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# Cold Vacuum Drying Facility Site Evaluation Report

**J. A. Diebel**

ICF Kaiser Hanford, Richland, WA 99352  
U.S. Department of Energy Contract DE-AC06-87RL10930

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**Abstract:**

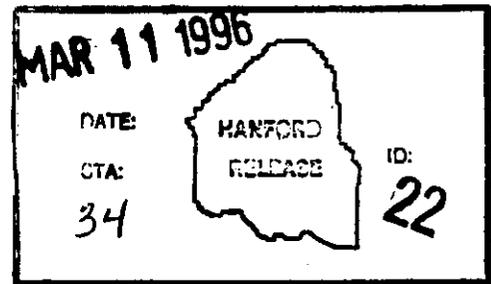
In order to transport Multi-Canister Overpacks to the Canister Storage Building they must first undergo the Cold Vacuum Drying process. This puts the design, construction and start-up of the Cold Vacuum Drying facility on the critical path of the K Basin fuel removal schedule. This schedule is driven by a Tri-Party Agreement (TPA) milestone requiring all of the spent nuclear fuel to be removed from the K Basins by December, 1999. This site evaluation is an integral part of the Cold Vacuum Drying design process and must be completed expeditiously in order to stay on track for meeting the milestone.

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*Chris Brillingham* 3-11-96  
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**Revision 0**

**COLD VACUUM DRYING FACILITY**  
**SITE EVALUATION REPORT**

Compiled by  
J. A. Diebel

February, 1996

ICF Kaiser Hanford

**WHC-SD-SNF-SE-001**  
**Revision 0**

**CONTENTS**

1.0	OBJECTIVE . . . . .	4
1.1	BACKGROUND . . . . .	4
1.1.1	Spent Nuclear Fuels Project . . . . .	4
1.2	PURPOSE AND SCOPE . . . . .	6
2.0	SUMMARY . . . . .	7
3.0	DESCRIPTION OF ALTERNATIVES . . . . .	8
3.1	SINGLE STRUCTURE IN THE 100K AREA . . . . .	8
3.2	ALTERNATIVE SITES . . . . .	10
4.0	DISCUSSION OF ALTERNATIVES . . . . .	12
4.1	SITE SELECTION CRITERIA . . . . .	12
4.1.1	Prohibited Criteria . . . . .	12
4.1.2	Productivity Criteria . . . . .	14
4.1.3	Site Evaluation Report Project Team . . . . .	15
4.2	EVALUATION OF ALTERNATIVES . . . . .	16
5.0	FINDINGS . . . . .	23
5.1	Conclusions . . . . .	23
5.2	Recommendation . . . . .	23
6.0	REFERENCES . . . . .	25
7.0	GLOSSARY . . . . .	26
 APPENDIXES		
A	Site Evaluation Report Project Team Evaluations . . . . .	27

**WHC-SD-SNF-SE-001  
Revision 0**

**LIST OF FIGURES**

1-1	Cold Vacuum Drying Facility Layout . . . . .	5
3-1	Location of the Hanford Site and the 100K Area . . . . .	9
3-2	Cold Vacuum Drying Alternative Locations . . . . .	11
4-1	Prohibited Areas . . . . .	13
5-2	Cold Vacuum Drying Facility Recommended Area . . . . .	24

**LIST OF TABLES**

4-2	Summary of Site Evaluations and Ranking of each Site . . . . .	17
5-1	Summary Ranking of Site Evaluation Results . . . . .	23

**COLD VACUUM DRYING  
SITE EVALUATION REPORT**

**1.0 OBJECTIVE**

**1.1 BACKGROUND**

**1.1.1 Spent Nuclear Fuels (SNF) Project**

Spent nuclear reactor fuel has been stored in water from the beginning of operations at the Hanford Site. Approximately 2100 metric tons or 80% of the U. S. Department of Energy's (DOE) total inventory of spent fuel is currently stored in water at 105K East and West Basins. These basins were built in the 1950's and are nearing the end of their useful lives. There is a great deal of stakeholder concern over continued storage of the fuel in the K-Basins because of the age of the facilities, the close proximity to the Columbia River, and because the 105-K East Basin is known to have leaked in the past.

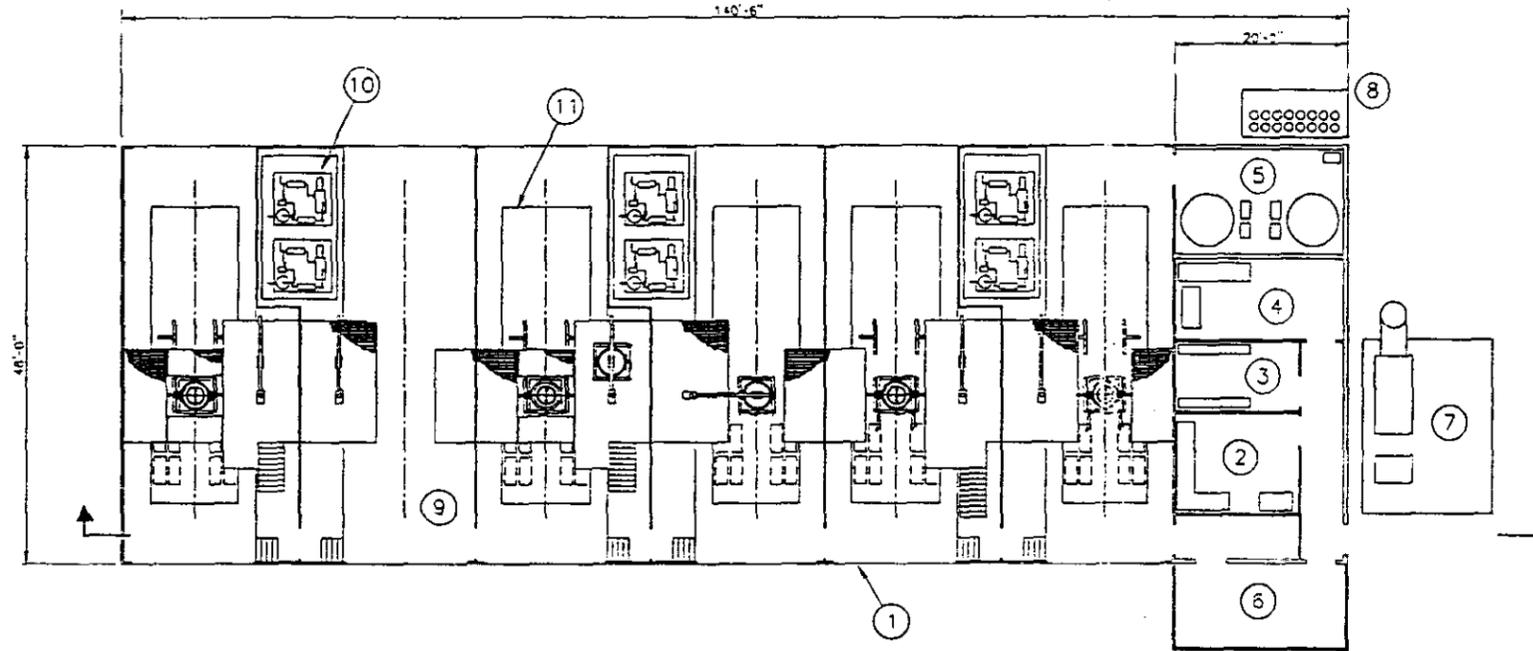
Spent Nuclear Fuel Project (SNF) has recommended to the DOE a process for removal of materials from the K-Basins. The process includes removal of the K-Basin Fuel from their existing canisters, de-sludging, and re-racking in the K Basins. The re-racked fuel is loaded into Multi-Canister Overpacks (MCOs) and sent to the Cold Vacuum Drying (CVD) facility for bulk water removal from each MCO and vacuum drying of the contents as shown in Figure 1-1. Then the MCO is transported to the Canister Storage Building (CSB), the loaded MCO would be staged, vented and await Hot Conditioning (HC). Conceptually, HC is done by elevating the temperature of the MCO to 300°C under decreased pressure to further remove gases and oxidants from the fuel. The MCO is then cooled to 150°C and the fuel is exposed to a limited source of oxygen to pacify chemically reactive sites on the fuel. MCOs would then go into interim storage, unvented, to await final disposition. The combined processes significantly diminish the reactivity of the fuel when exposed to air, mitigating accident potential and allowing dry storage for long periods in a stable condition.

In order to transport the MCOs to the CSB and to stage the MCOs at the CSB, they must first undergo the CVD process. This puts the design, construction and start-up of the CVD facility on the critical path of the K Basin fuel removal schedule. This schedule is driven by a Tri-Party Agreement (TPA) milestone requiring all of the spent nuclear fuel to be removed from the K Basins by December, 1999. This site evaluation is an integral part of the CVD design process and must be completed expeditiously in order to stay on track for meeting the milestone.

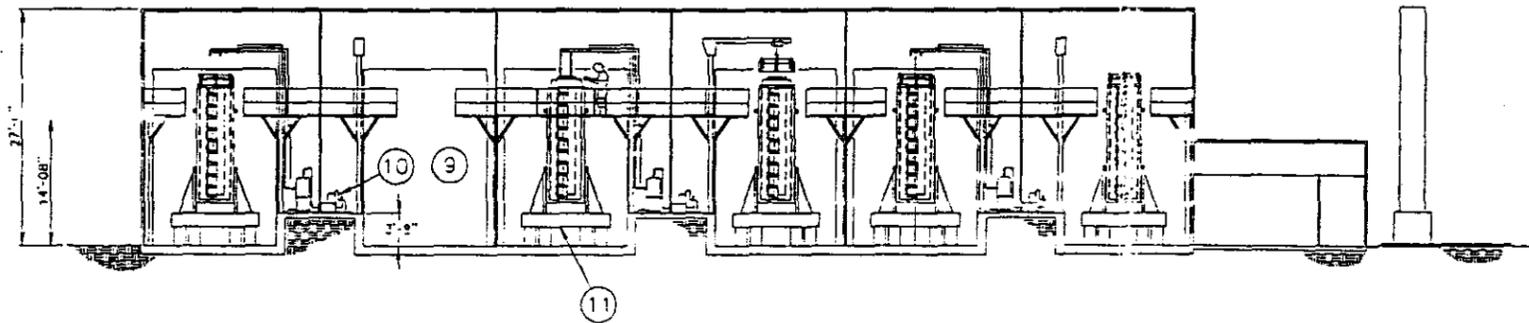
Figure 1-1. Cold Vacuum Drying Facility Layout

EQUIPMENT LIST

- ① COLD VACUUM MODULE
- ② CONTROL ROOM
- ③ ELECTRICAL SWITCHGEAR
- ④ FIRE RISER
- ⑤ HOLDING TANKS
- ⑥ CHANGE ROOM
- ⑦ HVAC SUPPORT
- ⑧ GAS SUPPLY
- ⑨ DOCKING BAY (TYP)
- ⑩ PROCESS SUPPORT MODULE
- ⑪ MCO TRANSPORTATION UNIT



PLAN



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WHC-SD-SNF-SE-001  
Revision 0

## 1.2 PURPOSE AND SCOPE

The purpose of this site evaluation is to identify the optimal location for the CVD facility. The evaluation was conducted in accordance with WHC-CM-8-7, *Operations Support Services*, Section 905, "Site Selection." A Site Evaluation Report Project Team was organized that reflected organizations/personnel either responsible for, or knowledgeable of, the assigned site criteria. The following methodology was used to develop a site recommendation.

