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# Limited Construction Authorization Request

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# History Sheet

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## Acronyms and Abbreviations

ALARA	As Low As Reasonably Achievable
ASTM	American Society for Testing and Materials
BNI	Bechtel National Inc.
BOF	balance of facilities
CSM	Construction Site Manager
DOE	US Department of Energy
HLW	high-level waste
ISM	integrated safety management
ISMP	Integrated Safety Management Plan
ITS	important-to-safety
LAW	low-activity waste
LCAR	Limited Construction Authorization Request
LPP	LAW Pretreatment Plant
OSR	Office of Safety Regulation
PSAR	Preliminary Safety Analysis Report
QA	Quality Assurance
RPP	Radiation Protection Program
SRD	<i>Safety Requirements Document</i>
SSC	structure, system, or component
TWRS	Tank Waste Remediation System
WAC	Washington Administrative Code
WTP	River Protection Project – Waste Treatment Plant

# 1 General Information

The River Protection Project - Waste Treatment Plant (WTP) is a new treatment facility to be constructed and operated to treat radioactively contaminated waste stored at the US Department of Energy (DOE) Hanford Site. The waste to be treated in the WTP is consistent with the definition of “radioactive high-level waste” per 10 CFR 72.3 and dangerous waste per Washington State Dangerous Waste regulations WAC 173-303.

The WTP will receive waste from the DOE’s tank waste storage system in batches that are composed of either low-activity waste (LAW) feed or high-level waste (HLW) feed. The LAW and HLW feed will be transferred by pipelines to the WTP for pretreatment and immobilization by vitrification. The vitrification process will combine the pretreated tank waste with glass-forming materials and melt the mixture into a liquid that is poured into stainless steel containers. After the hot glass cools and hardens, each container is closed in preparation for storage and permanent disposal.

The Limited Construction Authorization Request (LCAR) seeks DOE authorization to proceed with site preparation, excavation, and other activities listed in Table 1. Table 1 also indicates which of these activities could have an impact on Important to Safety (ITS) structures, systems, or components (SSC) as defined in the Safety Requirements Document (SRD) and derived via the project’s application of the Integrated Safety Management (ISM) process in accordance with DOE/RL-96-0004, Rev. 1, “Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for TWRS Privatization”. No inconsistencies have been identified relative to the proposed limited construction activities and the most recent Environmental Impact Statement for the River Protection Project.

The activities proposed for installation either support or do not affect the safety requirements of the completed facility. The work during the limited construction period will be performed in a manner that assures radiological, nuclear, and process safety to the workers, co-located workers, and the public.

Drawings cited in this document are for information only. Aspects of the cited drawings required to support limited construction authorization will be described in the text.

## 1.1 Facility Location

The Waste Treatment Plant Project Site Coordinate System is tied to the Washington State Coordinate System at a designated control point at the northwest corner of the Project Site Boundary. The Project Site Coordinate of this control point, defined as N 5000.00, E 10000.00 with US units in feet, is equivalent to N 136110.00, E 576195.00 with metric units in meters based on Washington State Coordinate System. Project North direction is the same as the Washington State Plane Coordinate System North direction.

The Washington State Coordinate System is based on the Washington State Plane Coordinate System (Southern Zone). The horizontal datum is the North American Datum of 1983 (NAD83/91) and the vertical datum is the North American Vertical Datum of 1988 (NAVD88).

The Site Plot Plan, DWG-W375BF-C00002, shows the site dimensions relative to the control point described above.

A public receptor is defined as an individual at a boundary established around the facility at the nearest locations of uncontrolled public access. The boundary for the WTP, different than the traditional Hanford Site boundary, was established during Part A. The WTP public receptor boundary is encompassed by the Columbia River to the north and east and Highway 240 to the west. The southern boundary extends in an

east-west line from the near bank of the Columbia River, across the northernmost part of the Energy Northwest site boundary, and intersects the Wye Barricade. From the Wye Barricade, the southern boundary extends at a 225° angle from north (north is 0°) until it intersects with Highway 240. Figure D-1, Appendix D, of the SRD shows the boundary. The approximate distances from the WTP facility to the nearest public receptor as described above are as follows:

Direction	Distance to Limiting Sector Location (miles)
N	8.1
NNE	6.3
NE	6.1
ENE	6.1
E	6.5
ESE	7.2
SE	7.2
SSE	6.9
S	5.8
SSW	5.7
SW	5.7
WSW	5.8
W	7.7
WNW	8.8
NW	8.4
NNW	8.4

## 1.2 Facility Description

There are four primary process facilities at the WTP each enclosing major process components: pretreatment (PT), LAW pretreatment (LPP), LAW vitrification, and HLW vitrification. In addition, systems and utilities known as the balance of facilities (BOF) support each of these waste treatment processes. The layout of the WTP is shown on drawing DWG-W375BF-C00002. ITS SSCs are not being installed by the activities described in this LCAR.

### 1.2.1 Primary Process Facilities

Each of the facilities will be constructed of reinforced concrete and structural steel work, supported by a reinforced concrete base mat. Loads on the base mat will be distributed uniformly to the surface being excavated as part of the LCAR scope. The base mat will be designed to transfer loads from equipment and structural elements to the structural fill material supporting the foundation. The soil interface will be prepared to a point of readiness for structural work (foundation, rebar, embeds, concrete, and so forth). Footprints of the buildings at the excavation elevation are shown on drawings referenced in Section 1.3.1.2. Building outlines at grade elevation are shown on the Site Plot Plan referenced in Section 1.2.

The primary process buildings are classified as important to safety. There are several contributors to the ITS classification of the buildings. The radiation shielding aspects of the structures are needed to achieve compliance with radiological exposure standards for workers during normal operation. Also, some aspects of the structures are required to maintain the confinement boundary for radiological release events to prevent workers, or the maximally exposed member of the public from receiving a radiological exposure that exceeds the exposure standards identified in the SRD. In addition, failure of the structures could impact the ability of ITS systems and components in performing an ITS function associated with radiological or chemical hazards.

### **1.2.2 Balance of Facilities**

The portions of the BOF included in the scope of the LCAR are identified in Table 1 as not important to safety and are further discussed in Section 1.3.2.

## **1.3 Limited Construction Activities**

The limited construction activities listed in Table 1 support preparation of the WTP site for construction of the main facilities and buildings. These activities prepare the site, complete major excavation, place mud mats, and prepare temporary and permanent facilities needed to support initial construction activities. As previously noted, the following sections describe both important to safety and not important to safety areas and functions. The descriptions below have been organized to follow the three sections headings in Table 1, Pre-Construction of Main Facilities, Permanent Facilities and Services to be Utilized During Construction, and Construction of Temporary Facilities, with corresponding activity numbers noted.

The drawings referenced are for information only. These drawings reflect the current design as of the submittal date of this document, and will be reissued for construction prior to the start of work.

### **1.3.1 Pre-Construction of Main Facilities**

#### **1.3.1.1 Site Grading, Survey Control, and Site Drainage (Activities 0001 and 0036)**

The site will be cleared, grubbed, and graded to facilitate construction of the permanent facilities shown on drawing DWG-W375BF-C00002, Site Plot Plan. The construction facility areas will also be cleared, grubbed, and graded to establish reasonably level benched areas for material laydown, shop facilities, and road access within the outer construction area.

Surveyors will locate monuments across the WTP site based on the Hanford site grid system. Surveyors will also establish the location and elevation of each process facility from these monuments. The quality requirements applicable to survey controls are described in Section 3.4.1.

#### **1.3.1.2 Excavation and Compaction for Foundations (Activities 0002 - 0004)**

Excavation will be performed for the foundations for the four primary process facilities, including installation of sheet piles, where applicable, as shown on excavation drawings DWG-W375-G0053 through DWG-W375-G0056.

##### **1.3.1.2.1 Site Geotechnical Conditions**

Completed geotechnical investigations (Geotechnical Investigation Report, by Shannon and Wilson, Inc., H-1616-51 dated May 2000) have established the suitability of the site for plant structures. Field explorations and testing included exploratory borings and test pits, infiltration testing, refraction, and down-hole

geophysical studies, seismic cone penetrometer studies, and in-place soil resistivity studies. The report also provides data on geological stratification of the soils in the vicinity of each facility. The Geotechnical Investigation Report did not indicate any anomalies in the subsurface conditions that would present problems in construction of the plant facilities.

The Geotechnical Investigation Report identified the various soil types and elevations across the WTP site. No additional geological logging or mapping of these layers will be conducted during excavation for the facility foundations. However, a Geotechnical Engineer will monitor the excavation process. When the excavation is completed, a Geotechnical Engineer will inspect the in-situ soil to confirm that subgrade conditions are consistent with the data contained in the Geotechnical Investigation Report. If deviations are identified, they will be documented in accordance with the QA Program procedures and investigated under the direction of a Geotechnical Engineer.

#### **1.3.1.2.2 Foundations**

Design of WTP facilities foundation will be in accordance with the recommendation provided in the Geotechnical Investigation Report. The primary process facilities foundation types were identified to a Geotechnical Engineer prior to assessment with estimated soil bearing requirements. The report documents the test results and contains recommendations for soil bearing capacities and associated deflections under loading conditions. This information will be used as design parameters for development of the building footprint and assessment of the structural base mat.

#### **1.3.1.2.3 Excavation**

Excavation will be performed in accordance with the drawings referenced in Section 1.3.1.2. Over excavation may be required to remove dune sand if it is found at the exposed subgrade elevation. Material encountered that cannot be tested using the methods identified in ASTM D1557, will be removed. Excavated soil removed beyond the required footing elevation will be replaced with compacted structural fill, to the required footing elevation.

The removal of material (including site grading) to an elevation to support installation of the permanent foundation mats does not impact the capability of the soil to support the structures. The soil will be tested to ensure compaction requirements are met as described in section 1.3.1.2.5. Therefore, material removal is not ITS.

A soil retention system may be installed as shown on drawings DWG-W375-G0054 through DWG-W375-G0056, extending below the elevation of the open cut excavation. These sheet piles may remain in place, as a form for the construction of the concrete walls. This soil retention system will be designed in accordance with the soil properties indicated in the Geotechnical Investigation Report by Shannon & Wilson and construction loads identified around the excavation.

The retaining system is not relied upon for the structural integrity of the permanent concrete walls. During the construction process the retaining system will be monitored to ensure that no movement occurs that could compromise the structural integrity of the structural fill beneath the facility. The important to safety aspect of the structural fill material will be monitored in accordance the structural fill and compaction technical specification. Therefore, the soil retention piling installed for the portions of ITS facilities extending below the level of the general mat foundation are not ITS SSCs.

The soil retention system may remain in place following placement of the structural concrete. To avoid potential problems with the chemical content of materials used in the soil retention system adversely affecting

the permanent concrete reinforcing, concrete cover between the retention system and permanent reinforcing will follow the guidelines for casting concrete against soil.

#### **1.3.1.2.4 Structural Fill and Compaction**

After the removal of dune sand and excavation to the desired elevation, the top 12 inches of the exposed subgrade surface will be compacted to an in-place density of at least 95 percent of the maximum laboratory dry density as determined by ASTM D1557. Structural fill may consist of the excavated soil or imported fill. Excavated soil may be used for structural fill unless such material is determined to be unsuitable. Imported structural fill will be 5/8-inch minus crushed base course or 2-inch minus pit run gravel with less than 5 percent fines (minus 200 sieve). All structural fill will be compacted to an in-place density of at least 95 percent of the maximum laboratory dry density, in accordance with ASTM D1557, Test Methods for Laboratory Compaction Characterization of Soil Uses / Modified Effort (56000 ft-lb./cu. ft (2700 kn.-m/cu. m.)).

