

# EXHIBIT 5

## White Declaration

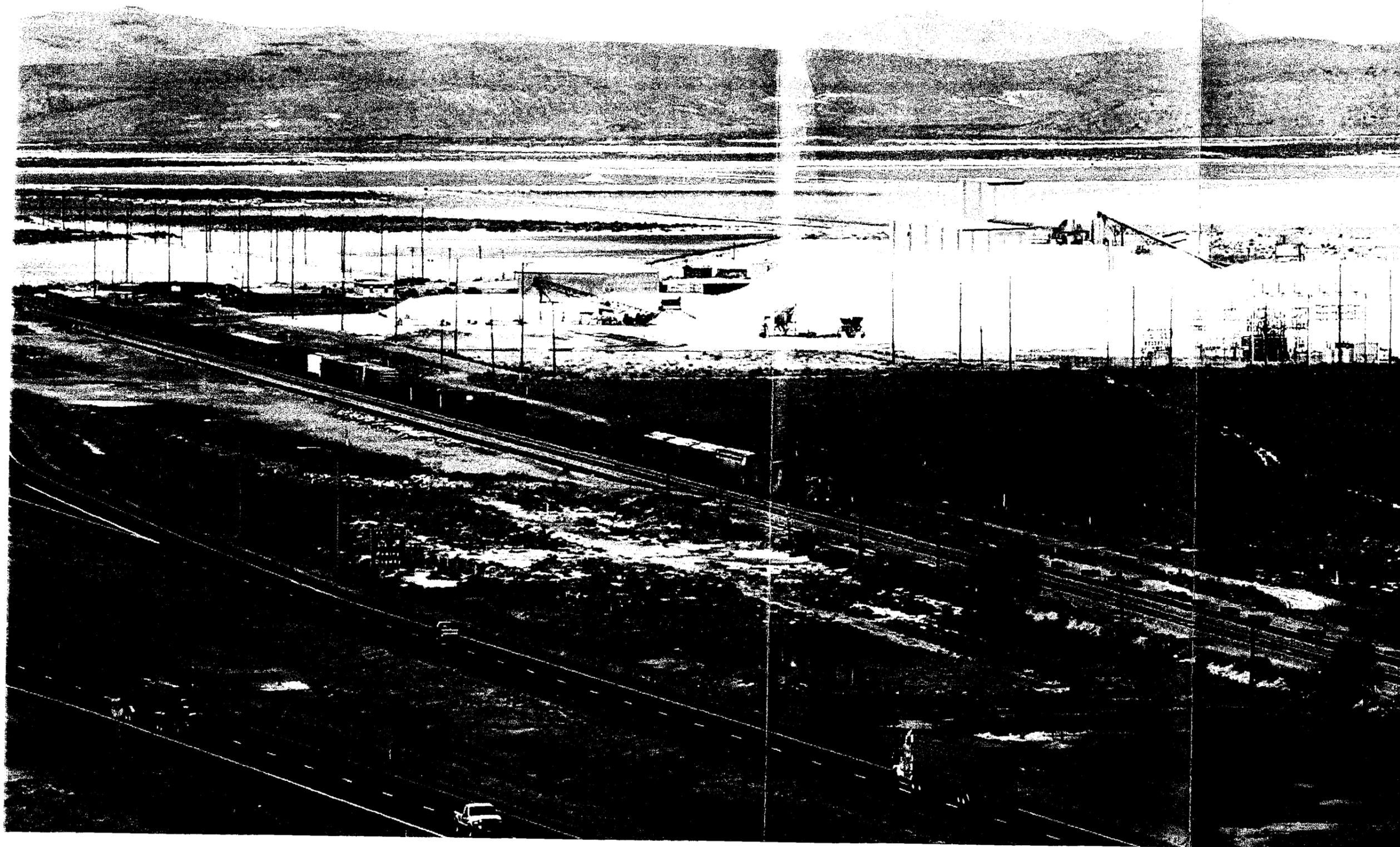
Photograph taken from  
the knoll at the edge of  
the Stansbury  
mountains overlooking  
the interchange and the  
Cargill plant to the  
northwest.



# EXHIBIT 6

## White Declaration

Photograph taken from same location as Exhibit 5 but is a closer look at approximately the same angle at the Cargill plant and the traffic on I-80 and the Union Pacific mainline.



# EXHIBIT 7

## White Declaration

Photograph taken from the same location as Exhibit 5 but is a further back view of the entire Cargill plant and the salt evaporator ponds, pink in color, to the north and east of the plant.



# EXHIBIT 8

## White Declaration

Photograph taken from the same location as Exhibit 5 but shows the view of the Timpie Springs Waterfowl Management Area to the east of the Cargill plant.



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

**DECLARATION OF CLYDE L. PRITCHETT**

Clyde L. Pritchett states as follows under penalties of perjury:

**I. INTRODUCTION**

1. I am an Emeritus Associate Professor of Zoology at Brigham Young University. I am providing this declaration in support of a motion for summary disposition of Contention Utah DD (Utah DD) in the above captioned proceeding concerning the Private Fuel Storage Facility (PFSF).

2. My professional and educational experience is summarized in the curriculum vitae attached as Exhibit 1 to this declaration. After my undergraduate education in zoology and botany and a Masters degree in Vertebrate Ecology (with an emphasis on mammals, reptiles and birds), I focused my graduate research on the study of rodents, particularly pocket gophers. My doctoral thesis, "Variability In Populations Of The Pocket Gopher, *Thomomys talpoides rostralis* Along An Altitudinal Transect Across The Snowy Range, Wyoming," involved extensive field research on pocket gophers during 1968-1970. I became intimately familiar with the natural history and behavior of pocket gophers during the extensive fieldwork required for my thesis.

3. Throughout my professional career, the study of small mammals, including pocket gophers, has been a significant focus of professional activities. I was an Assistant and an Associate Professor of Zoology at Brigham Young University from 1971 until my retirement in December, 1991, at which time I became an Emeritus Professor. I was also the Curator of Mammals at the M. L. Bean Museum, Brigham Young University from 1976 to 1994, at which time I became Emeritus Curator for Mammals.

4. In Contention Utah DD, as admitted,<sup>1</sup> the State of Utah asserts that:

The Applicant has failed to adequately assess the potential impacts and effects from the construction, operation and decommissioning of the ISFSI and the transportation of spent fuel on the ecology and species in the region as required by 10 C.F.R. §§ 72.100(b) and 72.108 and NEPA in that:

1. The License Application fails to address all possible impacts on federally endangered or threatened species, specifically peregrine falcons nesting on the Timpie Springs Waterfowl Management Area.
2. The License Application fails to include information on pocket gopher mounds which may be impacted by the proposal.
3. The License Application has not adequately identified plant species that are adversely impacted or adequately assessed the impact on those identified, specifically the impact on two "high interest" plants, Pohl's milkvetch and small spring parsley.
4. The License Application does not identify, nor assess the adverse impacts on, the private domestic animal (livestock) or the domestic plant (farm produce) species in the area.

5. The State has further elaborated its claims in discovery responses that it has provided to Private Fuel Storage (PFS). Among other items, the State claims that the environmental analysis did not contain the results of an adequate survey for Skull Valley pocket gophers or deal with the effects of traffic increases on any Skull Valley pocket gopher populations in the area.<sup>2</sup>

6. In this declaration, I will address Basis 2 of Utah DD, the adequacy of the environmental analysis for the PFSF with respect to an adequate survey for the presence of Skull Valley pocket gophers and the impact of increased vehicle traffic on such gophers.

## **II. THE PRIVATE FUEL STORAGE FACILITY**

7. As described in the Draft Environmental Impact Statement (DEIS), the proposed PFSF is an independent spent fuel storage facility to be located in Skull Valley, Utah. The

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<sup>1</sup> Private Fuel Storage, L.L.C. (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 204-205 (1998); Memorandum and Order (Memorializing Prehearing Conference Rulings) (May 20, 1998) (rephrasing Basis 1).

<sup>2</sup> State of Utah's Objections and Response to Applicant's Second Set of Discovery Requests with Respect to Groups II and III Contentions (June 28, 1999) (June 28, 1999 Discovery Response) at 119-122.

proposed site is approximately 44 km west-southwest of Tooele and is located on the Skull Valley Goshute Reservation, about 6 km west-northwest of the Skull Valley Band Village. A fence would mark the boundaries of the 820-acre leased site area, within which a 99-acre restricted access area would be sited where the storage pads and some support facilities would exist (DEIS 2.1.1.2). The facility would be approximately 25 miles south of the Timpie interchange on Interstate 80 and approximately two miles west of Skull Valley Road, which runs from the Timpie interchange on I-80, south, through the Skull Valley Reservation (DEIS Fig. 1.2). An access road would be built from Skull Valley road to the proposed site (DEIS 2.1.1.2).

### **III. THE LOW RAIL LINE**

8. PFS plans to transport SNF from the existing Union Pacific rail line at the north end of the Skull Valley to the proposed PFSF by the preferred alternative, rail. This line would run from the facility site to the existing, main rail line at Low Junction, Utah (Skunk Ridge). The construction of the new line would temporarily clear 314 hectares along the rail line, with 63 hectares remaining cleared during the operation of the facility (DEIS 2.1.1.3).

### **IV. DISCUSSION OF UTAH DD ISSUES**

9. In Utah Contention DD, the State asserts that environmental analysis does not include adequate information on surveys for pocket gopher mounds at the PFSF or along the transportation corridor, which may be impacted by construction and operation of the PFSF. The State further asserts that the impact of increased vehicular traffic on Skull Valley pocket gophers has not been assessed. Specifically, the State has contended that the impact of increased vehicular traffic during operation of the facility has not been addressed.<sup>3</sup>

#### **A. Status and Taxonomic Classification of Skull Valley Pocket Gopher**

10. Taxonomically, the Skull Valley Pocket gopher has the scientific name of *Thomomys bottae rostralis*. *Thomomys* is the genus name, *bottae* is the species name, and *rostralis* is the subspecies name. Most all pocket gophers in western United States are classified in the genus *Thomomys*, meaning heap mice. (For example, the pocket gopher in Wyoming that I studied for my doctoral thesis, *Thomomys talpoides rostralis*, is of the genus *Thomomys*.)

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<sup>3</sup> (June 28, 1999 Discovery Response) at 120.

Pocket gophers of the genus *Thomomys* differ from other genera of pocket gophers by the grooves in their upper incisors.

11. All genera of pocket gophers exhibit the same general behavior characteristics. They live in underground burrows, like ground squirrels, but unlike ground squirrels, plug the entrances to their burrows with dirt creating small mounds of dirt on the surface. If one opens an inhabited burrow, the pocket gopher will plug the burrow with dirt, thus signifying that the burrow is inhabited. Pocket gophers spend almost their entire lives below ground in the tunnels that they have dug and it is exceptionally rare to see one above ground.

12. Typically, pocket gophers feed from underground in their burrows on the root structures of a wide variety of herbaceous plants, grasses, bulbs, tubers, and roots of weeds and shrubs. They will feed on whatever forage may be present. If the amount of vegetation (potential food) is high, burrows are shorter than in comparable areas of reduced plant cover. Pocket gophers are present in all soil types, but very rocky or hard soils are more difficult to burrow in. Most burrows will be found in a sandy or loamy soil.

13. In Utah, there are two species of *Thomomys*. These are *Thomomys talpoides* and *Thomomys bottae*. They differ somewhat in size and color, but mainly in the structure and shape of bones in their skull. It is generally assumed that the two different species cannot interbreed and if they do, their offspring are usually infertile. Subspecies of both species are able to interbreed and produce fertile offspring in almost all cases. In Utah, *Thomomys talpoides* are usually found in the higher elevations and *Thomomys bottae* at lower elevations. Dr. Stephan Durrant in his Mammals of Utah<sup>4</sup> found both species present on the Oquirrh Mountains, *Thomomys bottae* below 5,000 feet and *Thomomys talpoides* 6,000 feet and above. Between 5,000 and 6,000 feet, *Thomomys bottae* was in the deeper soil and *Thomomys talpoides* in rocky and shallower soils.

14. In the environs of Skull Valley, there are three identified subspecies of *Thomomys bottae*. These are *Thomomys bottae robustus*, the Skull Valley pocket gopher, *Thomomys bottae stansburyi*, the Stansbury Mountain pocket gopher, and *Thomomys bottae albicaudatus*, a wide-spread pocket gopher that comes into the southern part of Skull Valley across the Onaqui

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<sup>4</sup> Durrant, S.D. 1952. Mammals of Utah. Univ. of Kansas Publ. Mus. Nat. His., 6:1-549 (Mammals of Utah) at 163.

Mountains (which are to south of the Stansbury Mountains). See Exhibit 2 this declaration (the portion of the map from Figure 2.1-1 of the PFS Environmental Report showing the Skull Valley area).

15. The Skull Valley Pocket Gopher was first identified as a separate subspecies of *Thomomys bottae* native to Skull Valley by Dr. Durrant in his Mammals of Utah. Dr. Durrant based his conclusion on examination of 23 specimens of the Skull Valley Pocket Gopher that he trapped at a “small isolated spring” on Orr’s ranch in Skull Valley.<sup>5</sup> (An approximate location for Orr’s ranch is identified by a label that has been added to Exhibit 2.) Beyond identifying the Skull Valley Pocket Gopher as a separate subspecies, Dr. Durrant did not evaluate the population of the new subspecies. There are no other formal studies of the Skull Valley pocket gopher

16. Dr. Durrant discusses, in Mammals of Utah, the morphological differences between each of the three subspecies, *rostralis*, *stansburyi*, and *albicaudatus* -- and indicates that there is interbreeding between each of these subspecies where their populations overlap (at the northern and southern ends of Skull Valley respectively).

17. The Skull Valley Pocket Gopher was “formerly listed as a Category 2 Candidate,” until Category 2 was eliminated by the U. S. Fish and Wildlife Service in 1996. This Category was used for flora and fauna that were low in numbers, restricted in their range, or met other criteria that might cause a decline in their numbers or the elimination of a given species or subspecies. Currently, the Skull Valley pocket gopher is identified as a BLM sensitive species (DEIS Table 3.4). A sensitive species is a species of special concern, defined as any wildlife species or subspecies that has experienced a substantial decrease in population distribution and/or habitat availability or occurs in limited areas and/or numbers due a restricted specialized habitat or has both a declining population or limited range.

18. Although identified as a sensitive species, the Skull Valley Pocket Gopher in fact appears to have a robust population. While Dr. Durrant only collected Skull Valley Pocket Gophers at Orr’s Ranch in the Skull Valley, the widespread presence of Skull Valley Pocket Gophers is evidenced by much recent data. Two sets of data are particular instructive.

19. First, there are a large number of pocket gopher castings or mounds in the ditches (or barrow pits) along the length of Skull Valley road. Along most roadways, because of water

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<sup>5</sup> Mammals of Utah at 185.

runoff, the vegetation is usually higher than the surrounding vegetation. Because of the diversity and quality of forage and sandy-loam substrate along Skull Valley road, the Skull Valley pocket gopher is relatively abundant along the roadway. Approximately 10 years ago, I was the Principal Investigator on two projects for the Utah Division of Wildlife Resources, one at Timpie Springs Waterfowl Management Area and the other at Horseshoe Springs. While working on these projects over several weeks, I often drove along Skull Valley road from my home to Timpie Springs or Horseshoe Springs. During this drive you could see gopher mounds most of the way through Skull Valley. During my recent survey of Skull Valley pocket gophers for PFS, conducted this spring, I again observed many gopher mounds in the ditches along the length of Skull Valley road.

20. Second, the work of Egoscue, Anderson, and Chamberlain, medical entomologists, working in the environs of Dugway Proving Grounds documented widespread presence of the gophers at and around the Proving Grounds during the 1950s. For example, Egoscue, Anderson, and Chamberlain collected gopher No. 11799 at the "head of Indian Springs, Simpson Mountains<sup>6</sup> on the south end of Skull Valley, No. 8320 in the Camels Back Mountains<sup>7</sup> (approximately 15 miles southwest of Dugway as shown on Exhibit 2) on the south west part of Skull Valley, many from Cedar Mountains on the west side of Skull Valley." Further, as part of my survey for PFS, I have observed pocket gopher signs along Skunk Ridge along the Cedar Mountains at the north end of Skull Valley, next to Interstate 80, more than 50 miles from Simpson Mountains at the south end of the Valley.

21. Thus, the Skull Valley pocket gophers are very widespread throughout the Valley. They range more than 50 miles from the north end to the south end of the Valley. According to Durrant, they interbreed in the north end with the Stansbury Mountain pocket gopher, and on the south end with the subspecies *albicaudatus*. Because of their wide range in Skull Valley from the northern to the southern ends where they interbreed with the two other subspecies, the population of Skull Valley pocket gophers appears fairly secure.

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<sup>6</sup> Indian Springs is not shown on the map at Exhibit, but is approximately 15 miles south and 3 west of Dugway, as shown on Exhibit 2.

<sup>7</sup> Camels Back Mountains are not shown on the map at Exhibit, but are approximately 15 miles southwest of Dugway, as shown on Exhibit 2.

**B. Survey for Presence of Skull Valley Pocket Gophers**

22. In April and May 2001, I formally surveyed three areas for Skull Valley pocket gopher: (1) the PFS 820 acre Owner-Controlled Area (OCA), (2) PFS access road right-of-way from Skull Valley road to the OCA, and (3) the proposed low rail line corridor.

**1. PSFS Owner Controller Area**

23. The survey of PFS OCA covered the approximately 820 acres. This area is currently fenced on the north and the west sides of the OCA, which were used as guides for the survey. These fences also marked the northwest corner of the Skull Valley Band of Goshute Indian Reservation.

24. In conducting the survey, I used a GPS that measured latitude and longitude in order to ensure that I transversed the entire area. One second on the GPS equaled about 100 feet and I transversed the area generally in one second swaths that would allow me to see 50 feet on each side. This was sufficient for the fairly open habitat, but I shortened the distance in the brush.

25. The vegetation in the PFSF controlled area was scattered greasewood brush and small annual plants growing in a heavy soil. This generally is not the type of habitat where one would typically find pocket gophers. I identified only one active pocket gopher burrow in the OCA, in the far southeastern corner (where the vegetation started to change as discussed in the paragraph below). The location of this burrow is shown on Exhibit 3 to this declaration which depicts the southeastern part of the OCA and the first 750 feet of the right of way for the access road as it intersects the OCA. As shown on Exhibit 3, the pocket gopher burrow that I identified is outside of the construction zone (as identified by PFS), including the 100 ft. construction zone standoff.

**2. PSFS Access Road Right of Way**

26. The PFSF access road right of way (203 acres) will run from Skull Valley road to the OCA, which is somewhat less than 2 miles PFS has a 1000 foot with right of way, for the road but the constructed width of the road itself will be only slightly wider than 100 ft. I surveyed the entire right of way even though the road would encompass only about a tenth of the right of way.

27. The survey of the PFSF access road was completed in the same manner as the survey of the PFSF site. Because the area of the proposed road is bisected by a large, deep wash, the survey was conducted in two parts. Starting at the OCA boundary, at the southernmost extent of the access road right of way where the road turns east, there was a change in the soil and consequently there was a change in vegetation. This new vegetation consists of more grass, forbs and small brush, vegetation that provides food for pocket gophers, than at the PFSF site. At this point I located two different places where pocket gophers had pushed the soil up to the surface to form mounds. I opened the two burrows. The next morning, both of the burrow openings had been filled, indicating the presence of either one or two pocket gophers because of the close proximity of the burrows to one another. The locations of these two burrows are shown on Exhibit 3.

28. The habitat in the portion of the access road right of way area closest to the Skull Valley road is much different than the part of the access road right of way closest to the OCA, making it more suitable to gopher habitation. The soil in the access road area closer to Skull Valley road is much more conducive to burrowing and the shrubs, forbs, and grasses provide a diverse potential source of food for pocket gophers. The change in flora may be due, in part, to the roadside effect, where runoff from Skull Valley road can move down through the adjacent fields and be deposited.

29. In this region of the access road way 30 potential burrow sites were identified. Most of these burrow sites were within one-half to three-quarters of a mile from the Skull Valley road. Again I opened these burrows and the next morning 21 of them had been filled, indicating the presence of pocket gophers (albeit more than burrow may be associated with an individual pocket gopher). Exhibit 4, which depicts this region of the access road show the location of these 21 burrows. (As reflected on Exhibit 4, included in these 21 burrows are two burrows just beyond the right of way for the access road. Exhibit 4 also shows four active burrows further away from the access road right of way that are not included in the 21 burrows discussed above.)

30. As shown on Exhibit 4, of the 21 active burrows only four were found within the construction zone for the access road (as identified by PFS), even including a 100 foot standoff distance. One burrow lies in the middle of the roadway, one lies at the edge of the roadway, and two lie at the edge of the 100 ft. construction zone standoff. Thus, four burrows have differing

degrees of potential of being affected by the construction of the road. I will discuss potential mitigation later in this declaration.

31. I also examined the areas both north and south of the proposed access road, and saw over a hundred gopher scattered mounds. Although I generally did not disturb or open the mounds in these areas, I did confirm the presence of pocket gophers in four of these burrows. In addition, there were numerous gopher mounds in the barrow pits or ditches alongside Skull Valley road, as I mentioned previously.

### 3. PSFS Low Rail Line

32. For my survey of the Low Rail Line corridor, I used a detailed, four-page survey map of the proposed railroad line that provided waypoints showing the longitude and latitude at certain points along the centerline of the rail corridor. The survey followed and transversed the two hundred foot "right of way," along the entire length of the proposed rail line. Using these waypoints from the map, I was able to follow the proposed rail line quite accurately. I expanded the my survey area another 100 feet on each side of the proposed right of way, transversing a four hundred foot wide search area the length of the proposed line.

33. Along the rail line there are several different types of habitats, including immense, dense stands of greasewood (*Sarcobatus vermiculatus*). While these greasewood communities were much more difficult to survey, I was unable to find any sign of pocket gopher in the greasewood communities.

34. In the open grassland communities, I was able to find only isolated gopher mounds, widely spaced. Four active burrows were located in the grassland habitat at the north end of the rail line. Three more active burrows were located at approximately the mid-point of the rail line. In total, I located seven active gopher burrows within my 400 foot wide search of the proposed rail corridor.

35. On the outside of the rail corridor in the open grasslands, there were scattered burrows without any large concentration of mounds, similar to what I found in the rail corridor in grassland areas. In the areas of the rail corridor where I found no gopher mounds, no mounds were found outside of the roadway. Because of the distance of the rail corridor, I did not go too far beyond the 400 foot survey area.

## **C. Effects of PFSF on Pocket Gophers**

### **1. Effects of Construction on Pocket Gophers**

36. In the three project areas that I surveyed, I found thirty-one active burrow sites. Four of these were in the construction zone, including the 100 ft. standoff area, for the access road. Seven of these were in the construction zone for the low rail line, including the 100 ft construction stand off zone. However, as described, above, neither of these populations were limited to project areas meaning that even if the individuals in those burrows were lost (which will not necessarily occur), neither population would be significantly affected.

37. There are, however, many pocket gopher mounds immediately adjacent to the affected areas. Thus, while the pocket gophers in the inhabited mounds would be lost without relocation, it may be possible to relocate them to the surrounding area, and PFS has requested that I develop a plan for relocating pocket gophers that reside in areas affected by construction. As discussed below, it is uncertain how well these pocket gophers would react to relocation, but suitable, available habitat exists to allow relocation and, I think, relocation would be the best strategy to allow the survival of the affected individuals. If the relocation were not successful, there would be no adverse impact on the population of Skull Valley Pocket Gophers.

38. The uncertainty in knowing how pocket gophers will respond to relocation is due to the fact that these mammals have historically been considered vermin or pests. Most of the early literature on pocket gophers deals with how to get rid of them. In this respect, I conducted a literature review in all the major journals in my field to determine whether studies have been conducted on relocation of pocket gophers. In my review, I could not find any studies that involve the relocation of any species of pocket gophers.

39. Based on my experience, the best way to mitigate harm to the particular affected animals, is to relocate each individual animal into a suitable, nearby habitat. As discussed above, there is an ample supply of suitable habitat outside of the affected areas. While no study exists in the scientific literature, to my knowledge, regarding the effects of relocation on pocket gophers, transplanting them appears to be the only way that may save the individual animals. In at least one situation of which I am aware, reclaimed land that had been restored with suitable soil and vegetation subsequently became inhabited by pocket gophers.

40. The ultimate success or failure of the relocation effort is uncertain because of the unique nature of pocket gophers. They live almost their entire lives below ground in burrows or

tunnels, and their success at relocating would depend on the soil structure and other physical factors. There is certainly available, suitable habitat nearby. However, it is impossible to predict with certainty how the pocket gophers will behave. Theoretically, you might put a pocket gopher out on the ground and it may immediately start digging a burrow or it may be preyed upon or die of exposure. Practically, we know that young pocket gophers “leaving the nest” must disperse and dig their own burrow. What percentage of young pocket gophers that may be lost in the process of dispersion from the burrow where they were raised is unknown, but obviously we also know that many are successful in that the species continues to thrive.

41. Regardless, my survey and the research that has been done on the Skull Valley pocket gopher demonstrate that the population of Skull Valley Pocket gophers is very secure. As discussed above, they are widely dispersed and seem to have a large gene pool. Even in the local populations I examined, the loss of the individuals in the burrows located would not have a significant impact on those populations.