- Identify applicable site criteria and the Site Evaluation Report Project Team.
- Identify alternative sites.
- Evaluate the alternate sites against the established criteria and performance measurements.
- Recommend a location for the CVD facilities.

## 2.0 SUMMARY

This report recommends approval of a site location for construction and operation of the CVD. The evaluation was conducted in accordance with established procedures. Site criteria was identified. A Site Evaluation Report Project Team was formed that reflected organizations/personnel either responsible for, or knowledgeable of, assigned site criteria.

Based on the 'prohibited' (go/no-go) criteria, and inspections of the area, six alternative sites were selected for evaluation. The alternative sites are within the 100K Area. The sites were evaluated by the Site Evaluation Report Project Team using their selected criteria and associated performance measurements. Briefings and discussions were held during the evaluation process between members of the Site Evaluation Report Project Team and members of the SNF design and operation teams.

The recommended location for the CVD facility is shown in Figure 5-2, as Site F. This area, adjoining the west side of 165KW and 190KW and extending west out to the 100K Area perimeter road, was the highest ranked and had the most desirable features of the candidate sites. The area is of sufficient size to allow the tractor/trailer rigs to safely and efficiently pull in/out of the CVD facility and possesses the required safety and security characteristics (e.g., close to the existing inner compound zone and away from high personnel populated/traffic areas) to best facilitate the operations. The site is also expected to accommodate changes in facility orientation or the addition of new facilities that may be required (e.g., operations support buildings).

Although, this site does have some known radiological contamination along its eastern border it is not anticipated to be a major impact. Soil sampling is planned to be performed to verify the extent of the contamination and if it will have enough of a cost and/or schedule impact as to preclude the use of Site F. If it is precluded then Site B will be the preferred site for it has the second highest rating.

The recommended location (Site F) should be approved for the Cold Vacuum Drying facility construction and operation use.

### 3.0 DESCRIPTION OF ALTERNATIVES

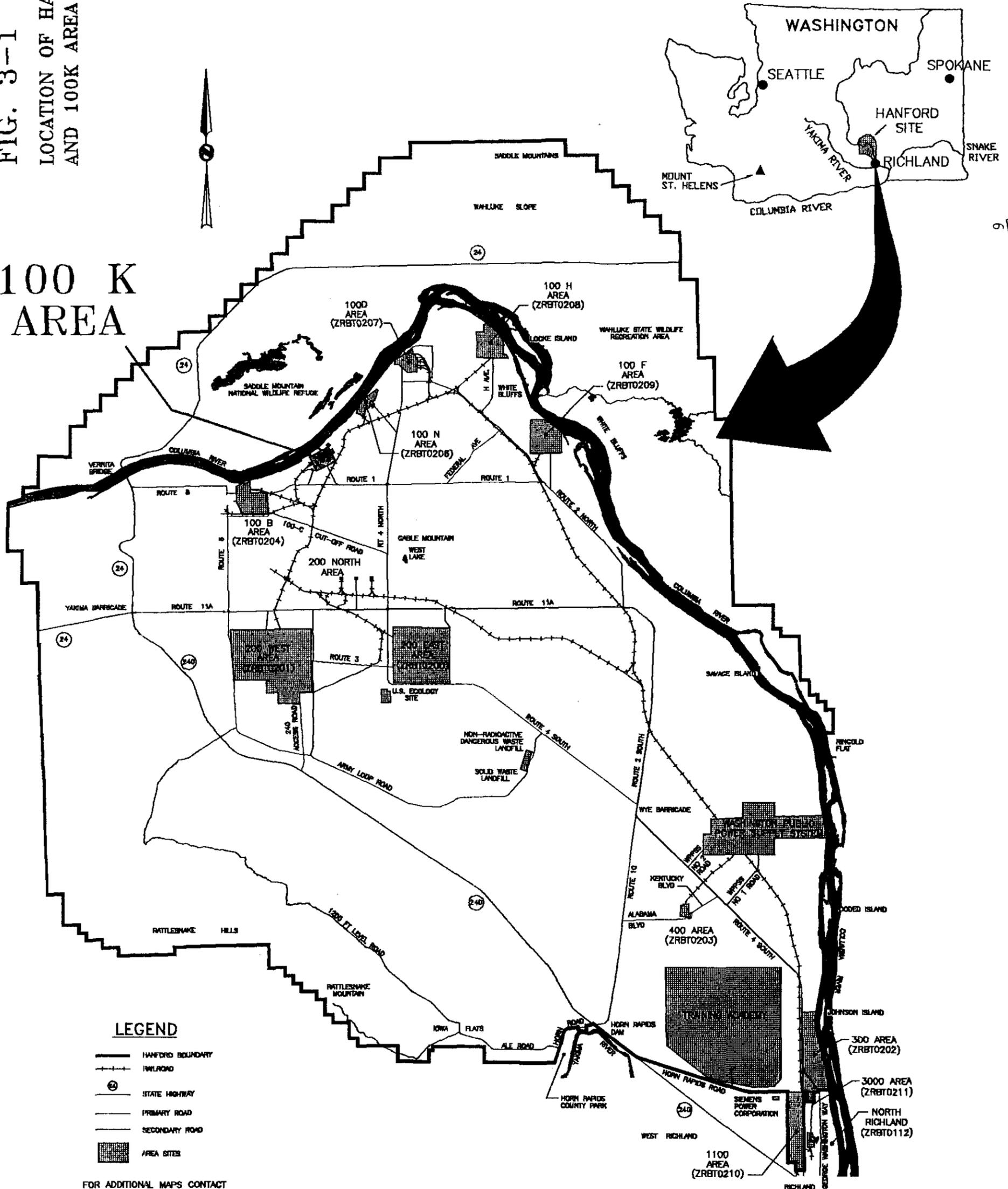
#### 3.1 SINGLE STRUCTURE IN 100K AREA

As described in the Cold Vacuum Drying Location Recommendation white paper (Bradshaw November, 1995), approved by the Technical Issue Management Board (EDT No. 612995 dated 2/18/96) and shown in Figure 3-1, the preferred area of land should be inside one new structure within the 100K Area. This white paper indicated that locations: 1) inside the existing K-Basin structures, 2) inside new structures adjacent to and connecting with each basin, 3) inside new structures adjacent to but separate from each basin, or 4) inside one new structure outside the 100K Area were not the optimal choice. The reasons these sites were rated unsatisfactorily include; 1) not being technically feasible, 2) did not facilitate meeting the fuel removal baseline schedule, 3) did not easily meet regulatory requirements, 4) had an impact on operations, and 5) exceeded reasonable costs.

FIG. 3-1

LOCATION OF HANFORD SITE AND 100K AREA

# 100 K AREA



**LEGEND**

- HANFORD BOUNDARY
- INLAND ROAD
- ⊙ STATE HIGHWAY
- PRIMARY ROAD
- - - SECONDARY ROAD
- ▒ AREA SITES

FOR ADDITIONAL MAPS CONTACT  
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Revision 0

NOTE: THIS MAP IS FOR REFERENCE ONLY. DO NOT USE FOR CONSTRUCTION OR ENGINEERING PURPOSES.	ICF KAISER HANFORD COMPANY MAPPING SERVICES	CADFILE: ZRBT0622 DATE: 2-20-96	CUSTOMER: JIM DIEBEL DRAWN BY: RAFAEL TORRES	TITLE: HANFORD - WASHINGTON MAP 100K AREA
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### 3.2 ALTERNATIVE SITES

Based on initial direction received from SNF and the information presented in section 3.1, six alternative sites were selected within the 100K Area for evaluation. The major criterion used to identify the alternative sites were a large area of cleared unobstructed land that was assumed to be clean of radiological or chemical contaminants and that utilities were readily accessible.

The six alternative sites are listed as Sites A through F and are shown in Figure 3-2. Site descriptions are as follows:

- Site A: An area that is close to the fuel storage basins. Partially contained in the inner compound security zone. Smallest of all alternative sites. Restrictive access. Located in a congested area.
- Site B: An area that is open and uncongested. Easily accessible from the fuel storage basins. Outside the inner compound security zone. Far from utility tie-in points.
- Site C: An area close to roads with high volume of traffic. Outside the inner compound security zone. Far from utility tie-in points.
- Site D: An area close to roads with high volume of traffic. Outside the inner compound security zone. Far from utility tie-in points.
- Site E: An area close to roads with high volume of traffic and restrictive access. Close to fish rearing operations. Outside the inner compound security zone. Close to utility tie-in points.
- Site F: An area that is open and uncongested. Easily accessible from the fuel storage basins. Partially inside the inner compound security zone. Utility tie-in points near-by.



#### 4.0 DISCUSSION OF ALTERNATIVES

##### 4.1 SITE SELECTION CRITERIA

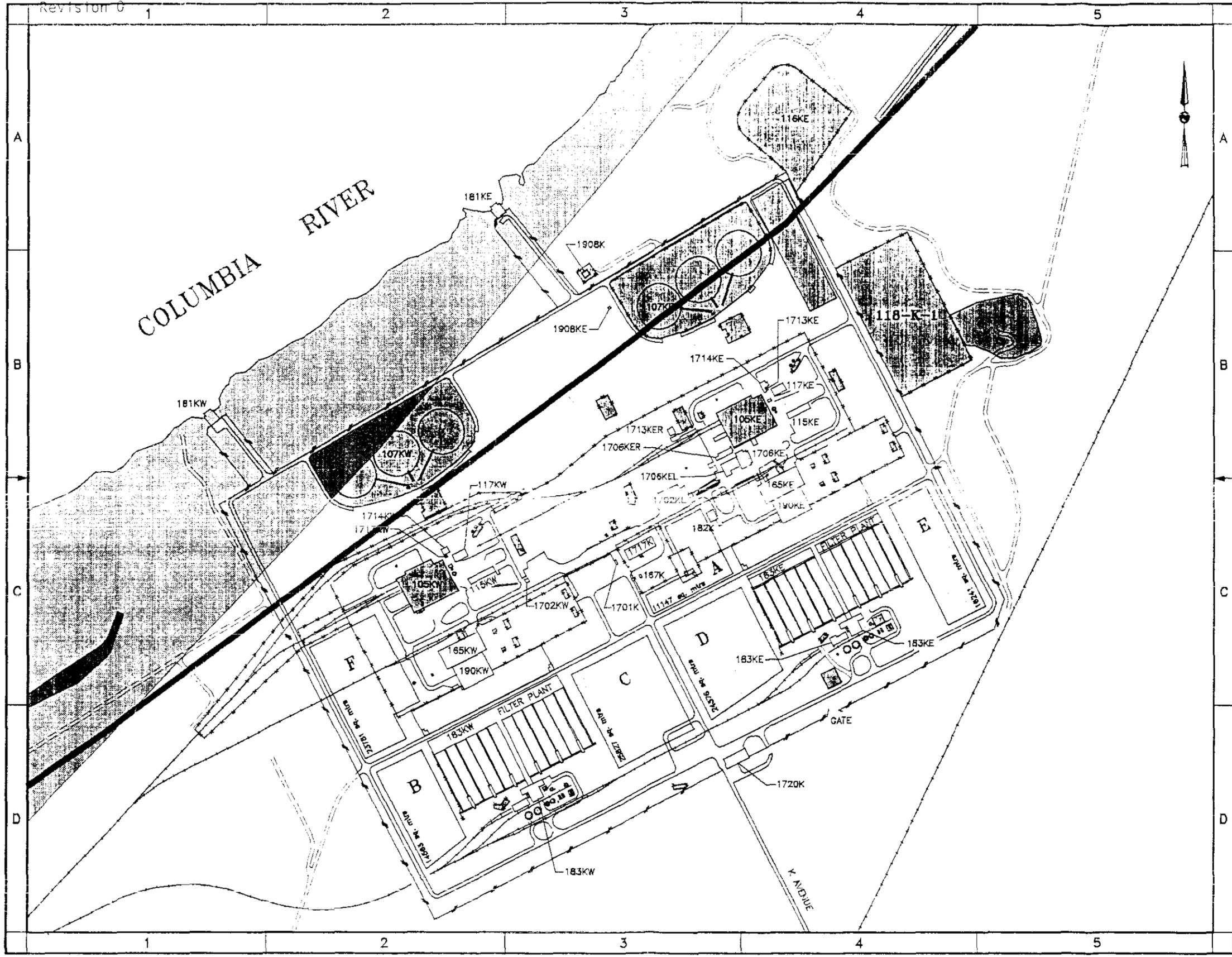
###### 4.1.1 Prohibited Areas (Go/No-Go) Criteria