The structural fill will be compacted in lifts of loose soil by hand operated or mechanical compactors as specified in the structural fill and soil compaction technical specification. Moisture content of compacted material will be controlled to be within  $\pm 2\%$  of optimum as determined by ASTM D1557.

#### **1.3.1.2.5 Soil Compaction Testing**

All sampling, field testing and laboratory testing work will be performed by a civil material testing laboratory, qualified per ASTM D3740, to verify that the compaction is in compliance with the latest issued design documents. Grading and compaction work shall be monitored by inspectors and testing will be performed to verify that compaction requirements have been met. SRD Safety Criterion 4.1-2 is applicable to soil compaction testing during limited construction. Standards for soil compaction testing will be selected from the following standards identified in Safety Criterion 4.1-2:

- ASTM D3740, Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and /or Inspection of Soil and Rock as Used in Engineering Design and Construction
- ASTM D2922, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
- ASTM D3017, Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods

The selected standards are industry-testing methods for determining soil properties in the laboratory and for field verification. These tests are to be used by the Geotechnical Engineer to confirm that structural fill material has been compacted in accordance with design requirements in the Geotechnical Investigation Report. Specific standards to be used, that are referenced in these parent standards, will be identified in the technical specification.

The soil compaction process is controlled through a quality related specification which contains installation, inspection and testing requirements to demonstrate that soils are compacted to meet the requirements specified for structural fill in the Geotechnical Investigation Report and in structural drawings. Materials used for backfill will meet the requirements of the Geotechnical Investigation Report and the standards described above. Confirmation that these materials meet these standards will be established through testing. Application of ASTM D3740 will ensure the capability of the civil testing laboratory to repeatedly and reliably perform tests to verify that important to safety attributes, such as soil density and compaction and moisture content, conform to design requirements.

### **1.3.1.3 Mud Mat Placement (Activity 0005)**

Mud mats will be placed as shown on drawings DWG-W375-G0053 through DWG-W375-G0056 for the LAW, HLW, PT, and the LPP areas. The mud mat will consist of an approximately 4 in. thick, non-structural, concrete surface. This mat keeps compacted soil beneath from being disturbed and provides a consistent work surface for installation of the building foundation reinforcement.

The installation of the mud mat will be performed in accordance with the structural fill and soil compaction specification with non-ITS material for the mud mat. The acceptability of the mud mat material is confirmed through testing to ensure that backfill requirements are met. The load bearing capacity of the mud mat material is significantly greater than the load bearing capacity of the soils, as such, the soil's bearing capacity is not adversely affected by the presence of the mud mat. The mud mats do not present a radiological or chemical hazard and are not required for the prevention or mitigation of any radiological or chemical hazards associated with the facility. Therefore, the installation of the mud mats is not an ITS activity and the mud mats are not ITS.

### **1.3.1.4 Pre-Assembly of Stainless Steel Liners (Activity 0006)**

Portions of the facilities will be provided with stainless steel liners to serve as secondary containment for tank systems in accordance with WAC 173-303, to facilitate decontamination to minimize contamination spread during operation, and to facilitate deactivation and decommissioning.

Fabrication of the stainless steel liners will be performed under a technical specification. Several areas of the facility provide the opportunity to utilize the stainless steel liners as form work for the placement of concrete. Therefore, it is desirable to begin fabrication of these liners as part of this LCAR scope. The stainless steel liners will not be installed during limited construction.

The liner materials will conform to ASTM standards that will be identified in the technical specification for the stainless steel liners. Welding will be controlled and tested in accordance with American Welding Society standards for structural welding that will be identified in the technical specification for the stainless steel liners. Liners required to meet dangerous waste regulations for tank system secondary containment will be designed and fabricated to support certification per WAC 173-303-640.

Based on ISM assessments performed to date, the stainless steel liners are not required to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the workers and the public due to a radiological or chemical hazard. Confinement of spilled liquid as a means to reduce operating risk to within exposure standards for workers, co-located workers, or members of the public is provided by the concrete structure itself and does not require liners. The ISM process has not identified any potential accidents that could result in damage to the structure extensive enough to negate the confinement function of the concrete structure. Therefore, the stainless steel liners are not designated as ITS.

## **1.3.2 Permanent Facilities and Services to be Utilized During Construction**

As discussed in the following subsections, none of the permanent facilities or utilities to be installed during limited construction has been designated as ITS. Where it is efficient, cost-effective, and physically possible to do so, permanent plant utilities and services routed within the permanent utility trench will be utilized for construction as discussed below.

### **1.3.2.1 Trenching Excavation and Installation of Utilities (Activities 008, 0011, 0012, 0024)**

Utility trenches will be excavated to allow installation of pipelines shown on the Composite Underground Utilities Plan drawings listed in Attachment A. Portions of the permanent electrical duct bank system shown on DWG-W375BF-E00500 will also be installed to the extent practical to facilitate expediting the construction schedule. No ITS duct banks will be installed during limited construction. ITS duct banks are designed to be separate from the non-ITS duct banks and will be installed in the future. Pipelines to be installed during limited construction are described in the following sections. Bedding and backfill above and around the pipelines will be compacted to 95 % of the maximum laboratory dry density, in accordance with ASTM D1557. Backfill will be installed after the project has tested and accepted the installed pipelines.

The scope of the piping and ductwork to be installed during limited construction is shown on the Issued for Bid (IFB) versions of the Composite Underground Utilities Plan drawings listed in Attachment A and the IFB version of the Electrical Duct Bank Plan, DWG-W375BF-E00500.

#### **1.3.2.1.1 Fire Water (Activities 0009, 0010, and 0024)**

Fire water is supplied to the site by DOE via an existing underground 12" diameter raw water line at locations identified on the Composite Underground Utilities Plan drawings listed in Attachment A. Firewater is distributed by an underground yard main loop with sectionalizing valves. Portions of the permanent underground yard main and hydrant system will be installed to the extent required to provide adequate fire protection throughout the WTP site during construction and to the extent practical to facilitate expediting the construction schedule. Distribution of fire/raw water to construction areas, material storage, and other construction facility site areas will be via temporary construction extensions with appropriate isolation valves from the permanent firewater system. Piping will be routed and installed in the site utility trench as shown on the Composite Underground Utilities Plan drawings listed in Attachment A.

The portions of the main fire protection yard loop being installed during limited construction will provide the water source for permanent facility sprinkler systems and hose stations. These lines will be 12 inch PVC piping. The system is sized to provide sprinkler coverage to the most demanding sprinkler system (assumed to be 0.2 gpm/ft<sup>2</sup> for 3,000 ft<sup>2</sup>), plus 500 gpm for hose streams, at the most remote location. A hydraulic analysis will be prepared by a qualified fire protection engineer, based on the requirements of UBC and NFPA 24. As the fire protection system design evolves, the size of individual sprinkler systems will be limited to ensure the capacity of the supply system is not exceeded.

The permanent portions of the fire water system installed during limited construction will be in accordance with SRD Safety Criterion 4.5-13

SRD Safety Criterion 4.5-13 implementing standards are DOE-STD-1066, Fire Protection Design Criteria, NFPA 801, Standard for Facilities Handling Radioactive Materials, and DOE G-440.1, Implementing Guide for use with DOE Orders 420.1 and 440.1, Fire Safety. As such, the fire main and hydrant system will be designed and installed per NFPA 24, including requirements imposed on personnel performing testing and installation. There are no seismic requirements for the underground portions of the fire protection system that are being installed during limited construction. System components will be tested in accordance with NFPA 24 before placing into service. Ends of pipes that are installed during limited construction, but not completed and used, will be isolated with blind flanges and post indicator valves until further installation and testing is complete. Piping downstream of the isolation valves will be flushed and tested in accordance with NFPA 24 prior to putting the piping downstream of the isolation valves in service following future completion.

Fire mains will be connected to the facility buildings in the future to provide automatic and manual fire suppression capability within the buildings. Control strategies developed to manage hazards presented by

potential fires in the facility do not rely on the fire suppression systems as a primary control. Passive fire protection features (for example fire barriers and separation) are provided in the design to reduce the risk of fires to acceptable levels. Based on ISM assessments performed to date, fire suppression water within the facility buildings is not required to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the workers and the public due to a radiological or chemical hazard. The fire main has therefore not been designated as ITS. Application of SRD Safety Criterion 4.5-13 provides assurance that the fire protection system will be designed and installed to fulfill the requirements of the best protection class of industrial risks (“Highly Protected Risk” and “Improved Risk”) and will provide protection to achieve “defense-in depth”.

#### **1.3.2.1.2 Potable Water (Activities 0011 and 0012)**

Potable water is supplied to the site by DOE via an existing underground 4 in. diameter potable water line at a location identified on the Composite Underground Utilities Plan drawings listed in Attachment A. Project distribution of potable water to construction areas, material storage, and other construction facility site areas will be by construction extensions from the permanent plant potable water system pipes routed and installed underground within the site utility trench. During the construction period, the site potable water lines will be charged from the DOE supply line. Temporary potable water headers will be routed to strategic locations within the construction work and material laydown areas as shown on the Composite Underground Utilities Plan drawings listed in Attachment A.

This utility does not present a radiological or chemical hazard and, based on ISM assessments to date, is not required for the prevention or mitigation of any radiological or chemical hazards associated with the facility. The potable water system is therefore not designated as ITS.

#### **1.3.2.1.3 Compressed Air (Activities 0011 and 0012)**

Portions of the permanent compressed air system supply header shown on the Composite Underground Utilities Plan drawings listed in Attachment A will be installed to the extent practical to facilitate expediting the construction schedule. Temporary construction compressed air piping will be used in conjunction with the portions of the permanent piping to supply compressed air for construction needs.

This utility does not present a radiological or chemical hazard and, based on ISM assessments to date, is not required for the prevention or mitigation of any radiological or chemical hazards associated with the facility. Any future identification of compressed air requirements to support ITS functions or equipment would be provided by dedicated ITS air supplies that are independent from the permanent compressed air system supply header piping to be installed during limited construction. The compressed air system header is therefore not designated as ITS.

#### **1.3.2.2 Fencing (Activities 0013, 0019, and 0028)**

Permanent and temporary fencing will be installed. The permanent fence will be a standard industrial fence per the Safeguard and Security Plan requirements. The fence is to provide protection against damage, destruction, or theft of property. Portions of the permanent fencing shown on the Fence Layout Plan, DWG-W375BF-C00020, necessary to provide separation between the construction area and the Hanford Site will be installed. Additionally, temporary fencing will be installed as needed to support construction activities.

Although restricting access of unauthorized personnel to the operating facility will be important element in preventing accidents caused by human actions, hazardous situations caused by deliberate acts of sabotage are outside the scope of the ISM process. The fencing is therefore not designated as ITS.

### **1.3.2.3 Electrical Grounding (Activity 0007)**

The perimeter loop for the site wide electrical grounding grid will be installed.

The perimeter loop is part of a site wide electrical grounding grid that will be installed as shown in DWG-W375BF-E00750, Site Area Grounding Plan. Electrical equipment will be connected to the site grounding system to provide personnel and equipment protection in the event of an electrical fault. Electrical equipment does not need a ground to operate. Degradation or malfunction of the grounding system would not impact the functionality of the electrical equipment. The facility instrumentation systems will also be connected to the site ground grid to provide shielding for the low voltage instrumentation loops. Due to the low voltages associated with instrumentation systems, the instrumentation systems will rely only on the portion of the ground system local to the facility to ensure adequate grounding of the instrument loops. The perimeter loop supports the overall ground capacity for large electrical faults for personnel safety and to prevent equipment damage. Therefore, the perimeter loop is not designated as ITS.