## **2. Effects of Operation of PFSF on Pocket Gophers**

42. As discussed above, gophers spend almost their entire lives below the surface. I have only observed three pocket gophers above ground in the day time. Therefore, it would be very rare, but not impossible, to see one above ground. An increase in vehicle traffic should have little or no effect on the number of pocket gophers.

43. The roadside of Skull Valley road has literally hundreds of pocket gopher mounds in the ditch and I have never seen a dead gopher in the road. They are able to pass under the road about as easily as over the road. Therefore, the opportunity for a pocket gopher to be struck by either automobile traffic or a train along the proposed low rail corridor is small. Along the rail line, there are so few individuals within the corridor that the opportunity for loss is even smaller than along the access road. Likewise, greater numbers of pocket gophers are currently not affected by existing automobile traffic in highly traveled areas such as Skull Valley road. Hundreds of vehicles travel Skull Valley Road every day and hundreds of pocket gophers live in the barrow pits or ditches along this road. I see no evidence that those populations are harmed by the level of traffic on Skull Valley road.

44. Thus, the small increase in traffic due to daily operations of the PFSF along Skull Valley Road should not significantly affect the current odds for gopher fatalities. Even if there were a measurable increase in gopher fatalities due to increases in traffic during construction and

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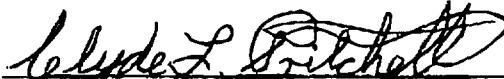
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operation of the PFSF, that increase would be so small that it would have no effect on the overall population of Skull Valley Pocket Gophers. In fact, the revegetation plan for the PFSF and the proposed low rail corridor would likely provide better gopher habitat in this part of Skull Valley.

45. Thus, there would be no adverse impact to Skull Valley Pocket Gopher populations from the construction and operation of the proposed PFSF or either transportation option (low rail corridor or ITP and heavy-haul trucking). All aspects for the survival of a population – a large gene pool and sufficient habitat – appear to be met in Skull Valley for the survival of the Skull Valley Pocket gopher and the proposed PFSF will do nothing to alter that. In fact, the proposed PFSF may have the effect of creating additional, suitable habitat for the Skull Valley Pocket Gopher.

I declare under penalty of perjury that to the best of my knowledge the foregoing is true and correct.

Executed on June 29, 2001.

  
Clyde L. Pritchett

**EXHIBIT 1**  
**Pritchett Declaration**

## PROFESSIONAL DOSSIER

**Name:** Clyde L. Pritchett  
**Birthdate:** April 4, 1926  
**Address:** Department of Zoology  
Brigham Young University  
Provo, Utah 84602

**Title:** Emeritus Professor of Zoology  
**Place of Birth** Mt. Pleasant, Utah  
603 E 600 South  
Orem, Utah 84097  
(801) 765-1160

### Academic Record:

<u>Institution and Location</u>	<u>Degree</u>	<u>Field</u>	<u>Dates attended</u>
Snow College, Ephraim, UT	A.A. (1959)	Biology	1944-1945
Brigham Young University, Provo, UT	B.S. (1960)	Zoology	1958-1960
Brigham Young University, Provo, UT	M.S. (1962)	Zoology	1960-1962
University of Utah, Salt Lake City, UT	NA	Radiation Biology	Summer, 1963
Arizona State University, Tempe, AZ	NA	Desert Biology	Summer, 1965
University of Wyoming, Laramie, WY	Ph.D. (1977)	Ecology	1968- 1970-1971
U.C. Berkeley, Berkeley, CA	NA	Mammalogy	1986

### Awards:

College Teaching Excellence Award, 1989 - College of Biology and Agriculture, Brigham Young University.

### Employment Record:

U.S. Army, Medic, 1945-1947  
Asst. Manager, Stringham Feed Mill, 1950-1958  
Nebo School District, Biology Teacher, 1962-1964  
Ricks College, Instructor, Biology Dept. 1964-1967  
Brigham Young University, Instructor, 1967-1971  
University of Wyoming, Visiting Professor of Ecology, Science Summer Camp, 1969  
Brigham Young University, Assistant Professor, 1971-1979  
Brigham Young University, Associate Professor, 1979-1991  
Retired, December, 1991.  
B. Y. U., M. L. B. Life Science Museum, Volunteer Mammal Dept., 1992-present.

## **Professional Experience:**

1. Project 10 with D. E. Beck, 1960-1961.
2. Ecological Studies, Nevada Test Site, Mercury, Nevada with D. E. Beck and Clive Jorgensen, summer 1964.
3. National Reactor Testing Station, Idaho Falls, Idaho with D. M. Allred, summer 1966 and 1967.
4. Visiting Professor. University of Wyoming - Summer 1969.
5. Four Seasons Incorporated, "Impact of Proposed Recreational Construction and Use," 1972-1973.
6. Raft River Environmental Studies. Energy Research and Development Administration, Idaho Operations Office, Idaho Falls, Idaho 83401, 1977-1979.
7. Curator of Mammals, M.L. Bean Museum, Brigham Young University, Provo, Utah 84602, 1976-1994. Emeritus Curator of Mammals, 194-present.
8. Professional Development Leave, U.C. Berkeley, Berkeley, CA., 1986.

## Consultant with:

1. Bureau of Reclamation on the Jensen Unit of the Central Utah Project. 1972.
2. Navajo Kaiparowits Project, 1973.
3. Bureau of Reclamation on the Bonneville Unit of the Central Unit Project. 1973 to 1975.
4. National Science Foundation In-service Institute for High School Biology Teachers. Drs. A. L. Allen and Marden Broadbent, Directors. 1968-1972.
5. Coon, King, and Knowlton Engineering. "Biotic Assessment of the Proposed West Valley- (Salt Lake Co.) Highway." 1975-1978.
6. Utah Power and Light/Vaughn Hansen Associates. "Effect of Reservoir Construction on Terrestrial Vertebrates." 1979.
7. Coastal States Energy Company/Vaughn Hansen Associates. "Impact of Coal Mining and Conveyor Construction on Big Game Behavior." 1979-81.
8. Valley Camp Mining Co./Vaughn Hansen Associates. "Wildlife Assessment of the Valley Camp Mining Properties." 1979.
9. Southern Utah Fuel Co./Coastal States Energy Co. "Wildlife Assessment of the Southern Utah Fuel Company Mining Property and Adjacent Areas, Sevier Co., Utah." 1980.
10. Kaiser Engineers, Oakland, California. "Non-avian Wildlife Assessment in the Environs of the Starpoint Mining and Reclamation Plan." 1980.
11. Natomas-Trail Mountain Coal Company/Vaughn Hansen Associates. "Fish and Wildlife Assessment in the Environs of Trail Mountain, Emery Co., Utah." 1981.
12. Natomas-Trail Mountain Coal Company. "Wildlife Assessments in Air Tunnel Breakout Areas, Trail Mountain Mine." 1981.
13. Natomas-Trail Mountain Coal Company/Vaughn Hansen Associates. "Wildlife Report to Accompany Mining Permit Application and Answers to DOGM's Questions." 1983
14. U.S. Corp of Engineers/Vaughn Hansen Associates. "Wasatch Front-Central Utah Flood Control Study--Overview of Wildlife." 1984.
15. Coastal States Energy Company. "Wildlife Resource Information, Link Canyon Mining Project, Emery Co., Utah." 1984.
16. Utah Power and Light Co. "Wildlife Assessment for Utah-Nevada Intertie 345 KV Line." 1986.

17. Coastal States Energy Co. "Effect of Subsidence on Wildlife at SUFCo Mine, Convulsion Canyon." 1986.
18. Howard, Needles, Tammen, and Bergendoff. "Upper Provo Canyon SEIS." 1987
19. Fremont Water Users Association. Wildlife Assessment of the Fremont River: Loa to Capital Reef Natl. Park. 1989.
20. Utah Division of Wildlife Resources, 1988 to present.
21. Endangered Plant Species 1990 to present.

#### Research Activities:

1. Brigham Young University. "Vertebrate distribution in relation to certain habitats in Central Kane County Utah." 1960-1962.
2. University of Wyoming, "Variability in populations of the pocket gopher Thomomys talpoides rostralis along an altitudinal transect across the Snowy Range, Wyoming.
3. Cytotaxonomic studies of the Tassel-eared squirrel on the north and south rims of the Grand Canyon, Arizona.
4. The impact of selected native rodents on certain plant species in the cool desert biome.
5. Comparative Vascularity of Appendages in Lagomorphs (with Kent Van De Graaff).
6. Ecological studies of the porcupine Erethizon dorsatum.
7. U. S. Fish and Wildlife Service/Utah Division of Wildlife Resources. "Mourning Dove nesting study." 1979-1980.
8. Habitat utilization by the Lark Bunting in cold deserts. Brigham Young University - Burns and McDonnell Engineering Company.
9. Winter bioenergetics of the porcupine. Brigham Young University--Telonics.
10. Range extension in pigmy rabbits.
11. Genetic variation in the cliff chipmunk.
12. Karyology of pigmy rabbit.
13. Phylogeny in Utah cottontail rabbits.
14. Differential feeding patterns on mule deer and elk antlers.
15. Ultrastructure of hair using scanning electronmicroscopy.
16. Speciation in Peromyscus maniculatus.
17. Ants as prey for Black Bear, Ursus americanus.

#### Current Research:

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Pritchett C. L., M. C. Oveson, and M. C. Shupe. 1984. Techniques of radiotransmitter implantation in porcupines, Erethizon dorsatum. Abstract of paper presented at spring meeting Utah Academy Science, Arts, and Letters. Encyclia 61.

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Unpublished Reports:

Allred, D. M. et al. 1973. An Ecological study of the Jensen Unit of the Central Utah Project. A report submitted to the Bureau of Reclamation by C.H.E.S., Brigham Young University. Provo, Utah. 112 pp.

- Pritchett, C. L. 1973. Photographic Supplement to the Ecological study of the Central Utah Project. Submitted to the Bureau of Reclamation by C.H.E.S., Brigham Young University. Provo, Utah. 6 pp.
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- Pritchett, C. L. 1974. Birds and Mammals in the Diamond Fork - Sevier River regions of the Bonneville Unit of the Central Utah Project. 31 pp. In a special report submitted to The Bureau of Reclamation by C.H.E.S. Brigham Young University. Provo, Utah. July 1974. 224 pp.
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- Pritchett C. L. 1977. Wildlife Assessment In Vegetative and Wildlife Assessment of the Jordan River Aqueduct extension. Bonneville Unit, Central Utah Project. Final Draft. Rocky Mountain Research, Provo, Utah.
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- Pritchett, C. L. and H. D. Smith. 1980. Non-avian wildlife assessment in the environs of the Starpoint mining and reclamation plan. Kaiser Engineers. Oakland, CA.
- Smith, H. D. and C. L. Pritchett. 1980. Wildlife Assessment of the Southern Utah Fuel Company Mining Property and Adjacent Areas, Sevier Co., Utah. To Coastal States Energy Co., Houston, TX.
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- Pritchett, C. L. and H. D. Smith. 1981. Fish and wildlife assessment in the environs of Trail Mountain, Emery Co., Utah. Natomas-Trail Mountain Coal Company, Colorado.
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- Pritchett, C. L. and H. D. Smith. 1984. Wildlife resource information, Link Canyon mining project. Coastal States Energy Company. Houston TX.
- Smith, H. D. and C. L. Pritchett. 1986. Wildlife assessment report for Utah-Nevada intertie 345 KV line. Utah Power and Light Co. 57 pp.
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- Smith, H. D., C. L. Pritchett, C. M. White, and R. W. Baumann. 1986. Faunal studies: draft environmental impact statement, Upper Provo Canyon. 75 pp.
- Smith, H. D. and C. L. Pritchett. 1987. Wildlife assessment supplementary report for Utah-Nevada intertie 345 KV line, Newcastle to Central segment.
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- Pritchett, C.L. 1990. Mammals of the LaSal Mountains: Community Structure Final Report, Utah Division of Wildlife Resources, SERO. Grant No. 900197. 31 pp.
- Pritchett, C.L. 1991. Mammals of the Uinta Mountains: Alpine Tundra. Final Report, Utah Division of Wildlife Resources, NRO. Grant No. 910279. 27 pp.
- Pritchett, C.L. 1992. Status of sensitive mammalian species in Washington Co. Final Report, Utah Division of Wildlife Resources, SWRO. Grant No. 913190. 33 pp.
- Pritchett, C.L. 1993. Small mammals associated with selected marshes in west central Utah. Final Report Division of Wildlife Resources, CRO. Grant No. 913190 (appended). 30 pp.

### **Professional Meetings:**

- 1972- International Academy of Cytology - Tutorial on Human Chromosomes and Chromatin. Chicago, Illinois.
- 1976- American Society of Mammalogists. Texas Tech University. Lubbock, Texas.
- 1976- Presented Paper at Symposium and Workshop Wildland Shrubs Brigham Young University, Provo, Utah.
- 1977- Presented Paper at Annual Meeting of American Society of Mammalogists, East Lansing, Michigan.
- 1978- American Society of Mammalogists. Athens, Georgia.
- 1978- Symposium Elk Management and Control. Laramie, Wyoming.
- 1978- On panel at the Symposium on Tassel-Eared Squirrels. Flagstaff, Arizona.
- 1980- American Society of Mammalogists. Kingston, Rhode Island.
- 1980- Symposium on Endangered Species. Logan, Utah.
- 1981- American Society of Mammalogists. Oxford, Ohio.
- 1981- Coauthored a paper presented at Utah Academy of Science Meetings. Provo, Utah.
- 1982- Hosted Annual meetings of the American Society of Mammalogists. Snowbird, Utah. Coauthored a paper presented at these meetings.
- 1982- Presented paper at the meetings of American Society of Veterinary Anatomists. Snowbird, Utah.
- 1982- Presented a paper at the annual meetings of the Utah Chapter of the Wildlife Society. Logan, Utah.
- 1982- International Cat Symposium. Kingsville, Texas. Reviewer of papers published in the proceedings.
- 1983- American Society of Mammalogy. Gainesville, Florida.
- 1984- American Society of Mammalogists. Arcadia, CA.
- 1984- Presented paper at spring meetings Utah Academy of Science, Arts and Letters, Salt Lake City, UT.
- 1984- Presented poster at the annual meetings of the Australian Mammal Society. University of New South Wales, Sidney Australia.
- 1984- Mountain Lion Workshop, Zions National Park, Utah.
- 1985- Presented a paper at the annual meetings of American Society of Mammalogists, University of Maine, Orono, Maine.

- 1986- American Society of Mammalogists, Univ. of Wisconsin, Madison, WI.
- 1986- Bay Area Association of Systematics. U. C. San Francisco, S.F., CA.
- 1987- Presented a paper at the Simposio Internacional Sobre Mastozoologia Latinoamericana, Cancun, Quintana Roo, Mexico.
- 1988- Regional Meetings, The Wildlife Society, Snow College, Ephraim, Utah.
- 1989- Utah Chapter Meeting, The Wildlife Society, Provo, Utah.
- 1989- Annual Meetings of American Society of Mammalogists, University of Alaska, Fairbanks, Alaska.
- 1990- Presented a poster at the annual meetings of American Society of Mammalogists. Frostburg State Univ., Frostburg, Maryland.
- 1992- Annual Meetings of American Society of Mammalogists. Univ. of Utah, Salt Lake City, Utah.
- 1993- Utah Chapter Meeting, The Wildlife Society, St. George, Utah
- 1993- Annual Meetings of American Society of Mammalogists, Western Washington Univ. Burminham, WA

**Professional Exposure:**

- 1971- Professional Development Leave in the Laboratory of T.C. Hsu .M.D. Anderson Hospital, Houston, Texas.
- 1986- Professional Development leave, Museum Vertebrate Zoology, U.C. Berkeley, Berkeley, CA.

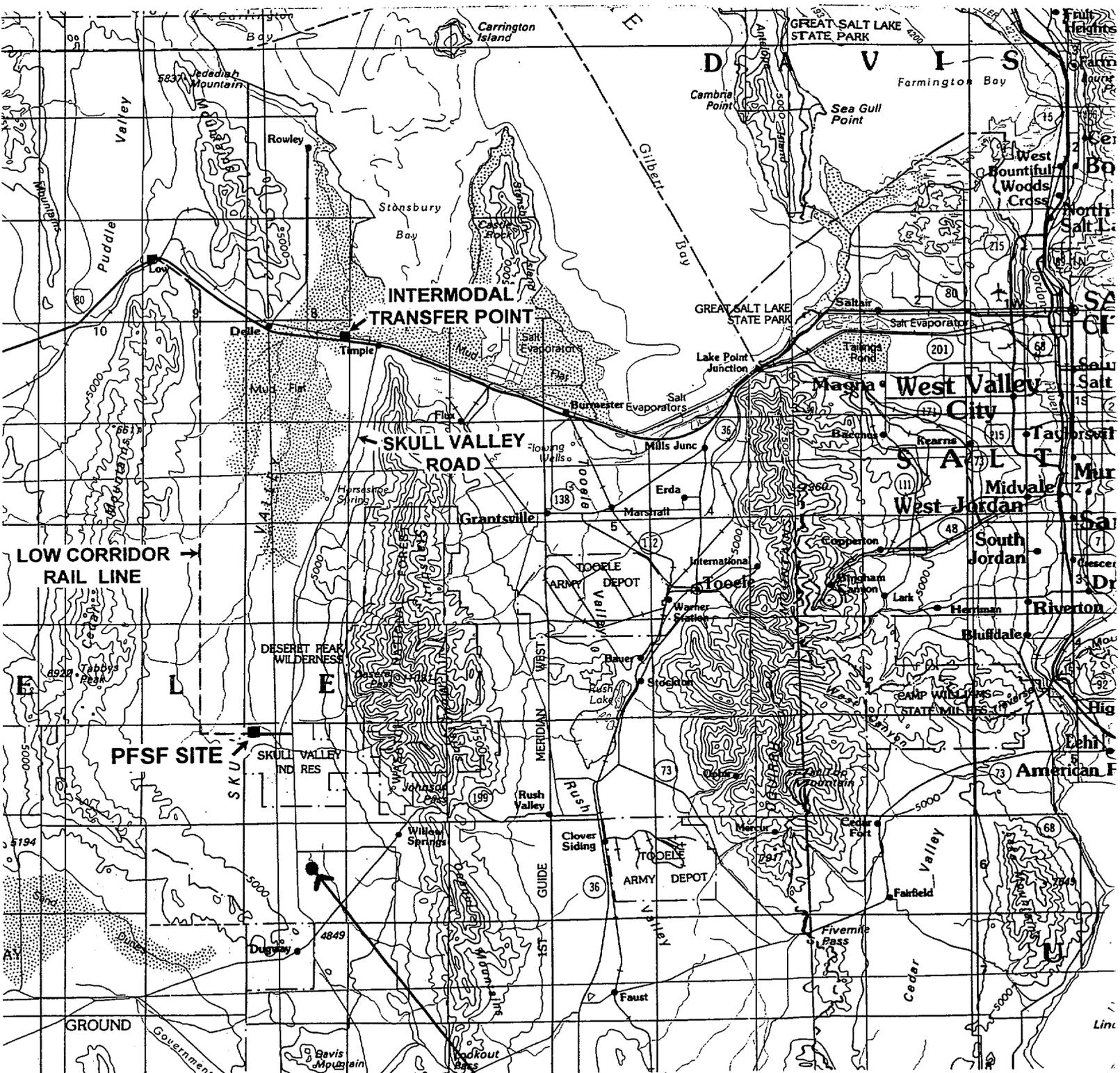
**Professional Memberships and Positions:**

<u>Society</u>	<u>Position</u>
American Society of Mammalogists	Reviewer
Sigma Xi	None
The Wildlife Society	Reviewer
Utah Zoological Society	None
American Association for the Advancement of Science	None

**Committee Activities:**

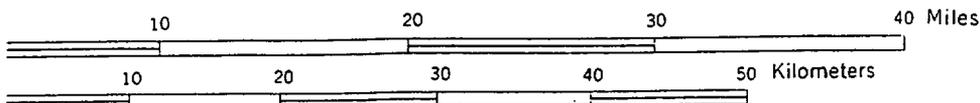
College Media Committee (Chairman)	1968-1970
College Teaching Assistant Committee	1973-1976
College G.E. Committee	1976-1979
College Preprofessional Committee	1977-1979
University Pre-Medical Committee	1979-1982
Wildlife Collecting and Importing Committee	1979-1983
Zoology Dept. Faculty Search Committee (Chairman)	1981-1982
University Studies Committee	1983-1987
Museum Exc. Committee	1984-1986
Zoology Dept. Faculty Search Committee	1985-1986
Museum Exc. Committee	1987-1992
Wildlife Collecting and Importing Committee	1988-1991

**EXHIBIT 2**  
**ER Figure 2.1-1**



Scale 1:500 000

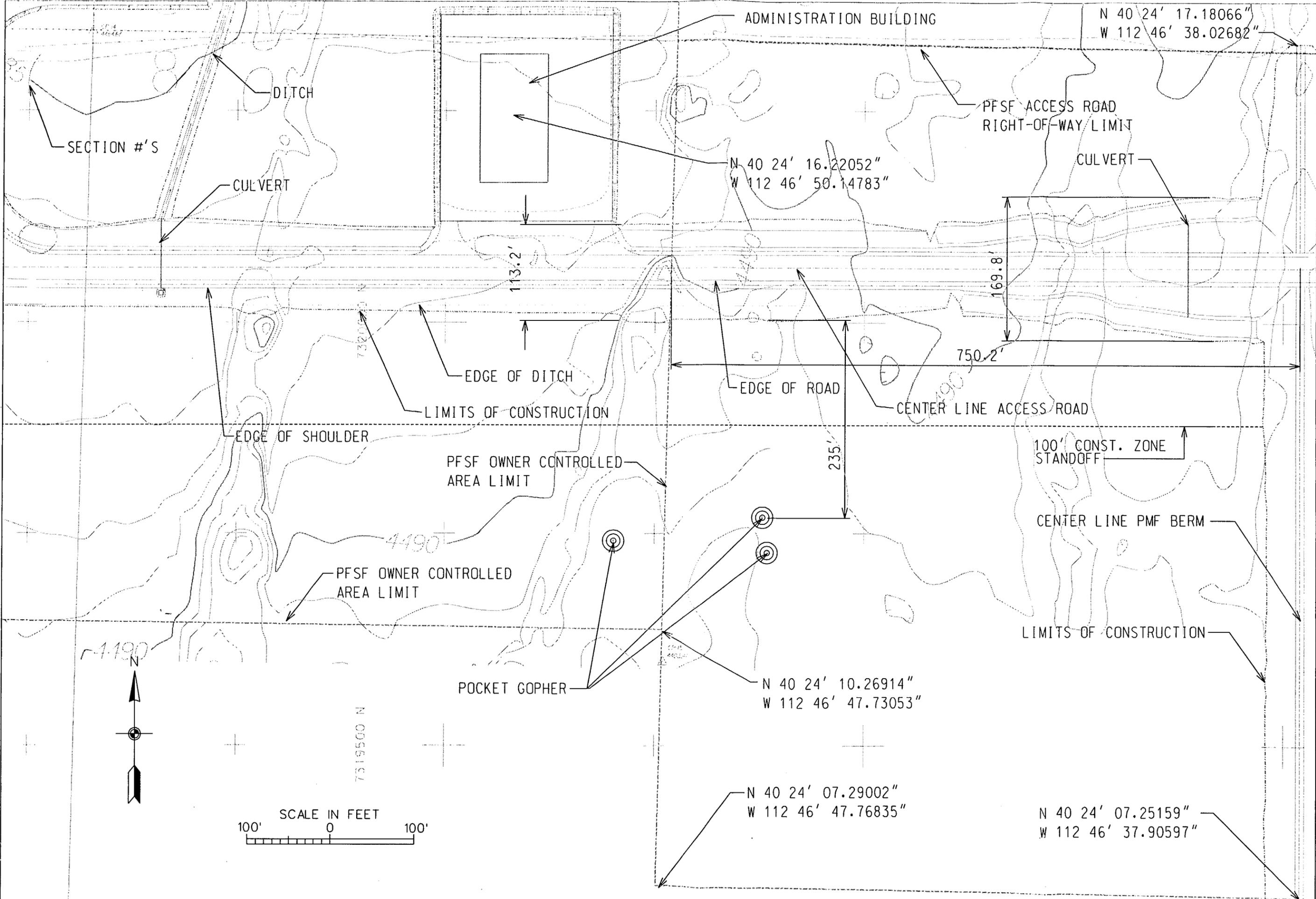
1 inch equals approximately 8 miles



Contour interval 500 feet  
National Geodetic Vertical Datum of 1929

**Figure 2.1-1**  
**REGIONAL LOCATION**  
PRIVATE FUEL STORAGE FA  
ENVIRONMENTAL REPO

EXHIBIT 3  
Map Depicting  
Pocket Gopher Locations  
At OCA And Part  
Of Access Road



ADMINISTRATION BUILDING

N 40 24' 17.18066"  
W 112 46' 38.02682"

DITCH

PFSF ACCESS ROAD  
RIGHT-OF-WAY LIMIT

SECTION #'S

CULVERT

N 40 24' 16.22052"  
W 112 46' 50.14783"

CULVERT

113.2'

169.8'

750.2'

