2.0 Description of the Proposed Action

This proposed action would construct and operate the Retrieval Complex, the Enhanced Radioactive Mixed Waste Storage Facility (Storage Facility), the Central Waste Support Complex (CWSC), and associated infrastructure upgrades (i.e., utilities, roads) in the 200 West Area to support the SWOC. The Retrieval Complex, the first three buildings of the Storage Facility, the CWSC, and infrastructure upgrades would be constructed a first phase (Phase 1). If necessary, the remainder of the Storage Facility could be completed by a second phase. In addition, the proposed action includes a mitigation strategy which has been developed to address lost priority shrub-steppe habitat. The total estimated cost of the proposed action, including mitigation for lost priority habitat, is $66 million. Figure 1 shows the Hanford Site and the location of the 200 West Area. Figure 2 shows the location of the proposed action within the 200 West Area. The proposed action covers approximately 18.6 hectares (46 acres).

2.1 Solid Waste Retrieval Complex

The proposed retrieval action includes the retrieval of post-1970 solid waste suspected of containing TRU radionuclides and the construction, operation, and maintenance of a complex of facilities to be used for the retrieval. The proposed retrieval activity would retrieve approximately 2,260 cubic meters (80,000 cubic feet) in about 10,000 drums, of suspect TRU waste from the 200 West Area low-level burial Trench 4C-T04. Although a total of approximately 15,400 cubic meters (545,000 cubic feet) of suspect TRU waste exists on the Hanford Site, this proposed action would focus on the retrieval from only Trench 4C-T04. Trench 4C-T04 has approximately 15 percent by volume of the total retrievably stored TRU waste on the Hanford Site and has waste containers expected to be in a better physical condition because they have been stored the shortest length of time. The retrieved waste containers would be inspected, overpacked, vented, x-rayed, and assayed in the Retrieval Complex, and moved to the Storage Facility. Lessons learned from the retrieval activities would be incorporated into the design of future retrieval activities.

A typical storage trench is about 145 meters (475 feet) in length (about 20 storage modules) with an asphalt pad in the bottom on which the waste container modules sit. The bottom of the trench is about 5 meters (16 feet) below grade and is accessible by a sloped asphalt ramp at one end of the trench from ground level to the trench floor. Figure 3 shows a typical cross-section of a TRU waste trench.

At trench 4C-T04, the soil overburden would be removed by a combination of hand-digging and mechanical means. Precautions would be taken during the soil overburden removal to prevent any contact with the waste container module before removing the module covering of plywood and plastic sheeting. A weather enclosure would be erected over the trench area where the storage modules are located and either rolled along the length of the trench or be moved to the next position by an overhead crane. The enclosure would be securely anchored around the trench perimeter.