### **1.3.2.4 Administration Building (Activity 0014)**

The Administration Building will be an office building used to house the daily engineering, operations, management, and administrative activities of the WTP project.

The administration building will not contribute to potential hazards or the prevention or mitigation of hazards. Equipment located within the building will not perform safety functions related to facility operations. Therefore, the administration building is not designated as ITS.

### **1.3.2.5 Sanitary System (Activities 0015 and 0017)**

The sanitary system during construction will be a combination of permanent sanitary sewer system and portable sanitary equipment. The portions of the permanent sanitary sewer system to be installed will be the sanitary leach field shown on drawing DWG-W375BF-C00002 and the collection system piping necessary to connect the temporary construction facilities to the leach field shown on the Composite Underground Utilities Plan drawings listed in Attachment A.

This utility does not present a radiological or chemical hazard and is not required for the prevention or mitigation of any radiological or chemical hazards associated with the facility. The sanitary sewer system is therefore not designated as ITS.

### **1.3.2.6 Roads (Activity 0016)**

The DOE has constructed a permanent road around the WTP site. This paved roadway serves as the access road from the Hanford Site to the WTP site.

Some permanent onsite roads, shown on the Composite Underground Utilities Plan drawings listed in Attachment A, will be constructed early to support construction activities. Permanent roads will be constructed to specific load bearing ratings. Construction and location of roads are relevant to the safety case in that an assumption has been made that administrative controls will restrict traffic to those loads (type and quantity) for which the roads were designed. Therefore, the roads themselves are not designated as ITS.

### **1.3.2.7 Main Construction Warehouse (Activities 0031 and 0037)**

A construction field warehouse will be built and may be used as permanent warehouse. This warehouse will be designed and constructed to accommodate receipt, control, and storage requirements described in the QA

Program for ITS materials. This warehouse does not present a radiological or chemical hazard and is not required for the prevention or mitigation of any radiological or chemical hazards associated with the facility. Although this warehouse will be used to store ITS items during construction activities and facility operation, the structure is not ITS.

Materials will be received, controlled, and stored in accordance with SRD Safety Criterion 7.3-5, ISMP Section 1.3.11, and the QA Program, as applicable (see LCAR Section 3.4). Limited procurement of ITS materials, prior to PSAR approval, will be in accordance with 10CFR830.206. The types and quantities of ITS materials to be stored onsite during limited construction will not impact radiological nuclear or process safety.

### **1.3.3 Temporary Construction Facilities/Utilities**

Construction of temporary facilities is needed to support craft labor and construction equipment, site construction personnel, material receiving and storage, site security, and general construction services. Construction facilities are considered to include all construction support buildings, support areas, and construction services to assist the permanent construction of the WTP.

Temporary construction facilities and utilities do not present a radiological or chemical hazard and are not required for the prevention or mitigation of any radiological or chemical hazards associated with the facility. Temporary construction facilities and utilities are therefore not designated as ITS.

Below are descriptions of the temporary facilities to be installed.

#### **1.3.3.1 First Aid Facility (Activity 0018)**

A First Aid and Safety Facility will be provided close to the site construction areas.

#### **1.3.3.2 Concrete Batch Plant and Operations Area (Activity 0020)**

The Concrete Batch Plant and Operations Area will be located north of the construction areas.

Installation of concrete production equipment and facilities will be performed during limited construction. The subcontractor/owner of the batch plant(s) will be required to submit and follow an approved quality program. This program will contain the flow down requirements of the WTP commitments to control materials and processes during the production of concrete. Upon completion of the batch plant erection, qualification to produce ITS concrete will be conducted in accordance with the specification and quality program requirements.

The batch plant is not an ITS facility, but will utilize qualification testing to establish its ability to produce consistent quality concrete. Acceptability of the concrete will be evaluated prior to use in ITS facilities. No concrete will be produced by this facility for ITS applications during limited construction.

On the Hanford site north of Route 3 between the 200 East and 200 West areas there is a previously used gravel pit known as Pit 30. Aggregate from Pit 30 may be used in the concrete batch plant. If used, excavation of aggregate from Pit 30 will be monitored and controlled in accordance with the Radiation Protection Program (RPP) as described in Section 4 for construction excavation.

### **1.3.3.3 Materials Testing Laboratory and Office (Activity 0026)**

A materials testing laboratory and office will be located within the concrete operations area for ready access to concrete production activities. The materials testing laboratory and office is not an ITS SSC. However, the laboratory will perform ITS testing of soils during limited construction as described in Section 1.3.1.2.5.

### **1.3.3.4 Site Parking Areas (Activity 0029)**

Development and grading of the site construction parking areas will be included in the site grading and excavation contract package. Following completion of excavation and site grading, final construction phase parking area surfaces will be completed.

### **1.3.3.5 Construction Field Offices (Activity 0021)**

Construction field offices will provide accommodation for WTP non-manual employees during the construction phase of the project.

### **1.3.3.6 Shops, Laydown Areas, and Change Rooms (Activities 0022 and 0037)**

Open storage areas will be located in the outer construction facilities area for the storage of construction and plant materials not requiring protected warehouse conditions. Materials will be received, controlled, and stored in accordance with SRD Safety Criterion 7.3-5, ISMP Section 1.3.11, and the QA Program, as applicable (see Section 3.4). Limited procurement of ITS materials, prior to PSAR approval, will be in accordance with 10CFR830.206. The types and quantities of ITS materials to be stored onsite during limited construction will not impact radiological nuclear or process safety.

A total of approximately 2,000,000 ft<sup>2</sup> (50 acres) has been identified for potential laydown, fabrication, and shop facility usage. Procedures for the control of materials that may have quality requirements in these areas is described in Section 3.4.1.

A combination shop will be provided to support construction needs such as fabrication and maintenance. Activities performed in the combination shop will support limited construction activities described in this LCAR and will be consistent with requirements for those LCAR activities.

Construction craft change houses will be provided for WTP manual employees to change into work clothes, eat lunch, and clean up at the end of a workday.

### **1.3.3.7 Construction Electric Power and Lighting (Activity 0023 and 0034)**

DOE will supply electricity to the site for project construction needs. No permanent power cables will be installed during limited construction. Construction power will be routed in temporary concrete-encased duct banks, spare conduits in permanent non-ITS duct banks, and by overhead power distribution lines around the perimeter of the storage and laydown areas as shown in DWG-W375BF-E00500. Direct burial may also be used for temporary construction power where appropriate and practical. Construction power will follow the permanent underground utility trench, where practical.

The feeders will provide primary power to temporary 13.8 kilovolt to 480 volt substations installed at strategic locations within the construction site and lay down areas. Construction subcontractors will provide and install their own low voltage distribution equipment and feeders from the load centers. Temporary construction

lighting will be installed as needed. Power and lighting will also be provided by portable electric generators to areas of the construction site as needed.

#### **1.3.3.8 Communication Services (Activity 0025)**

Communications on and off the site may include such features as:

- Land line telephone service based with the local telephone company
- Onsite telephone system with distribution to primary site, office, shop, warehouse, and construction areas
- Multi-channel radio system for onsite construction communication
- Cellular telephone communication for on and offsite communications
- Electronic transfer and networking capability via a Local Area Network (LAN) line

#### **1.3.3.9 Waste and Trash Disposal (Activity 0027)**

Waste and trash disposal equipment and services will be provided as needed to support construction activities.

#### **1.3.3.10 Main Construction Field Office (Activity 0030)**

A main construction field office will be provided to accommodate non-manual employees.

#### **1.3.3.11 Time Office and Craft Entry Gates (Activity 0032)**

Time offices and construction access points will be provided as necessary.

#### **1.3.3.12 Special Material and Tool Cribs (Activity 0033)**

Tool crib inventories will be located in storage units located close to construction work areas.

Weld rod inventories will be maintained and controlled in storage units located close to construction work areas. Storage units will be provided with utilities required to maintain rod inventories in accordance with project requirements. No ITS welding will be performed to support the activities identified in this LCAR.

Special materials and construction tools, such as grout and concrete vibrators, will be stored in dry and secured storage units. These storage units will be located adjacent to construction areas to provide reasonable access without affecting access to ongoing construction activities. These units may be portable to support site access conditions.

#### **1.3.3.13 Construction Heavy Equipment Mobilization (Activity 0035)**

This activity includes the setup, testing, and servicing of various cranes, earthmovers, and vehicles needed to support limited construction activities.

### **1.4 Potential for Design Changes**

The overall plant configuration reflected in this submittal is consistent with the baseline design that is integrated with project schedules and costs. Potential changes that go beyond detailed design implementation will be captured in the project change management process (see Section 3.1). Following OSR approval, the design and safety criteria described in this LCAR, especially as they relate to permanent ITS systems,

structures, and components, will be changed only as allowed by RL/REG-97-13, Regulatory Unit Position on Contractor-Initiated Changes to the Authorization Basis.

The most likely source of changes initiated within the project would result from ongoing redesign of the pretreatment facility and design evolution of the other primary facilities. Installations that are scheduled to be completed during limited construction that could be impacted by these ongoing design activities are as follows:

- Primary Facility Excavations
- Permanent Underground Utilities

The impact of potential change in these areas on the various safety and quality related considerations in the LCAR is limited. The potential impact is minimized due to the limited scope of the work to be accomplished under this LCAR.

#### Primary Facility Excavations

The relative positioning of the process facilities on the site, and therefore the relative location of excavations, has been fixed in the project baseline based on functional relationships between facilities, effective arrangement of support facilities and utilities, and individual facility design requirements. The site layout is acceptable based on hazard analyses performed to date (particularly with respect to radiological releases to co-located workers).

The footprint of individual buildings that must be accommodated within the planned excavations is largely driven by process or utility requirements as reflected in major equipment, by safety and maintenance requirements that drive considerations for confinement spaces, shielding requirements, and by access for operation and maintenance.

The ISM process has identified natural phenomena design bases and has identified the Seismic Category and Performance Category of each facility in accordance with the requirements outlined in SRD Section 4.1 Safety Criteria. The codes and standards identified in the appropriate Safety Criteria are used to develop the loads on the structure, including:

- Live loads
- Dead loads
- Startup and operational loads
- Loads associated with fault conditions

During development of facility layouts, basic structural requirements are also addressed. Upon resolution of the primary structural systems, finite element structural models of the facilities are developed and appropriate design loads applied. Loads determined to have the greatest effect on the WTP structural design, including the foundations, are loads associated with natural phenomena events, particularly seismic events. Design basis seismic events are documented in the following reports, previously submitted to DOE for review:

- Validation of the Geomatrix Hanford Seismic Report for Use on the TWRS Privatization Project, RPT-W375-RU00004
- Applicability of DOE Documents to the Design of TWRS-P Facility for Natural Phenomena Hazards, RPT-W375-RU00003

- TWRS-P Facility Design Basis Earthquake – Peak Ground Acceleration, Seismic Response Spectra, and Seismic Design Approach, RPT-W375-RU00002
- Seismic Analysis and Design Approach, RPT-W375-RU00005

To develop confidence in the direction of the structural design, preliminary seismic analyses are performed utilizing a finite element model of the primary load-resisting elements. These analyses assess the configurations of the structural systems and support the proposed configuration of the base mats. A detailed seismic analysis will be performed prior to issuing foundation drawings for construction. These analyses will consider the structural systems for each facility and identify loads for detailed design.

