Enclosure 3
Page changes to the Environmental Report
showing changes made under Revision 18
(Revision bars, strikethroughs and underlines utilized)

ENVIRONMENTAL REPORT
REVISION 18

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Summary of Changes for Revision 17		
Issue / Date	**Change**	**Description of Change**
17a 02/01/10	LBDCR-10-0002 1-12-2010	Editorial changes for Phased approach to operations CC-LS-2010-0001; 70.72 = 2010-0026
17b 02/08/10	LBDCR-10-0010 01-29-10	Delete tables which identity the locations and quantities of chemicals stored CC-CH-2009-0006; 70.72 = 2010-0060
	LBDCR-10-0007 02-02-10	SBM Temporary Ventilated Room CC-EG-2009-0369; 70.72= 2010-0078
17c 03-05-10	LBDCR-10-0018 02-09-10	Replace current water system design with two smaller systems CC-EG-2010-0008; 70.72 = 2010-0112
	LBDCR-10-0015 02-10-10	Remove details regarding the specific number of personnel and fire & rescue equipment for Hobbs and Eunice CC-LS-2010-0004; 70.72 = 2010-0121
	LBDCR-10-0009 02-25-10	SBM-1001 extension and Cab extension CC-LS-2010-0005; 70.72 = 2010-0190
	LBDCR-10-0005 01-11-10	Gantry crane description CC-OP-2009-0002; 70.72 = 2010-0101
17d 03-25-10	LBDCR-10-0039 03-09-10	Temporary storage of SBM condensate (in lieu of LECTS) CC-EG-2010-0005; 70.72 = 2010-0016
	LBDCR-10-0042 03-10-10	Refine & clarify terminology used to describe radiological areas. Also update standards and process systems, removing no longer used and adding new. CC-RP-2010-0001; 70.72 = 2010-0222
	LBDCR-10-0033 03-18-10	Phased Operation is being revised to clearly identify the scope of the individual phases. CC-LS-2010-0010; 70.72 = 2010-0186

Summary of Changes for Revision 17		
Issue / Date	**Change**	**Description of Change**
	LBDCR-10-0046 03-20-10	Mobile pump and trap set used as local exhaust ventilation for connection of on-line mass spectrometer. CC-EG-2010-0112; 70.72 = 2010-0247
18 03-25-10	N/A	Submittal to NRC for non substantial changes previously approved by LES

The entire plant process gas system operates at sub-atmospheric pressure. This provides a high degree of safety but also means that the system is susceptible to in-leakage of air. Any in-leakage of air passes through the cascades and is preferentially directed into the product stream. A vent system is provided to remove hazardous contaminants from low levels of light gas (any gas lighter than UF_6) that arise on a regular basis from background in-leakage, routine venting of UF_6 cylinders, and purging of UF_6 lines.

~~(See § 9.2.12 E.)~~ Each Plant Module – consisting of two Cascade Halls - is provided with a cooling water system to remove excess heat at key positions on the centrifuges in order to maintain optimum temperatures within the centrifuges. LBDCR-10-0033

The centrifuges are driven by a medium frequency Alternating Current (AC) supply system. A converter produces the medium frequency supply from the AC main supply using high efficiency switching devices for both run-up and continuous operation.

The major structures and areas of the NEF are described below and shown in Figure 1.2-4, NEF Buildings.

~~(See § 9.1.10)~~(See SAR § 12.1.1.7) The Security Building serves as the primary access control point for the facility. It also contains the Secondary Alarm Station (duplicate control console to the Central Alarm Station). LBDCR-10-0033

~~(See § 9.1.1)~~(See SAR § 12.1.1.1) The Separations Building Modules (SBMs) have two Cascade Halls, a UF_6 Handling Area, and a Process Services Corridor. The Cascade Hall contains multiple cascades, each of which is made up of many centrifuges. Natural uranium in the form of UF_6 is fed into the Cascades and UF_6 enriched in the ^{235}U isotope (product) and UF_6 depleted in the ^{235}U isotope (tails) are removed. The UF_6 Handling Area contains the Feed System, Product Take-off System, Tails Take-off System, and the Blending and Liquid Sampling Systems. The Process Services Corridor contains gas transport equipment, which connects the cascades to the UF_6 Feed System, Product Take-off System, Tails Take-off System and Contingency Dump System. LBDCR-10-0033

The Centrifuge Assembly Building (CAB) is used to assemble centrifuges before the centrifuges are moved to the Separations Building and installed in the cascades.

~~(See 9.1.2)~~(See SAR § 12.1.1.2) The Technical Services Building (TSB) contains the Mechanical Electrical and Instrumentation (ME&I) Workshop, a Medical Room, the Central Alarm Station (CAS), the Control Room, and the primary Emergency Operations Center (EOC) for the facility. LBDCR-10-0033

~~(See 9.1.7)~~(See SAR § 12.1.1.5) The Central Utilities Building (CUB) provides a central location for the utility services for the process buildings. The CUB also contains the two standby diesel powered electric generators that provide power to protect selected equipment in the unlikely event of loss of offsite supplied power. The building also contains electrical rooms/areas, an air compressor area, battery rooms, and a Centrifuge Cooling Water System. LBDCR-10-0033

~~(See § 9.1.3)~~(See SAR § 12.1.1.3) The Cylinder Receipt and Dispatch Building (CRDB) is used to receive, inspect, weigh and temporarily store cylinders of natural UF_6 sent to the plant and ship cylinders of enriched UF_6 to customers. Additionally, clean, empty product and UBC are received, inspected, weighed, and temporarily stored prior to their being filled in the Separations Building. LBDCR-10-0033

The CRDB also contains various laboratories and maintenance facilities necessary to safely operate and maintain the facility. Most site infrastructure facilities (i.e., laboratories for sample analysis) are located in the CRDB.

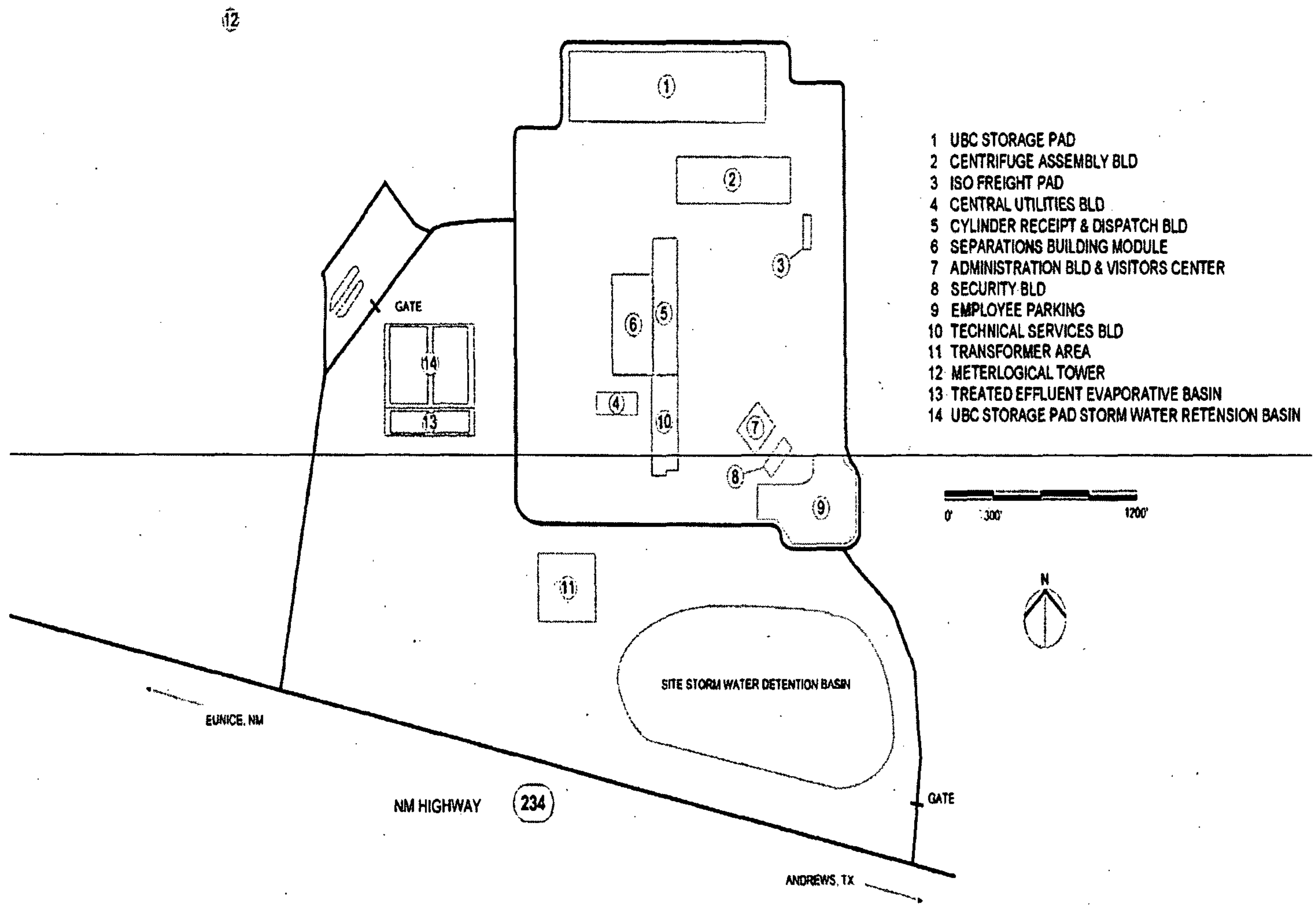
~~(See § 9.1.6)~~(See SAR § 12.1.1.4) The Uranium Byproduct Cylinder (UBC) Storage Pad is a series of concrete pads designed to store up to 15,727 UBCs. A single-lined UBC Storage Pad Stormwater Retention Basin will be used specifically to retain runoff from the UBC Storage Pad during heavy rainfalls. This basin will also receive cooling tower blowdown. The unlined Site Stormwater Detention basin will receive rainfall runoff from the balance of the developed plant site. Liquid effluent from plant process systems will be discharged to the double-lined Treated Effluent Evaporative Basin provided with a leak detection system. LBDCR-10-0033

1.2.3 Schedule of Major Steps Associated with the Proposed Action

The NEF will be constructed in phases. Each phase will result in an additional SWU capacity, with the first unit beginning operation prior to the completion of the remaining phases. The NEF is designed for at least 30 years of operation. A review of the centrifuge replacement options will be conducted late in the second decade of 2000. Decommissioning is expected to take approximately nine (9) years.

The anticipated schedule for licensing, construction, operation, and decommissioning is as follows: LBDCR-10-0033

Milestone	Estimated Date
• Submit Facility License Application	December 2003
• Initiate Facility Construction	August 2006
• Start First Cascade	October 2008
• Achieve Full Nominal Production Output	October 2013
• Submit License Termination Plan to NRC	April 2025
• Complete Construction of D&D Facility	April 2027
• D&D Completed	April 2036


1 UBC STORAGE PAD
2 CENTRIFUGE ASSEMBLY BLD
3 ISO FREIGHT PAD
4 CENTRAL UTILITIES BLD
5 CYLINDER RECEIPT & DISPATCH BLD
6 SEPARATIONS BUILDING MODULE
7 ADMINISTRATION BLD & VISITORS CENTER
8 SECURITY BLD
9 EMPLOYEE PARKING
10 TECHNICAL SERVICES BLD
11 TRANSFORMER AREA
12 METERLOGICAL TOWER
13 TREATED EFFLUENT EVAPORATIVE BASIN
14 UBC STORAGE PAD STORM WATER RETENSION BASIN
GATE
SITE STORM WATER DETENTION BASIN
EUNICE, NM
NM HIGHWAY
234
ANDREWS, TX
GATE
0'
300'
1200'
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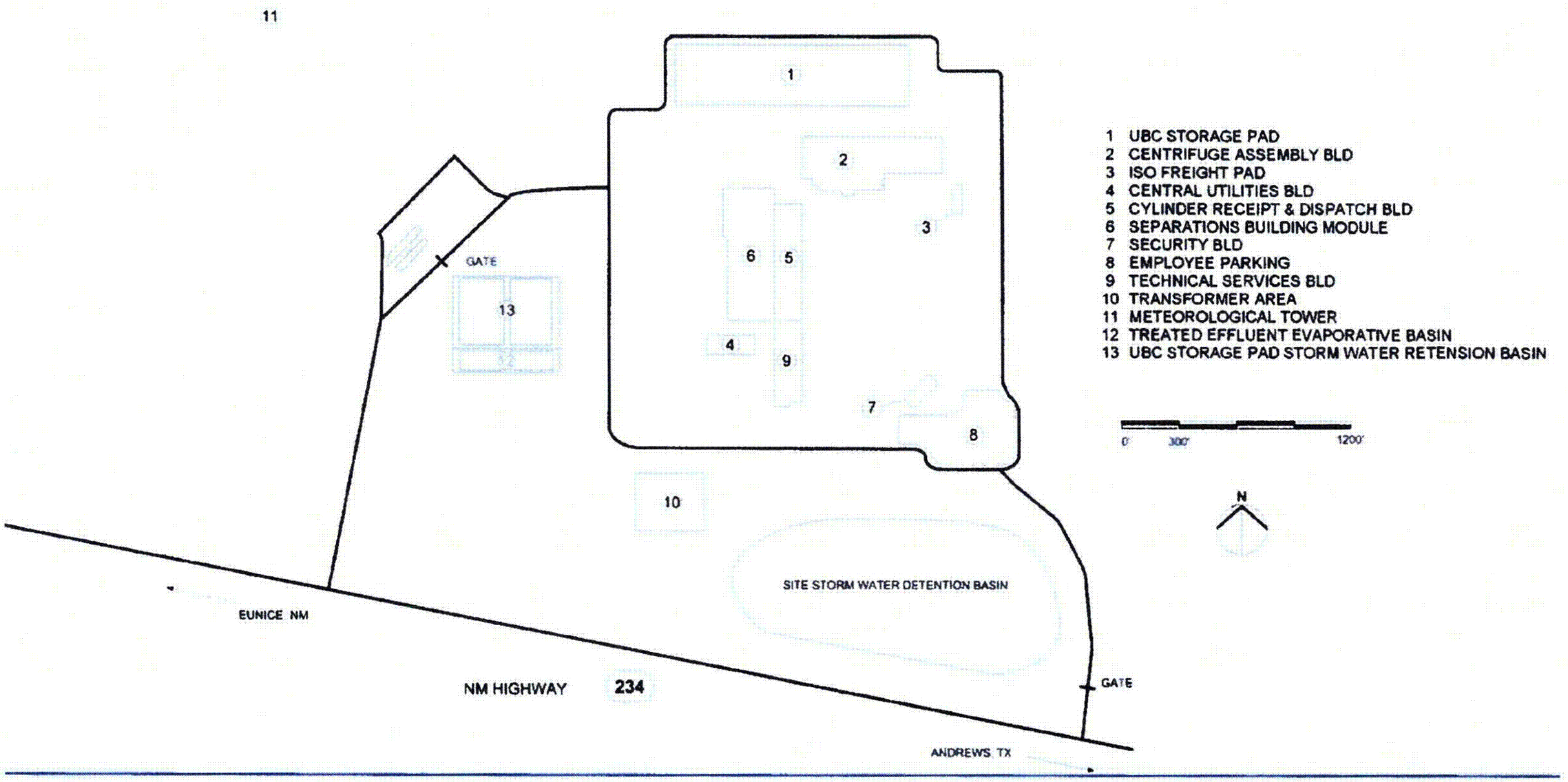

Figure 1.2-4 NEF Buildings

The feed material for the enrichment process is uranium hexafluoride (UF_6), with a natural composition of isotopes ^{234}U, ^{235}U, ^{236}U, and ^{238}U. The enrichment process involves the mechanical separation of isotopes using a fast rotating cylinder (centrifuge) and is based on a difference in centrifugal forces due to differences in the molecular weight of the uranic isotopes. No chemical or nuclear reactions take place. The feed, product, and depleted uranium streams are all in the form of UF_6.

The UF_6 feed arrives from conversion facilities as a solid under partial vacuum in 122-cm (48-in) diameter transportation cylinders. Product material is collected in 76-cm (30-in) diameter containers and transported to a fuel fabricator. The depleted UF_6 material is collected in 122-cm (48-in) diameter containers and removed for storage onsite.

The plant design capacity is three million separative work units (SWU) per year. At full production in a given year, the plant will receive approximately 8,600 MT (9,480 tons) of UF_6 feed, produce 800 MT (880 tons) of low enriched UF_6, and yield 7,800 MT (8,600 tons) of depleted UF_6. The principal NEF operational structures are shown on Figure 2.1-4, NEF Buildings, and include the following:

- SBMs (includes UF_6 Handing Area, Cascade Halls, Process Services Corridor)
- Cylinder Receipt and Dispatch Building (CRDB)
- Technical Services Building (TSB)
- Centrifuge Assembly Building (CAB)
- Uranium Byproduct Cylinders (UBC) Storage Pad
- Administration Building
- Central Utilities Building (CUB)
- Security Building

Information on items used, consumed, or stored at the site during construction and operation is provided in ER Section 3.12.4, Resources and Materials Used, Consumed or Stored During Construction and Operation.

2.1.2.3.1 ~~(See § 9.1.1)~~(See SAR § 12.1.1.1) Separations Building Modules LBDCR-10-0033

The Separations Building Modules (SBMs) have two Cascade Halls, a UF_6 Handling Area, and a Process Services Corridor. The Cascade Hall contains multiple cascades, each which is made up of many centrifuges. Natural uranium in the form of UF_6 is fed into the Cascades and UF_6 enriched in the ^{235}U isotope (product) and UF_6 depleted in the ^{235}U isotope (tails) are removed. The UF_6 Handling Area contains the Feed System, Product Take-off System, Tails Take-off System, and the Blending and Liquid Sampling Systems. The Process Services Corridor contains gas transport equipment, which connects the cascades to the UF_6 Feed System, Product Take-off System, Tails Take-off System and Contingency Dump System.

2.1.2.3.2 ~~(See § 9.1.3)~~(See SAR § 12.1.1.3) Cylinder Receipt and Dispatch Building (CRDB) LBDCR-10-0033

The CRDB is located between SBMs: SBM-1001 and SBM-1003 and adjacent to the Technical Services Building. All UF_6 feed cylinders and empty product cylinders and UBCs enter the facility through the CRDB. It is designed to include space for the following:

Outside the CRDB Bunkered Area:

- Loading and unloading of cylinders
- Cylinder preparation area for testing new or cleaned cylinders
- Inventory weighing
- Preparation and storage of protective cylinder overpacks
- Buffer storage of feed cylinders
- Semi-finished product storage
- Final product storage
- Prepared cylinder storage

Inside the CRDB Bunkered Area:

- Equipment decontamination
- Rebuilding of vacuum pumps
- UF_6 cylinder valve repair
- UF_6 cylinder preparation
- Solid waste collection and packaging
- Collection and treatment of liquid effluents
- Contaminated material handlingMass spectrometry and chemical analysis
- Radiation monitoring
- Filtration and exhaust of gaseous effluent through Gaseous Effluent Vent Systems (GEVS)
- HVAC equipment (supporting radiological and non-radiological portions of the CRDB)

The majority of the floor area is used as lay-down space for the cylinders, for both storage and staging. The cylinders are placed on concrete saddles to stabilize them while being stored in the CRDB.

~~(See § 9.1.3 L.)~~(See SAR § 12.1.1.3.11) Cylinders are delivered to the facility in transport trucks. The trucks enter the CRDB through the main vehicle loading bay, which is equipped with vehicle access platforms that aid with cylinder loading and unloading. Three double girder bridge cranes on two sets of crane rails handle the cylinders within the CRDB. Each crane spans half the width of the CRDB. The two bridge cranes on the West side run the full length of the building. The third bridge crane on the East Side services the area North of the Bunkered Area. LBDCR-10-0033

After delivery, the cylinders are processed for receipt as either empty UBCs (48Y cylinders) or empty product cylinders (30B cylinders) or UF_6 feed cylinders (48Y cylinders). They are inspected and weighed and moved to their appropriate locations. UF_6 feed cylinders are delivered to a storage area in the CRDB.

When required for processing, the cylinders, which have been placed in storage areas, will be moved by the overhead cranes one of two rail transporters in the CRDB.

~~(See § 9.1.1 C.4.)~~ (See SAR § 12.1.1.1.8) The rail transporter in the UF_6 Handling Area travels on rails embedded in the floor along the entire length of the UF_6 Handling Area to the CRDB's cylinder transporting and stillage area. It moves the cylinders to and from the appropriate feed or receiver stations. It has the ability to handle both the feed cylinders and UBCs 122-cm (48-in) and product 76-cm (30-in) cylinders. LBDCR-10-0033

Floors in the CRDB are made of exposed concrete with a washable epoxy coating finish designed to resist process chemicals, decontamination agents, and radiation.

During initial plant operations, until the CRDB construction is complete, all cylinders will enter the facility through the West end of the SBM1001 UF_6 Handling Area. Cylinders will be unloaded from the transport trailer using a double gantry crane. The gantry crane spans a transport trailer unloading station located just outside SBM 1001. Cylinders on the gantry crane are then retrieved by the rail transporter for use. Cylinder dispatch from the facility are handled in the reverse order. LBDCR-10-0005

Cylinders received at the site are expected to be in good working condition. Cylinders with deficient conditions are returned to an approved supplier for corrective maintenance and testing in accordance with ANSI N14.1-2001, provided the cylinder fully complies with all DOT transport requirements.

Cylinders with deficient conditions that do not fully comply with all DOT transport requirements must be corrected at the site. Such corrective maintenance may include valve replacement, plug replacement and post maintenance testing on containers with UF_6. Such corrective maintenance and testing is performed in the CRDB Ventilated Room in accordance with ANSI N14.1-2001 and the LES QA Program.

Inside the CRDB steel Butler building, there is an inner, two story stand-alone concrete structure referred to as the "Bunkered Area."
Inside the CRDB Bunkered Area, the following functional areas are located on the ground floor:

- Ventilated Room (Room 143)
- Decontamination Workshop (Room 151)
- Vacuum Pump Rebuild Workshop (Room 154)
- Vacuum Pump Test Room (Room 155)
- Liquid Effluent Collection and Treatment Room (Room 156)
- Solid Waste Collection Room (161)
- Mass Spectrometry Laboratory (Room 136)
- Chemical Laboratory (Room 133)

- Sample Storage (Room 139)

Also inside the CRDB Bunkered Area, the following functional areas are located on the second floor:

- Gaseous Effluent Vent System (GEVS) Room (Room 242)
- Contaminated Material Handling Room (Room 261)
- Radiation Monitoring Laboratory (Room 262)

~~(See § 9.1.3 C. and § 9.2.12 N.)~~*(See SAR § 12.1.1.3.3 and 12.1.3.4)* Decontamination Workshop LBDCR-10-0033

The Decontamination Workshop provides a maintenance facility for both UF_6 pumps and vacuum pumps. It is also used for the temporary storage and subsequent dismantling of failed pumps. The activities carried out within the Decontaminated Workshop include receipt and storage of contaminated pumps, out-gassing, perfluorinated polyether (PFPE) oil removal and storage, pump stripping, and the dismantling and maintenance of valves and other plant components.

The Decontamination Workshop also provides a facility for the removal of radioactive contamination from contaminated materials and equipment. The decontamination system consists of a series of steps including equipment disassembly, degreasing, decontamination, drying and inspection. Components commonly decontaminated include pumps, valves, piping, instruments, sample bottles, tools and scrap metal.

The Decontamination Workshop is under negative pressure. Therefore, any equipment or personnel entering this room must go through an air-lock.

(See § 9.1.3 G.)(See SAR § 12.1.1.3.7) Gaseous Effluent Vent System (GEVS) Room LBDCR-10-0033

The GEVS removes uranium compounds particulates containing uranium [i.e., uranyl fluoride (UO_2F_2)], and hydrogen fluoride (HF) from potentially contaminated process gas streams. Pre-filters and absolute high efficiency particulate air (HEPA) filters remove particulates, including uranium particles, and impregnated activated carbon filters remove HF.

Laboratory Areas LBDCR-10-0033

The Laboratory Areas provides space for three laboratories that receive, prepare, and store various samples as follows:

- (See § 9.1.3 H.)(See SAR § 12.1.1.3.8) Mass Spectrometry Laboratory – designed for the purpose of measuring the isotopic abundance of various uranium isotopes in prepared samples, the bulk comprising hydrolyzed uranium hexafluoride LBDCR-10-0033
- (*See SAR § 12.1.1.3.9.1.3 I.)* Chemical Laboratory – designed for the purposes of analyzing sold and liquid samples taken from all area of the facility. LBDCR-10-0033
- (*See SAR § 12.1.1.3.109.1.3 J.)* Radiation Monitoring Laboratory – designed for the purposes of analyzing samples taken from all areas of the facility in support of radiological control. LBDCR-10-0033

(See SAR § 12.1.1.3.69.1.3 F.) Contaminated Material Handling Room LBDCR-10-0033

The Contaminated Material Handling Room, located in the CRDB, provides an area for the Recycling Group to store protective clothing drums and other material/waste containers that have been assayed and released from the Safeguards item control program. This area will normally provide storage for containers awaiting Radiation Protection survey to be either unconditionally released or transferred to the solid waste collection system for additional processing. In addition, the contaminated Material Handling Room will contain cabinets and bins with supplies to support the waste program and a connection to the CRDB GEVS to support ventilation engineering controls when required.

(See § 9.1.3 E.) Liquid Effluent Collection and Treatment Room LBDCR-10-0033

The Liquid Effluent Collection and Treatment Room is used to collect potentially contaminated liquid effluents produced onsite, which are monitored for contamination prior to processing. These liquid effluents are stored in tanks prior to processing. The effluents are segregated into significantly contaminated effluent, slightly contaminated effluent or non-contaminated effluent. Both the significantly and slightly contaminated liquids are processed for uranium recovery while the non-contaminated liquid is neutralized and routed to the double-lined Treated Effluent Evaporative Basin, with leak detection. Liquid effluents produced by the plant include hydrolyzed uranium hexafluoride, degreaser water, citric acid, floor wash water, hand wash/shower water and miscellaneous effluent. The LECTS Room will also be used for trap filling.

(See SAR § *12.1.1.1.11~~9.1.3 J.~~)* Radiation Monitoring Control Room LBDCR-10-0033

The Radiation Monitoring Control Room is the point of demarcation between potential contaminated areas and non-contaminated areas of the plant. This area provides a step-off pad for exiting the CRDB through a breezeway into the TSB or to the outside. It includes space for a hand and foot monitor, hand washing facilities, safety showers, and boot barrier access.

(See SAR § 12.1.1.3.1~~9.1.3A.~~) Solid Waste Collection Room LBDCR-10-0033

The Solid Waste Collection Room processes both wet and dry low-level solid waste. Wet waste is categorized as radioactive, hazardous or industrial waste and includes assorted materials, oil recovery sludge, oil filters and miscellaneous hazardous wastes. Dry waste is also categorized as radioactive, hazardous or industrial waste and includes assorted materials, activated carbon (impregnated with potassium carbonate/potassium hydroxide), aluminum oxide (also referred to as alumina), sodium fluoride, HEPA filters, scrap metal and miscellaneous hazardous materials.

(See SAR § 12.1.1.3.11~~9.1.3 L.~~) Truck Bay/Shipping and Receiving Area LBDCR-10-0033

The Truck Bay, located at the North end of the CRDB, is used for the shipping and receiving of UF6 cylinders as well as to load packaged low-level radioactive wastes and hazardous wastes onto trucks for transportation offsite to a licensed processing facility and/or licensed disposal facility. It is also used for miscellaneous shipping and receiving.

(See SAR § 12.1.1.3.2~~9.1.3 B.~~) Vacuum Pump Rebuild Workshop LBDCR-10-0033

The Vacuum Pump Rebuild Workshop provides space for the maintenance and re-building of plant equipment, mainly pumps that have been decontaminated in the decontamination facility, and other miscellaneous plant equipment.

(See SAR § 12.1.1.3.4~~9.1.3 D.~~) Ventilated Room LBDCR-10-0033

The Ventilated Room provides space for the maintenance of chemical traps and cylinders. The Ventilated Room is also used for the temporary storage of full and empty traps and the contaminated chemicals used in the traps. The activities carried out within the Ventilated Room include receipt and storage of saturated chemical traps, chemical removal and temporary storage, contaminated cylinder pressure testing, and cylinder pump out and valve maintenance. The Ventilated Room is under negative pressure. Therefore, any equipment or personnel entering this room must go through an air-lock.

2.1.2.3.3 ~~(See § 9.1.2)~~ Technical Services Building (TSB) LBDCR-10-0033

The TSB is adjacent to the south end of the Cylinder Receipt and Dispatch Building (CRDB). The TSB contains support areas for the facility and acts as the secure point of entry to the CRDB. The TSB contains the following functional areas, some of which are contained in a hardened area:

Control Room

The Control Room is the main monitoring and reporting point for the entire facility. The Control Room provides facilities to both directly and indirectly monitor and operate plant control systems. It is permanently manned area and contains the following equipment:

- Overview screen
- Control desk
- Fire alarm system
- Plant Control Systems
- Communication systems.

~~(See § 9.1.2 B.)~~ Training and Simulator Rooms LBDCR-10-0033

These rooms are used for Control Room training. The rooms are in the hardened area and contain the following:

- Plant Control System training system
- Centrifuge Monitoring System training system
- Central Control System switches and servers

Central Alarm Station (CAS) Area

The Central Alarm Station Area is used as the primary security monitoring station for the facility. The area includes the Central Alarm Station (CAS), offices, conference area and secure archives. All electronic security systems are controlled and monitored from this center. These systems include Closed Circuit Television (CCTV). Intrusion Detection and Assessment (IDA), Access Control and radio dispatch. The Secondary Alarm Station (SAS) will be located in the Security Building and will serve as a duplicate control console to the CAS.

(See SAR § 12.1.1.2.1~~9.1.2 D.~~) Medical Room LBDCR-10-0033

The Medical Room is designed to provide space for a nurse's station.

Emergency Operations Center Room

The Emergency Operations Center Room serves as an assembly area for emergency planning purposes.

Technical Support Center Assembly Room

The Technical Support Center Assembly Room serves as an assembly area for emergency planning purposes and has an area allocated for the storage of emergency equipment and supplies and emergency monitoring equipment.

(See SAR § 12.1.1.2.2~~9.1.2 G.~~) Break Room LBDCR-10-0033

The Break Room has space for vending machines, tables and a small kitchenette.

(See SAR § 12.1.1.2.3~~9.1.2 H.~~) I&C Electrical Shop Room LBDCR-10-0033

The I&C Electrical Shop Room serves as a work area for general electrical and I&C components and maintenance.

(See SAR § 12.1.1.2.4~~9.1.2 I.~~) Mechanical Shop Room LBDCR-10-0033

The Mechanical Shop Room serves as a work area for general mechanical maintenance and work such as painting or welding.

Chemical Storage Room

The Chemical Storage Room serves as a storage area for typical industrial chemicals.

Waste Processing Room

The Waste Processing Room serves as a processing area of non-radioactive wastes.

2.1.2.3.4 Centrifuge Assembly Building (CAB)

The CAB is located North and East of the CRDB. It is used for the assembly, inspection, and mechanical testing of the centrifuges prior to installation in the Cascade Halls of the SBMs and introduction of UF_6. Centrifuge assembly operations are undertaken in clean room conditions. The building is divided into the following distinct areas:

- Centrifuge Component Storage Area
- Centrifuge Assembly Area "A"
- Centrifuge Assembly Area "B"
- Centrifuge Assembly Area "C" LBDCR-10-0009
- Assembled Centrifuge Storage Area
- Building Office Area
- Centrifuge Test and Post Mortem Facilities (CTF/PMF).

Centrifuge Component Storage Area

The Centrifuge Component Storage Area serves as the initial receipt location for the centrifuge parts. It is designed to store up to four weeks of delivered centrifuge components. These components are delivered by truck in specifically designed containers, which are then packed into International Organization for Standardization (ISO) freight containers. These containers are off-loaded via fork lift truck and placed in the storage area through one of two roller shutter doors located at the end of the CAB.

Because the assembly operations are undertaken in clean room conditions, the centrifuge component containers will be cleaned in a washing facility located within the Centrifuge Component Storage Area, prior to admission to the Centrifuge Assembly Area. The component store also acts as an acclimatization area to allow components to equilibrate with the climatic conditions of the Centrifuge Assembly Area.

Transfer of components and personnel between the component store and the centrifuge assembly areas will be via an airlock to prevent ingress of airborne contaminants. LBDCR-10-0009

Centrifuge Assembly Area

Centrifuge components are assembled into complete centrifuges in ~~this~~these areas. ~~Assembly operations are carried out on two parallel production lines (A and B).~~ The centrifuge operates in a vacuum; therefore, centrifuge assembly activities are undertaken in clean-room conditions to prevent ingress of volatile contaminants, which would have a detrimental effect on centrifuge performance. Prior to installation into the cascade, the centrifuge has to be conditioned, which is done in the Centrifuge Assembly Area prior to storage in the Assembled Centrifuge Storage Area. LBDCR-10-0009

Assembled Centrifuge Storage Area

Assembled and conditioned centrifuges are stored in the Assembled Centrifuge Storage Area prior to installation. During construction of the plant, a separate installation team will access this area and transfer the assembled and conditioned centrifuges to the Cascade Halls for installation.

~~Centrifuges are to be routed via a covered communication corridor, which links the CAB with the CRDB.~~ LBDCR-10-0009

Building Office Area

A general office area is located adjacent to the assembly area. It contains the main personnel entrance to the building as well as entrances to the assembly storage and assembly workshop. It is a two-story area, which includes:

- Offices
- Change Rooms
- Break Room
- Maintenance Area
- Chemical Storage Area
- Battery Charging Area.

Centrifuge Test and Post Mortem Facilities

The Centrifuge Test Facility provides an area to test the functional performance of production centrifuges and ensure compliance with design parameters. The Post-Mortem Facility provides an area to investigate production and operational problems. The demand for centrifuge post mortems is infrequent.

The principal functions of the Centrifuge Post Mortem Facility are to:

- Facilitate dismantling of non-contaminated centrifuges or contaminated centrifuges using equipment and processes, that minimize the potential to contaminate personnel or adjacent facilities.
- To prepare potentially contaminated components and materials for transfer to the CRDB prior to disposal.