The following 'prohibited' criteria were identified as areas to avoid during the initial walk down of each alternative site:

- The facility must be placed at a minimum of a quarter of a mile from the Columbia River, in consideration of the Wild and Scenic Rivers Act.
- The facility must not be located in the Columbia River maximum probable flood plain, so as not to endanger the operations of the CVD or the environment.
- The facility must not be located in a currently known waste site, so as not to disturb the existing waste and impact the clean-up of the site.

As depicted in Figure 4-1, all alternative sites meet the above prohibited criteria.

FIG. 4-1  
PROHIBITED AREAS



**LEGEND**

- MAJOR BUILDINGS
- IMPROVED ROADS
- UNIMPROVED ROADS
- DIRT ROADS
- RAILROADS
- SECURITY, WARNING & MISC FENCES
- POST & CHAIN (CRIB & BURIAL-GROUND FENCES)
- PERIMETER FENCES
- UNDERGROUND WASTE TANKS
- WATER TANKS
- MISC. TANKS
- BASINS
- 118-K-1 CRIBS
- 118-K-1 BURIAL GROUNDS
- WIDS SITES
- PROBABLE MAXIMUM FLOOD
- QUATER MILE LINE
- CYD ALTERNATIVE SITES

#### 4.1.2 Productivity Criteria

The productivity criteria were developed by the attendees of the kick-off meeting for siting the Cold Vacuum Drying facility. This criteria was established to support the concerns of these attendees. The attendees were identified as being responsible for or having interest in the 100K Area; all programs, projects and special interests that operate in and/or near the 100K Area were asked to participate in the siting of the CVD. This included: DOE-Spent Fuels Division and Plateau Restoration Division, Utilites, Nuclear Safety, SNF-Engineering, SNF-Operations, Security, Environmental Services, Fire Protection, CVD-Project Management, Bechtel Hanford Inc.(BHI)-Remedial Action, Process Engineering, Projects and Site Services-Fish Rearing Program, CVD Design-Meier Associates, Pre-Operational Review and Monitoring, etc.

The productivity criteria and who in the Site Evaluation Report Project Team addressed it are shown below.

#### PRODUCTIVITY CRITERIA

1. Telecom - Robin Poe, IRM Telecommunications
  - 1.A Define telecom corridors to assure no interference with them.
  - 1.B Distance the "proposed site" is from a telecom tie-in.
  - 1.C Distance from telephone switch nodes.
  - 1.D What services are required; COMSEC, etc.
2. Electrical - Clint Whitney, Electric Utilities
  - 2.A Define electrical corridors to assure no interference with them.
  - 2.B Set-back distances from high-voltage lines.
  - 2.C Distance the "proposed site" is from a electrical tie-in.
3. Water - Cheryl Myott, SNF Fire Protection
  - 3.A Define sanitary and fire water corridors; assure no interference w/them.
  - 3.B Set-back distances from water lines.
  - 3.C Distance the "proposed site" is from a water line tie-in.
4. Security Requirements - Liz Koster, Safeguards and Security
  - 4.A Facilitate security regulations:  
Use existing inner compound zones i.e. fencing around reactors.
5. Radiological and Chemical Hazard Assessment - Jerry Kurtz, Radiological Control
  - 5.A Surface contamination.
  - 5.B Subsurface contamination.
  - 5.C Radiation Hazards Review
  - 5.D Waste Information Data System (WIDS) information - Chuck Hedel, BHI Remedial Action

**WHC-SD-SNF-SE-001**  
**Revision 0**

6. Cultural and Ecological Resources Review - Jerry Hunacek, SNF Standards & Requirements
  - 6.A Cultural assessment.
  - 6.B Biological assessment.
  - 6.C Historical assessment.
7. Efficient Movement of the MCO to the CVD and on to the CSB. - Rick Bradshaw, CVD Project Manager
  - 7.A Can water tunnels support weight of tractor/trailer rig?
  - 7.B Car/foot traffic over/around alternative site and MCO route?
8. Adequate Space of Alternative Site - Rick Bradshaw, CVD Project Manager
  - 8.A Building functions.
  - 8.B Access/egress of tractor/trailer rig.
  - 8.C Security fencing set back from building.
  - 8.D Laydown area during construction.
9. Fire Hydrants - Cheryl Myott, SNF Fire Protection
10. Fire Exposure Separation - Cheryl Myott, SNF Fire Protection
11. Preoperational Monitoring - Ray Johnson, Preoperation Review/Monitoring
  - 11.A Proximity to waste sites.
  - 11.B Proximity to existing environmental sample points.
  - 11.C Existing historical information.

#### **4.1.3 Site Evaluation Report Project Team**

The Site Evaluation Report Project Team was developed from the attendees at the Kick-off meeting. The Site Evaluation Report Project Team was organized, as a small working size group of people, to evaluate the 'pro's' and 'con's' of each site against the stated criteria. The participants on the team were chosen for their organizations/personnel responsibility for, or knowledge of, the site criteria in their respective areas.

#### 4.2 EVALUATION OF ALTERNATIVES

The Site Evaluation Report Project Team evaluated the alternative sites against the assigned criteria and developed the 'pro's' and 'con's' of each site which are contained in Appendix A. The team developed the following performance measurements as listed in order of importance and they were given a ranking score: Safety = 4, Security = 3, Schedule = 2 and Cost = 1. Each criteria was then assigned the performance measurement that best fit the given criteria. (e.g. 'Security Requirements' best fits the security performance measurement, it is given a ranking of 3.) By analyzing the 'pro's' and 'con's' for the specific criteria of each site; the site(s) that best fit the criteria were identified and then were times by the given performance measurement ranking to establish the site ranking for that criteria as shown in Table 4-2. (e.g. The criteria 'Security Requirments' was given the performance measurement: Security = 3, and Site F was the best site from the analysis of the 'pro's' and 'con's', therefore  $F \times 3 = FFF$ .) The number of times each site was listed in the site ranking column were added together and the highest ranking score determined the optimal site for siting the Cold Vacuum Drying facility as shown in Table 5-1.

**WHC-SD-SNF-SE-001**  
Revision 0

**TABLE 4-2. Summary of Site Evaluations and the Ranking of each Site.**

Site Evaluation Criteria	Summary of key findings for Alternative Sites	Site Ranking of most favorable site(s)
<p>1. <u>Telecom</u></p> <p>1.A Define telecom corridors to assure no interference with them.</p>	<p>All sites except site A are favorable.</p> <p>Con for site A: Major interference with main telecommunication conduit and manhole system. Site probably not feasible.</p> <p>Performance measure: Cost = 1.</p>	<p>B, C, E, F</p>
<p>1.B Distance the "proposed site" is from a telecom tie-in.</p>	<p>Sites A and D most favorable.</p> <p>Con for Site B: Tie-in to Site B would involve extensive trenching and conduit. Est Cost. 15-18K.</p> <p>Pro for Site A and D: Tie-in to telecommunications manhole system would involve minimal trenching. Est. Cost. 2.5K</p> <p>Performance measure: Cost = 1.</p>	<p>A, D,</p>
<p>1.C Distance from telephone switch nodes.</p>	<p>Con for Site B: Distance to the switch node is outside the limit for digital circuits.</p> <p>Performance measure: Cost = 1.</p>	<p>A, C, D, E, F</p>
<p>1.D What telcom services are required; COMSEC, etc.</p>	<p>Con for Site B, E and F: Fiber optic cable may need to be pulled.</p> <p>Performance measure: Cost = 1.</p>	<p>A, C, D,</p>
<p>2. <u>Electrical</u></p> <p>2.A Define electrical corridors to assure no interference with them.</p>	<p>Con for Site A, C, D, E and F: Electrical corridors run through sites.</p> <p>Performance Measure: Cost = 1.</p>	<p>B</p>
<p>2.B Set back distances from hi-voltage lines.</p>	<p>Con for Site A, C, D, E and F: Set backs for electrical corridors will have to be followed.</p> <p>Performance Measure: Cost = 1.</p>	<p>B</p>

**WHC-SD-SNF-SE-001**  
**Revision 0**

<p>2.C Distance the "proposed site" is from an electrical tie-in.</p>	<p>Con for Site A and D: Depends on the amount of power required for the distance to a tie-in point.</p> <p>Performance Measure: Cost = 1.</p>	<p>B, C, E, F</p>
<p>3. <u>Water</u></p> <p>3.A Define sanitary and fire water corridors; assure no interference w/them.</p>	<p>All Sites favorable.</p> <p>Performance Measure: Cost = 1.</p>	<p>A, B, C, D, E, F</p>
<p>3.B Set back distances from water lines.</p>	<p>All Sites favorable.</p> <p>Performance Measure: Cost = 1.</p>	<p>A, B, C, D, E, F</p>
<p>3.C Distance the "proposed site" is from a water line tie-in.</p>	<p>Con for Site B, C and D: Long distance from tie-in points.</p> <p>Performance Measure: Cost = 1.</p>	<p>A, E, F</p>
<p>4. <u>Security Requirements</u></p> <p>4.A Facilitate security regulations.</p>	<p>Pro for Site F: Security's preferred site in support of their requirements.</p> <p>Performance Measure: Security = 3.</p>	<p>FFF</p>
<p>5. <u>Radiological Assessment</u></p> <p>5.A Surface contamination.</p>	<p>Con for Site F: Surface contamination found along railroad tracks.</p> <p>Because Site F is the highest ranked site; a soil sampling plan will be developed to verify the extent of the contamination at Site F and the real schedule/cost impacts to the project will be identified.</p> <p>Performance Measure: Schedule = 2.</p>	<p>AA, BB, DD, EE</p>