To evaluate adequacy of the soil to support the foundations, a geotechnical investigation of the WTP site was conducted to determine bearing capacities and dynamic soil properties. Preliminary estimated load requirements were identified to the Geotechnical Engineer. The Geotechnical Investigation Report confirms that the site soil conditions have adequate capacity to support these loads without significant deflections and indicates that the soil is capable of sustaining significantly greater bearing loads than those estimated. When the final seismic analysis is completed, estimated soil loads will be replaced by calculated loads and confirmed to be acceptable. Additionally, the designs will demonstrate that the facilities are capable of accommodating the settlements corresponding to the calculated loads.

Excavation drawings to be issued for limited construction work will be updated based on issued general arrangement drawings that are consistent with the layouts described above prior to commencing excavation work. As such, it is unlikely that excavation work performed during limited construction would require rework as a result of ongoing design activities.

An evaluation is also underway to consider the performance of structures used for primary containment of process liquors under seismic events that exceed the design basis. Preliminary analyses to date indicate that increased reinforcement may be required in some structural elements, but not to the extent of affecting structural dimensions. This assessment focuses on performance of individual elements and should not affect the building footprints.

#### Permanent Underground Utilities

Utility requirements serving the facilities, such as power, fire protection supply, potable water, compressed air, and sewer have been identified for each facility and routed based on drawing DWG-W375BF-C00002, Site Plot Plan. These services are located predominantly underground to enhance unobstructed movement around the site. Constructability reviews support the present arrangement of utilities. The portions of the permanent underground utilities to be installed during limited construction consist of the main yard supply headers, external to the excavation areas for the primary facilities. Utility headers are sized to meet the expected facility service requirements for fully expanded operation with sufficient margin added to accommodate variances due to ongoing design evolution within the facilities. The excavation drawings for the primary facilities will be based on issued building general arrangement drawings. Drawings for permanent utility installations will not be issued for construction, in areas that could be impacted by ongoing pretreatment redesign, prior to finalizing the pretreatment general arrangement and associated excavation requirements. As such, it is unlikely that permanent utilities to be installed during limited construction would require rework as a result of ongoing design activities.

## 2 Organization and Administration

The following section describes the construction organization that will perform the limited construction activities. Included in this description are the functional titles and responsibilities to be performed by those functions. Within the limitations imposed by the ISMP and QA Program on functional independence for the Field QC Manager and ES&H Manager, the responsibilities may be reassigned to other functional areas and functional titles may be revised. SRD Safety Criterion 7.0-4 and ISMP Sections 3.2, 6.1.1, 6.1.2, and 11.1 are applicable to the Project organization during limited construction.

### 2.1 Overall Management Structure and Organization

The Project Manager is responsible for the proper execution of all work under the contract. The project management organization, including engineering and procurement support for construction, is described in the QA Program.

### 2.2 Construction Organization

The construction organization for the limited construction activities is shown in Figure 1. The site organization and the responsibilities of project construction management personnel are discussed below.

### 2.3 Responsibilities

The Construction Site Manager (CSM) is responsible for the overall management of the WTP site and site work force, and the implementation of the plans and procedures governing construction activities. The CSM implements this direction through the following construction management staff:

- Field Engineering Manager
- Area Superintendents - pretreatment, HLW, LAW, LAW pretreatment, and BOF/Yard
- General Superintendent
- Labor Relations Manager
- Field Quality Control Manager (FQCM)
- Environmental, Safety and Health Manager
- Project Field Procurement Manager
- Project Field Subcontracts Manager
- Field Project Controls Manager (FPCM)

The Construction Site Manager is responsible to the WTP Project Manager or Deputy Project Manager for day-to-day operations on the project. Areas of responsibility include:

- Total WTP site management
- Reporting construction progress to Project Manager
- Implementing the WTP Site Environmental, Health and Safety program, which provides strict adherence to Federal, State, and site safety codes
- Site Organization Management
- Overall quality of work being performed and implementation of the WTP Quality Control Program

- Construction site policies and procedures
- Site Specific or Task Specific (if required) training of manual labor on the project
- Executing overall construction scope within schedule and budget
- Monitoring construction performance on the project and controlling site expenditure for craft supervision, labor, equipment, services, and material
- Directing and coordinating the activities of the construction effort, determining manpower needs; coordinating established operational plans; reviewing work accomplished by each craft
- Providing input and direction to estimates, schedules, construction methods, and procedures
- Administering labor relations onsite and coordinating these activities with the Corporate Labor Relations Department
- Providing overall administration and direction to subcontractors to ensure that their work is in compliance with construction procedures, specifications, and schedules
- Site Interface for regulatory agencies

The Field Engineering Manager is responsible for construction engineering and technical support activities, including the interface with Design Engineering and maintaining configuration control of the design during the construction phase.

The Pretreatment Area Superintendent is responsible for directing the planning and execution of work performed by WTP direct hire craft and WTP subcontractors in the pretreatment facility.

The HLW Area Superintendent is responsible for directing the planning and execution of work performed by WTP direct hire craft and WTP subcontractors in the HLW facility.

The LAW Area Superintendent is responsible for directing the planning and execution of work performed by WTP direct hire craft and WTP subcontractors in the LAW facility.

The LAW Pretreatment Area Superintendent is responsible for directing the planning and execution of work performed by WTP direct hire craft and WTP subcontractors in the LAW Pretreatment facility.

The BOF/Yard Area Superintendent is responsible for directing the planning and execution of work performed by WTP direct hire craft and WTP subcontractors in the BOF/Yard area.

The General Superintendent is responsible for organizing, directing and controlling the manual labor force. He has overall responsibility for craft worker safety on the project site and implementing the project Zero Accident policy.

The Labor Relations Manager, reporting directly to the Construction Site Manager, is responsible for assisting the Construction Site Manager in handling the labor relations related aspects of the project.

The Field Quality Control Manager, who receives functional and technical direction from the Quality Assurance department, is responsible for the implementation of the WTP Construction Quality Control program.

The Site Environmental, Safety and Health Manager, receives oversight direction from the Environmental, Safety and Health Manager, and is responsible for assisting the Site Manager in handling the Environmental, Safety and Health related aspects of the construction site.

The Project Field Procurement Manager reports directly to the CSM and is responsible for procuring all field materials and services required by the design that are not procured by the Project Procurement organization.

The Project Field Subcontracts Manager reports directly to the CSM and is responsible for ensuring that the subcontractors' contractual obligations regarding the scope of the WTP project are met.

The Field Project Controls Manager is responsible for implementation of the project controls program, including cost control, planning, and scheduling.

## **3 Management Control Systems**

### **3.1 Configuration Management**

During the Limited Construction Phase of the WTP project, the Configuration Management (CM) program, identified in the project CM plan (PL-W375-MG00002), is applied to work activities that describe and control the facility configuration. Configuration management is an integrated management process that identifies and documents the physical and functional characteristics of the facility's structures, systems, components, and computer software. It also ensures changes to these characteristics are properly developed, assessed, approved, issued, implemented, verified, recorded, and incorporated into the facility's documentation. SRD Safety Criteria 4.0-1 and 4.0-2 and ISMP Sections 1.3.16 and 5.3 are applicable to configuration management for limited construction activities.

### **3.2 Quality Assurance**

The QA Program describes the WTP commitment to quality, establishes quality policy, and defines the approach to the implementation of Quality Assurance (QA) Manual requirements on the Project. The QA Program is in accordance with SRD Safety Criterion 1.0-10 and the safety criteria contained in SRD Section 7.3. The QA Program will be approved by OSR, associated procedures will be available, and appropriate training completed prior to commencing limited construction activities. QA Program section numbers may change due to program revisions. As such, QA Program sections applicable to specific LCAR activities are not identified in the LCAR. The QA Program will be applied, using a graded approach as described in the QA Program, to all limited construction activities.

### **3.3 Records Management**

The commitments and requirements for records management are addressed in the QA Program. The current project records management program will be implemented for limited construction activities.

### **3.4 Procedures**

Procedures will be developed to support quality related BNI activities within the LCAR scope that require procedures. The procedures will be developed in accordance with ISMP Section 1.3.13 and QA Program requirements governing the need for and production of procedures. Specific titles may change and content may be reorganized as actual procedures are developed. Procedures for subcontracted activities will be developed and implemented as directed by the subcontract.

### 3.4.1 Construction Procedures

Construction procedures are planned to support quality related limited construction activities. Key points and objectives of these procedures are discussed below. Procedures will be issued sufficiently in advance of the work activity to support planning and training requirements.

#### Construction Organization

This procedure describes the construction organization and establishes specific responsibilities on both departmental and individual bases.

The Construction management staff consists of representatives of functional departments including Labor Relations, Field Engineering, Procurement, Project Controls, Human Resources, and Quality Control, and is headed by the Construction Site Manager.

Where organizational independence is required, matrixed reporting relationships are in place, such as the Construction Quality Control department is matrixed to the construction organization and reports to the Quality Assurance organization.

#### Construction Quality Control Program

Control of construction quality is the responsibility of the Construction Site Manager, and is accomplished through application of a variety of tools, processes, and organizations. Quality will be built into the work processes, not inspected into the work.

Quality construction will be accomplished via the following:

- Appropriate work process development
- Procedural development
- Training
- Self verification and checking by the installer
- Verification and/or inspection by others, as required for the quality level of the work performed
- Appropriate documentation commensurate with the quality level of the work

Field engineers qualified in the area of work being performed accomplish first-line verification of day-to-day construction activities, regardless of quality classification.

Quality Control will perform inspections on quality related work activities, as required by the Quality Control Program. Quality Control Program elements will be applied using a graded approach based on the assigned quality classification or safety significance of the work item or process. Grading will be accomplished through application of varying depth, methods, and responsibility for inspection activities as appropriate to the importance of the item or activity.

Procedures for activities affecting quality will specify required verifications and inspections, including methods, acceptance criteria, documentation requirements, and responsibility for their performance, or contain provisions for assignment of inspection points in working documents. Deficiencies discovered during Quality Control inspections will be documented and evaluated for nonconforming conditions and adverse trends, dispositioned for correction, and input to trending data. Nonconformance reports will be generated as required.

### Construction Training

Construction personnel will receive DOE required Hanford site access training, project Indoctrination, Safety Orientation, Quality Assurance Orientation, and additional training applicable to their assignments and duties. Subject matter will encompass applicable technical criteria and procedures, applicable quality assurance program elements, and individual job responsibilities and authority. Training methods include on-the-job training, classroom/formal training sessions, reading assignments, and refresher courses.

Ongoing training will address revised project requirements, and other subjects specified by management. Training will be documented and training records maintained.

Technical qualification of crafts personnel will be ensured through hiring of trades people who have achieved journeyman status through the applicable Building Trade training and qualification program. Qualified journeyman building tradesmen, or apprentices working under journeyman direction, will perform activities affecting quality.

Selected activities such as welding require additional training and qualification, which will be completed prior to performing the specified activity.

Field Engineering personnel performing verification of quality affecting activities will be qualified for those activities. Quality Control personnel inspecting activities affecting quality will be qualified and certified, as applicable, prior to performing the subject inspection activity.

Also see Section 7.2.

### Construction Work and Inspection Packages

Construction Work and Inspection Packages (CWIPs) will be required for quality affecting work activities and may also be utilized for non-quality affecting work. Packages will be assembled by Field Engineering. Packages will typically include the following:

- A description of work to be performed
- A list of design documents required to implement the work and indication of which design documents are included in the package
- Details and documentation required by the construction procedures applicable to each included work activity
- A list of material required to implement the package
- Inspection and test documents for the work

The CWIP will be issued to craft supervision and will be the guiding document for important to safety work performed in the field. The work sequencing and detailed instructions will not normally be required unless circumstances require them. Documentation required by construction procedures, when complete, will serve as the permanent records of the subject construction activity.

Measures will be established to ensure that the correct revision and issue of design documents is in use in the field for construction and inspection activities.