Centrifuges are brought into the facility on a specially designed transport cart. The facility is also equipped with radiological monitoring devices, toilets and washing facilities, and hand, foot and clothing personnel monitors to detect surface contamination.

The Centrifuge Post Mortem Facility includes a centrifuge dismantling area and an inspection area. The centrifuge dismantling area includes a stand onto which the centrifuge to be dismantled is mounted providing access to the top and bottom of the centrifuge. A local jib crane is located over the stand to enable removal of the centrifuge from the transport cart and facilitate loading onto the stand.

The inspection area includes an inspection bench, portable lighting, a microscope, an endoscope and a digital video/camera.

2.1.2.3.5 (*See SAR § 12.1.1.4~~9.1.6~~*) Uranium Byproduct Cylinders (UBC) Storage Pad LBDCR-10-0033

The NEF uses an area outside of the CRDB for storage of UBCs containing UF_6 that is depleted in ^{235}U. The depleted UF_6 is stored under vacuum in corrosion resistant Type 48Y cylinders, i.e., UBCs.

The UBC Storage Pad design provides storage cylinders of depleted uranium. The UBC Storage Pad will also be used to store empty feed cylinders that are not immediately recommended to the plant. Approximately 625 UBCs per year will be stored on the UBC Storage Pad. The storage area required to support plant operations accommodates a maximum of 15,727 cylinders of depleted uranium. These cylinders are stacked two high on concrete saddles that elevate the cylinders approximately 0.2 m (0.65 ft) above ground level. (See ER Section 4.13.3.1.1, Uranium Byproduct Cylinder (UBC) Storage.)

Flatbed trucks move the cylinders from the CRDB to the UBC Storage Pad, where cranes remove the cylinders from the trucks and place them on the UBC Storage Pad.

The UBC Storage Pad will be developed in sections over the life of the facility.

2.1.2.3.6 (*See SAR § 12.1.1.6~~9.1.8~~*) Administration Building LBDCR-10-0033

The Administration Building is near the TSB. It contains general office areas for the facility. Personnel enter the Administration Building and general office areas via the main lobby.

Over 50 work locations are provided for the plant office staff. The office environment consists of private, semiprivate, and open office space. It also contains a kitchen, break room, conference rooms, building service facilities such as the janitor's closet and public telephone, and a mechanical equipment room.

2.1.2.3.7 (*See SAR § 12.1.1.5~~9.1.7~~*) Central Utilities Building (CUB) LBDCR-10-0033

The Central Utilities Building is located near the TSB. It houses two diesel generators, which provide the site with standby power. The building also contains day tanks, switchgear, control panels, and building heating, ventilating, and air conditioning (HVAC) equipment. The rooms housing the diesels are constructed independent of each other with adequate provisions made for maintenance, as well as equipment removal and equipment replacement.

The diesel fuel unloading area provides tanker truck access to the two above ground tanks, which provide diesel fuel storage. Secondary containment (berms) will be provided to contain spills or leaks from the two above ground diesel fuel tanks. The above ground diesel storage tank area will be included in the site Spill Prevention Control and Countermeasures (SPCC) plan.

The CUB also houses the Centrifuge Cooling Water System, pumps, and air compressors.

2.1.2.3.8 (*See SAR § 12.1.1.79.1.10*) Security Building LBDCR-10-0033

The main Security Building is located at the entrance to the plant. It functions as a security checkpoint for all incoming and outgoing personnel. Employees and visitors that have access approval will be screened at the main Security Building. A smaller Gatehouse has been placed at the secondary site entrance. All vehicle traffic including common carriers, such as mail delivery trucks, will be screened at this location.

The Security Building also contains a Visitor Center. There are adequate physical barriers, locked doors, etc. to separate the visitor accessible areas from areas designed to support security functions.

The main Security Building contains Entry Exit Control Point (EECP) for the facility. All personnel access to the plant occurs at this location. Vehicular traffic passes through a security checkpoint before being allowed to park. Parking is located outside of the Controlled Access Area (CAA) security fence. Personnel enter the Security Building and general office areas via the main lobby.

Personnel requiring access to the facility areas or the CAA must pass through the EECP. The EEC is designed to facilitate and control the passage of authorized facility personnel and visitors. Entry to the plant area from the Security Building is only possible through the EECP.

2.1.2.4 Process Control Systems

The NEF uses various operations and Process Controls Systems to ensure safe and efficient plant operations. The principal process systems include:

- Decontamination System
- Fomblin Oil Recovery System
- Liquid Effluent Collection and Treatment System
- Solid Waste Collection System
- Gaseous Effluent Vent System
- Centrifuge Test and Post Mortem Exhaust Filtration System

2.1.2.4.1 (See SAR § 12.1.1.3.3 and 12.1.3.4.*49.2.12 N.*) Decontamination System LBDCR-10-0033

The Decontamination System is designed to remove radioactive contamination [in the form of uranium hexafluoride (UF_6), uranium tetrafluoride (UF4) and uranyl fluoride (UO_2F_2), i.e., uranium compounds] from contaminated materials and equipment. The system consists of a series of steps, including equipment disassembly, degreasing, decontamination, drying, and inspection.

Items commonly decontaminated include pumps, valves, piping, instruments, sample bottles, and scrap metal. Decontamination is typically accomplished by immersing the contaminated component in a 5% citric acid bath with ultrasonic agitation, rinsing with water, drying using compressed air, and then inspecting before release. The process time is about one hour for most plant components. Liquid waste is sent to the Liquid Effluent Collection and Treatment System; solid waste/sludge to the Solid Waste Collection System, and enclosure exhaust air to the GEVS prior to venting.

2.1.2.4.2 (*See SAR § 12.1.3.5~~9.2.12 O.~~*) Fomblin Oil Recovery System — LBDCR-10-0033

Vacuum pumps use a Perfluorinated Polyether (PFPE) oil, such as Fomblin oil. Fomblin oil is a highly fluorinated, inert oil selected especially for use to avoid reaction with UF_6. The Fomblin Oil Recovery System reclaims spent Fomblin oil from pumps used in the UF_6 processing system. The recovery employs anhydrous sodium carbonate (Na_2CO_3) in a laboratory-scale precipitation process to remove the primary impurities of UO_2F_2, UF4, and activated carbon to remove trace amounts of hydrocarbons. Refer to ER Section 4.13, Waste Management Impacts, for the annual estimated oil quantity recovered.

2.1.2.4.3 ~~(*See § 9.2.12 L.*)~~ Liquid Effluent Collection and Treatment System — LBDCR-10-0033

The Liquid Effluent Collection and Treatment System collects potentially contaminated liquid effluents that are generated in a variety of plant operations and processes. These liquid effluents are collected in holding tanks and then transferred to bulk storage tanks prior to processing. The bulk liquid storage is segregated by the level of contamination into three categories. Significant and slightly contaminated liquids are processed for uranium recovery, while the non-contaminated liquid is routed to the Treated Effluent Evaporative Basin. The effluent input streams include hydrolyzed UF_6 , degreaser water, citric acid, floor wash water, and hand wash/shower water and miscellaneous effluent. Refer to Safety Analysis Report (SAR) Section 3.3 for additional information.

2.1.2.4.4 (*See SAR § 12.1.3.3~~9.2.12 M.~~*) Solid Waste Collection System — LBDCR-10-0033

Solid wastes are generated in two categories: wet and dry. The Solid Waste Collection System is simply a group of methods and procedures that apply, as appropriate, to the two categories of solid wastes. The wet waste portion of the system handles all plant radiological, hazardous, and industrial wastes. Input streams include oil recovery sludge, oil filters, and miscellaneous hazardous materials. Each is segregated and handled by separate procedures. The dry waste portion (i.e., liquid content is 1% or less of volume) input streams include activated carbon, aluminum oxide, sodium fluoride, filters, scrap metal, nonmetallic waste and miscellaneous hazardous materials. The wastes are likewise segregated and processed by separated procedures.

2.1.2.4.5 (*See SAR § 12.1.1.1.10~~9.2.9.~~*) Gaseous Effluent Vent System — LBDCR-10-0033

There are two GEVS that support the NEF: Pumped Extract GEVS and CRDB GEVS. The GEVS are designed to route some of the potentially contaminated gaseous streams in the CRDB and the SBMs that require treatment before discharge to the atmosphere. These systems route these streams through filter systems prior to exhausting via vent stacks. The stacks contain continuous monitors to indicate radioactivity levels. Both GEVS are monitored from the Control Room.

The CRDB GEVS, located in the CRDB, provides filtration of potentially contaminated gaseous streams in the CRDB from areas that include the Ventilated Room, Decontamination Workshop, Contaminated Material Handling Room, Fomblin Oil Recovery System, Decontamination System, Chemical Laboratory, and Vacuum Pump Rebuild Work shop. The total air flow is handled by a central gaseous effluent distribution system that operates under negative pressure. The treatment system includes a single train of filters consisting of a pre-filter, HEPA filter, impregnated activated carbon filter, centrifugal fan, automatically operated inlet-outlet isolation dampers, monitors, and differential pressure transducers.

The Pumped Extract GEVS, a Safe-By-Design system located in the UF_6 Handling Area of SBM-1001, provides exhaust of potentially hazardous contaminants for the SBMs from all permanently connected vacuum pump and trap sets as well as temporary connections used by maintenance and sampling rigs. Local exhausts to the Pumped Extract GEVS are provided for initial plant operations via a temporary local extract connection to remove any releases from connections or disconnections of process equipment. To support the connection of on-line mass spectrometer standards, a mobile pump and trap set will be used to provide local exhaust ventilation for a one tome use. LBDCR-10-0046

2.1.2.4.6 Centrifuge Test and Post Mortem Facilities Exhaust Filtration System

The Centrifuge Test and Post Mortem Facilities Exhaust Filtration System provides exhaust of potentially hazardous contaminants from the Centrifuge Test and Post Mortem Facilities. The system also ensures the Centrifuge Test and Post Mortem Facility is maintained at a negative pressure with respect to adjacent areas during contaminated or potentially contaminated processes. The Centrifuge Test and Post Mortem Facilities Exhaust Filtration System is located in the Centrifuge Assembly Building and is monitored from the Control Room.

The ductwork is connected to one filter station and vents through the roof and an exhaust stack. Operations that require the Centrifuge Test and Post Mortem Facilities Exhaust Filtration System to be operational are manually shut down if the system shuts down. After filtration, the clean gases pass through a fan, which maintains the negative pressure upstream of the filter station. The clean gases are then discharged through the monitored (alpha and HF) stack on the Centrifuge Assembly Building.

2.1.2.5 Site and Nearby Utilities

The city of Eunice, New Mexico will provide water to the site. Water consumption for the NEF is calculated to be 168.5 m^3/day (44,500 gal/d) to meet potable and process consumption needs. Peak water usage for fire protection is23.7 L/s (375 gal/m). Electrical service to the site will be provided by Xcel Energy. The projected demand is approximately 30 MW. Sanitary wastewater will be sent to the City of Eunice Wastewater Treatment Plant via a system of lift stations and 8 inch sewage lines. Six septic tanks, each with one or more leach fields, may be installed as a backup to the sanitary waste system.

Identified, onsite pipelines include a 25.4-cm (10-in) diameter, underground carbon dioxide pipeline that runs southeast-northwest. This pipeline is owned by Trinity Pipeline LLC. A

40.6-cm (16-in) diameter, underground natural gas pipeline, owned by the Sid Richardson Energy Services Company, is located along the south property line, paralleling New Mexico Highway 234. A parallel 35.6-cm (14-in) diameter gas pipeline is not in use. There are no known onsite underground storage tanks, wells, or sewer systems.

Detailed information concerning water resources and the use of potable water supplies is discussed in ER Section 3.4, Water Resources, and the impacts from these water resources are discussed in ER Section 4.4, Water Resources Impacts. A discussion of impacts related to utilities that will be provided is included in ER Section 4.1, Land Use Impacts.

2.1.2.6 Chemicals Used at NEF

The NEF uses various types and quantities of non-hazardous and hazardous chemical materials. ~~Table 2.1-1, Chemicals and Their Properties, lists the chemicals associated with the NEF operation and their associated hazards. Tables 2.1-2 through 2.1-5 summarize the chemicals in use and storage, categorized by building. These tables also include the physical state and the expected quantity of chemical materials.~~A Chemical Safety Program tracks the general locations of hazardous chemicals onsite and the specific hazards associated with these chemicals. LBDCR-10-0010

2.1.2.7 Monitoring Stations

The NEF will monitor both non-radiological and radiological parameters. Descriptions of the monitoring stations and the parameters measured are described in other sections of this ER as follows:

- Meteorology (ER Chapter 3, Section 3.6)
- Water Resources (ER Chapter 3, Section 3.4)
- Radiological Effluents (ER Chapter 6, Section 6.1)
- Physiochemical (ER Chapter 6, Section 6.2)
- Ecological (ER Chapter 6, Section 6.3)

2.1.2.8 Summary of Potential Environmental Impacts

Following is a summary of impacts from undertaking the proposed action and measures used to mitigate impacts. Table 2.1-17, Summary of Environmental Impacts for the Proposed Action, summarizes the impact by environment resource and provides a pointer to the corresponding section in ER Chapter 4, Environmental Impacts, that includes a detailed description of the impact. Detailed discussions of proposed mitigation measures and environmental monitoring programs are provided in ER Chapter 5, Mitigation Measures and Chapter 6, Environmental Measurements And Monitoring Programs, respectively. LBDCR-10-0010

Operation of the NEF would result in the production of gaseous, liquid, and solid waste streams. Each stream could contain small amounts of hazardous and radioactive compounds either alone or in a mixed form.

Gaseous effluents for both non-radiological and radiological sources will be below regulatory limits as specified in permits issued by the New Mexico Air Quality Bureau (NMAQB) and release limits by NRC (CFR, 2003q; NMAC 20.2.78). This will result in minimal potential impacts to members of the public and workers.

The results are then tested through a variety of sensitivity analyses that help verify assigned weighting and examine the relative importance of each objective to project ranking. The sensitivity analyses also help demonstrate how sites compare based on their scores for each objective.

2.1.3.3.2 First Phase Screening

Initially, the screening analysis involved the collection of existing qualitative and quantitative data on eight sites. Each site was evaluated using the data available and six first screening criteria (see Table 2.1-28, Matrix of Results from First Phase Screening, and table notes which further define the six screening criteria): LBDCR-10-0010

- Seismology/Geology
- Site Characterization Surveys
- Size of Plot
- Land Not Contaminated
- Moderate Climate
- Redundant Electrical Power

These criteria were initially applied to the following eight sites:

- Ambrosia Lake, New Mexico (Rio Algom/Quivira Mining Site)
- Columbia, SC (Westinghouse Nuclear Fuel Site)
- Metropolis, IL (Honeywell International Site)
- Paducah, KY (Department of Energy Gaseous Diffusion Plant Site)
- Portsmouth, OH (Department of Energy Gaseous Diffusion Plant Site)
- Wilmington, NC (Global Nuclear Fuel Site)
- Barnwell, SC (former Barnwell Nuclear Fuel Plant Site)
- Richland, WA (Framatome ANP Nuclear Fuel Cycle Facility Site)

In its site selection process, LES considered sites within the 48 contiguous states. The Columbia, Metropolis, Paducah, Portsmouth, Wilmington, Barnwell and Richland sites were included in the evaluation because they are extant nuclear facilities involved in the nuclear fuel cycle. (The latter two sites are also notable as sites with no existing soil or groundwater contamination.) Ambrosia Lake, a uranium mining site, was included in the evaluation upon the request of an LES partner organization.

Five of the eight sites (Barnwell, Columbia, Metropolis, Paducah and Richland) failed to meet the seismic criterion. Further, the Wilmington site was not made available for consideration. Because only Portsmouth, and Ambrosia Lake remained as viable sites, LES added two additional sites to the evaluation, as follows:

- Erwin, TN (Nuclear Fuel Services Site)
- Lynchburg, VA (Framatome Fuels Site)

Availability of Good Transport Routes

This criterion consists of four desirable, but non-essential, subcriteria, as follows:

- It is desirable to have a railhead located at the site.
- Close proximity to controlled-access highways and/or interstate highways is desirable.
- There should be traffic capacity for construction and operation activities, with minimal improvements required.
- There should be optimal and efficient highway and/or rail access for UF_6 feed suppliers to fuel fabricators.

Disposal of Operational Low-Level Waste

This criterion consists of a single non-essential consideration: It is desirable if site-specific issues (e.g., availability/access to nearby facilities for disposal of low-level waste, transportation modes, etc.) do not impede disposal of low-level waste.

Amenities for Work Force

This criterion consists of two desirable, but non-essential, sub-criteria, as discussed below:

- It is desirable that housing, hotels, and lodging be available for the seconded work force, as well as recreational facilities.
- It is desirable that there be cultural activities available at or near the area.

A swing-weighting method was used to develop the weights for each tier of the value hierarchy. The four objectives were ranked in order of relative importance. A weight of 100 was assigned to the most important objective, Operational Requirements. The other objectives were assigned weights reflecting their relative importance compared to Operational Requirements. A weight of 80 was assigned to Environmental Acceptability, 70 for Schedule for Commencing Operations and 60 for Operational Efficiencies. Table 2.1-39, Screening Criteria (Subsequent to First Screening) lists the criteria described above as well as the weights accorded to each criterion and sub-criterion. LBDCR-10-0010

Other Considerations

The commitment of capital for site preparation and facility construction is not very sensitive to alternative sites since it is heavily influenced by the costs of specialized equipment. Therefore, it was not explicitly considered in the alternative site selection process. Prevailing wage rates is not considered by LES to be an important site selection criteria and therefore was not considered in the alternative site selection process. LES did not explicitly consider other recurring and nonrecurring costs in the site selection process since they are not considered sensitive to any particular site.

2.1.3.3.4 Discussion

A description of each of the six sites considered in the second phase screening is provided in this section.

~~Table 2.1-2Chemicals – Separations Building~~

CHEMICAL/PRODUCT			INVENTORY BY LOCATION								REMARKS
NAME	FORMULA	PHYSICAL STATE	UBC STORAGE PAD (outdoor) – see Note 4		UF_6 HANDLING AREA	CASCADE HALLS	FIRST FLOOR PROCESS SERVICESCORRIDOR–SEPARATIONS BUILDING	SECOND FLOOR PROCESS SERVICES/CORRIDOR–SEPARATIONS BUILDING	THIRD FLOOR PROCESS SERVICESCORRIDOR–SEPARATIONS BUILDING	BLENDING AND LIQUID SAMPLING AREA	
-	-	-			-	-	No chemicals		No chemicals	-	
uranium hexafluoride	UF_6	solid	197 E6 kg (434 E6 lb)		4.00 E5 kg/module (8.82 E5 lb/module)					9,124 kg (20,073 lb)	Notes 1, 2, & 4
ranium hexafluoride	UF_6	liquid								9,127 kg (20,080 lb)	Note 1
uranium hexafluoride	UF_6	gas			piping	256 kg/module (565 lb/module)		13.8 kg/module (30.4 lb/module)		3 kg (6.6 lb)	Notes 4 and 5
hydrogen fluoride	HF	gas			piping (trace)						
silicone oil		liquid			560 L / module 148 gal/module)					70 L (18.5 gal)	Note 4
sodium fluoride	NaF	solid						4,800 kg/module (10,584 lb/module)			Note 4
R23 trifluoromethane		gas/liquid			13.6 kg/module 30.0 lb/module)					1.7 kg (3.7 lb)	Note 4
R404A fluoroethane blend		gas/liquid			120 kg/module (265 lb/module)					15 kg (33.1 lb)	Note 4
R507 penta/tri fluoroethane		gas/liquid			510 kg/module (1,125 lb/module)					60 kg (132 lb)	Note 4

Table 2.1-2 Chemicals – Separations Building

CHEMICAL/PRODUCT			INVENTORY BY LOCATION								REMARKS
NAME	FORMULA	PHYSICAL STATE	UBC STORAGE PAD (outdoor) – see Note 4		UF_6 HANDLING AREA	CASCADE HALLS	FIRST FLOOR PROCESS SERVICES CORRIDOR – SEPARATIONS BUILDING	SECOND FLOOR PROCESS SERVICES CORRIDOR – SEPARATIONS BUILDING	THIRD FLOOR PROCESS SERVICES CORRIDOR – SEPARATIONS BUILDING	BLENDING AND LIQUID SAMPLING AREA	
R-407C (refrigerant blend)	R32 (20%) + R125 (40%) + R134a (40%) CH_2F_2 / CHF_2CF_3 / CH_2CF_3	gas/liquid									Note 6
R-410A (refrigerant blend)	R32 (50%) + R125 (50%) CH_2F_2 / CHF_2CF_3	gas/liquid									Note 6
activated carbon	C	granules			624 kg (1,376 lb)					13 kg (28.7 lb)	
impregnated activated carbon	C, K_2CO_3, KOH	Granules			GEVS Filters 64 kg (141 lb)						Note 8
aluminum oxide	Al_2O_3	granules			828 kg (1,826 lb)					23 kg (50.7 lb)	
gaseous nitrogen	N_2	gas		piping	piping					piping	Note 7
cryogenic nitrogen	N_2	Liquid			piping & dewars						Note 7

~~Table 2.1-2Chemicals – Separations Building~~

~~CHEMICAL/PRODUCT~~			~~INVENTORY BY LOCATION~~								~~REMARKS~~
~~NAME~~	~~FORMULA~~	~~PHYSICAL STATE~~	~~UBC STORAGE PAD (outdoor) – see Note 4~~		~~UF_6 HANDLING AREA~~	~~CASCADE HALLS~~	~~FIRST FLOOR PROCESS SERVICESCORRIDOR–SEPARATIONS BUILDING~~	~~SECOND FLOOR PROCESS SERVICES CORRIDOR–SEPARATIONS BUILDING~~	~~THIRD FLOOR PROCESS SERVICESCORRIDOR–SEPARATIONS BUILDING~~	~~BLENDING AND LIQUID SAMPLING AREA~~	

~~NOTES:~~

~~1.The Blending and Liquid Sampling Area can have up to 2 (30B) cylinders in donor stations,2 (30B) cylinders in receiver stations. Up to 4 (30B) cylinders can be present in liquid sampling autoclaves and will be in various physical states depending on sampling in progress.~~

~~2.UF_6 Handling Area inventory is maximum estimated operational inventory.~~

~~3.The UBC Storage Pad is located outside of and detached from the Separations Building.~~

~~4.The NEF will have three plant modules.~~

~~5.Gas flows in piping routed from the UF_6 Handling Area to the Cascade Halls and back. The Process Services Corridor contains the main manifolds and valve stations. Normal estimated operational inventory in piping.~~

~~6.Approximately 773kg (1,700 lb) of R-407C/R-410A refrigerant is contained in packaged and split-system HVAC units for each Separations Building Module.~~

~~7.Liquid Nitrogen in cryogenic piping inside of the building at liquid filing stations and in portable dewars.~~

~~8.Previous revisions of the license basis documents identify potassium carbonate as the HF absorption media for the carbon filters. In design development of the filter units it was determined that potassium hydroxide provides a preferred means of impregnating the carbon media. The potassium hydroxide is converted to alkaline potassium salts (carbonate being primary due to the affinity of aqueous KOH to rapidly absorb CO_2 from air and from the pores of the activated carbon).~~

Table 2.1-3Chemicals – Centrifuge Assembly Building (CAB)

CHEMICAL/PRODUCT			INVENTORY BY LOCATION			REMARKS
NAME	FORMULA	PHYSICAL STATE	CENTRIFUGE ASSEMBLY AREA	Note 6 CENTRIFUGE TEST FACILITY	Note 5 POST MORTEM FACILITY	
uranium hexafluoride	UF_6	Gas/solid		~20 kg (44lb)		Notes 2,3 & 6
hydrogen fluoride, residual	HF	gas		inside pumps		-
paper, wipes, gloves, etc.		solid			<1m³ (<35.3 ft³)	-
oil		liquid			See Remark	Note 4
contaminated disposable clothing		solid			<1m³ (<35.3 ft³)	-
helium	He	gas	440 m³ (15,536 ft³)			Gas volume is at Std. Conditions. Note 1
argon	Ar	gas	190 m³ (6,709 ft³)			Gas volume is at Std. Conditions.
gaseous nitrogen	N_2	gas	piping	piping	piping	
liquid nitrogen	N_2	liquid		dewars		
activated carbon	C	granules	-	25 kg/yr (22.1 lb)	-	-
aluminum oxide	Al_2O_3	granules	-	20 kg (44.1 lb)	-	-
carbon fibers	-	solid	-	-	See Remark	Note 4
metals (aluminum)	-	solid	-	-	See Remark	Note 4
Air crafts Laquer Spray		Aerosol		25 liters/yr		
Araldite 2012 Hardner		Liquid	500 liters/yr			
Brake Fluid		Liquid	10 liters/yr			
De-Ionized Water		Liquid		150 liters/yr		
Donax Transmission Fluid		Liquid	30 liters/yr			
DW Therm Heat Transfer Fluid		Liquid		26 liters/yr		
Ethylalcohol	C_2H_5OH	Liquid	5 liters/yr			

Fomblin Perfluorosoly PFS-1		Liquid	20 liters/yr			
Fomblin PFPE Oil		Liquid		15 liters/yr		
Heat Sink Silicone Compound			240 kg/yr			
Hydraulic Fluid		Liquid	180 liters/yr			
Hydroflurie Acid 48-52%	HF	Liquid	1000 ml/yr			
Krylon Spray Paint		Aerosol	10 liters/yr			
Leak Detection Spray		Aerosol	5 lieter/yr			
Lubriplate EMB		Liquid	50 liters/yr			
Nitrogen, Dry	N_2	Gas	5000 liters/yr			Note 1
Nitrogen, Liquid	LN_2	Liquid	60 liters/yr			Note 1
Oxygen, Liquid	LOX	Liquid	5000 liters/yr			
P-11 Oil		Liquid	30 liters/yr			
P-3 Oil		Liquid		30 liters/ yr		
Ehtylene Glycol		Liquid	10 liters/yr			
Propane, Isobutane	C_3H_8	Gas/Liquid	80 liters/yr			
R-134 Refrigerant			10 kg/yr			
R-23 Refrigerant				15 kg/yr		
Refrigerants R410a						
RFefrigerant R407c						
R-507 Refrigerant				6 kg/yr		
SEM Shredder Oil		Liquid	60 liters/yr			
Shell Chain Lubricant		Liquid	10 liters/yr			
Shell Donax TA Lubricant		Liquid	20 liters/yr			
Shell Donax yb Lubricant		Liquid	50 liters/yr			

~~Petroleum, Hydrocarbon~~		~~Solid~~	~~20 kg/yr~~			
~~Shell Retinax Grease ep2~~		~~Solid~~	~~25 kg/yr~~			
~~Paraffinic, Naphthenic distillant~~		~~Liquid~~	~~50 kg/yr~~			
~~Shell Spirax A90 Oil~~		~~Liquid~~	~~50 liters/yr~~			
~~Shell Spirax AX 80w-90 Oil~~		~~Liquid~~	~~50 liters/yr~~			
~~Shell Stamina RL2 Grease~~		~~Solid~~	~~15 kg/yr~~			
~~Shell Tellus Oil~~		~~Liquid~~	~~30 liters/yr~~			
~~Spriax Gear Oil~~		~~Liquid~~	~~30 liters/yr~~			
~~Sulfuric Acid~~	~~H_2SO_4~~	~~Liquid~~		~~5 kg/yr~~		
~~Tellus T46 Oil~~		~~Liquid~~	~~25 liter/yr~~			
~~Cutting Fluid~~		~~Liquid~~	~~25 liter/yr~~			
~~Tyreno Fluid 16/40 V~~		~~Liquid~~	~~10 liters/yr~~			
~~Shell Vitrea Oil~~		~~Liquid~~		~~20 liters/yr~~		
~~Methonol, Wiper Fluid~~		~~Liquid~~	~~10 liters/yr~~			
~~Hand wash/shower water~~		~~Aqueous~~	~~2,744 L (725 gal)~~			~~Hand Wash / Shower Monitor Tank in Assemb;ed Centrifuge Storage Area~~

~~NOTES:~~

1. ~~Helium, Liquid Nitrogen, and Dry Nitrogen are used in the Centrifuge Assembly Area and Centrifuge Test Facility.~~
2. ~~Centrifuges in the Centrifuge Post Mortem Facility are considered contaminated based on previous operation with UF_6. Once in the Centrifuge Post Mortem Facility, they will not contain significant amounts of UF_6.~~
3. ~~In the Centrifuge Test Facility, 50 kg (110 lb) of UF_6 is contained in a feed vessel, test centrifuges, and a take off vessel. Physical state will vary depending on testing in progress. Approximately 20 kg (44 lb)~~

~~This 50kg (110 lb) of UF_6 is the maxium amount allowed in the CAB per Materials License condition 27 and includes the Residual amount listed for the Post Mortem Facility.~~

4. ~~Quantity of materials is classified.~~
5. ~~The Centrifuge Test Facility and Post Mortem Facility are housed in the same room in the CAB.~~
6. ~~Initial UF_6 fill us supplied in ANSI N14.1 30B containers.~~

Table 2.1-4 Chemicals – Technical Services Building					
CHEMICAL/PRODUCT			INVENTORY BY LOCATION		REMARKS
NAME	FORMULA	PHYSICAL STATE	ME&I WORKSHOP	ENVIRONMENTAL MONITORING LABORATORY	
sodium fluoride	NaF	powder			
oxygen gas	O_2	gas	11 m³ (388ft³)		
acetylene gas	C_2H_2	gas	6m³ (212 ft)		
propane gas	C_2H_8	gas	0.68 kg (1.50 lb)		
cutting oil		liquid	2.4 L (0.6 gal)		
paint		liquid	2.4 L (0.6 gal)		
hydrogen	H_2	gas		Std. cylinder	
gaseous nitrogen	N_2	gas	10 m³ (353 ft³)	piping	
sand blasting sand		Solid	50 kg (110 lb)		
degreaser water		liquid (aqueous)	1,000 L (264 gal)		
water	H_2O	liquid		sample bottle	See Note 1
urine		liquid		sample bottle	See Note 1
soils and grass		solid		Sample bottle	See Note 1
R-407C (Refrigerant Blend)	CH_2F_2 / CHF_2CF_3/ CH_2CF_3	gas/liquid			
R-410A (Refrigerant Blend)	CH_2F_2 / CHF_2CF_3	gas/liquid			

1.Quantities of samples in the Environmental Monitoring Laboratory are assumed to be negligible and assumed to be non-hazardous.