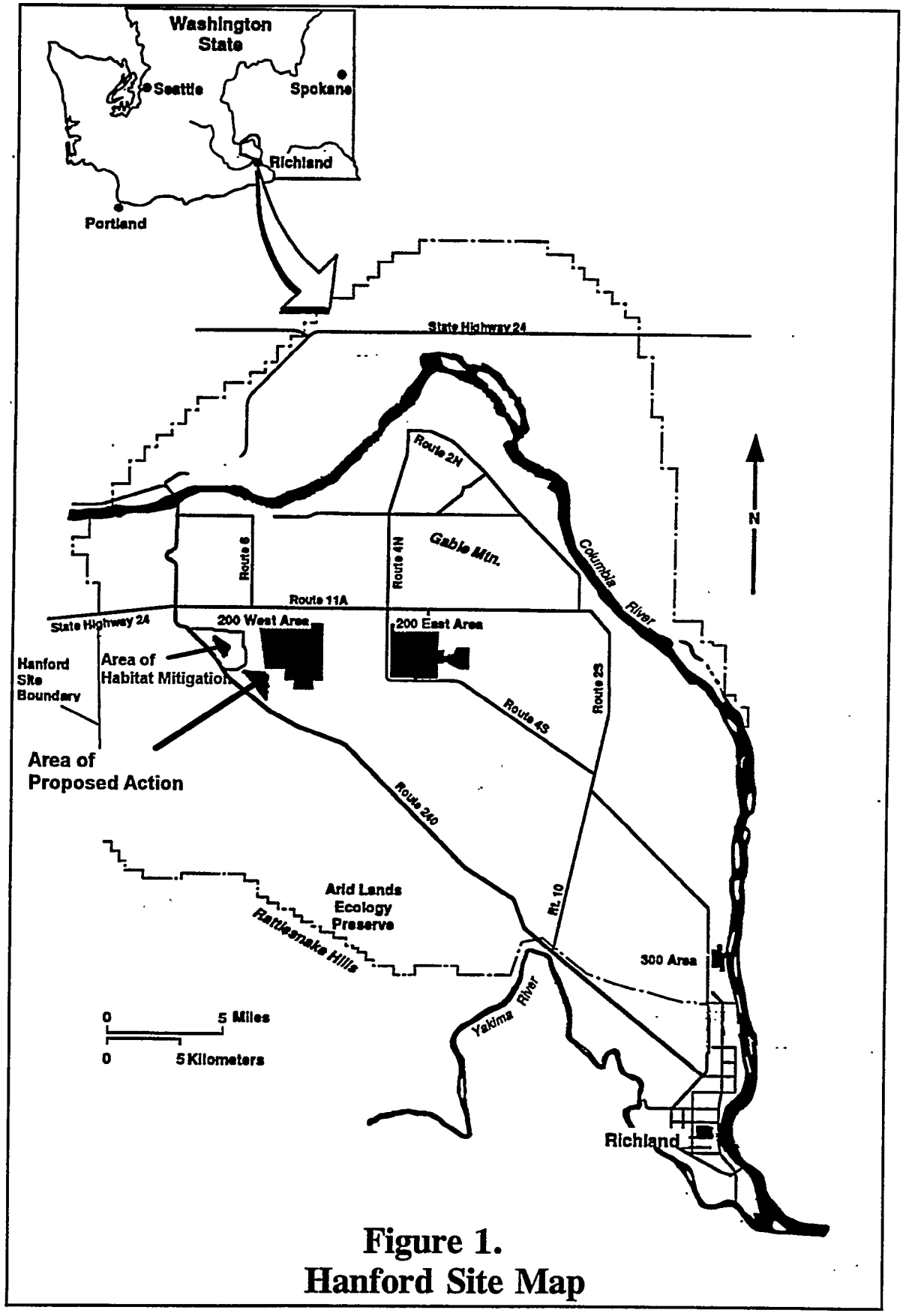

Figure 1.
Hanford Site Map

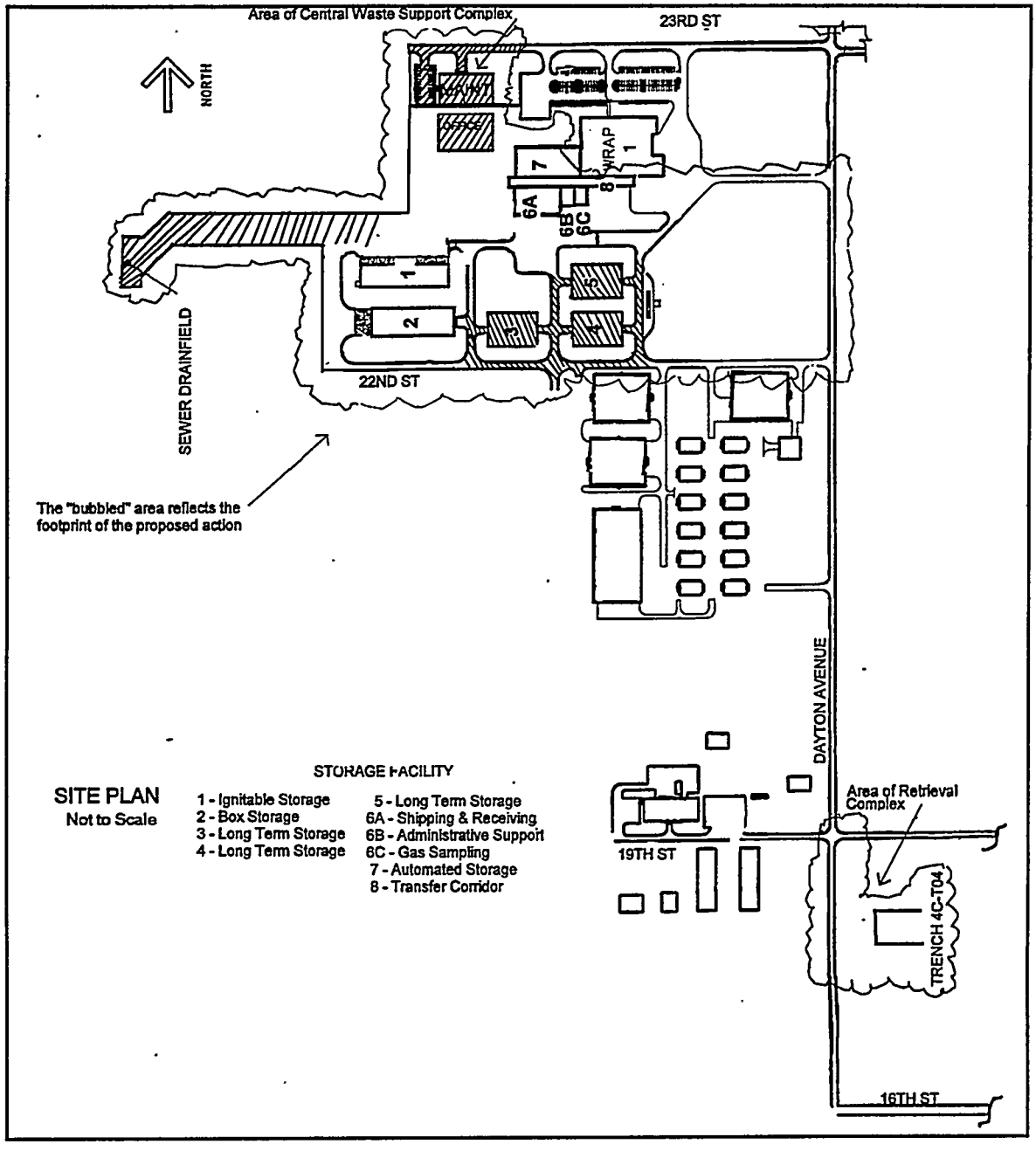

Figure 2.
Location of Proposed Action - 200 West Area

Exhaust fans would be installed on the weather enclosure and exhaust air sampled for any potential radiological release. Sampling of the exhaust air would provide a record of emissions.

The typical trench storage module consists of waste drums stacked about 7.3 meters (24 feet) wide by 7.3 meters (24 feet) long by 3.6 meters (12 feet) high. The containers in trench 4C-T04 are stored under plastic moisture barrier covers. In some cases, the waste container has been overpacked in another container. The majority of the containers are 208-liter (55-gallon) galvanized steel drums and the rest of the containers are painted steel drums, 416 liter (110 gallon) drums, and metal boxes of various sizes. The waste containers are covered with plywood, plastic sheeting, and 1.2 meters (4 feet) of earth. Figure 3 shows a cross-section of a storage array of retrievably stored TRU waste containers in a typical trench storage module.

Retrieval operations would typically progress down the trench in the last-in/first-out mode although alternate sequencing may be necessary. A maximum of one storage module (12 drums wide by 12 drums long by 4 drums high) would be uncovered at a time. The front layer (3.6 meters [12 feet] high) of waste drums in the storage array would be removed from top to bottom (see Figure 3). A jib crane would lower the top waste drums from the storage array to the trench floor where the overpacking would occur. Drum vent filters would be installed on the overpack drums and a gas sample taken. Containers would be assayed (to determine the amount of fissionable material present), x-rayed, and then moved by truck approximately 1.2 kilometers (0.75 miles) to the proposed Storage Facility. The retrieved containers would be stored in the Storage Facility until processing in WRAP.

Waste containers to be retrieved from trench 4C-T04 are characterized as contact-handled (less than 200 millirem [mrem] per hour). However, in the event a waste container is encountered in the trench that requires remote-handling, it would be decontaminated or shielded to a level below 200 mrem per hour and moved to the Storage Facility.

The retrieval action would include mobile facilities which could be reused in future retrieval operations. The facilities would be located in previously disturbed surface areas and, as required, utility tie-ins would be made to the nearest source. The planned facilities would be located in a non-radiological area free of surface soil contamination. However, radioactive soil could be encountered during construction activities. If contaminated soil is encountered, it would be removed and disposed of in Hanford Site's low-level burial grounds. Any mixed waste encountered would be removed and stored onsite in a *Resource Conservation and Recovery Act of 1976* (RCRA) permitted storage facility until shipment to an approved RCRA permitted TSD facility.

