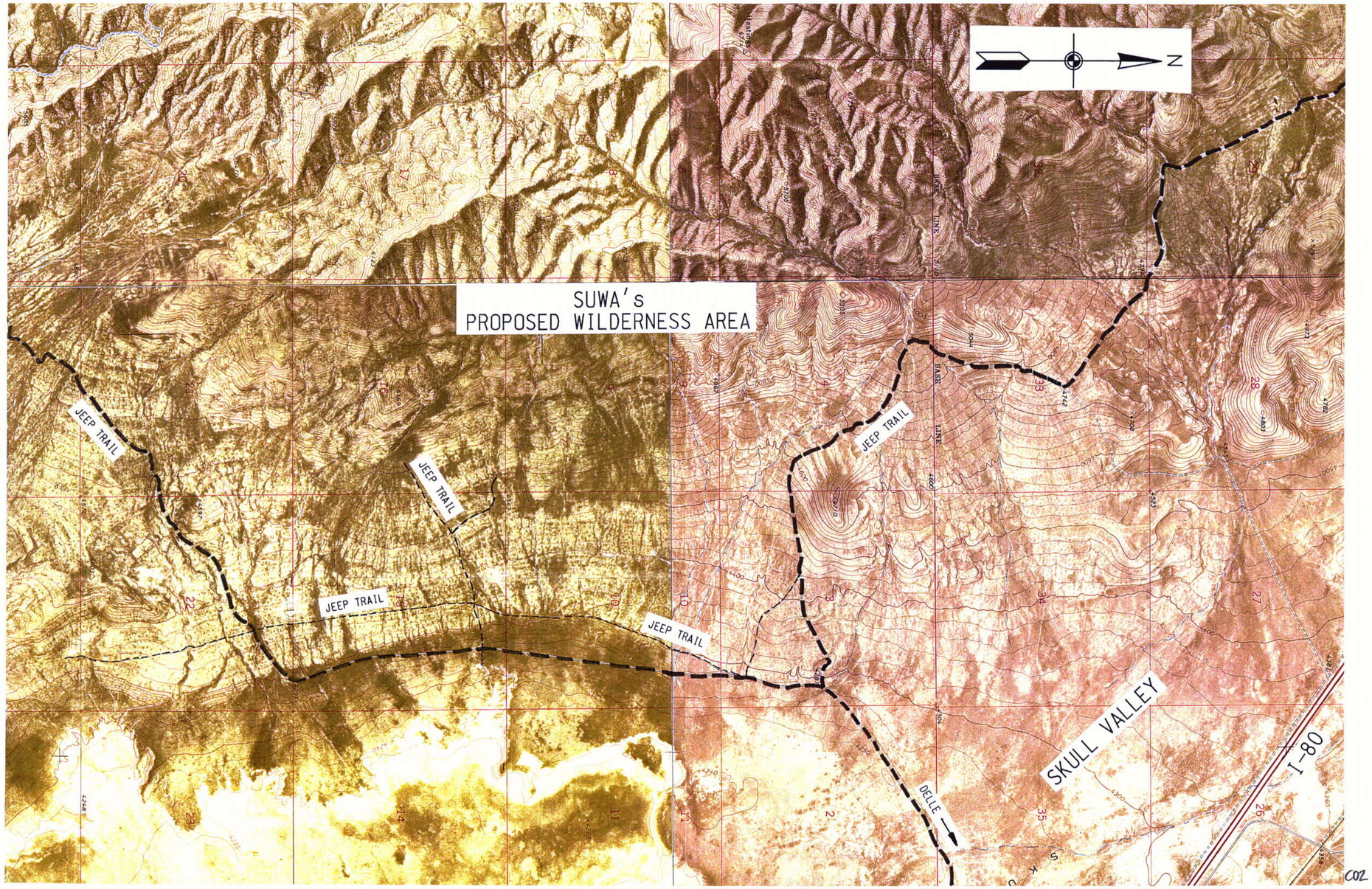


Report No. 0599602-Y(D)-2 Rev. 0

Figure 6-8
Direct Rail Sites
Options DR-1 to DR-5

PFS Exhibit II

Map of "Jeep" Trails Near Low Corridor


N
SUWA's
PROPOSED WILDERNESS AREA
JEEP TRAIL
JEEP TRAIL
JEEP TRAIL
JEEP TRAIL
JEEP TRAIL
BASE LINE
BASE LINE
SKULL VALLEY
DELLE
I-80
C02