~~Table 2.1-5 Chemicals – Cylinder Receipt and Dispatch Building~~

~~CHEMICAL/PRODUCT~~			~~INVENTORY BY LOCATION~~										~~REMARKS~~
~~NAME~~	~~FORMULA~~	~~PHYSICAL STATE~~	~~CONTAINER STORAGE~~	~~Contaminated Material Handling Room~~	~~VENTILATED ROOM~~	~~DECONTAMINATION WORKSHOP~~	~~VACUUM PUMP REBUILD WORKSHOP~~	~~LIQUID EFFLUENT COLLECTION AND TREATMENT SYSTEM~~	~~SOLID WASTE COLLECTION SYSTEM~~	~~GASEOUS EFFLUENT VENT SYSTEM (CRDB)~~	~~CHEMICAL LABORATORY~~	~~MASS SPECTROMETRY LABORATORY~~	
~~uranium hexafluoride~~	~~UF_6~~	~~solid~~	~~2.87E6 kg (6.33E6 lb)~~		~~2,300-12,500 kg (5,071-27,563 lb) 48Y cylinder~~	~~residual~~					~~250 kg (551 lb)~~	~~0.5 kg (1.1 lb)~~	
~~uranium hexafluoride~~	~~UF_6~~	~~gas~~								~~trace piping~~			
~~hydrogen fluoride~~	~~HF~~	~~gas~~			~~residual~~	~~residual~~				~~trace piping~~	~~residual~~		
~~uranium compounds~~	~~UO_2F_2~~	~~gas~~			~~residual~~								
~~uranium compounds~~	~~UO_2F_2~~	~~solid~~		~~residual~~		~~residual~~			~~residual~~				
~~uranium compounds~~	~~UO_2F_2~~	~~solution~~						~~residual~~			~~residual~~	~~0.5 (1.1 lb)~~	
~~uranium compounds~~	~~UO_2F_2~~	~~aerosol~~								~~trace piping~~			
~~combustible solid waste~~		~~solid~~			~~14 kg (30.9 lb)~~	~~84 kg (185 lb)~~	~~180 kg (397 lb)~~		~~1,500 kg (3,308 lb)~~				
~~combustible solid waste & paper~~		~~solid~~							~~1,000 kg (2,205 lb)~~				
~~sodium fluoride~~	~~NaF~~	~~powder~~					~~100 kg (221 lb)~~						
~~cutting oil~~	-	~~liquid~~					~~0.08 kg (0.18 lb)~~						

~~Table 2.1-5 Chemicals – Cylinder Receipt and Dispatch Building~~

~~CHEMICAL/PRODUCT~~			~~INVENTORY BY LOCATION~~										~~REMARKS~~
~~NAME~~	~~FORMULA~~	~~PHYSICAL STATE~~	~~CONTAINER STORAGE~~	~~Contaminated Material Handling Room~~	~~VENTILATED ROOM~~	~~DECONTAMINATION WORKSHOP~~	~~VACUUM PUMP REBUILD WORKSHOP~~	~~LIQUID EFFLUENT COLLECTION AND TREATMENT SYSTEM~~	~~SOLID WASTE COLLECTION SYSTEM~~	~~GASEOUS EFFLUENT VENT SYSTEM (CRDB)~~	~~CHEMICAL LABORATORY~~	~~MASS SPECTROMETRY LABORATORY~~	
~~paint~~	-	~~liquid~~		-	-	-	~~9.6 L (2.5 gal)~~	-	-	-	-	-	-
~~primus gas~~	-	~~gas~~		-	-	-	~~0.5 kg (1.1 lb)~~	-	-	-	-	-	-
~~degreaser solvent, SS25~~	-	~~liquid~~		-	-	-	~~2.4 L (0.6 gal)~~	-	-	-	-	-	-
~~penetrating oil~~	-	~~liquid~~		-	-	-	~~0.44 L (0.12 gal)~~	-	-	-	-	-	-
~~methylene chloride~~	~~CH_2Cl_2~~	~~Liquid~~					~~210 L (55.4 gal)~~		~~420 L (111 gal)~~				
~~organic chemicals~~	-	~~liquid~~		-	-	-		-	~~50 L (13.2 gal)~~	-	-	-	-
~~potassium or sodium hydroxide~~	~~KOH/NaOH~~	~~liquid~~		-	-	-	-	~~210 L (55.4 gal)~~	-	-	-	-	-
~~Oil (from pumps)~~		~~Liquid~~									~~1 kg (2.2 lb)~~		
~~nitric acid (65%)~~	~~HNO_3~~	~~liquid~~		-	-	-	-	-	-	-	~~26 L (6.9 gal)~~	-	-
~~ethanol (100%)~~	~~C_2H_6O~~	~~liquid~~		-	-	-	-	-	-	-	~~5 L (1.3 gal)~~	-	-
~~hydrogen peroxide (30%)~~	~~H_2O_2~~	~~liquid~~		-	-	-	-	-	-	-	~~4 L (1.1 gal)~~	-	-
~~acetone~~	~~C_3H_6O~~	~~liquid~~		-	-	-	-	-	-	-	~~27 L 7.1 gal)~~	-	-

~~Table 2.1-5 Chemicals – Cylinder Receipt and Dispatch Building~~

~~CHEMICAL/PRODUCT~~			~~INVENTORY BY LOCATION~~										~~REMARKS~~
~~NAME~~	~~FORMULA~~	~~PHYSICAL STATE~~	~~CONTAINER STORAGE~~	~~Contaminated Material Handling Room~~	~~VENTILATED ROOM~~	~~DECONTAMINATION WORKSHOP~~	~~VACUUM PUMP REBUILD WORKSHOP~~	~~LIQUID EFFLUENT COLLECTION AND TREATMENT SYSTEM~~	~~SOLID WASTE COLLECTION SYSTEM~~	~~GASEOUS EFFLUENT VENT SYSTEM (CRDB)~~	~~CHEMICAL LABORATORY~~	~~MASS SPECTROMETRY LABORATORY~~	
~~toluene~~	~~C_7H_8~~	~~liquid~~		-	-	-	-	-	-	-	~~2 L (0.5 gal)~~	-	-
~~petroleum ether~~	-	~~liquid~~		-	-	-	-	-	-	-	~~10 L (2.6 gal)~~	-	-
~~sulfuric acid~~	~~H_2SO_4~~	~~liquid~~		-	-	-	-	-	-	-	~~10 L 2.6 gal)~~	-	-
~~phosphoric acid~~	~~H_3PO_4~~	~~liquid~~		-	-	-	-	-	-	-	~~44 L (11.6 gal)~~	-	-
~~sodium hydroxide (0.1N)~~	~~NaOH~~	~~liquid~~									~~5 L (1.3 gal)~~		
~~PFPE oil (e.g., Fomblin, Tyreno)~~		~~Liquid~~				~~10 L (2.6 gal)~~	~~130 L (34.3 gal)~~						
~~PFPE oil sludge~~		~~Liquid~~				~~10 L (2.6 gal)~~							
~~Evaporator / dryer sludge~~		~~Liquid~~						~~Container~~	~~Container~~				~~See Note 2~~
~~Precipitator sludge~~		~~Liquid~~						~~Container~~	~~Container~~				~~See Note 2~~
~~Degreaser sludge~~		~~Liquid~~						~~Container~~	~~Container~~				~~See Note 2~~
~~Hydrocarbon sludge~~		~~Liquid~~							~~10 kg (22.1 lb)~~				
~~Floor wash water~~		~~Liquid~~			~~40 L (10.6 gal)~~	~~40 L (10.6 gal)~~							

Table 2.1-5 Chemicals – Cylinder Receipt and Dispatch Building

CHEMICAL/PRODUCT			INVENTORY BY LOCATION										REMARKS
NAME	FORMULA	PHYSICAL STATE	CONTAINER STORAGE	Contaminated Material Handling Room	VENTILATED ROOM	DECONTAMINATION WORKSHOP	VACUUM PUMP REBUILD WORKSHOP	LIQUID EFFLUENT COLLECTION AND TREATMENT SYSTEM	SOLID WASTE COLLECTION SYSTEM	GASEOUS EFFLUENT VENT SYSTEM (CRDB)	CHEMICAL LABORATORY	MASS SPECTROMETRY LABORATORY	
Activated carbon (impregnated with potassium carbonate/potassium hydroxide)	C	Granules	13.7 kg (28.7 kg)		10 kg & 210 L (22.1 lb & 55.4 gal)		20 kg (22.1 lb)		50 kg (110 lb)				
aluminum oxide	Al_2O_3	granules	23 kg (50.7 lb)	-	40 kg & 210 L (88.2 lb & 55.4 gal)	-	20 kg (44.1 lb)	-	360 kg (794 lb)	-	-	-	-
citric acid, 5-10%	-	solution		-	-	800 L (211 gal)	-	-	-	-	-	-	-
citric acid, waste	-	solution		-	-			1325 L (350 gal)	-	-	-	-	-
gaseous nitrogen	N_2	gas		-	piping	-	-	-	-	-	piping	-	-
shot blaster media		powder					bag						
miscellaneous effluent								1,325 L (350 gal)					
hand wash/shower water								45,426 L (11,992 gal)					
ion exchange resin	-	solid		-	-	-	-	0.8 m^3 (28.2 ft^3)	0.8 m^3 (28.2 ft^3)	-	-	-	-
filters, radioactive		solid							10,244 kg (22,588 lb)				

~~Table 2.1-5 Chemicals – Cylinder Receipt and Dispatch Building~~

CHEMICAL/PRODUCT			INVENTORY BY LOCATION										REMARKS
NAME	FORMULA	PHYSICAL STATE	CONTAINER STORAGE	Contaminated Material Handling Room	VENTILATED ROOM	DECONTAMINATION WORKSHOP	VACUUM PUMP REBUILD WORKSHOP	LIQUID EFFLUENT COLLECTION AND TREATMENT SYSTEM	SOLID WASTE COLLECTION SYSTEM	GASEOUS EFFLUENT VENT SYSTEM (CRDB)	CHEMICAL LABORATORY	MASS SPECTROMETRY LABORATORY	
~~filters, industrial~~		~~solid~~							~~26,800 kg (54,094 lb)~~				
~~Activated carbon/potassium carbonate/potassium hydroxide~~	-	~~granules~~		-	-	-	-	-	-	~~Filters~~	-	-	-
~~Miscellaneous samples~~		~~Liquid~~									~~Multiple 0.5 kg (1.1)~~		
~~Standard solutions~~	~~25 elements~~	~~Liquid~~									~~2.5 L (0.7 gal)~~		-
~~argon~~	~~Ar~~	~~Gas~~										~~190 L (50.2 gal)~~	
~~liquid nitrogen~~	~~N_2~~	~~liquid~~		-	-	-	-	-	-	-	~~2 L (0.5 gal)~~	-	
~~diatomaceous earth~~		~~powder~~		-	-	~~10kg (22.1 lb)~~	-	-	-	-		-	
~~sodium carbonate~~	~~Na_2CO_3~~	~~granules~~		-	-	~~10kg (22.1 lb)~~	-	-	-	-		-	
~~Laboratory chemicals~~	~~Various~~	~~Liquid/solid~~									~~10 kg (22.1 lb)~~		
~~Scrap metals~~		~~solid~~							~~2,000 kg (4,410 lb)~~				
~~Non-metallic waste (plastic)~~		~~Solid~~							~~1,000 kg (2,205 lb)~~				

Table 2.1-5 Chemicals – Cylinder Receipt and Dispatch Building

CHEMICAL/PRODUCT			INVENTORY BY LOCATION										REMARKS
NAME	FORMULA	PHYSICAL STATE	CONTAINER STORAGE	Contaminated Material Handling Room	VENTILATED ROOM	DECONTAMINATION WORKSHOP	VACUUM PUMP REBUILD WORKSHOP	LIQUID EFFLUENT COLLECTION AND TREATMENT SYSTEM	SOLID WASTE COLLECTION SYSTEM	GASEOUS EFFLUENT VENT SYSTEM (CRDB)	CHEMICAL LABORATORY	MASS SPECTROMETRY LABORATORY	
R-407C (Refrigerant Blend)	CH_2F_2 / CHF_2CF_3 / CH_2CF_3	gas/liquid											
R-410A (Refrigerant Blend)	CH_2F_2 / CHF_2CF_3	gas/liquid											

1. The degreaser and precipitation sludge have a combined estimated total of 400 kg (882 lb) solids including 57 kg (126 lb) of uranium annually. The evaporator/dryer sludge is not included and is estimated to be a small quantity which will be determined in final design.

2. For the Solid Waste Collection System, combustible solid waste includes paper.

3. Many waste streams including gaseous effluent, liquid waste and solid waste will contain some level of residual uranium compounds, not within toxic concentrations. The radiation hazard is listed separately as residual uranium compounds.

4. It is not normally expected that NaF traps will be located in the Ventilated Room. However, in the unlikely event of process upset resulting in the need to change out the affected NaF traps, this activity will be accomplished in the Ventilated Room with the resulting waste going to the Solid Waste Collection Room.

5. The CRDB can house up to 210 feed cylinders [122 cm (48 in) diameter] and 110 product cylinders [76 cm (30 in) diameter].

Table 2.1-6Chemicals – Utilities

CHEMICAL/PRODUCT			INVENTORY BY LOCATION			REMARKS
NAME	FORMULA	PHYSICAL STATE	NITROGEN SYSTEM	ADDITIONAL UTILITIES SYSTEMS	ELECTRICAL SYSTEM	
Diesel fuel		liquid			69,803 L (18,440 gal)	2 storage tanks at 30,283 L (8,000 gal) each – CUB (outdoors) 2 day tanks at 833 L (220 gal) each – CUB (indoors) 1 storage tank at 5,678 l (1,500 gal) – TSB (outdoors) 1 storage tank 1,893 L (500 gal) – Fire Water Pump House (indoors)
cryogenic nitrogen (outdoors)	N_2	liquid	124,919 L (33,000 gal)			3 Tanks 34,069 L (9,000 gal) – TSB/CRDB & SBMs 1 Tank at 22,712 L (6,000 gal) – CAB
gaseous nitrogen	N_2	gas	Piping			
miscellaneous chemicals				Various		Note 1

Notes:

1. Miscellaneous chemicals are required for normal operations of utility systems and are assumed to be non-hazardous.

Table 2.1-17 Summary of Environmental Impacts For The Proposed Action

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Environmental Impact	Proposed Action[1]	ER Reference Section
Land Use	Minimal considering more than half the site will remain undeveloped and current activities on nearby properties.	4.1
Transportation	~1,500 radiological and 2,800 non-radiological additional heavy truck shipments/yr; traffic patterns impact predicted to be inconsequential.	4.2
Geology and Soils	Minimal; potential, short-term erosion during construction, but enhanced afterwards due to soil stabilization.	4.3
Water Resources	None from operation to surface or groundwater; stormwater (174,100 m^3/yr; 46 Mgal/yr) from the two stormwater runoff basins, controlled by NPDES permit.	4.4
Ecological Resources	Minimal impact. Not RTE species present.	4.5
Air Quality	Minimal; vehicle and fugitive emissions less than NAAQS regulatory limits during construction or operation.	4.6
Noise	Not significant; typically should remain within HUD guidelines of 65 dBA L_{dn} and EPA limit of 55 dBA L_{dn}	4.7
Historic and Cultural	Minimal in that all NHPR sites can be avoided or mitigated, if required.	4.8
Visual/Scenic	None out of character with existing site features.	4.9
Socioeconomic	Positive impact to economy; minimal impact to local public services.	4.10
Environmental Justice	No disproportionate impact.	4.11
Public and Occupational Exposure	Minimal; dose equivalents below NRC and EPA regulatory limits.	4.12
Waste Management (Rad/NonRad)	Within offsite licensed facility capacities; reduced waste streams due to new and high efficient technology.	4.13
- Gaseous	Well below regulatory limits/permits.	3.12
- Liquid	2,130 m^3/yr (562,631 gal/yr)	3.12
- Solid	86,950 kg/yr (191,800 lb/yr) of low-level wastes[2]	3.12
- Mixed	50 kg/yr (110 lb/yr)	3.12
- Hazardous	1,770 kg/yr (3,930 lb/yr)	3.12
- Non-hazardous	172,500 kg/yr (380,400 lb/yr)	3.12

1 Projected impacts are based on preliminary design and assumed to be bounding. Impacts are expected to occur for the life of the plant.

2 Excludes depleted UF_6.

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Table 2.1-28 Matrix Of Results From First Phase Screening

Site	Criterion 1 Seismology/Geology[1]	Criterion 2 Site Characterization Surveys[2]	Criterion 3 Size of Plot[3]	Criterion 4 Land Not Contaminated[4]	Criterion 5 Moderate Climate[5]	Criterion 6 Redundant Electrical Power[6]
Ambrosia Lake, NM	No Go	Go	Go	Go	Acceptable	Go
Barnwell, SC	No Go	Go	Go	Go	Acceptable	Go
Bellefonte, AL	Go	Go	Go	Go	Acceptable	Go
Carlsbad, NM	Go	Go	Go	Go	Acceptable	Go
Clinch River Industrial Site, TN	No Go	Go	No Go	Go	Acceptable	Go
Columbia, SC	No Go	No Go	Go	Go	Acceptable	Go
Eddy County, NM	Go	Go	Go	Go	Acceptable	Go
Erwin, TN	Go	Go	No Go	Go	Acceptable	Go
Hartsville, TN	Go	Go	Go	Go	Acceptable	Go
Lea County, NM	Go	Go	Go	Go	Acceptable	Go
Metropolis, IL	No Go	Go	No Go	Go	Acceptable	Go
Paducah, KY	No Go	Go	Go	Go	Acceptable	Go
Portsmouth, OH	Go	Go	Go	Go	Acceptable	Go
Richland, WA	No Go	Go	Go	Go	Acceptable	Go
Wilmington, NC	Go	Not Evaluated[7]	No Go	Not Evaluated[7]	Acceptable	Go

Notes:

[1]Go/No Go Criteria: Peak ground acceleration (PGA) 0.04 – 0.08 g_a, ground movements ≤1 mm, and no capable fault within 8-km (5-mi) radius of site
[2]Go/No Go Criterion: Not located within 500-year flood plain
[3]Go/No Go Criterion: Supports a rectangular footprint of approximately 800 m (2,625 ft) by 600 m (1,969 ft) and expandable for a 6,000 tSW plant
[4]Go/No Go Criteria: Site not contaminated at levels that would inhibit licensing or property transfer, or would require remediation
[5]No Essential Subcriterion
[6]Go/No Go Criterion: Redundant electrical capability
[7]A site was not provided for evaluation.

Gray shading indicates site did not pass the initial phase screening.

Table 2.1-39 Screening Criteria (Subsequent to First Screening)

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Criteria	Weight	Subcriteria (Weight)
OPERATIONAL REQUIREMENTS	**100**	
Acceptable Seismology/Geology	100	
Essential (Go/No Go) Criteria:		
• 1 in 500 year event with a peak horizontal ground acceleration no greater than the range of 0.04 – 0.08g_a (dependent upon the frequency content of the typical response spectra).		NA – Go/No Go without scale
• Ground movements < 1mm (0.04 in).		NA – Go/No Go without scale
• No capable fault (per NRC definition) within 8 km (5-mi) radius of site.		NA – Go/No Go without scale
Desirable (Non-Exclusionary) Criteria:		
• **Liquefaction Potential** – Minimal liquefiable materials present.		50
• **Peak Ground Acceleration** – Lower PGA preferred.		100
• **Survey Available** – Well documented and up-to-date seismological surveys are available.		60
• **Karstification** – Low or no potential for underlying karstification.		80
• **Rock Excavation** – Minimal amount of rock excavation required.		30
• **Differential settlement** – Low differential settlement to minimize required ground improvements.		50
• **Allowable bearing** – Sufficient allowable bearing to minimize required ground improvements.		30
Size of Plot (on existing site or available within new boundary)	80	
Essential (Go/No Go) Criteria: • Site size supports a rectangular footprint of approximately 800 m (2,625 ft) x 600 m (1,969 ft) for a 3 million SWU facility.		NA – Go/No Go without scale
• Future expansion capability exists for a 6 million SWU plant. (At this time, there is no intention to license, construct or operate a greater than 3 million SWU plant.)		NA – Go/No Go without scale
Desirable (Non-Exclusionary) Critiera): • **Future Expansion** – Degree of capability to support future expansion beyond a 6 million SWU facility (approximately 1,600 m (5,250 ft) x 600 m (1,969 ft). (At this time, there is no intention to license, construct or operate a greater than 3 million SWU plant.)		100
• **Buffer Area** – Extent of buffer area between site and populated areas.		80
• **Plant Layout** - Site requires minimal or no adjustment to ideal plant layout to fit site and terrain.		90
• **Construction Laydown** – Accommodates construction laydown areas and temporary facilities without limiting plant layout.		40
• **Borrow/Fill** - Borrow/fill requirements can be met onsite or close by. Site preparation costs due to variances in site topography are optimal (cut/fill balanced without significant earthmoving requirements or use of borrow pits). Site topography optimizes the overall usability of the site for the site footprint, transportation access, and drainage.		30
Redundant Electrical Power Supply Essential (Go/No Go) Criteria:	75	
• Dual dedicated power supply on separate feeders with capability of delivering 20 MVA for a 3 million SWU facility.		NA – Go/No Go without scale

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Table 2.1-39 Screening Criteria (Subsequent to First Screening)

Criteria	Weight	Subcriteria (Weight)
Desirable (Non-Exclusionary) Criteria: • **Transmission feeders** – Transmission feeders can supply power requirements for a 6 million SWU facility. (At this time, there is no intention to license, construct or operate a greater than 3 milllion SWU plant.)		50
• **Government Cost Sharing** – Local utility and/or government willing to cost share in capital costs associated with power supply to the facility substation.		10
Factors to evaluate include: -Utility willingness to construct feed lines. -Utility willingness to construct substation. -Utility willingness to maintain feeder and substation.		
• **Optimal Rate Structure** - Power provider willingness to provide optimal rate structure as a favored client. Factors to evaluate include:		60
-Optimal rate agreements with load factors, transmission costs, equipment maintenance, and repair, etc. that are advantageous to the plant. -Preferred customer status. -Significant break in off-peak rates. Guarantees for quality and reliability.		
• **Quality** – Power supply has a guaranteed availability rate of greater than 99.5% and a +/-5% voltage regulation and willingness of the supplier to guarantee quality of service. Factors to consider:		100
-Historical performance of utility, including down times. -Performance in restoration after severe weather outages. -Historical voltage regulation of system. -Capability to provide all power without buying from other suppliers. - Historical delivery performance to production and manufacturing facilities in the area.		
Water Supply	10	NA
Desirable (Non-Exclusionary) Criteria: Groundwater or water from another source is readily available to provide ample water supply to the facility for both potable and process uses.		
ENVIRONMENTAL ACCEPTABILITY	**80**	
Site Characterization Surveys and Availability	**100**	
Essential (Go/No Go) Criteria: • Site is not within the 500-year flood plain.		NA – Go/No Go without scale
Desirable (Non-Exclusionary) Criteria): • **Existing surveys** – Existing quality surveys are available for:		100
- Hydrology - Meteorology (rain, wind, tornadoes, temperatures, etc.) - Topography - Archeology - Endangered species		80
• **Protected Species** - Site is not a habitat for federal listed threatened or endangered species.		80
• **Archeology/Cultural** - Low probability of archeological/cultural resources.		70

Table 2.1-39 Screening Criteria (Subsequent to First Screening)

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Criteria	Weight	Subcriteria (Weight)
• **Environmental Justice** - Low probability of environmental justice issues.		90
• **Protected Properties** - Adjacent properties have no areas designated as protected for wildlife or vegetation that would be adversely affected by the facility.		20
• **NPDES Permits** - Waste water discharge permit (NPDES) readily achievable for projected discharge of the plant.		70
• **Air Permitting** - Air Permit/NESHAPS readily achievable for projected discharge of both a 3 million SWU and a 6 million SWU facility. (At this time, there is no intention to license, construct or operate a greater than 3 million SWU plant.)		70
• **Wetlands and Other Waters** – Few or no areas designated as wetlands. No requests for wetlands mitigation required.		70
• **Wind** - Low probability of high/excessive winds. Factors to consider include:		50
- Proximity of hurricane-prone zones - Annual frequency of wind gusts greater than 80 km/hr (50 mi/hr) exceeding 10 - Design wind speed (176-160 km/hr; 160-112 km/hr; <112 km/hr) (110-100 mi/hr, 100-70 mi/hr; <70 mi/hr) - Tornado frequency		
• **New Radiological Source** - New plant adds no additional radiological sources to the environment.		10
• **Fire** - Minimal risk from grass or forest fire events. Factors to consider include:		10
- Proximity of fuel sources - Drought conditions - Wind		
• **Ponding** - Natural site contours minimize potential of localized flooding or ponding Includes evaluation of:		80
- Stream beds - Natural and potential runoffs - Runoff from adjacent areas - Storm drainage systems in place - Requirements for retention ponds		
• **Slides** - No/low potential for rockslides, mudslides, or other debris flow.		50
Includes evaluation of: - Slopes on or near facility greater than 9.1 m (30 ft) in height or near vertical face (greater than 60%) with no protective ground cover. - Possibility of upstream failure of dams, lakes, or ponds.		
Land Not Contaminated Through Previous Use	**90**	
Essential (Go/No Go Criteria): • Site is not contaminated with radiological material in soil or groundwater to a level that would inhibit licensing or transfer of property with clear identification of liabilities.		NA – Go/No Go without scale
• Site is not identified as a CERCLA or RCRA site contaminated with hazardous wastes or materials.		NA – Go/No Go without scale
• Site does not have contamination that would require remediation prior to construction.		NA – Go/No Go without scale

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Table 2.1-39 Screening Criteria (Subsequent to First Screening)

Criteria	Weight	Subcriteria (Weight)
Desirable (Non-Exclusionary) Criteria: • **Documentation** - Well documented site surveys and monitoring for radiological, chemical, and hazardous material contamination.		50
• **Neighboring Plume** - No facility in the area with existing release plume (air or water) of hazardous material or radiation release that includes site.		100
• **Future Migration** – Future migration of contamination from adjoining or nearby sites negligible.		80
Discharge Routes	40	
Desirable (Non-Exclusionary) Criteria: • **Facility Discharges** - Plant discharge and runoff controls are economically implemented for minimal affect to the existing environment.		100
• **Differentiation** - For sites with extant nuclear facilities, facility discharges are readily identifiable from extant facility discharges.		50
Proximity of Hazardous Operations/High Risk Facilities	30	
Desirable (Non-Exclusionary) Criteria: • **Hazardous Chemical Facility** – Distance from any facility storing, handling or processing large quantities of hazardous chemicals.		100
• **Propane Pipeline** – Distance from large propane pipeline.		100
• **Airport** - Site is not located within 16 km (10 mi) of commercial airport.		60
• **General Emergency Area** - Site should be outside the general emergency area for any nearby hazardous operations facility (other than extant nuclear related facility)		60
• **Air Quality** - Site should not be located near paper mill or other operating/manufacturing facility that inhibits site air quality. Site has high level of ambient air quality. No facility within 8 km (5 mi) of site has significant air discharge of material affecting quality. Terrain does not limit air dispersal. Community air quality is significantly within regulations at the present time.		30
Ease of Decommissioning	20	NA
Desirable (Non-Exclusionary) Criteria: • **Ease of Decommissioning** - Site characteristics (e.g., hydrology) do not negatively affect D&D activities.		
Adjacent Site's Medium/Long-Term Plans (e.g., construction, demolition, site restoration)	10	NA
Desirable (Non-Exclusionary) Criteria: • **Adjacent Site's Long-Term Plans** - Planned major construction activities in adjacent sites are minimal over the next 10 years. No heavy industrial activities planned within 1.6 km (1 mi) of the site boundary.		
SCHEDULE FOR COMMENCING OPERATIONS	70	
Political Support	100	
Essential (Go/No Go) Criteria: • Federal, State, and local government officials do not oppose the facility.		NA – Go/No Go without scale
Desirable (Non-Exclusionary) Criteria: • **Advocates** - Federal, State, and local officials are advocates for the facility.		100
• **Incentives** - Federal, State, and/or local governments offer tax breaks and/or other incentives for the construction and operation of the facility.		50

Table 2.1-39 Screening Criteria (Subsequent to First Screening)

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Criteria	Weight	Subcriteria (Weight)
• **Road Improvements** - Road upgrades are financed by the Federal, State, and/or local governments.		10
• **Cooperation in Permitting** – Cooperation and assistance by Federal, State, and local government in obtaining necessary easements, leases, construction permits, operating permits, and disposition of low-level waste.		50
Public Support	**100**	
Desirable (Non-Exclusionary) Criteria: • **Community Support** - Majority of community merchants and citizens support the construction and operation of the facility in their locale.		90
• **Labor Support** - Local labor force supports the facility.		60
On or Near an Existing Nuclear Facility Desirable (Non-Exclusionary) Criteria: • **On or Near an Existing Nuclear Facility** – Located on or near a site with an existing or previous NRC license.	**80**	**NA**
Moderate Climate Desirable (Non-Exclusionary) Criteria: • Site construction delays due to weather conditions are minimal and average 15 days or less per year, considering: - Temperature (range and average) - Rainfall (total and frequency) - Ice/Sleet potential - Snowfall (total and accumulation)	**80**	**NA**
Availability of Construction Labor Force	**75**	
Desirable (Non-Essential) Criteria: • Sufficient Labor Force – Local area has sufficient skilled construction labor pool to construct the facility on desired schedule. Craft requirements include all major construction crafts (e.g., steelworkers, electricians, pipefitters, operators, finishers, etc.).		100
• Competing Projects - No major construction projects in the area competing for the labor pool resources that would significantly limit resource availability..		80
• Labor Support - If construction crafts at the site are provided by union personnel, commitment by labor union business agents to support the plant construction on a preferential basis. Willingness of unions to sign a Project Labor Agreement that is owner/client protective. • Craft Apprenticeship - Existing craft apprenticeship programs.		60 10
• Support for Travelers - If construction crafts at the site are provided by union personnel, union support for use of travelers for short-term assignments in areas of critical skill shortages.		30
OPERATIONAL EFFICIENCIES	**60**	
Availability of Skilled and Flexible Workforce for Plant Operations	**100**	
Desirable (Non-Exclusionary) Criteria: • **Sufficient Labor Pool** - Sufficient supply of qualified labor that can readily be trained for plant operations, maintenance, technical support, and waste management.		100
• **Technical School** - Community has technical school, technical/community college, or local nuclear facility that is willing to provide candidates and training classes for the plant operations.		50

Table 2.1-39 Screening Criteria (Subsequent to First Screening)

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Criteria	Weight	Subcriteria (Weight)
• **Multi-task Employees** - Local labor rules do not prohibit or discourage multi-tasking of employees.		50
Extant Nuclear Site	80	
Desirable (Non-Exclusionary) Criteria: • **Supply Chain** - Supply chain integration and optimization by co-location with a fuel fabrication facility or a UF_6 production site.		90
• **Nuclear Infrastructure** - Existing nuclear infrastructure that can be used to support the project, including security facilities and systems, waste treatment/disposal facilities, contaminated material handling, emergency response resources and equipment, medical dispensary, etc., that might be shared.		100
• **Non-nuclear Infrastructure** - Existing non-nuclear infrastructure (e.g., dedicated water supply, water treatment facilities, steam facilities, etc.) that can be used for the new facility.		70
• **Technical resources** - Specialized technical resources that can be used on a limited basis.		40
Availability of Good Transport Routes (for centrifuge deliveries from Europe and UF_6 cylinder transportation)	60	
Desirable (Non-Exclusionary) Criteria: • **Rail** - Railhead located at the site.		10
• **Access to Highways** - Close proximity access to controlled access highways (parkways) and/or interstate highways.		100
• **Construction Traffic** - Traffic capacity for construction and operation activities with minimal improvements.		10
• **Transport Routes** - Optimal and efficient highway and/or rail for UF_6 feed suppliers (environmental impact, safety, costs, and security) to fuel fabricators (environmental impact, safety, costs, and security).		10
Disposal of Operational Low-Level Waste	60	NA
Desirable (Non-Exclusionary) Criteria: • **Disposal of Low-Level Waste** – Site-specific issues (e.g., availability/access to nearby facilities for disposal of low-level waste, transportation modes, etc.) do not impede disposal of low-level waste.		
Amenities for Workforce	20	
Desirable (Non-Exclusionary) Criteria: • **Housing and Recreation** - Housing, apartments, hotels, and lodging available for seconded workforce. Recreational facilities (entertainment, shopping, and restaurants) available in or near the area.		100
• **Culture** – Cultural activities available at or near the area.		50

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Table 2.1-410 Scoring Summary

Weight	Major Objective	Weight	Criteria	Weight	Subcriteria	Bellefonte	Carlsbad	Eddy County	Hartsville	Lea County	Portsmouth
100	**Operational Requirements**										
		100	Acceptable Seismology/Geology								
				50	Liquefaction Potential	8	10	10	10	10	8
				100	Peak Ground Acceleration	7	10	10	10	10	10
				60	Surveys Available	7	5	10	7	5	7
				80	Karstification	0	10	10	0	10	8
				30	Rock Excavation	8	6	6	5	6	10
				50	Differential Settlement	5	8	8	10	8	5
				30	Allowable Bearing	5	8	8	10	8	7
		80	Size of Plot								
				100	Future Expansion	8	9	10	10	10	8
				80	Buffer Area	8	10	10	10	10	9
				90	Plant Layout	8	9	10	8	10	8
				40	Construction Laydown	10	10	10	10	10	10
				30	Borrow/Fill	10	10	10	10	10	7
		75	Redundant Electrical Power Supply								
				50	Transmission Feeders	10	7	10	10	10	7
				10	Govt. Cost Sharing	9	7	10	10	10	5
				60	Optimal Rate Structure	7	5	7	7	7	5
				100	Quality	10	5	10	10	10	10

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Table 2.1-4~~10~~ Scoring Summary

Weight	Major Objective	Weight	Criteria	Weight	Subcriteria	Bellefonte	Carlsbad	Eddy County	Hartsville	Lea County	Portsmouth
		10	Water Supply		Water Supply	10	9	8	10	7	9
80	**Environmental Acceptability**										
		100	Environmental Protection								
				100	Existing Surveys	3	0	7	9	4	7
				80	Protected Species	10	5	10	10	10	8
				70	Archeology/ Cultural	7	3	5	10	5	5
				90	Environmental Justice	9	7	7	10	7	10
				20	Protected Properties	7	10	10	5	10	9
				70	NPDES Permits	7	7	10	7	10	7
				70	Air Permitting	10	10	10	10	8	10
				70	Wetlands and Other Waters	10	5	10	9	8	2
				50	Wind	10	7	7	10	7	10
				10	New Radiological Hazard	0	0	7	0	6	10
				10	Fire	10	10	10	8	10	8
				80	Ponding	10	10	10	10	10	9
				50	Slides	10	10	10	10	10	10
		90	Land not Contaminated								
				50	Documentation	9	0	8	10	5	5
				100	Neighboring Plume	8	10	10	10	10	8
				80	Future Migration	9.5	10	10	10	10	9
		40	Discharge Routes								
				100	Facility Discharges	9	8	10	9	10	5

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Table 2.1-4~~10~~ Scoring Summary

Weight	Major Objective	Weight	Criteria	Weight	Subcriteria	Bellefonte	Carlsbad	Eddy County	Hartsville	Lea County	Portsmouth
				50	Differentiation	10	10	10	10	10	7
		30	Proximity of Hazardous Operations								
				100	Hazardous Chemical Facility	10	5	7	10	5	10
				100	Propane Pipeline	10	10	10	10	10	10
				60	Airport	10	10	10	10	10	10
				60	General Emergency Area	10	10	10	10	10	10
				30	Air Quality	10	5	7	10	5	10
		20	Ease of Decommissioning		Ease of Decommissioning	10	10	10	10	10	9
		10	Adjacent Sites' Long-Term Plans		Adjacent Sites' Long-Term Plans	9	10	10	8	8	5
70	**Schedule for Commencing Operations**										
		100	Political Support								
				100	Advocates	9	10	10	0	10	6
				50	Incentives	8	9	10	2	10	8
				10	Road Improvements	10	10	10	10	10	8
				50	Cooperation in Permitting	9	8	8	0	10	6
		100	Public Support								
				90	Community Support	9	9	9	2	9	8
				60	Labor Supports	9	9	9	9	9	9
		80	On or Near Existing Nuclear Facility		On or Near Existing Nuclear Facility	7	0	0	10	5	10

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Table 2.1-410 Scoring Summary

Weight	Major Objective	Weight	Criteria	Weight	Subcriteria	Bellefonte	Carlsbad	Eddy County	Hartsville	Lea County	Portsmouth
		80	Moderate Climate		Moderate Climate	7	9	9	6	9	5
		75	Construction Labor Force								
				100	Sufficient Labor Force	9	7	7	9	7	9
				80	Competing Projects	10	10	10	10	10	8
				60	Labor Support	9	5	5[a]	9	5[a]	9
				10	Craft Apprenticeship	5	5	5[a]	5	5[a]	8
				30	Support for Travelers	10	10	10	10	10	8
60	**Operational Efficiencies**										
		100	Workforce for Plant Operations								
				100	Sufficient Labor Pool	9	8	8	9	8	10
				50	Technical School	9	10	10	9	8	10
				50	Multi-task Employees	9	5	5	9	5	5
		80	Extant Nuclear Site								
				90	Supply Chain	0	0	0	0	0	0
				100	Nuclear Infrastructure	0	0	8	0	5	3
				70	Non-nuclear Infrastructure	5	5	5	5	5	5
				40	Technical Resources	5	5	5	5	5	5
		60	Good Transport Routes								

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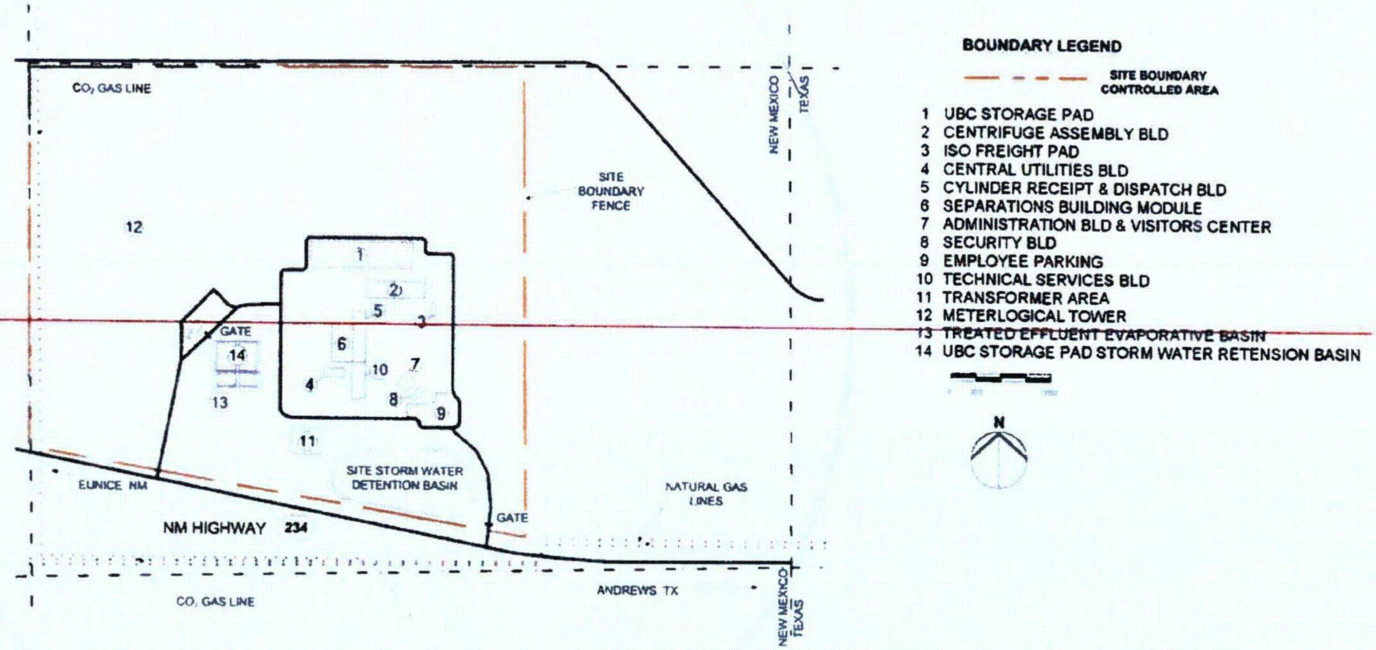
Table 2.1-~~410~~ Scoring Summary

Weight	Major Objective	Weight	Criteria	Weight	Subcriteria	Bellefonte	Carlsbad	Eddy County	Hartsville	Lea County	Portsmouth
				10	Rail	9	10	4	0	10	10
				100	Access to Highways	10	10	9	9	10	9
				10	Construction Traffic	10	10	10	7	10	8
				10	Transport Routes	9.5	2	2	10	2	8
		60	Disposal of Low-Level Waste		Disposal of Low-Level Waste	4	6	6	4	6	5

[a] The established rule for the decision-making analysis was to score a site a "5" if data were not available for evaluation.