WHC-SD-SNF-SE-001  
Revision 0

<p>5.B Subsurface contamination.</p>	<p>Con for Site A and F: An underground radioactive material area is close to or within these sites. Surface contamination found along railroad tracks.</p> <p>Because Site F is the highest ranked site; a soil sampling plan will be developed to verify the extent of the contamination at Site F and the real schedule/cost impacts to the project will be identified.</p> <p>Performance Measure: Schedule = 2.</p>	<p>BB, CC, DD, EE</p>
<p>5.C Radiation Hazards Review</p>	<p>Pro for B, C and F: No unmonitored personnel housed in these areas.</p> <p>Performance Measure: Safety = 4.</p>	<p>BBBB, CCCC, FFFF</p>
<p>5.D WIDS Sites</p>	<p>All sites are within similar proximity to WIDS sites.</p> <p>Performance Measure: Safety = 4</p>	<p>AAAA, BBBB, CCCC, DDDD, EEEE, FFFF</p>
<p>6. <u>Cultural and Ecological Resources Review</u></p> <p>6.A Cultural assessment.</p>	<p>No Site has an advantage. Any mitigation that may be required is expected to have minimal impact on the project.</p> <p>Performance Measure: Schedule = 2.</p>	<p>AA, BB, CC, DD, EE, FF</p>
<p>6.B Biological assessment.</p>	<p>No Site has an advantage. Proximity of Site F to a bald eagle roost site is being investigated for possible timing constraints. Potential presence of endangered species on all sites is being investigated. Any mitigation that may be required is expected to have minimal impact on the project.</p> <p>Performance Measure: Schedule = 2.</p>	<p>AA, BB, CC, DD, EE, FF</p>
<p>6.C Historical assessment.</p>	<p>No Site has an advantage. Any mitigation that may be required is expected to have minimal impact on the project.</p> <p>Performance Measure: Schedule = 2.</p>	<p>AA, BB, CC, DD, EE, FF</p>

**WHC-SD-SNF-SE-001**  
**Revision 0**

<p>7. <u>Efficient Movement of the MCO to the CVD and on to the CSB</u></p> <p>7.A Can water tunnels support weight of tractor/trailer rig?</p>	<p>Pro for Sites B, E and F: Tunnels can be avoided.</p> <p>Performance Measure: Schedule = 2.</p>	<p>BB, EE, FF</p>
<p>7.B Car/foot traffic over/around alternative site and MCO route.</p>	<p>Pro for B and F: Little if no impact on existing traffic.</p> <p>Performance Measure: Safety = 4.</p>	<p>BBBB, FFFF</p>
<p>8. <u>Adequate Space of Alternative Site</u></p> <p>8.A Building functions.</p>	<p>Pro for Site B and F: Unrestricted.</p> <p>Note: Site F has advantage of being bigger for increased capacity of building orientation.</p> <p>Performance Measure: Schedule = 2.</p>	<p>FF</p>
<p>8.B Access/egress of tractor/trailer rig.</p>	<p>Cons for A and E: Restrictions on building orientation may impact accessibility.</p> <p>Note: Site F has best possible exit from the 100K Area with existing roads.</p> <p>Performance Measure: Schedule = 2.</p>	<p>FF</p>
<p>8.C Security fencing set back from building.</p>	<p>Pros for Site A and F: Close to or within existing inner compound zone.</p> <p>Performance Measure: Schedule = 2.</p>	<p>AA, FF</p>
<p>8.D Laydown area during construction.</p>	<p>Pro for Site B, C, D and F: No restrictions.</p> <p>Performance Measure: Schedule = 2.</p>	<p>BB, CC, DD, FF</p>
<p>9. <u>Fire Hydrants</u></p>	<p>Pros for Site A and E: Close water available.</p> <p>Performance Measure: Cost = 1.</p>	<p>A, E</p>

**WHC-SD-SNF-SE-001**  
**Revision 0**

<p><b>10. <u>Fire Exposure Separation</u></b></p>	<p>All sites equally favorable.</p> <p>Performance Measure: Safety = 4.</p>	<p>AAAA, BBBB, CCCC, DDDD, EEEE, FFFF</p>
<p><b>11. <u>Preoperational Monitoring</u></b></p> <p>11.A Proximity to waste sites</p>	<p>Waste sites on or immediately proximal to the preferred site result in slower sampling because of increased personnel protection procedures and equipment.</p> <p>Pros include that all sites are located in areas that have no known contamination present. Site B is most distant from any contaminated area, followed by C, D, E, F, &amp; finally A.</p> <p>Cons include that Site A is proximal to two WIDS Sites and an Underground Radioactive Material area and not too far from a Surface Contamination area.</p> <p>Performance Measure: Schedule = 2</p>	<p>BB, CC, DD, EE, FF</p>
<p>11.B Proximity to existing environmental sample points</p>	<p>Pros for Sites A, C, D, &amp; F: Existing environmental monitoring sample points will reduce expense of collecting baseline data. Site A is closest to the most environmental sample sites (4), followed by F (3), with C &amp; D being tied at a distant third (1). However, no site is excluded.</p> <p>Performance Measure: Schedule = 2</p>	<p>AA, CC, DD, FF</p>

WHC-SD-SNF-SE-001  
Revision 0

<p>11.C Existing historical information</p>	<p>The DOE regulations for conducting preoperational monitoring specify that existing data are to be used wherever possible to reduce impacts on cost and schedules.</p> <p>All sites are considered to be in the "pro" category.</p> <p>Performance Measure: Schedule = 2</p>	<p>AA, BB, CC, DD, EE, FF</p>
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## 5.0 FINDINGS

### 5.1 Conclusions

Table 5-1 presents a summary ranking of the site evaluation results. The results indicate that Site F ranked highest and therefore is the optimum site to locate the CVD facility. The location and size of Site F is expected to (1) accommodate changes in facility orientation or the addition of new facilities (e.g., support buildings), (2) facilitates meeting security requirements of the facility and (3) has the least adverse safety implications on current and planned operations, projects, traffic, access and egress to the 100K Area.

Site B is to be considered the back-up site in case Site F has a problem that can not be effectively or efficiently mitigated. Site B ranked second to F because of the increased distances to, and therefore additional costs estimated for accessing utility tie in points and supporting security requirements.

Sites A, C, D and E ranked lower because of the safety issue of having a high population of personnel or traffic in/around them, and the security issue of not being close to the existing inner security compound zone.

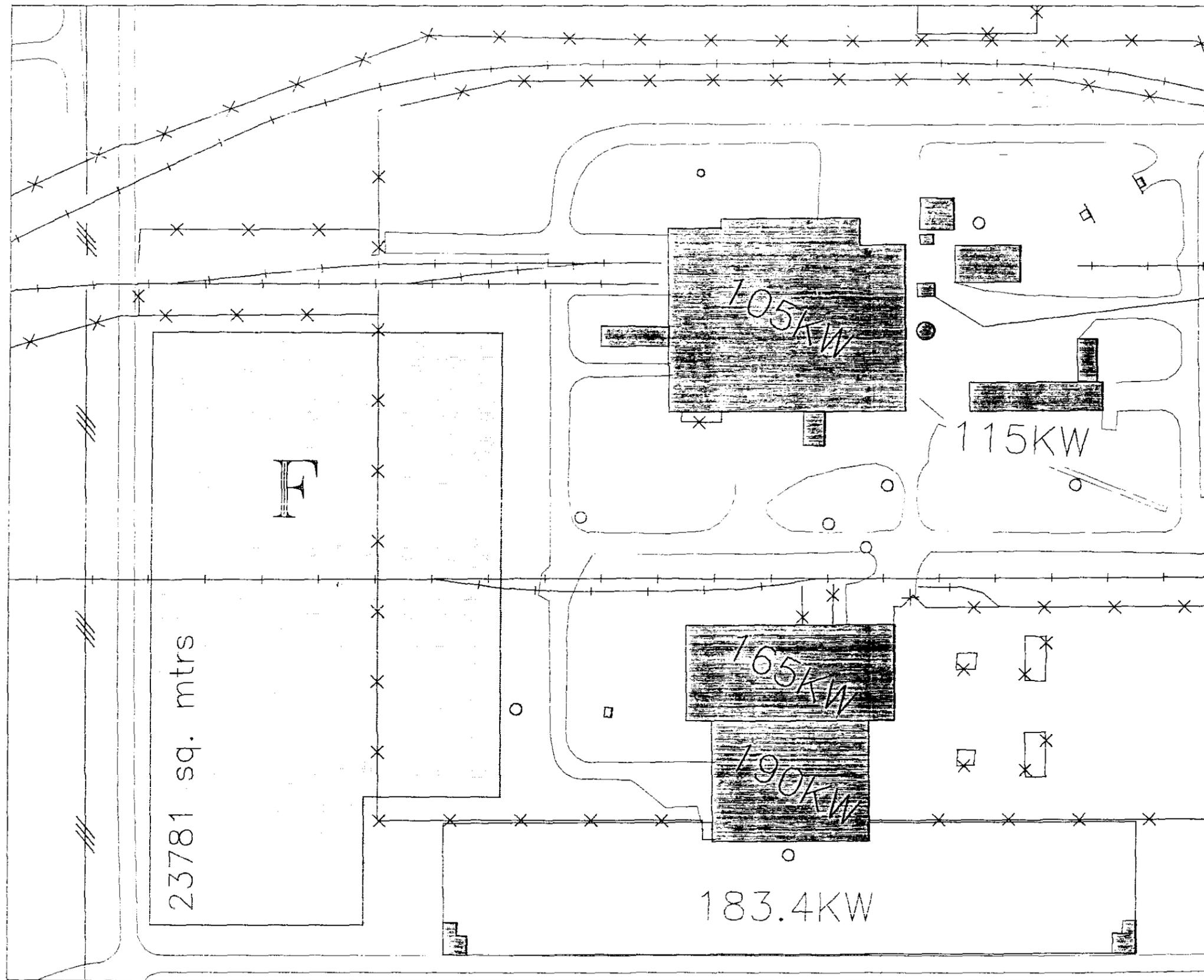
Table 5-1. Summary of the Site Evaluation Rankings.

Site	A	B	C	D	E	F
Total ranking score each site received.	36	40	34	31	31	47

### 5.2 Recommendation

The recommendation is that the Site F area shown in Figure 5-2 be approved for the CVD facility and that the work efforts proceed on this basis.

FIG. 5-2  
COLD VACUUM DRYING  
FACILITY RECOMMENDED  
AREA



-  EXISTING FACILITIES
-  CVD ALTERNATIVE SITES

WHC-SD-SNF-SE-001  
Revision 0

6.0 REFERENCES

Bradshaw, F. W., *Cold Vacuum Drying Location Recommendation* (white paper),  
Revision 1, November 1995.

Garvin, L.J., 1995 *REGULATORY AND SAFETY IMPACTS ON LOCATION ALTERNATIVES FOR  
COLD VACUUM DRYING* (Letter 5B100-95-003 to F. W. Bradshaw, November 8),  
Westinghouse Hanford Company, Richland, Washington.

WHC-S-0435, *Performance Specification for the K-Basin Spent Nuclear Fuel  
Vacuum Drying Module*, Westinghouse Hanford Company, Richland,  
Washington.