PFS Exhibit JJ

BLM Intensive Wilderness Inventory, Final Decision on Wilderness Study Areas, Utah (Nov. 1980)

BLM INTENSIVE WILDERNESS INVENTORY

FINAL DECISION on Wilderness Study Areas

UTAH

NOVEMBER 1980

UNIT NO. UT-020-087 WSA ACREAGE: 0

UNIT NAME: NORTH CEDAR MOUNTAINS UNIT ACREAGE: 16,089

1. AREA DESCRIPTION: Unit 087 is located in the north-central portion of Tooele County, Utah, approximately 58 miles east of Wendover and 60 miles west of Salt Lake City, via Interstate-80. Located at the northern end of the Cedar Mountain Range, Unit 087 is basically polygonal in shape. Dimensions vary, depending on directions measured, but approximates for general description are 5.5 miles wide and 7.0 miles long.

2. WILDERNESS CHARACTERISITCS

A. SIZE: The unit contains 16,089 acres of Public Land and encloses approximately 1,920 acres of private land. State land is not found in the unit.

B. NATURALNESS: The imprint of man's work is substantially noticeable in the North Cedar Mountains. The cumulative effect of many minor and some large impacts are considerably evident within the relatively small unit.

Some interior hillsides are untrammeled by man and affected by the forces of nature. However, because of the openness and exposure to other imprints, a feeling of sublime naturalness is lacking.

Twenty-seven impacts or activities were identified; a cumulative network of over 11 miles of "ways" were recorded within the unit's boundaries. Lee's Canyon "way" follows a drainage and cuts a six-mile path through the southeast end of the North Cedars, impacting in its course the 5,000 acre parcel making up that end of the unit. Other imprints along this access route includes quarries, livestock trails, and motorcycle paths.

C. OUTSTANDING OPPORTUNITIES:

(1) SOLITUDE: The upper elevations and inner portion of the unit provide scattered opportunities for solitude. Occasional vegetative covering, mountainous topography, and lack of penetrating roads, are evident. The lower, outside portions of the unit lack outstanding opportunities for solitude due to the sparse vegetative cover, relative open terrain and the cumulative effect of many impacts in the unit.

Feelings of isolation are seldom complimented by winding canyons. Vegetation canopies and screening are lacking, and therefore do not aid in an outstanding feeling of solitude.

(2) PRIMITIVE AND UNCONFINED RECREATION: Opportunities for a primitive and unconfined type of recreation which exist in the North Cedars are hunting, horseback riding, hiking, wildlife observation and sightseeing. However, these opportunities are not considered "outstanding" by the wilderness inventory teams. Wildlife populations and numbers are few. Terrain for hiking and horseback riding is not unique in nature and does not provide outstanding opportunities for these recreation types. Sightseeing is encumbered by many outside activities and interior impacts of man.

D. SUPPLEMENTAL VALUES: Rock windows, sawtooth ridges and small caves carved in cliffs and terraces are common throughout the northern section of the unit. These are all remnants, displays cut by either the Bonneville or Provo levels of ancient Lake Bonneville, and are considered to be typical geological formations, common to the Bonneville Basin, and characteristic to all 14 units undergoing intensive inventory on the Salt Lake District.