Planned support facilities would include the following:

- Weather enclosure--A modular pre-engineered metal building (approximately 2,650 square meters [28,500 square feet]) that would cover a portion of the trench and can be relocated to support future retrieval activities. The purpose of this building is to provide weather protection during retrieval operations.

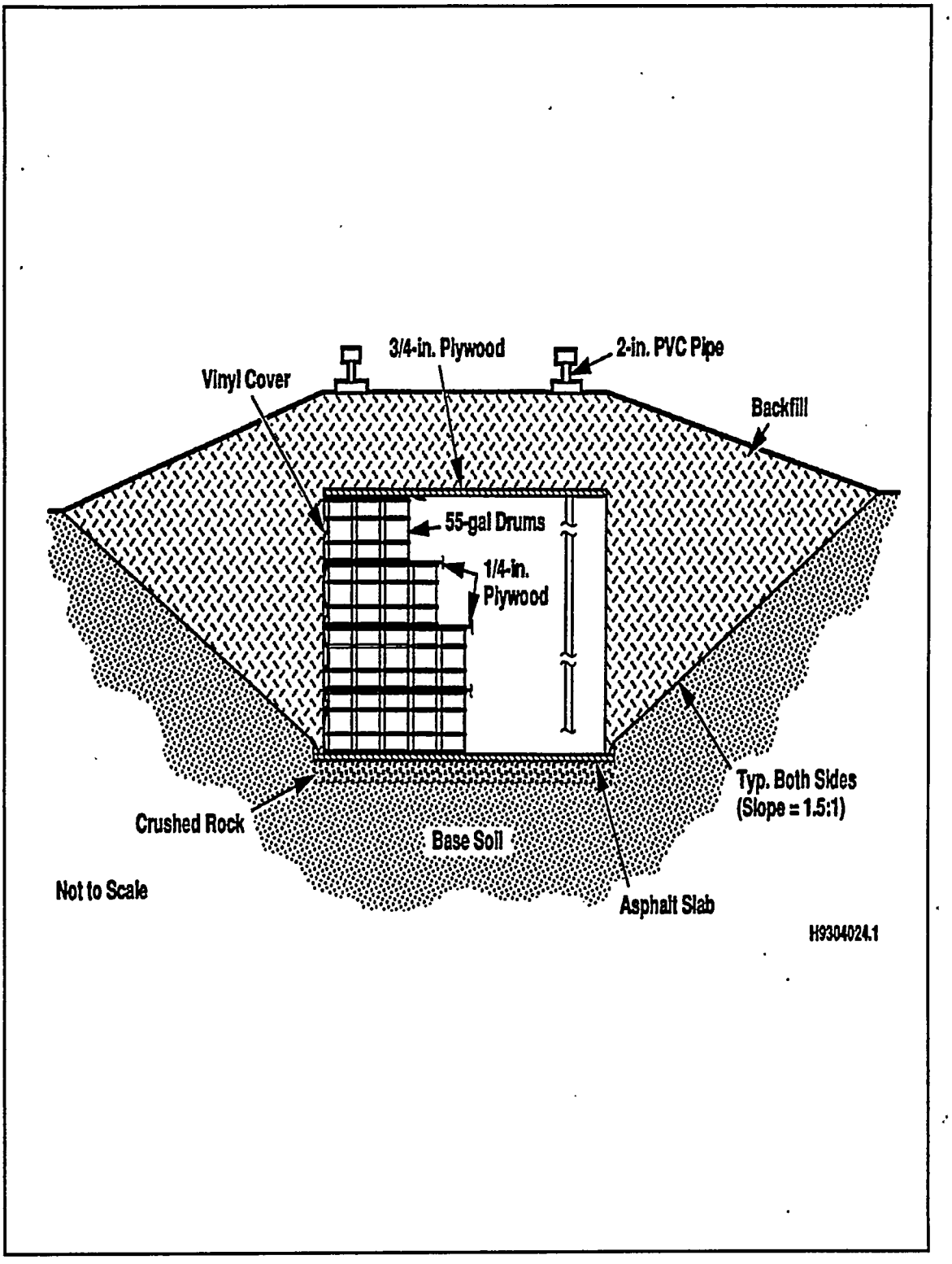

Figure 3.
Cross-Section of Typical Transuranic Waste Trench and Module

- Retrieval office building--A facility consisting of a double-wide office trailer (approximately 204 square meters [2,200 square feet]) to house the assigned administrative personnel. The facility would have a site office space, a conference room, a lunchroom, and restrooms.