### Field Document Control

The existing Project Document Control procedures will be revised or amended, if required, to accommodate implementation of the project document control processes at the construction site.

### Field Change Requests and Field Change Notices

Field changes to engineering documents will be communicated by Construction to Engineering through the use of Field Change Requests (FCRs) and Field Change Notices (FCNs).

Specific direction for, and limitations on use, will be established and changes will be reviewed, approved, and issued in accordance with the Configuration Management program described in Section 3.1.

### Quality Control Certification

Quality Control personnel will be certified for inspection activities based on the requirements of the QA Program. Certification will be based on related experience, training and, as applicable, examination(s), to determine knowledge level and confirm capability to perform inspection activities. The Field Quality Control Manager will administer the certification program.

### Nonconforming Items

Nonconforming items will be documented, clearly describing the conditions that do not conform to specified criteria. Nonconforming items will be controlled via tagging, segregation, or other means to prevent inadvertent use. Nonconforming items will be dispositioned by qualified personnel assigned by the responsible technical organization, with technical justification when required, and configuration management concerns addressed in the disposition.

Reworked and repaired items will be inspected, tested, or reviewed in accordance with original requirements or approved alternate requirements, respectively.

### Measuring and Test Equipment Control

Measuring and Test Equipment (M&TE) utilized for acceptance of activities affecting quality requires control and calibration traceable to national standards. M&TE control is administered by the Field Engineering department with equipment calibration and maintenance performed by a qualified testing laboratory. Controls will be imposed in accordance with the QA Program and will include:

- Equipment identification, calibration, and inclusion of a recall system
- Equipment storage and calibration in a suitable environment
- Segregation of out of calibration equipment until recalibration is performed
- Application of calibration status indicators to equipment

### Subcontract Administration

Subcontractors performing important to safety activities are required to have an approved quality program appropriate to the work, or will work directly to the WTP QA Program.

- If implementing an approved subcontractor quality program, activities will be verified to be in compliance with contract quality requirements by Quality Assurance or Quality Control through audit, surveillance, and document review, as appropriate.
- If working to the WTP QA Program, activities will be performed to the appropriate construction procedures with monitoring and inspection by Field Engineering and Quality Control as specified therein.

#### Material Control

Materials will be controlled in accordance with QA Program requirements including measures to ensure that:

- Storage areas will be identified and materials will be stored under conditions appropriate to their sensitivity and physical characteristics.
- Movement of materials into, out of, between, and within storage areas will be documented.
- Storage conditions will be monitored periodically by material handling personnel (and Quality Control for important to safety materials) to verify that materials are properly identified and stored under suitable conditions.
- Special maintenance requirements specified by Engineering are implemented and documented as required to maintain equipment integrity or warranty.

Identification of materials requiring traceability will be maintained either on the items or in documents traceable to the item(s).

#### Receipt Inspection

Materials and components will be subject to receipt inspection, before release for installation at the site, in accordance with the QA Program. Quality Control inspection will be performed utilizing a graded approach that considers quality classification and safety significance, attributes of the item (such as standard catalog item versus unique design), and inspections performed at the source. Inspections will typically include:

- Confirmation that items comply with the requirements of the purchase order.
- Proper packaging.
- Items are received free of damage.
- Provision may be included for sampling inspection of bulk items where appropriate.

#### Survey Control

This procedure will require establishment of several primary control points, which will be utilized for horizontal and vertical control for layout of the site's secondary and tertiary monuments and benchmarks. Secondary and tertiary monuments will be established after site grading and earthwork activities.

In addition to requirements imposed by the M&TE program, equipment will receive periodic field checks to ensure continued proper operation and minimize risk of calibration failure.

## 4 Radiological Safety

### 4.1 Radiation Protection Program for Construction

WTP activities shall be conducted in compliance with a documented Radiation Protection Program (RPP), as approved by the DOE, unless specifically excluded by 10 CFR 835.1(b). The RPP presents plans and measures for managing potential exposure scenarios involving radioactive material and radiation (such as source handling/use) encountered during construction activities. These plans and measures are designed to assure site personnel safety and comply with the requirements of 10 CFR 835, Occupational Radiation Protection. The RPP for Design and Construction shall be approved by the DOE prior to start of construction activities. SRD Safety Criteria 5.0-1 and 1.0-10 and ISMP Section 2.3 are applicable to the RPP for Design and Construction.

### 4.2 Radioactive Contamination Detected During Construction

The WTP construction site characterization study, documented in HNF-2067, Rev. 0, TWRS Phase 1 Privatization Site Pre-construction Characterization Report, indicates radiological conditions consistent with Hanford Site-wide background levels. However, due to the potential for encountering legacy radioactive material during construction activities, the WTP project will implement a radiological monitoring program to assure site personnel and public radiological safety. The periodicity and type of radiological surveys performed during construction will be determined by the programs and procedures specified in the RPP. BNI does not intend to perform additional site characterization and will establish a monitoring program initially based on the characterization specified in HNF-2067. Background determinations will be based on the Hanford Site background determination. The radiological monitoring program is designed to detect radioactive material or conditions above existing background levels and to ensure prompt identification and response to conditions warranting protective measures in accordance with 10 CFR 835, Occupational Radiation Protection. Procedures will be developed to address construction site response to off-normal radiological conditions in support of implementation of the RPP. Limiting doses in accordance with the requirements of 10 CFR 835 per the RPP implementing procedures will ensure conformance to public dose standards in SRD Safety Criteria 2.0-1 and 2.0-3 in the event that contamination or buried waste are encountered.

The RPP implementing procedures will:

- Include action levels that will trigger mitigative actions if radioactive contamination above background levels is encountered
- Provide controls on radioactive contamination encountered during limited construction activities and the release of materials and property containing residual radioactive contamination (SRD Safety Criterion 5.3-8 is applicable to limited construction activities)
- Provide methods to limit and control the spread of radioactive contamination
- Provide methods to collect, document, store, and retain all contamination and exposure records

The RPP implementing procedures and programs described above will ensure that an inadvertent release of radioactive material to the environment will be managed and controlled such that the impacts to the environment and exposures to the public are kept as low as reasonably achievable (ALARA). These procedures and programs will be consistent with 10 CFR 835 and will be available for review prior to the limited construction readiness evaluation.

Should it occur, the discovery of legacy waste will be recorded, reported, and evaluated as described in Section 5. The radioactive emission license discussed in Section 6.1.1 will include conditions to address environmental radiological protection requirements should radioactive contamination be encountered during limited construction excavation activities. Procedures provided to address the radioactive emission license conditions will include SRD Safety Criteria 5.3-1, 5.4-2, 5.4-3, 5.4-6, 5.4-7, 5.4-8, 5.4-9, and 5.4-10 requirements that are relevant to limited construction activities.

## **5 Notification, Categorization and Consequence Assessment**

Construction occurrence reporting procedures will include categorization and notification requirements specified in SRD Safety Criteria 7.7-4, 7.7-5, 7.7-6, and 7.7-7 relative to “Unusual Occurrences” and “Off-Normal Occurrences”. “Emergency” categorizations are not applicable prior to facility operation.

Construction occurrence reporting procedures will be developed in accordance with DOE Manual 232.1-1A, Section 8. These procedures will satisfy the requirements of SRD Safety Criterion 7.7-6 and associated implementing standard, ISMP Section 1.3.17. Notification and reporting will be in accordance with DOE Manual 232.1-1A, Sections 5.3.2 and 5.4 to satisfy the requirements of SRD Safety Criterion 7.7-8.

Construction occurrence reporting procedures will include provisions to address the requirements of ISMP Section 2.5 relative to 10 CFR 820.

Subcontractors and suppliers will be required to report defective items, materials, and services during limited construction in accordance with SRD Safety Criterion 7.7-9 as described in the QA Program and associated implementing procedures.

As described in SRD Safety Criterion 7.7-1 and DOE/RL-96-0006 incidents that result in or could reasonably have resulted in a major accident shall be investigated. Per the definitions in Section 12 of the ISMP, relative to implementation of the investigation and reporting requirements of 29 CFR 1910.119(m), a major accident is a major uncontrolled emission, fire, or explosion, involving one or more highly hazardous chemicals or radioactive materials, that presents serious danger to facility worker.

During limited construction, highly hazardous chemicals described above will not be utilized and there is no reason to believe that significant amounts of hazardous chemicals were improperly disposed of on the construction site. Radioactive materials will not be required to perform limited construction. The anticipated low level legacy contamination that may be encountered during construction will be controlled as described in Section 4.1. The radiation protection program establishes a site monitoring and control process that identifies and controls radioactive contamination to a level several thousand times below the level necessary to present a serious danger to facility workers. As such, incident investigation requirements contained in SRD Safety Criteria 7.7-1, 7.7-2, and 7.7-3 are not applicable to limited construction activities. Incident investigation procedures will be developed consistent with DOE Manual 232.1-1A, Section 5.5, for use during limited construction activities.

## **6 Required Permits**

### **6.1.1 Clean Air Act**

Two Notice of Construction (NOC) applications have been prepared to support WTP limited construction activities.

A radioactive NOC will be submitted to the Washington State Department of Health (WDOH) in support of excavation activities (WAC 246-247). The radioactive emission license issued by WDOH is being obtained as a precautionary measure should radioactive contamination be encountered during soil excavation, but is not specifically required for construction to begin.

A dust control plan will be used to minimize non-radioactive fugitive emissions resulting from excavation and construction traffic.

An NOC is also being prepared for particulate emissions from the concrete batch plant (WAC 173-400). This NOC will be submitted to the Washington State Department of Ecology. The concrete batch plant air permit is required prior to erecting the batch plant.

### **6.1.2 Clean Water Act**

Documentation will be submitted to WDOH supporting agency approval for operation of a Large On-Site Sewer System (WAC 246-272). Section 1.3.2.5 describes the strategy for managing sanitary wastes during construction.

Water permits will be required to support some construction discharge activities. Three existing state waste discharge permits have been approved for Hanford Site activities and will meet most WTP needs.

- Hydrotest, Maintenance, and Construction (ST-4508)
- Cooling Water and Condensate (ST-4509)
- Industrial stormwater discharges (ST-4510)

In addition to these existing permits, a state sand and gravel general permit may be required to cover discharges associated with sand and gravel and concrete batch plant operations not addressed by existing permits.

## **7 Contractor's Technical and Experience Qualifications to Construct the Plant**

### **7.1 Experience**

Bechtel's successful history in safely designing and constructing large and complex projects to exacting quality standards in a highly regulated environment is notable and extensive. With more than 50 years of nuclear experience, Bechtel has designed or built more than half of the nuclear power plants in the United States, constructed over 150 nuclear power plants world-wide, managed the DOE's (FUSRAP) nuclear waste cleanup program and performed design for the DOE's Defense Waste processing facility at the Savannah River Site.