CO_2 GAS LINE
12
SITE BOUNDARY FENCE
NEW MEXICO
TEXAS
1
2
5
3
GATE
14
6
10
7
4
8
9
13
11
SITE STORM WATER DETENTION BASIN
EUNICE NM
NM HIGHWAY 234
GATE
NATURAL GAS LINES
CO_2 GAS LINE
ANDREWS TX
NEW MEXICO
TEXAS
BOUNDARY LEGEND
SITE BOUNDARY
CONTROLLED AREA
1 UBC STORAGE PAD
2 CENTRIFUGE ASSEMBLY BLD
3 ISO FREIGHT PAD
4 CENTRAL UTILITIES BLD
5 CYLINDER RECEIPT & DISPATCH BLD
6 SEPARATIONS BUILDING MODULE
7 ADMINISTRATION BLD & VISITORS CENTER
8 SECURITY BLD
9 EMPLOYEE PARKING
10 TECHNICAL SERVICES BLD
11 TRANSFORMER AREA
12 METERLOGICAL TOWER
13 TREATED EFFLUENT EVAPORATIVE BASIN
14 UBC STORAGE PAD STORM WATER RETENSION BASIN
N

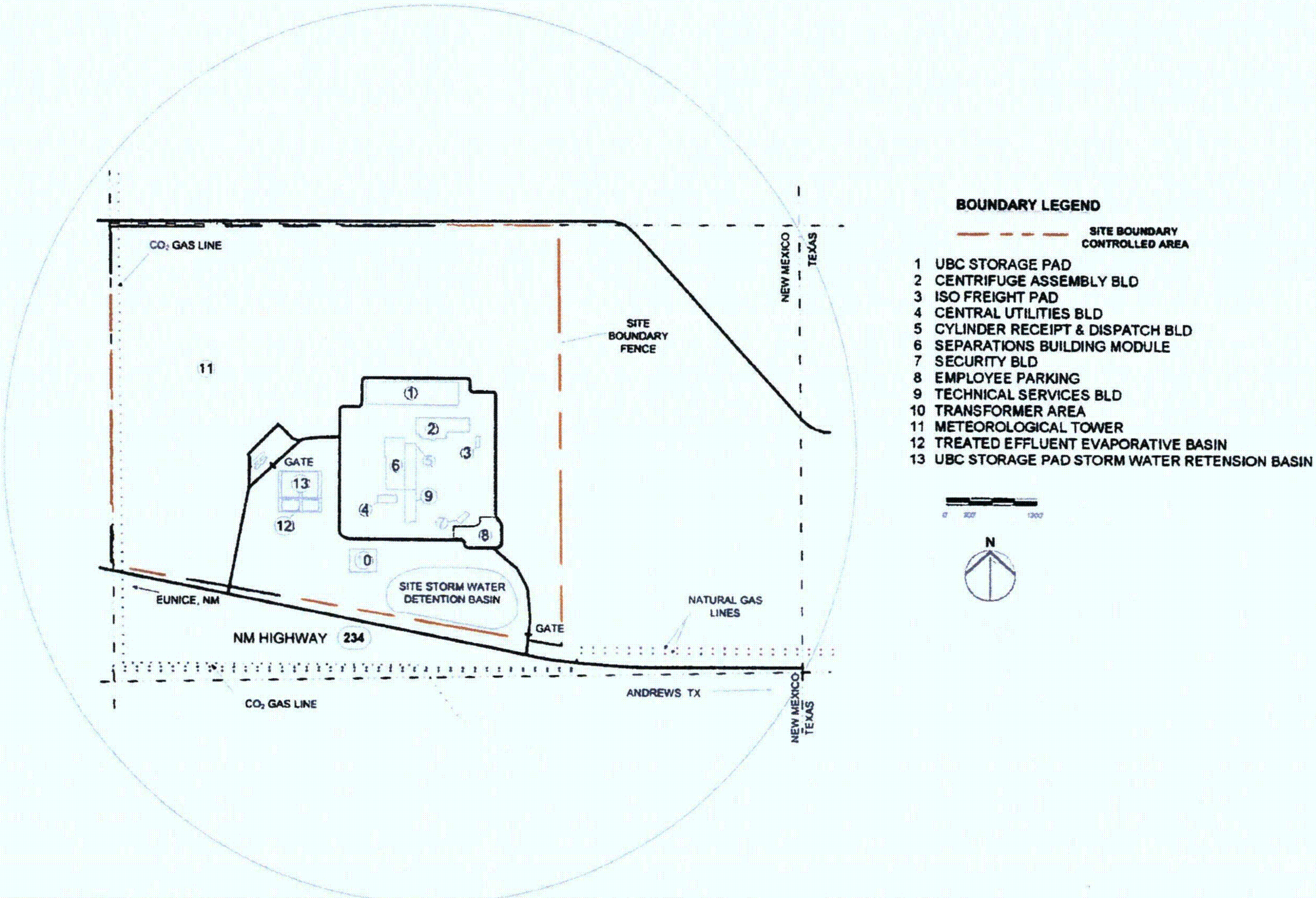
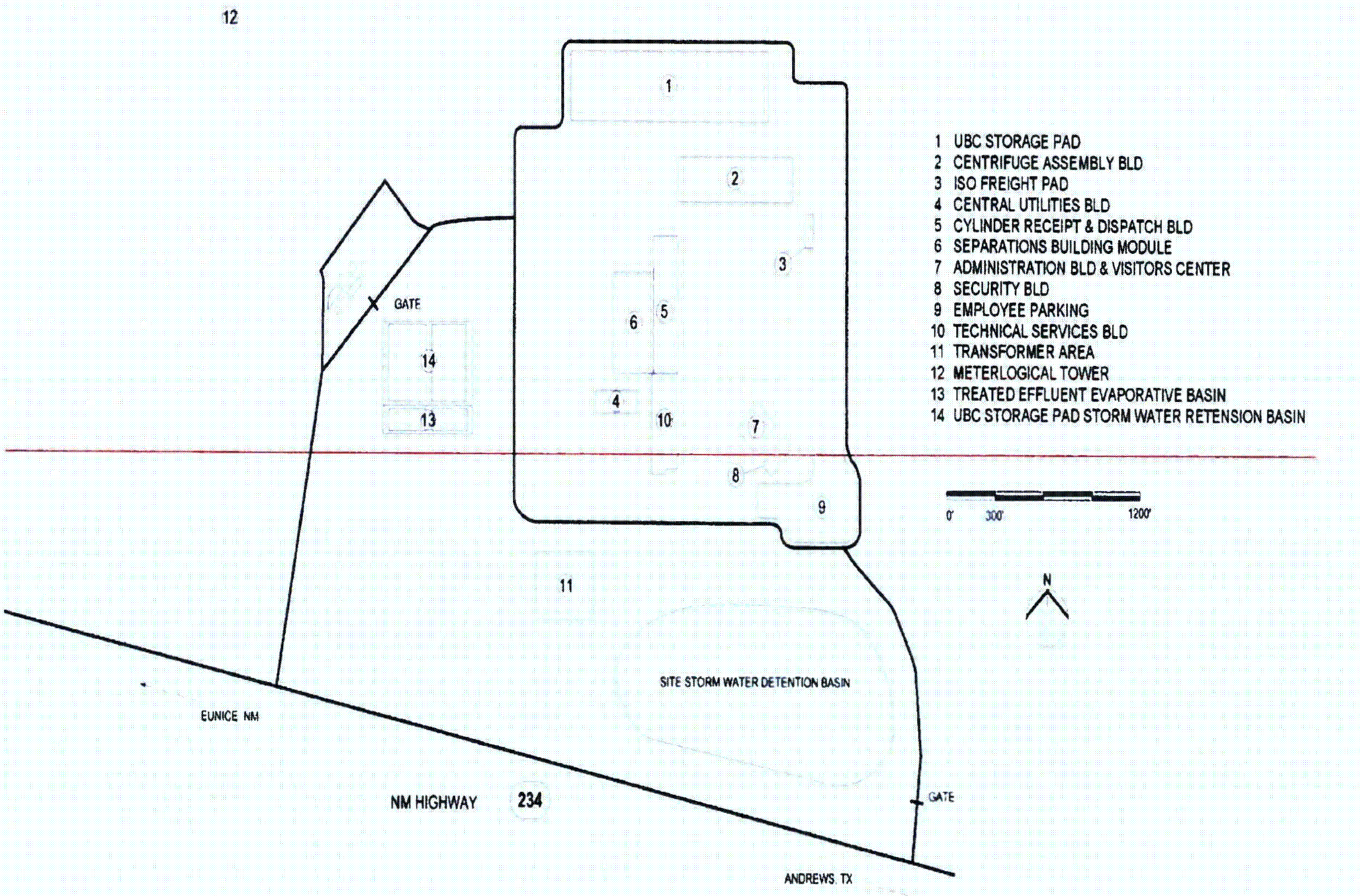


Figure 2.1-2 Site Area and Facility Layout Map 1.6-Kilometer (1-Mile Radius)


12
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14
GATE
1 UBC STORAGE PAD
2 CENTRIFUGE ASSEMBLY BLD
3 ISO FREIGHT PAD
4 CENTRAL UTILITIES BLD
5 CYLINDER RECEIPT & DISPATCH BLD
6 SEPARATIONS BUILDING MODULE
7 ADMINISTRATION BLD & VISITORS CENTER
8 SECURITY BLD
9 EMPLOYEE PARKING
10 TECHNICAL SERVICES BLD
11 TRANSFORMER AREA
12 METERLOGICAL TOWER
13 TREATED EFFLUENT EVAPORATIVE BASIN
14 UBC STORAGE PAD STORM WATER RETENSION BASIN
0' 300' 1200'
N
SITE STORM WATER DETENTION BASIN
EUNICE NM
NM HIGHWAY 234
GATE
ANDREWS, TX

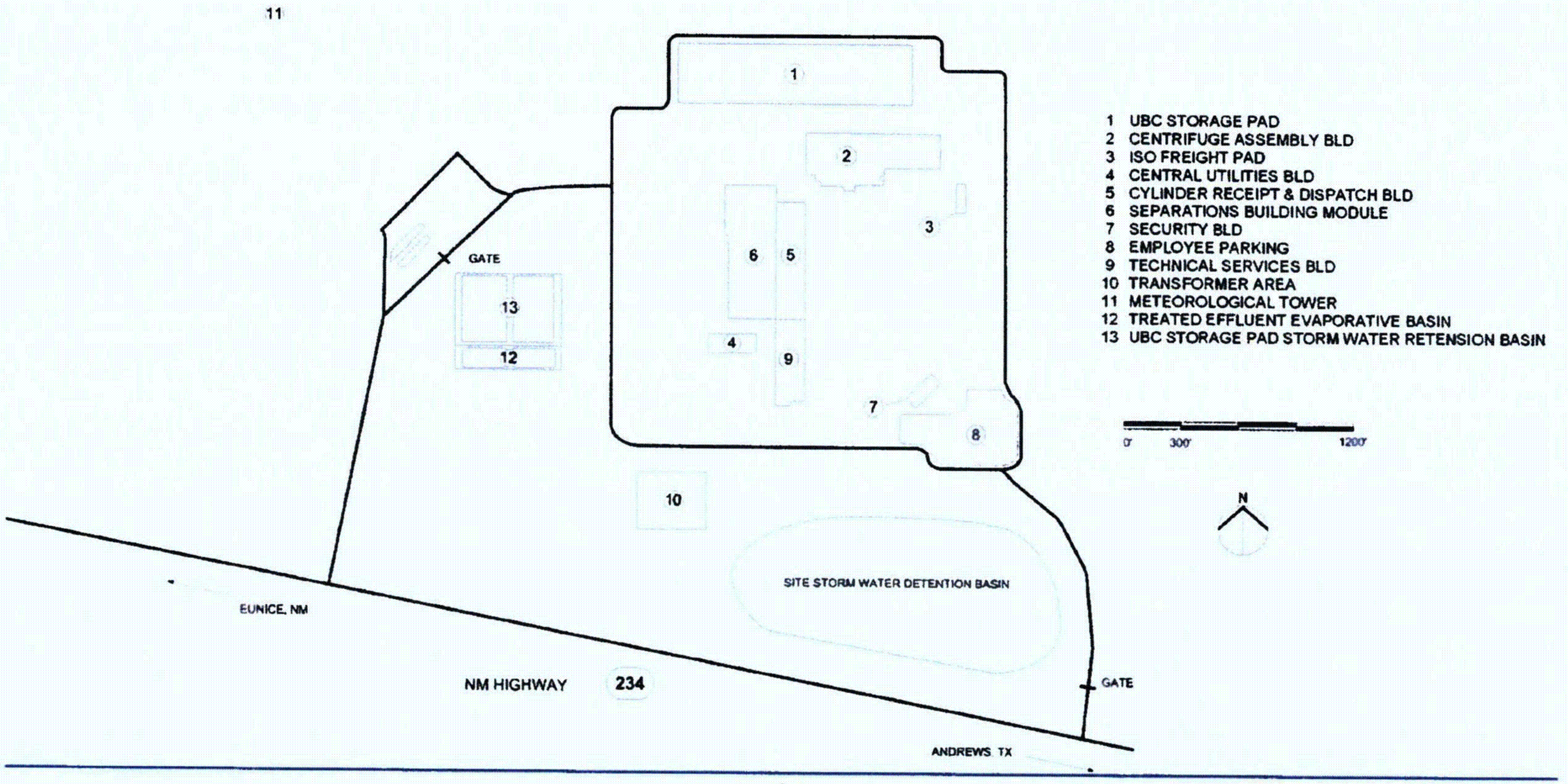
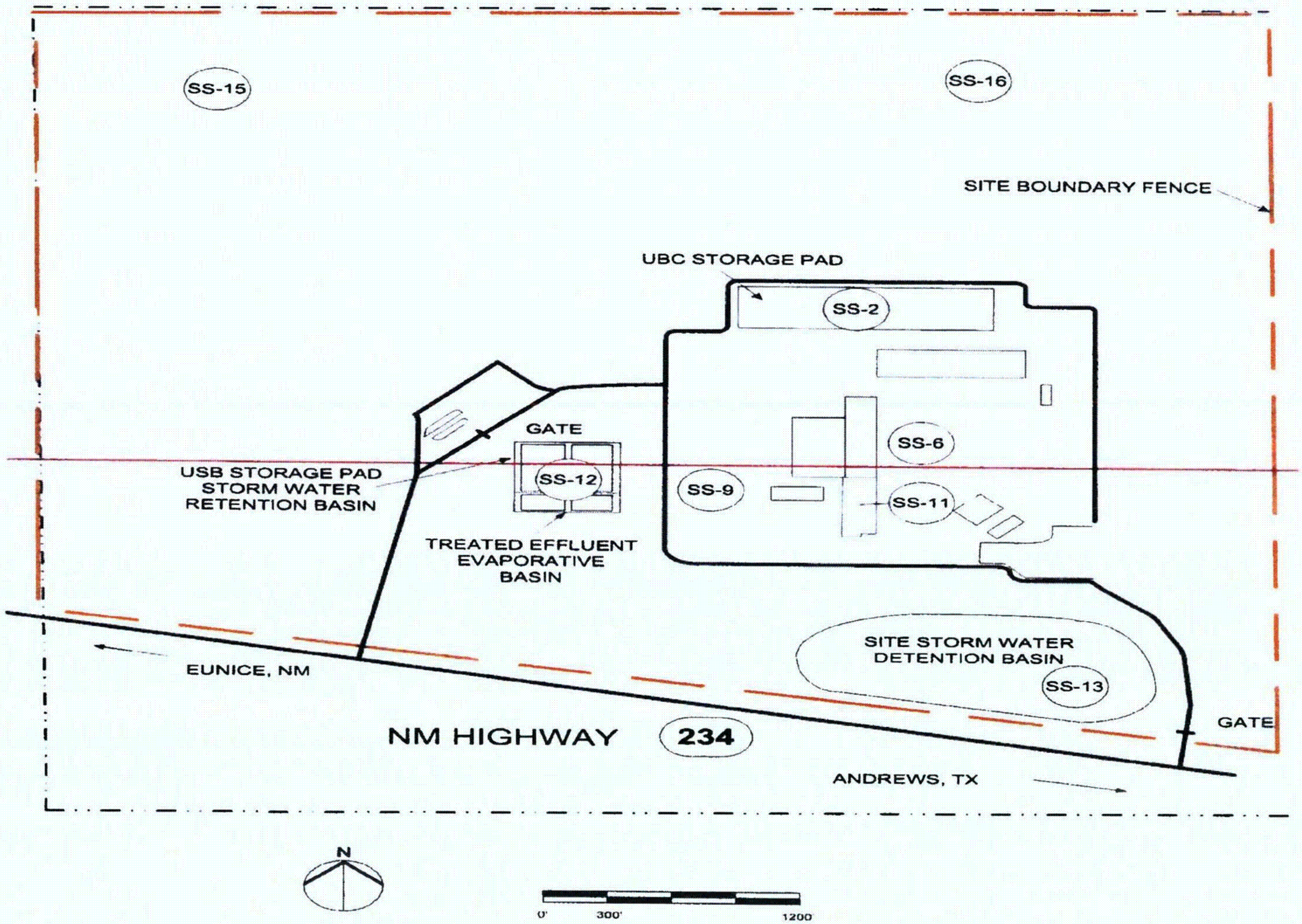


Figure 2.1-4 NEF Buildings



SS-15
SS-16
SITE BOUNDARY FENCE
UBC STORAGE PAD
SS-2
GATE
SS-6
USB STORAGE PAD
STORM WATER
RETENTION BASIN
SS-12
SS-9
SS-11
TREATED EFFLUENT
EVAPORATIVE
BASIN
SITE STORM WATER
DETENTION BASIN
SS-13
EUNICE, NM
GATE
NM HIGHWAY 234
ANDREWS, TX
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0'
300'
1200'

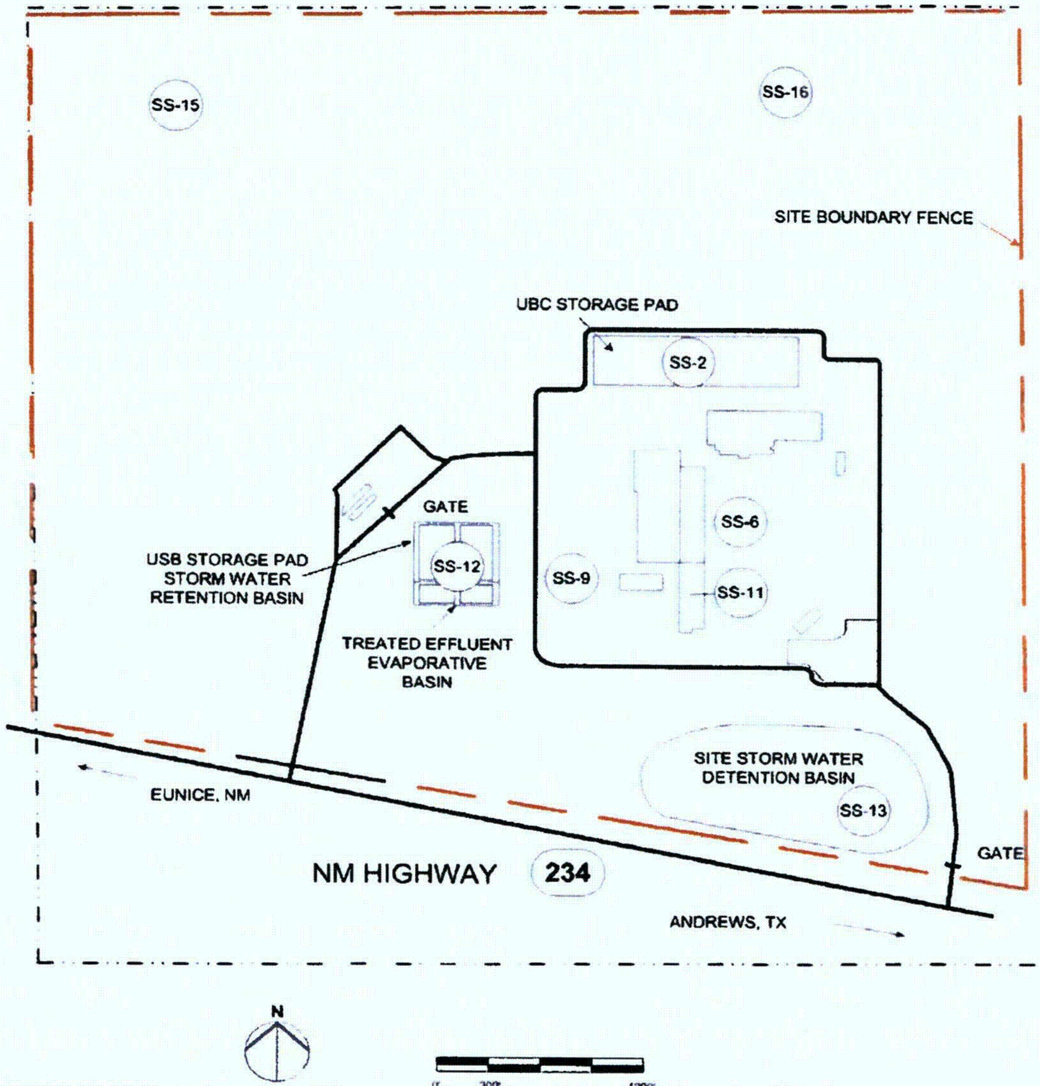

Figure 3.3-12Soil Sample Locations

Table 3.4-5 Anticipated Peak Plant Water Consumption	
Area/Usage	**GPM**
Domestic Water	290.0
Cooling Tower Make Up	56.2
~~Deionized Water Make Up~~	~~40.0~~
Fire Protection	375.0

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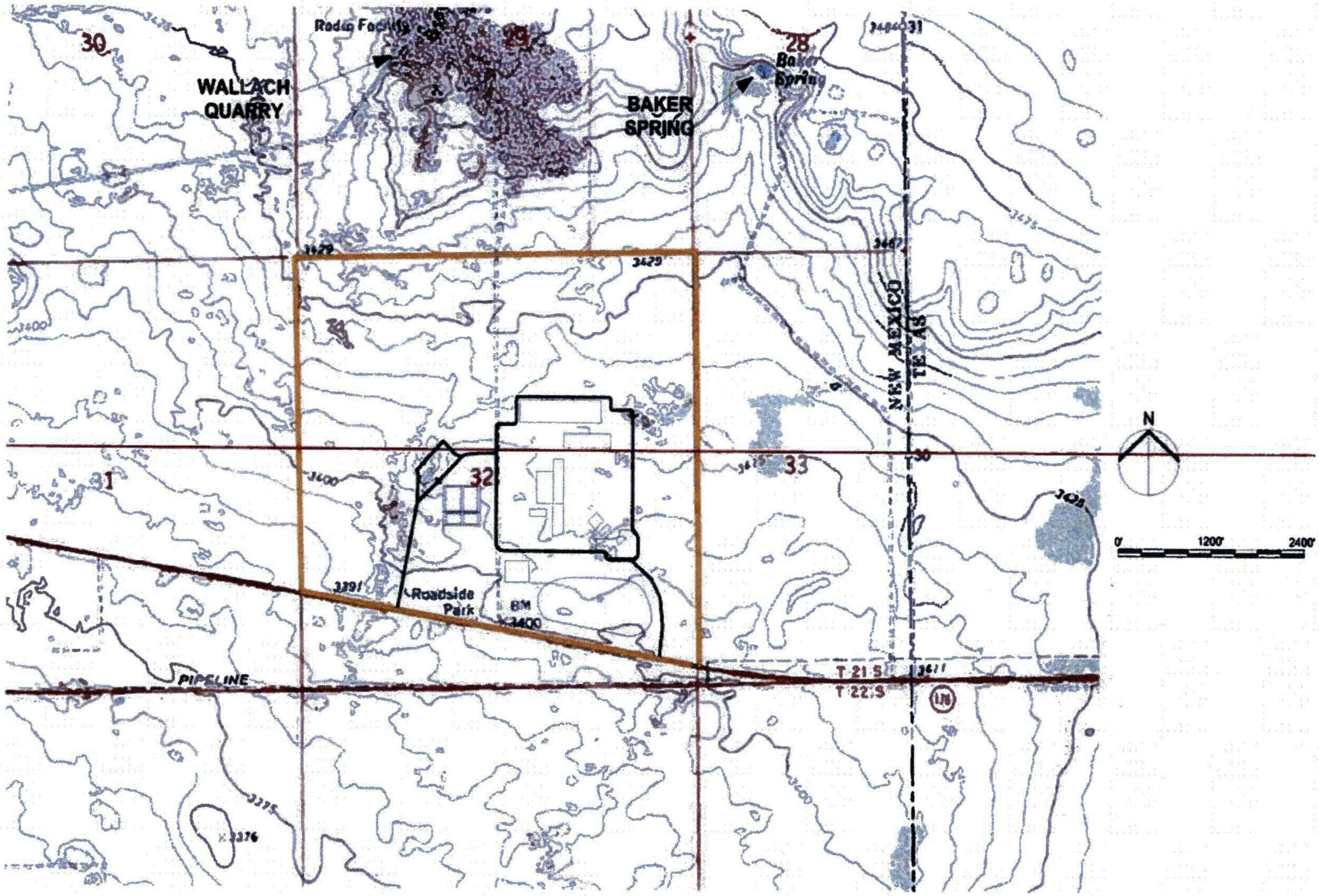

30
29
28
Rodeo Facility
WALLACH QUARRY
BAKER SPRING
Baker Spring
NEW MEXICO
TEXAS
N
0'
1200'
2400'
31
32
33
Roadside Park
BM 3400
PIPELINE
T 21 S
T 22 S

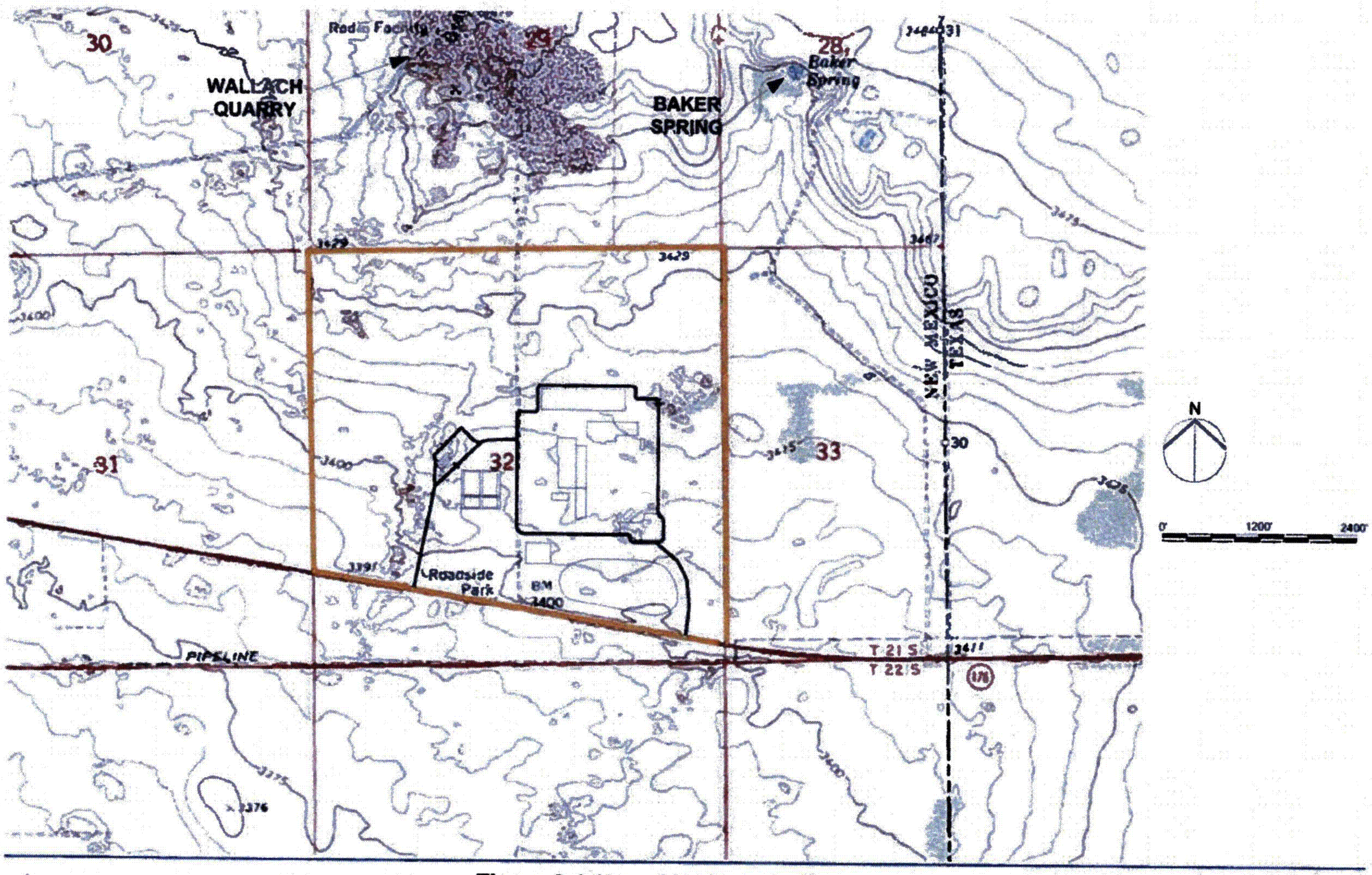
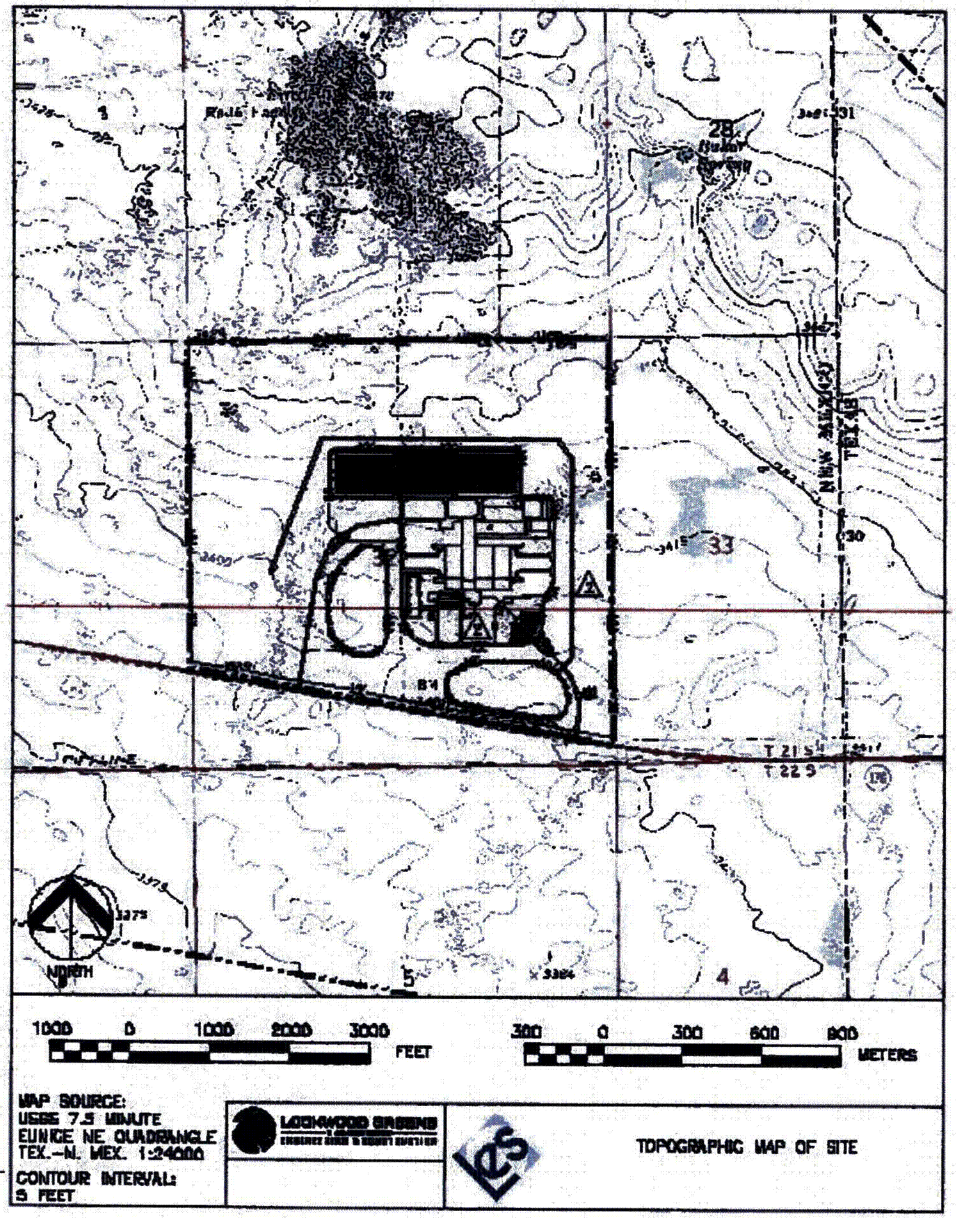