- Retrieval staff changeroom-- A facility consisting of a double-wide office trailer (approximately 204 square meters [2,200 square feet]) to house an estimated retrieval operations staff of 20. This building would have locker rooms, lunchrooms, restrooms, and shower facilities. An area would be allocated for health physics technicians.

- Nondestructive Examination/Nondestructive Assay Facility--A mobile office trailer containing appropriate shielding that would be used to inspect and assay containers retrieved from the trench. The trailer could be used in or out of the trench area and would support future retrieval activities.

- Venting Facility--A mobile office trailer containing appropriate shielding that would be used to vent containers retrieved from the trench. The trailer could be used in or out of the trench area and would support future retrieval activities.

All retrieval activities would comply with federal requirements of 29 *Code of Federal Regulations* (CFR) 1910, "Occupational and Safety Health Administration [OSHA]," and 29 CFR 1926, "Safety and Health Regulations for Construction," as implemented by DOE Order 5480.4 (DOE 1984). Work activities would comply with As Low As Reasonably Achievable (ALARA) principles, waste management policies (WHC 1994), applicable state and federal regulations, and DOE Orders and guidelines. The potential radiation dose received by workers during the performance of the retrieval activities would be administratively controlled below DOE radiological dose limits as set forth in 10 CFR Part 835, *Occupational Radiation Protection*, (limit: 5 roentgen equivalent man [rem] annual effective dose equivalent (EDE) for onsite employee and 0.1 rem EDE for a member of the public) (DOE 1993) and the *Hanford Site Radiological Control Manual* (HSRCM) (HSRCM 1994). Any workers entering a radiation zone during construction or operation of a retrieval facility would be required to have the proper type of protective clothing and equipment. This entry would be controlled by site-approved radiological and industrial safety procedures. Principles of ALARA would be implemented during the construction and operation of the retrieval facilities.

2.2 Enhanced Radioactive and Mixed Waste Storage Facility

The proposed Storage Facility would provide a RCRA-permitted storage facility for retrieved TRU and newly generated TRU, mixed, and GTC3 waste awaiting processing in the WRAP facility and for processed waste awaiting shipment to the permanent disposal site. The Storage Facility would provide storage capacity for approximately 5,621 cubic meters (199,504 cubic feet) of waste. This design capacity assumes the WRAP facility is

operational and retrieved waste is only stored temporarily pending processing. The Storage Facility would be designed for a useful operating life of 30 years.

The Storage Facility project would consist of the construction and operation of approximately 10 buildings. Proposed new facilities would include an administration building, a shipping and receiving building, a transfer corridor building, an automated drum storage building, a gas sampling building, an ignitable waste storage building, approximately three long-term drum storage buildings, and a box storage building. Figure 2 shows the proposed location of the Storage Facility buildings within the SWOC. The SWOC is an existing and planned series of TSD units that centralizes the management of solid waste operations at a single location in the 200 West Area. Only the three long term drum storage buildings would be built in the first phase of construction. All or some of the additional buildings may be constructed during a future construction stage as the need to complete the full proposed Storage Facility arises. In addition, the proposed action includes mitigation for loss of priority shrub-steppe habitat.

The following is a brief description of the buildings located in the proposed Storage Facility. Refer to Figure 2 for the planned siting.

- Long-Term Drum Storage Buildings. Three buildings would utilize manual (nonautomated) storage and handling equipment for storage of GTC3 and mixed waste. In manual storage, waste containers could remain in the Storage Facility without transfer for more than two years before treatment or disposal. (Figure 2, #3, #4, #5)

- Ignitable Waste Storage. This building would provide storage for fully characterized, ignitable mixed waste. Also, storage would be provided for retrieved, potentially ignitable suspect TRU waste. This storage building would comply with applicable state and local fire protection codes for flammability. (Figure 2, #1)

- Box Storage. This building would provide storage for boxed waste. The building would contain equipment for receiving and shipping waste boxes and placing them into and removing them from storage spaces. (Figure 2, #2)