Bechtel has time tested and proven construction work processes, which will be deployed to construct WTP. These work processes and construction management systems have received recognition in the areas of safety and quality performance. Some notable accomplishments include the following:

- Winning the National Safety Council Award of Honor twice, for completing 2.75 million work hours without a lost time injury in 1994 and 2.6 million in 1996 at DOE's Savannah River Site

- Over 75 % of Bechtel's projects worldwide, over 75 million work hours have been performed without a single lost time accident, even under exceptionally hazardous conditions
- Winning the National Safety Achievement Award from the National Contractors Association for Outstanding Safety Performance
- Replacement of North Anna nuclear power station steam generators setting a U.S. record for the lowest plant shutdown time and lowest total radiation exposure, with a safety record twice that of the previous best
- Ten consecutive Outstanding ratings for performance as Environmental Restoration Contractor at the DOE's Hanford Site since 1994
- Tennessee Quality Commitment Award from the Tennessee Quality Awards program for Bechtel's consistent record of excellence in environmental cleanup
- U.S. Department of Energy's "Large Contractor of the Year" from the U.S. Department of Energy's Oak Ridge Operations Office for FUSRAP

In addition to the construction experience and history described above, Bechtel is or has recently provided construction and field services to support the DOE mission of Waste Cleanup with substantial experience in the areas of radiological safety, radiation protection, environmental radiation protection, Quality Assurance, and management controls as follows:

- Oak Ridge - Bechtel Jacobs role
- Bechtel Hanford Inc. - Environmental Restoration
- Savannah River Site
- Nevada Test Site
- Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP)
- Idaho National Engineering Laboratory

## 7.2 Training and Qualification

Personnel will be trained and qualified to ensure they are capable of performing their assigned work and provided with continuing training to ensure job proficiency is maintained in accordance with ISMP Section 1.3.12 and SRD Safety Criterion 7.3-3.

# 8 Approach to Implement the SRD and the ISMP

The SRD and ISMP contain radiological, nuclear and process regulatory commitments that, if applicable, must be implemented in order to perform project activities including limited construction activities. The approach to implement these commitments is as follows:

- 1 Identify the limited construction activities including those that may impact ITS SSCs. This element of the approach is documented in Table 1 WTP Project Limited Construction Activities.
- 2 Identify the radiological, nuclear and process regulatory commitments from the SRD and ISMP that apply to the activities identified in step 1.
- 3 Identify and develop procedures that will implement the regulatory commitments from the SRD and ISMP identified in steps 2.
- 4 Assess that the plan for performance of limited construction activities is in compliance with the SRD and ISMP. That is, the LCAR submittal, integrated with a project self-assessment and an OSR readiness

inspection performed prior to start of activities, will ensure acceptability and compliance of the activities with the SRD and ISMP.

This approach ensures that the limited construction activities will be implemented consistent with the program described in the ISMP and that the applicable requirements of the ISMP and SRD are met as required by RL/REG-99-17, Rev. 4, Sections F.3.3 and G.3.3, Regulatory Acceptance Criteria.

The LCAR cites ISMP and SRD requirements that are specific to limited construction activities. Those SRD and ISMP requirements, applicable to other project activities, that are not cited in the LCAR are not excluded during limited construction.

**Table 1 WTP Project Limited Construction Activities**

Activity No.	ACTIVITY DESCRIPTION	Impact on ITS Structure, System, or Component (SSC) Yes / No	Justification	LCAR Section Reference
<b>Pre-Construction of Main Facilities - Pretreatment/HLW/LAW</b>				
0001	Site Grading/Survey Control established -Clear and Grub	No – Grading  Yes – Survey Control	The ability to prevent or mitigate accidents related to the SSCs that will be installed in the future is not dependent on the clearing and grading of the areas in which they will be installed. Final grading is not part of the LCAR Scope.  Some plant physical dimensions are ITS. Survey activities will be performed in accordance with an approved Project Survey program. Commercial survey tools and methods with QA program oversight is sufficient. (Quality related procurement of survey services will supplement the project survey program).	1.3.1.1
0002	Soil Retention Sheet Pile Installation for Pretreat/LPP/HLW Base Slab Foundations	No – Structure	The sheet piles to be installed will not be used as part of the foundation or structure of the ITS SSCs to be constructed at a later date.	1.3.1.2
0003	Pretreat/LPP/HLW/LAW Main Foundation Excavation	No	The ability to prevent or mitigate accidents of the SSC that will be installed in the future is not dependent on the material removal process.	1.3.1.2
0004	Subgrade Compaction Inspection for Activity #0003	Yes	Some of the compacted soil will support buildings that will be ITS. Hazards of inadequately compacted soil include unexpected settlement that damages buried waste transfer lines, and dynamic response to natural phenomena that exceeds the design basis, (Quality related procurement of testing services)	1.3.1.2
0005	Mud Mat Placement for Activity #0003	No	A mud mat is used for construction convenience. The properties of the mud mat substantially exceed adjacent soil and do not affect the ability of the future structure to perform the required safety function.	1.3.1.3

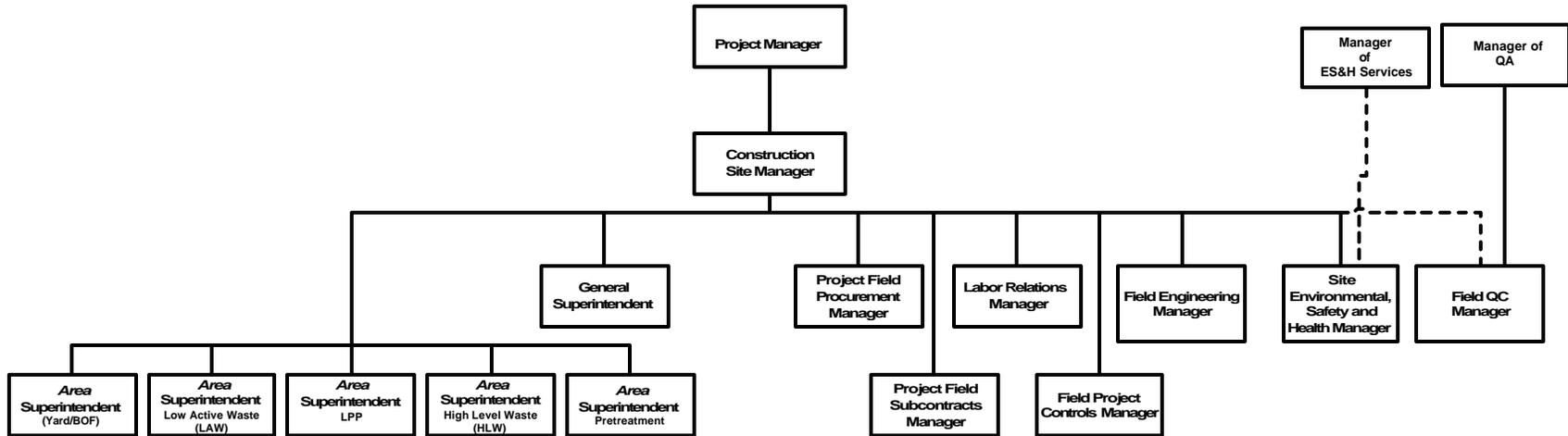
**Table 1 WTP Project Limited Construction Activities**

<b>Activity No.</b>	<b>ACTIVITY DESCRIPTION</b>	<b>Impact on ITS Structure, System, or Component (SSC) Yes / No</b>	<b>Justification</b>	<b>LCAR Section Reference</b>
0006	Pre-assembly of SST Liner - All Applicable Areas	No	Hazards analyses associated with spills into lined areas do not depend on the liners to meet dose criteria. They serve ALARA and decontamination functions.	1.3.1.4
	<b>Permanent Facilities and Services to be Installed/Utilized during Construction</b>			
0007	Electrical Grounding	No	The grounding system is installed for personnel safety reasons. The perimeter system to be installed under the LCAR is not required for the functioning of ITS circuits.	1.3.2.3
0008	Excavation for U/G Firewater System	No	Fire hazards control strategies do not rely on active fire suppression systems.	1.3.2.1
0009	Installation and Testing of U/G Firewater System	No	See Activity 0008 above.	1.3.2.1
0010	Temporary Commissioning of portions of U/G Firewater System	No	See Activity 0008 above.	1.3.2.1
0011	Excavation for other U/G utilities - raw water, potable water, permanent power, site drainage, compressed air, cathodic protection, etc.	No	None of the underground systems to be installed during the LCAR period have been identified as ITS in the hazards analysis. Permanent potable and raw water supplies to the facility are not designated as ITS. These utilities do not present a radiological or chemical hazard and are not required for the prevention or mitigation of any radiological or chemical hazards associated with the facility.	1.3.2.1
0012	Installation of Items in Activity #0011	No	See Activity 0011 above.	1.3.2.1
0013	Permanent Facility Fencing Installation	No	Security criteria are not ITS.	1.3.2.2
0014	Administration Building	No	The Administration Building will not house any ITS SSCs.	1.3.2.4
0015	Permanent Sanitary System Installation	No	The Sanitary System has no safety function.	1.3.2.5
0016	Site Road Construction	No	The site roads under the LCAR are not ITS SSCs	1.3.2.6
0031	Main Construction Warehouse	No	Temporary use for construction phase.	1.3.2.7
0036	Site Drainage System	No	The site drainage system has no safety function.	1.3.1.1
0037	Material Receipt and Storage	Yes	Material received and stored during limited construction may include ITS items	1.3.2.7 1.3.3.6

**Table 1 WTP Project Limited Construction Activities**

Activity No.	ACTIVITY DESCRIPTION	Impact on ITS Structure, System, or Component (SSC) Yes / No	Justification	LCAR Section Reference
	<b>Construction Temporary Facilities (concurrent activities)</b>		No temporary construction facility will be ITS or will impact the ability of an ITS SSC to perform the required safety function. In those cases that the activity associated with a construction facility can impact an ITS SSC, the activity will be subject to appropriate Quality Assurance Program requirements. The specific items below that enable quality-related activities are activity 0020, Concrete Batch Plant, and activity 0026, Civil Testing Laboratory.	
0017	Temporary Sanitary Facilities	No	Temporary installation for construction phase.	1.3.2.5
0018	First Aid Trailer/Emergency Response/Fire Protection	No	Temporary installation for construction phase.	1.3.3.1
0019	Site Security	No	Security is not ITS.	1.3.2.2
0020	Concrete Batch Plant	No	See 1.3.3.2 (Quality related procurement for qualification and production processes)	1.3.3.2
0021	Temporary Site Offices	No	Temporary installation for construction phase.	1.3.3.5
0022	Fabrication Shops/Laydown areas/Change Rooms	No	Temporary installation for construction phase. See 3.5.1 for material control and receipt inspection.	1.3.3.6
0023	Construction Power Distribution, priorities: Batch Plant, Site Office facilities, Fabrication Shops	No	Temporary installation for construction phase.	1.3.3.7
0024	Construction Water Distribution	No	Temporary installation for construction phase.	1.3.2.1.1
0025	Site communication	No	Temporary installation for construction phase.	1.3.3.8
0026	Civil Testing Laboratory Facility	No	See 1.3.3.3 (Quality related procurement for Testing services)	1.3.3.3
0027	Construction Waste and Trash Disposal	No	Temporary installation for construction phase.	1.3.3.9
0028	Construction Fencing	No	Temporary installation for construction phase.	1.3.2.2
0029	Site Parking Lots	No		1.3.3.4
0030	Main Field Office	No	Temporary installation for construction phase.	1.3.3.10
0032	Timekeepers Trailers/Entry Turnstiles	No	Temporary installation for construction phase.	1.3.3.11
0033	Tool Cribs	No	Temporary installation for construction phase.	1.3.3.12
0034	Area and Security Lighting	No	Temporary installation for construction phase.	1.3.3.7
0035	Construction Heavy Equipment Mobilization	No	Temporary installation for construction phase.	1.3.3.13

Figure 1 WTP Project Construction Organization



A

## Appendix A

### Drawings

The drawings referenced herein are for information only. They reflect the current design as of the submittal date of this document and will be issued for construction prior to start of work.