EDGE OF DITCH

EDGE OF ROAD

LIMITS OF CONSTRUCTION

CENTER LINE ACCESS ROAD

EDGE OF SHOULDER

100' CONST. ZONE  
STANDOFF

PFSF OWNER CONTROLLED  
AREA LIMIT

235'

CENTER LINE PMF BERM

PFSF OWNER CONTROLLED  
AREA LIMIT

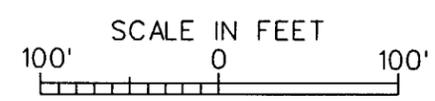
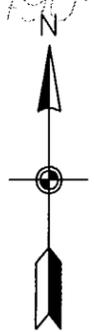
LIMITS OF CONSTRUCTION

POCKET GOPHER

N 40 24' 10.26914"  
W 112 46' 47.73053"

N 40 24' 07.29002"  
W 112 46' 47.76835"

N 40 24' 07.25159"  
W 112 46' 37.90597"

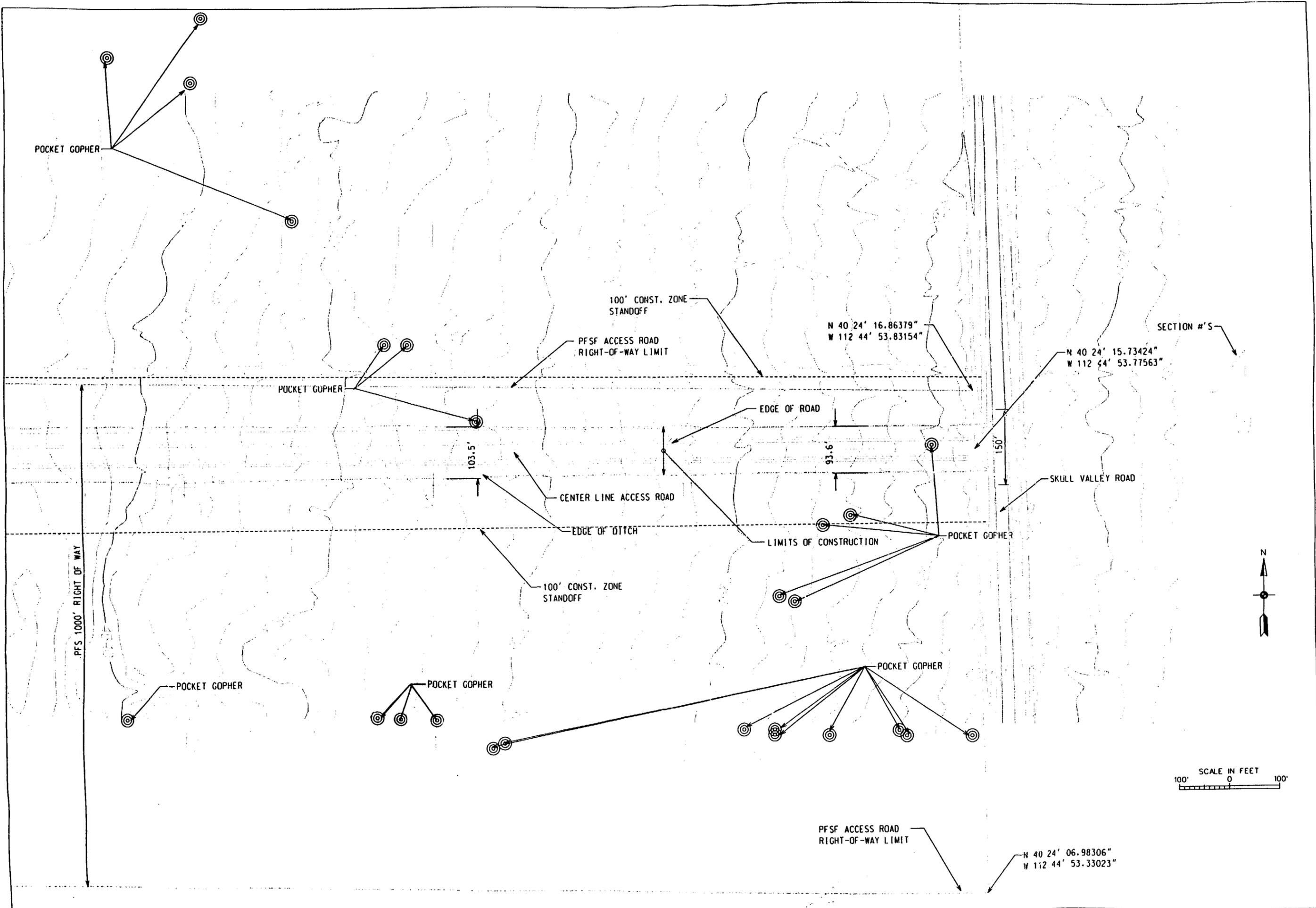


7319500 N

4490

4190

EXHIBIT 4  
Map Depicting  
Pocket Gopher Locations  
On Access Road



SECTION #'S



PFSF ACCESS ROAD  
RIGHT-OF-WAY LIMIT

N 40 24' 06.98306"  
W 112 44' 53.33023"

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

**DECLARATION OF RONALD J. KASS**

Ronald J. Kass states as follows under penalties of perjury:

**I. Introduction**

1. Currently, I am president of Intermountain Ecosystems, a small environmental consulting firm that specializes in conducting botanical and ecological inventories in the Intermountain West. I am providing this declaration in support of a motion for summary disposition of Contention Utah DD (Utah DD) in the above captioned proceeding concerning the Private Fuel Storage Facility (PFSF).

2. My professional and educational experience is summarized in the curriculum vitae attached as Exhibit 1 to this declaration. I am trained as a botanist/plant taxonomist (Masters of Science) and a plant ecologist (Ph.D.). One of my areas of expertise is rare plant ecology. I have conducted numerous qualitative and quantitative plant ecological surveys throughout the western U.S., and have over 25 years of experience conducting plant inventories in Utah and the Western United States. My experience that relates directly to the Skull Valley Pohl's milkvetch and Small Spring Parsley includes the following:

- In 1981, I was a botanist with the Bureau of Land Management's Salt Lake District Office. My responsibilities included doing range vegetation studies and searching for sensitive plant species. During that summer, I observed several populations of the Pohl's milkvetch.

- During 1981-82, I participated in the Flora of the Stansbury Mountain<sup>1</sup> project that included observation and collection of the Pohl's milkvetch.
- I was trained under Dr. Stanley Welsh, recognized expert and author of A Utah Flora,<sup>2</sup> and worked under his tutelage for 15 years.
- In 1988, I completed my master's thesis, which involved a plant inventory in the House Range,<sup>3</sup> a geographic area located about 70 miles southwest of the PFSF.
- I have worked in the eastern Great Basin area (this encompasses mainly western Utah) a total of four summers 1981-82, 1990-91 and spent one summer doing vegetation and rare plant studies in the Salt Lake District. I lived at the BLM Timpie Spring fire station in Skull Valley for the summer of 1981, and am familiar with the area.

3. In Contention Utah DD, as admitted,<sup>4</sup> the State of Utah asserts that:

The Applicant has failed to adequately assess the potential impacts and effects from the construction, operation and decommissioning of the ISFSI and the transportation of spent fuel on the ecology and species in the region as required by 10 C.F.R. §§ 72.100(b) and 72.108 and NEPA in that:

1. The License Application fails to address all possible impacts on federally endangered or threatened species, specifically peregrine falcons nesting on the Timpie Springs Waterfowl Management Area.
2. The License Application fails to include information on pocket gopher mounds which may be impacted by the proposal.
3. The License Application has not adequately identified plant species that are adversely impacted or adequately assessed the impact on those identified, specifically the impact on two "high interest" plants, Pohl's milkvetch and small spring parsley.

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<sup>1</sup> Taye, A. C. 1983. Flora of the Stansbury Mountains. Great Basin Naturalist. Vol. 43:619-646.

<sup>2</sup> Welsh, S. L., N. D. Atwood, S. Goodrich and L. Higgins. 1993. A Utah Flora. 2<sup>nd</sup> ed. Brigham Young University Print Services.

<sup>3</sup> Kass, R. J. 1988. A checklist of the Vascular Plants of the House Range, Utah. Great Basin Naturalist. Vol. 48:102-116.

<sup>4</sup> Private Fuel Storage, L.L.C. (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 204-205 (1998); Memorandum and Order (Memorializing Prehearing Conference Rulings) (May 20, 1998) (rephrasing Basis 1).

4. The License Application does not identify, nor assess the adverse impacts on, the private domestic animal (livestock) or the domestic plant (farm produce) species in the area.

4. In this declaration, I will address Basis 3 of Utah DD, the adequacy of the environmental analysis for the PFSF with respect to the assessment of potential impacts on Pohl's milkvetch and Small Spring Parsley. As I discuss below, the PFSF will have no adverse impacts on Pohl's milkvetch or Small Spring Parsley. Therefore, the environmental analysis conducted by PFS for the facility, and its planned mitigation measures, are adequate with respect to the potential impacts of the facility on those plant species.

## **II. The Private Fuel Storage Facility**

5. As described in the Draft Environmental Impact Statement (DEIS), the proposed PFSF is an independent spent fuel storage facility to be located in Skull Valley, Utah. The proposed site is approximately 44 kilometers west-southwest of Tooele and is located on the Skull Valley Band of Goshute Reservation, about 6 kilometers west-northwest of the Skull Valley Band Village.

6. I conducted a total of three surveys around Skull Valley for PFS. The first two surveys were conducted in 1998. From May 11 through May 13, 1998, I surveyed along the Low rail corridor, at the Intermodal Transfer Point site, and along the Skull Valley Road.<sup>5</sup> In June 1998, I conducted a survey that covered the 820-acre PFSF Owner Controlled Area ("OCA") and the 203-acre access right-of-way.<sup>6</sup> In May 1999, I surveyed an alternate rail corridor.<sup>7</sup> As part of those plant inventories, I located and documented the occurrence of sensitive plant species and provided a plant community description for the areas that would be affected by the proposed PFSF. The surveys I conducted on the plant communities in the Skull Valley Area and PFSF included compiling a list of dominant plant species with a brief discussion

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<sup>5</sup> Private Fuel Storage Facility, Rare Plant Inventory, Skull Valley, Utah (May 20, 1998).

<sup>6</sup> Private Fuel Storage Facility, Rare Plant Inventory, Skull Valley, Utah (June 22, 1998).

<sup>7</sup> Private Fuel Storage Facility, Proposed Alternate Rail Route Plant Species of Special Concern Inventory, Skull Valley Utah (May 12, 1999).

of the plant associations, collecting specimens to verify the presence of rare plant populations that coexist in a given habitat, present.

7. The surveys along the Skull Valley Road and proposed rail corridor were conducted from a vehicle driven along both sides of each corridor, with periodic stops to check for suitable habitat for rare plants, including the Pohl's milkvetch and Small Spring Parsley. Where potential habitat was found, the field personnel walked linear transects across the habitat to determine what rare plant species might be present in that habitat. The surveys at the proposed PFSF OCA and ITP sites were conducted by walking linear transects across the entire site, looking for habitat suitable for either plant species.

8. Pohl's milkvetch is a small, perennial herb (20 cm tall) with pale pink-purple flowers, and inflated, freckled, leathery pods. It is a member of the Legume Family. The habitat for Pohl's milkvetch is sandy areas, sand dunes, low bluffs, and barren clay areas in greasewood, sagebrush and salt desert shrub communities at 1330 to 1650 meters elevation. The Small Spring Parsely (*Cymopterus acaulis var. parvus*) is small, perennial herb (15cm tall) with a short stem and yellowish umbrella-shaped flowers and winged fruits. It is a member of the parsley or carrot family that is found in sand dunes (aeolian sands) at 1400 to 1585 meters elevation and is associated with desert shrub, sagebrush, and juniper plant communities. No suitable habitat was found for Small Spring Parsley and only limited habitat for Pohl's milkvetch was found during each of the three surveys.

9. Greasewood (*Sarcobatus vermiculatus*) is the dominant plant association at the PFSF OCA. The most common herbaceous (non-woody) vegetation present within the area are invasive annuals, such as, cheatgrass (*Bromus tectorum*), tumble mustard (*Sisymbrium altissimum*), and tansy mustard (*Descurainia pinnata*). Native salt desert shrubs such as shadscale (*A triplex confertifolia*), winterfat (*Ceratoides lanata*), budsage (*Artemisia spinescens*) and green molly (*Kochia americana*) are very poorly represented. The abundance of invasive annuals and the poor representation of native shrubs and grasses reflect past overgrazing practices and periodic fire and drought; the presence of these invasive annuals makes it far less likely that either the Pohl's milkvetch or Small Spring Parsley would occur in the area, even if

suitable habitat exists for those plants, because invasive annuals grow faster and out compete native species.

### **III. Transportation Corridor and Facilities**

10. PFS will use one of two modes of transportation to ship spent nuclear fuel to the facility – rail or heavy haul. Under the preferred rail option, PFS plans to transport SNF from the existing Union Pacific rail line at the north end of the Skull Valley to the proposed PFSF. A new rail line would run generally along the west side of Skull Valley from the facility site to the existing, main rail line at Low Junction, Utah (Skunk Ridge). The construction of the new line would temporarily clear 314 hectares along the rail line, with 63 hectares remaining cleared during the operation of the facility (DEIS 2.1.1.3).

11. Common plant communities or associations encountered along the rail corridor were predominantly stands of greasewood. Invasive annuals were abundant throughout the corridor and native forbs and grasses were sparse. As noted above, suitable habitat for the Pohl's milkvetch along the proposed rail corridor is limited and no suitable habitat for Small Spring Parsley is present along the corridor.

12. If SNF is shipped by truck down the Skull Valley Road, the Intermodal Transfer Point ("ITP") is the point at which spent nuclear fuel would be transferred from railcars to heavy-haul vehicles for transport to the proposed PFSF. The ITP would be located approximately 1.8 miles west of Timpie in the area north of I-80 and south of the mainline railroad (DEIS 2.2.4.2, 5.2.1.1). The ITP would require 4.5 hectares of land to be cleared (DEIS 2.2.4.2, 5.3.1.2).

13. The survey of the proposed ITP site determined that the site is dominated by greasewood and big rabbitbrush (*Chrysothamnus nauseosus*), with invasive annuals abundant throughout the area. Once again, for the reasons discussed above, these invasive plant communities generally inhibit the establishment of Pohl's milkvetch or Small Spring Parsley. Even if suitable habitat were present for either Pohl's milkvetch (very limited suitable habitat present) or Small Spring Parsley (no suitable habitat present), it would be more difficult for such plants to establish themselves in the ITP area.

#### **IV. Discussion of Utah DD Issues**

14. In Utah Contention DD, the State asserts that the potential impacts on the Pohl's milkvetch and Small Spring Parsley have not been adequately addressed in the evaluation of the environmental impacts of the facility. Specifically, the State asserts that the environmental analysis is inadequate because it fails to discuss the presence or absence of potential habitat for the Pohl's milkvetch at the PFSF site. The State claims that the Pohl's milkvetch found during PFS's 1998 Rare Plant Survey is near enough to the PFSF site to raise a question as to whether potential habitat for Pohl's milkvetch exists at the PFSF site.<sup>8</sup> The State contends that PFS has failed to properly determine whether potential habitat for Pohl's milkvetch exists within the PFSF project area. If such habitat exists, the State contends that Pohl's milkvetch may appear at the site in subsequent years and PFS should describe in detail how it intends to address the presence of Pohl's milkvetch if eventually found at the site.

##### **A. Pohl's Milkvetch**

15. Pohl's milkvetch is listed as a BLM Special Status Species under BLM 6840 Manual. Generally, this listing is applied to a species for several reasons, including limited numbers of the species, limited geographic range, and the need for more information regarding the numbers and range of a species. The Utah Natural Heritage Program, a state-funded organization, lists Pohl's milkvetch as G5 T1 & S1. The Global rank (G5) refers to the species status, with the numerical ranking 5 denoting that the species is secure globally (i.e., the species, meaning milkvetch, is common or globally secure); the T1 ranking refers to the subspecies status, with the numerical ranking 1 denoting that the subspecies is limited or rare (i.e., the subspecies "var. pohlii" is limited and is in fact native only to Skull Valley and Rush Valley). The S1 ranking is the Utah State ranking, with the numerical ranking 1 indicating that the status of Pohl's milkvetch is of concern because it meets one of the following criteria: there are typically five or fewer reported occurrences of the plant, very few remaining individuals (less than 1,000), or because they occupy less than 2,000 acres.

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<sup>8</sup> See State of Utah's Objections and Response to Applicant's Second Set of Discovery Requests with Respect to Groups II and III Contentions (June 28, 1999) at 122-23.

16. As discussed above, during the surveys I walked linear transects on the proposed ITP and PFSF sites and drove a four-wheel vehicle along both the Skull Valley Road and the proposed rail corridor, periodically checking areas that appeared to be potential habitat by walking linear transects over those areas. The survey found very few sandy areas and no sand dunes in the areas surveyed. The sandy areas that the survey identified were heavily vegetated by alien annuals and habitat quality was poor. Barren knolls and depressions occur throughout the PFSF OCA, ITP site, Skull Valley Road, and proposed rail corridor, but no *Pohl* milkvetch plants were found. The likelihood of finding populations in those areas is low, because of the lack of suitable habitat and the degradation of the habitat that does exist. In general, rare plants grow where competition is limited. The abundance of invasive annuals limits the potential for native vegetation recovery and results in a low probability for the occurrence of any rare plants. For the same reasons, there is a low potential for Pohl's milkvetch occurrence in the PFSF OCA, at the ITP site, or along the access road and proposed low rail line rights-of-way.

17. Although not part of the 1998 surveys, Pohl's milkvetch was incidentally located in two specific areas during the May 1998 inventory on a Skull Valley Band of Goshute road leading off of Skull Valley road toward Hickman Knolls. The first location along this two-track road was about 1.5 miles southeast of the OCA of the proposed PFSF (near Skull Valley road) and second location was on the same two-track road leading to Hickman Knolls, approximately 200 meters distant from the first plant siting. A total of seven plants were located at these two sites. At those sites, Pohl's milkvetch was found along the disturbed road margins populated mostly with invasive annuals. It was not found in habitat typical for the species, such as low clay bluffs and vegetated sand dunes.

18. The presence of the Pohl's milkvetch at the locations found in the May 1998 survey would increase the potential for Pohl's milkvetch seeds to be dispersed and deposited at the proposed PFSF and access road areas. However, the fact remains that the habitat at the PFSF OCA and access road area is not favorable for Pohl's milkvetch and the probability that Pohl's milkvetch would grow in those areas even if its seeds were deposited there is low. Further, in May 1999, I conducted a follow up rare plant inventory for PFS and the Pohl's milkvetch plants that I had located in 1998 were not found during my 1999 survey. For the reasons discussed

above (the presence of invasive annuals), there is a low probability that any Pohl's milkvetch will recur in the area.

**B. Absence of Small Spring Parsley and Suitable Habitat at the PFSF Site and Transportation Corridor**

19. The Small Spring Parsley is listed by the Utah Heritage Program as G5T2T3, S2. The global ranking (G5) indicates that it is secure globally at the species level. At the sub-species level (T2, T3) it is rare or uncommon, and falls into one of the following categories: it may be found nowhere else except in the immediate locale where it was collected, it may be found locally (even abundantly at some of its locations) in a restricted range (i.e., limited to a single western state), or because of other factors it may be vulnerable to extinction throughout its range. The S2, or state ranking, indicates either 6 to 20 reported occurrences of the plant or few remaining individuals (1,000-3,000) or range of acres (2,000-10,000).

20. According to the Utah Natural Heritage Program's Elements Occurrence Records, Small Spring Parsley has occasionally been found within Skull Valley. However, I located no specimens during my surveys. As I indicated, there are no sand dunes or other suitable habitat for Small Spring Parsley located within the areas I surveyed, making the probability very low that any Small Spring Parsley would ever occur in the area.

**C. Protective Measures**

21. The most appropriate and effective mitigation technique against environmental impacts of construction projects on flora is avoidance. Avoidance can generally be accomplished by fencing off areas where plants are located. This protects the plant communities without any negative effects. PFS has committed to fence, to the extent possible (i.e. not within the area of construction), populations of Pohl's milkvetch and Small Spring Parsley that may be discovered in the future at the PFSF or the ITP sites (see DEIS 4.4.5.1).

**V. Summary**

22. In summary, neither plant species was found at the proposed PFSF site, the proposed ITP site, along the Skull Valley Road, or along the proposed low rail corridor during the most recent survey of those areas. Moreover, no habitat exists within the area surveyed for

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Small Spring Parsley and the limited habitat suitable for Pohl's milkvetch is degraded and overrun with invasive annuals that make it a low probability that Pohl's milkvetch could occur in the limited available habitat. PFS's commitment to survey the site before construction and to avoid and fence any populations of the plants that may be found as part of that survey will be sufficient to avoid any negative impact to such plants.

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

Executed on June 28, 2001.

  
Ronald J. Kass

**EXHIBIT 1**  
**Kass Declaration**

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**EDUCATION**

- Ph.D.** New Mexico State University, Las Cruces, NM. Depart. of Biology, Plant Community Ecology, 1992.
- M.S.** Brigham Young University, Provo, UT. Depart. of Botany and Range Science, Plant Taxonomy, 1983.
- B.S.** Brigham Young University, Provo, UT. Depart. of Zoology, Wildlife Ecology, 1978.

**PROFESSIONAL EXPERIENCE**

**Principal-Intermountain Ecosystems, L.C.**

24 years experience in: Endangered Species Inventory and Monitoring, Quantitative Vegetation Sampling and Reclamation, Botanical and Wildlife inventory, Wetland Delineation and Mitigation. Compliance with NEPA, USACOE, EPA, FERC, SMCRA, BLM, USFS and USFWS guidelines.

**PRINCIPLE PROJECTS**

**ENDANGERED SPECIES**

- 2000 Private Fuels Storage Facility, LLC. Expert witness for rare plant and vegetation.
- Sear-Brown Group, Salt Lake City, Ut. T & E clearance for Riverdale Bike Path.
- Sear-Brown Group, Salt Lake City, Ut. T & E clearance for Man of War Bridge, St. George, Ut..
- RB&G Engineering, Provo, Ut. T&E clearance for Orem Center St. Project
- RB&G Engineering, Provo, Ut. T&E clearance for 4 Utah County Bridges
- SWCA, Salt Lake City, Ut. Solitude & DMB ski resort rare plant inventory.
- Entranco, Salt Lake City, Ut. Atkinville Interchange T&E inventory. St George, Ut.
- Entranco, Salt Lake City, Ut. Southern Corridor Biological Assessment. St George, Ut.
- Environmental Management Associates, Elko Nevada. BLM Land Exchange T&E inventory.
- W. W. Clyde, Springville, Ut. Wolf Creek Rd. T&E & raptor clearance, Tabiona, Ut.
- W. W. Clyde, Springville, Ut. North Glendale Gravel Pit. T&E clearance, Kane, Co., Ut.
- Pentacore, Midvale, Ut. *Spiranthes diluvialis* monitoring for American Fork Mall.

- Pentacore, Midvale, Ut. *Spiranthes diluvialis* inventory Provo Industrial Park.
- SWCA, Salt Lake City, Ut. Williams Corps. Aspen pipeline T&E inventory.
- Sear-Brown Group, Salt Lake City, Ut. T & E clearance for Provo 800 North.
- 1999 USDA, Unita National Forest. King's woody aster (*Machaeranthera kingii*) inventory.
- Michael Baker Jr., Salt Lake City. T&E clearance for fiber optic line-Colo.& Ut.
- Sear-Brown Group, Salt Lake City, Ut. T&E clearance River Road Project, St. George, Ut.
- W. W. Clyde, Springville, Ut. T&E clearance Green River gravel pit. Green River, Ut.
- W. W. Clyde, Springville, Ut. T&E clearance for Snow Basin-Trapper Loop Road. Odgen, Ut.
- Stone & Webster, Denver, Co. Rare plant inventory. Skull Valley Private Storage Facility, Tooele Ut.
- UDOT & Entranco, Salt Lake City, Ut. Southern Corridor Desert Tortoise (*Gopherus agassizii*) inventory: St George, Ut.
- Williams Corp. Salt Lake City, Ut. Southwestern willow flycatcher (*Empidonax traillii extimus*). Mancos Loop Pipeline. Mancos, Co.
- SWCA. Salt Lake City, Ut. Williams Pipeline Co. Aspen Pipeline T& E.
- 1998 Orem City, Ut. Ute ladies tresses (*Spiranthes diluvialis*) inventory, restoration, and monitoring.
- Burns & McDonnell Kansas City, Mo. *Spiranthes diluvialis* inventory for DM&E railroad. Wyo. & S. Dakota.
- Engineering Planning Group, Draper, Ut. *Spiranthes diluvialis* inventory, American Fork, Ut.
- Stone & Webster, Denver, Co. Rare plant, burrowing owl, and loggerhead shrike inventory. Skull Valley Private Storage Facility.
- BLM. Richfield District, Ut. Rare plant, burrowing owl, Utah prairie dog and noxious weed inventory. Wayne Co.
- HDR, & Baseline Data. Legacy Highway BA. Salt Lake City, Ut.
- Pic-Technologies, Denver, Co. Wetlands & T& E. Ultra Natural Gas EIS. Pinedale, Wy.
- SWCA, Salt Lake City, Ut. Williams Pipeline Co. Aspen T&E inventory, Price, Ut.
- SWCA, Salt Lake City, Ut. Questar Gas Co., Rare plant inventory, Price, Ut.
- 1997 Continental Lime Co., Delta, Ut. Rare plant inventory Cricket Mt. Mine Expansion.
- SWCA., Salt Lake City, Ut. Questar Pipeline. *Spiranthes diluvialis* inventory. Genola, Ut.
- River Gas Inc. Northport, Al. T&E inventory: Price Coalbed Methane.