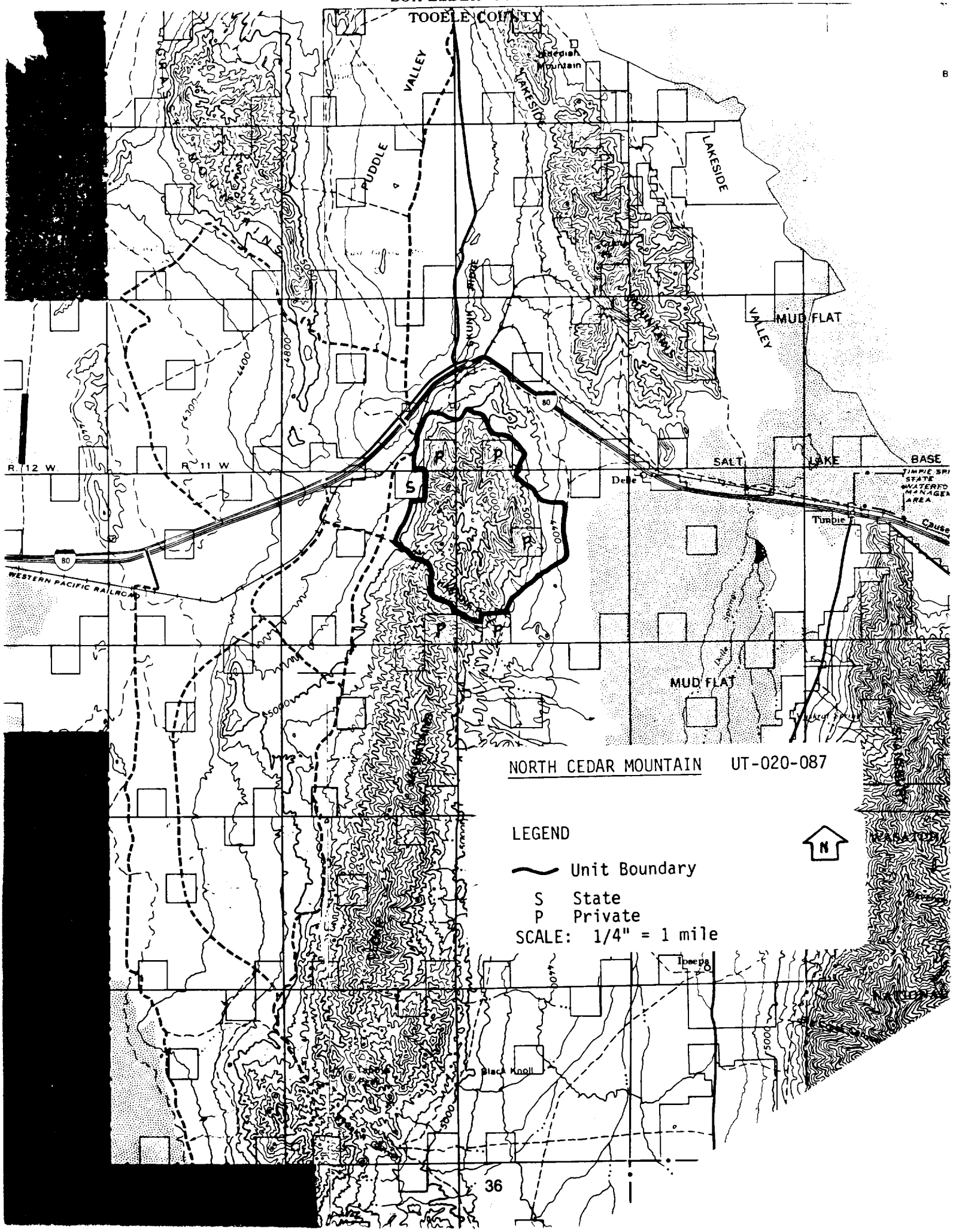
Modern history, too, has left its imprint upon the unit. Hastings Pass, today dividing the two Cedar Mountains units, was once the route taken by a number of pioneers attempting to shorten their journey to California. Those interested in historical trail interpretation might find this portion of the Hastings Cutoff somewhat intriguing.

Mining operations have been digging Aragonite along the south end of the unit since 1895. Old buildings, pits and assorted prospects remain as a legacy to past ambitions.

3. SUMMARY OF COMMENTS: No specific comments were received. Recognition was given to this unit only by those who commented generally, listing all units by number and stating that these units should be considered for Wilderness Study Area designation.

4. DECISION: Dropped from further wilderness inventory and review.

5. RATIONALE FOR DECISION: Size and naturalness, to a degree, have placed this unit into the intensive inventory phase of the wilderness review. The lack of "outstanding" potential, or opportunity for solitude and/or a primitive and unconfined recreational experience should drop it from further wilderness inventory consideration. Man's imprints are substantially noticeable within the unit. Natural screening contributes little to hide or enclose man and his contrasting influences. Recreation opportunities exist but all are encumbered by man's developments.