<b>Drawing Number</b>	<b>Title</b>
DWG-W375BF-C00002	RPP-WTP Site Plot Plan
DWG-W375BF-C00130	RPP-WTP Site Composite Underground Yard Utilities Plane Area 1
DWG-W375BF-C00131	RPP-WTP Site Composite Underground Yard Utilities Plane Area 2
DWG-W375BF-C00132	RPP-WTP Site Composite Underground Yard Utilities Plane Area 3
DWG-W375BF-C00133	RPP-WTP Site Composite Underground Yard Utilities Plane Area 4
DWG-W375BF-C00134	RPP-WTP Site Composite Underground Yard Utilities Plane Area 5
DWG-W375BF-C00135	RPP-WTP Site Composite Underground Yard Utilities Plane Area 6
DWG-W375BF-C00136	RPP-WTP Site Composite Underground Yard Utilities Plane Area 7
DWG-W375BF-C00137	RPP-WTP Site Composite Underground Yard Utilities Plane Area 8
DWG-W375BF-C00138	RPP-WTP Site Composite Underground Yard Utilities Plane Area 9
DWG-W375BF-E00500	RPP-WTP Site Electrical Distribution Duct Bank Plan
DWG-W375BF-E00750	RPP-WTP Site Area Grounding Plan
DWG-W375-G00053	LAW Excavation And Mudmat
DWG-W375-G00054	HLW Excavation And Mudmat
DWG-W375-G00055	Pretreatment Excavation And Mudmat
DWG-W375-G00056	LPP Excavation And Mudmat

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## Attachment 2

### **Responses to Regulatory Unit Comments/Questions On Contractor Limited Construction Authorization Request (00-RU-0517)**

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*Comment/Question #* 00-LCAR-001-Q      *Reviewer:* Gilbert      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of LCA features that are important to safety.

*LCAR Reference:* Table 1-1, WTP Project Limited Construction Authorization Activities, of the LCAR identifies activities that will be performed as part of limited construction. Excavation and subsequent compaction to support important to safety facilities appear to be limited to the four primary processing facilities (HLW vitrification, LAW vitrification, pretreatment, and LAW pretreatment plant). Other structures that are potentially important to safety include waste transfer lines, chemical storage, backup power, and others.

*Comment/Question:* Will other excavations and compaction for important to safety structures be performed during limited construction?

*Contractor Response:* Only the activities described in the LCAR will be performed during limited construction.

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*Comment/Question #* 00-LCAR-002-Q      *Reviewer:* Gilbert      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires information on electrical systems and components that will be installed as part of the LCA and that are designated as important to safety.

*LCAR Reference:* Section 1.3 of the LCAR identifies no ITS mechanical, electrical, or instrumentation and control systems, or components thereof, which are planned for installation during LCA execution.

*Comment/Question:* Are any ITS mechanical, electrical, or instrumentation and control systems going to be installed during LCA?

*Contractor Response:* As noted in Table 1.1, no ITS mechanical, electrical, or instrumentation and control systems will be installed during LCA.

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*Comment/Question #* 00-LCAR-003-Q      *Reviewer:* Gilbert      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of excavation related design of important to safety buildings including a description of backfill compaction criteria.

*LCAR Reference:* Section 1.3.1.2.3, Excavation, of the LCAR states, "The function that can impact the ITS facilities is structural backfill. The backfill activity is controlled through a quality-related technical specification." Section 1.3.1.2.4, Structural Fill and Compaction, describes requirements for structural fill and compaction. Section 3.5.1, Construction Procedures, describes construction procedures including top-level concepts for excavation and backfill.

*Comment/Question:* Has the technical specification for backfill been prepared and when will it be made available for RU review?

*Contractor Response:* The structural fill and soil compaction technical specification discussed in Section 1.3.1.2.4 is currently scheduled for completion in mid July 2001 and will be available for OSR review when completed. Technical specifications may be completed sooner than scheduled and will be made available for review as they are completed.

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*Comment/Question #* 00-LCAR-004-Q

*Reviewer:* Gilbert

*Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires description of the capability of the civil testing laboratory to repeatedly and reliably perform tests to verify that important to safety attributes, such as soil density/compaction ratio and moisture content, conform to the design requirements.

*LCAR Reference:* Section 1.3.1.2.5, Soil Compaction Testing, of the LCAR states, "The testing of compacted material to establish optimum moisture content and determine that compaction requirements have been met will be performed by a subcontractor working to a quality related technical specification and under an approved quality program."

*Comment/Question:* 1. Has the technical specification for testing of compacted material been prepared and when will it be made available for RU review?

The title listed for ASTM D2922 is "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)." The ASTM standard most closely matching the ASTM title provided in Section 1.3.1.2.5 is for ASTM D2216, "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures."

*Comment/Question:* 2. What is the correct number and title of the ASTM standard the Contractor plans to use?

*Contractor Response:*

1. The structural fill and soil compaction technical specification discussed in Section 1.3.1.2.4 is currently scheduled for completion in mid July 2001 and will be available for OSR review when completed. Technical specifications may be completed sooner than scheduled and will be made available for review as they are completed.

2. ASTM D2922 is the correct ASTM. An ABCN was initiated to add this and other ASTMs to the SRD. (See ABCN-W375-00-00038, approved in 00-RU-0498.) Revised LCAR Section 1.3.1.2.5 shows the correct title of the ASTM standard.

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*Comment/Question #* 00-LCAR-005-Q

*Reviewer:* Gilbert

*Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of excavation related design of important to safety buildings including a description of backfill compaction criteria.

*LCAR Reference:* Section 1.3.1.3, Mud Mat Placement, of the LCAR states, “The acceptability of the mud mat material is confirmed through testing methods to ensure that backfill requirements are met. The material will be tested by a qualified testing laboratory.” It is not clear that the requirements in section 1.3.1.2.4, Structural Fill and Compaction apply to concrete.

*Comment/Question:* What requirements will be applied to the concrete mud mat?

*Contractor Response:* See revised LCAR Section 1.3.1.3. Mud mat requirements will be included in the structural fill and compaction technical specification.

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*Comment/Question #* 00-LCAR-006-Q

*Reviewer:* Chen

*Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires description of the excavation-related design of important to safety buildings with sufficient information to ensure that the excavation will be adequate.

*LCAR Reference:* Section 1.3.1.2.5, Soil Compaction Testing, of the LCAR states that the compacted soil, which is used to support ITS buildings, is ITS. The contractor identified the following standards for soil compaction testing for structural fill:

- ASTM D 3740
- ASTM D 2922
- ASTM D 3017

Section 1.3.1.2.5 also identified ASTM D 1557 as a standard for the soil compaction test for the exposed subgrade surface after the excavation activity has been performed. Subsequent to the submittal of the LCAR, the contractor submitted an authorization basis amendment request (ABAR) to add ASTM D 3740, ASTM D 2922, and ASTM D 3017 to the SRD.

*Comment/Question:* 1. Why isn't ASTM D 1557 included in the referenced ABAR since it has been identified in the LCAR as a standard for soil compaction test to support ITS buildings? Please provide detailed plans on how the above-mentioned standards will be met.

*Contractor Response:* ASTM D1557 is an applicable standard for soil compaction testing and is implemented through reference in ASTM D3740. During the standards selection

process the design team determined that by referencing ASTM D3740, the numerous applicable ASTMs that govern soil-testing activities would be invoked through reference. ASTM 2922 will be the primary standard for soil compaction. While ASTM D1557 may be used in limited circumstances, it will not be used as a replacement for testing in accordance with ASTM D2922. See revised LCAR Section 1.3.1.2.5.

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*Comment/Question #* 00-LCAR-007-Q      *Reviewer:* Griffith      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the submittal to include sufficient evidence that appropriate quality has been, or will be, applied to designing, constructing, installing, and testing the underground firewater system to meet the corresponding SRD requirements.

*LCAR Reference:* Section 1.3.2.1, Fire Water, of the LCAR contains no information on the fire prevention/protection controls to be applied during the LCA activities to prevent/mitigate wildland fires. Specifically, the LCAR does not provide the planned dimensions and nature of the “defensible space” as per NFPA Standard 299, “Protection of Life and Property from Wildfire.”

*Comment/Question:* What are the Contractor’s intentions with regard to defensible space protection from wildfires?

*Contractor Response:* The WTP project will prove defensible space protection as defined in NFPA 299, Standard for Protection of Life and Property from Wildfire. However, prevention/mitigation of wildland fires is not related to radiological, nuclear, and process safety and is not addressed in the LCAR. A construction fire protection plan is being developed to address fire protection during construction.

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*Comment/Question #* 00-LCAR-008-Q      *Reviewer:* Griffith      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the submittal to include sufficient evidence that appropriate quality has been, or will be, applied to designing, constructing, installing, and testing the underground firewater system to meet the corresponding SRD requirements.

*LCAR Reference:* Section 1.3.2.1, Fire Water, of the LCAR commits to designing and installing the fire pump system, firewater storage tanks, and the fire water main and hydrant system in accordance with the requirements of NFPA 20, 22, and 24, respectively. However, the only testing called out for these systems by the LCAR is hydrostatic testing. This questions whether or not the Contractor is committing to the other testing requirements of these NFPA standards.

*Comment/Question:* Are any deviations anticipated by the Contractor from the requirements contained in NFPA Standards 20, 22, 24, or 801 regarding the design, installation, and testing of the fire water distribution system?

*Contractor Response:* No. See revised LCAR section 1.3.2.1.1.

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*Comment/Question #* 00-LCAR-009-Q      *Reviewer:* Griffith      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the submittal to include sufficient evidence that appropriate quality has been, or will be, applied to designing, constructing, installing, and testing the underground firewater system to meet the corresponding SRD requirements.

*LCAR Reference:* Section 1.3.2.1, Fire Water, of the LCAR, states that while the fire water distribution system is not a primary control for the hazards associated with potential fires, it may well be a secondary control/defense-in-depth. Without the benefit of the safety/accident analysis results, there is no basis for the RU to conclude that the quality controls committed to in the LCAR for the fire water distribution system are adequate.

*Comment/Question:* Is the secondary control/defense-in-depth discussed in this section required to meet the requirements in Safety Criteria 2.0-1, 2.0-2, and Appendices A and B of the SRD?

*Contractor Response:* No. See revised LCAR Section 1.3.2.1.1.

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*Comment/Question #* 00-LCAR-010-Q      *Reviewer:* Polehn      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of LCA features that are important to safety.

*LCAR Reference:* Section 1.3.2.4, Administration Building, of the LCAR states that the administration building has not been designated as important to safety partly because "releases of hazardous material will be transported away from the building." This statement does not make sense because, even if the administration building is located predominately upwind from the process facilities, there can be no assurance that released material will not impact the building.

*Comment/Question:* Please clarify the referenced statement.

*Contractor Response:*  
See revised Section 1.3.2.4.

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*Comment/Question #* 00-LCAR-011-Q      *Reviewer:* Gilbert      *Date Opened:* 07/28/00

*Review Guidance:* Section D, Information Required in the LCAR, of the review guidance requires a description of specific quality assurance and quality control procedures related to limited construction activities and a description of all quality-related procedures applicable to limited construction work activities.

*LCAR Reference:* Section 1.3.3, Temporary Construction Facilities, of the LCAR states that the concrete batch plant and the material testing lab have quality requirements imposed on inspection, testing, and materials in the ISMP and QAP. Requirements specific to batch plant and material testing laboratories are not included in the QAP or ISMP.

*Comment/Question:* Please identify the specific requirements referenced in the ISMP and the QAP?

*Contractor Response:* See revised LCAR Sections 1.3.3.2 and 1.3.3.3

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*Comment/Question #* 00-LCAR-012-Q      *Reviewer:* Gilbert      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires detailed plans for inspecting and verifying that the concrete batch plant meets the ACI-318 certification activities.

*LCAR Reference:* Section 1.3.3.2, Concrete Batch Plant Operations Area, of the LCAR states, “The concrete batch plant and operations area is not an ITS SSC. However, the batch plant will produce concrete for construction of ITS structures..... Upon completion of the batch plant erection, qualification will be conducted in accordance with the specification and quality program requirements.”