BLM. Ferron Gas EIS Rare plant inventory. Price, Utah.

Northern Geophysical of America, Englewood, Co. Rare plant inventory Salina, Ut.

BLM. Wright fishhook cactus (*Sclerocactus wrightiae*) demographic monitoring.

HDR & Baseline Data. Legacy Highway EIS, Salt Lake City, Ut.

1996

McMurry Oil Company, Big Piney, Wy. Rare plant and logger head shrike inventory: Jonah EIS.

Continental Lime Co., Delta, Ut. Rare plant inventory. Cricket Mt. Mine Expansion.

Brush Wellman, Delta, Ut. Rare plant inventory. Topaz Mine Expansion.

Kennecott Copper and The Nature Conservancy, Salt Lake City, Ut. Northern Oquirrh Mts. Bio-inventory.

USFS Black Hills Natl. Forest, Sundance Wy. Rare plant inventory Bear Lodge N. F. Timber EA.

Chandler Oil, Denver Colo. Rare plant inventory, Emery Co.

Engineering Planning Group, Draper, Ut. Endangered species inventory, Spotted frog (*Rana pretiosa*) Ute ladies' tresses (*Spiranthes diluvialis*) American Fork, Ut.

Baseline, Inc. Orem, Ut. Western Transportation Corridor MIS & T&E species.

Northwest Pipeline, Salt Lake City, Ut. Rare plant inventory, Evanston, Wy.

Mariah Assoc., Laramie, Wy. U.S. Gypsum Co., Kimball Draw EA.

Golder Assoc., Denver, Co. Phelps Dodge Co. Chino Mine Expansion EA, Silver City, NM.

1995

USFS Dixie Natl. Forest, Cedar City, Ut. Status report for *Penstemon pinorum*.

Northern Geophysical of America, Englewood, Co. Rare plant inventory Salina, Ut.

Balcron Oil and Subsurface Exploration, Pasadena, Ca. Rare plant inventory Snake Valley Seismic Project. Millard Co, Ut.

Northwest Pipeline Inc., Salt Lake City, Ut. Rare plant inventory for Piceance Creek Replacement Project. Rangely Co.

Union Telephone Co., Lonetree, Wy. Rare plant and logger head shrike inventory.

1994

U.S. Gypsum Co, Chicago, Ill. Rare plant inventory: proposed Gypsum Mine in San Rafael, Ut.

Balcron Oil and Subsurface Exploration, Pasadena, Ca. Rare plant inventory: Snake Valley Seismic Project, Millard Co, Ut.

Resource Management International, Sacramento, Ca. Rare plant inventory: Ute ladies's tresses (*Spiranthes diluvialis*). Central Utah Project, Nephi Basin, Ut.

CH2M-Hill & Mt. Nebo Scientific, Springville Ut. Rare plant inventory: Ute ladies's tresses (*Spiranthes diluvialis*). Central Utah Project, Unitah Basin, Utah.

Baseline, Inc., Orem, Ut. Rare plant inventory: Ute ladies's tresses (*Spiranthes diluvialis*) on the UDOT Myton and Currant Creeks Bridge replacement.

Wyoming Fish and Game, Cheyenne, Wy. Rare plant inventory: Big Piney big game habitat enhancement project. Pinedale, Wy.

BLM, Rock Spring District Office. Status survey and habitat management plan for bastard draba milkvetch (*Astragalus drabelliformis*) in the Upper Green River Basin, Wy.

River Gas of Utah, Northport, Al. T&E inventory: Price Coalbed Methane EIS.

Freston, Ostler, Vernon & Assoc., Vernal, Ut. Rare plant inventory for Ute ladies's tresses (*Spiranthes diluvialis*), Ashley Creek Bridge replacement.

Enron Oil & Gas Corporation, Houston, Tx. T&E inventory: Upper Green River Basin.

Chevron, USA. Houston, Tx. Rare plant inventory: southwestern Wyo.

Mobil Oil Corporation, Bakerfield, Ca. Rare plant inventory: LaBarge oil fields.

Enviroserve Assoc., Fruit Heights, Ut. Rare plant inventory: Ute ladies's tresses (*Spiranthes diluvialis*) AT&T underground powerline: Strawberry Reservoir, Ut.

Freston, Ostler; Vernon & Assoc., Vernal, Ut. Rare plant inventory: Ute ladies's tresses (*Spiranthes diluvialis*), Fort Duchesne, Ut.

Heitzman Drill Services, Casper, Wy Anadarko Petroleum EA., Helper Coalbed Methane EA-- rare plants. Helper, Ut.

Endangered Plant Studies, Orem, Ut. UDOT. LaVerkin Creek Bridge Replacement BA.

Williams Field Services, Salt Lake City, Ut. Rare plant inventory Big-Piney-LaBarge oil fields.

1993 U.S. Justice Dept., Denver Co. Expert witness for Zion National Park Virgin River Ajudication. Expert for hanging gardens and rare plants.

Mobil Oil Corporation & Heitzman Drilling, Casper, Wy. Rare plant inventory: LaBarge oil fields.

Texaco Inc. Heitzman Drilling. Stagecoach Draw EIS--rare plants. Farson, Wy.

Mobil EA: LaBarge Oil Field Expansion Program. Rare plants

Endangered Plant Studies, Orem, Ut. Pacific-Corp., Salt Lake City, Ut. Ismay and Mexican Water Powerline EA, Navajo Tribal Lands, Window Rock, Az.

Williams Field Services. Green River, Wy. Rare plant inventory: Cathodic Protection Systems.

Geo-Marine Inc., Plano, Tx. Rare plants and burrowing owls inventory: Wendover Nev.

Chevron, USA. LaBarge, Wy. Rare plant inventory: LaBarge oil fields.

BLM, Salt Lake City, Ut. Monitoring and demographics for Wright Fishhook cactus (*Sclerocactus wrightiae*).

- Mariah Associates, Inc., Laramie, Wy. Rare plant inventory: Cutthroat Gas plant. Granger, Wy.
- Enron Oil & Gas, Big Piney, Wy. Rare plant inventory, LaBarge, Wy.
- Pic-Technology, Denver, Co. Rare plant inventory: Basin Exploration. Big Piney, Wy.
- Utah Power and Light, Salt Lake City, Ut. burrowing owl and black footed ferret inventory: Navajo Reservation, Aneth, Ut.
- Pic-Technology, Denver, Co. Rare plant inventory: Northwest Pipeline Inc. Big Piney, Wy.
- Endangered Plant Studies, Orem, Ut. Utah Prairie Dog (*Cynomys parvidens*) inventory: Beaver, Ut.
- 1992 Endangered Plant Studies, Orem, Ut. Desert Tortoise (*Gopherus agassizii*) inventory: Walmart Inc. Wash. Co., Ut.
- Utah Power and Light Co., Salt Lake City, Ut. Rare plant inventory: Dixie N.F. Enterprize, Ut.
- BLM, Salt Lake City, Ut. House Range rare plant inventory.
- Ute Indian Reservation, Fort Duchesne, Ut. Rare plant inventory: *Spiranthes diluvialis*.
- USFWS, Denver, Co. Status reports: *Eriogonum soredium*, *Trifolium andersonii* var. *friscanum*, and *Lepidium ostleri*.
- Endangered Plant Studies, Orem, Ut. Pacific-Corp. EA: transmission corridor. BLM and Dugway Proving Ground.
- Endangered Plant Studies, Orem, Ut. Pacific-Corp. BA: transmission corridor for Dixie National Forest.
- 1991 Versar Engineering, Orem, Ut., UDOT. *Spiranthes diluvialis* inventory, U.S.Highway 89.
- Pic-Technology, Denver, Co. Rare plant inventory: Northwest Pipeline Inc., Wyo.,Ut and Id.
- Wayne Co. Water Conservancy District, Salt Lake City, Ut. *Spiranthes diluvialis*, Capital Reef National Park.
- 1990 BLM, Richfield District, Ut. Rare plant inventory: Warm Springs and House Range Resource Areas.
- Utah Heritage Program, Salt Lake City, Ut. Rare plant inventory: Tushar Mountains, Ut.
- BLM, Salt Lake City, Ut. Rare plant inventory: Great Basin and Deep Creek Mts.
- Chusa Energy Co. Farmington, NM. *Sclerocactus mesa-verde*. Navajo Indian Reservation.
- 1989 Endangered Plant Studies, Anadarko Petroleum Company, Denver, Co. Rare plant inventory: Lonetree, Wy.
- BLM, Salt Lake City, Ut. Rare plant inventory: San Rafael Swell, Ut.
- Chusa Energy Company, Farmington, NM. Black-footed ferret inventory: Navajo Indian Reservation, Blanding, Ut.

- 1988 Endangered Plant Studies, Orem, Ut. Utah Power and Light. Rare plant inventory: Blanding, Ut.  
BLM, Salt Lake City, Ut. Rare plant inventory: San Rafael Resource Area, Ut.  
Endangered Plant Studies, Orem, Ut. Seis-Pro Corp., Billings, Mt. Rare plant inventory: Nucla, Co.  
Endangered Plant Studies, Orem, Ut. NPS, Springdale, Ut. Botanical inventory: Zion National Park.  
Endangered Plant Studies, Orem, Ut. Questar Pipeline Inc., Salt Lake City, Ut. Rare plant inventory in Brown's Park, Ut.
- 1987 Endangered Plant Studies, Orem, Ut. NPS, Springdale, Ut. Botanical inventory: Zion National Park.  
Endangered Plant Studies, Orem, Ut. Wayne Co. Water Conservancy District. Rare plant inventory : proposed Fremont River Dam.  
Endangered Plant Studies, Orem, Ut. Utemco Mineral Corp., Uravan, Co. Rare plant inventory: radioactive waste repository.  
Endangered Plant Studies, Orem, Ut. Plateau Mining Corp., Wattis, Ut. Rare plant inventory.
- 1986 Endangered Plant Studies, Orem, Ut. NPS, Springdale, Ut. Botanical inventory: Zion National Park.  
Neese Investigations, Salt Lake City, Ut. *Sclerocactus wrightiae* .BLM, Richfield, Ut.
- 1985 El Paso Natural Gas Company. Rare plant inventory: natural gas line in NM.and AZ.  
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Endangered Plant Studies, Orem, Ut. Wayne Co. Water Conservancy. Rare plant inventory: Fremont River Dam, Ut.
- 1984 Endangered Plant Studies, Orem, Ut. Amoco-Badger Oil Co. Vernal, Ut. Rare plant inventory.  
Bio-West, Logan, Ut. Exxon USA, Midland Tx. Riley Ridge EIS.  
Bio-West, Logan, Ut. San Juan Basin Coal, EIS, Farmington, NM.  
Bio-West, Logan, Ut. Gulf Oil Corp, Houston, Tx. EIS. Commissary Ridge, Wy.  
Endangered Plant Studies, Orem, Ut. Utah Power and Light. Rare plant inventory: Wash. Co., Ut.  
Endangered Plant Studies, Orem, Ut. UDOT. Rare plant inventory: Interstate 70 in Emery Co., Ut.  
Endangered Plant Studies, Orem, Ut. Utah Power and Light. Rare plant & Desert Tortise (*Gopherus agassizii*) inventory: Wash. Co., Ut.
- 1983 Endangered Plant Studies, Orem, Ut. Utah Power and Light. Rare plant inventory: Unita Co., Wy  
Endangered Plant Studies, Orem, Ut. NGA, Engelwood, Co. Rare plant inventory: Price, Ut.  
Endangered Plant Studies, Orem, Ut. Chevron USA., Kemmerer, Wy. Rare plant inventory.

Endangered Plant Studies, Orem, Ut. Bectel Corp., San Francisco, Ca. Rare plant inventory: railway facility Lavender Canyon Nuclear Waste Repository.

Endangered Plant Studies, Orem, Ut. Colorado-Ute Power, Montrose, Co. Rare plant inventory: Grand Junction, Co.

1982 Endangered Plant Studies, Orem, Ut. Frontier Exploration, Billing Mt. Rare plant inventory: Price, Ut.

Bio-West, Logan, Ut. BLM, Vernal, Ut. Rare plant inventory: Uinta Basin, Ut.

Brigham Young University, Provo, Ut. Inventory for Zion Snail (*Physa zionis*). Zion Natl. History Association.

1979 BLM. Las Cruces, New Mexico. Rare plant inventory Sacramento Mts.

1978 Endangered Plant Studies, Orem, Ut. MX missel inventory in Nevada & Utah.

#### WETLAND

2001 R B&G Engineering. Provo, Ut. Wetland delineation

2000 UDOT-HDR Engineering, Salt Lake City, Ut. Springville Interchange wetland delineation and mitigation.

W. W. Clyde. Springville, Ut. Sportmans Park Trail wetland determination. Park City, Ut.

W. W. Clyde. Springville, Ut. Wolf Creek Gravel Pit determination. Summit Co, Ut.

Utah County Rural Housing Development. Provo, Ut. Dry Creek subdivision delineation.

Shady Glen Subdivision, Riverdale, Ut. Wetland delineation.

RB&G Engineering, Provo, Ut. Spanish Fork Canyon wetland delineation and mitigation.

1999 HDR Engineering, Salt Lake City. Vaughn Burbridge delineation. Park City, Ut.

Michael Baker Jr., Salt Lake City, Ut. Wetland delineation fiber optic line-Colo-Ut.

Colliers-CRG, Salt Lake City, Ut. Wetland delineation. Farmington Ut.

HDR& Pic-Tech, Denver, Co. Wetland delineation. DM&E Railroad, Wyo. & S. Dakota.

W. W. Clyde. Springville, Ut. Wetland determination, Trapper Loop Snowbasin Rd.

W. W. Clyde. Springville, Ut. Wetland determination-Gravel Pit Green River, Ut.

4-H Construction, Odgen, Ut. Wetland delineation.

Williams Corp. Salt Lake City. Wetland delineation. Mancos Loop project. Mancos, Co.

1998 Pic-Tech, Denver, Co. Wetland delineation. Paiute Natural Gas Line from Wells to Elko, Nv.

Doug Holmes, Blue Sky Ranch, Heber, Ut. Wetland delineation.

- Pic-Tech, Denver, Co. Wetland delineation. Northwest Pipeline. Twin Falls to Wells, Nv.
- Diversified Habitats. Salt Lake City, Ut. Wetland delineation. Farmington, Ut.
- Tiffany Development Co. Wetland delineation and mitigation. Roy, Utah.
- Robert Nelson Construction, Salem, Ut. Wetland delineation.
- EPG, Draper, Utah. Wetland delineation. Toshiba Development Project.
- 1997** Issac Springs Development, Riverdale, Ut. Wetland delineation and mitigation.
- Springville City Co., Ut. Wetland delineation. Springville Industrial Complex.
- HDR & Baseline Data, Inc. Orem, Ut. Legacy Highway. Wetland delineation team.
- Alco Group, Spanish Fork, Ut. Wetland delineation.
- Engineering Planning Group, Draper, Ut. Wetland delineation. Toomb Development, Provo, Ut.
- Engineering Planning Group, Draper, Ut. Wetland delineation. Jordan River-Palmer.
- Engineering Planning Group, Draper, Ut. Wetland delineation. Ogden Subdivision.
- 1996** Pic-Technologies, Denver, Co. Northwest Pipeline. Evanston pipeline delineation.
- Engineering Planning Group, Draper, Ut. Wetland delineation. Willow Creek Park, Lehi, Ut.
- Springville City Co. Springville, Ut. Wetland delineation. Springville Industrial Complex.
- Engineering Planning Group, Draper, Ut. Wetland delineation. Springville City, Ut.
- Engineering Planning Group, Draper, Ut. Wetland delineation. Genola, Ut.
- Engineering Planning Group, Draper, Ut. Wetland delineation. Macy's, Spanish Fork, Ut.
- Engineering Planning Group, Draper, Ut. Wetland delineation. Harold Toomb Development, Provo, Ut.
- 1995** Enviroserve, Fruit Heights, Ut. Heatherwood Subdivision, Ivory Homes, Roy Ut.
- Williams Field Services, Green River, Wy. Wetland delineation. Green River Pipeline.
- Ecological Planning and Toxicology, Corvallis, Or. Kennecott Copper wetland community analysis.
- Enviroserve, Fruit Heights, Ut. Wetland delineation. Odgen Cove Subdivision.
- 1994** Pic-Tech, Denver, Co. Wetland delineation: Northwest Pipeline Repair Project. Rangely, Co.
- 1993** Pacificorp, Inc. Salt Lake City, Ut. Wetland delineation: Naughton Power Plant, Kemmerer, Wy.
- 1992** PIC Technology, Denver, Co. Wetland delineation: Northwest Pipeline Expansion, Wyo. and Id.
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- 1991 Wayne Co. Water Conservancy District, Salt Lake City, Ut. Wetland inventory: Fremont River Dam.
- 1983 Biowest Inc. Wetland inventory for the West Desert Pumping EIS Davis & Salt Lake Cos., Ut.

#### VEGETATION SAMPLING & RECLAMATION

- 2000 Southern Utah Fuels Co., Waste Rock re-vegetation monitoring.
- 1999 USDA, Uinta Natl. Forest. Vegetation monitoring for Mt. Goats in Mt. Nebo Wilderness Area.
- 1998 Southern Utah Fuels Co., Salina, Ut. Waste Rock and Reference re-vegetation monitoring.
- 1996 Coastal States Energy Co., Midvale, Ut. Vegetation inventory: waste rock monitoring Skyline Mine.
- 1995 Coastal States Energy Co., Midvale, Ut. Vegetation inventory: waste rock monitoring. Skyline Mine.
- Ecological Planning and Toxicology, Corvallis, Or. Ecological risk assessment. Kennecott Copper Mine, Salt Lake City, Ut.
- USFS Shoshone Natl. Forest, Cody, Wy. Soil/vegetation community typing on Absorbka Range.
- 1994 Ecological Planning and Toxicology, Corvallis, Or. Ecological risk assessment. Kennecott Copper, Ut.
- Coastal States Energy Co., Midvale, Ut. Vegetation inventory: waste rock monitoring. Skyline Mine.
- 1992 Southern Utah Fuels Company. Helper, Ut. Vegetation inventory and reclamation plan, Skyline Mine.
- Southern Utah Fuels Company. Helper, Ut. Vegetation and reclamation, Convulsion Canyon Mine, Ut.
- 1988 Endangered Plant Studies, Orem, Ut. Coastal States Energy Co. Monitoring and re-vegetation: Skyline Mine.
- 1985 Endangered Plant Studies, Orem, Ut. Coastal State Energy Co. Monitoring and re-vegetation: Skyline Mine.
- Endangered Plant Studies, Orem, Ut. Southern Utah Fuels Co., Emery, Ut. Soils and vegetation inventory for new lease area.
- 1984 Endangered Plant Studies, Orem, Ut. Coastal State Energy Co. Monitoring and revegetation at Skyline Mine.
- 1983 Mt. Nebo Scientific, Springville, Ut. Vegetation/ soil inventory: Diamond Shamrock Mine, Emery Co., Ut.
- Mt. Nebo Scientific, Springville, Ut. Vegetation/soil inventory: Horse Cyn. Mine. Sunnyside, Ut. U.S Steel Corp.
- 1982 Utah International, Farmington, N. M. Soil/ vegetation inventory at San Juan and Navajo Mines.
- Biowest, Logan, Ut. Reclamation plan for Riley Ridge Natural gas expansion. Wyoming.
- 1979 Endangered Plant Studies & NPI, Salt Lake City, Ut. Vegetation sampling and monitoring: Alaska pipeline: Prudoe Bay to Fairbanks to Tok.
- 1977-78 BLM, Moab District Office. Range technician. Vegetation mapping and sampling (SVIM).

BLM, Glenwood Sps., Co. Range technician. Vegetation mapping and sampling (SVIM).

1976 Brigham Young University and Dow Chemical Co. Gambel oak control.

#### **PUBLICATIONS**

5 scientific publications and 100 non-refereed reports.

#### **PROFESSIONAL AFFILIATIONS**

Ecological Society of America, Society of Wetland Scientists, Natural Areas Assoc., Utah & Wyoming Native Plant Society.

#### **CERTIFICATIONS**

Nationwide Permit Workshop, Wetland Training Institute, 2000.

Advanced Problems in Hydric Soil, North Carolina State University, 2000

Professional Wetland Scientist, Society of Wetland Scientists, 2000.

Habitat Evaluation Procedures, USFWS 1995.

Southwestern Willow Flycatcher Survey Techniques, USFWS 1995, 1998.

Wetland Training Institute, Advanced Wetland Delineation 1992.

Black Footed Ferret Survey Techniques, USFWS, 1990.

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

**DECLARATION OF ROBERT J. HOFFMAN**

Robert J. Hoffman states as follows under penalties of perjury:

**I. INTRODUCTION**

1. I am currently employed as the Radiation Safety Officer at the Veterans Medical Center in Salt Lake City, Utah. I am providing this declaration in support of Applicant's motion for summary disposition of Contention Utah DD (Utah DD) in the above captioned proceeding concerning the Private Fuel Storage Facility (PFSF).

2. My professional and educational experience is summarized in the curriculum vitae attached as Exhibit 1 to this declaration. My main areas of expertise are in medical health physics (the science concerned with the detection, evaluation and control of health hazards from ionizing radiation) and medical radiation safety. My familiarity with those limits comes from extensive study, preparation of lecture materials on medical health physics, and review of NRC license applications.

3. In Contention Utah DD, as admitted,<sup>1</sup> the State of Utah asserts that:

The Applicant has failed to adequately assess the potential impacts and effects from the construction, operation and decommissioning of the ISFSI and the transportation of spent fuel on the ecology and

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<sup>1</sup> Private Fuel Storage, L.L.C. (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 204-205 (1998); Memorandum and Order (Memorializing Prehearing Conference Rulings) (May 20, 1998) (rephrasing Basis 1).

species in the region as required by 10 C.F.R. §§ 72.100(b) and 72.108 and NEPA in that:

1. The License Application fails to address all possible impacts on federally endangered or threatened species, specifically peregrine falcons nesting on the Timpie Springs Waterfowl Management Area.
2. The License Application fails to include information on pocket gopher mounds which may be impacted by the proposal.
3. The License Application has not adequately identified plant species that are adversely impacted or adequately assessed the impact on those identified, specifically the impact on two "high interest" plants, Pohl's milkvetch and small spring parsley.
4. The License Application does not identify, nor assess the adverse impacts on, the private domestic animal (livestock) or the domestic plant (farm produce) species in the area.

4. The State has further elaborated on its claims in discovery responses that it has provided to Private Fuel Storage (PFS). Among other items, the State claims that the environmental analysis does not address the potential for alteration to the human or wildlife food chains due to low-level radiation from the site.<sup>2</sup>

5. In this declaration, I will address Basis 4 of Utah DD, which questions the adequacy of the environmental analysis for the PFSF with respect to the assessment of potential environmental impacts on private domestic animal (livestock) and domestic plant (farm produce) species in the area. I will also address the State's claims of potential adverse impacts on the food chains for humans and peregrine falcons (specifically those that nest at the Timpie Springs WMA) due to low-level radiation from the site. As I discuss below, the PFSF will have no adverse health or safety impacts on the human food chain or on farm livestock and produce. Likewise, radiation from storage casks at the PFSF will have no impact on peregrine falcons at the Timpie Springs WMA.

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<sup>2</sup> State of Utah's Objections and Response to Applicant's Second Set of Discovery Requests with Respect to Groups II and III Contentions, June 28, 1999 at 119, 124-26.

## II. THE PRIVATE FUEL STORAGE FACILITY

6. As described in the Draft Environmental Impact Statement (DEIS), the proposed PFSF is an independent spent fuel storage facility to be located in Skull Valley, Utah. The spent nuclear fuel will be sealed in stainless steel canisters that will arrive at the facility welded shut and will never be opened at the site and which, because of their construction, will not allow the escape of any radionuclides during normal operation of the facility. At the PFSF, the canisters will be stored in cylindrical shaped concrete storage casks. Low-level radiation, in the form of gamma and neutron radiation, can escape the cask. However, the storage casks have sufficient shielding to reduce the dose an animal would receive at the surface of a cask (including radiation from neighboring casks in the array) to a maximum potential dose rate of 14.0 mrem/hr at the sides and 10.2 mrem/hr at the top. Such doses contribute minimally to the level of background radiation at the PFSF.

7. The area of Skull Valley under the control of PFS, the Controlled Area (OCA), will be subdivided into two fenced areas. A four-strand barbed wire "range" fence will enclose the entire 820-acre OCA site. This fence is the closest that any large animal, such as livestock, could approach the facility. Within the area enclosed by the range fence is the 99-acre restricted-access area, enclosed by two eight-foot chain link "security" fences (DEIS 2.1.1.2; ER 4.2.2). The security fence will be embedded 1 foot below the ground. This fence is the closest point at which smaller wildlife could possibly make some form of habitation.