Figure 3.4-1 Local Hydrologic Features


28
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NEW MEXICO
TEXAS
T 21 S
T 22 S
NORTH
1000 0 1000 2000 3000
FEET
300 0 300 600 900
METERS
MAP SOURCE:
USGS 7.5 MINUTE
EUNICE NE QUADRANGLE
TEX.-N. MEX. 1:24000
CONTOUR INTERVAL:
5 FEET
TOPOGRAPHIC MAP OF SITE

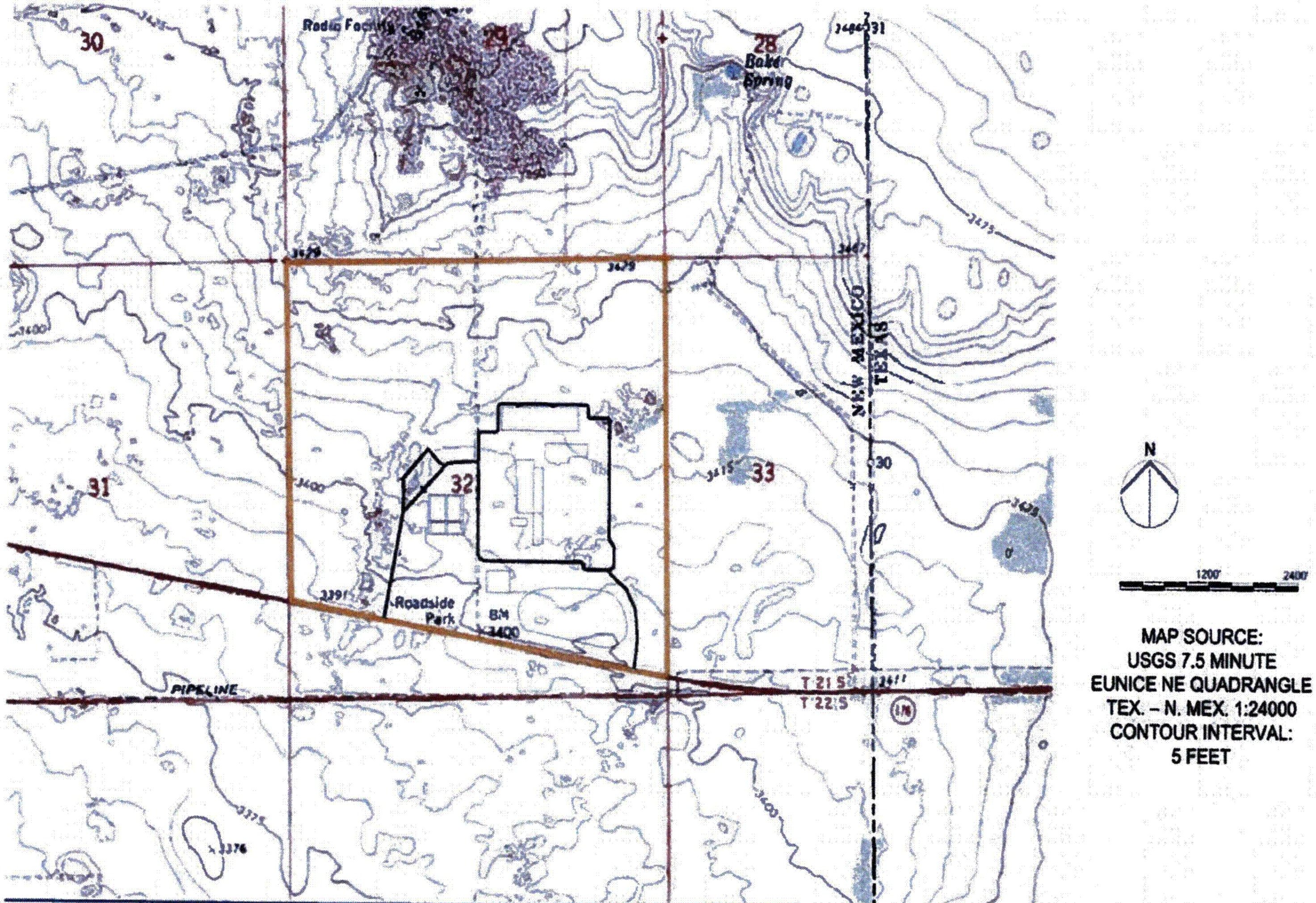
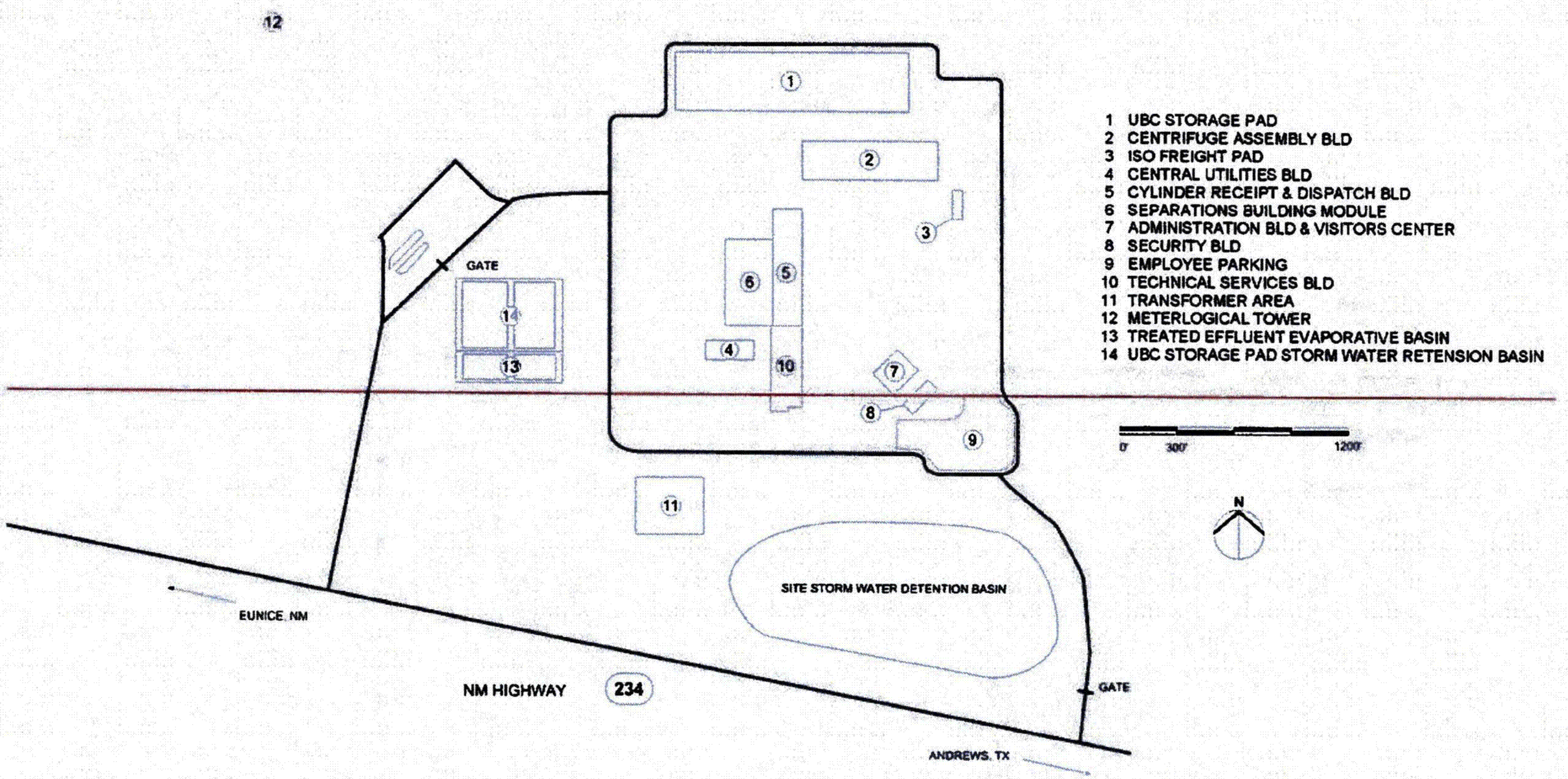


Figure 3.6-11Topographic Map of Site



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1 UBC STORAGE PAD
2 CENTRIFUGE ASSEMBLY BLD
3 ISO FREIGHT PAD
4 CENTRAL UTILITIES BLD
5 CYLINDER RECEIPT & DISPATCH BLD
6 SEPARATIONS BUILDING MODULE
7 ADMINISTRATION BLD & VISITORS CENTER
8 SECURITY BLD
9 EMPLOYEE PARKING
10 TECHNICAL SERVICES BLD
11 TRANSFORMER AREA
12 METERLOGICAL TOWER
13 TREATED EFFLUENT EVAPORATIVE BASIN
14 UBC STORAGE PAD STORM WATER RETENSION BASIN
0' 300' 1200'
N
SITE STORM WATER DETENTION BASIN
EUNICE, NM
NM HIGHWAY 234
GATE
ANDREWS, TX

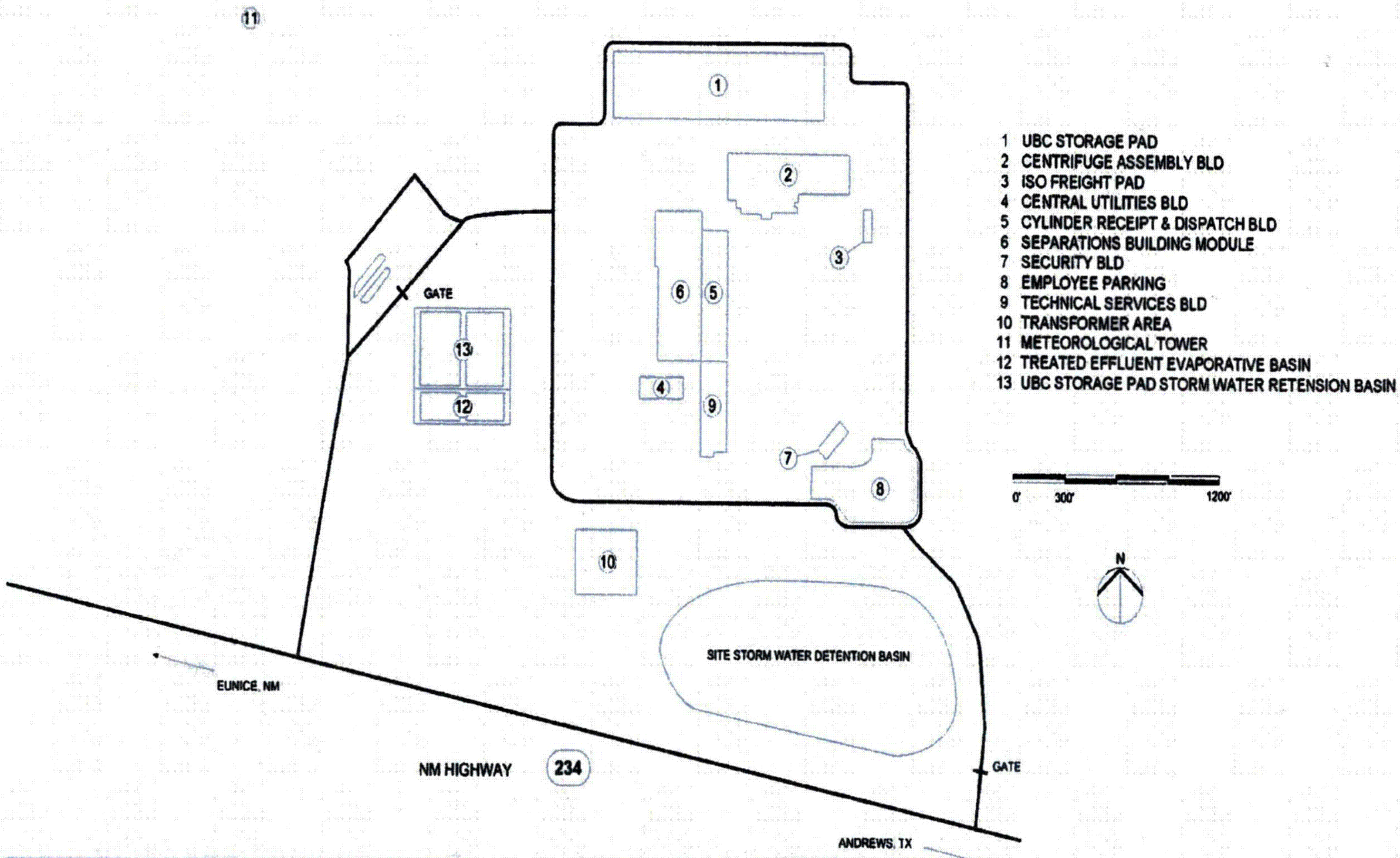


Figure 3.9-2Constructed Features (Site Plan)

Public Safety

Fire support service for the Eunice area is provided by the Eunice Fire and Rescue, located approximately 8 km (5 mi) from the plant. It is staffed by a full-time Fire Chief and 34 volunteer firefighters. Equipment at the Eunice Fire and Rescue includes:

Three Ambulances;

Three Pumper Fire Trucks;

•one 340 m^3/hr (1,500 gal per min (gpm)) pump which carries 3,785 L (1,000 gal) of water,

•one 227 m^3/hr (1,000 gpm) pumper which carries 1,893 L (500 gal) of water, LBDCR-10-0015

•one 284 m^3/hr (1,250 gpm) pumper which carries 2,839 L (750 gal) of water,

One Water Truck 22,700 L (6,000 gal) with 114 m^3/hr (500 gpm) pumping capacity

Three Grass Fire Trucks:

•one 3,785 L (1,000 gal) water truck with a 68 m^3/hr (300 gpm) pump

•one 1,136 L (300 gal) water truck with a 34 m^3/hr (150 gpm) pump

•one 946 L (250 gal) water truck with a 34 m^3/hr (150 gpm) pump

One Rescue Truck:

Vehicle Accident Rescue truck with 379 L (100 gal) of water and 45 m^3/hr (200 gpm) pump

If additional fire equipment is needed, or if the Eunice Fire and Rescue is unavailable, the Central Dispatch will call the Hobbs Fire Department. In instances where radioactive/hazardous materials are involved, knowledgeable members of the facility Emergency Response Organization (ERO) provide information and assistance to the responding offsite personnel.

Mutual aid agreements exist with all of the county fire departments. In particular, mutual aid agreements exist between Eunice, New Mexico, and the nearby City of Hobbs Fire Department, as well as with Andrews County, Texas, for additional fire services. If emergency fire services personnel in Lea County are not available, the mutual aid agreements are activated and the Eunice Central Dispatch will contact the appropriate agencies for the services requested at the NEF.

The Eunice Police Department, with five full-time officers, provides local law enforcement. The Lea County Sheriff's Department also maintains a substation in the community of Eunice. If additional resources are needed, officers from mutual aid communities within Lea County, New Mexico, and Andrews County, Texas, can provide an additional level of response. The New Mexico State Police provide a third level of response.

Transportation

The nearest active rail transportation is a short-line carrier, the Texas-New Mexico Railroad (TNMR#815) accessible in Eunice, New Mexico about 5.8 km (3.6 mi) from the site.

3.12 WASTE MANAGEMENT

Waste Management for the National Enrichment Facility (NEF) is divided into gaseous and liquid effluents, and solid wastes. Descriptions of the sources, systems, and generation rates for each waste stream are discussed in this section. Disposal plans, waste minimization, and environmental impacts are discussed in ER Section 4.13, Waste Management Impacts.

3.12.1 Effluent Systems

The following paragraphs provide a comprehensive description of the NEF systems that handle gaseous and liquid effluent. The effectiveness of each system for effluent control is discussed for all systems that handle and release effluent.

3.12.1.1 *(See SAR § 12.1.1.1.10~~9.2.9~~)* Gaseous Effluent Vent Systems (GEVS) LBDCR-10-0033

The function of the GEVS is to remove particulates containing uranium and HF from potentially contaminated process gas streams. Prefilters and high efficiency particulate air (HEPA) filters remove particulates and impregnated activated carbon filters are used for the removal of HF. The systems produce solid wastes from the periodic replacement of prefilters, HEPA filters, and impregnated activated carbon filters. The systems produce no gaseous effluents of their own, but discharge effluents from other systems after treatment to remove hazardous materials. There are two GEVS for the plant: (1) Pumped Extract GEVS and (2) the CRDB GEVS.

Note: The Heating Ventilation and Air Conditioning (HVAC) systems and Gaseous Effluent Vent Systems (GEVS) for the NEF are undergoing redesign. After these design changes are finalized the information in Section 3.12.1.1 (Gaseous Effluent Vent Systems), associated Sections 4.6.2.2 (Description of Gaseous Effluent Vent Systems), 4.6.5 (Mitigative Measures of Air Quality Impacts), 6.1.1.1 (Gaseous Effluent Monitoring), and other sections that reference GEVS will be revised as necessary and in accordance with 10 CRF 70.72. The final design will be evaluated in accordance with the requirements of 10 CFR 70.72 prior to requirements for operational readiness.

3.12.1.1.1 Functional Description

The design requirements provide a large safety margin between normal and accident conditions so that no single failure could result in the release of significant hazardous material. The amounts of UF_6 in the system also preclude the release of significant quantities of hazardous material from a single failure or multiple failures. Instrumentation is provided to detect abnormal process conditions so that the process can be returned to normal by automatic or operator actions.

These requirements and operating conditions also assure "as low as reasonably achievable" (ALARA) personnel exposure to hazardous materials and compliance with environmental and safety criteria.

3.12.1.1.2 Major Components for GEVS

The Pumped Extract GEVS and CRDB GEVS each consist of the following major components.

A. Duct system

B. Pre-filter(s)

C. High Efficiency Particulate Air (HEPA) Filters

D. Impregnated activated carbon filter(s)

E. Centrifugal fans

F. Monitoring and controls (HF) before and after filter trains (with temperature indicating alarms on carbon filters)

G. Automatically controlled inlet and outlet isolation dampers or valves

H. Exhaust stack

I. Monitoring and controls (alpha and HF) in exhaust stack

J. Airflow monitors and airflow blender

3.12.1.1.3 Pumped Extract GEVS

The Pumped Extract GEVS, a Safe-By-Design[1] system, provides exhaust of potentially hazardous contaminants for the SBMs from all permanently connected vacuum pump and trap sets as well as temporary connections used by maintenance and sampling rigs. To support the connection of on-line mass spectrometer standards, a mobile pump and trap settt will be useeed to provide local exhaust ventilation for a one time use. The Pumped Extract GEVS is located in the UF_6 Handling Area of SBM-1001. The system is monitored from the Control Room. LBDCR-10-0046

3.12.1.1.3.1 Design Description

A mimumum target velocity of 7 m/s (1380 ft/min) will be established in the piping system to convey particulate contaminants through the piping and minimize settling. Each section of the pipe system has an orifice plate to maintain a minimum air velocity.

The Pumped Extract GEVS piping connects to an inlet header. Off the inlet header are two parallel trains each with eight banks of filters. Each train is capable of handling 100% of the effluent during normal operations. One train is online and the other is a standby. Each bank of filters consists of a 60-65% efficient pre-filter which removes dust and protects the HEPA filter, a 99.97% efficient HEPA filter which removes uranium aerosols (mainly UO_2F_2 particles), a 99% efficient activated carbon filter for removal of HF, a position for an optional additional filter, and a final 99.97% HEPA filter which removes carbon fines and any additional uranium aerosols. Manual dampers are also located at the inlet and outlet of each of the eight banks of filters for testing and to allow isolation of a bank while the unit continues to operate. Flow balancing orifices are provided on each bank to assure balanced flows across each bank.

[1] Safe-by-design components are those components that by their physical size or arrangement have been shown to have a k_{eff} < 0.95.

Each filter train vents the clean gases through a variable speed centrifugal fan, which maintains the negative pressure upstream of the filter train by using input from a differential pressure controller. Finally, the clean gases are discharged through a roof top exhaust stack on the SBM. One exhaust stack is common to the operational system and the standby system. A switch between the operational and standby systems (trains) can be made using automatically controlled dampers. There are motorized and manually controlled dampers located at the inlet and outlet of each train to allow for different modes of operation of the system. The design flow rate is estimated to be 646 m^3/hr (380 cfm).

The Pumped Extract GEVS provides ventilation and hazardous contaminant removal and is connected via permanently piped locations for the following systems, equipment, and areas:

A. The UF_6 Feed System, the Product Take-off System, the Tails Take-off System, the Product Blending and Sampling Vent Subsystem and Contingency Dump System.

B. All Liquid Sampling System autoclaves.

C. All discharge lines from mobile vacuum pump sets. To support the connection of on-line mass spectrometer standards, a mobile pump and trap set will be used to provide local exhaust ventilation and not be connected to the Pumped Exhaust GEVS for a one time use. LBDCR-10-0046

D. In addition, local exhausts to the Pumped Extract GEVS are provided for initial plant operations via a temporary local extract connection to remove any releases from connections or disconnections of process equipment.

If the Pumped Extract GEVS stops operating, material within the piping will not be released into the building because each of the Pumped Extract GEVS connections is piped into the top of the header to prevent entrained material from falling back into the building from the piping during system failure.

Mobile vacuum pump units that vent to the Pumped Extract GEVS are available in the UF_6 Handling Area.

3.12.1.1.4 CRDB GEVS

The CRDB GEVS provides exhaust of potentially hazardous contaminants from rooms and services within the CRDB Bunkered Area. The system is located in the CRDB's GEVS Room and is monitored from the Control Room.

3.12.1.1.4.1 Design Description

The GEVS serving the CRDB consists of a duct network that serves all of the UF_6 processing systems and operates at negative pressure. The ductwork is connected to one filter station and vents through one fan. Both the filter station and the fan can handle 100% of the effluent. There is no standby filter station or fan. Operations that require the GEVS to be operational will be shut down if the system shuts down. The system capacity is estimated to be 18,700 m^3/hr (11,000 cfm). A differential pressure controller controls the fan speed and maintains negative pressure in front of the filter station.

3.12.1.2 Centrifuge Test and Post Mortem Facilities Exhaust Filtration System

The Centrifuge Test and Post Mortem Facilities Exhaust Filtration System provides exhaust of potentially hazardous contaminants from the Centrifuge Test and Post Mortem Facilities. The system also ensures the Centrifuge Test and Post Mortem Facility is maintained at a negative pressure with respect to adjacent areas during contaminated or potentially contaminated processes. The Centrifuge Test and Post Mortem Facilities Exhaust Filtration System is located in the Centrifuge Assembly Building and is monitored from the Control Room.

Potentially contaminated exhaust air comes from the Centrifuge Test and Post Mortem Facilities. The total airflow to be handled by the Centrifuge Test and Post Mortem Facilities Exhaust Filtration System is adequate to maintain a negative pressure in the room.

The Centrifuge Test and Post Mortem Facilities Exhaust Filtration System consists of a duct network that serves the Centrifuge Test and Post Mortem Facilities and operates at negative pressure. The ductwork is connected to a filter station that can handle 100% of the effluent. Operations that require the Centrifuge Test and Post Mortem Facilities Exhaust Filtration System to be operational are manually shut down if the system shuts down.

The Centrifuge Test and Post Mortem Exhaust Filtration System consist of an owner specified filter configuration consistent to meet the requirements of the this Plan. The basic filter arrangement consist of a prefilters, activated carbon filter, and HEPA filter, and is designed to remove dust/debris, HF, uranic particles, and any other hazardous material dictated by environmental requirements from the air stream while maintaining adequate air flow. After filtration, the clean gases pass through a fan, which maintains the negative pressure upstream of the filter station. The clean gases are then discharged through the monitored (alpha and HF) stack on the Centrifuge Assembly Building.

3.12.1.3 ~~(See § 9.2.12 L.)~~ Liquid Effluent Collection and Treatment System (LECTS) LBDCR-10-0033

Quantities of radiologically contaminated, potentially radiologically contaminated, and nonradiologically contaminated aqueous liquid effluents are generated in a variety of operations and processes in the CRDB and in the Separations Building. The majority of all potentially radiologically contaminated aqueous liquid effluents are generated in the CRDB. All aqueous liquid effluents are collected in tanks that are located in the Liquid Effluent Collection and Treatment System in the CRDB. The collected effluent is sampled and analyzed.

3.12.1.3.1 Effluent Sources and Generation Rates

Numerous types of aqueous and non-aqueous liquid wastes are generated in the plant. These effluents may be significantly radiologically contaminated, potentially contaminated with low amounts of contamination, or non-contaminated. Effluents include:

- Hydrolyzed uranium hexafluoride and aqueous laboratory effluent

These hydrolyzed uranium hexafluoride solutions and the aqueous effluents are generated during laboratory analysis operations and require further processing for uranium recovery.

- Degreaser Water

3.12.2 Solid Waste Management

Solid waste generated at the NEF will be grouped into industrial (nonhazardous), radioactive and mixed, and hazardous waste categories. In addition, solid radioactive and mixed waste will be further segregated according to the quantity of liquid that is not readily separable from the solid material. The solid waste management systems will be a set of facilities, administrative procedures, and practices that provide for the collection, temporary storage, (no solid waste processing is planned), and disposal of categorized solid waste in accordance with regulatory requirements. All solid radioactive wastes generated will be Class A low-level wastes (LLW) as defined in 10 CFR 61 (CFR, 2003r).

Industrial waste, including miscellaneous trash, vehicle air filters, empty cutting oil cans, miscellaneous scrap metal, and paper will be shipped offsite for minimization and then sent to a licensed waste landfill. The NEF is expected to produce approximately 172,500 kg (380,400 lbs) of this normal trash annually. Table 3.12-2, Estimated Annual Non-Radiological Wastes, describes normal waste streams and quantities.

Radioactive waste will be collected in labeled containers in each ~~Restricted Area~~Radiologically Controlled Area (RCA) and transferred to the Radioactive Waste Storage Area for inspection. Suitable waste will be volume-reduced and all radioactive waste disposed of at a licensed low-level waste (LLW) disposal facility. LBDCR-10-0042

Hazardous wastes (e.g., spent blasting sand, empty spray paint cans, empty propane gas cylinders, solvents such as acetone and toluene, degreaser solvents, diatomaceous earth, hydrocarbon sludge, and chemicals such as methylene chloride and petroleum ether) and some mixed wastes will be generated at the NEF. These wastes will also be collected at the point of generation, transferred to the Waste Storage Area, inspected, and classified. Any mixed waste that may be processed to meet land disposal requirements may be treated in its original collection container and shipped as LLW for disposal. Table 3.12-2, Estimated Annual Non-radiological Wastes, denotes hazardous waste and quantities.

3.12.2.1 Radioactive and Mixed Wastes

Solid radioactive wastes are produced in a number of plant activities and require a variety of methods for treatment and disposal. These wastes are categorized into wet solid waste and dry solid waste due to differences in storage and disposal requirements found in 40 CFR 264 (CFR, 2003v) and 10 CFR 61 (CFR, 2003r), respectively. For disposal of solid waste (radioactive waste and mixed waste), 10 CFR 61.56(a)(3) (CFR, 2003a) requires: "Solid waste containing liquid shall contain as little free standing and noncorrosive liquid as reasonably achievable, but in no case shall the liquid exceed 1% of the volume." For this facility, dry solid waste is waste that meets the requirement in its as-generated form and wet solid waste is waste that requires treatment prior to disposal to meet this requirement.

All solid radioactive wastes generated are Class A low-level wastes as defined in 10CFR 61 (CFR, 2003r). Wastes are transported offsite for disposal by contract carriers. Transportation is in compliance with 49 CFR 107 and 49 CFR 173 (CFR, 2003k; CFR 2003l).

The Solid Waste Collection System is simply a group of methods and procedures applied as appropriate to the various solid wastes. Each individual waste is handled differently according to its unique combination of characteristics and constraints. Wet and dry waste handling is described separately below. (Wastes produced by waste treatment vendors are handled by the vendors and are not addressed here.)

3.12.2.1.1 Wet Solid Wastes

The wet waste portion of the Solid Waste Collection System handles all radiological, hazardous, mixed, and industrial solid wastes from the plant that do not meet the above definition of dry waste. This portion handles several types of wet waste: wet trash, oil recovery sludge, oil filters, miscellaneous oils (e.g., cutting machine oil) solvent recovery sludge, and uranic waste precipitate. The system collects, identifies, stores, and prepares these wastes for shipment. Waste that may have a reclamation or recycle value (e.g., miscellaneous oils) may be packaged and shipped to an authorized waste reclamation firm for that purpose.

Wet solid wastes are segregated into radioactive, hazardous, mixed, or industrial waste categories during collection to minimize recycling and/or disposal problems. Mixed waste is that which includes both radioactive and hazardous waste. Industrial waste does not include either hazardous or radioactive waste.

The Solid Waste Collection System involves a number of manual steps. Handling of each waste type is addressed below.

3.12.2.1.1.1 Wet Trash

In this plant trash typically consists of waste paper, packing material, clothing, rags, wipes, mop heads, and absorption media. Wet trash consists of trash that contains water, oil, or chemical solutions.

Generation of radioactive wet trash is minimized insofar as possible. Trash with radioactive contamination is collected in specially marked plastic-bag-lined drums. These drums are located throughout each ~~Restricted Area~~RCA. Wet trash is collected in separate drums from dry trash. When the drum of wet trash is full, the plastic bag is removed from the drum and sealed. The bag is checked for leaks and excessive liquid. The exterior of the bag is monitored for contamination. If necessary, excess liquids are drained and the exterior is cleaned. The bag may be placed in a new clean plastic bag. The bag is then taken to the Radioactive Waste Storage Area where the waste is identified, labeled, and recorded. LBDCR-10-0042

The radioactive trash is shipped to a Control Volume Reduction Facility (CVRF) that can process wet trash. The licensed CVRF reduces the volume of the trash and then repackages the resulting waste for disposal. The waste package is then shipped to a licensed radioactive waste disposal facility.

Trash with hazardous contamination is collected in specially marked plastic-lined drums. Wet trash is collected separately from dry trash. When full, the drum is taken to the Solid Waste Collection Room (SWCR) and the plastic bag containing wet trash is removed from the container, sealed, and the exterior is monitored for hazardous material, and cleaned if necessary. The trash is identified, labeled, and recorded. All hazardous trash is stored in the Hazardous Waste Area until it is shipped to a hazardous waste disposal facility. Different types of hazardous materials are not mixed in order to avoid accidental reactions.

Empty containers that at one time contained hazardous materials are a special type of hazardous waste, as discussed in 40 CFR 261 (CFR, 2003p). After such a container is emptied, it is resealed and taken to the Hazardous Waste Area for identification, labeling, and recording. The container is handled as hazardous waste and is shipped to a hazardous waste processing facility for cleaning or disposal. Alternately, the container is used to store compatible hazardous wastes and to ship those wastes to a hazardous waste processing facility for processing and container disposal.

"Mixed" trash results from using wipes and rags with solvent on uranium-contaminated components. It is collected in appropriate containers and segregated from other trash. The waste is identified, labeled, recorded, and stored in accordance with regulations for both hazardous and radioactive wastes. Mixed waste is shipped to a facility licensed to process mixed waste. Waste resulting from the processing is then forwarded to a qualified disposal facility licensed to dispose of the particular resulting waste.

Industrial trash is collected in specially marked receptacles in all parts of the plant. The trash from ~~Restricted Areas~~RCAs is collected in plastic bags and taken to the Radioactive Waste Storage Room in the CRDB for inspection to ensure that no radioactive contamination is present. The inspected trash and the trash from the Controlled Area are then taken to one of several large containers around the plant. The trash is stored in these containers until a contract carrier transports them to a properly permitted sanitary landfill. LBDCR-10-0042

3.12.2.1.1.2 Oil Recovery Sludge

The process for recovering used Fomblin oil generates an oily sludge that must be disposed of offsite. The sludge results from the absorption of hydrocarbons in activated carbon and diatomaceous earth. Sodium carbonate, charcoal, and celite also contribute to this sludge. A contracted radioactive waste processor will process the waste at an offsite location. Alternatively, the waste may be shipped offsite to a CVRF for volume reduction. Regulations and technology current at the time of waste production will dictate treatment methods. In either case the waste is finally disposed of at a licensed low-level radioactive waste disposal facility.