WHC-SD-SNF-TI-009, *105-K Basin Material Design Basis Feed Description for  
Spent Nuclear Fuel Project Facilities*, Westinghouse Hanford Company,  
Richland, Washington.

WHC-CM-8-7, *Operations Support Services*, Westinghouse Hanford Company,  
Richland, Washington.

7.0 GLOSSARY

ABBREVIATIONS AND ACRONYMS

BHI	Bechtel Hanford Inc.
CVD	Cold Vacuum Drying Facility
CSB	Canister Storage Building
DOE	US Department of Energy
EPA	US Environmental Protection Agency
HC	Hot Conditioning
MCO	Multi-Canister Overpack
NEPA	National Environmental Policy Act
SNF	Spent Nuclear Fuels Project
UGRMA	UnderGround Radiation Material Area

APPENDIX A

Site Evaluation Report Project Team Evaluations

SITING CRITERIA FOR SITE A

1. Telecom - Robin Poe, IRM Telecommunications

1.A Define telecom corridors to assure no interference with them - this is a critical go/no-go issue.

PROS - N/A.

CONS - Major interference with main telecommunication conduit and manhole system. Site probably not feasible.

1.B Distance the "proposed site" is from a telecom tie-in.

PROS - Tie-in to telecommunications manhole system would involve minimal trenching. Est. Cost. 2.5K

CONS - N/A.

1.C Distance from telephone switch nodes.

PROS - Distance is well within limits for both analog and digital circuits.

CONS - N/A.

1.D What services are required; COMSEC, etc.

PROS - All telecommunications services available

CONS - N/A.

2. Electrical - Clint Whitney, Electric Utilities

2.a Define electrical corridors to assure no interference with them.

PROS - N/A.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE A (con't)

- CONS - Site A location includes land presently being used as a 230kV switching station. There are no short or long term plans to utilize the (A21) switch station and there are currently no planned projects or funding available to engineer the removal of the equipment. Portions of the transmission system are still energized at 230kV. Layout of overhead transmission system is shown on H-13-000240, sheet 2.
- Site A may be difficult to obtain electrical power as it would probably have to be served from the 1717K bldg. Contact Jay Roberts for any electrical service to be served from within a 100K Area building.
- 2.B Set-back distances from hi-voltage lines.
- PROS - N/A.
- CONS - Set-back distances are required and listed in ANSI C2-1993, National Electrical Safety Code, Rule 232C1 and 234C1. Summary of clearances needed: 8m vertically from roadway to 230kV circuits, 6.2m vertically from top of building to 230kV circuits, 5m horizontally from buildings to 230kV circuits.
- 2.C Distance the "proposed site" is from an electrical tie-in.
- PROS - N/A.
- CONS - Distance depends on an amount of power needed. A rough guess for the tentative size of building is 225kVA. With this estimate, it will be marginal to add this size service to the 500kVA existing at the 1717K bldg. Suggest talking with Jay Roberts if service is to be added to 1717K bldg.
3. Water - Cheryl Myott, SNF Fire Protection
- 3.A Define sanitary and fire water corridors; assure no interference w/them.
- PROS - This site is over the cross-tie tunnel which contains both sanitary and service water piping. No interference between the two is anticipated.
- CONS - N/A.
- 3.B Set-back distances from water lines.
- PROS - No problems anticipated.
- CONS - N/A.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE A (con't)

3.C Distance the "proposed site" is from a water line tie-in.

PROS - This site is over the cross-tie tunnel which provides a connection to the sanitary and fire water supplies at the site or within 1,000 ft.

CONS - N/A.

4. Security Requirements - Liz Koster, Safeguards and Security

4.A Facilitate security regulations

Use existing inner compound zones i.e. fencing around reactors.

PROS - Current forces can be utilized unless the vulnerability assessment determines otherwise.  
- Close proximity to existing inner compound.  
- Some existing security lighting and fencing.

CONS - Heavy traffic and operations congestion.  
- High population area.

5. Radiological and Chemical Hazards Assessment - Jerry Kurtz, Radiological Control

5.A Surface contamination.

PROS - No known surface contamination. However, some contaminated items have been found in the laydown yard in the past.

CONS - None.

5.B Subsurface contamination.

PROS - No known underground contamination in this area. Previous excavations around 1717K and the parking area have shown no contamination.

CONS - This area does border a known underground radioactive material area (within 15 '). This UGRMA does have measurable contamination matrixed in the soil. Therefore, excavations in this area would involve more detailed sampling plan and surveillance. No data is available to this reviewer on underground plumes or past spill locations in this area. K Basins Environmental would need to be contacted for this information. If any spoils were found contaminated above detectable levels, this material would need to be stored until dose assessment could be developed and approved for release by DOE HQ.

SITING CRITERIA FOR SITE A (con't)

5.C. Radiation Hazards Review

PROS - None

CONS - This area directly adjoins facilities where unmonitored personnel work. Placing this facility in this location would require additional area and/or personnel monitoring for ionizing radiation.

5.D WIDS Sites - Chuck Hedel, BHI Remedial Action

PROS - No waste sites located within this area. It does not appear that any waste sites that are within 100 meters of site perimeters would have an unavoidable impact on the proposed facility because none are immediately adjacent to the alternative site. This site does not have any known impacts on or interferences with pump and treat facilities being planned for the 100-KR-4 Groundwater Operable Unit. No groundwater monitoring wells were found to exist within this site.

CONS - Four waste sites are present within 100 meters. They are: 130-K-1, 130-K-2, 130-K-3, and 130-KE-2. All four sites are fuel storage facilities.

6. Cultural and Ecological Resources Review - Jerry Hunacek, SNF Standards & Requirements

6.A Cultural assessment.

PROS - Moderately disturbed area.

CONS - N/A.

6.B Biological assessment.

PROS - N/A.

CONS - N/A.

6.C Historical assessment.

PROS - No structures involved.

CONS - N/A.

7. Efficient movement of the MCO to the CVD and on to the CSB. - Rick Bradshaw, CVD Project Manager

7.A Can water tunnels support weight of tractor/trailer rig.

PROS - N/A.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE A (con't)

- CONS - This location straddles the tunnel between the East and West sides of the area. It is likely that additional support would have to be installed to allow trailer movement over the tunnel, and the building orientation would be restricted by how it aligns with the tunnel.
- 7.B Car/foot traffic over/around alternative site and MCO route.
- PROS - Would not impact foot traffic.
- CONS - Would impact vehicle travel to the adjacent buildings and offices.
8. Adequate space of alternative site - Rick Bradshaw, CVD Project Manager
- 8.A Building functions.
- PROS - N/A.
- CONS - Building orientation will be restricted because of the location of the east west tunnel through the site.
- This site is the closest to population centers as compared to the other alternatives. Potential releases would have the highest impact.
- 8.B Access/egress of tractor/trailer rig.
- PROS - Close to both basins.
- CONS - Restrictions on building orientation may impact accessibility.
- Will need to build new road through inner compound fence for trailer exit. The current topography will need to be graded to lessen the incline for egress.
- 8.C Security fencing set back from building.
- PROS - Facility may fit within existing compound.
- CONS - N/A.
- 8.D Laydown area during construction.
- PROS - Could use sites C or D for laydown areas.
- CONS - Adjacent area limited for laydown area.
9. Fire Hydrants - Cheryl Myott, SNF Fire Protection
- PROS - There are hydrants to the west of this site, and others can be added because the water supply is near by.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE A (con't)

- CONS - There are not enough hydrants in this area so others will have to be added.
10. Fire Exposure Separation - Cheryl Myott, SNF Fire Protection
- PROS - There is adequate area to provide exposure separation from other structures per NFPA 80A.
- CONS - N/A.
11. Preoperational Monitoring - A. Ray Johnson, Near-Field Monitoring
- 11.A Proximity to waste sites.  
Waste sites on or immediately proximal to the preferred site result in sampling delays because of increased personnel protection procedures and equipment.
- PROS - Site A is free of known contamination.
- CONS - Site A is proximal to two WIDS Sites, conterminous with an Underground Radioactive Material area, and near a Surface Contamination area. In addition, all Sites are on disturbed land and there is a potential for encountering contamination during excavation.
- 11.B Proximity to existing environmental sample points.  
Existing environmental monitoring sample points will reduce the expense of collecting baseline data.
- PROS - Site A is proximal to four (4) environmental sample sites and ranks first in this category.
- CONS - NA
- 11.C Existing historical information.  
The DOE regulations for conducting preoperational monitoring specify that existing data are to be used wherever possible to reduce impacts on cost and schedules.
- PROS - Site A has the most environmental baseline information available of the six sites, however, all sites are acceptable.
- CONS - NA

SITING CRITERIA FOR SITE B

1. Telecom - Robin Poe, IRM Telecommunications
  - 1.A Define telecom corridors to assure no interference with them.
    - PROS - Site shows no interference with telecommunications cables or conduits.
    - CONS - N/A.
  - 1.B Distance the "proposed site" is from a telecom tie-in.
    - PROS - N/A.
    - CONS - Tie-in to Site B would involve extensive trenching and conduit. Est Cost. 15-18K.
  - 1.C Distance from telephone switch nodes.
    - PROS - Distance to the switch node is within the limit for analog circuits.
    - CONS - Distance to the switch node is outside the limit for digital circuits.
  - 1.D What services are required; COMSEC, etc.
    - PROS - Telephone service (analog) is available.
    - CONS - Services requiring fiber optic cable (HLAN, video, wideband digital) will require additional cabling costs.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE B (con't)

2. Electrical - Clint Whitney, Electric Utilities

2.A Define electrical corridors to assure no interference with them.

PROS - No overhead distribution or transmission system in vicinity. Utility poles are existing and a new service could be routed along them to service facility at site B. Power would probably be provided from 165KW and would need to be coordinated with Jay Roberts.

CONS - Layout of overhead transmission system is shown on H-13-000240, sheet 2.

2.B Set-back distances from high-voltage lines.

PROS - None in the vicinity of site B.

CONS - N/A.

2.C Distance the "proposed site" is from an electrical tie-in.

PROS - Service will probably have to be subfed from an existing building or a new service extended from 165KW. Contact Jay Roberts if extended from existing building.

CONS - N/A.

3. Water - Cheryl Myott, SNF Fire Protection

3.A Define sanitary and fire water corridors; assure no interference w/them.

PROS - N/A.

CONS - There is no water available to this site.

3.B Set-back distances from water lines.

PROS - No problems.

CONS - No water tie-in near by.

3.C Distance the "proposed site" is from a water line tie-in.

PROS - N/A.

CONS - Over 2,000 ft.

SITING CRITERIA FOR SITE B (con't)

4. Security Requirements - Liz Koster, Safeguards and Security

4.A Facilitate security regulations

- PROS - Use existing inner compound zones i.e. fencing around reactors.
- Low population and operations use.
- Isolated.
- Good road access.
- Security's second preferred site
- It's viable that the inner compound fence could be moved to include the secured zone.
  
- CONS - Outside inner compound zone.
- Additional patrol post required, ~\$500K/year.
- No existing security lighting and fencing.

5. Radiological and Chemical Hazards Assessment - Jerry Kurtz, Radiological Control

5.A Surface contamination.

- PROS - No known surface contamination exists in this area. No past history of contamination events for this area. A complete surface survey would be prudent before starting work.
  