8. Storage casks are contained within the restricted-access area enclosed by the security fences. Any evidence of animal habitation in the 99-acre restricted-access area will lead to the removal of the animals from that area. Likewise, birds will be deterred from perching or nesting on or near storage casks by active attempts to shoo the birds away and, if necessary, suitable physical devices (such as cones) will be installed on top of the casks to make perching or nesting physically impossible (ER 4.2.2).

9. The maximum dose rate at the range fence at its closest approach to the restricted-access area is 9.20 mrem per year, based on a full year (assuming 8,760 hours) of exposure at the fence (ER 4.2.9.1.1). The natural background radiation exposure rates in Skull Valley are approximately 0.01 mrem/hr (87.6 mrem/yr). Therefore, the natural background radiation

exposure rate at the range fence is about 9.5 times greater than the maximum dose rate due to the storage casks.

10. The range fence is the closest point at which large mammals could approach the facility. Thus, the maximum radiation dose that domestic range animals, such as cattle and sheep, could receive in a single year would be 9.20 mrem using the unrealistic assumption that they spent the entire year at the range fence. Likewise, domestic plants could grow no closer than the range fence. Given that most domestic plants (produce) have a growing season shorter than a year, domestic plants would receive a lower dose. For example, a plant with a six-month growth cycle would receive a maximum dose of 4.60 mrem assuming that it grew right next to the range fence at its closest point to the PFSF. As discussed below, this additional dose would have no effect on any animals or plants.

11. The maximum dose rate at the inner security fence is calculated to reach a maximum level of 5.3 rem per year (assuming 8,760 hours of exposure, 4,000 casks at the site) (ER 4.2.9.2.2) due to the presence of the storage casks. Thus, smaller animals that would not be stopped by the range fence, including some potential prey species of the peregrine, would be exposed to a maximum of 5.3 rem per year, assuming the animal stayed next to the security fence 24 hours per day for an entire year. It is not reasonable that any animal will stay at the security fence for an entire year, so the actual doses received by smaller wildlife will be substantially less. Regardless, the additional dose received from spending a full year at the security fence will have no effect on any animals.

### **III. THE INTERMODAL TRANSFER POINT**

12. The Intermodal Transfer Point (ITP) is the point at which spent nuclear fuel, contained within sealed shipping casks, would be transferred from railcars to heavy-haul vehicles for transport to the proposed PFSF if that transportation alternative is used. The ITP would be located next to the main Union Pacific Rail Line 1.8 miles west of Timpie. The ITP would include one pre-engineered metal enclosure. The ITP would be enclosed by an eight foot chain link fence to control public access and a range fence enclosing a buffer area around the enclosure. The shipping casks will not remain permanently at the ITP, but will be transferred directly from the train to heavy-haul vehicles (DEIS 5.7.2.4). The total cumulative radiation dose for all workers at the ITP is 11.9 person-rem per year (DEIS 5.7.2.4), assuming that the ITP workers

handle all 200 casks projected for a single year of operation. The amount of exposure that an individual worker would receive would be considerably less, approximately 1.49 rem per year.

#### IV. DISCUSSION OF UTAH DD ISSUES

13. In Utah Contention DD, the State asserts that several aspects of the presence of the storage casks at the PFSF have not been addressed in the evaluation of the environmental impacts of the facility. Specifically, the State asserts that environmental analysis does not address the potential for low level radiation to alter the food chain of the peregrine falcons through effects on falcon prey species. The State also asserts that the PFS environmental analyses do not adequately address the potential for alteration of the human food chain through the exposure of domestic animals (livestock, including bees) and plants (produce) to low-level radiation.<sup>3</sup> Likewise, the State believes that the analysis fails to address potential ancillary effects on agricultural products produced by livestock and produce that has been exposed to low-level radiation.

14. The State's contention ignores two fundamental facts. First, radiation doses to which an animal may be exposed cannot be passed through the food chain to humans or animals that consume an irradiated animal. Second, the maximum background radiation attributable to PFSF is within well-established parameters and would have no adverse consequences on those consuming the plants and animals exposed to those radiation levels or the products produced by or from those plants and animals.

##### A. Potential for Peregrine Falcon Food Chain Alteration

15. The dose calculations for wildlife contained in the ER (4.2.9.2.2) address the possible radiation dose levels to which prey species of the peregrine falcon may be exposed. As noted earlier, animals that may be prey to the peregrine falcon will have a maximum exposure of 5.3 rem assuming they are present at the security fence of the facility for an entire year. Dose rates are also calculated for animals, such as birds, that may temporarily enter the cask storage area. Animals that are in contact with the air inlet ducts of a fuel storage cask would receive a total radiation dose rate of 14 mrem per hour. An animal in contact with the top of a fuel storage

---

<sup>3</sup> The State has dropped its claim that radionuclides may concentrate in the food chain, based on the Howe Deposition at paras. 37-40.

cask would receive a maximum total radiation dose of 10.2 mrem per hour. Using an extremely conservative assumption (without basis in fact) that an animal would spend up to one-half of a year at either location, the total exposure to the animal would be 61.3 rem per year if it is in contact with the air duct and 44.7 rem per year if it is in contact with the top of the cask (ER 4.2.9.2.2). As stated above, steps will be taken to insure that animals do not remain in the restricted-access area where the storage casks are located for extended periods of time as discussed above. The maximum radiation dose exposure for wildlife at the ITP would be bounded by the maximum radiation dose to which ITP workers would be subject, which is approximately 1.49 rem per year.

16. These dose levels are within well-established parameters that would result in no harm to the peregrine falcon food chain. The National Biological Service (1994) indicates that the lowest dose rate at which harmful effects from chronic irradiation have been observed on wildlife are about 100 rem per year. Similarly, the IAEA (1992) indicates that the chronic radiation of mammals at 1 rad per day (365 rads per year) is near the threshold at which slight dose effects become apparent. The radiation exposure to which an animal may be exposed at the PFSF is considerably below these levels. Therefore, there will be no harm to potential prey species of the peregrine falcon.

17. Moreover, the exposure of prey species to the radiation doses calculated could not result in any harm to peregrine falcons that consume such species. It is impossible for a prey species that is exposed to any of the radiation dose levels calculated for the PFSF to pass along that radiation exposure to a peregrine falcon, because the prey species are not radioactive themselves.

18. For these reasons, the dose rates and cumulative doses possible at the proposed ITP or PFSF sites there will be no adverse effects in the peregrine falcon food chain or to the peregrine falcon itself due to radiation.

B. Potential for Alteration of Human Food Chain

19. The dose calculations for wildlife in the ER also apply to domestic animals (livestock) and domestic plants (produce). Domestic livestock (with the possible exception of bees) and domestic plants (produce) would be unable to be any closer to the facility than the range

fence. The maximum radiation dose such livestock or produce would receive would be 9.20 mrem if present at the range fence continuously for an entire year, approximately an order of magnitude lower than the normal background radiation as discussed above. Even with the unrealistic assumption that an animal would spend the entire year at this location, this radiation level would result in no cognizable harm to domestic livestock or plant species. Likewise, no potential effects of radiation present at the PFSF would have any effect on the products produced from those plants or animals (e.g., meat, milk, eggs).

20. That any additional background radiation from the PFSF would not harm plants or animals is demonstrated by the fact that there are places in the world where humans and animals are exposed to background radiation doses that are significantly higher than the ones at the proposed facility without detectable adverse health effects. For example, Leadville, Colorado receives approximately 70 mrem more per year of natural background radiation from cosmic rays compared to Skull Valley. I am aware of no documented ill effects to the human or animal populations due to this level of background radiation, which is substantially higher than the combined maximum background radiation that would be present at the range fence of the PFSF.

21. While bees theoretically would be able to get past the security fence, there is absolutely nothing that would attract them inside the restricted-access area which will be devoid of vegetation (ER 4.2.2). Even assuming that the bees were exposed to the dose rates calculated for contact with a cask air inlet duct for half a year (an assumption with no basis in fact or reason), that exposure would have no effect on the bees, the honey produced, or humans who may consume the honey.

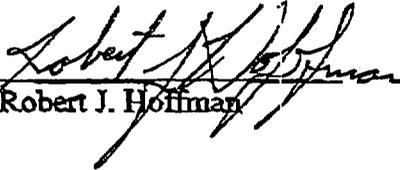
22. Even if domestic plants or animals were exposed to those maximum radiation levels, the radiation, as discussed above, does not remain in the food chain as the State seems to suggest. No cognizable harm would therefore occur to humans that consumed agricultural products produced by or from livestock or plants exposed to the increased radiation from the presence of storage casks. Additionally, the maximum exposure to radiation to which such domestic plant or animal life could be subject would have no "genetic" or otherwise inheritable effects.

#### IV. SUMMARY

23. The State's assertions in Utah DD regarding the effects of radiation on the peregrine falcon and human food chains has no basis in fact. In fact, it implicitly makes several wrong assumptions about the nature of radiation. The dose calculations provided in the DEIS and ER indicate that no harm will come to wildlife, livestock or domestic plants that may come in close proximity to the PFSF. Moreover, the maximum exposure that wildlife, livestock, or produce might receive will have no effect on either peregrine falcons or humans that may consume them.

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

Executed on 29 June, 2001.

  
Robert J. Hoffman

**EXHIBIT 1**  
**Hoffman Declaration**

## PERSONAL RÉSUMÉ

**Robert James Hoffman**  
2291 Four Woods Cir.  
Salt Lake County, Utah 84109  
(801)-272-6059

### Education

B. S. Physics, Math Minor, University of Utah – 71  
M.S. Physics [Medical Radiation], University of Utah - 73

### Professional Positions

**University of Utah, Salt Lake City, Utah - 7/75 to 4/78, Health Physicist**

*Varied health physics responsibilities in support of an NRC license of broad scope, responsible for all analytical x-ray safety and surveys, responsible for medical x-ray surveys at the VAMC.*

**Yale-New Haven Hospital, New Haven, Connecticut - 5/78 to 6/81, Radiation Safety Officer**

*Responsible for a broad medical radioactive materials program and license, responsible for radiation safety for therapy and diagnostic x-ray units.*

**Yale University, Department of Radiation Oncology, New Haven, Connecticut - 5/78 to 6/81, Lecturer**

Taught health physics and radiation safety to technician and dosimetry students, and Radiation Oncology Residents.

**University of Utah, Salt Lake City, Utah - 7/81 to 3/82, Health Physicist**

*Varied health physics responsibilities in support of an NRC/BRC license of broad scope, responsible for all analytical x-ray safety and surveys, (applies to the next two positions as well).*

**University of Utah, Salt Lake City, Utah - 4/82 to 11/82, Radiation Safety Officer and Acting Director of Radiological Health.**

**University of Utah, Salt Lake City, Utah - 12/82 to 8/89, Health Physicist**

**Veterans Affairs Medical Center, Salt Lake City, Utah - 8/89 to present, Radiation Safety Officer**

*Responsible for all radiation safety support of an NRC medical license of broad scope, responsible for medical x-ray surveys and safety.*

### Additional Formal Courses or Training

Finished major portion of course work for M.S. in nuclear engineering while working as a campus health physicist.

Breast Exposure Nationwide Trends "BENT" Training Course given by Bureau of Radiological Health - FDA - PHS - U.S. Department of Health, Education, and Welfare, 12/77.

Attended the 2<sup>nd</sup> HPS Summer School on "Ionizing and Non-Ionizing Radiation in Medicine", 7/79.

Completed two one week courses sponsored by NIOSH given by the Rocky Mountain Center for Occupational and Environmental Health at the University of Utah.

1. "Current issues and trends in controlling occupational exposures to RF/microwave radiation", 2/82.

2. "Introduction to industrial hygiene chemistry (NIOSH 590)", 11/83

Certificate for a course given by Professional Management Training Program of Personnel Administration, University of Utah, 1/85.

Seminar "Packaging & Transportation of Radioactive Waste Material" given by USEcology, September 23 - 25, 1986.

Attended the HPS Summer School on "Practical Statistics for Operational Health Physics", 7/87.

Attended the 1993 HPS Summer School on "Hospital Health Physics", 7/93 Attended course titled "X-Ray Mammography" given by the University of Texas, Health Science Center, 10-11 January 1994.

Attended a 54 hour course in "Mammography Facility Inspection Techniques" given by The Uniformed Services University of the Health Sciences, September 25-30, 1995.

Completed 20 hours of emergency response training as part of the VA Medical Emergency Radiological Response Team (MERRT) - Albuquerque, New Mexico August 13-15, 1996.

Completed 36 hour course "R/F System Performance and Compliance Testing For Physicists" given by Radiological Service Training Institute - Cleveland, Ohio September 16-20 1996.

Completed 24 hours training on "Medical Management of Radiological Incidents" given by Office of Emergency Medical Preparedness - Veterans Health Administration - Minneapolis, MN - March 20-22, 1997.

Completed 15 hours training in "Mammography: A Course for Physicists" presented by Medical Technology Management Institute - San Francisco, CA January 24-25, 1998.

Completed 36 hours training in "Radiological Accident Command, Control and Coordination Course" given by the Defense Threat Reduction Agency at the Defense Nuclear Weapons School, Kirtland Air Force Base, New Mexico, March 1-5, 1999.

Completed "8-Hour Hazardous Materials Awareness Training for Medical Responders" given by DVAMC, Bay Pines, Fl. May 16, 2000.

Completed "16-Hour Hazardous Materials Operations Training for Medical Responders" given by DVAMC, Bay Pines, Fl. May 17-18, 2000.

#### **Certification**

Certified by the American Board of Health Physics-1981 Recertified thru 1989, Recertified thru 1993, Recertified thru 1997, Recertified thru 2001.

Utah Radiation Control Board approved as a Mammography Imaging Medical Physicist. Issued June 1, 1997.

MQSA Physics authorization by letter from FDA, April 28, 2000

#### **Advisory Appointments**

Chairman of Radiation Control Board for the Department of Environmental Quality for the State of Utah - (April 1995 to July 1997).

Appointed as a member of the Radiation Control Board for the Department of Environmental Quality for the State of Utah (1991 - 1998).

Member of Radiation Technical Advisory Committee to The Bureau of Radiation Control for the State of Utah 1982 to 1986, Re-appointed to five year term in December of 1986.

Radiation Safety Committee and Radioactive Drug Research Committee - University of Utah - 1981 to Present.

#### **Health Physics Society Activities**

Plenary Member -1975 to Present

Program Committee-Health Physics Society-1985-1988

Annual Meeting Place Committee - Health Physics Society - 1990-1992.

#### **HPS Chapter Activities**

Treasurer Great Salt Lake Chapter-Health Physics Society - 1978.

President-elect of Connecticut Chapter-Health Physics Society-1980.

President of Great Salt Lake Chapter - Health Physics Society-1986

Local Arrangements Committee for Salt Lake City 1987.

#### **Publications**

Hoffman R. J., Nath R., On the Sources of Radiation Exposure of Technologists in a Radiotherapy Center with High Energy X-ray Accelerators. Health Physics 42,525.

Hoffman R. J., Report on Methodology of Calibration and Irradiation of Samples with the UDM <sup>137</sup>Cs Beam Irradiator at the University of Utah. US-Japan Joint Reassessment of Atomic Bomb Radiation Dosimetry in Hiroshima and Nagasaki FINAL REPORT Volume 2 (Appendix to Volume 1) DS86.

**General Health Physics  
Consulting & Services**

Interwest Health Physics – President - consulting in medical health physics and general radiation safety - diagnostic x-ray unit surveys - evaluation of mammography units for compliance with state and FDA MQSA screening programs - training - license applications -radiological evaluations - instrument calibrations. Below is a partial list of clients.

AgriDyne Technologies Inc.-- Salt Lake City, Utah  
Allen Memorial Hospital -- Moab, Utah  
Allied Clinical Labs--Salt Lake City, Utah  
AMAX Magnesium Corn--Utah  
AMOCO Oil--Salt Lake City, Utah  
ARUP--Salt Lake City, Utah  
Ashley Valley Medical Center--Vernal, Utah  
Bannock Regional Medical Center--Pocatello, Idaho  
Brigham City Hospital--Brigham City, Utah  
Cassia Memorial Hospital--Burley, Idaho  
Castleview Hospital--Price, Utah  
Davis Hospital & Medical Center--Layton, Utah  
Deseret Research--UBTL-Midico-- Salt Lake City, Utah  
Design West--Logan, Utah  
Duchesne County Hospital--Roosevelt, Utah  
Evans and Sutherland Computer Corporation--Salt Lake City, Utah  
Envirocare of Utah--Salt Lake City  
FHP of Utah--Salt Lake City, Utah  
GenMark--Salt Lake City, Utah  
Geneva Steel--Orem, Utah  
Kennecott Research--Salt Lake City, Utah  
Lake View Hospital--Bountiful, Utah  
Logan Regional Hospital-- Logan, Utah  
McKay Dee Hospital--Ogden, Utah  
Mountain View Hospital--Payson, Utah  
NPI--Salt Lake City, Utah  
Nelson Johnson and Partners--Salt Lake City, Utah  
Ogden Clinic--Ogden, Utah  
Ogden Regional Medical Center--Ogden, Utah  
Osteon Incorporated--Wahiawa, Hawaii  
Pioneer Valley Hospital--Salt Lake County, Utah  
Pocatello Regional Medical Center-- Pocatello, Idaho  
Rogers & Associates Engineering Corporation--Salt Lake City, Utah  
San Juan County Hospital -- Monticello, Utah

South Lincoln Medical Center -- Kemmerer, Wyoming  
Star Valley Hospital -- Afton, Wyoming  
Stebbins Engineering --Watertown, New York  
Technicare--Hayward, California  
Timpangos Regional Hospital - Orem, Utah  
Uintah Basin Medical Center - Roosevelt, Utah  
United States Bureau of Reclamation--Provo, Utah  
Utah Orthopedic Associates--Salt Lake City, Utah  
Utah Valley Regional Medical Center -- Provo, Utah

# CONDENSED TRANSCRIPT

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of ) Docket No. 72-22  
PRIVATE FUEL STORAGE ) ASLPB No. 97-732-02-ISFSI  
L.L.C. ) DEPOSITION OF:  
(Private Fuel Storage ) FRANK P. HOWE  
Facility) )  
\_\_\_\_\_ ) (Utah Contention DD)

Tuesday, April 24, 2001 - 8:30 a.m.

Location: Parsons, Behle & Latimer

201 S. Main, #1800

Salt Lake City, Utah

Reporter: Vicky McDaniel

Notary Public in and for the State of Utah



**CitiCourt, LLC**  
THE REPORTING GROUP

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Private Fuel Storage, L.L.C.  
 Frank P. Howe \* April 24, 2001

SHEET 1 PAGE 1

UNITED STATES OF AMERICA  
 NUCLEAR REGULATORY COMMISSION  
 Before the Atomic Safety and Licensing Board  
 In the Matter of ) Docket No. 72-22  
 ) ASLPB No. 97-732-02-ISFSI  
 PRIVATE FUEL STORAGE )  
 L.L.C. ) DEPOSITION OF:  
 )  
 (Private Fuel Storage ) FRANK P. HOWE  
 Facility) )  
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 Tuesday, April 24, 2001 - 8:30 a.m.  
 Location: Parsons, Behle & Latimer  
 201 S. Main, #1800  
 Salt Lake City, Utah  
 Reporter: Vicky McDaniel  
 Notary Public in and for the State of Utah

PAGE 2

A P P E A R A N C E S

1  
 2  
 3 For the Intervenor: LAURA LOCKHART, ESQ.  
 ASSISTANT ATTORNEY GENERAL  
 Office of the Attorney General  
 160 East 300 South, 5th Floor  
 Salt Lake City, UT 84114-0873  
 4  
 5 For the Applicant: ERNEST L. BLAKE, ESQ.  
 SHAW PITTMAN  
 2300 N Street, NW  
 Washington, D.C. 20037-1128  
 (202) 663-8304  
 6  
 7 For the NRC: CATHERINE MARCO, ESQ.  
 U.S. NUCLEAR REGULATORY COMMISSION  
 Washington, D.C. 20555  
 8  
 9 Also Present: Clayton White  
 10  
 11  
 12 I N D E X

THE WITNESS	PAGE
FRANK P. HOWE	
Examination by Mr. Blake	5
Examination by Ms. Marco	77
Further Examination by Mr. Blake	79

13  
 14  
 15  
 16  
 17  
 18  
 19  
 20  
 21  
 22  
 23  
 24  
 25

PAGE 3

	E X H I B I T S	
1		3
2	NUMBER	PAGE
3	DD-1 Appendix A from LBP-98-07	12
4	DD-2 State of Utah's Objections and Response to Applicant's Second Set of Discovery Requests with Respect to Groups II and III Contentions	14
5		
6	DD-3 State of Utah's Objections and Response to Applicant's Sixth Set of Discovery Requests to Intervenor State of Utah	16
7		
8	DD-4 Resume of Frank Pence Howe	16
9		
10	DD-5 ER Chapter 4, Revision 8, page 4.2-19	27
11	DD-6 Excerpt from Draft EIS, Transportation Impacts	64
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

PAGE 4

P R O C E E D I N G S

1  
 2 MR. BLAKE: Do you want to start with what  
 3 you've handed out?  
 4 MS. LOCKHART: Sure. My name is Laura  
 5 Lockhart and I represent the State of Utah in this  
 6 matter. We have given opposing counsel a copy of a  
 7 document entitled Frank Howe's Areas of Testimony dated  
 8 April 24, 2001. If you want to make it an exhibit or  
 9 just -- anyway, it is intended to show the, well,  
 10 obviously the areas of testimony for Mr. Howe, which are  
 11 narrower than the contention, obviously.  
 12 MR. BLAKE: I only had one question on it,  
 13 Laura, and that was the last bullet, which says  
 14 "construction impacts on non raptors; apparent failure  
 15 to mitigate." Was that intended to mean non raptors who  
 16 are prey species for the peregrine?  
 17 MS. LOCKHART: Would you like me to answer  
 18 that or Frank? I mean, I'm happy to --  
 19 MR. BLAKE: I don't know whose document this  
 20 is.  
 21 MS. LOCKHART: It's a document that I  
 22 created after speaking with Mr. Howe. There are some  
 23 matters that I will grant may be considered to be  
 24 outside of the contention that we wanted to bring to  
 25 your attention. That's really my -- obviously it could

PAGE 5 5

1 be both.  
2 MR. BLAKE: Okay. I would understand,  
3 obviously, the peregrine prey species that are non  
4 raptors, but I'll try that. These are the ones that  
5 we'll probably agree maybe are outside the contention  
6 but you wanted to make us aware of.  
7 MS. LOCKHART: Right.  
8 MR. BLAKE: So be it.  
9 FRANK P. HOWE,  
10 having first been duly sworn to tell the truth,  
11 was examined and testified as follows:  
12 EXAMINATION  
13 BY MR. BLAKE:  
14 Q. Mr. Howe, you've been sworn.  
15 A. Uh-huh.  
16 Q. Have you been deposed before?  
17 A. No, I haven't.  
18 Q. Have you appeared as a witness in any  
19 proceeding?  
20 A. No.  
21 Q. Let me just say that this is not like a  
22 hearing context. If you want to take a break at any  
23 time, just say, "I want to take a break." Doesn't  
24 matter to me whether or not there's a question pending  
25 or there isn't a question pending or anything of the

PAGE 6 6

1 sort. So anytime you want to take a break, you take  
2 one. And if you don't understand for any reason or you  
3 don't you don't understand what I'm saying, just tell me  
4 that and I'll try again, and I'll keep trying till we  
5 communicate.  
6 A. Okay.  
7 Q. State your name for the record.  
8 A. It's Dr. Frank P. Howe.  
9 Q. And what's your current position and  
10 employer?  
11 A. I am the nongame avian program coordinator  
12 for the State of Utah Division of Wildlife Resources.  
13 Q. And are you familiar with the PFS project?  
14 A. Yes, I am.  
15 Q. Does PFS make sense to you?  
16 A. Yes, uh-huh.  
17 Q. And how are you familiar with it?  
18 A. Primarily through documentation of the  
19 environmental report and through the contention  
20 documentation that have been provided by Laura Lockhart.  
21 Q. Let me add one other instruction for you  
22 which you may have already heard from your own lawyer.  
23 I don't care about communications between you and your  
24 lawyers. I do care about other kinds of communications,  
25 but not between you and your counsel. And to the extent

PAGE 7 7

1 the question sounds like I'm trying to inquire into what  
2 you and Laura talked about or you and any other attorney  
3 that represents the state, feel free to correct me or  
4 say "I'm not going to talk about that" or whatnot, and  
5 we'll get beyond that.  
6 MS. LOCKHART: As long as we're on  
7 preliminaries, there's something else I forgot.  
8 MR. BLAKE: Sure.  
9 MS. LOCKHART: We wanted to -- I imagine  
10 Dr. White has mentioned this to you, but there is a  
11 financial relationship between these two witnesses with  
12 Frank funding some of Dr. White's programs.  
13 MR. BLAKE: I wasn't aware of that.  
14 MS. LOCKHART: It doesn't bother me. I just  
15 wanted to make sure that we had it on the record.  
16 MR. BLAKE: All right. Do you think it  
17 bothers anybody?  
18 MS. LOCKHART: I'm not aware of anybody it  
19 bothers.  
20 MR. BLAKE: Okay. It doesn't bother me that  
21 Dr. White might be beholdant of private finances.  
22 MS. LOCKHART: They're both good, honorable  
23 people.  
24 MR. BLAKE: I'm sure we'll hear a good,  
25 honest reaction from Dr. White, in any event.