3.12.2.1.1.3 Oil Filters

Used oil filters are collected from the diesel generators and from plant vehicles. No filters are radioactively contaminated. The used filters are placed in containers and transported to the waste storage area of the CRDB. There the filters are drained completely and transferred to a drum. The drained waste oil is combined with other waste oil and handled as hazardous waste. The drum is then shipped to an offsite waste disposal contractor.

3.12.2.1.1.4 Resins

Spent resins will not be part of any routine waste stream at the NEF. Use of the Mixed-Bed Demineralizer in liquid waste treatment is a final polishing step, and the resin is expected to last the life of the plant. The demineralizer resin will be properly processed and disposed when the NEF is decommissioned.

3.12.2.1.1.5 Solvent Recovery Sludge

Solvent is used in degreasers and in the workshops. The degreasers are equipped with solvent recovery stills. The degreasers in the decontamination area and the contaminated workshop area handle radioactive components. Solids and sludge removed from these stills and degreasers are collected, labeled, and stored as mixed waste. The waste is shipped to a facility licensed to process mixed waste. Waste resulting from the processing is then forwarded to a licensed disposal facility for the particular resulting waste.

The Vacuum Pump Rebuild Workshop degreaser handles only decontaminated components, so the solids and sludge removed from this degreaser (after checking for radioactivity) are collected, labeled, and stored as hazardous waste. This hazardous waste is shipped to a licensed hazardous waste disposal facility.

3.12.2.1.1.6 Uranic Waste Precipitate

Aqueous uranic liquid waste is processed to remove most of the uranium prior to evaporation of the liquid stream in the Evaporator/Dryer. This aqueous waste is primarily from the decontamination degreaser, citric acid baths and the laboratory. The uranium is precipitated out of solution and water is removed by filter press. The remaining precipitate is collected, labeled, and stored in the radioactive waste storage area. The waste is sent to a licensed low-level radioactive waste disposal facility.

3.12.2.1.2 Dry Solid Wastes

The dry waste portion of the Solid Waste Collection and Processing System handles dry radiological, hazardous, mixed, and industrial solid wastes from the plant. These wastes include: trash (including miscellaneous combustible, non-metallic items), activated carbon, activated alumina, activated sodium fluoride, HEPA filters, scrap metal, laboratory waste and dryer concentrate. The system collects, identifies, stores, and prepares these wastes for shipment.

All solid radioactive wastes generated are Class A low-level wastes as defined in 10 CFR 61 (CFR, 2003r).

The Solid Waste Collection and Processing System involves a number of manual steps. Handling for each waste type is addressed below.

3.12.2.1.2.1 Trash

Trash consists of paper, wood, gloves, cloth, cardboard, and non-contaminated waste from all plant areas. Some items require special handling, and are not included in this category, notably: paints, aerosol cans, and containers in which hazardous materials are stored or transported. Trash from ~~Restricted Areas~~RCAs is collected and processed separately from non-contaminated trash. LBDCR-10-0042

The sources of dry trash are the same for the wet trash, and dry trash is handled in much the same way as wet trash. ER Section 3.12.2.1.1.1, Wet Trash, describes the handling of wet trash in more detail. Only the differences between wet and dry trash handling are discussed below.

Filters used in the GEVS, and Centrifuge Test and Post Mortem Facilities Exhaust Filtration System are used to remove HF and trace uranium compounds from the exhaust air stream. When the filters become loaded with particulate matter, they are removed from the housings and wrapped in plastic bags to prevent the spread of radioactive contamination. Due to the hazard of airborne contamination, either portable ventilation equipment or respiratory protection equipment is used during filter handling to prevent the inhalation of material by plant personnel. The filters are taken to the Solid Waste Collection Room in the CRDB where they are sampled to determine the quantity of ^{235}U present. The exterior of the bag is monitored for contamination; the package is properly marked and placed in storage. The filter elements are sent to a CVRF for processing and shipped to a low-level radioactive waste disposal facility.

Air filters from the non-contaminated HVAC systems, Compressed Air System and the Diesel Generators are handled as industrial waste.

3.12.2.1.2.6 Scrap Metal

Metallic wastes are generated during routine and abnormal maintenance operations. The metal may be clean, contaminated with radioactive material hazardous material. Radioactive contamination of scrap metal is always in the form of surface contamination caused by uranium compounds adhering to the metal or accumulating in cracks and crevices. No process in this facility results in activation of any metal materials.

Clean scrap metal is collected in bins located outside the Technical Services Building. This material is transported by contract carrier to a local scrap metal vendor for disposal. Items collected outside of ~~Restricted Areas~~an RCA are disposed of as industrial scrap metal unless there is reason to suspect they contain hazardous material. LBDCR-10-0042

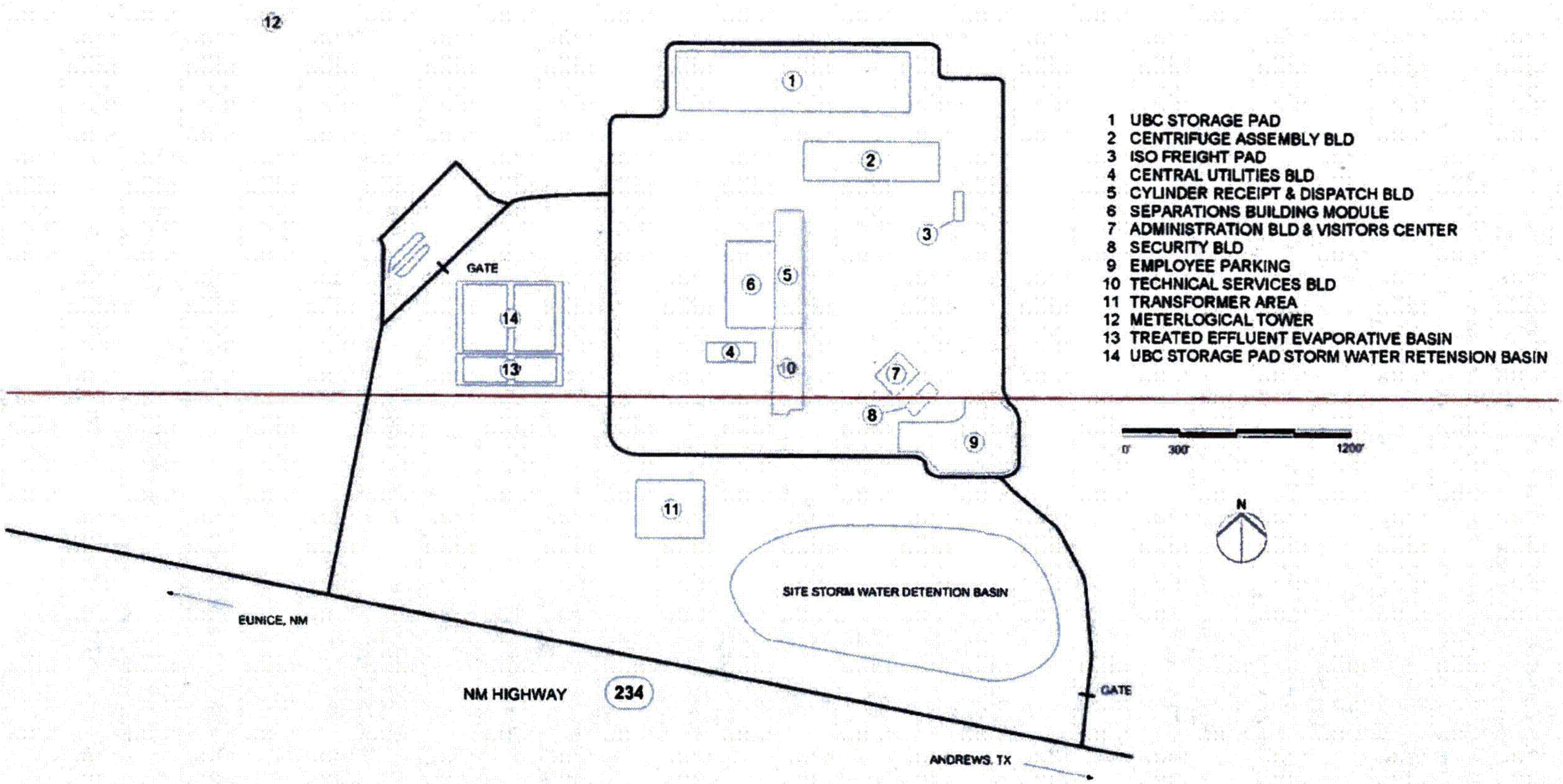
Scrap metal is monitored for contamination before it leaves the site. Metal found to be contaminated is either decontaminated or disposed of as radioactive waste. When feasible, decontamination is the preferred method.

Decontamination is performed in situ for large items and in the Decontamination Workshop for regular items used in performing maintenance. Decontamination of large items should not be required until the end of plant life. Items that are not suitable for decontamination are inspected to determine the quantity of uranium present, packaged, labeled, and shipped either to a CVRF or a radioactive waste disposal facility.

Metallic items containing hazardous materials are collected at the location of the hazardous material. The items are wrapped to contain the material and taken to the Waste Storage Room. The items are then cleaned onsite if practical. If onsite cleaning cannot be performed then the items are sent to a hazardous waste processing facility for offsite treatment or disposal.

3.12.2.1.2.7 Laboratory Waste

Small quantities of dry solid hazardous wastes are generated in laboratory activities, including small amounts of unused chemicals and materials with residual hazardous compounds. These materials are collected, sampled, and stored in the Waste Storage Room of the CRDB. Precautions are taken when collecting, packaging, and storing to prevent accidental reactions. These materials are shipped to a hazardous waste processing facility where the wastes will be prepared for disposal.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EUNICE, NM
NM HIGHWAY
234
GATE
ANDREWS, TX
1 UBC STORAGE PAD
2 CENTRIFUGE ASSEMBLY BLD
3 ISO FREIGHT PAD
4 CENTRAL UTILITIES BLD
5 CYLINDER RECEIPT & DISPATCH BLD
6 SEPARATIONS BUILDING MODULE
7 ADMINISTRATION BLD & VISITORS CENTER
8 SECURITY BLD
9 EMPLOYEE PARKING
10 TECHNICAL SERVICES BLD
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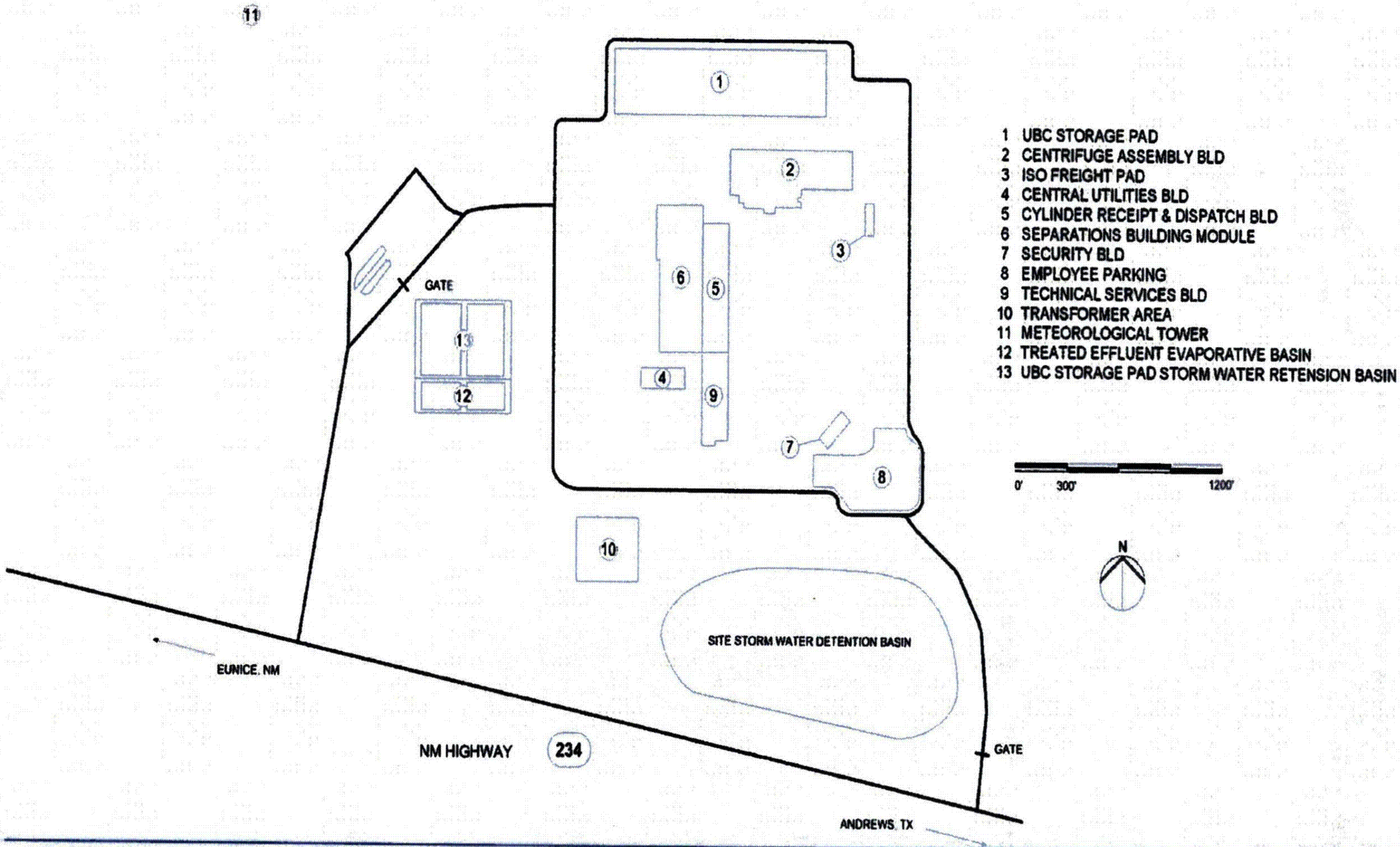

Figure 4.4-1 Site Plan with Stormwater Detention/Retention Basins

Table 4.6-4Construction Emission Types

Emission Type	Source Location	Quantity
Fugitive Dust	On site	2.4 g/s (19.1 lb/hr)
Vehicle Exhaust	On site	4,535 kg/yr (5 tons/yr)
Portable Generator Exhaust	NA[1]	NA[1]
Paint Fumes	On site buildings	NA[1]
Welding Torch Fumes	On site buildings	NA[1]
Solvent Fumes	NA[1]	NA[1]
Air Compressors	NA[1]	NA[1]

[1]Information is not available at this time.

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Table 4.6-6 Air Emissions During Operations

Table 4.6-8 Decommissioning Emission Types

Emission Type[1]	Source Location	Quantity
Fugitive Dust	On site	2.4 g/s (19.1 lb/hr)
Vehicle Exhaust	On site	4,535 kg/yr (5 tons/yr)
Portable Generator Exhaust	NA[2]	NA[2]
Cutting Torch Fumes	On site buildings	NA[2]
Solvent Fumes	NA[2]	NA[2]
Air Compressors	NA[2]	NA[2]

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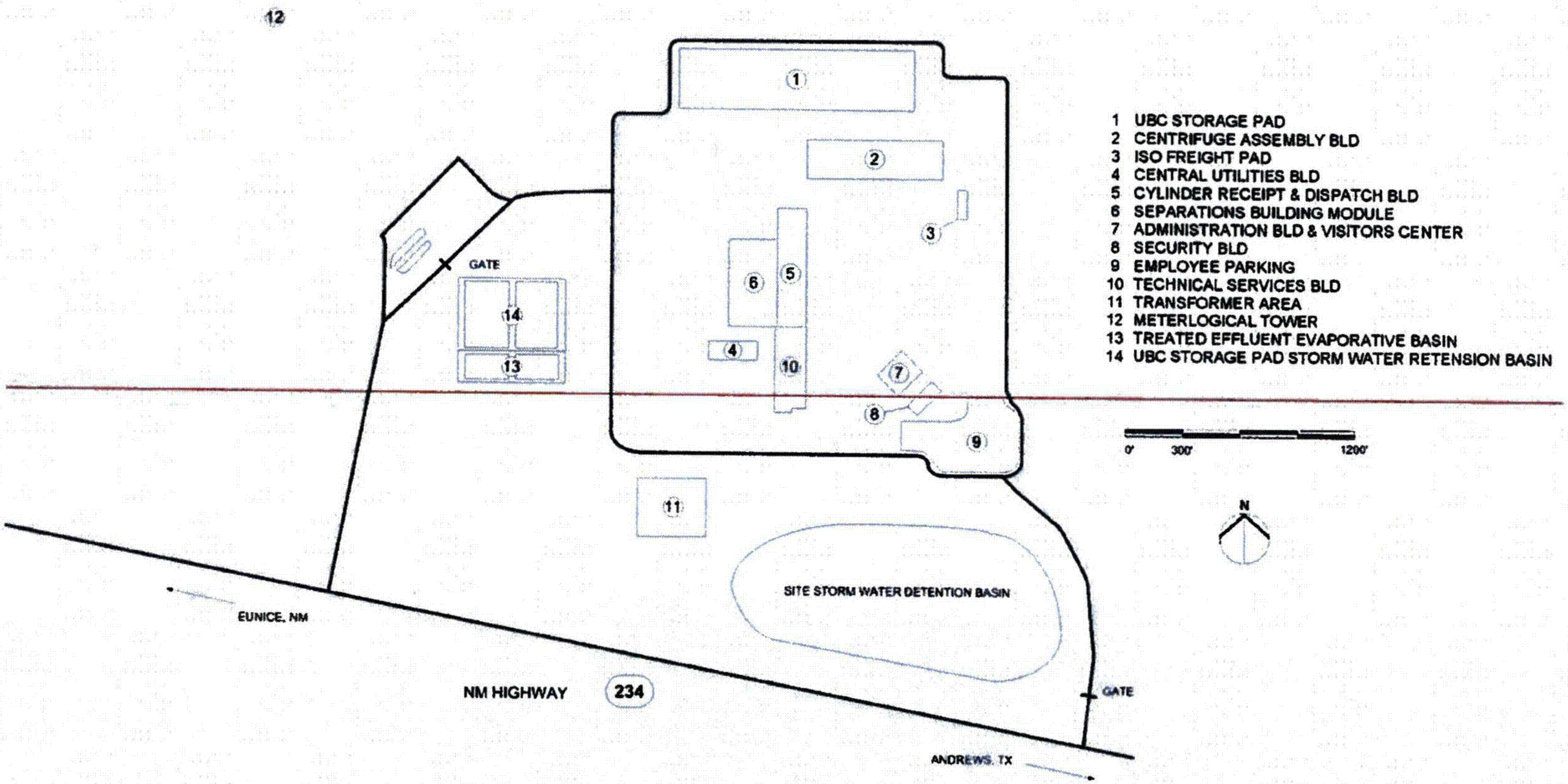
1 Fugitive dust and vehicle exhaust during decommissioning are assumed to be bounded by the emissions during construction.

2 Information is not available at this time.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SITE STORM WATER DETENTION BASIN
EUNICE, NM
NM HIGHWAY
234
GATE
ANDREWS, TX
1 UBC STORAGE PAD
2 CENTRIFUGE ASSEMBLY BLD
3 ISO FREIGHT PAD
4 CENTRAL UTILITIES BLD
5 CYLINDER RECEIPT & DISPATCH BLD
6 SEPARATIONS BUILDING MODULE
7 ADMINISTRATION BLD & VISITORS CENTER
8 SECURITY BLD
9 EMPLOYEE PARKING
10 TECHNICAL SERVICES BLD
11 TRANSFORMER AREA
12 METERLOGICAL TOWER
13 TREATED EFFLUENT EVAPORATIVE BASIN
14 UBC STORAGE PAD STORM WATER RETENSION BASIN
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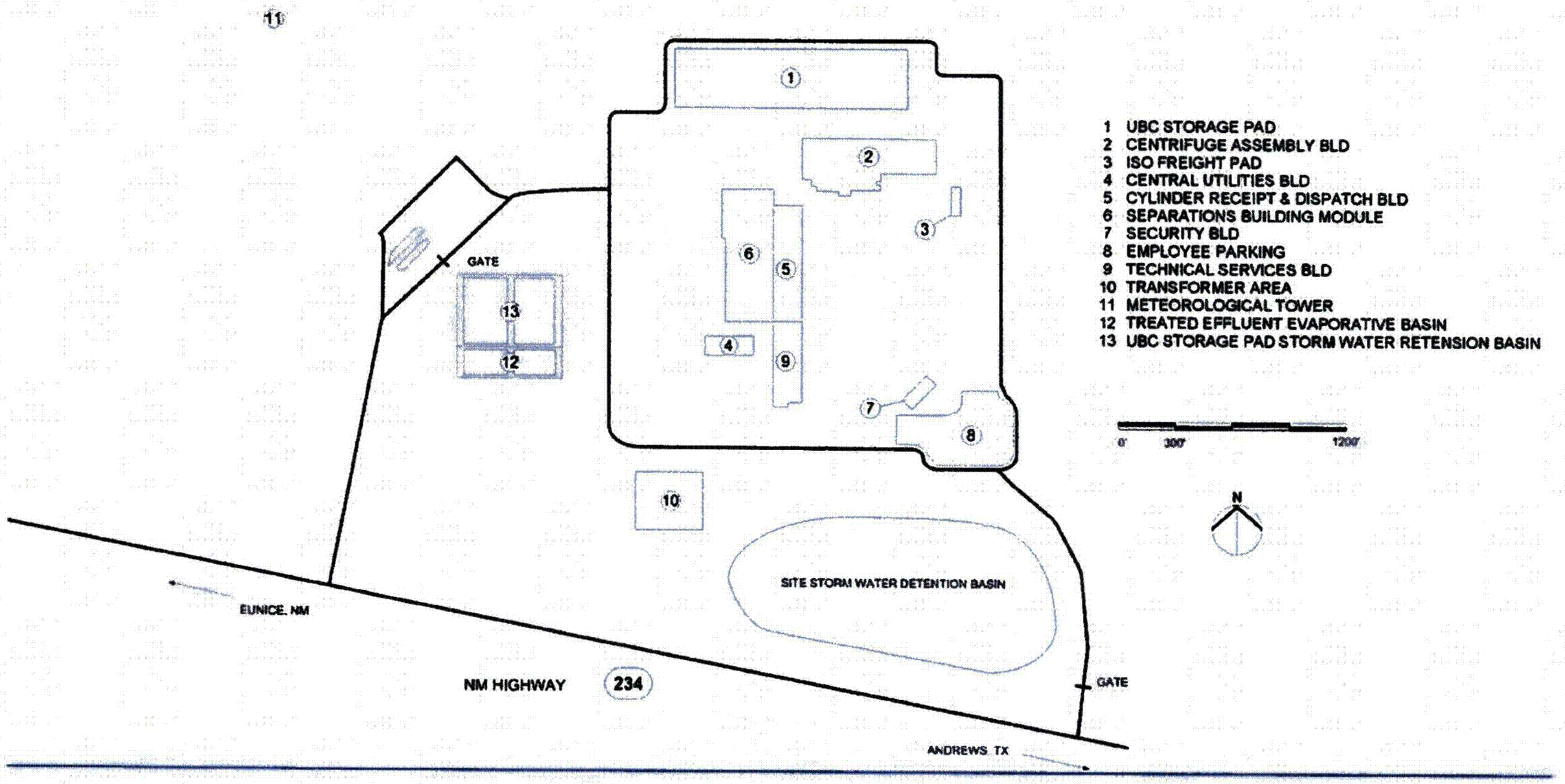


Figure 4.12-2Site Layout for NEF

4.13 WASTE MANAGEMENT IMPACTS

Solid waste generated at the NEF will be disposed of at licensed facilities designed to accept the various waste types. Industrial waste, including miscellaneous trash, filters, resins and paper will be shipped offsite for compaction and then sent to a licensed waste landfill. Radioactive waste will be collected in labeled containers in each ~~Restricted Area~~Radiologically Controlled Area (RCA) and transferred to the Solid Waste Collection Room for inspection. Suitable waste will be volume-reduced and all radioactive waste disposed of at a licensed LLW disposal facility. Hazardous and some mixed wastes will be collected at the point of generation, transferred to the Solid Waste Collection Room, inspected, and classified. Any mixed waste that may be processed to meet land disposal requirements may be treated in its original collection container and shipped as LLW for disposal. There will be no onsite disposal of solid waste at the NEF. Waste Management Impacts for onsite disposal, therefore, need not be evaluated. Onsite storage of UBCs will minimally impact the environment. A detailed pathway assessment for the UBC Storage Pad is provided in ER Section 4.13.3.1.1, UBC Storage. LBDCR-10-0042

NEF will generate approximately 1,770 kg (3,932 lbs) of Resource Conservation and Recovery Act (RCRA) hazardous wastes per year and 50 kg (110 lbs) of mixed waste. This is an average of 147 kg (325 lbs) per month. Under New Mexico regulations, a facility that generates less than 100 kg (220 lbs) per month is conditionally exempt. In New Mexico, hazardous waste generators are classified by the actual monthly generation rate, not the annual average. Given that the average is over 100 kg/mo (220 lbs/mo), NEF would be considered a small quantity generator and would not be conditionally exempt from the New Mexico Hazardous Waste Bureau (NMHWB) hazardous waste regulations. Within 90 days after the generation of any new waste stream, NEF will need to determine if it is classified as a hazardous waste. If so, the NEF will need to notify the NMHWB within that time period. As a small quantity generator, the NEF will be required to file an annual report to the NMHWB and to pay an annual fee. The NEF plans to ship all hazardous wastes offsite within the allowed timeframe, therefore, no further permitting should be necessary. Without the appropriate RCRA permit, NEF will not treat, store or dispose of hazardous wastes onsite; therefore the impacts for such systems need not be evaluated.

4.13.1 Waste Descriptions

Descriptions of the sources, types and quantities of solid, hazardous, radioactive and mixed wastes generated by NEF construction and operation are provided in ER Section 3.12, Waste Management.

4.13.2 Waste Management System Description

Descriptions of the proposed NEF waste management systems are provided in ER Section 3.12.

4.13.3 Waste Disposal Plans

4.13.3.1 Radioactive and Mixed Waste Disposal Plans

Solid radioactive wastes are produced in a number of plant activities and require a variety of methods for treatment and disposal. These wastes, as well as the generation and handling systems, are described in detail in ER Section 3.12, Waste Management.

4.13.3.1.1 (*See SAR § 12.1.1.4~~0.1.6~~*) Uranium Byproduct Cylinder (UBC) Storage | LBDCR-10-0033

The NEF yields a depleted UF_6 stream that will be temporarily stored onsite in containers before transfer to the conversion facility and subsequent reuse or disposal. The storage containers are referred to as Uranium Byproduct Cylinders (UBC). The storage location is designated the UBC Storage Pad. The UBC Storage Pad will have minimal environmental impacts.

The NEF's preferred option for disposition of the UBCs includes temporary onsite storage of cylinders. See ER Section 4.13.3.1.3. There will be no disposal onsite. The NEF will pursue economically viable disposal paths for the UBCs as soon as they become available. In addition, the NEF will look to private deconversion facilities to render the UF_6 into U_3O_8.

LES is committed to the following storage and disposition of UBCs on the NEF site (LES, 2003b):

- Only temporary onsite storage will be utilized.
- No long-term storage beyond the life of the plant.
- Aggressively pursue economically viable disposal paths.
- Setting up a financial surety bonding mechanism to assure adequate funding is in place to dispose of all UBCs.

Since UBCs will be stored for a time on the pad, the potential impact of this preferred option is the remote possibility of stormwater runoff from the UBC Storage Pad becoming contaminated with UF_6 or its derivatives. Cylinders placed on the UBC Storage Pad normally have no surface contamination due to restrictions placed on surface contamination levels by plant operating procedures . Because of the remote possibility of contamination, the runoff water will be directed to an onsite lined retention basin, designed to minimize ground infiltration. The site soil characteristics greatly minimize the migration of materials into the soil over the life of the plant. However, the basin is sampled under the site's environmental monitoring plan. The sources of the potential water runoff contamination (albeit unlikely) would be either residual contamination on the cylinders from routine handling, or accidental releases of UF_6 and its derivatives resulting from a leaking cylinder or cylinder valve (caused by corrosion, transportation or handling accidents, or other factors). Operational evidence suggests that breaches in cylinders and the resulting leaks are "self-sealing." (See ER Section 4.13.3.1.2.)

The chemical and physical properties of UF_6 can pose potential health risks, and the material is handled accordingly. Uranium and its decay products emit low-levels of alpha, beta, gamma and neutron radiation. If UF_6 is released to the atmosphere, it reacts with water vapor in the air to form HF and the uranium oxyfluoride compound called uranyl fluoride (UO_2F_2). These products are chemically toxic. Uranium is a heavy metal that, in addition to being radioactive, can have toxic chemical effects (primarily on the kidneys) if it enters the bloodstream by means of ingestion or inhalation. HF is an extremely corrosive gas that can damage the lungs and cause death if inhaled in high concentrations.

The NEA/IAEA (NEA, 2002) reports that there is widespread experience with the storage of UF_6 in steel cylinders in open-air storage yards. It is reported that even without routine treatment of localized corrosion, containers have maintained structural integrity for more than 50 years. The most extreme conditions experienced were in Russian Siberia where temperatures ranged from +40°C to -40°C (+104°F to –40°F), and from deep snow to full sun.

4.13.4.2 Reprocessing and Recovery Systems

Systems used to allow recovery, or reuse of materials, are described below.

4.13.4.2.1 (*See SAR § 12.1.3.5~~9.2.12 0.~~*) Fomblin Oil Recovery System LBDCR-10-0033

Fomblin oil is an expensive, highly fluorinated, inert oil selected specifically for use in UF_6 systems to avoid reaction with UF_6. The Fomblin Oil Recovery System recovers used Fomblin oil from pumps used in UF_6 systems. All Fomblin oil is recovered; none is normally released as waste or effluent.

Used Fomblin oil is recovered by removing impurities that inhibit the oil's lubrication properties. The impurities collected are primarily uranyl fluoride (UO_2F_2) and uranium tetrafluoride (UF_4) particles. The recovery process also removes trace amounts of hydrocarbons, which if left in the oil would react with UF_6. The Fomblin Oil Recovery System components are located in the Decontaminated Workshop in the CRDB. The total annual volume of oil to be processed in this system is approximately 535 L (141 gal). LBDCR-10-0033

The Fomblin oil recovery process consists of oil collection, uranium precipitation, trace hydrocarbon removal, oil sampling, and storage of cleaned oil for reuse. Each step is performed manually.

Fomblin oil is collected in the Vacuum Pump Rebuild Workshop as part of the pump disassembly process. The oil is the transferred for processing to the Decontamination Workshop in plastic containers. The containers are labeled so each can be tracked through the process. Used oil awaiting processing is stored in the used oil storage receipt array to eliminate the possibility of accidental criticality.

Uranium compounds are removed from the Fomblin oil in the Fomblin oil fume hood to minimize personnel exposure to airborne contamination. Dissolved uranium compounds are removed by the addition of anhydrous sodium carbonate (Na_2CO_3) to the oil container which causes the uranium compounds to precipitate into sodium uranyl carbonate $Na_4UO_2(CO_3)_3$. The mixture is agitated and then filtered through a coarse screen to remove metal particles and small parts such as screws and nuts. These are transferred to the Solid Waste Collection System. The oil is then heated to 90°C (194°F) and stirred for 90 minutes to speed the reaction. The oil is then centrifuged to remove UF_4, sodium uranyl carbonate, and various metallic fluorides. The particulate removed from the oil is collected and transferred to the Solid Waste Collection Room for disposal.

Trace amounts of hydrocarbons are next removed in the Fomblin oil fume hood next by adding activated carbon to the Fomblin oil and heating the mixture at 100°C (212°F) for two hours. The activated carbon absorbs the hydrocarbons, and the carbon in turn is removed by filtration through a ~~bed~~-celite bed. The resulting sludge is transferred to the Solid Waste Disposal Collection Room for disposal. LBDCR-10-0033

Recovered Fomblin oil is sampled. Oil that meets the criteria can be reused in the system while oil that does not meet the criteria will be reprocessed. The following limits have been set for evaluating recovered Fomblin oil purity for reuse in the plant:

- Uranium - 50 ppm by volume

~~13.0~~12.0APPENDIX B AIR QUALITY IMPACTS OF CONSTRUCTION SITE PREPARATION ACTIVITIES

LBDCR-10-0033

Introduction

Air quality impacts from construction site preparation were evaluated using emission factors and air dispersion modeling. Emission rates of Clean Air Act Criteria Pollutants and non-methane hydrocarbons (a precursor of ozone, a Criteria Pollutant) were estimated for exhaust emissions from construction vehicles and for fugitive dust using emission factors provided in AP-42, the Environmental Protection Agency (EPA's) Compilation of Air Pollutant Emission Factors (EPA, 1995). These emission rates were input into the Industrial Source Complex Short-Term (ISCST3) air dispersion model to estimate both short-term and annual average air concentrations at the facility property boundary. ISCST3 is a refined, EPA-approved air dispersion model in the Users Network for Applied Modeling of Air Pollution (UNAMAP) series of air models (EPA, 1987). It is a steady-state Gaussian plume model that can be used to estimate ground-level air concentrations from industrial sources out to a distance of 50 km (31 mi). The air emissions calculations and air dispersion modeling are discussed in more detail below. Air concentrations predicted at the property boundary are then compared to National Ambient Air Quality Standards (NAAQS).

Emission Rate Estimates

Sources of Criteria Pollutants during construction site preparation will include combustion sources and fugitive dust. Of the combustion sources, vehicle exhaust will be the dominant source. Fugitive volatile emissions will also occur because vehicles will be refueled on-site. Fugitive dust will originate predominantly from vehicle traffic on unpaved surfaces, earth moving, excavating and bulldozing, and to a lesser extent from wind erosion. Emission rates from vehicle exhaust and fugitive dust for air modeling purposes were estimated for a 10-hour workday assuming peak construction activity levels were maintained throughout the year. This will lead to a conservative estimate of the annual average air concentrations because the peak construction activity levels will occur for only a portion of the year. Emission factors and assumptions specific to each of these two sources are discussed separately in the following paragraphs:

- Hydrocarbons - 3 ppm by volume

Recovered Fomblin oil is stored in plastic containers in the Chemical Storage Area.