BOX ELDER COUNTY
TOOELE COUNTY
Medish Mountain
PUDDLE VALLEY
LAKESIDE
LAKESIDE MOUNTAINS
MUD FLAT VALLEY
MUD FLAT
R. 12 W.
R. 11 W.
SALT LAKE BASE
Delle
Timpie
WESTERN PACIFIC RAILROAD
80
S
P
NORTH CEDAR MOUNTAIN UT-020-087
LEGEND
Unit Boundary
S State
P Private
SCALE: 1/4" = 1 mile
N
Ibapah
Black Knoll
5000
4800
4600
4400

PFS Exhibit KK

Second Declaration of Jim Catlin for Petitioner Southern Utah Wilderness Alliance (SUWA) (Dec. 8, 1998)

UNITED STATES OF AMERICA
BEFORE THE
NUCLEAR REGULATORY COMMISSION

Private Fuel Storage, a Limited Liability Company; (Independent Spent Fuel Storage Installation).	Docket No. 72-22 December 8, 1998

SECOND DECLARATION OF JIM CATLIN
FOR PETITIONER SOUTHERN UTAH WILDERNESS ALLIANCE (SUWA)

I, **Jim Catlin**, based on personal knowledge, declare as follows:

1. I am an adult citizen and resident of Salt Lake County, Utah. I was raised in Utah and have leaved there almost all of my life.

2. I have a PhD from the University of California, Berkeley in Natural Resource Management and Geographic Information Systems (GIS). I have been practicing in this field for 20 years.

3. I am a member in good standing of the Southern Utah Wilderness Alliance (SUWA), petitioner in this matter, and was one of the original members of the organization. I joined this organization in part, because of its work to identify and preserve public lands which process wilderness character from development.

4. The North Cedar Mountain roadless area possesses wilderness character. This area includes land at both higher and lower elevations. The latter, called benches or foothills, were purposefully included in the North Cedar Mountain roadless area. This is because the benches

also possess wilderness character and are important to preserving biodiversity as well as the wilderness character of the whole area. All references I have made and will make to the North Cedar Mountain roadless area are to the area identified on the map attached as exhibit 2 to SUWA's petition which includes both the benches and mountainous terrain within that roadless area.

5. Because one of the goals of the 1998 inventory process was to use wilderness designation as a means to protect biological diversity, Wilderness Act, 16 U.S.C.A. § 1131(3)(4), the technical review team, in consultation with biologists, gave priority to areas containing large elevation gradients, large complexes on contiguous roadless areas, and riparian areas. The bench section of the North Cedar Mountain roadless area represents an important elevation gradient and is part of the large elevation gradient of the entire roadless area. The North Cedar Mountain roadless area, as a whole, represents a large complex within a contiguous roadless area.

6. The construction and operation of the Low Rail Spur and the construction and maintenance of the fire buffer zone will irreversibly impair the wilderness character of the North Cedar Mountain roadless area, including its benches.

7. If constructed pursuant to the license amendment, the Low Rail Spur will significantly intrude into the North Cedar Mountain roadless area so that it will no longer be an area which "generally appears to have been affected primarily by the forces of nature, with the imprint of [human] work substantially unnoticeable; . . ." Wilderness Act, 16 U.S.C.A. § 1131(c)(1). In addition, the operation of the rail spur will significantly intrude upon the area's currently "outstanding opportunities for solitude. . . ." Id., § 1131(c)(2). Finally, the construction and

operation of the rail spur will have adverse impacts on the area's wildlife and plant life, values which are essential to the ecological health of the area. Id., § 1131(c)(4).

8. Although the proposed rail spur will be constructed on the bench of the area, its impacts will intrude well into the North Cedar Mountain roadless area and will harm the wilderness character of a large portion of the area. Impacts to recreational values, scenic values, ecosystem values and opportunities for solitude will be felt on the lands (within the North Cedar Mountains roadless area) immediately impacted by the proposed rail spur and will be felt within a large portion of the area, not just the smaller section over which the rail spur will traverse. This is because these impacts are not confined to the smaller area, but have far reaching effects.

9. An alternative alignment to the proposed rail spur that avoided the North Cedar Mountains roadless area, exhibit "2", and/or ran two miles to the east of the current alignment (avoiding sensitive wetlands, etc.) would have less impact on the wilderness character of the North Cedar Mountain roadless area as identified by exhibit "2" attached to SUWA's petition to intervene..