PAGE 8 8

1 Q. (BY MR. BLAKE) How long have you been  
2 involved in the PFS project or its review?  
3 A. Since about 1997.  
4 Q. And what has been your involvement?  
5 A. I had a little difficulty actually finding  
6 documentation that I made comments to the state on. The  
7 state has provided comments to the initiating agency,  
8 and it's highly likely that I made some contribution to  
9 those comments. So I've provided comments on the  
10 construction project and the effects that that  
11 construction may have on nongame birds.  
12 Q. And maybe I can show you some documents that  
13 will help you identify. Do you know the difference  
14 between like interrogatory responses and contentions?  
15 A. No, not really.  
16 Q. Okay. Well, I'll try to show you some  
17 documents to help you. And who were you working with in  
18 this early commenting period?  
19 A. It would have been the habitat section at  
20 the Division of Wildlife Resources. We have a regional  
21 structure, and typically we would -- I would consult  
22 with the regional habitat biologists. In this case it  
23 would have been Mr. Rory Reynolds. And given the  
24 magnitude of this project, it would have probably been  
25 handled out of the Salt Lake office, and the chief of

Private Fuel Storage, L.L.C.  
Frank P. Howe \* April 24, 2001

SHEET 2 PAGE 9 9

1 the habitat section at that time I believe was Mr. Larry  
2 Dalton.  
3 Q. So you've worked with Larry Dalton. Did you  
4 work with Don Paul at all?  
5 A. Yes.  
6 Q. Any other individuals other than  
7 Mr. Reynolds?  
8 A. Perhaps Pam Kramer.  
9 Q. Is that K or C?  
10 A. K.  
11 Q. K.  
12 A. She's also in the regional office. And I  
13 may have consulted with one of the habitat biologists  
14 from the central region, and I cannot recall at that  
15 time who that would have been.  
16 Q. Nor can I give you any help from the central  
17 region. Do you recall the substance of those  
18 communications?  
19 A. Not directly.  
20 Q. Do you recall your communications to them?  
21 A. No, I honestly don't. I could guess at what  
22 we talked about, but I really can't recall.  
23 Q. What were the purposes or the circumstances?  
24 A. The habitat section will typically consult  
25 with me on issues of importance to nongame birds. That

PAGE 10 10

1 is my area of expertise. And if they have a particular  
2 problem that they see a construction project may have on  
3 nongame birds, they will talk to me directly. And so I  
4 would have discussed with them the birds that may be in  
5 the area, those that may be impacted by the construction  
6 activities.  
7 Q. What did you do to prepare for today's  
8 deposition?  
9 A. Reviewed the environmental report and the  
10 draft environmental impact statement.  
11 Q. Did you review any of the prior discovery  
12 materials that you had been asked to support in that  
13 affidavit?  
14 A. Reviewed some of the contention materials,  
15 the interrogatory materials.  
16 Q. Other than counsel, did you talk about this  
17 deposition with anybody else?  
18 A. No.  
19 Q. Are you aware you've been named by the state  
20 as an expert --  
21 A. Yes.  
22 Q. -- who may testify in the hearing?  
23 A. Yes.  
24 Q. Let me show you a contention, and I have to  
25 go and get another book to do it. That's a way of going

PAGE 11 11

1 through and limiting your testimony.  
2 A. Okay.  
3 Q. Hold on.  
4 What I'm showing you is out of this. It's a  
5 copy from memorandum and order that the licensing board,  
6 the three judges in this NRC proceeding issued back in  
7 '98. And it allowed contentions, these rulings on what  
8 was in, what was out. This is just an excerpt from it.  
9 But attached to it was an appendix, and this is the  
10 contention that we're talking about. I'm sure you've  
11 seen this before and your counsel will recognize it.  
12 The handwriting on this copy that I'm  
13 showing you is my handwriting, only because I know in a  
14 later order they made this change really at the state's  
15 request to make sure that we weren't talking about bird  
16 A and B, we were talking about whatever the birds and  
17 falcons were that were out there in the Timpie Springs  
18 area.  
19 So this is from LBP 98-7, and that's what I  
20 want to go through with you. It's going to be about the  
21 same topic as your counsel handed out at the beginning  
22 of the session.  
23 MS. LOCKHART: I have a copy of the  
24 contention, a clean copy, if you just want to introduce  
25 it as an exhibit now.

PAGE 12 12

1 MR. BLAKE: Sure. That would be fine. Is  
2 this just a retyped version of what I'm looking at here,  
3 do you think, Laura?  
4 MS. LOCKHART: It's not even a retype. They  
5 took it directly from LBP-09, cut and paste. And then I  
6 made the changes in '98, or I thought I did.  
7 I really meant to make this simpler. If  
8 this is more complicated, by all means, you don't have  
9 to use this yet.  
10 MR. BLAKE: No, this will be fine. I'm  
11 happy to mark this. You can keep one if you'd like.  
12 Let me mark this. And following the same  
13 kind of format we had before, this would be Utah  
14 Contention DD Exhibit 1. And we'll just follow that  
15 format no matter who's doing the questioning so we don't  
16 have applicant's and the state's and NRC's, and we can  
17 all use the same exhibits. So this will be Exhibit 1.  
18 (Exhibit DD 1 marked.)  
19 Q. If you have that document now in front of  
20 you, Dr. Howe. There's a lead-in that says the  
21 applicant, which means PFS here, has failed to take into  
22 account the impacts from construction, operation,  
23 decommissioning, transportation in the following  
24 respects. And that's really what I want to focus on is  
25 1, 2, 3, and 4.

PAGE 13 13

1 It's my understanding that you're prepared  
2 to talk about item No. 1, which is impacts on federally  
3 endangered, specifically the peregrine falcons.  
4 A. Yes.  
5 Q. It's my understanding that you're not  
6 prepared to talk about 2, pocket gophers?  
7 A. That's correct.  
8 Q. It's my understanding that you're not  
9 prepared to talk about 3, which is some flora concerns?  
10 A. That's correct.  
11 Q. And it's my understanding as well you're not  
12 prepared to talk about 4, which is domestic livestock?  
13 A. Yes.  
14 Q. Okay. Now, having looked at this document,  
15 which is the Contention DD, did you play a role in its  
16 development? It would have been submitted back in the  
17 '97 time frame.  
18 A. Yes.  
19 Q. And did you play a role just in the first  
20 part, that is, with regard to peregrine falcons?  
21 A. Yes.  
22 Q. And what was that role?  
23 A. It was again a consultation with the state  
24 on species that may be affected by the construction  
25 activities, and also at that time the operation of the

PAGE 14 14

1 facility; and just, again, discussing with them what  
2 species may occur in the area, what species may be  
3 affected.  
4 Q. Did you make the decision to raise as a  
5 specific concern peregrine falcons?  
6 A. No. That was one of the species that was  
7 mentioned, but it was not a species that I necessarily  
8 singled out.  
9 Q. Were there others that you were concerned  
10 about at that time?  
11 A. Yes.  
12 Q. That weren't included in the contention?  
13 A. Yes.  
14 Q. And who was it that was particularly  
15 concerned about peregrine falcons, if you know?  
16 A. I don't know.  
17 Q. I'm going to ask you -- I'm going to have  
18 marked as Exhibit 2 State of Utah's Objections and  
19 Response to Applicant's Second Set of Discovery Requests  
20 With Respect to Groups II and III Contentions, a  
21 document dated June 28th, 1999.  
22 (Exhibit DD 2 marked.)  
23 Dr. Howe, this is a document back in summer  
24 of 1999 dated June 28th, 1999. If you would look at --  
25 this is just an excerpt from this document. It was a

PAGE 15 15

1 very large response which the state gave to one of our  
2 requests. If you would look here at this excerpt which  
3 includes pages 116 through 119. I'm guessing this was a  
4 document that you even looked at before today's  
5 deposition --  
6 A. Yes.  
7 Q. -- so you're probably very familiar with it.  
8 Do you recall this document and your involvement in its  
9 preparation?  
10 A. Yes.  
11 Q. Did you write what appears there in response  
12 to Interrogatory No. 1, pages 116 to 119?  
13 A. I did not physically write this statement.  
14 Q. How did it -- what was the process that you  
15 used in your involvement?  
16 A. I spoke with Laura Lockhart and she prepared  
17 the actual written statement, I believe.  
18 Q. And then you looked at it --  
19 A. Yes.  
20 Q. -- and said, looks fine to me; that kind  
21 of --  
22 A. Right.  
23 Q. I'm going to come back to this and ask  
24 whether or not you still hold these views or they all  
25 remain concerns today.

PAGE 16 16

1 The second set of documents, similar kind of  
2 thing. This is State of Utah's Objections and Response  
3 to Applicant's Sixth Set of Discovery Requests to  
4 Intervenor State of Utah dated February 28th, 2001. And  
5 I want this one marked as Exhibit 3.  
6 (Exhibit DD 3 marked.)  
7 This document, if you'd look at -- again,  
8 this is an excerpt from the state's response. Take a  
9 look at page numbers 47, 48. Same kinds of questions,  
10 Dr. Howe. Do you recognize this?  
11 A. Yes, I do.  
12 Q. And did you play a role in the development  
13 of this answer?  
14 A. Yes, I did.  
15 Q. Same kind of process?  
16 A. Yes.  
17 Q. You came up with ideas and counsel developed  
18 something, then you looked at it and made sure it was  
19 all right before it was submitted?  
20 A. Yes.  
21 Q. I'm going to have marked as Exhibit No. 4 a  
22 document entitled Resume, Frank Pence Howe.  
23 (Exhibit DD 4 marked.)  
24 Do you recognize this document?  
25 A. I do.

Private Fuel Storage, L.L.C.  
Frank P. Howe \* April 24, 2001

SHEET 3 PAGE 17 17

1 Q. Is it accurate --  
2 A. Yes.  
3 Q. -- as of today, as far as you know?  
4 A. Uh-huh, yes.  
5 Q. Under your current position as nongame avian  
6 program coordinator, you list a number of species with  
7 which you've been involved, but not the peregrine  
8 falcon. What's the reason for that?  
9 A. The peregrine falcon is included in actually  
10 the second sentence, "monitoring programs for rare and  
11 endangered species," although they're not specifically  
12 mentioned there. I have been more involved with  
13 projects relating to other species that would actually  
14 look better on a resume than indicating peregrine  
15 falcons, but they are in fact included in the second  
16 sentence there.  
17 Q. The other current position that you list is  
18 as an associate biology professor at Westminster  
19 College.  
20 A. Yes.  
21 Q. What courses do you teach there?  
22 A. Environmental biology.  
23 Q. Okay. What is the course in environmental  
24 biology? Particularly, what kind of course content is  
25 there, if any, with regard to waste or its effects on

PAGE 18 18

1 ecological and biological systems?  
2 A. There are sections of the course that cover  
3 solid waste, solid waste disposal, and it does include  
4 disposal of nuclear waste materials.  
5 Q. Does the school publish in some form some  
6 synopsis of your course?  
7 A. There's a syllabus that is prepared by  
8 myself that the school makes available.  
9 Q. Does it refer to nuclear waste materials or  
10 the subject matters being covered?  
11 A. I don't believe it specifically refers to  
12 nuclear waste. It refers to solid waste.  
13 Q. How long is this course taught? Over what  
14 period of time?  
15 A. It's taught in a single semester, twelve  
16 weeks.  
17 Q. And how much of a course is devoted to the  
18 nuclear materials out of that time frame?  
19 A. I would say a portion of one classroom  
20 session.  
21 Q. How long are the classroom sessions?  
22 A. The classroom sessions are an hour and  
23 fifteen minutes.  
24 Q. What would you say that that portion is?  
25 A. Forty, forty-five minutes.

PAGE 19 19

1 Q. Half or so?  
2 A. Yeah, half of one class period.  
3 Q. Do you have materials that support your past  
4 teaching on this topic?  
5 A. What sort of materials?  
6 Q. Do you have your own materials that you use  
7 to assist you in doing this instruction?  
8 A. Not on that particular topic.  
9 Q. So do you have any written materials at all  
10 on this topic, or does it all come from just your own  
11 knowledge?  
12 A. It's from textbook information.  
13 Q. Have you done research on the effects of  
14 contaminants or waste of one sort or another,  
15 biological, ecological systems?  
16 A. Not directly. I have studied the potential  
17 of transportation of radionuclides by wildlife species,  
18 particularly mourning doves, on the Idaho National  
19 Engineering Laboratory.  
20 Q. Is this listed in some way in your resume?  
21 A. Yes. The title of my master's thesis is  
22 Ecological Study of Mourning Doves in the Cold Desert  
23 Ecosystem on the Idaho National Engineering Laboratory.  
24 And as a portion of that study I looked at the potential  
25 of transportation of radionuclides.

PAGE 20 20

1 Q. And did you travel to INEL, Idaho National  
2 Engineering Laboratory?  
3 A. Yes, I did. And as a point of  
4 clarification, on the last question on page 2 under  
5 graduate research/teaching assistant, South Dakota State  
6 University. First sentence there indicates that the  
7 project was to determine the potential for transport of  
8 radionuclides by birds.  
9 Q. Let me stick just for a minute with the  
10 master's thesis. How much time did you spend at the --  
11 in Idaho doing this?  
12 A. It was three field seasons. And field  
13 seasons are approximately four months long, so three  
14 different summers.  
15 Q. And what exactly was the research? How did  
16 you do the research on the transport of radionuclides?  
17 A. The birds were captured and radio tagged,  
18 they received a radiotelemetry transmitter, and they  
19 were then followed on air and by the ground with a  
20 receiver.  
21 Q. And what were these birds?  
22 A. Mourning doves.  
23 Q. And what was their source of radionuclides?  
24 A. Was contamination in ponds that were  
25 basically cooling water for some of the active nuclear

PAGE 21  
21

1 reactors.  
2 Q. I didn't understand.  
3 A. For some of the active nuclear reactors on  
4 the site.  
5 Q. Was this SL1 or AIW, or --  
6 MS. LOCKHART: Can you clarify that?  
7 MR. BLAKE: Those are the names of reactors.  
8 A. Yeah. Trying to recall all the acronyms.  
9 There are so many from -- do you have a particular site?  
10 Q. Well, if you have another description, that  
11 works as well.  
12 A. Yes. One of them was a test facility for  
13 the Navy, and I don't recall the actual name of the  
14 reactor there, but I believe it was the naval test  
15 reactor on the site. And --  
16 Q. What were the radionuclides?  
17 A. Cesium 137 was the primary radionuclide.  
18 And I did not test birds for the presence of  
19 radionuclides. That information was done before I  
20 started my research.  
21 Q. And who was that done by?  
22 A. Dr. O. Doyle Markham and one of his  
23 associates. I don't recall his name at this time.  
24 Q. What was your role? What did you do?  
25 A. I actually looked at the mourning doves, the

PAGE 22  
22

1 species that they had previously tested for the presence  
2 of Cesium, and determined to the extent possible whether  
3 they were capable of transporting the radionuclides off  
4 of the site and whether that was done with any  
5 regularity.  
6 Q. What were the levels of Cesium 137 in the  
7 birds?  
8 A. I don't recall.  
9 Q. Did it have any impact on the birds  
10 themselves?  
11 A. That was not studied.  
12 Q. So you looked at the birds when they were  
13 off site to see whether or not they were radioactive?  
14 A. I trapped the birds on site and then  
15 followed them to see if they would leave the site or if  
16 they left the site regularly.  
17 Q. And the birds that you trapped and then  
18 followed, someone else had determined had some amount of  
19 Cesium 137?  
20 A. Yes. Not those particular birds but birds  
21 that used the same areas.  
22 Q. I see. So you didn't work with birds that  
23 were exposed to radioactivity at all?  
24 A. No, these birds were most likely exposed to  
25 radioactivity.

PAGE 23  
23

1 Q. But you don't know whether or not they were  
2 or they weren't?  
3 A. Right, that's correct.  
4 Q. I see. What was your view of the impact  
5 from mourning doves who on site picked up some Cesium  
6 137 contamination and then flew off site? What would be  
7 the impact of that, in your work?  
8 A. We found that it happened very infrequently.  
9 Most of the birds that used those areas tended to stay  
10 relatively close to those areas, and those areas were  
11 insular in the site so that birds did not very often  
12 travel off of the site. And so my general conclusion  
13 from that was that they proposed very little hazard to  
14 transporting radionuclides off the site.  
15 Q. And did your study explore, even if they had  
16 gone off site with these radionuclides, what would  
17 happen then or what the problem might be?  
18 A. No.  
19 Q. We've talked about two areas of research,  
20 one in some detail, your master's. We haven't talked  
21 about the South Dakota research effort. Were there  
22 other areas of research that you've done?  
23 A. Yes.  
24 Q. And what are those?  
25 A. Studied the effects of pesticides,

PAGE 24  
24

1 particularly malathion, on productivity and survival of  
2 nongame birds. It was my Ph.D. dissertation.  
3 Q. If I looked at your publications and  
4 presentations, would this be the same topic that --  
5 let's see. It's the third item under Publications and  
6 Presentations. Is this the same topic, direct and  
7 indirect effects?  
8 A. Yes, that is a portion of the same topic.  
9 Q. Okay. Now, the birds that were involved in  
10 this, what birds?  
11 A. Primarily sage thrashers and Brewer's  
12 sparrows.  
13 Q. Was this a direct effect on these birds from  
14 the insecticides?  
15 A. I studied both the direct and indirect  
16 effects. There were negligible direct effects.  
17 Q. And the indirect effects means the lack of  
18 their insect food --  
19 A. Yes.  
20 Q. -- as a result of insecticides?  
21 A. Exactly.  
22 Q. Is that the primary effect?  
23 A. Yes, a reduction of the insect prey base.  
24 Q. Was there any involvement here with raptors  
25 or any species consuming the birds that you were

1 studying?  
2 A. That was not looked at.  
3 Q. So has any of your research work involved  
4 raptors?  
5 A. Neither my master's nor my doctoral  
6 dissertation researched it.  
7 Q. Did I miss in any of the other publications  
8 a reference to research work that you've done which  
9 might have involved raptors? Is there any of that?  
10 A. Much of the monitoring does include raptor  
11 species.  
12 Q. We're back to the second sentence there  
13 under your current nongame --  
14 A. Yes.  
15 Q. Okay. Your work at the St. Cloud State  
16 University, does that have any particular application to  
17 what you're testifying about today? Assistant  
18 archaeologist I think was what you used.  
19 A. Uh-huh. None that I can think of.  
20 Q. What about the wildlife research technician  
21 work in '82?  
22 A. No.  
23 Q. Now, the South Dakota -- the South Dakota  
24 State University work, tell me, if you would, about that  
25 research.

1 A. Okay. That is the research that was done  
2 for my master's --  
3 Q. Okay.  
4 A. -- degree.  
5 Q. Are you familiar with the terms  
6 "irradiation" and "radiation" and "radioactivity"?  
7 A. Yes.  
8 Q. Have you done any studies of what happens to  
9 an irradiated bird?  
10 A. No.  
11 Q. Have you discussed with anyone else the  
12 possible effects of radiation and radionuclides on  
13 birds?  
14 A. Yes.  
15 Q. Anyone involved in this project? That is,  
16 have those discussions taken place in the context of  
17 this?  
18 A. Yes.  
19 Q. And who were those people?  
20 A. It was Laura Lockhart.  
21 Q. Well, Laura's -- again, she's off limits.  
22 A. No other professional level consultation.  
23 Q. I'm going to have marked as Exhibit 5 an  
24 excerpt from the applicant, Private Fuel Storage's  
25 environmental report, chapter 4. It's actually Section

1 4.2.9.2.  
2 (Exhibit DD 5 marked.)  
3 You indicated that you had looked at the  
4 environmental report.  
5 A. Yes.  
6 Q. This section provides the applicant's dose  
7 calculations from wildlife, including wildlife that  
8 might be on the top of a cask that's stored out there.  
9 Are you capable of doing this kind of calculation?  
10 A. Directly from research?  
11 Q. Yes.  
12 A. No.  
13 Q. Do you have any reason to dispute the  
14 calculation that's done here?  
15 A. I would not dispute the actual calculations,  
16 that word down here.  
17 Q. Is there something clever in what you're  
18 saying there?  
19 A. Well, I would have a comment on calculating  
20 these on a yearly average, since they are really  
21 discussing things like death of an embryo, and certainly  
22 an embryo is not going to be exposed to radiation over a  
23 yearly period. Those concentrations would be -- the  
24 embryos would be exposed over a limited period of time.  
25 Q. What is the particular section or portion of

1 this that troubles you?  
2 A. In several places they refer to exposure  
3 rates per year. And again, an embryo would be exposed  
4 for a period of 10, 15, 20 days depending on the  
5 species. So it would actually be a daily exposure rate  
6 as opposed to a yearly exposure rate that may affect the  
7 embryos.  
8 Q. Would that be something different than  
9 dividing by some time?  
10 A. If the rates are calculated as an average,  
11 then yes, it would be different than simply dividing by  
12 the number of days in a year.  
13 Q. Do you have a view on what those rates might  
14 be or how that would differ?  
15 A. I do not.  
16 Q. You worked in 1995 on the Mexican spotted  
17 owl. This is a raptor?  
18 A. Yes.  
19 Q. And are there other raptors that you have  
20 the same amount of experience with that you did with the  
21 Mexican spotted owl?  
22 A. No. I would say that's the raptor I've had  
23 the most experience with.  
24 Q. The Utah Partners in Flight coordinator  
25 role, explain what that is.

PAGE 29 29

1 A. It's a group of biologists and  
2 administrators, academicians that -- as well as agency,  
3 both state and federal agency biologists that have a  
4 common mission of monitoring, inventorying, researching  
5 nongame, primarily nongame birds.  
6 Q. And how long have you been -- how long were  
7 you in that position? About a two-year period? I can  
8 never tell from these dates when it says 1995, 1996.  
9 A. Yeah. It was actually primarily -- the  
10 position itself was one year.  
11 Q. One year?  
12 A. One year. I was actually a founding member  
13 of Utah Partners in Flight, and I now supervise that  
14 position.  
15 Q. And during that one year, was the peregrine  
16 falcon the focus of the organization's work?  
17 A. It was not a primary focus.  
18 Q. Did you do some work with the peregrine  
19 falcon during that one year in that program? Well, let  
20 me ask you this. Is there some documentation of that  
21 one year when you were the coordinator that I'd be able  
22 to look at? I don't believe I've seen any.  
23 A. I am not honestly sure if there is any  
24 documentation there. I would suspect that there is.  
25 Q. And do you think that documentation would

PAGE 30 30

1 reflect work with the peregrine falcon?  
2 A. Yes.  
3 Q. And what do you think that work was?  
4 A. It was likely compilations of peregrine  
5 falcon nest success and productivity on a statewide  
6 basis. And I will correct myself: I do have  
7 documentation.  
8 Q. Okay.  
9 A. I've recalled.  
10 Q. Now, back to the nongame avian program  
11 coordinator and the reference that you made to  
12 monitoring programs for rare and endangered species.  
13 Explain that to me now in some more detail, if you  
14 would.  
15 A. Okay. We have several programs, program  
16 components within the state of Utah where we monitor  
17 populations and productivities of a variety of species.  
18 Some of these, such as neotropical migrants, we monitor  
19 several species at one time. Others, such as rare and  
20 endangered species, we focus on a single species in  
21 those particular program components.  
22 Q. Is this something that you do yourself or  
23 people who work for you?  
24 A. It's both.  
25 Q. Both. In just looking at your -- haven't

PAGE 31 31

1 counted them, but 20 lines or 15 lines of text  
2 describing nongame avian program coordinator work, there  
3 are several species identified here but not the  
4 peregrine. Does that indicate the amount of relative  
5 work you've done with the peregrine in this position?  
6 A. No, it does not.  
7 Q. What proportion of your time do you think  
8 you've spent focused on the peregrine falcon?  
9 A. The reason I'm pausing is because it's  
10 varied actually quite a bit --  
11 Q. Sure.  
12 A. -- through the years that I've been here.  
13 Overall I would say between 5 and 10 percent.  
14 Q. Okay. And has that been the development of  
15 programs for monitoring the peregrine?  
16 A. The development of and implementation of  
17 those programs.  
18 Q. Has there been field work involved?  
19 A. Yes.  
20 Q. On your part?  
21 A. Yes.  
22 Q. And tell me about that.  
23 A. Most of the field work would involve finding  
24 and observing peregrine falcon nesting locations to  
25 determine whether courtship is taking place, whether the

PAGE 32 32

1 sites are occupied and active, whether the nests have  
2 been successful, and whether they have -- or how many  
3 young they have produced.  
4 Q. And has that taken place in certain  
5 geographic areas?  
6 A. Statewide.  
7 Q. When I scratch things out, that's good.  
8 In addition to those documents that you've  
9 looked at previously or looked at in preparing for  
10 today's deposition, do you have in mind the need to  
11 review additional documents to prepare yourself to  
12 testify at the hearing?  
13 A. No.  
14 Q. What's, in your view, the status of the  
15 peregrine falcon populations worldwide now?  
16 A. In relation to --  
17 Q. What it's been, what it's likely to be.  
18 A. It's significantly better than it was 20 to  
19 30 years ago.  
20 Q. What do you attribute that to?  
21 A. Oh, a variety of factors: the banning of DDT  
22 in the United States, programs developed specifically to  
23 release peregrine falcons in many areas, awareness of  
24 proper habitat management for peregrine falcons.  
25 Q. What about in the United States in

SHEET 5 PAGE 33 33

1 particular? Same question, what you view as their  
2 status.  
3 A. I believe the populations are doing well  
4 compared to 20 to 30 years ago.  
5 Q. Do you know what the statistics are on how  
6 much populations have increased?  
7 A. Not off the top of my head.  
8 Q. You're aware that they've been removed from  
9 the endangered federal list?  
10 A. Yes.  
11 Q. And why was that?  
12 A. They met several of the recovery criteria  
13 that were established in the recovery plan for the  
14 peregrine falcon.  
15 Q. And were you asked about your input on  
16 whether or not they should be removed from that list?  
17 A. Yes, I was.  
18 Q. And what was your response?  
19 A. Yes, they should be removed from the list.  
20 Q. And what, if any, lists are they on within  
21 the state of Utah?  
22 A. They're on the state sensitive species list  
23 that was developed in 1998. And they are on that list,  
24 listed as threatened, I believe.  
25 Q. And they remain on the -- in the threatened

PAGE 34 34

1 category?  
2 A. Yes.  
3 Q. And what's the criterion for removing them?  
4 A. That's a moving target at this point. The  
5 State Wildlife Board last month passed a new rule on the  
6 sensitive species list development and revisions. And  
7 so at this point I honestly cannot tell you until that  
8 has been clarified.  
9 Q. Did you play a role in this?  
10 A. Minor role. In that particular rule, a  
11 minor role.  
12 Q. And do you know about what this change  
13 amounts to?  
14 A. It's primarily a change in the process. The  
15 process in the past had been, quite honestly, more  
16 biological, and it will now be more political. The  
17 division director and department executive director will  
18 review all species that are proposed for either listing  
19 or de-listing on the state sensitive species list.  
20 Q. Wow. For all species?  
21 A. Yes.  
22 Q. Before was it some form of committee  
23 recommendation or even pre-set conditions or numbers  
24 like is used at the federal level?  
25 A. Yes. There was an established policy that

PAGE 35 35

1 indicated when a species might be listed. There were  
2 not specific numbers that the population needed to  
3 decline by 20 percent per year. That was left up to the  
4 expertise of there was a lead person within the Division  
5 of Wildlife Resources who consulted with experts in the  
6 field.  
7 Q. Are peregrines doing well throughout Utah  
8 generally? You have state, I take it, knowledge?  
9 A. Yes. I would say no. They're doing well in  
10 particular portions of the state, and in other portions  
11 of the state they are not doing as well.  
12 Q. What about the section of the state that I'm  
13 particularly interested in, Skull Valley?  
14 A. That is one of the sections of the state  
15 where they're not doing as well.  
16 Q. They're not doing as well?  
17 A. Right.  
18 Q. And what do you attribute that to?  
19 A. It's a loss of habitat, probably, for the  
20 most part. Many of the areas where the falcons had  
21 nested in the past and had foraged in the past have now  
22 been developed or in other ways impacted.  
23 Q. An example of that being the cliffs on the  
24 south side of I-80 and the top of the Stansburys?  
25 A. Yes, those cliffs have been impacted.