- CONS - Area not routinely surveyed due to not currently a radiological area.

5.B Subsurface contamination.

- PROS - No known subsurface contamination in this area. A check with K Basins Environmental would be required to confirm. Surveillance during excavation would be minimal.
  
- CONS - None.

5.C Radiation Hazards Review

- PROS- This area does not house any unmonitored personnel, therefore would not require any additional monitoring.
  
- CONS- None.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE B (con't)

5.D WIDS Sites - Chuck Hedel, BHI Remedial Action

PROS - No waste sites located within this area. It does not appear that any waste sites that are within 100 meters of site perimeters would have an unavoidable impact on the proposed facility because none are immediately adjacent to the alternative site. This site does not have any known impacts on or interferences with pump and treat facilities being planned for the 100-KR-4 Groundwater Operable Unit. No groundwater monitoring wells were found to exist within this site.

CONS - One waste site, the 1607-K3 Septic Tank and Drain Field system for the 183-KW Building, is present within 100 meters of the proposed site.

6. Cultural and Ecological Resources Review - Jerry Hunacek, SNF Standards & Requirements

6.A Cultural assessment.

PROS - Moderately disturbed area.

CONS - N/A.

6.B Biological assessment.

PROS - N/A.

CONS - Eagle roosting zone nearby.

6.C Historical assessment.

PROS - No structures involved.

CONS - N/A.

7. Efficient movement of the MCO to the CVD and on to the CSB - Rick Bradshaw, CVD Project Manager

7.A Can water tunnels support weight of tractor/trailer rig.

PROS - May be able to avoid crossing all tunnels by adding some road improvements and access through the inner compound fence on the east side.

CONS - N/A.

7.B Car/foot traffic over/around alternative site and MCO route.

PROS - Little or no impact on current foot or vehicle traffic.

CONS - N/A.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE B (con't)

8. Adequate space of alternative site - Rick Bradshaw, CVD Project Manager

8.A Building functions.

PROS - No restrictions.

CONS - N/A.

8.B Access/egress of tractor/trailer rig.

PROS - No restrictions. Egress will be enhanced if a new security compound exit is added to the west side.

CONS - Farthest distance for K East fuel to travel in a flooded MCO.

8.C Security fencing set back from building.

PROS - N/A.

CONS - Not within current security compound. Will have to construct a new security compound and associated fence.

8.D Laydown area during construction.

PROS - No restrictions

CONS - N/A.

9. Fire Hydrants - Cheryl Myott, SNF Fire Protection

PROS - N/A.

CONS - No fire hydrants near this site.

10. Fire Exposure Separation - Cheryl Myott, SNF Fire Protection

PROS - Adequate area to provide exposure separation from any other structures.

CONS - N/A.

11. Preoperational Monitoring - A. Ray Johnson, Near-Field Monitoring

11.A Proximity to waste sites.

Waste sites on or immediately proximal to the preferred site result in sampling delays because of increased personnel protection procedures and equipment.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE B (con't)

- PROS - Site B is free of known contamination and of all suggested sites is the most distant from known contamination areas.
  - CONS - All Sites are on disturbed land and there is a potential for encountering contamination during excavation.
- 11.B Proximity to existing environmental sample points.
- Existing environmental monitoring sample points will reduce the expense of collecting baseline data.
- PROS - Site B is acceptable.
  - CONS - Site B is one of two of the most distant from existing environmental monitoring sample points.
- 11.C Existing historical information.
- PROS - All sites are acceptable.
  - CONS - NA

SITING CRITERIA FOR SITE C

1. Telecom - Robin Poe, IRM Telecommunications
- 1.A Define telecom corridors to assure no interference with them.
- PROS- Site shows no interference with telecommunications cables and conduits.
  - CONS- N/A.
- 1.B Distance the "proposed site" is from a telecom tie-in.
- PROS - Site is located relatively close to the Area manhole system. Trenching distance is not significant. Est. Cost. 4.5K
  - CONS - Tie-in to Site would involve cutting and patching the main road into the 100K Area. Est Cost. ???

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE C (con't)

1.C Distance from telephone switch nodes.

PROS - Site C is within the distance requirements for both analog and digital circuits.

CONS - N/A.

1.D What services are required; COMSEC, etc.

PROS - All Services available

CONS - N/A.

2. Electrical - Clint Whitney, Electric Utilities

2.A Define electrical corridors to assure no interference with them.

PROS - N/A.

CONS - Active 230kV transmission corridor bisects the west side of site C and is shown on H-13-240, sheet 2.

2.B Set-back distances from high-voltage lines.

PROS - N/A

CONS - Set-back distances are required and listed in ANSI C2-1993, National Electrical Safety Code, Rule 232C1 and 234C1. Summary of clearances needed: 8m vertically from roadway to 230kV circuits, 6.2m vertically from top of building to 230kV circuits, 5m horizontally from buildings to 230kV circuits.

2.C Distance the "proposed site" is from an electrical tie-in.

PROS - Depending on an amount of power needed, electrical could be served from 165KW, 1717K, or 183KE. Coordination should be made with Jay Roberts if new electrical services of other than 13.8kV primary voltages.

CONS - N/A.

3. Water - Cheryl Myott, SNF Fire Protection

3.A Define sanitary and fire water corridors; assure no interference w/them.

PROS - The water source is closer than it is for Site B.

CONS - Water piping runs will be 1,500 ft minimum.

3.B Set-back distances from water lines.

PROS - No problems anticipated

CONS - No water lines.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE C (con't)

3.C Distance the "proposed site" is from a Water Line Tie-in.

PROS - Closer than Site B. There is a deactivated service water line running through this site. The water line was utilized for fire hydrant supply around 183 KW. The condition of the water line and if it could be utilized for the CVD should be investigated. Sanitary water tie-in, and service water if the above water line is unacceptable, will have to be made at or near the 183 KE Headhouse.

CONS - 1,500 ft minimum.

4. Security Requirements - Liz Koster, Safeguards and Security

4.A Facilitate Security Regulations

PROS - Use existing inner compound zones i.e. fencing around reactors. Gate three is a viable truck entry to inner compound zone.

CONS - Outside inner compound zone.  
- Additional patrol post required, ~\$500K/year.  
- No existing security lighting and fencing.  
- Heavy traffic and operations congestion.  
- High population area.  
Gate three goes through existing parking lot.

5. Radiological and Chemical Hazards Assessment - Jerry Kurtz, Radiological Control

5.A Surface Contamination.

PROS - None.

CONS - This area does contain a surface contamination area used to store old plant items. No other surface contamination is known in this area.

5.B Subsurface Contamination.

PROS - No known underground contamination in this area. Again, check with K basins Environmental for past spill locations. Surveillance would be minimal during construction activities.

CONS - None.

5.C. Radiation Hazards Review

PROS- This area does not house any unmonitored personnel within relatively close proximity.

CONS- None.

SITING CRITERIA FOR SITE C (con't)

5.D WIDS Sites - Chuck Hedel, BHI Remedial Action

PROS - No waste sites located within this area. It does not appear that any waste sites that are within 100 meters of site perimeters would have an unavoidable impact on the proposed facility because none are immediately adjacent to the alternative site. This site does not have any known impacts on or interferences with pump and treat facilities being planned for the 100-KR-4 Groundwater Operable Unit. No groundwater monitoring wells were found to exist within this site.

CONS - One waste site, the 1607-K1 Septic Tank and Drain Field system for the 1720-K Building, is present within 100 meters of the proposed site.

6. Cultural and Ecological Resources Review - Jerry Hunacek, SNF Standards & Requirements

6.A Cultural Assessment

PROS - Moderately disturbed area.

CONS - N/A.

6.B Biological Assessment

PROS - N/A.

CONS - N/A.

6.C Historical Assessment.

PROS - No structures involved.

CONS - N/A.

7. Efficient movement of the MCO to the CVD and on to the CSB. - Rick Bradshaw, CVD Project Manager

7.A Can water tunnels support weight of tractor/trailer rig.

PROS - N/A.

CONS - Tunnels may require reinforcement in two places if main roads are utilized for transfer to the CVD. From K West, the trailer would cross the tunnel running between 105KW and 165KW, then cross another tunnel running between the 190KW and 190KE buildings. The trailers could be rerouted around the tunnels, but would require a new fence penetration(s) and new roadway(s).

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE C (con't)

7.B Car/foot traffic over/around alternative site and MCO route.

PROS - No foot traffic normally exists in this area.

CONS - Car travel will be effected for access to several offices and to the inner security compound area.

8. Adequate space of alternative site - Rick Bradshaw, CVD Project Manager

8.A Building functions.

PROS - Relatively flat large area.

CONS - Overhead power lines divide the proposed area. Will need special provisions for crossing under the lines for access/egress to the CVD facility. Will effect the building orientation alternatives.

8.B Access/egress of tractor/trailer rig.

PROS - Good access to existing paved roads.

CONS - Close to occupied trailers and to personal vehicle access/egress points. However, alternative routes exist for both cars and the trailers.

8.C Security fencing set back from building.

PROS - N/A.

CONS - Must create new security compound.

8.D Laydown area during construction.

PROS - No restrictions.

CONS - N/A.

9. Fire Hydrants - Cheryl Myott, SNF Fire Protection

PROS - There was water supplied to hydrants near 183 KW Head house by piping that ran through this site.

CONS - No hydrants in or near this area at this time.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE C (con't)

10. Fire Exposure Separation - Cheryl Myott, SNF Fire Protection

PROS - Adequate area to separate CVD from other structures.

CONS - N/A.

11. Preoperational Monitoring - A. Ray Johnson, Near-Field Monitoring

11.A Proximity to waste sites.

Waste sites on or immediately proximal to the preferred site result in sampling delays because of increased personnel protection procedures and equipment.

PROS - Site C is free of known contamination and is second only to B in being the most distant from known contamination areas.

CONS - All Sites are on disturbed land and there is a potential for encountering contamination during excavation.

11.B Proximity to existing environmental sample points.

Existing environmental monitoring sample points will reduce the expense of collecting baseline data.

PROS - Site C is acceptable.

CONS - Site C is tied with D and rank a distant third to A & F in being close to environmental monitoring sample points.

11.C Existing historical information.

PROS - All sites are acceptable.

CONS - NA

SITING CRITERIA FOR SITE D

1. Telecom - Robin Poe, IRM Telecommunications

1.A Define telecom corridors to assure no interference with them.