- Shipping and Receiving. The shipping and receiving building would contain truck bays and equipment for waste package transfer with a transport equipment maintenance area. (Figure 2, #6A)

- Administrative Support. A building adjacent to the Shipping and Receiving Building would contain administrative support space for approximately 12 assigned personnel, a lunchroom, restrooms, record storage, and the inventory and automated equipment handling system control center. (Figure 2, #6B)

- Gas Sampling Building. This building is attached to the Shipping and Receiving Building and would provide an area and equipment where a gas sample would be taken of a retrieved waste container and analyzed prior to shipment to an offsite disposal facility. (Figure 2, #6C)

- Automated Drum Storage. This building, as currently envisioned, would be a rack supported, high bay structure providing storage and automated material handling of waste drums by using a computer controlled automated stacker-retriever. The primary inventory of this building is to be 208-liter (55-gallon) drums and 322-liter (85-gallon) drum overpacks. (Figure 2, #7)

- Transfer Corridor. The transfer corridor would connect the automated storage and the gas sampling building with the shipping and receiving building, and would be used for the transfer of incoming and outgoing waste and for access to the WRAP Facility modules. The corridor would be sufficiently sized to accommodate two-way waste container traffic with a safety divider. Forklifts and electric motor-driven units would transport waste containers. (Figure 2, #8)

All retrieved waste containers (including mixed waste containing both radioactive and hazardous constituents) would be handled and stored within the Storage Facility or other RCRA compliant storage facilities. However, there would be no processing or repackaging of this waste within the Storage Facility. Normal operations would involve the receipt, movement, and storage of drums and boxes containing this waste. The waste containers would not be opened. Although the waste drums stored within the buildings would have charcoal filters on the vents, there would be some potential for airborne emissions caused by passive ventilation. Pre-construction approvals for air emissions from facility exhausting systems would be obtained from the U.S. Environmental Protection Agency (EPA) and the State of Washington Department of Health (DOH).

There would be a gas sampling system within the Storage Facility that would draw routine gas samples from the waste drums. Based on gas sampling, drums would be purged as necessary to reduce potential buildup of flammable gases. The Storage Facility would have continuous air monitors that, upon detection of a release, would automatically shut down the building's supply and exhaust system. The buildings would be protected by an automatic fire protection system, and would have radiation and air monitoring instrumentation in storage areas. The Storage Facility buildings would be constructed in accordance with DOE Order 6430.1A, *General Design Criteria* (DOE 1989).

Table 1 shows the estimated volumes of waste for the entire proposed Storage Facility (WHC 1991a). The three Long-Term Drum Storage Buildings planned for the first phase of construction would hold approximately 13,300 Drum Equivalents or 2770 cubic meters (97,800 cubic feet) of waste.

Table 1 - Estimated Waste Storage Capacity

Waste Description	Waste Quantity (cubic meters)	Drum Quantity
GTC3/LLWM	832	4,000
Other/LLWM	1,250	6,000
Ignitable Mixed Waste	42	200
Newly Generated TRU	1,520	7,300
Retrieved Suspect TRU	625	3,000
Ignitable Retrieved Suspect TRU	166	800
Box Storage	1,186	5,700*
Total	5,621 (199,504 cubic feet)	27,000*

* Drum Equivalents

The waste volumes shown in Table 1 include waste from three categories:

(1) Retrieved waste from burial ground trenches

(2) Mixed waste from ongoing activities (newly generated), and

(3) Long-term storage of GTC3 waste until the best available technology and/or disposal methods are selected.

All work activities associated with the construction and operation of the proposed Storage Facility would comply with federal requirements of OSHA as implemented by DOE Order 5480.4 (DOE 1984). The principles of ALARA, waste minimization (WHC 1994) would be implemented during the construction and operation of the proposed Storage Facility. The Storage Facility would be a permitted facility in accordance with the requirements of the RCRA and Washington Administrative Code (WAC) 173-303 for storage of RCRA waste.

The potential radiation dose received by workers during the performance of the storage activities would be administratively controlled below DOE radiological dose limits in 10 CFR Part 835, *Occupational Radiation Protection*, (limit: 5 rem annual effective dose equivalent (EDE) for onsite employee and 0.1 rem EDE for a member of the public) and the HSRCM (HSCRM 1994).