PAGE 36 36

1 Q. What about the peregrines at Farmington Bay?  
2 Are you familiar with nests of -- nesting of peregrines  
3 there?  
4 A. Yes.  
5 Q. And how are they doing?  
6 A. They appear to be producing and nesting  
7 fairly consistently there.  
8 Q. What's their proximity to the interstate?  
9 A. I don't have an exact measurement. I would  
10 estimate they're within certainly two miles.  
11 Q. Have you been there, visited that site?  
12 A. Yes, I have. I discovered it.  
13 Q. You did?  
14 A. The birds that are nesting on a power pole  
15 there.  
16 Q. Did they take over another bird's nest?  
17 A. They did, most likely.  
18 Q. And what about the Timpie Springs nest?  
19 Have you visited that?  
20 A. I have.  
21 Q. And how do you characterize the success  
22 of --  
23 A. It's been fairly consistent as well.  
24 Q. Those birds -- how many birds are there?  
25 A. At this point?

PAGE 37 37

1 Q. Uh-huh.  
2 A. Today I do not know.  
3 Q. Fair enough. How about at this point in  
4 time generally?  
5 A. Generally there are two, hopefully.  
6 Q. Two?  
7 A. A pair.  
8 Q. And by success you mean what?  
9 A. By success meaning that they produce at  
10 least one fledgling per year.  
11 Q. If we go back to Exhibit No. 1 which you  
12 have in front of you.  
13 A. Two, perhaps?  
14 Q. Yeah, it will be 2. I'm sorry. In that  
15 answer that deals with peregrines, you really list four  
16 kinds of potential problems that you see. One was the  
17 impact of increased rail and vehicle traffic, and second  
18 was the impact on peregrine prey species through  
19 increased rail and vehicle traffic. The third was the  
20 impact on peregrine prey species through loss of  
21 habitat, and the final was the impact of radiation on  
22 peregrine prey species.  
23 Do you have the same four concerns today, or  
24 have any of those been alleviated, eliminated? If you  
25 say yes, I won't ask you about the areas that have been

PAGE 38 38

1 eliminated.  
2 MS. LOCKHART: I'd like to take a break when  
3 it's convenient.  
4 MR. BLAKE: Sure. You can take one right  
5 now if you'd like to to talk about this subject.  
6 MS. LOCKHART: Oh, we don't need to talk.  
7 Let's take a break.  
8 (Recess from 9:38 to 9:46 p.m.)  
9 Q. (BY MR. BLAKE) I had asked a question  
10 before the break, and maybe you've had time to consider  
11 it through the break. You can answer it now.  
12 A. Okay. It appears that the risks of birds  
13 being exposed to radionuclides in the draft  
14 environmental impact statement are stated to be minimal,  
15 which addresses the fourth question.  
16 Q. Okay. We ought to be able to get through  
17 that one fairly easily. Let me go through starting with  
18 the first area, which was the -- let me start with that  
19 one. It really comes in two bites. One of the concerns  
20 is the direct potential impact on peregrines from  
21 radiation or radioactive components or radionuclides.  
22 And can we agree that there is no direct impact, or  
23 unlikely to be, that that's not a concern?  
24 A. That was the statement of the draft impact  
25 assessment.

PAGE 39 39

1 Q. Yes. And do you now agree with that? Are  
2 you convinced by reading the staff's excellent work or  
3 by some other means?  
4 A. I wouldn't say entirely convinced, but yeah,  
5 I would concede that point, that there's not likely to  
6 be, certainly not likely to be consistent exposure to  
7 radionuclides.  
8 Q. Why do you think there would be any  
9 exposure? Direct, I'm talking about. I'm not going  
10 through the prey species yet.  
11 A. Well, I really don't have a great deal of  
12 evidence or even expertise in the area of storage of  
13 radioactive materials, but I do have some experience at  
14 the Idaho National Engineering Laboratory of radioactive  
15 materials being exposed to the environment when there  
16 was a guarantee that they would not be. So very much a  
17 personal opinion.  
18 Q. And it was based on whatever the work was at  
19 INEL?  
20 A. Not directly through research, just through  
21 working there and having seen where they had had spills,  
22 various exposures to the environment.  
23 Q. But you have not postulated any particular  
24 pathway here?  
25 A. No, that's correct.

PAGE 40 40

1 Q. Let me turn, then, to the possible indirect  
2 effects on peregrines through prey species. Is that  
3 still really a concern for you?  
4 A. Not if they are not directly exposed to  
5 radionuclides.  
6 Q. And do you have any postulated pathway for  
7 the way in which prey species would be exposed to or  
8 contaminated by radionuclides?  
9 A. Other than the event of a leakage, no.  
10 Q. And do you have a postulate for an event,  
11 leakage of that?  
12 A. No.  
13 Q. I take it, then, I don't need to go down  
14 through what prey species you believe would be included  
15 and how would they get together. Is that fair?  
16 A. Yes.  
17 Q. Okay. I'll go back to No. 1, which was the  
18 impact of increased rail and vehicle traffic. How do  
19 you believe that the peregrines' prey or the peregrine  
20 itself will be impacted by increased rail and vehicle  
21 traffic?  
22 A. You're referring to the first --  
23 Q. Uh-huh.  
24 A. Okay.  
25 Q. That remains a concern, I take it?

SHEET 6 PAGE 41 41

1 A. Yes.  
2 Q. Okay, go ahead.  
3 A. There's a potential for, well, increased  
4 disturbance at the nesting site, as well as the post-  
5 fledgling area, area that the young may occupy once they  
6 have begun to fly. And those would be from either  
7 disturbance causing the adults to leave the nest when  
8 either eggs or young are on the nest, or for actual  
9 direct mortality of the young, particularly when they  
10 are in this post-fledgling area.  
11 Q. Are we talking about the Timpie Springs nest  
12 here?  
13 A. Yes.  
14 Q. How far is the Timpie Springs nest from the  
15 ITP, the proposed ITP?  
16 A. I believe around two miles. I'm not sure  
17 the exact distance.  
18 Q. And is it the ITP that's of concern to you?  
19 A. That's one of the concerns, but also just  
20 simply the increase in vehicular and rail traffic. And  
21 both the rail, primarily the rail is within a mile of  
22 the peregrines' nesting site at the Timpie Springs.  
23 Q. So is it primarily the rail that's  
24 troublesome to you?  
25 A. It's both, really.

PAGE 42 42

1 Q. Okay, let's just start with the rail.  
2 A. Okay.  
3 Q. How many rail cars is it your understanding  
4 would come on a weekly basis to this vicinity of the  
5 ITP?  
6 A. I don't have that information.  
7 Q. How many rail cars pass by that vicinity now  
8 without the ITP or the impact of this project?  
9 A. I don't have that direct information. I do  
10 have some personal experience from working along the  
11 south shore of the Great Salt Lake, which is the same  
12 rail line.  
13 Q. This is the mainline you're talking about?  
14 A. The mainline, yes. I often saw two to three  
15 trains in a four- or five-hour working period.  
16 Q. And if there's that kind of frequency of  
17 usage of those tracks out there, how much of an increase  
18 due to this project would be required in order to impact  
19 the peregrines, in your view?  
20 A. I don't know that I could actually state a  
21 percentage of increase. I would say that any increase  
22 would increase the potential of some impact.  
23 Q. Would one or two trains a week, including  
24 some cars with casks on them, have an impact on the  
25 peregrines, do you believe?

PAGE 43 43

1 A. Potentially, yes.  
2 Q. So we're talking about maybe less than 5  
3 percent increase in traffic; 2 percent or 1 percent  
4 would have a recognizable, significant impact?  
5 A. I'm hesitating because of the word  
6 "significant," and it has --  
7 Q. Well, you can use your own. I don't need to  
8 put words in your mouth.  
9 A. Scientific terminology.  
10 Q. Okay.  
11 A. It could potentially have a recognizable  
12 impact.  
13 Q. Explain to me the impact, if you would.  
14 A. Impact could come from loss of prey base as  
15 well as direct mortality to adults from more likely  
16 young fledgling birds. The prey base in that area  
17 includes things like California gulls, and California  
18 gulls, I have seen California gulls struck on that  
19 particular line by trains.  
20 Q. Do you know what the speed of the train was  
21 that you saw?  
22 A. I do not.  
23 Q. Would that have any impact, that is, would  
24 the speed of the trains in the area make any difference?  
25 A. Yeah, it's very likely to make a difference.

PAGE 44 44

1 Q. And I'm guessing the faster the train, the  
2 greater the potential risk. Is that true?  
3 A. Yes.  
4 Q. Do you have any statistics or can you add  
5 any quantification to that? They do well with trains  
6 under 20 but not greater than 20, or anything of that  
7 sort? Can you add any flesh to that?  
8 A. No.  
9 Q. Now, what about the peregrines themselves,  
10 which is actually what we were focused on?  
11 A. There are records of peregrines being struck  
12 by trains. None of them from Utah that I'm aware of.  
13 And also there are several records from birds in Utah  
14 being struck or nearly struck by vehicular traffic.  
15 Q. This is peregrines?  
16 A. Yes.  
17 Q. And let's just stick with the trains.  
18 Again, would it be the same likely relative impact as a  
19 function of the speed of the train?  
20 A. I would say yes, although we're talking  
21 about birds that are poorly flighted here when we're  
22 discussing fledglings, recently fledged birds. And in  
23 the case of the gulls, those are adult birds that are  
24 well flighted. So you may have less of an influence,  
25 speed of the train may have less of an influence in this

PAGE 45 45

1 case, but would likely have some influence.  
2 Q. So is there a concern with adult peregrines  
3 at all with respect to trains?  
4 A. It would be a minor concern.  
5 Q. Would that particularly be the case here  
6 where they live in the basic vicinity of trains and have  
7 some familiarity with them?  
8 A. It's likely that they have somewhat  
9 acclimated to the presence of trains. Whether that's a  
10 benefit or a detriment, it's difficult to say.  
11 Q. Isn't it acclimation that allows the  
12 peregrines to succeed in unlikely spots like they did in  
13 downtown Salt Lake, for example?  
14 A. Yes.  
15 Q. Wouldn't that same thing likely pertain  
16 here?  
17 A. There are some differences there in that the  
18 disturbance at Timpie Springs would be a disturbance  
19 that is nearly on the same level as the peregrines,  
20 whereas here the disturbance is primarily below. The  
21 peregrines here being the Beneficial Life building in  
22 downtown Salt Lake City. And peregrines are less  
23 disturbed by disturbances that are below their nests.  
24 Q. Now, with respect to the fledglings, what is  
25 the range of the fledglings during the period which

PAGE 46 46

1 you're particularly concerned about?  
2 A. Geographic range?  
3 Q. Yeah.  
4 A. Distance? It will vary greatly with  
5 individual birds as well as prey availability at the  
6 time. And also, as the fledglings mature, their range  
7 will increase.  
8 Q. And as their range increases, so does their  
9 ability to cope with trains, planes, and flying  
10 machines, or whatever the third topic was?  
11 A. Probably not, actually. Probably their  
12 exposure to disturbances actually increases and their  
13 risk of mortality increases.  
14 Q. And what's the period of time we're talking  
15 about that you're particularly concerned about?  
16 A. They are probably most vulnerable out of the  
17 nest for a period of a month to two months. However,  
18 they're still vulnerable for up to a year, although they  
19 would not be in that general vicinity probably, after  
20 that time.  
21 Q. Now, are you aware of any fledglings at  
22 Timpie Springs that run into this problem with trains?  
23 A. I'm not aware of any.  
24 Q. And are you aware of specific examples of  
25 fledglings having problems with trains anywhere?

PAGE 47 47

1 A. Yes.  
2 Q. And where was that?  
3 A. I don't recall the exact location, but there  
4 have been fledgling birds, flighted birds that have  
5 directly flown into trains.  
6 Q. In Utah?  
7 A. I don't believe it's in Utah.  
8 Q. Do you know when this occurred?  
9 A. It was within the last five years.  
10 Q. And how many instances are you aware of?  
11 A. Single instance with two birds.  
12 Q. And now let's shift to the traffic as  
13 opposed to the trains. Same kinds of questions. Is  
14 your concern not with adults but rather with fledglings,  
15 potentially?  
16 A. More with fledglings than adults, yes.  
17 Q. And what part of the traffic that's  
18 attributable to this project concerns you?  
19 A. Could you repeat that?  
20 Q. What is the traffic that's attributable to  
21 the PFS project which concerns you?  
22 A. Would be primarily the increase in traffic  
23 that would be associated with the area directly around  
24 Timpie Springs, within two or three miles of Timpie  
25 Springs. This is for direct impacts to the falcons.

PAGE 48 48

1 Q. Yes. Is this increase in car traffic  
2 because of employees going to and from work?  
3 A. It could be increase in any types of  
4 traffic, whether it's large vehicles or small personal  
5 vehicles.  
6 Q. And do you know what numbers of increased  
7 traffic are attributable to this project?  
8 A. From the information that I've seen from the  
9 documents provided here and other places, environmental  
10 report, it appears that the traffic volume may double  
11 during the construction phase, and I don't recall  
12 exactly what the long-term increase would be in traffic.  
13 Q. Where was it doubling?  
14 A. I believe that was on the Skull Valley Road.  
15 Q. Was it up within two or three miles of  
16 Timpie Springs?  
17 A. I don't know that they did that detailed of  
18 an analysis. I don't recall.  
19 Q. How far is it to the Skull Valley Road  
20 northern end from the nesting site in Timpie Springs?  
21 A. I believe that's also within a mile and a  
22 half to two miles.  
23 Q. And if it doubled, that would double the  
24 potential for a problem? Is that a fair --  
25 A. I don't know that there's a linear

1 relationship there. Again, I would say there's some  
2 increase, but exactly how much is difficult to say.  
3 Q. And are you aware of any fledglings -- and  
4 this is again fledglings; this not a concern with  
5 adults. Is that correct?  
6 A. Uh-huh.  
7 Q. Are you aware of any fledglings that have  
8 been harmed by traffic there in the Timpie Springs area?  
9 A. Not in the Timpie Springs area.  
10 Q. You're aware of fledglings that have been  
11 harmed by traffic elsewhere?  
12 A. Yes.  
13 Q. And where was that?  
14 A. We have information from the downtown Salt  
15 Lake nest.  
16 Q. And what was that statistic?  
17 A. I don't recall the exact numbers.  
18 MR. BLAKE: Do you know whether or not  
19 that's been provided, Laura?  
20 MS. LOCKHART: That's a good question.  
21 MR. BLAKE: Do you know whether that has  
22 been provided to us?  
23 THE WITNESS: I don't know.  
24 MS. LOCKHART: I'll find out and get back to  
25 you.

1 MR. BLAKE: Thanks. As well as the syllabus  
2 and the course materials from his teaching, and  
3 specifically any reference they have to radioactive  
4 materials. I don't think we've seen that, either.  
5 MS. LOCKHART: You want copies of the  
6 textbook?  
7 MR. BLAKE: Whatever he has in the way of  
8 written materials that support his teaching.  
9 MS. LOCKHART: Okay.  
10 MR. BLAKE: But in particular I'm interested  
11 just in radioactive materials.  
12 MS. LOCKHART: Sure.  
13 Q. (BY MR. BLAKE) What is your recollection of  
14 what problems occurred in peregrines in downtown Salt  
15 Lake as a result of traffic?  
16 A. Birds would fledge out of the nests and then  
17 be exposed to traffic in the areas down below in their  
18 post-fledgling areas.  
19 Q. Do you know whether or not some of those  
20 occurred two or three miles away from the nest, or they  
21 occurred during the earliest days and fairly close to  
22 the nest?  
23 A. Most of the recorded incidents occurred  
24 closer to the nests. We had people that were observing  
25 the nests, observing birds in those areas actually

1 stopping traffic in some incidents.  
2 Q. Have some occurred as much as two or three  
3 miles away?  
4 A. I don't recall if that's the case or not.  
5 Q. Are there any other instances that you're  
6 aware of?  
7 A. There are none that I can recall. I believe  
8 there may be some indication of birds struck by vehicles  
9 in some of our written records or perhaps in museum  
10 collections. We routinely salvage dead birds from the  
11 side of the highway.  
12 Q. Peregrines?  
13 A. All birds that we find on the side of the  
14 highway. So there's a possibility that we may have  
15 salvaged some. I don't recall any off the top of my  
16 head.  
17 Q. Now, are there any other impacts of  
18 increased rail or vehicle traffic with regard to  
19 peregrines directly that we need to talk about, or have  
20 we covered your concerns?  
21 A. That's the only other concern, which is on  
22 page 117, is potential for increased flushing of adults  
23 off the nest, which may lead to either starvation of the  
24 young or increased predation of the young just by virtue  
25 of the adults being present less often at the nest.

1 Q. And do you believe in your expert opinion  
2 that this nest at Timpie Springs will be so impacted by  
3 the traffic and -- vehicular and train traffic  
4 associated with this project?  
5 A. Could you --  
6 Q. Sure. Do you believe that as a result of  
7 the traffic, vehicular and train traffic attributable to  
8 this project, that the Timpie Springs nest adults will  
9 be so impacted?  
10 A. I believe there is a potential for them to  
11 flush more often with additional traffic.  
12 Q. With the amount of additional traffic we're  
13 talking about?  
14 A. Yes.  
15 Q. I guess that's not too fair since you don't  
16 know how much additional traffic, train track we're  
17 talking about; and you have read somewhere that there  
18 will be a doubling of some traffic, but you're not sure  
19 where that is either, right?  
20 A. Right.  
21 Q. Okay. Does that cover potential problems?  
22 A. Uh-huh.  
23 Q. Let me go now to the prey species, then, and  
24 the impact from rail and vehicular traffic. Do you have  
25 with you or would you be able to locate what this

PAGE 53 53

1 doubling of the traffic reference is?  
2 A. I think that was in the draft EIS.  
3 Q. I think we're going to finish very soon, so  
4 maybe we'll have an opportunity for me to look for that  
5 or you to look for it.  
6 A. This was during the construction phase?  
7 Q. Uh-huh. Okay, impact on peregrine prey  
8 species through increased rail and vehicle traffic.  
9 Let's take rail first. I take it that your state of  
10 knowledge hasn't improved since we talked about  
11 peregrines, and you don't know how much additional rail  
12 we're talking about, but any additional rail could  
13 potentially have some impact?  
14 A. Yes.  
15 Q. Okay. Tell me about this impact. I note  
16 that you referred to the California gulls --  
17 A. Uh-huh.  
18 Q. -- and their potential for being hit by  
19 train traffic?  
20 A. There is a gull colony that is actually  
21 directly adjacent to -- on one side of the rail line.  
22 That particular colony I'm not sure, the exact distance  
23 to Timpie Springs, but it's likely with the size of the  
24 colony that it is a foraging area. It's the largest  
25 colony closest to Timpie Springs. And that's --

PAGE 54 54

1 Q. This is on the north side of the --  
2 A. South side of the lake on the main railroad  
3 causeway, basically on the west end of the Great Salt  
4 Lake. So the southwest corner of the Great Salt Lake.  
5 Q. On the south side of the rail causeway?  
6 A. It's directly on the south side.  
7 Q. And basically adjacent to the rail?  
8 A. It's on the railroad embankment on the  
9 railroad causeway.  
10 Q. Okay.  
11 A. And that colony might be affected, as we've  
12 discussed before.  
13 Q. But again, you don't have any feel for what  
14 the increased train traffic might be at that point on  
15 the mainline --  
16 A. That's correct.  
17 Q. -- due to our project?  
18 A. Right.  
19 Q. How far would it be from our proposed  
20 intermodal transport facility? Do you know how far it  
21 would be?  
22 A. To that colony?  
23 Q. Yeah.  
24 A. I would have to look at a map.  
25 Q. How far is this colony from the Timpie

PAGE 55 55

1 Springs peregrine nest?  
2 A. I'd also have to look at a map to tell you  
3 that.  
4 Q. Do you have a feel or a sense? Are we  
5 talking one mile? Five? Ten?  
6 A. I would say between five and ten.  
7 Q. Okay. So the colony would be west of our  
8 intermodal, our proposed intermodal facility?  
9 A. East.  
10 Q. It would be east of the proposed intermodal  
11 facility?  
12 A. In the southwest --  
13 Q. How far is the intermodal facility, in your  
14 view, from the Timpie Springs nest?  
15 A. I believe it's about two miles.  
16 Q. I'm sorry. Now you have me confused. If  
17 the intermodal facility is in fact west of Timpie  
18 Springs --  
19 A. Right.  
20 Q. And if -- I thought you said earlier you  
21 thought it was two miles or so. And the gulf -- and the  
22 gull colony is five to ten miles from the Timpie Springs  
23 nest, can you agree with me that it would be west of the  
24 intermodal facility?  
25 A. I'm sure it's east, and it would certainly

PAGE 56 56

1 be helpful to look at a map at this point. And perhaps  
2 my reference to the southwest corner of the Great Salt  
3 Lake is a bit confusing. This would be the saline  
4 portion of the Great Salt Lake.  
5 Q. That maybe will be helpful. Let's take a  
6 break and look at a map and see if that helps all of us.  
7 A. Okay  
8 (Discussion off the record.)  
9 Q. (BY MR. BLAKE) We've established that the  
10 gull colony that you were talking about is east of the  
11 Timpie Springs peregrine nest.  
12 A. Yes.  
13 Q. And it's about 15 miles or so east. And  
14 that the ITP is west some distance that we didn't  
15 measure, but a short distance, mile and a half or so,  
16 from the Rowley Junction turnoff, which would make it  
17 about two miles or so from the nest. Is that correct?  
18 A. Yes.  
19 Q. Now, to focus back on prey. The increased  
20 train traffic attributable to this project could have an  
21 impact on the prey species, particularly this gull  
22 colony which is about 15 miles west of the Timpie  
23 Springs nest. Is that a fair summary of where we are?  
24 A. Yes.  
25 Q. Are there other prey species that you

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Frank P. Howe \* April 24, 2001

SHEET 8 PAGE 57

57

1 believe might be impacted by the increased train traffic  
2 attributable to this project?  
3 A. Yes. There are several shorebird species  
4 that nest in the same general vicinity as the gull  
5 colony which we just discussed. I actually have records  
6 of numbers of birds that were seen there, and actually  
7 Don Paul would have all of those records.  
8 MS. LOCKHART: As do you.  
9 MR. BLAKE: Pardon?  
10 MS. LOCKHART: As do you.  
11 MR. BLAKE: Yes.  
12 Q. (BY MR. BLAKE) And the shorebirds in  
13 particular that you're talking about, the species?  
14 A. American avocets, black-necked stilts,  
15 long-billed curlews.  
16 Q. And do you have records of their having been  
17 impacted by train traffic?  
18 A. I have no direct records.  
19 Q. Do you have any knowledge of these species  
20 having been impacted by train traffic anywhere?  
21 A. I don't believe I have any documentation,  
22 though very many of the same things that might impact  
23 peregrines and trains would also influence these other  
24 species. Shorebirds in particular have a way of  
25 avoiding predators by freezing, and if they freeze while

PAGE 58

58

1 they're on a railroad track or on a road, it's not a  
2 very good strategy.  
3 Q. I can understand that. Let's shift, then,  
4 to vehicular traffic. Same kinds of questions. You're  
5 concerned about the California gulls and as well these  
6 kinds of shorebirds potentially being impacted by  
7 increased vehicular traffic attributable to this  
8 facility?  
9 A. Uh-huh, yes.  
10 Q. And are you able to quantify that level of  
11 concern?  
12 A. No.  
13 Q. Are you able to qualify it?  
14 A. Yes. Again, the impacts would be from  
15 vehicular traffic impacting prey species like the  
16 shorebirds, both adults and young fledgling birds, but  
17 primarily for fledgling species.  
18 Q. Where is the traffic -- is it traffic along  
19 I-80, increased traffic along I-80 that you're concerned  
20 with?  
21 A. I would guess there would be increased  
22 traffic along I-80, but it's primarily in the transfer  
23 area.  
24 Q. The ITP --  
25 A. ITP, yes.