PROS - The telecommunications easements run along the west side of Site D.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE D (con't)

- CONS - Some small provisions may be needed to ensure no interference with the telecommunications easements. Cost impact not significant, planning consideration only.
- 1.B Distance the "proposed site" is from a telecom tie-in.  
PROS - Site can tie to the existing conduit and manhole system with minimal trenching. Est. Cost. 2.5K
- CONS - N/A.
- 1.C Distance from telephone switch nodes.  
PROS - Site is within acceptable distance for both analog and digital lines.
- CONS - N/A.
- 1.D What services are required; COMSEC, etc.  
PROS - All services available.
- CONS - N/A.
2. Electrical - Clint Whitney, Electric Utilities
- 2.A Define electrical corridors to assure no interference with them.  
PROS - N/A.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE D (con't)

- CONS - 230kV transmission corridor bisects the west side of site D and is shown on H-13-240, sheet 2. There are no short or long term plans to remove the section of transmission lines that cross site D.
- 2.B Set-back distances from high-voltage lines.
- PROS - N/A
- CONS - Although section of 230kV transmission line is not in use at the present moment, set-back distances are required and listed in ANSI C2-1993, National Electrical Safety Code, Rule 232C1 and 234C1. Summary of clearances needed: 8m vertically from roadway to 230kV circuits, 6.2m vertically from top of building to 230kV circuits, 5m horizontally from buildings to 230kV circuits.
- 2.C Distance the "proposed site" is from an electrical tie-in.
- PROS - Depending on an amount of electrical power needed - the new service could probably be easily extended from the 183KE bldg. Project W405B will be installing a new transformer and outside switchboard with extra breaker cubicles. Coordinate new service with Jay Roberts.
- CONS - Extending service from 1717K could be difficult as capacity at 1717K is decreasing as a result of new load (maintenance shop, HVAC, etc). Extending service from 165KE or 165KW would be long and more expensive than from 183KE.
3. Water - Cheryl Myott, SNF Fire Protection
- 3.A Define sanitary and fire water corridors; assure no interference w/them.
- PROS - Tie-in to both water sources could be made at or near the 183 KE Headhouse. It is closer than Sites B and C. There is a deactivated service water line running through this site. The water line was utilized for fire hydrant supply around 183 KW. The condition of the water line and if it could be utilized for the CVD should be investigated.
- CONS - This piping run would be approximately 1,000 ft
- 3.B Set-back distances from water lines.
- PROS - No problems anticipated.
- CONS - 1,000 ft minimum piping runs.

SITING CRITERIA FOR SITE D (con't)

3.C Distance the "proposed site" is from a water line tie-in.

PROS - Closer than Sites B and C.

CONS - 1,000 ft minimum.

4. Security Requirements - Liz Koster, Safeguards and Security

4.A Facilitate security regulations

Use existing inner compound zones i.e. fencing around reactors.

PROS - N/A.

CONS - Outside inner compound zone.

- Additional patrol post required, ~\$500K/year.

- No existing security lighting and fencing.

- Heavy traffic and operations congestion.

- High population area.

- Increased congestion with tours of fish rearing program.

5. Radiological and Chemical Hazards Assessment - Jerry Kurtz, Radiological Control

5.A Surface contamination.

PROS - No surface contamination is known in this area.

CONS - Area not routinely surveyed.

5.B Subsurface contamination.

PROS - No known underground contamination in this area. Again, check with K basins Environmental for past spill locations. Surveillance would be minimal during construction activities.

CONS - None

5.C. Radiation Hazards Review

PROS - None

CONS - This area does house unmonitored personnel within 15 meters of location and would require additional monitoring. Would adjoin an area where members of public are routinely present.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE D (con't)

5.D WIDS Sites - Chuck Hedel, BHI Remedial Action

PROS - No waste sites located within this area. It does not appear that any waste sites that are within 100 meters of site perimeters would have an unavoidable impact on the proposed facility because none are immediately adjacent to the alternative site. This site does not have any known impacts on or interferences with pump and treat facilities being planned for the 100-KR-4 Groundwater Operable Unit. No groundwater monitoring wells were found to exist within this site.

CONS - Two waste sites are present within 100 meters. They are: 1607-K2 Septic Tank and Drain Field system and the 183-KE Sandblast site.

6. Cultural and Ecological Resources Review - Jerry Hunacek, SNF Standards & Requirements

6.A Cultural assessment.

PROS - Moderately disturbed area.

CONS - N/A

6.B Biological assessment.

PROS - N/A

CONS - N/A.

6.C Historical assessment.

PROS - No structures involved.

CONS - N/A

7. Efficient movement of the MCO to the CVD and on to the CSB. - Rick Bradshaw, CVD Project Manager

7.A Can water tunnels support weight of tractor/trailer rig.

PROS - N/A

CONS - Tunnels may require reinforcement in two places if main roads are utilized for transfer to the CVD. From K West, the trailer would cross the tunnel running between 105KW and 165KW, then cross another tunnel running between the 190KW and 190KE buildings. The trailers could be rerouted around the tunnels, but would require a new fence penetration(s) and new roadway(s).

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE D (con't)

7.B Car/foot traffic over/around alternative site and MCO route.

PROS - Will impact primary foot traffic from M0401 to M0293. However, other routes are available.

CONS - Car travel will be effected for access to several offices and the normal access to the inner security compound area.

8. Adequate space of alternative site - Rick Bradshaw, CVD Project Manager

8.A Building functions.

PROS - Relatively flat large area.

CONS - Overhead power lines divide the proposed area. Will need special provisions for crossing under the (if necessary) lines for access/egress to the CVD facility. May effect the building orientation alternatives.

8.B Access/egress of tractor/trailer rig.

PROS - Good access to existing paved roads.

CONS - Close to occupied trailers and to personal vehicle access/egress points. However, alternative routes exist for both cars and the trailers.

8.C Security fencing set back from building.

PROS - N/A

CONS - Must create new security compound.

8.D Laydown area during construction.

PROS - No restrictions.

CONS - N/A

9. Fire Hydrants - Cheryl Myott, SNF Fire Protection

PROS - There is a deactivated service water line running through this site. The water line was utilized for fire hydrant supply around 183 KW. The condition of the water line and if it could be utilized for the CVD should be investigated.

CONS - No hydrants in the area. If the above line can not be utilized, 1,000 ft minimum to service water supply.

SITING CRITERIA FOR SITE D (con't)

10. Fire Exposure Separation - Cheryl Myott, SNF Fire Protection  
PROS - Adequate area to supply separation for other structures.  
CONS - N/A.
11. Preoperational Monitoring - A. Ray Johnson, Near-Field Monitoring
- 11.A Proximity to waste sites.  
Waste sites on or immediately proximal to the preferred site result in sampling delays because of increased personnel protection procedures and equipment.  
PROS - Site D is free of known contamination and is the third most distant from known contamination areas.  
CONS - All Sites are on disturbed land and there is a potential for encountering contamination during excavation.
- 11.B Proximity to existing environmental sample points.  
Existing environmental monitoring sample points will reduce the expense of collecting baseline data.  
PROS - Site D is acceptable.  
CONS - Site D is tied with C and rank a distant third to A & F in being close to environmental monitoring sample points.
- 11.C Existing historical information.  
PROS - All sites are acceptable.  
CONS - NA

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE E

1. Telecom - Robin Poe, IRM Telecommunications

1.A Define telecom corridors to assure no interference with them.

PROS - Site E shows no interference with telecommunications conduit or cabling.

CONS- N/A.

1.B Distance the "proposed site" is from a telecom tie-in.

PROS - Site E can tie to the Area conduit and manhole system within a small amount of trenching. Est. Cost 5K

CONS - N/A

1.C Distance from telephone switch nodes.

PROS - Site E is within the acceptable distance for analog circuits.

CONS- Depending on the particular routing scheme, Site E may or may not be within the acceptable distance for digital circuits.

1.D What services are required; COMSEC, etc.

PROS - All services available.

CONS - Depending on specific services requiring wideband digital (Video, etc.), additional fiber optic cable may need to be pulled. Est. Cost. 10K

2. Electrical - Clint Whitney, Electric Utilities

2.A Define electrical corridors to assure no interference with them.

PROS -

CONS - Active 230kV transmission lines bisecting the northern portion of site E. Transmission lines are shown on H-13-000240, sheet 2. Set back distances are required and listed in ANSI C2-1993, National Electrical Safety Code, Rule 232C1 and 234C1. Summary of clearances: 8m vertically from roadway to 230kV circuits, 9m vertically from top of building to 230kV circuits, 5m horizontally from buildings to 230kV circuits.

2.B Set-back distances from high-voltage lines.

PROS - N/A.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE E (con't)

- CONS - Active 230kV transmission lines bisecting the northern portion of site E. Transmission lines are shown on H-13-000240, sheet 2. Set back distances are required and listed in ANSI C2-1993, National Electrical Safety Code, Rule 232C1 and 234C1. Summary of clearances needed: 8m vertically from roadway to 230kV circuits, 6.2m vertically from top of building to 230kV circuits, 5m horizontally from buildings to 230kV circuits.
- 2.C Distance the "proposed site" is from an electrical tie-in.  
PROS - Power will be available from an outside switchboard after project W405B is completed. Contact Jay Roberts to connect additional power at the 183KE bldg.
- CONS - N/A
3. Water - Cheryl Myott, SNF Fire Protection
- 3.A Define sanitary and fire water corridors; assure no interference w/them.  
PROS - Sanitary and service water are both supplied to the MO-293 which is under 500 ft from the site.
- CONS - N/A.
- 3.B Set-back distances from water lines.  
PROS - No problems anticipated
- CONS - N/A
- 3.C Distance the "proposed site" is from a water line tie-in.  
PROS - Within 500 ft
- CONS - N/A
4. Security Requirements - Liz Koster, Safeguards and Security
- 4.A Facilitate security regulations  
PROS - Use existing inner compound zones i.e. fencing around reactors.  
N/A.
- CONS - Outside inner compound zone.  
Additional patrol post required, ~\$500K/year.  
No existing security lighting and fencing.  
Heavy traffic and operations congestion.  
High population area of personnel not associated with SNF operations.  
Increased congestion with tours of fish rearing program.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE E (con't)

5. Radiological and Chemical Hazards Assessment - Jerry Kurtz, Radiological Control

5.A Surface contamination.

PROS - No known surface contamination in area. Past surveys during 1723K installation showed no contamination present.

CONS - None

5.B Subsurface contamination.

PROS - None known. However, I believe there was a past hazardous spill site in close proximity, which was subsequently remediated. Need to check with K Basins Environmental.

CONS - None

5.C. Radiation Hazards Review

PROS- None

CONS- This area houses unmonitored personnel within 15 meters of location and would require additional monitoring. Would adjoin an area where members of public are routinely present.

5.D WIDS Sites - Chuck Hedel, BHI Remedial Action

PROS - No waste sites located within this area. It does not appear that any waste sites that are within 100 meters of site perimeters would have an unavoidable impact on the proposed facility because none are immediately adjacent to the alternative site. This site does not have any known impacts on or interferences with pump and treat facilities being planned for the 100-KR-4 Groundwater Operable Unit. No groundwater monitoring wells were found to exist within this site.

CONS - Six waste sites are present within 100 meters. They are: 128-K-1 Burn Pit; the 120-KE-9 Brine Pit; the 120-KE-2 Acid French Drain; the 120-KE-4 & 5 Acid Storage Tanks; the 100-K-25 Caustic Neutralization Pit; and the 120-KE-3 Acid Sludge Disposal Trench.

6. Cultural and Ecological Resources Review - Jerry Hunacek, SNF Standards & Requirements

6.A Cultural assessment.

PROS - Moderately disturbed area.

CONS - N/A.

SITING CRITERIA FOR SITE E (con't)

6.B Biological assessment.

PROS - N/A.

CONS - N/A.

6.C Historical assessment.

PROS - No structures involved.

CONS - N/A.

7. Efficient movement of the MCO to the CVD and on to the CSB. - Rick Bradshaw, CVD Project Manager

7.A Can water tunnels support weight of tractor/trailer rig.