Failure of this system will not endanger the health and safety of the public. Nevertheless, design and operating features are included that contribute to the safety of plant workers. Containment of waste is provided by components, designated containers, and air filtration systems. Criticality is precluded through the control of geometry, mass, and the selection of appropriate storage containers. To minimize worker exposure, airborne radiological contamination resulting from dismantling is extracted. Where necessary, air suits and portable ventilation units are available for further worker protection.

4.13.4.2.2 (See SAR § 12.1.1.3.3 and 12.1.3.4~~0.2.12 N.~~) Decontamination System LBDCR-10-0033

The Contaminated Workshop and Decontamination System are located in the same room in the CRDB. This room is called the Decontamination Workshop. The Decontamination Workshop in the CRDB will contain the area to break down and strip contaminated equipment and to decontaminate that equipment and its components. The decontamination systems in the workshop are designed to remove radioactive contamination from contaminated materials and equipment. The only significant forms of radioactive contamination found in the plant are uranium hexafluoride (UF_6), uranium tetrafluoride (UF_4) and uranyl fluoride (UO_2F_2).

One of the functions of the Decontamination Workshop is to provide a maintenance facility for both UF_6 pumps and vacuum pumps. The workshop will be used for the temporary storage and subsequent dismantling of failed pumps. The dismantling area will be in physical proximity to the decontamination train, in which the dismantled pump components will be processed. Full maintenance records for each pump will be kept.

The process carried out within the Decontamination Workshop begins with receipt and storage of contaminated pumps, out-gassing, Fomblin oil removal and storage, and pump stripping. Activities for the dismantling and maintenance of other plant components are also carried out. Other components commonly decontaminated besides pumps include valves, piping, instruments, sample bottles, tools, and scrap metal. Personnel entry into the facility will be via a sub-change facility. This area has the required contamination controls, washing and monitoring facilities.

The decontamination part of the process consists of a series of steps following equipment disassembly including degreasing, decontamination, drying, and inspection. Items from uranium hexafluoride systems, waste handling systems, and miscellaneous other items are decontaminated in this system. The decontamination process for most plant components is described below, with a typical cycle time of one hour. For smaller components the decontamination process time is slightly less, about 50 minutes. Sample bottles and flexible hoses are handled under special procedures due to the difficulty of handling the specific shapes. Sample bottle decontamination and decontamination of flexible hoses are addressed separately below.

Criticality is precluded through the control of geometry, mass, and the selection of appropriate storage containers. Administrative measures are applied to uranium concentrations in the Citric Acid Tank and Degreaser Tank to maintain these controls. To minimize worker exposure, airborne radiological contamination resulting from dismantling is extracted. Air suits and portable ventilation units are available for further worker protection.

The NEF will ensure that sampling equipment (pumps, pressure gages and air flow calibrators) are calibrated by qualified individuals. All air flow and pressure drop calibration devices (e.g., rotometers) will be calibrated periodically using primary or secondary air flow calibrators (wet test meters, dry gas meters or displacement bellows). Secondary air flow calibrators will be calibrated annually by the manufacturer(s). Air sampling train flow rates will be verified and/or calibrated each time a filter is replaced or a sampling train component is replaced or modified. Sampling equipment and lines will be inspected for defects, obstructions and cleanliness. Calibration intervals will be developed based on applicable industry standards.

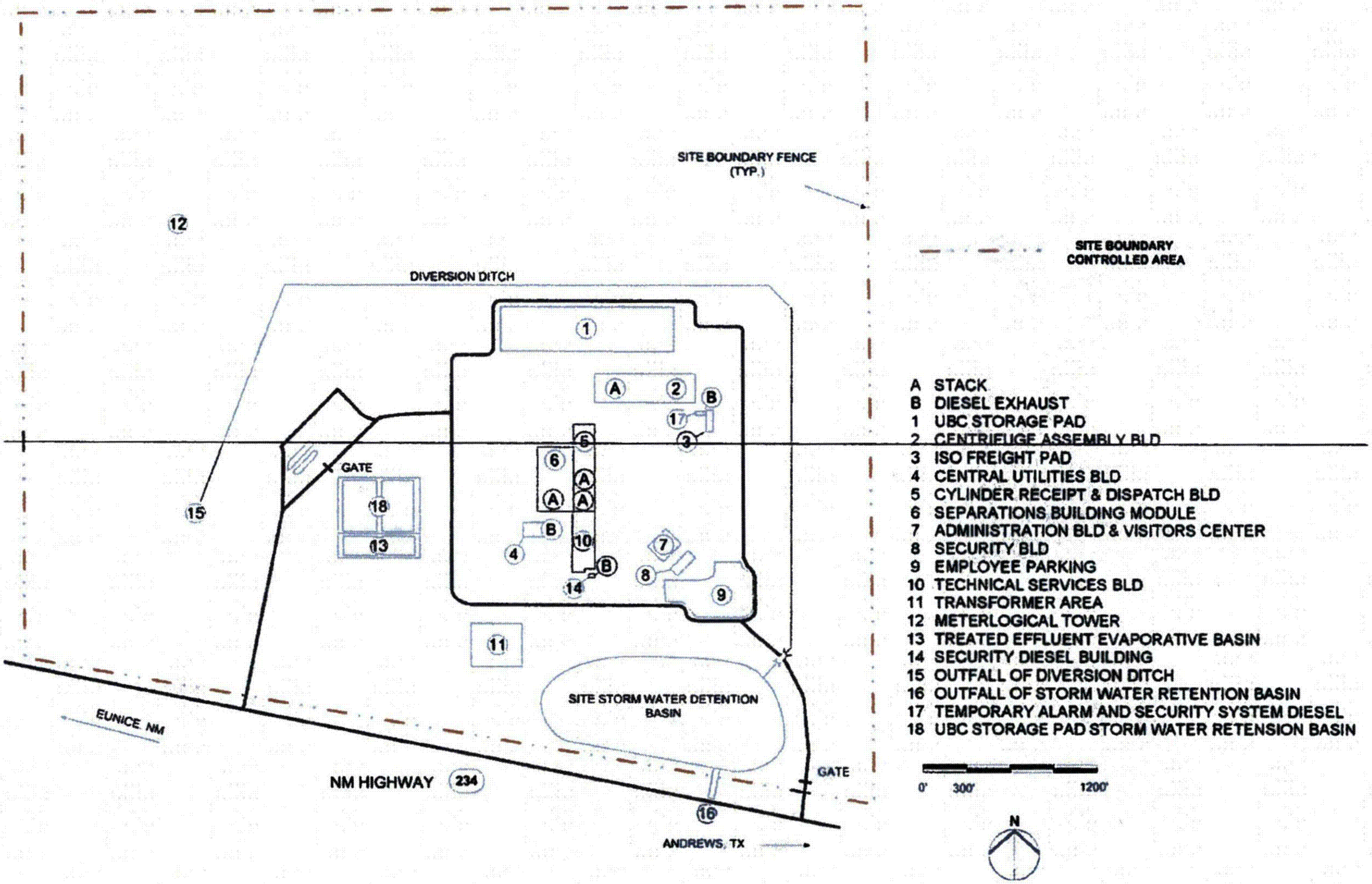
6.1.1.1 Gaseous Effluent Monitoring

As a matter of compliance with regulatory requirements, all potentially radioactive effluent from the facility is discharged only through monitored pathways. See ER Section 4.12.2.1, Routine Gaseous Effluent, for a discussion of pathway assessment. The effluent sampling program for the NEF is designed to determine the quantities and concentrations of radionuclides discharged to the environment. The uranium isotopes ^{238}U, ^{236}U, ^{235}U and ^{234}U are expected to be the prominent radionuclides in the gaseous effluent. The annual uranium source term for routine gaseous effluent releases from the plant has been conservatively assumed to be 8.9 MBq (240 □Ci) per year, which is equal to twice the source term applied to the 1.5 million SWU plant described in NUREG-1484 (NRC, 1994a). This is a very conservative annual release estimate used for bounding analyses. Additional details regarding source term are provided in ER Section 4.12, Public and Occupational Health Impacts. Representative samples are collected from each release point of the facility. Because uranium in gaseous effluent may exist in a variety of compounds (e.g., depleted hexavalent uranium, triuranium octoxide, and uranyl fluoride), effluent data will be maintained, reviewed, and assessed by the facility's Radiation Protection Manager, to assure that gaseous effluent discharges comply with regulatory release criteria for uranium. Table 6.1-1, Effluent Sampling Program, presents an overview of the effluent sampling program.

The gaseous effluent monitoring program for the NEF is designed to determine the quantities and concentrations of gaseous discharges to the environment.

Gaseous effluent from the NEF, which has the potential for airborne radioactivity (albeit in very low concentrations) will be discharged through the Pumped Extract GEVS, the CRDB GEVS, the Centrifuge Test and Post Mortem Facilities Exhaust Filtration System, and portions of the CRDB Heating Ventilating and Air Conditioning (HVAC) System that provide the confinement ventilation function for areas of the CRDB with the potential for contamination (Decontamination Workshop and the Ventilated Room). To support the connection of on-line mass spectrometer standards, a mobile pump and trap set will be used to provide local exhaust ventilation for a one time use and will be monitored locally. Monitoring for each of these systems is as follows: LBDCR-10-0046

- Pumped Extract GEVS: This system discharges to a stack on the SBM-1001 roof. The Pumped Extract GEVS provides for continuous monitoring and periodic sampling of the gaseous effluent in the exhaust stack in accordance with the guidance in NRC Regulatory Guide 4.16. The GEVS stack sampling system provides the required samples. The exhaust stack is equipped with monitors for alpha radiation and HF.


SITE BOUNDARY FENCE (TYP.)
SITE BOUNDARY CONTROLLED AREA
DIVERSION DITCH
GATE
SITE STORM WATER DETENTION BASIN
EUNICE, NM
NM HIGHWAY 234
ANDREWS, TX
A STACK
B DIESEL EXHAUST
1 UBC STORAGE PAD
2 CENTRIFUGE ASSEMBLY BLD
3 ISO FREIGHT PAD
4 CENTRAL UTILITIES BLD
5 CYLINDER RECEIPT & DISPATCH BLD
6 SEPARATIONS BUILDING MODULE
7 ADMINISTRATION BLD & VISITORS CENTER
8 SECURITY BLD
9 EMPLOYEE PARKING
10 TECHNICAL SERVICES BLD
11 TRANSFORMER AREA
12 METERLOGICAL TOWER
13 TREATED EFFLUENT EVAPORATIVE BASIN
14 SECURITY DIESEL BUILDING
15 OUTFALL OF DIVERSION DITCH
16 OUTFALL OF STORM WATER RETENTION BASIN
17 TEMPORARY ALARM AND SECURITY SYSTEM DIESEL
18 UBC STORAGE PAD STORM WATER RETENSION BASIN
0' 300' 1200'
N

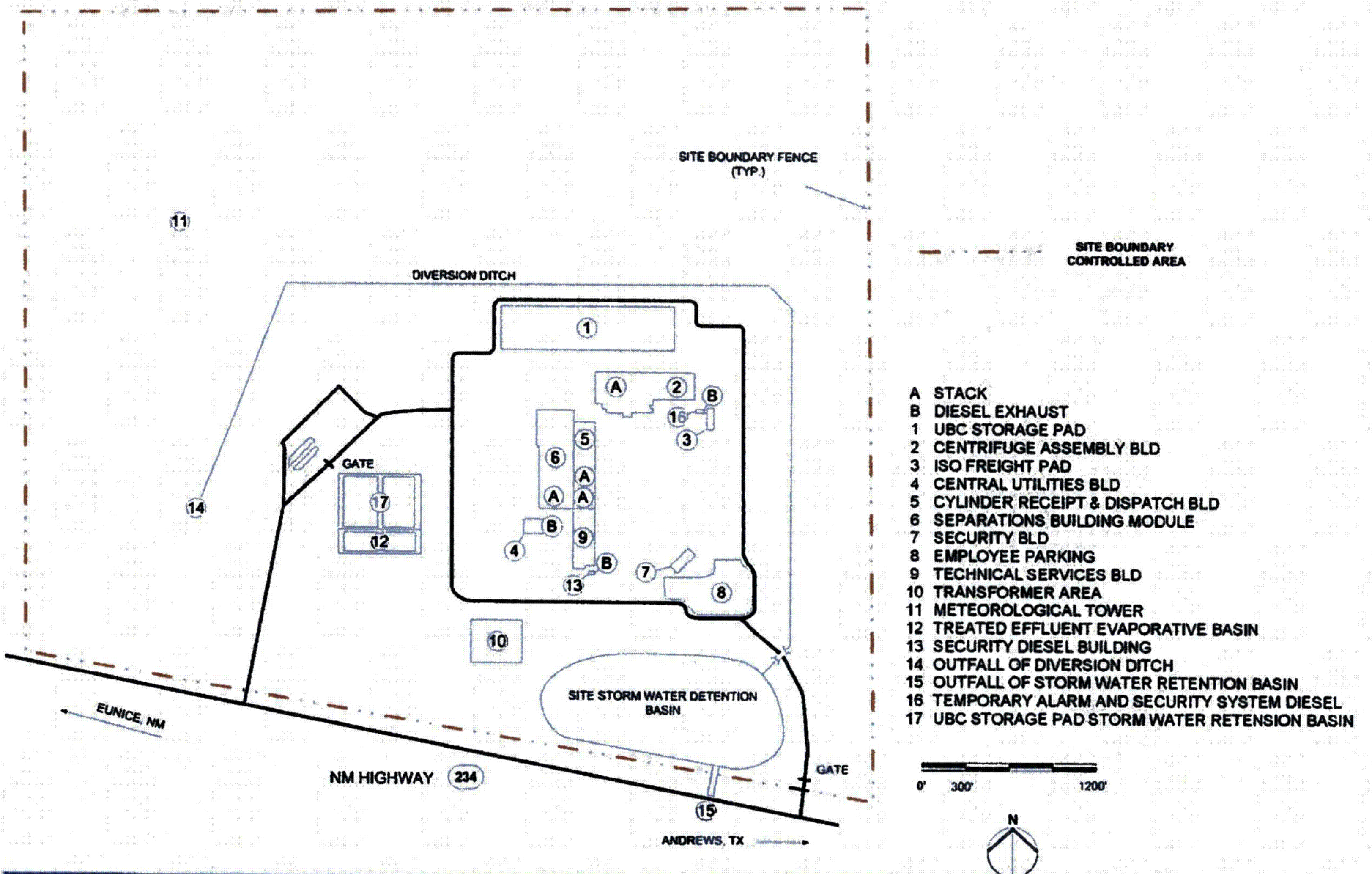
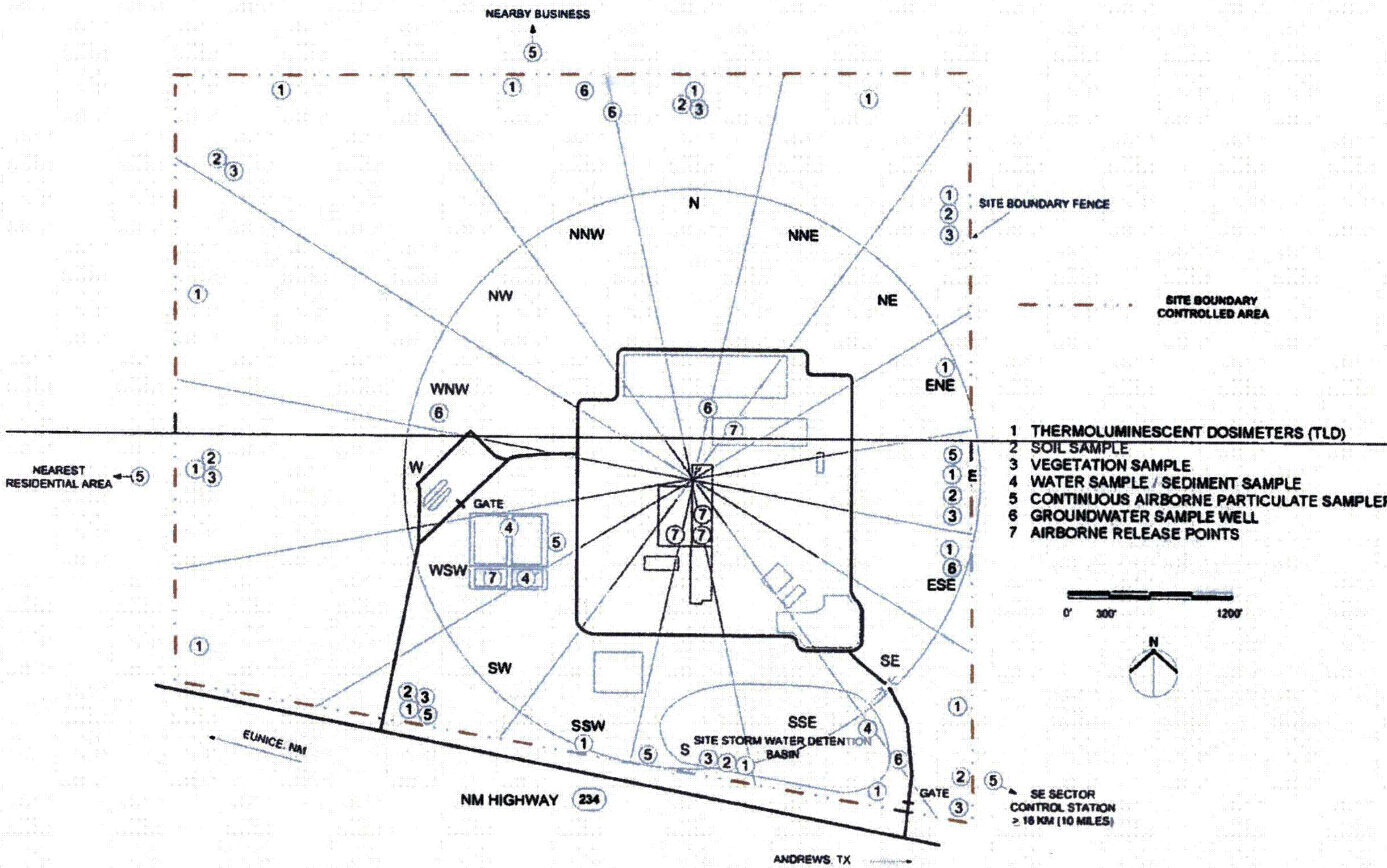


Figure 6.1-1 Effluent Release Points and Meteorological Tower


NEARBY BUSINESS
N
NNW
NNE
NW
NE
WNW
ENE
W
E
WSW
ESE
SW
SE
SSW
SSE
S
SITE BOUNDARY FENCE
SITE BOUNDARY CONTROLLED AREA
NEAREST RESIDENTIAL AREA
GATE
SITE STORM WATER DETENTION BASIN
EUNICE, NM
NM HIGHWAY 234
ANDREWS, TX
SE SECTOR CONTROL STATION ≥ 16 KM (10 MILES)
1 THERMOLUMINESCENT DOSIMETERS (TLD)
2 SOIL SAMPLE
3 VEGETATION SAMPLE
4 WATER SAMPLE / SEDIMENT SAMPLE
5 CONTINUOUS AIRBORNE PARTICULATE SAMPLER
6 GROUNDWATER SAMPLE WELL
7 AIRBORNE RELEASE POINTS
0'
300'
1200'

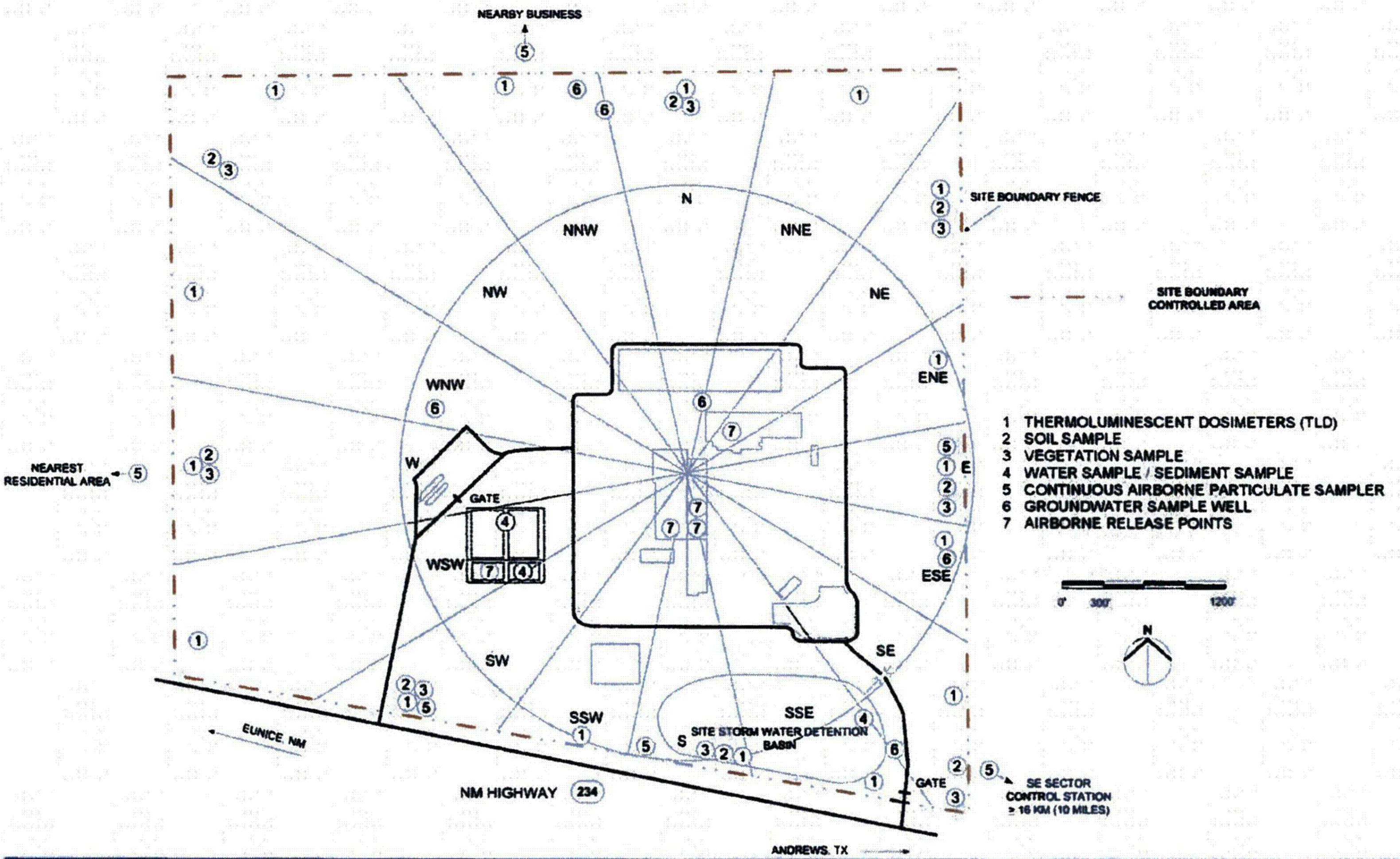
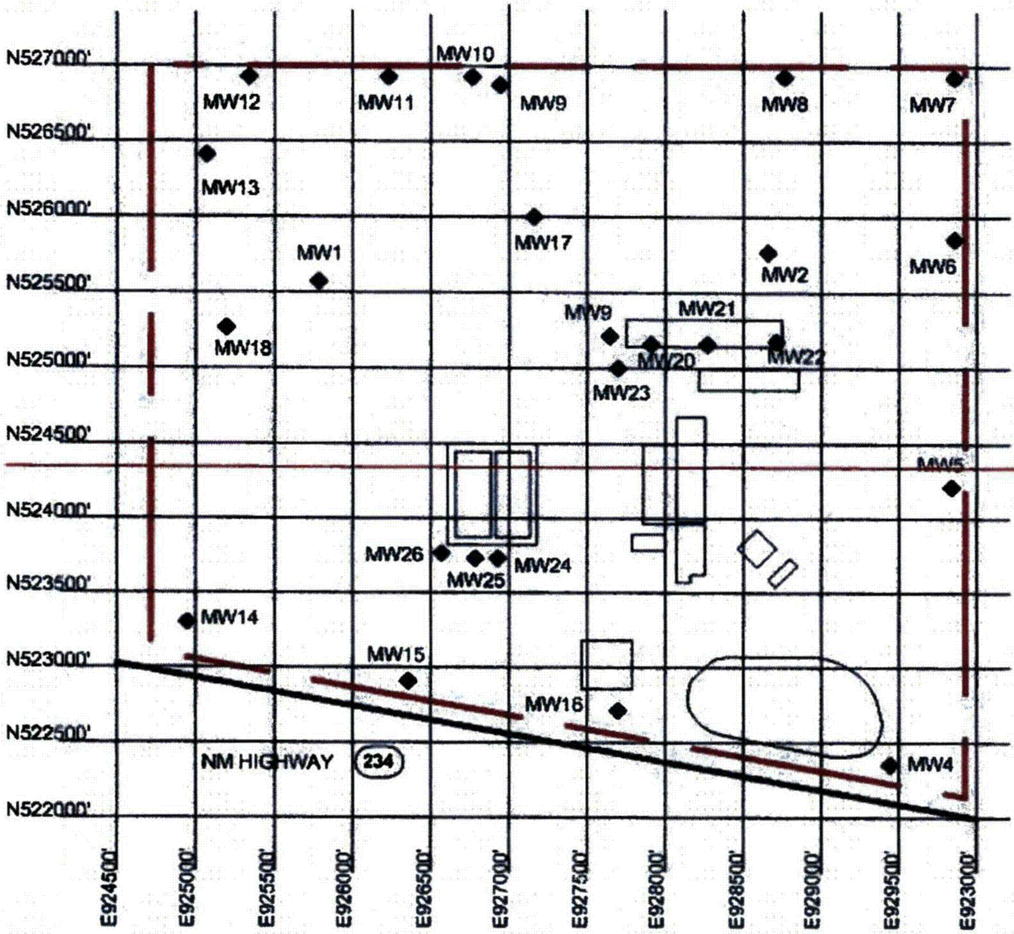
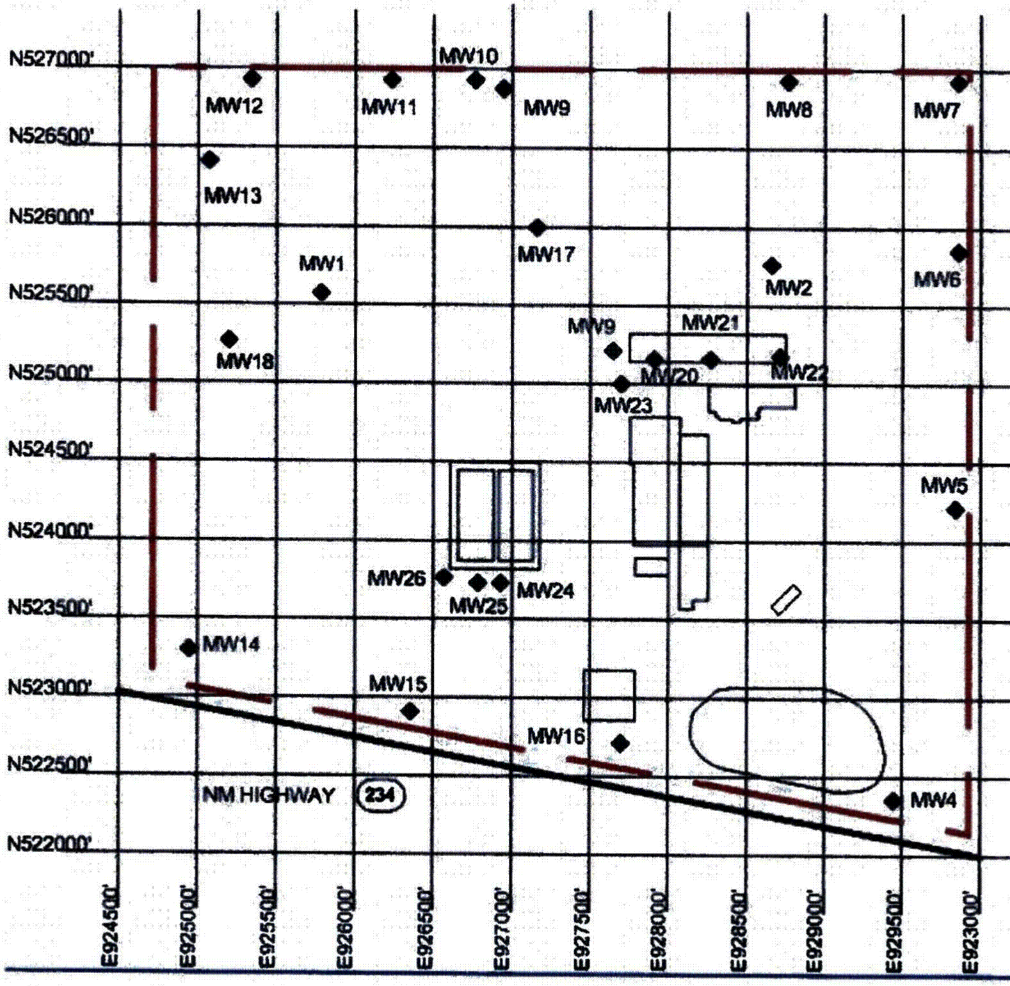


Figure 6.1-2Modified Site Features With Proposed Sampling Stations and Monitoring Locations



MONITORING WELLS		
WELL NO.	NORTHING	EASTING
MW-1	525569.74	925710.07
MW-2	525770.2	928825.73
MW-4	522326.995	929433.808
MW-5	524206.02	929825.78
MW-6	525881.706	929797.959
MW-7	527012.291	929741.526
MW-8	526979.997	928748.078
MW-9	526949.714	926975.341
MW-10	526974.82	926780.668
MW-11	526961.562	926251.803
MW-12	526950.295	925310.473
MW-13	526405.856	925022.698
MW-14	523292.982	924976.896
MW-15	522868.566	926358.939
MW-16	522675.427	927652.874
MW-17	526000.259	927162.85
MW-18	525246.462	925165.989
MW-19	525201.25	927581.17
MW-20	525147.25	927863.25
MW-21	525166.5	928228.42
MW-22	525154.92	928676.5
MW-23	524994.75	927663.83
MW-24	523744.58	926907.75
MW-25	523739.67	926739.67
MW-26	523747.17	926528.42



MONITORING WELLS		
WELL NO.	NORTHING	EASTING
MW-1	525569.74	925710.07
MW-2	525770.2	928625.73
MW-4	522326.995	929433.808
MW-5	524206.02	929825.78
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MW-8	526979.997	928748.078
MW-9	526949.714	926975.341
MW-10	526974.82	926780.668
MW-11	526961.562	926251.803
MW-12	526950.295	925310.473
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MW-14	523292.982	924976.896
MW-15	522868.566	926358.939
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MW-17	526000.259	927162.85
MW-18	525246.462	925165.989
MW-19	525201.25	927581.17
MW-20	525147.25	927853.25
MW-21	525156.5	928228.42
MW-22	525154.92	928676.5
MW-23	524994.75	927653.83
MW-24	523744.58	926907.75
MW-25	523739.67	926739.67
MW-26	523747.17	926528.42

Figure 6.1-2A Monitoring Wells

9.0PHASED OPERATION

Note: Section 9.0 is a proposed plan for proceeding with Phased Operation. Some of Tthe information delineated below may not yet be approved for implementation. However, as specific design details becomes available and prior to operation, it they will be evaluated and approved in accordance with the Configuration Management process. Approval documentation will be clearly noted (e.g., "Approved per CC-EG-2009-9999"). LBDCR-10-0002

The initial startup of the National Enrichment Facility does not include all facilities, systems, processes, and IROFS described in ISA Summary § 3.3 through § 3.8. The startup of the facility is performed in a phased approach to begin operation as soon as the required facilities, systems, processes, and IROFS are operational to support Initial Plant Operation. As delineated in SAR § 2.1.4, Transition from Design and Construction to Operations, LES is responsible for the design, quality assurance, construction, testing, initial startup, and operation of the facility. As the construction of systems is completed, the systems will undergo acceptance testing as required by procedure, followed by turnover from the construction organization to the operations organization by means of a Commissioning Acceptance Plan.

The facility will operate in a series of phases determined by operational requirements. Initial Plant Operation phase will include all safety systems necessary to safely conduct enrichment operations. The following phases (Production Phase 1 and Production Phase 2) will add support systems as necessary as the production capacity expands. These phases are described as follows: LBDCR-10-0033

1. Initial Plant Operation - During the initial phase of operation at the NEF, all Structures, Systems, and Components (SSCs) that are required to support the start up and early operation of the enrichment facility will be are completed and brought online as necessary to support that function. UF_6 operations will be are conducted in SBM 1001. This building will contains all the required SSCs to support Initial Plant Operations. Additional support functions will be are brought into operation in the following phases. In addition to the permanent plant equipment, some temporary systems will be are installed in the UF_6 Handling Area of SBM 1001 to support operations in place of systems that will not be are not completed. These systems include a storage area for a small amount of of radioactive material orsolid and liquid waste, and any contaminated equipment that requires storage in preparation for decontamination and repairs, waste treatment, or disposal. In addition, the Local Extract GEVS function will be is combined with the Pumped Extract GEVS to support Initial Plant Operations. LBDCR-10-0002

   The cascades in SBM 1001 will be are brought online in modules that contain all the systems that are necessary to support the function of the individual cascades. For instance, when the first cascade is started up, enough feed, product and tails stations will be are online to support operation of that cascade. Subsequent cascade modules will be are incrementally brought online as they are needed. LBDCR-10-0002 LBDCR-10-0002

   Other support systems not directly part of the UF_6 enrichment process will be arecontracted. For example, Llaboratory analysis of UF_6 material will be is contracted to a certified analytical laboratory, and a temporary personnel decontamination trailer will be provided on site.