2.3 Infrastructure Upgrades

The infrastructure for development of the SWOC would be part of the Phase 1 construction and include access roads, electrical power, water supply (sanitary and raw water), fire protection, sanitary sewers, storm runoff systems, and telecommunications systems. The following proposed upgrades would serve the existing and planned centralized waste management facilities located in the SWOC. Refer to Figure 2.

- Access Roads. Roads necessary for access to the Storage Facility, the CWSC, and the WRAP Facility modules would be constructed. Two existing Hanford Site roads (22nd, and 23rd Streets) would be extended west of Dayton Avenue, upgraded to current road standards, and resurfaced with asphalt. These two road extensions would provide access to the two new administrative support facilities (extension of 23rd) and to the three Long Term Drum Storage buildings (extension of 22nd). Approximately 23,225 square meters (250,000 square feet) of asphalt paving would be required for roads and parking areas. Paved roads would be constructed to provide for two-way traffic and would be suitable for loaded tractor-trailer and automobile access. Utility corridors would be provided on both sides of the roads.

- Electrical Power. Electrical lines would tie into the Hanford Site network at an existing 13.8-kilovolt overhead line near the intersection of Dayton and 23rd Street. The electrical distribution system for the proposed action would have sufficient capacity without a need for a new power source.

- Water Supply. Raw water is pumped from the Columbia River through a Hanford Site network servicing all areas. Water, as required, is then treated in filter plants at the various areas for filtered and sanitary water needs. Additional potable water lines would be installed to provide service to centralized SWOC facilities as necessary. Existing potable water lines in the nearby vicinity would be used as practicable to complete the distribution network.

- Sanitary Sewer. The SWOC would be served by two new, separate sanitary sewer systems consisting of septic tanks, dosing chambers, and pressurized drainfields. All drainfields would be located away from existing burial grounds. The proposed new septic tank systems would be installed in phases as needed to meet the use demand. One system would serve the proposed Storage Facility The second system would serve the proposed retrieval facilities. The total design flowrate of the two systems is about 17,700 liters (4,600 gallons) per day to serve a population of approximately 210 persons. Permits would be obtained from the DOH.

The construction of a central collection and treatment plant for sanitary waste is under consideration for the 200 Areas (DOE-RL 1993). If this plant is constructed, it would be an evaporative system to minimize the use of drainfields and liquid discharges to the soil. The proposed septic tank systems may be tied into the treatment plant if it is built in the future.

- Storm Runoff. Site grading throughout the SWOC would provide for adequate drainage and control of stormwater runoff. An overall SWOC stormwater collection system would be designed and built within the 200 West fenced area to direct stormwater away from burial grounds and monitoring wells in the 200 West Area. This system would include appropriate catch basins and corrugated metal pipe drainlines. Current planning locates the storm system settling basin west of the proposed new north-south infrastructure access road. The proposed settling basin would be unlined and approximately 30 square meters by 1 meter deep (100 square feet by 3 feet deep). The soils and underlying formations in the 200 West Area are composed of sedimentary materials consisting of silts, sands, and gravels. Any runoff water would evaporate with residual runoff percolating into the soil.

- Telecommunications. Telecommunication capabilities would be installed to provide telephone, Hanford Local Area Network, and networked computer capabilities to support the SWOC. Telecommunication cabling would be installed from a new hub location approximately 610 meters (2,000 feet) south of the existing Dayton Avenue and 23rd Street intersection. Fiber optic cabling would be routed in underground conduit to the proposed CWSC (management support building) and from there go to the proposed Storage Facility. The system would include spares that could be used for future telecommunication needs.

- Other. The proposed infrastructure upgrades would include the installation of sidewalks, fencing, lawn sprinklers, and landscaping. After construction, surface areas not paved or landscaped would be stabilized either by re-seeding or gravel to control blowing sand. Some areas would require vegetation control to prevent unwanted plant growth. If re-seeding was performed, plant species would be compatible with surrounding ground cover vegetation. Some existing fencing may be removed, as necessary, to allow for the proposed access roads, and paved areas may be cut and patched to install utilities.

The concept of site infrastructure integration is consistent with Hanford Site planning goals (DOE-RL 1993).