PAGE 59

59

1 Q. -- facility area, increased vehicular  
2 traffic?  
3 A. Yes.  
4 Q. Also Skull Valley Road?  
5 A. Yes.  
6 Q. And it's these areas that are some 16 or 17  
7 miles from the nesting area?  
8 A. ITP is within a couple miles, as we've  
9 discussed. Within two miles of the nesting area.  
10 Q. Yes. Of the peregrine nesting?  
11 A. Right. And there is I believe a wetland, at  
12 least an ephemeral wetland in the area of the ITP, and  
13 there is a wetland at the nesting area of the  
14 peregrines. It is in a wetland.  
15 Q. So we're not now on that portion of the  
16 Great Salt Lake where the California gulls have their  
17 colony; you're focused on different geographic areas for  
18 these shorebirds?  
19 A. Well, there are a large number of shorebirds  
20 in many places around the Great Salt Lake. The colony  
21 that we discussed is the largest colony of gulls. I  
22 don't actually have relative numbers of the other  
23 species. Again, I think that probably Don Paul has  
24 provided that as well as information on how many  
25 shorebirds are at the Timpie Springs area. To my

PAGE 60

60

1 knowledge, no surveys have been done in the area for the  
2 proposed ITP.  
3 Q. Is it fair to say that with respect to the  
4 California gulls in this important colony that you've  
5 referred to, that the risk from vehicular traffic would  
6 be that along I-80 but not that associated with Skull  
7 Valley Road or the ITP simply because of the 16- or  
8 17-mile distance?  
9 A. Yes.  
10 Q. But for shorebirds in the general vicinity  
11 of Timpie Springs or the ITP, you'd be concerned about  
12 increased vehicular traffic?  
13 A. Yes.  
14 Q. Okay. Does that cover your concerns with  
15 regard to peregrine prey species potentially being  
16 impacted by increased rail and vehicle traffic? Or are  
17 there other areas that we haven't covered?  
18 A. I think we've covered the traffic. We  
19 haven't necessarily covered the site construction.  
20 Q. Would that be the next one, the impact on  
21 prey species through loss of habitat?  
22 A. Are you talking about the third?  
23 Q. Yes.  
24 A. Can I get a quick clarification on ITF?  
25 Q. ITF is the intermodal transfer facility.

PAGE 61 61

1 That's what ITF stands for.  
2 A. I believe the third relates primarily to  
3 wetland habitat loss, whereas construction of the rail  
4 site and some of the other facilities would also have  
5 impacts to upland habitats.  
6 Q. Is that the construction of the ITP that you  
7 were talking about, or the ITF?  
8 A. The ITP I believe would impact more wetlands  
9 of concern, whereas the rail line itself would impact  
10 more uplands.  
11 Q. I really want to know whether or not we're  
12 done with the second area, the impact on peregrine prey  
13 species through increased rail and vehicle traffic.  
14 We've covered whatever your concerns are with that?  
15 A. Well, construction is also included in the  
16 second, the fifth line, affected by rail or site  
17 construction, increased truck rail and passenger vehicle  
18 traffic. So yes, I feel like we're done with traffic.  
19 Q. Okay. Traffic, I see the traffic could be  
20 as a result of the construction traffic which would be  
21 greater than the ongoing operational traffic? You  
22 wanted to make sure that was covered?  
23 A. The impacts of the construction on the prey  
24 base, loss of prey base, nesting sites and habitat, and  
25 not just restricted to wetlands.

PAGE 62 62

1 Q. Let's go, then, to loss of habitat, whether  
2 it's a result of construction of the ITP or rail or...  
3 Your concern is that by -- let's just focus on the ITP  
4 for a moment.  
5 A. Okay.  
6 Q. You know where it is located?  
7 A. (Witness nods head.)  
8 Q. And do you know how much land it will cover?  
9 A. I don't recall. I believe that was listed  
10 in the draft EIS.  
11 Q. Do you know how much land the construction  
12 of the ITF will consume?  
13 A. I don't recall acres.  
14 Q. If I were to represent to you that it was 11  
15 acres, would that represent to you an important loss of  
16 habitat for prey species for the peregrine?  
17 A. If that were wetland acres, yes.  
18 Q. If it were not wetland acres?  
19 A. If it were not wetland acres, I would say  
20 not.  
21 Q. Let's shift, then, from the ITP to your  
22 other concerns with loss of habitat to prey species.  
23 Does your concern focus really on wetlands or impacts on  
24 wetland areas?  
25 A. Not entirely, no.

PAGE 63 63

1 Q. Okay. Let's start with if the intermodal  
2 transfer facility were used, therefore there was truck  
3 traffic down the Skull Valley Road to the facility  
4 itself, what impacts, what loss of habitat would you see  
5 occurring from that alternative -- use of that  
6 alternative?  
7 A. The only loss of habitat directly would be  
8 at the intermodal transportation facility. To my  
9 understanding, there would be no alteration of the road  
10 or the road base, so there would be no habitat lost  
11 under that alternative.  
12 Q. If the rail alternative were used, what is  
13 the loss of habitat that concerns you there?  
14 A. I don't believe I've seen an actual acreage  
15 amount of habitat that would be lost, but it's likely in  
16 the neighborhood of hundreds of acres, if not thousands  
17 of acres of upland habitats, grassland habitats, shrub  
18 steppe habitats with primarily greasewoods, some  
19 sagebrush, and the possibility of some piñon juniper  
20 habitat loss. Many of these habitat types are the  
21 habitat of prey species for peregrine falcons.  
22 Q. Do you know where this rail line is proposed  
23 to be constructed?  
24 A. Yes.  
25 Q. And you agree with me it's on the west side

PAGE 64 64

1 of Skull Valley?  
2 A. Yes.  
3 Q. What's the distance from there to the Timpie  
4 Springs peregrine nest?  
5 A. Again, I don't know the exact distance, but  
6 it's over ten miles, I would guess.  
7 Q. And do you believe that the peregrine  
8 falcons in Timpie hunt for prey in that area?  
9 A. I don't have any record of that. It's  
10 possible that they do, but I don't have any record of  
11 it.  
12 Q. I'll get marked as No. 6 an excerpt from the  
13 draft environmental impact statement that the NRC staff  
14 has produced.  
15 (Exhibit DD 6 marked.)  
16 This is section 5.4.1 and 5.4.2, 5.4.3, and  
17 5.4.4 from the Draft Environmental Impact Statement. It  
18 includes some statistics like my representation to you  
19 of the 11 acres for the ITP.  
20 A. Uh-huh.  
21 Q. And as well includes statistics on how  
22 much -- what would be clear for the rail line. This is  
23 probably what you remember --  
24 A. Yes.  
25 Q. -- looking at. I don't mean to test your

1 memory, but that would be easier if we just had it in  
2 front of us.  
3 Are these about the statistics that you  
4 remember and that you were relying on for your  
5 judgments?  
6 A. Yes.  
7 Q. Not only in Section 5.4.1.1 where it refers  
8 to vegetation on the first page, but on the second page  
9 as well under 5.4.1.2 in wildlife. It gives some  
10 percentages of the amount of habitat or potential  
11 habitat that would be disturbed by these constructions.  
12 Do you see the figures there of 1/100th of a percent and  
13 3/10 of a percent?  
14 A. Uh-huh.  
15 Q. Do you have any reason to dispute these  
16 statistics?  
17 A. I guess I wouldn't necessarily feel  
18 qualified to answer that without seeing a more  
19 comprehensive documentation of what exists in the Skull  
20 Valley area.  
21 Q. Do you have any basis for disputing it? You  
22 just don't know?  
23 A. I just don't know.  
24 Q. Assuming that those statistics are correct,  
25 does it alter at all your level of your concern?

1 A. No, it does not.  
2 Q. And are there other areas of concern that  
3 you have about loss of habitat that we haven't  
4 discussed?  
5 A. Yes. One is wildfire or fire caused by  
6 either a train, increased train traffic, sparks from  
7 trains, or from increased vehicular traffic.  
8 Q. Have you done any work to quantify or  
9 attempt to quantify what this increased risk may be?  
10 A. No.  
11 Q. Are you able to qualify what that increased  
12 risk might be?  
13 A. It's fairly well documented that trains are  
14 a major cause of grassland and rangeland fires, as well  
15 as people throwing cigarette butts out of vehicles on  
16 highways. These fires, particularly -- the potential  
17 particularly exists in the Skull Valley area where a non  
18 native invasive grass called cheat grass has become  
19 established in some areas. Cheat grass is a very fire  
20 prone grass, and it tends to carry fires well into the  
21 native grasslands and shrublands. And once an area is  
22 converted to cheat grass, it basically stays in cheat  
23 grass because cheat grass does in essence encourage a  
24 more rapid fire return rate to an area than native  
25 grasses or native shrubs would.

1 Q. And is the area where the train line is  
2 proposed to be built primarily a cheat grass?  
3 A. It's a combination of grasslands and shrub  
4 habitats and some pinion juniper, I believe. I do not  
5 know the percentage of cheat grass that is included in  
6 the grassland definition.  
7 Q. And does cheat grass provide a good habitat  
8 for peregrine prey species?  
9 A. No, it does not.  
10 Q. So if it were primarily cheat grass, it  
11 would be poor habitat?  
12 A. (Witness nods head.)  
13 Q. And therefore less impacted by fire?  
14 A. If it were primarily cheat grass, the  
15 concern would be that fire would become more frequent in  
16 the area and more frequently threaten the native  
17 habitats that do exist alongside of the cheat grass  
18 habitats.  
19 Q. Do you recall the staff's, the NRC staff's  
20 observation in its draft environmental impact statement  
21 that the proposed revegetated areas along the rail line  
22 might in fact function as a green strip to help prevent  
23 the spread of fire?  
24 A. Yes, I do recall that.  
25 Q. Did you sign up for that proposition?

1 A. I have great reservations that they'll be  
2 able to establish native grasses in those heavily  
3 disturbed areas without a great deal of money and  
4 effort.  
5 Q. So you're not sure whether or not they'll be  
6 accurate about this, but you have some doubts?  
7 A. Yes.  
8 Q. Okay. I'd like to take a break. I may be  
9 close to the end here. I just need to take a break to  
10 take a look through my questions and see if there is  
11 anything -- is there anything more that you feel I  
12 haven't covered from your concerns?  
13 A. I've got the cheat sheet here again.  
14 Q. Well, you can also consider during the break  
15 or talk with your counsel and see if you have anything  
16 more. I meant to cover and put on the record whatever  
17 your concerns are.  
18 A. Okay.  
19 Q. And to the extent I haven't asked you about  
20 some and you still have some that we haven't explored, I  
21 would like to do that.  
22 (Recess from 10:52 to 11:05 a.m.)  
23 Q. (BY MR. BLAKE) I do have a couple more  
24 questions, and I understand as well you want to add  
25 something. Go ahead.

PAGE 69 69

1 A. Okay. The one topic that we hadn't covered  
2 was one that we mentioned earlier was the construction  
3 impacts on non raptors and the loss of habitat and  
4 actually direct impacts to a variety of birds. That  
5 potential exists because of construction of primarily  
6 the rail facility, but also the actual storage facility.  
7 And all of those species are covered by the Migratory  
8 Bird Treaty Act, so that any loss of a particularly  
9 direct impact of those species would be a violation of  
10 the Migratory Bird Treaty Act. And that was just  
11 something that I hadn't really seen addressed anywhere  
12 in the draft EIS or in the environmental report. They  
13 focused primarily on raptors, but this would include  
14 nests of non raptors as well as raptors.

15 Q. Let me just start with raptors. In all that  
16 you've just said, is there some concern about raptors  
17 which we haven't explored which is due to the  
18 construction of the facility or the associated rail line  
19 or ITF facility?

20 A. Yeah, our discussion has primarily been  
21 around peregrine falcons, not the other raptors that  
22 occur within the construction zones.

23 Q. I see. Okay. This may be the kind of thing  
24 that your counsel indicated at the outset you wanted to  
25 put on the record, even though we might agree it's not

PAGE 70 70

1 included within this contention.

2 A. Right.

3 Q. Okay. And now with respect to non raptors,  
4 are we talking about prey species for the peregrine  
5 falcon, or again, is this a broader statement that you  
6 just wanted to make for the record?

7 A. A number of them are prey species, but it is  
8 a broader statement, species that may not be regularly  
9 taken by peregrine falcons that would still be native  
10 species that may be impacted by the construction and  
11 would be protected by the Migratory Bird Treaty Act as  
12 well as state law.

13 Q. And with respect to the confines of the  
14 contention, the peregrine and its prey species, is there  
15 anything more by way of concern that you have that we  
16 haven't explored or talked about today, or again, is  
17 this a statement which you wanted to make for the record  
18 even though it might be outside the area of contention?

19 A. Primarily the latter.

20 Q. Anything in the former that we should talk  
21 about? As I say, I do want to cover whatever your  
22 concerns are that are related to the contention. Or  
23 have we covered the waterfront? I have some areas I'm  
24 going to go into.

25 A. I can't think of anything.

PAGE 71 71

1 MS. LOCKHART: No, but since it's outside of  
2 the contention, I think I'll feel free to testify.

3 MR. BLAKE: Sure.

4 MS. LOCKHART: The concern is that in a  
5 number of places in the environmental report it  
6 indicates that if raptor nests are encountered, there  
7 will be some sort of mitigation. And I just want to  
8 make it clear that -- I'm sure you folks know, but it  
9 would be nice if it were clear that that should happen  
10 for all protected birds, not just raptors.

11 MR. BLAKE: Certainly the environmental  
12 report, just to the extent I can set your mind at ease,  
13 is not developed for the purposes of the contention.  
14 It's developed for the wider, broader, potential  
15 consequences of construction or operation of the  
16 facility. And to that extent, to the best of my  
17 knowledge, it wasn't intended to be limited to the  
18 peregrine falcons at all.

19 MS. LOCKHART: Okay.

20 Q. (BY MR. BLAKE) Can you describe what the  
21 typical diet is of the peregrine falcon, particularly  
22 those that Timpie Springs has?

23 A. I can estimate what the typical diet of  
24 peregrine falcons are in the state. I don't know that I  
25 can speak directly to the Timpie nest.

PAGE 72 72

1 Q. Okay.

2 A. The bulk of the diet, not necessarily the  
3 majority, but certainly the bulk of the diet will be  
4 made up of shorebirds, followed by species such as  
5 mourning doves, followed by passerine species and then  
6 other miscellaneous.

7 Q. Birds?

8 A. Birds, yes.

9 Q. And as far as you know, that would be true  
10 of the Timpie Springs peregrines?

11 A. Yes, as far as I know.

12 Q. In talking about loss of habitat, we talked  
13 about the area that would be consumed by the ITF and the  
14 area as well that would be disturbed by the construction  
15 of the railroad line. We didn't talk about the facility  
16 itself down on the Indian reservation. Is that also a  
17 loss of habitat which is of concern to you?

18 A. It would be a loss of upland habitats. It's  
19 similar to the rail construction impacts.

20 Q. And what's your understanding of the  
21 distance from that facility to the Timpie Springs nest?

22 A. Mileage wise, I don't recall exactly. I  
23 would say it is 20, 25 miles.

24 Q. If I represented that it were more than 25  
25 miles, would that reduce the level of concern that you

SHEET 10 PAGE 73 73

1 have about the loss of that particular habitat?  
2 A. No.  
3 Q. It wouldn't?  
4 A. No.  
5 Q. What are the species that -- the prey  
6 species that currently inhabit the area where the  
7 facility is proposed to be located?  
8 A. I would guess that it would include mourning  
9 doves as well as a number of other passerine species.  
10 Q. Have you done any study of what it is?  
11 A. No, I have not. Actually, I would like to  
12 correct the statement about foraging items and include  
13 gulls with shorebirds.  
14 Q. Okay. Are you aware of a single instance of  
15 foraging by the Timpie Springs peregrines as far away,  
16 and particularly as far away as south down Skull Valley  
17 as the proposed site?  
18 A. No.  
19 Q. What's the reason for your concern?  
20 A. There are potential peregrine falcon nesting  
21 habitats as well as other raptor nesting habitats that  
22 are very near the proposed site, basically on both ends,  
23 both sides of Skull Valley. So the concern there is not  
24 primarily with the birds nesting at Timpie Springs, but  
25 other potential -- peregrine falcon, prairie falcon,

PAGE 74 74

1 ferruginous hawk nest that may prey on the species that  
2 are there.  
3 Q. If we stick for a moment just to the  
4 contention, do you have a concern with the loss of that  
5 habitat?  
6 A. Not that --  
7 Q. I understand you have some --  
8 A. Not that would directly impact the Timpie  
9 Springs nesting.  
10 Q. Okay. Do you have any evidence or sightings  
11 or other indications of the Timpie Springs peregrine  
12 falcons hunting in the area where the rail line is  
13 proposed to be constructed?  
14 A. That would actually be impossible to tell.  
15 Q. That would be what?  
16 A. Impossible to tell. The birds at Timpie  
17 Springs are not marked in any way, so whether they would  
18 actually forage in that area would be impossible to  
19 tell. And I am not aware of any records of birds in the  
20 area of the proposed railroad construction.  
21 Q. That is, more particularly, you're not aware  
22 of any records or evidence of peregrine falcons,  
23 wherever they came from, foraging in the area where the  
24 railroad is proposed to --  
25 A. That's correct.

PAGE 75 75

1 Q. Do you have any data regarding the foraging  
2 patterns of the peregrines that use the Timpie nest?  
3 A. No.  
4 Q. Based on your knowledge of peregrines and  
5 the habitats that exist in that area, would you expect  
6 them to forage generally in a northerly or southerly,  
7 easterly or westerly direction?  
8 A. I would not expect them to forage in a  
9 northeasterly direction, which would take them out over  
10 the bulk of the Great Salt Lake. I have no reason to  
11 believe that they wouldn't forage in any other  
12 direction. And they would forage in the northeasterly  
13 direction as far as probably the edge of the lake, so  
14 they would not go over, forage over the open water.  
15 Q. Let me ask you to take a look at Section  
16 5.4.1.3 which was included in Exhibit 6. You may  
17 already have read it in preparing for today's  
18 deposition, in any event. Do you have any reason to  
19 dispute those observations with regard to the lack of  
20 impact on wetlands by construction of the ITF or the  
21 railway corridor?  
22 A. I believe there was a correction to this  
23 somewhere indicating that there were some wetlands in  
24 the ITF construction area within the footprint of the  
25 construction.

PAGE 76 76

1 Q. Really?  
2 A. That may be my mistake, but I believe that  
3 there was a correction subsequently published to that.  
4 There are certainly playa wetlands in that area.  
5 Whether they meet the jurisdictional definition of a  
6 wetland or not, I'm not sure.  
7 Q. By playa wetlands you mean mudflats kind of  
8 stuff?  
9 A. Yeah.  
10 Q. To use lay terminology?  
11 A. Yes. And those are periodically flooded  
12 wetlands. Seasonally as well as when the lake rises,  
13 those wetlands often become flooded for years at a time.  
14 And with reference to the Skull Valley Road,  
15 yeah, there's no contention there that that wouldn't --  
16 would not impact.  
17 Q. The rail?  
18 A. Directly. I wouldn't contest that.  
19 Q. Okay. I am unaware of a correction to the  
20 draft environmental impact statement in this regard, so  
21 after --  
22 MS. LOCKHART: Well, if Catherine is  
23 unaware.  
24 MS. MARCO: No.  
25 MR. BLAKE: Well, if you would just consult

PAGE 77 77

1 with --  
2 MS. LOCKHART: Sure.  
3 MR. BLAKE: -- your counsel and provide me  
4 whatever it is you're referring to, That would be  
5 helpful. I just don't know what it might be.  
6 I have no more questions.  
7 MS. LOCKHART: I have no questions.  
8 EXAMINATION  
9 BY MS. MARCO:  
10 Q. I just have a couple. When you were  
11 speaking about the vehicular traffic impacts, was that  
12 limited to the physical strike that a bird would have  
13 into an automobile or a train?  
14 A. Yes.  
15 Q. Okay. And with respect to the California  
16 bird colony, how much of a reduction in the California  
17 bird colony would be required in order to impact the  
18 Timpie Springs peregrine falcons?  
19 MS. LOCKHART: Can you clarify that that's  
20 the California gull colony?  
21 MS. MARCO: Yeah. In population.  
22 A. I don't know that I could estimate that.  
23 Q. Any reason why not?  
24 A. I am not aware of how much the Timpie  
25 Springs birds rely on that particular colony, nor do I

PAGE 78 78

1 know how much the increase in rail traffic would be.  
2 Q. And would that be the same with respect to  
3 the shorebird species near that colony?  
4 A. Yeah.  
5 Q. And how frequently do the peregrine falcons  
6 at Timpie Springs eat?  
7 A. How frequently do they eat?  
8 Q. Yes.  
9 A. It's probably more correct to ask how  
10 frequently do they forage, how often do they obtain  
11 food. Because the parent will eat but they will also  
12 bring food back to their young. And it will vary  
13 dramatically throughout the season based on whether they  
14 are foraging simply for themselves, whether they are  
15 foraging to increase their energy to produce eggs,  
16 whether they are nesting and bringing food into the  
17 nestlings and providing food to the birds once they've  
18 left the nest. Maybe several times a day. Probably at  
19 least two times a day to several times a day.  
20 Q. That they go out to seek food, or they  
21 actually find it and eat it?  
22 A. That they actually find and eat.  
23 Q. Okay. And that would be an average for all  
24 three cases where the birds are seeking or foraging for  
25 themselves or foraging to build up energy or foraging for

PAGE 79 79

1 the young?  
2 A. It will increase as they are foraging  
3 particularly for young.  
4 MS. MARCO: Okay. I don't have any other  
5 questions.  
6 FURTHER EXAMINATION  
7 BY MR. BLAKE:  
8 Q. I'd like to get your sense based on NRC  
9 staff's questions. Your sense of distances they  
10 normally forage, in particular, of course I'd like to  
11 know the Timpie Springs peregrines, but I understand  
12 from your prior testimony you don't have any particular  
13 information about that.  
14 A. Right.  
15 Q. There have been statistics provided by U.S.  
16 Fish and Wildlife to this project on what those  
17 statistics are, and maybe you have different views or  
18 maybe you don't. My recollection, though, is that they  
19 normally will forage up to like a ten-mile range. They  
20 can forage up to 18 miles or so, and 80 percent of their  
21 foraging is done within a mile or so. That's the  
22 numbers that I remember from U.S. Fish and Wildlife. Do  
23 you know those kinds of figures or statistics, or do you  
24 believe just what I've said is about right?  
25 A. That's probably a fair assessment. There's

PAGE 80 80

1 not a great deal of information on peregrines that nest  
2 in the Great Basin ecoregion. There is some  
3 information. And those birds do tend to nest near  
4 wetlands where they will do most of their foraging. But  
5 certainly birds will travel great distance, 17, 18  
6 miles, to forage. I don't think that it would be  
7 unusual for birds to have a two-mile foraging radius.  
8 Q. Where I talked about 80 percent might be  
9 done within a mile, 80 percent within two miles might be  
10 a figure, a statistic that you'd go with?  
11 A. Yeah.  
12 Q. Anything more you want to add to that topic  
13 or anything else we've talked about?  
14 A. No, I don't think so.  
15 MR. BLAKE: I have no more questions.  
16 Counsel?  
17 MS. LOCKHART: No.  
18 MR. BLAKE: I do appreciate your time and  
19 your forthrightness, and I hope we resolve the issue.  
20 (Deposition was concluded at 11:30 a.m.)  
21 \* \* \*  
22  
23  
24  
25



Private Fuel Storage, L.L.C.  
Frank P. Howe \* April 24, 2001

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