PROS - Trailers could be routed around some of or all of the tunnels with some road improvements and access through the inner compound fence on the east side.

CONS - Using existing roads and inner compound access presents the same problems as with sites C or D, crossing tunnels in three places.

7.B Car/foot/fin traffic over/around alternative site and MCO route.

PROS - No impacts if trailers are routed through the inner compound fence on the east side.

CONS - Will impact car traffic if existing roads and compound access is utilized.

When the fish rearing program lays their fish transfer pipeline across the road it will impact MCO shipment.

8. Adequate space of alternative site - Rick Bradshaw, CVD Project Manager

8.A Building functions.

PROS - N/A

CONS - Building orientation may be restricted due to the limited space available.

8.B Access/egress of tractor/trailer rig.

PROS - N/A

CONS - Some restrictions on orientation would be necessary to allow adequate access/egress of tractor trailer due to the limited space available.

SITING CRITERIA FOR SITE E (con't)

8.C Security fencing set back from building.

PROS - N/A

CONS - New security fence/security compound will be required.

8.D Laydown area during construction.

PROS - N/A

CONS - Some restrictions on quantity will apply in the immediate vicinity of the facility. Other areas nearby will be adequate but less convenient.

9. Fire Hydrants - Cheryl Myott, SNF Fire Protection

PROS - There are hydrants to the west. There is a service water line that is sized large enough to be utilized as a supply for other hydrants and the CVD fire protection within 500 ft of the site.

CONS - Not enough hydrants around site.

10. Fire Exposure Separation - Cheryl Myott, SNF Fire Protection

PROS - There is adequate area to provide separation from other structures.

CONS - N/A

11. Preoperational Monitoring - A. Ray Johnson, Near-Field Monitoring

11.A Proximity to waste sites.

Waste sites on or immediately proximal to the preferred site result in sampling delays because of increased personnel protection procedures and equipment.

PROS - Site E is free of known contamination and is the fourth most distant from known contamination areas.

CONS - All Sites are on disturbed land and there is a potential for encountering contamination during excavation.

11.B Proximity to existing environmental sample points.

Existing environmental monitoring sample points will reduce the expense of collecting baseline data.

WHC-SD-SNF-SE-001  
Revision 0

SITING CRITERIA FOR SITE E (con't)

- PROS - Site E is acceptable.
  - CONS - Site E is one of two of the most distant from existing environmental monitoring sample points.
- 11.C Existing historical information.
- PROS - All sites are acceptable.
  - CONS - NA

SITING CRITERIA FOR SITE F

1. Telecom - Robin Poe, IRM Telecommunications
- 1.A Define telecom corridors to assure no interference with them.
- PROS- Site F shows no interference with existing telecommunications cabling or conduit.
  - CONS- N/A.
- 1.B Distance the "proposed site" is from a telecom tie-in.
- PROS - Site F is fairly close to a tie-in point for telecommunications.

SITING CRITERIA FOR SITE F (con't)

- CONS - Some cutting and patching (to include building entry) may be required to reach tie-point. Cost significant, but indeterminate.
- 1.C Distance from telephone switch nodes.
  - PROS - Site F is within the acceptable distance for analog circuits.
  - CONS - Depending on routing scheme, Site F may or may not be within the acceptable distance for digital circuits
- 1.D What services are required; COMSEC, etc.
  - PROS - All services available
  - CONS - Additional fiberoptic cable may need to be pulled for wideband (video, HLAN) requirements
- 2. Electrical - Clint Whitney, Electric Utilities
- 2.A Define electrical corridors to assure no interference with them.
  - PROS - N/A
  - CONS - Project E027 will be installing a 13.8kV overhead distribution circuit from the north side of 165KW, paralleling the railroad tracks and exiting the 100K areas on the west side. This new circuit will approximately bisect site F in half. The electrical corridor is shown on H-1-81186, sheet 7.

SITING CRITERIA FOR SITE F (con't)

2.B Set-back distances from high-voltage lines.

PROS - N/A

CONS - Set back distances are required and listed in ANSI C2-1993, National Electrical Safety Code, Rule 232C1 and 234C1. Summary of clearances: 5.6m vertically from roadway to 13.8kV circuits, 4.1m vertically from top of building to 13.8kV circuits, 2.3m horizontally from buildings to 13.8kV circuits. Actual vertical clearances should be field measured after completion of project W405B.

2.C Distance the "proposed site" is from an electrical tie-in.

PROS - Power should be available from 165KW. Contact Jay Roberts to coordinate power connections from 165KW.

CONS - N/A

3. Water - Cheryl Myott, SNF Fire Protection

3.A Define sanitary and fire water corridors; assure no interference w/them.

PROS - Water tie-ins can be made in the 105/165 KW tunnel

3.B Set-back distances from water lines.

PROS - No problems anticipated

CONS - No water to site at this time

3.C Distance the "proposed site" is from a water line tie-in.

PROS - Tie-in are available within 500 ft

CONS - The service water supply is not adequate and a second line will have to be supplied from 190 KE. This run will be close to 3,000 ft. Approximately 2,500 ft of the run can be made through the tunnels.

SITING CRITERIA FOR SITE F (con't)

4. Security Requirements - Liz Koster, Safeguards and Security

4.A Facilitate security regulations

- PROS - Use existing inner compound zones i.e. fencing around reactors.  
Current forces can be utilized unless the vulnerability assessment determines otherwise.
- Close proximity to existing inner compound.
  - Existing security fencing.
  - Low population and operations use.
  - Isolated.
  - Good road access.
  - Security's preferred site
  - The inner compound fence could be moved to include it in the secured zone.

CONS - N/A.

5. Radiological and Chemical Hazards Assessment - Jerry Kurtz, Radiological Control

5.A Surface contamination.

PROS - None known

CONS - Surface contamination has been found in past along railroad tracks leading from the KW facility. This is due to past shipments of fuel to PUREX. The tracks are routinely surveyed out to fence. Can expect to find some within 1-2' of tracks as work is performed.

5.B Subsurface contamination.

PROS - None

CONS - Part of this site is located within a Underground Radioactive Material Area. The area from the road along the backside of 105KW out to about 15' is in the UGRMA. Well data from sample wells around the backside of 105 KW show some measurable activity. Plumes located in this area are unknown and would have to be checked by K Basins Environmental. Surveillance of construction activities would be considerable during work in this area. A detailed sampling plan with Data Quality Objectives would be required. A spoils area would need to be established for spoil storage until a dose assessment could be prepared and approved by DOE HQ for the release of spoils. Depending how deep we have to go, there is a real possibility of exposing some underground contamination which would require personnel controls. Radiologically, this is the worst site for construction activities.

SITING CRITERIA FOR SITE F (con't)

5.C. Radiation Hazards Review

PROS- Not located where unmonitored personnel routinely work

CONS- None

5.D WIDS Sites - Chuck Hedel, BHI Remedial Action

PROS - No waste sites located within this area and site F does not have any known impact or interferences with pump and treat facilities planned for the 100-KR-4 Groundwater Operable Unit.

CONS - Our findings indicate that there is a potential conflict with one low-priority waste site, the 100-K-13 French Drain, that is located within three meters to the outside of the east boundary of site F. In our Remaining Sites FFS project, the 100-K-13 site is currently planned for "no action," pending the results of confirmatory sampling. If site F is selected for the proposed facility, then WHC and/or ICF Kaiser staff should consult with ERC on how to best address the needs of the K-Basins project and ERC remedial action projects. Waste sites within 100 meters of the perimeter of site F include the 118-KW-1 Reactor Building; the 116-KW-2 Storage Basin French Drain; the 120-KW-6 Brine Pit; and the 130-KW Oil Storage Tank (underground) and Pumping Facilities. Also, there is one groundwater monitoring well, ID No. 199-K-107A, within 100 meters of site F.

6. Cultural and Ecological Resources Review

6.A Cultural assessment.

PROS - Moderately disturbed area.

CONS - N/A.

6.B Biological assessment.

PROS - N/A.

CONS - Endangered bird may inhabit area.  
Eagle roosting zone nearby.

6.C Historical assessment.

PROS - No structures involved.

CONS - N/A.

SITING CRITERIA FOR SITE F (con't)

7. Efficient movement of the MCO to the CVD and on to the CSB. - Rick Bradshaw, CVD Project Manager
- 7.A Can water tunnels support weight of tractor/trailer rig.  
PROS - Trailers could be routed around all tunnels with the addition of a limited amount of roadway and added egress through the inner compound fence on the west side.
- CONS - N/A
- 7.B Car/foot traffic over/around alternative site and MCO route.  
PROS - Little or no impact
- CONS - N/A
8. Adequate space of alternative site - Rick Bradshaw, CVD Project Manager
- 8.A Building functions.  
PROS - No restrictions, if the inner security fence can be moved out.
- CONS - N/A
- 8.B Access/egress of tractor/trailer rig.  
PROS - No restrictions. Egress will be enhanced if a new security compound exit is added to the west side.
- CONS - Existing topography will require some modification to facilitate trailer movement.
- 8.C Security fencing set back from building.  
PROS - Close to existing inner compound fence, may be able to fit new facility inside or move the compound boundary out to accommodate.
- CONS - Extension of existing inner compound boundary is likely to be required for certain building orientations.
- 8.D Laydown area during construction.  
PROS - No restrictions.
- CONS - N/A.
9. Fire Hydrants - Cheryl Myott, SNF Fire Protection  
PROS - There are hydrants to the east of the site.
- CONS - There are not enough hydrants to support the facility and the water supply is not adequate to add any.

SITING CRITERIA FOR SITE F (con't)

10. Fire Exposure Separation - Cheryl Myott, SNF Fire Protection  
PROS - There is adequate area to provide separation from other structures.  
CONS - N/A.
11. Preoperational Monitoring - A. Ray Johnson, Near-Field Monitoring
- 11.A Proximity to waste sites.  
Waste sites on or immediately proximal to the preferred site result in sampling delays because of increased personnel protection procedures and equipment.  
PROS - Site F is free of known contamination and is the fifth most distant from known contamination areas.  
CONS - All Sites are on disturbed land and there is a potential for encountering contamination during excavation.
- 11.B Proximity to existing environmental sample points  
Existing environmental monitoring sample points will reduce the expense of collecting baseline data.  
PROS - Site F proximal to three (3) existing environmental sample points and is second only to Site A in this category.  
CONS - NA
- 11.C Existing historical information.  
PROS - Site F is second only to Site A in having the most environmental baseline information available, however, all sites are acceptable.  
CONS - NA

## DISTRIBUTION SHEET

To Distribution	From ICF KH Infrastructure and Land Use Planning	Page 1 of 1 Date 3/8/96
Project Title/Work Order Cold Vacuum Drying Facility Site Evaluation Report/E36396		EDT No. 602384 ECN No. N/A

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
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F. W. Bradshaw	R3-85	X			
T. H. Gronewald	X3-78	X			
E. A. Koster	S2-46	X			
C. F. Myott	X3-74	X			
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C. D. Lucas	X3-67	X			
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A. R. Johnson	H6-20	X			
J. J. Irwin	H0-33	X			
G. D. Trenchard	S7-41	X			
D. I. Herborn	H6-06	X			
<i>Central Files</i>	<i>A3-88</i>	X			