2.4 Central Waste Support Complex

The proposed CWSC, which would be constructed in Phase 1, would include two pre-engineered metal or modular type solid waste management support buildings. Each building would be a single-story structure having individual heat pumps for heating and cooling. Fire protection lines would be installed. Telecommunication features would be extended to these buildings. Sidewalks, parking lots, landscaping, and traffic access routes would be provided as part of the proposed action. Personnel occupying the proposed buildings would be relocated from other areas onsite as part of effort to centralize waste management activities.

The two solid waste management support buildings would include: (1) a 1028 square meter (11,000 square foot) operational support facility for Wrap 1 and the other Central Waste Complex Facilities and (2) a 374 square meter (4,000 square foot) maintenance support facility. These buildings would be constructed near the Wrap 1 facility. The Operations Support Facility would provide office space for approximately 65 personnel and the maintenance facility would provide workspace for about 15 craftsmen. These facilities would include office bays, lunchrooms, restrooms, computers and copy centers, and other appropriate workstation and maintenance type functions.

The solid waste maintenance facility would provide space for small maintenance jobs. The building would not have changerooms or shower facilities in it. Provisions would include a material staging area, a receiving area, electrical, mechanical, and instrumentation shops, and a shop stockroom and grinding area.

2.5 Mitigation for Priority Habitat Loss

The proposed action would require clearing shrub-steppe habitat to construct new facilities. Part of that habitat, dominated by mature sagebrush, meets the State of Washington designation of "priority habitat" because of its importance to wildlife and because it is becoming relatively scarce in the state. Therefore, the loss of substantial acreage of this habitat type is an issue of concern. Compensatory mitigation for unavoidable loss of this priority habitat, in the form of restored, enhanced, or created similar habitat, would be a part of the proposed action. A Hanford sitewide mitigation program is being developed by U.S. Department of Energy, Richland Operations Office (RL) in cooperation with the Washington Department of Fish and Wildlife, the U.S. Fish and Wildlife Service (USFWS), and the indian tribes.

Compensation for lost habitat values would be accomplished by enhancing the habitat value of an area west of the 200 West Area that has had no sagebrush component for many years due to past fires, but has all the other components of a mature habitat (e.g., understory species). This area is shown on Figure 1. If a more favorable area is determined by the Sitewide Mitigation Strategy, another site may be selected. A baseline characterization of the proposed compensation area has already been completed. The compensation site area has also been surveyed for cultural resources to make sure the mitigation action would not affect cultural resources. Enhancement would be through restoration of the shrubs in a selected area of habitat. Compensation for lost habitat value for the SWOC Project would be done at a ratio of 3 to 1.

The first phase of the proposed action would remove an estimated 11.4 hectares (28 acres) of mature habitat. At the ratio of 3:1, 34 hectares (84 acres) would be remediated as compensation. Under a potential future phase of Project W-112, 3.2 hectares (8 acres) of habitat may be destroyed and 9.6 hectares (24 acres) would be remediated in the appropriate area. Sagebrush plants of appropriate size could be salvaged from the Phase 1 and Phase 2 areas and transplanted. RL is currently evaluating the possibility of siting the Box and Ignitable Storage Buildings in a previously disturbed area directly east of the three Long Term Storage Buildings to reduce the potential habitat loss by 3.2 hectares (8 acres).

The current proposal, consistent with the draft Sitewide Mitigation Strategy, proposes that sagebrush transplants would be placed at a density of no more than 50 per hectare (20 per acre) and would be supplemented with tubeling nursery stock at a maximum density of 500 per hectare (200 per acre). If the Sitewide Mitigation Strategy determines that a more favorable method of mitigation or a more favorable location is appropriate, the Sitewide Mitigation Strategy would be followed.

2.6 Decommissioning of Waste Management Facilities

At some undetermined future date, the facilities used for the waste management activities associated with this proposed action would undergo decontamination and decommissioning (D&D) in accordance with DOE Order 5820.2A, Chapter V, *Decommissioning of Radioactively Contaminated Facilities* (DOE 1988). These waste management facilities would be managed in an environmentally safe manner in compliance with local, state, and federal standards until a final disposition is made of the facility. It is anticipated that when the facilities are no longer needed, the structures would be decommissioned and the site restored. Information on decommissioning plans or activities is not sufficient to provide a meaningful discussion of the environmental impacts associated from decommissioning. The D&D of waste management facilities is not evaluated in this EA and would be the subject of future *National Environmental Policy Act of 1969* reviews.