10. Members of SUWA frequently visit, use and enjoy the natural resources of the North Cedar Mountain roadless area, including its benches and including the section of this area that will be traversed by the proposed rail spur, for many health, recreational, scientific, spiritual, educational, aesthetic, and other purposes and will do so frequently in the future. Sometimes SUWA members visit these areas for days at a time or several times within a relatively short period of time and develop an ongoing and deep bond with the land and its wilderness character which they hope to cultivate in the future. SUWA members frequently enjoy and will, in the

future, with some frequency, enjoy hiking, camping, birdwatching, study, contemplation, solitude, photography, and other activities in and around the North Cedar Mountains roadless area including the exact tract of land — the bench of the North Cedar Mountains -- over which the proposed rail spur will traverse. SUWA and its members also participate in information gathering and dissemination, education and public outreach, commenting upon proposed government actions, and other activities relating to the management of and impacts on BLM lands, including the North Cedar Mountains and benches (including the exact tract of land over which the rail spur will travel) and other public lands and resources in the area managed by the BLM. These health, recreational, scientific, spiritual, educational, aesthetic, informational, and other interests will be directly affected and irreparably harmed by a decision to allow construction and operation of the Low Rail Spur and by other agency actions which may impact the North Cedar Mountains, including the exact tract of land — the bench of the North Cedar Mountains -- over which the proposed rail spur will traverse.

11. I have a personal interest in and have frequently visited, used and enjoyed the natural resources of the North Cedar Mountains and benches, including the section of this area that will be traversed by the proposed rail spur, for many health, recreational, scientific, spiritual, educational, aesthetic, and other purposes and will do so frequently in the future. I have visited these areas, including the exact tract of land within the North Cedar Mountains area that will be traversed by the proposed rail spur, and have developed an ongoing and deep bond with the land and its wilderness character which I will continue to cultivate in the future. I frequently enjoyed and will, in the future with some frequency, enjoy hiking, camping, birdwatching, study,

contemplation, solitude, photography, and other activities in and around the North Cedar Mountains roadless area, including the exact tract of land — the bench of the North Cedar Mountains -- over which the proposed rail spur will traverse. I will be personally harmed and my health, recreational, scientific, spiritual, educational, aesthetic, informational, and other interests will be directly affected and irreparably harmed by a decision to allow construction and operation of the Low Rail Spur and by other agency actions which may impact the North Cedar Mountains, including the exact tract of land — the bench of the North Cedar Mountains -- over which the proposed rail spur will traverse.

12. The North Cedar Mountains, including the exact tract — the bench area over which the rail spur will traverse will be harmed if the proposed rail spur is constructed and operated. The area will become developed and I will be unable to enjoy its relatively primitive nature. I will be able to feel the presence and hear the noise of the construction and operation of the proposed project well within the North Cedar Mountains roadless area and this will harm me, particularly when I spend long periods of time there. In addition, the construction and operation of the Low Rail Spur will threaten the ecological values of the North Cedar Mountains. If these values are harmed, I too will be harmed.

13. In determining the boundaries of North Cedar Mountain roadless area, the technical review team considered: 1) the need to preserve large roadless and relatively primitive areas to preserve biodiversity; 2) the need to prevent habitat fragmentation; 3) the need to take an ecosystem approach to land management; 4) the need to include, within large undeveloped areas, a gradient of elevations in order to protect biodiversity; and, 5) the importance of protecting the

bench areas or foothills in a basin and range to preserve biodiversity, access from basin to range and habitat for animals and plants that depend upon this transitional zone. For these and other reasons, we identified and included the benches of the area within the North Cedar Mountains roadless area.

14. If the proposed rail spur is constructed and operated on the benches of the North Cedar Mountains, these biodiversity values and goals will be harmed. I also will be harmed because I enjoy visiting the various elevation gradients and viewing the diversity of plants and animals that depend upon them. SUWA also will be harmed because the goals of the organization — protecting large tracts of land from development in order to meet these biodiversity principles — will be harmed.

15. I authorize SUWA to represent me in this proceeding (the matter of Private Fuel Storage, LLC before the Atomic Safety and Licensing Board) and otherwise act in this proceeding on my behalf.

I DECLARE, under penalty of perjury, that the foregoing is true and correct.

Executed on this December 9, 1998

JIM CATLIN