2. Production Phase 1 - When enough product has been is enriched and is ready to be shipped to a customer, several other support functions will be completed are available and ready to support plant operations. These support functions include cylinder storage and sampling: LBDCR-10-0002

- Cylinder Storage Facilities (South CRDB)
- UBC Storage Pad
- GEVS systems (Local Extract GEVS, Fume Hood GEVS)
- Product Donor and Receiver Blending Stations
- Liquid Sampling Autoclave
- Personnel Decontamination Shower
- Ventilated Room
- Chemistry Lab
- Sub-Sampling System
- Mass Spectrometry Lab
- UBC Basin
- Centrifuge Cooling Water Towers

Addition of these SSCs will provide several additional functions that will support commercial production and shipment to customers. They include This provides additional cylinder storage, the ability to sample product prior to shipment, and other chemistry activities.

3. Production Phase 2 - At the completion of this phase, functions supporting sample analysis, wet and dry waste collection and treatment, and radioactive decontamination and maintenance of plant equipment will be are available. SSCs include: LBDCR-10-0002

- Permanent Cylinder Receipt/Shipment
- Solid Waste Collection
- Expanded Cylinder Storage in CRDB
- Vacuum Pump Rebuild Workshop
- Liquid Effluent Collection and Treatment
- Decontamination Workshop

With the addition of these final SSCs, the NEF plant will be fully functional. Additional cascades and support equipment will be can be added in the future to increase production, but the plant will be is fully capable of carrying out continuous commercial production at this point.

4. Production Phase 3 - When construction activities support, cCascade modules in Cascade Hall 1002 will be are started up incrementally as needed to support continued plant expansion. This incremental start up will continues until Cascade Halls 1001 and 1002 are both fully operational. LBDCR-10-0002

5. Production Phase 4 - As SSCs are ready for operation, the extension of SBM 1001 will be brought online using the same modular approach used to start up all previous cascades.

Operate While Constructing

An Operate While Constructing program is necessary to implement controls for continued construction during facility operation. The Operate While Constructing program is necessary until all cascades and expansion modifications are implemented and accepted by Operations.

1.0 PHASED OPERATION

~~Operate While Constructing is a process that implements controls to ensure that the Integrated Safety Analysis for the National Enrichment Facility remains valid during operations when part of the facility is still being constructed. The process of Phased Operation, placing cascades on-line and facility expansion is estimated to take several years; therefore, Operate While Constructing is an essential safety process for the operation of the National Enrichment Facility.~~

9.1FACILITY DIFFERENCES FOR PHASED OPERATION

The differences between the facility as described in §§ 3.3 through 3.5 and the facility at the start of Initial Plant Operations through Production Phase 2 are described below. Phased Operation does not impact ISA Summary §§ 1.0 through 3.3.1.

9.1.1*(1.2.2 and 2.1.2.3.1)* Separations Building Modules

A.(Approved per CC-LS-2010-0001) At the beginning of Initial Plant Operations, only one cascade within SBM 1001 will be is operational. Additional cCascades will be are brought into service as they are commissioned. LBDCR-10-0002

B.(Approved per CC-LS-2010-0001) The Process Services Corridor for SBM 1001 will be operational, but will lack gas transport equipment for cascades that are not on line (NaF Traps, Pump and Trap Sets, process headers, etc). This equipment is installed and operated as additional cascades are completed through Initial Plant Operations, Production Phase 1, and Production Phase 2. LBDCR-10-0002

C.The UF_6 Handling Area, including the Blending and Liquid Sampling Area, will have has the following differences: LBDCR-10-0002

1.(Approved per CC-LS-2009-0002, Rev. 1) The UF_6 Solid Feed Stations, Feed Purification Stations, Product Take-off Stations, and Tails Take-Off Stations associated with SBM 1001 will be are installed and brought online as needed to support starting up cascades in SBM 1001. LBDCR-10-0002

2.(Approved per CC-LS-2009-0002, Rev. 1) The Autoclaves, Product Blending Receiving and Donor Stations are not available for Initial Plant Operation. , and Product Blending operations are not conducted until Production Phase 1. Receiver Stations will not be installed until Production Phase 1. Without these components, no product cylinders can be shipped off site.

3.(Approved per CC-LS-2009-0002, Rev. 1) The Autoclaves are installed at the time of Production Phase 1. Without these components, product cylinders can not be shipped to customers but can be shipped off site for temporary storage.The Blending and Liquid Sampling Area has been moved into SBM 1001 UF_6 Handling Area. The Blending Receiving and Donor Stations and Liquid Sampling Autoclaves will not be available for Initial Plant Operation. Blending and liquid sampling will not be conducted until Production Phase 1. LBDCR-10-0002

4.(CC-OP+2009-0002 Pending) The Rail tTransporter will travels on rails embedded in the floor of the UF_6 Handling Area. These rails run the entire width of the module to the west through doors onto a concrete pad where cylinders will beare delivered during Initial Plant Operations and Production Phase 1 Operations. The rail runs east to the CRDB. Upon commencement of Production Phase 2, cylinders will be are delivered through the CRDB, and the west entrance of the UF_6 Handling Area will is no longer be used for cylinder deliveries. LBDCR-10-0002

5. (Approved per CC-EG-2009-0291) A weigh station will be is located in the UF_6 Handling Area for Initial Plant Operations. Upon commencement of Production Phase 1 Operations, the weigh scale in the CRDB will be is functional and the one in the SBM will be is removed. LBDCR-10-0002

9.1.2 *(1.2.2 and 2.1.2.3.3)* Technical Services Building (TSB)

A. The Control Room will be is operational as described in ISA Summary § 3.3.1.2.2.1.

B. The Training and Simulator Rooms will not beare operational as described in ISA Summary § 3.3.1.2.2.2. The PCS Training software will be temporarily installed in a classified trailer to facilitate Operator Training in preparation for Initial Plant Operations. LBDCR-10-0002

C. The Central Alarm Station (CAS) Area will be is operational as described in ISA Summary § 3.3.1.2.2.3.

D. (Approved per CC-LS-2009-0002, Rev. 2) The Medical Room will be is operational for general first aid cases. Injuries requiring more than general first aid will be are transported off site to local area medical facilities. LBDCR-10-0002

E. The Emergency Operations Center Room will be is operational as described in ISA Summary § 3.3.1.2.2.5. LBDCR-10-0002

F. The Technical Support Center Assembly Room will be is operational as described in ISA Summary § 3.3.1.2.2.6.

G. (Approved per CC-LS-2009-0002, Rev. 2) The Break Room will not is notbe operational.

H. (Approved per CC-LS-2009-0002, Rev. 2) The I&C Electrical Shop Room will is not be operational. The I&C Electrical Shop serves as a work area for general electrical and I&C components and maintenance. Maintenance on non-contaminated equipment will be is delayed until the I&C Electrical Shop is available or is conducted in other locations on-site or off-site, as necessary, based on the equipment and maintenance required. LBDCR-10-0002

I. (Approved per CC-LS-2009-0002, Rev. 2) The Mechanical Shop Room will is not be operational. The Mechanical Shop serves as a work area for general mechanical maintenance and work such as painting or welding. Maintenance on non-contaminated equipment will be is delayed until the Mechanical Shop is available or conducted in other locations on-site or off-site, as necessary, based on the equipment and maintenance required. LBDCR-10-0002

J. The Chemical Storage Room will be is operational as described in ISA Summary §3.3.1.2.2.10.

K. (Approved per CC-LS-2010-0001) The Waste Processing Room will be operational. The Waste Processing Room serves as a processing area of non-radioactive wastes. Non-radioactive wastes will are either be stored under appropriate safety controls until processing systems are available, or shipped off-site to a processing facility for treatment and/or disposal at a licensed facility. LBDCR-10-0002

L. (Approved per CC-LS-2009-0002, Rev. 1) The Environmental Monitoring Laboratory will is not be operational. Instead, samples will be are collected and shipped to a certified testing facility for analysis. The sample containers will are not be returned to LES, but will be are disposed of by the receiving facility. LBDCR-10-0002

9.1.3 *(1.2.2 and 2.1.2.3.2)* Cylinder Receipt and Dispatch Building (CRDB)

A. (Approved per CC-LS-2009-0002, Rev. 1) The Solid Waste Collection Room will not be is not operational. The Solid Waste Collection Room is designed to process both wet and dry low-level radioactive solid waste. The small quantity of solid waste that is expected to be generated at NEF will be is stored in accordance with appropriate radiological and criticality safety controls until the Solid Waste Collection Room is completed. LBDCR-10-0002

B. (Approved per CC-LS-2009-0002, Rev. 1) The Vacuum Pump Rebuild Workshop will not be is not operational. The rebuilding of vacuum pumps is a planned evolution. In the unlikely event that a rebuild of a vacuum pump containing UF_6 is required, the pump will be is replaced with a clean vacuum pump and the contaminated pump stored in accordance with appropriate radiological controls until the Vacuum Pump Rebuild Workshop is completed. LBDCR-10-0002

C. (Approved per CC-LS-2009-0002, Rev. 1) The Decontamination Workshop will not be is not operational. The decontamination systems in this workshop are designed for radioactive decontamination of materials and equipment used in uranium hexafluoride systems, waste handling systems, and other areas of the plant. The small quantity of contaminated equipment that is expected will be is stored in accordance with appropriate radiological and criticality safety controls until the Decontamination Workshop is completed. LBDCR-10-0002

D. (Approved per CC-EG-2009-0369 Pending) The Ventilated Room will not be is not operational. The main activities carried out in the Ventilated Room are servicing chemical traps by removing spent carbon, aluminum oxide, and sodium fluoride and replacing damaged and leaking valves on cylinders which contain UF_6. Servicing chemical traps is a planned evolution and will not be is not required or planned before Ventilated Room is completed. A temporary room has been constructed will beis constructed in the UF_6 Handling Area in SBM 1001 for the purpose of storageing any contaminated equipment or waste generated during Initial Plant Operations. This room will be are connected to the Pumped Extract GEVS, which is also located in UF_6 Handling Area. The room will be is used for storage only; no processing of equipment or materials will be conducted. Although a leaking valve on a cylinder containing UF_6 is not expected, if one is identified, the potential leakage will be is stopped using appropriate procedural guidance and the cylinder stored in an appropriate (feed or product) station until repairs can be conducted or the cylinder can be returned to the vendor. LBDCR-10-0002 LBDCR-10-0007 LBDCR-10-0007 LBDCR-10-0002

Transitional accident sequences associated with this room have been identified that require implementation of existing IROFS. See ISA Summary Tables 4-4 and 4-5. LBDCR-10-0007

E.(CC-EG-2010-0005 Pending) (Approved per CC-EG-2010-0005 Rev. 1)The Liquid Effluent Collection and Treatment Room will not be is not operational. Instead, the various types of aqueous and non-aqueous liquid wastes generated by plant operations and processes in the facility will be are collected and either shipped off site to an appropriate treatment and disposal facility or stored on site in accordance with appropriate radiological and criticality safety controls until the Liquid Effluent Collection and Treatment Facility is completed. LBDCR-10-0002 LBDCR-10-0039

(Approved by CC-EG-2008-0519) The LECTS Room will also be used for trap filling. Until the LECTS Room is available, clean (non-UF_6 contaminated) trap fill operations (carbon, aluminum oxide, and NaF) will be are conducted in the Trap Filling and Vacuum Pump Building (2300). Building 2300 will also be used for chemical trap drying; vacuum pump receipt inspections; PFPE oil sampling; PFPE oil analysis; and helium leak testing. No licensed materials will be are contained in this building. Contaminated traps will not be reused. LBDCR-10-0002

F.(Approved by CC-RW-2009-0001) The Contaminated Material Handling Room will not be is not operational. Instead contaminated disposable protective clothing will be is collected, monitored and either shipped off site to a licensed disposal facility or stored on site in accordance with appropriate controls until the Contaminated Material Handling Room and Solid Waste Collection Room are completed and implemented. LBDCR-10-0002

(Approved by CC-EG-2009-0293) The Gaseous Effluent Ventilation System (GEVS) Room will not be operational. The GEVS System will be constructed as three separate systems, Pumped Extract GEVS, Local Extract GEVS, and Fume Hood GEVS (Fume Hood GEVS is not required for Initial Plant Operations). Pumped Extract GEVS will beis permanently installed in the UF_6 Handling Area of SBM 1001 and will beis operational for Initial Plant Operations. The Pumped Extract GEVS will be is temporarily connected to Local Extract ductwork in the SBM to support Initial Plant Operations. LBDCR-10-0002

(CC-EG-2009-0101 Pending) When the GEVS Room is complete, the permanent Local Extract GEVS will be installed along with the Fume Hood GEVS in that room. Once these GEVS systems are operational, the Pumped Extract GEVS' temporary connection to the Local Extract ductwork will be isolated. LBDCR-10-0002

G.(Approved per CC-LS-2009-0002, Rev. 1) The Mass Spectrometry Laboratory will not beis not operational. Instead, samples will be are collected and shipped to a certified testing facility for analysis. Contaminated sample containers will not be are not returned to LES, but will be are disposed of by the receiving facility.

H.(Approved per CC-LS-2009-0002, Rev. 1) The Chemical Laboratory will not be is not operational. Instead, samples will be are collected and shipped to a certified testing facility for analysis. Contaminated sample containers will not be returned to LES, but will be are disposed of by the facility. LBDCR-10-0002

I. (Approved per CC-LS-2010-0001) The Radiation Monitoring Control Room will not be is not operational. Normal ingress and egress from the enrichment processing areas will be is through the controlled SBM west entrance. The required radiological equipment will be available. A radiological control point is established within the SBM designed to be the point of demarcation between non-contaminated areas and potentially contaminated areas of the facility. Personnel contamination detection equipment is staged at the control point. There is a personnel decontamination facility containing hand washing capabilities and safety showers adjacent to the SBM. LBDCR-10-0002

J. (Approved per CC-LS-2009-0002, Rev. 1) The Truck Bay/Shipping and Receiving Area will not be is not operational.

- (CC-OP-2009-0002 Pending) Commercial transport tractors are disconnected from the trailers carrying containers and connected to LES yard tractors which comply with IROFS36c (diesel fuel capacity less than 280 L). The yard tractor Transport trucks will deliver UF_6 cylinders (i.e., full 48Y feed cylinders, new or cleaned 30B product cylinders, and empty 48Y tails cylinders) to a cement pad on the west side of SBM 1001 in the southwest corner. Cylinders are unloaded with a gantry crane of sufficient capcity to perform all required cylinder movements. The gantry crane will lift and transfer the cylinder to the rail transporter that sits on rails extened outside the SBM. On completion of receipt inspection, the rail transporter will move the cylinder inside the UF_6 Handling Area. The unloading of cylinders will be performed with a mobile crane of sufficient capacity to unload cylinders from the delivery vehicles directly onto the rail transporter. Cylinders are removed from the facility in the same fashion. LBDCR-10-0002

K. The Cylinder Storage Areas in the CRDB will not be is not operational. LBDCR-10-0002

- (Approved per CC-LS-2009-0002, Rev. 1) The buffer storage of feed cylinders will be is in the UF_6 Handling Area in available Solid Feed, Tails, and Feed Purification Stations until the UBC Storage Pad or the South end of the CRDB are is ready to accept cylinders for storage. LBDCR-10-0002

- (Approved per CC-LS-2009-0002, Rev. 2) Full product cylinder storage will be is accomplished in the UF_6 Handling Area in Product Take-off Stations and Blending Donor and Take-Off Stations Stations for approximately 3 months after initial plant operations commence. When, the autoclaves are operational, the product cylinders are liquid sampled and shipped to clientsuntil the UBC Storage Pad or the South end of the CRDB is ready to accept cylinders for storage. LBDCR-10-0002 LBDCR-10-0002

- (Approved per CC-LS-2009-0002, Rev. 1) Full tails cylinders will be are stored in the Tails Take-off Stations until the UBC Storage Pad or the South end of the CRDB is ready to accept cylinders for storage.

9.1.4 Centrifuge Assembly Building (CAB)

The CAB will be is operational as described in ISA Summary § 3.3.1.4. LBDCR-10-0002

9.1.5Not Used

9.1.6Uranium Byproduct Cylinder (UBC) Storage Pad

(Approved per CC-LS-2009-0019) The UBC Storage Pad and UBC Basin are notwill not be operational at the beginning of the Initial Plant Operations phase; however, these system will be operational prior to Production Phase 1. The UBC Storage Pad will be completed in sections. The first section will be completed prior to Production Phase 1. LBDCR-10-0002

9.1.7Central Utilities Building (CUB)

The CUB will not be is not operational as described in ISA Summary § 3.3.1.7. However, Ssystems required for Initial Plant Operation will be are ready in sufficient capacity to support plant operations. The following list describes sSystems within the CUB that will not be are ready for to support Initial Plant Operations are as follows: LBDCR-10-0002

- (Approved per CC-EG-2008-0392, Rev. 0) Centrifuge Cooling Water will be is operational with the exception of the cooling towers. A bypass line has been installed to isolate the cooling towers and only the Centrifuge Water Heat Exchanger (colled by CCW Chillers) is currently utilized as a heat removal source for the CCWS. LBDCR-10-0002
- (CC-EG-2010-0008 Pending) The DI Water System will be is brought online as needed to support make-up water requirements after the initial system fill is made. A temporary skid-mounted polisher will be is installed until the permanent equipment is operational in the CUB. LBDCR-10-0018
- (Approved per CC-LS-2010-0001) Normal power supplied to the CRDB will not be is not available. However, Depending on the scheduled completion date for storage area within the CRDB, alternate power is available and will may need to be supplied as necessary. LBDCR-10-0002
- (Approved per CC-LS-2010-0001) Final commissioning and acceptance will be is in progress when Initial Plant Operations begin. These activities will be are complete in sufficient time to support continued plant operations.

9.1.8*(2.1.2.3.6)* Administration Building

(Approved per CC-LS-2009-0002, Rev. 2) The Administration Building will not be is not operational.

A. The Administration Building provides over 50 work locations for plant office staff. Until building completion, the staff will continue to be housed in temporary buildings on the east end of the facility.

B. The Administration Building lobby is designed to act as an assembly area for emergency planning purposes. Alternate assembly areas are designated for assembly until completion for the Administration Building.

LBDCR-10-0002

~~9.1.9Not Used~~

~~9.1.10*(1.2.2 and 2.1.2.3.8)* Site Security Buildings~~

~~A.(Approved by CC-LS-2010-0001) The main Security Building at the entrance of the facility will not beis operational for access to the Controlled Access Area (CAA). Instead, the existing security trailer will continue to be used. Vehicular traffic passes through additional security checkpoints before being allowed to park. Parking is located outside of the Controlled Access Area (CAA) security fence. Visitor passes are issued at a temporary security trailer located at the south east enterance to the facility.~~

LBDCR-10-0002

9.2PROCESS DIFFERENCES

The differences between the processes as described in ISA Summary § 3.4 and Initial Plant Operation are as follows:

9.2.1Overview of Gas Centrifuge Enrichment Process

The overview of the gas centrifuge enrichment process is as described in ISA Summary § 3.4.1.

9.2.2UF_6 Feed System

(Approved per CC-LS-2009-0002, Rev. 1) The UF_6 Feed System will be is operational as described in ISA Summary § 3.4.2 except the UF_6 Feed System will initially contain a sufficient number of operational UF_6 Solid Feed Stations to maintain operational flexibility for the operational Cascade Hall. These Feed Stations will be are brought into service as needed to support incremental startup of cascade modules. All operational feed stations will contain a full feed cylinder. Additional feed cylinders will be are stored in the spare tails stations to provide enough feed stock (and eventually tails storage) for approximately 3 months of operation before requiring additional storage space. LBDCR-10-0002 LBDCR-10-0002

9.2.3Cascade System

(Approved per CC-LS-2009-0002, Rev. 1) The Cascade System will be is operational as described in ISA Summary § 3.4.3 with the exception that only one cascade will be is on line at the beginning of Initial Plant Operation. Cascades will be are brought online incrementally when the centrifuges within each cascade and all support equipment related to each cascade module are commissioned. LBDCR-10-0002

9.2.4Product Take-off System

(Approved per CC-LS-2009-0002, Rev. 1) The Product Take-off System will be operational as described in ISA Summary § 3.4.4 with the following exception. The Product Low Temperature Takeoff Stations and supporting equipment may not all be in operation when the first cascade is started up. Each Product Low Temperature Takeoff Station will be is brought online as needed to support the incremental start up of cascades. LBDCR-10-0002

9.2.5Tails Take-off System

(Approved per CC-LS-2009-0002, Rev. 1) The Tails Take-off System will be is operational as described in ISA Summary § 3.4.5 with the exception that all stations not in use will initially contain a full feed cylinder. Once an in-service feed cylinder is emptied, it will be is switched with a full feed cylinder from the tails station. The empty feed cylinder can then be used for normal tails take-off. This cylinder storage strategy will allow approximately 3 months of operation before additional cylinder storage space is required. In addition, the Tails Low Temperature Takeoff Stations and supporting equipment may not all be in operation when the first cascade is started up. Each Tails Low Temperature Takeoff Station will be is brought online as needed to support the incremental start up of cascades. Sufficient Tails Stations will be are available at all times to accommodate peak flow from the cascades. LBDCR-10-0002 LBDCR-10-0002

9.2.6Product Blending System

(Approved per CC-LS-2009-0002, Rev. 1) The Product Blending System will not be is not operational as described in ISA Summary § 3.4.6. The Blending System is not needed for Initial Plant Operations. It will be is in operation when needed to support plant operations. LBDCR-10-0002

9.2.7Product Liquid Sampling System

(Approved per CC-LS-2009-0002, Rev. 1) The Product Liquid Sampling System will not be is not operational at Initial Plant Operation. The Product Liquid Sampling Autoclaves will be are unavailable. Autoclaves will be are operational for Production Phase 1 to provide sampling capability for product that is ready for shipment. LBDCR-10-0002

9.2.8Contingency Dump System

(Approved per CC-LS-2009-0002, Rev. 1) The Contingency Dump System will be is operational as described in ISA Summary § 3.4.8. Each operating cascade module has its own dedicated Contingency Dump System available for use. As additional cascades are completed, additional contingency dump components are installed and made operational in the process services corridor to support incremental plant start up and expansion. LBDCR-10-0002

9.2.9Gaseous Effluent Vent Systems

(Approved by CC-EG-2009-0293) The Gaseous Effluent Ventilation System (GEVS) Room will not beis not operational. The GEVS System will be is constructed as three separate systems, Pumped Extract GEVS, Local Extract GEVS, and Fume Hood GEVS (Fume Hood GEVS is not required for Initial Plant Operations). Pumped Extract GEVS will be is permanently installed in the UF_6 Handling Area of SBM 1001 and will be is operational for Initial Plant Operations. The Pumped Extract GEVS will be is temporarily connected to Local Extract ductwork in the SBM to support Initial Plant Operations. LBDCR-10-0002

(CC-EG-2009-0101 Pending) When the GEVS Room in the CRDB is complete, the permanent Local Extract GEVS will be installed along with the Fume Hood GEVS in that room. Once these GEVS systems are operational in the CRDB, the Pumped Extract GEVS' temporary connection to the Local Extract ductwork will be isolated. LBDCR-10-0002

9.2.10Centrifuge Test and Centrifuge Post Mortem Processes

The Centrifuge Test and Centrifuge Post Mortem Facility will be is operational as described in ISA Summary § 3.4.10. LBDCR-10-0002

9.2.11(CC-OP-2009-0002 Pending) Material Handling Processes

Cylinder Receipt and Shipping

During initial plant operations, cylinders are shipped and received via a loading platform on the West side of the UF_6 Handling Area of SBM 1001 (West side SBM 1001). The West side SBM 1001 space for the following services:

- Cylinder loading and unloading
- Inventory weighing
- Secure internal storage
- Preparation and storage area for overpack/protective structural packaging.

LBDCR-10-0002

~~The cylinders are received, shipped offsite, stored, and transferred to and from the UF_6 Handling Area until the CRDB and UBC Storage Pad become operational.~~

~~Full feed cylinders, empty feed cylinders, semi-finished product cylinders, and UBCs are stored in the UF_6 Handling Area until the CRDB and UBC Storage Pad become operational.~~

~~Description~~

~~Commercial transport tractors are disconnected from the trailers carry containers and connected to LES yard tractors which comply IROFS36c (dieasel fuel capacity less than 280 L). The yard tractor will deliver UF_6 cylinders (i.e., full 48Y feed cylinders, and new or cleaned 30B product cylinders) to West side SBM 1001 recipt platform. Cylinders are unloaded with a gantry crane of sufficient capacity to perform all required cylinder movements. The gantry crane will lift and transfer the cylinder to the rail transporter that sits on rails that are extended outside the SBM. On completion of receipt inspection, the rail transporter will move the cylinder inside the UF_6 Handling Area. Cylinders are removed from the facility in the same fashion.~~

~~Equipment~~

~~The following equipment is used for cylinder handling on the West side SBM 1001 receipt platform.~~ LBDCR-10-0002

~~Vehicle Loading Platform~~

~~The vehicle loading and unloading platform is located adjacent to the West side SBM 1001 equipment hatch. This platform provides a safe method of transfer from the vehicle trailer to rail transporter located on the platform.~~

~~Gantry Crane.~~

~~A dedicated gantry crane is used to handle cylinders on the vehicle loading platform. The crane spans the width of the loading platform to access vehicle trailers and the rail transporter. The hoist has a maximum lift of approximately 6.1 m (20 ft). Crane specifications are as follows:~~

~~Span~~	~~11.3 m~~	~~(37 ft)~~
~~Capacity~~	~~30 MT~~	~~(44,100 lb)~~
~~Hoist lift height~~	~~3.1 m~~	~~(20 ft)~~
~~Hoist lift speed~~	~~3 m/min & 0.5 m/min~~	~~(10 ft/min & 1.6 ft/min)~~
~~Travel length~~	~~7.9 m~~	~~(26 ft)~~
~~Bridge travel speed (VFD)~~	~~19.8 m/min~~	~~(65 ft/min)~~
~~Brake type~~	~~Direct Current Disk~~	

Scale.

(Approved by CC-EG-2009-0291) Inventory Weighing is performed using a temporary scale in the UF_6 Handling Area of SBM-1001. The scale is identical to the scales described in § 3.4.11.1.2.C. Each cylinder that enters or exits the UF_6 Handling Area during the Initial Operations Phase is weighed. A weigh scale capable of weighing a load of 17 MT (37,500 lb) and capable of accepting a load of 20 MT (44,100 lb) is installed. The scale is capable of weighing to a tolerance of ±2.5 kg (±5.5 lb). The scale has reader and printout facilities.

Powered Vehicles And Rail Transporters.

LES yard tractors that comply IROFS36c (diesel fuel capacity less than 280 L) are utilized to deliver the vehicle trailer containing cylinders to the West side SBM 1001 receipt platform. The gantry crane will lift and transfer the cylinder to the stillage just outside the SBM accessible to the rail transporter. On completion of receipt inspection, the rail transporter will retrieve the cylinder for use. Cylinders are removed from the facility in the same fashion.

(3.4.11.1.3) Cylinder Specifications.

As specified in ISA Summary § 3.4.11.1.3.

(3.4.11.1.4, 3.4.11.1.5 and 3.4.11.1.6) Storage LBDCR-10-0002

Storage is made available in phases. Initially, cylinders are stored in their respective stations in the UF_6 Handling Area. When available, the CRDB and the UBC Storage Pad is utilized for storage of cylinders.

- During initial plant operations, cylinders are placed on and removed from delivery trucks using a gantry crane. They are moved inside the UF_6 area using the rail transporter and in the CRDB (when available in Production Phase 1) using the West Bridge Crane. The other bridge cranes in the CRDB are installed at a later date.
- The UBC Storage Pad is not operational at Initial Plant Operations. It is completed in time to provide storage of cylinders while the CRDB is being finished.

(3.4.11.1.7) Cylinder Deliveries

As specified in ISA Summary § 3.4.11.1.7, with the exception that the numbers of deliveries and shipments are less during the Initial Plant Operations Phase due to limited initial production and storage capacity.

A. During initial plant operations, cylinders will be shipped and received via a loading platform on the West side of the UF_6 Handling Area of SBM 1001. Inventory Weighing will be performed using temporary scales in the UF_6 Handling Area of SBM 1001. Storage will be made available in phases. Initially, cylinders will be stored in their respective stations. When available, the South end of the CRDB and the UBC Storage Pad will be utilized for storage of cylinders.

B. During initial plant operations, cylinders will be placed on and removed from delivery trucks using a mobile crane of sufficient capacity. They will be moved inside the UF_6 area using the rail transporter and in the CRDB (when available in Production Phase 1) using the West Bridge Crane. The other bridge cranes in the CRDB will be installed at a later date.

~~C.The UBC Storage Pad will not be operational at Initial Plant Operations. It will be completed in phases in time to provide storage of cylinders while the CRDB is being finished.~~ LBDCR-10-0002

9.3UTILITY AND SUPPORT SYSTEM DIFFERENCES

The differences between the utility and support systems as described in ISA Summary § 3.5 and Initial Plant Operation are as follows:

A.The Building Ventilation will be is operational as described in ISA Summary § 3.5.1.

B.The Electrical System will be is operational as described in ISA Summary § 3.5.2. LBDCR-10-0002

C.The Compressed Air System will be is operational as described in ISA Summary § 3.5.3.

D.Not Used (Approved per CC-LEGS-201009-00082, PendingRev. 1) The Deionized Water System will not be operational. Initial system fill and makeup water, if required, will be performed by an external source, such as a tanker truck. A temporary skid-mounted polisher will be installed until the permanent equipment is operational in the CUB. LBDCR-10-0018

E.*(1.2.2)* (Approved per CC-EG-2008-0392, Rev. 0) The Centrifuge Cooling Water (CCW) System will be is operational with the exception of the cooling water towers. The cooling water towers will be are bypassed and heat removal will be is performed by the CCW heat exchanger cooled by the CCW chiller units. This arrangement can support several cascades on line [CC-EG-2008-0392]. When the cooling towers are completed and additional cooling is needed, the bypass valve will be is closed and normal operation will commence. LBDCR-10-0002 LBDCR-10-0002

E.The Sewage System will be is operational as described in ISA Summary § 3.5.6. LBDCR-10-0002

F.The Communication and Alarm Annunciation System will be is operational as described in ISA Summary § 3.5.7.

G.Not Used

H.The Control System will be is operational as described in ISA Summary § 3.5.9. LBDCR-10-0002

I.The Standby Diesel Generator System will be is operational as described in ISA Summary § 3.5.10.

LBDCR-10-0002

J.The Nitrogen System will be is operational as described in ISA Summary § 3.5.11.

K.*(2.1.2.4.3 and 3.12.1.3)* (Approved per CC-EG-2010-0005 Rev. 1) The Liquid Effluent Collection and Treatment System (LECTS) will not be is not operational. Instead, the various types of aqueous and non-aqueous liquid wastes generated by plant operations and processesin the facility will be are collected and either shipped off site to an appropriate treatment and disposal facility or stored on site in accordance with appropriate radiological and criticality safety controls until the Liquid Effluent Collection and Treatment Facility is completed. LBDCR-10-0002 LBDCR-10-0039 LBDCR-10-0002

L.*(2.1.2.4.4)* The Solid Waste Collection System will not be is not operational. Solid wastes will either be stored on site using appropriate chemical, radiological, and criticality safety controls until the Solid Waste Collection Room is completed or shipped off site to a processing facility for treatment and/or disposal at a licensed facility.

M. *(2.1.2.3.2, 2.1.2.4.1, and 4.13.2)* (Approved per CC-LS-2009-0002, Rev. 1) The Decontamination Workshop will not be is not operational. Contaminated equipment will be is stored in accordance with appropriate radiological and criticality safety controls until the Decontamination Workshop is completed. LBDCR-10-0002

N. *(2.1.2.4.2 and 4.13.4.2.1)* (Approved per CC-LS-2009-0002, Rev. 2) The Fomblin Oil Recovery System will not be is not operational; however, the system has no impact on any safety aspect of facility operation. Fomblin oil will either be appropriately stored on site until the system is operational or disposed of at a certified disposal facility. LBDCR-10-0002

O. Not Used

P. (Approved per CC-EG-2009-0369 Pending) The Ventilated Room will not be is not operational. A temporary room will be is has been constructed in the UF_6 Handling Area in SBM-1001 to for store storage any equipment or waste that would normally be stored in the Ventilated Room during initial Plant Operations as necessary. This room will be is connected to the Pumped Extract GEVS. The room will be is used for storage only; no processing of equipment or materials will be are conducted. Although a leaking valve on a cylinder containing UF_6 is not expected, if one is identified, the potential leakage will be is stopped in one of three ways depending on the nature of the damage. The valve will be is capped, the valve stem will be is tightened or the packing gland will be is tightened and the cylinder stored in an appropriate (feed or product) station until repairs can be conducted or the cylinder can be returned to the vendor. LBDCR-10-0007 LBDCR-10-0002

Transitional accident sequences associated with this room have been identified that require implementation of existing IROFS. See ISA Summary Tables 4-4 and 4-5. LBDCR-10-0007

Q. (Approved per CC-LS-2009-0002, Rev. 1) The Chemistry Laboratory will not be is not operational. Instead, samples will be is collected and shipped to a certified testing facility for analysis. The sample containers will not be are not returned to LES, but will be are disposed of by the facility. LBDCR-10-0002

9.4SAFETY SIGNIFICANCE

Section 119.0 of the LES Environmental Reort has been initially established as an administrative change to describe the Phased Operation concept. There is no safety significance because none of the identified changes will be finalized and implemented until reviewed and approved in accordance with the LES configuration management program as described in § 11.1 of the Safety Analysis Report Management Measures. Pursuant to 10 CFR 70.72, LES has established a system to evaluate, implement, and track each change to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel. Configuration management of IROFS, and any items that may affect the function of IROFS, is applied to all items identified within the scope of the IROFS boundary. All changes to structures, systems, equipment, components, and activities of personnel within the identified IROFS boundary are evaluated before the change is implemented. If the change requires an amendment to the License, Nuclear Regulatory Commission approval is received prior to implementation. LBDCR-10-0002

All proposed changes described in § 9.0 are tracked and evaluated per the LES configuration management program prior to implementation. As the changes are processed, § 9.0 will be revised to incorporate changes to the facility, processes, and programs. Section 9.0 documents all site changes facilitated as a result of the Phased Operation approach.

~~10.0~~9.0 LIST OF REFERENCES

LBDCR-10-0033

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~~12.0~~11.0 APPENDIX A CONSULTATION DOCUMENTS

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