*Comment/Question:* 1. Will qualification of the batch plant be performed during limited construction? 2. Has the specification for batch plant operations been prepared and when will it be available for RU review?

*Contractor Response:*

1. Yes, see revised LCAR Section 1.3.3.2.
2. The batch plant operations specification has not been prepared, but it will be available for DOE review prior to batch plant operations.

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*Comment/Question #* 00-LCAR-013-Q      *Reviewer:* Chen      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires a listing of the industry codes and standards that will be implemented in executing the construction activities authorized by the LCA.

*LCAR Reference:* Section 1.3.3.2, Concrete Batch Plant and Operations Area, of the LCAR identified several standards for production of concrete, which is used to provide ITS functions of shielding walls and building structures. The identified standards include ACI 318, ACI 349, ACI 211.1, ACI 301, and ACI 304. ACI 318 and ACI 349 are listed in the SRD Safety Criteria 4.1-4 and 4.1-3 respectively. However, ACI 211.1, ACI 301, ACI 304 are not included in the SRD.

*Comment/Question:* Please explain why ACI 211.1, ACI 301, and ACI 304 are not included in the SRD since all three standards are identified to implement ITS functions for shield walls and building structures?

*Contractor Response:* Concrete for use in ITS structures will not be produced during limited construction. Standards for production of concrete for use in ITS structures are not included in the revised LCAR. See revised LCAR Section 1.3.3.2.

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*Comment/Question #* 00-LCAR-014-Q      *Reviewer:* Polehn      *Date Opened:* 07/28/00

*Review Guidance:* No guidance was provided on temporary facilities.

*LCAR Reference:* Section 1.3.3.8, Waste and Trash Disposal, of the review guidance discusses cleanliness of the construction work areas. The current process used on the Hanford Site for disposal of non-radioactive trash is to send the trash to the 400 Area for a radiological screening survey prior to disposal in the City of Richland Landfill per an agreement between DOE and the City.

*Comment/Question:* What process will be used to dispose of non-radioactive trash?

*Contractor Response:* Details on non-ITS temporary facilities and services are not required to be included in the LCAR. Temporary construction facility and service descriptions have been revised to remove unnecessary detail. See revised LCAR Section 1.3.3.9.

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*Comment/Question #* 00-LCAR-015-Q      *Reviewer:* Kirsch      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the laydown area for storing important to safety SSCs meet the requirements of the QAPIP and ISMP.

*LCAR Reference:* Section 1.3.3.11.2, Weld Rod Storage and Control, of the LCAR discusses weld rod storage/control. However, the LCAR identifies no ITS welding that is planned during LCA execution.

*Comment/Question:* Will ITS welding be conducted during LCA activities and, if yes, will weld rod control be conducted in accordance with the applicable AWS or ASME code?

*Contractor Response:* No ITS welding activities will be performed to support LCAR activities, see revised LCAR Section 1.3.3.12. ITS materials will be received, controlled, and stored as described in revised LCAR Sections 1.3.2.7 and 1.3.3.6.

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*Comment/Question #* 00-LCAR-016-Q      *Reviewer:* Gilbert      *Date Opened:* 07/28/00

*Review Guidance:* Section D, Information Required in the LCAR, of the review guidance requires discussion of potential for design changes that may require rework of installations scheduled to be completed during limited construction activities.

*LCAR Reference:* Section 1.4, Potential for Design Changes, of the LCAR discusses the stability of facility and utility arrangement layouts. This section states that results of ISM Cycle 1 and Cycle 2 hazard analysis design inputs have been incorporated in the current layouts. As of the July 2000, ISM Cycle 2 meetings to reconcile the April 24 design documentation with ISM Cycle 2 evaluations were still ongoing as well as initial ISM meetings for the LAW pretreatment plant.

*Comment/Question:* 1. Which facility areas do not have complete ISM Cycle 2 evaluations?  
2. Of the remaining facility areas that have not undergone reconciliation or initial ISM reviews, which facilities will likely be impacted?

*Contractor Response:*

1. ISM 2 reconciliation has been completed for each of the facilities.

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*Comment/Question #* 00-LCAR-017-Q      *Reviewer:* Gilbert      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance states that the contractor should identify and describe the footprints and elevation of the compacted subgrades for important to safety buildings. This description should include pile location.

*LCAR Reference:* Drawings DWG-W375-G00054, HLW Excavation and Mudmat, DWG-W375-G00055, Pretreatment Excavation and Mudmat, and DWG-W375-G00056, LPP Excavation and Mudmat, do not provide specific dimensions for the mudmats or sheetpiles. The sheetpile dimensions are required to define the extent of the excavation.

*Comment/Question:* 1. Do the specific dimensions for mudmats and sheetpiles exist and when will they be provided to the RU for review? 2. Does the sheetpile design or specification exist and when will it be provided to the RU for review?

*Contractor Response:*

1. Current excavation and mud mat drawings will be available for review as they are produced and updated. Excavation drawings to be issued for limited construction work will be updated based on issued general arrangement drawings prior to commencing excavation work. See revised LCAR Section 1.4.
2. Sheetpile design requirements will be included in a technical specification that will be completed and available for review prior to the start of sheet piling activities.

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*Comment/Question #* 00-LCAR-018-Q      *Reviewer:* Hardwick      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires a description of the footprints and elevation of the compacted subgrades for the buildings.

*LCAR Reference:* Drawing DWG-W375-G00054 Rev. A shows the west-east dimension on the HLW building excavation plan to be ~380 ft. However, drawing DWG-W375BF-C00002 Rev. J shows the west-east dimension to be ~443 ft.

*Comment/Question:* Which dimension is correct for the west-east dimension on the HLW building?

Drawing DWG-W375-G00008 does not show the location of the stockpiled excavated material as indicated in Section 1.3.1.2.3.

*Comment/Question:* The location of the stockpiled excavated material should be added to drawing DRW-W375-00008.

*Contractor Response:*

1. Construction excavation drawings will be updated to match issued general arrangement and site plot plan drawings prior to commencing limited construction excavation activities.
2. It is anticipated that the majority of the excavated material will be required to level the North end of the site to provide a suitable area for fabrication shops. Any remaining material will be stockpiled for use at a suitable location on the site. The specific location of the stockpiled material will depend on the amount remaining and has not been selected at this time. The reference to location of the stockpile has been removed from the revised LCAR.

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*Comment/Question #* 00-LCAR-019-Q      *Reviewer:* Polehn      *Date Opened:* 07/28/00

*Review Guidance:* No guidance was provided on organization and administration.

*LCAR Reference:* In Section 2.3, Responsibilities, of the LCAR, the Contractor states that, "The Environmental, Safety, and Health Manager,...receives direction from the Environmental, Safety and Health Manager."

*Comment/Question:* Was this intended to read, "receives direction from the Corporate Manager of ES&H Services" consistent with Figure 2.1 in the LCAR?

*Contractor Response:* See revised LCAR Section 2.

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*Comment/Question #* 00-LCAR-020-Q      *Reviewer:* Polehn      *Date Opened:* 07/28/00

*Review Guidance:* Section 4.3.3, Regulatory Acceptance Criteria, item 4 of the review guidance requires the description of the program to obtain appropriate environmental

samples and radiological surveys to detect the presence of soil contamination such that the public is not adversely impacted by the limited construction activities.

*LCAR Reference:* Section 4.1.1, Radioactive Contamination Detected During Construction, of the LCAR states that the WTP construction site characterization study (HNF-2067) indicates contamination “consistent with Hanford Site-wide background levels.” However, this statement ignores the study’s findings that some areas of the WTP site clearly exhibit above-background contamination levels. For example, Section 10.5 (Summary and Conclusions) of HNF-2067 states that “Above-background activities of some radionuclides occur in the central and northern portions of the TWRS Phase 1 Demonstration Site.”

*Comment/Question:* Please clarify the above regarding the background radiation levels at the proposed WTP site.

*Contractor Response:* The above-background radiation levels are below the levels required for continuous monitoring as required by 10 CFR 835.1102. Based on the radiation levels detected and identified in HNF-2067, monitoring would be performed as necessary to ensure the radiological conditions stay consistent with the radiological posting and control. See revised LCAR Sections 4 and 6.

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*Comment/Question #* 00-LCAR-021-Q      *Reviewer:* Polehn      *Date Opened:* 07/28/00

*Review Guidance:* Section 6.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor's revised RPP for limited construction is acceptable ...if it describes an acceptable radiation safety program for the identified limited construction activities and can be implemented.

*LCAR Reference:* Section 4.1.2, Notification, Categorization and Consequence Assessment, of the LCAR states "Notification, categorization, and consequence assessment for the event will be implemented through the RCP and associated procedures. These procedures will be consistent with DOE/RL-94-02, Hanford Emergency Response Plan."

Additionally, the Contract [DE-AC27-96RL13308, Part I, Section C, Standard 4: Safety, Health, and Environmental Program, c.2)(d) and Table S4-1] requires the contractor to deliver a Draft Emergency Response Plan at Start of Construction with Note 2 that states (the Plan) "Shall comply with requirements of 40 CFR 68, 40 CFR 355, DOE/RL-94-02, Revision 1, and 29 CFR 1910.38, and WAC 246-247 (Plan must be consistent with DOE/RU-94-02, Rev. 1, but exposure standards are contained in SRD Vol. II, Section 2.1)."

*Comment/Question:* The RCP, Section 16, Off-Normal Event Response, is not clear with regard to whom will be notified within DOE (i.e., the RU plus other DOE entities), when DOE (and the RU) will be notified after the event, and what type of information will be

provided. With respect to Off-Normal Events, please describe the reporting structure, the required time of reporting, and the content of the report.

*Contractor Response:* The RCP has been cancelled. See revised LCAR Sections 4 and 5.

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*Comment/Question #* 00-LCAR-022-Q      *Reviewer:* Griffith      *Date Opened:* 07/28/00

*Review Guidance:* Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the submittal to include sufficient evidence that appropriate quality has been, or will be, applied to designing, constructing, installing, and testing the underground firewater system to meet the corresponding SRD requirements.

*LCAR Reference:* Section 4.3.1, Construction Fire Prevention Plan, of the LCAR, commits to providing a high level of fire prevention and protection during the construction of the facility. To implement this commitment, the Contractor has established a WTP Fire Prevention Plan (FPP) and associated implementing procedure. However, the Contractor did not submit the FPP with the LCAR. Thus, the RU can not assess the thoroughness and adequacy of the FPP for providing sufficient fire prevention and protection during LCAR activities.

*Comment/Question:* 1. Please provide the FPP and, if appropriate, the implementing procedure for RU review. 2. To what extent, if any will the provisions of NFPA Standard 241, "Safeguarding Construction, Alteration and Demolition Operations," be followed during LCAR activities?

*Contractor Response:*  
Industrial health and safety has been removed from the revised LCAR. However, a fire protection plan (FPP) and any required implementing procedures for the construction phase will be developed prior to the start of limited construction activities. The FPP and implementing procedures will be available for DOE review during the readiness inspection.

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*Comment/Question #* 00-LCAR-023-Q      *Reviewer:* Polehn      *Date Opened:* 07/28/00

*Review Guidance:* No guidance was provided on the Emergency Plan.

*LCAR Reference:* In Section 5.1, Site Emergency Management Plan, of the LCAR, the Contractor makes the statement, "The WTP construction management team is developing a Site Emergency Plan (SEMP), which is not considered part of the authorization basis...."

*Comment/Question:* Why isn't the SEMP considered part of the authorization basis?

*Contractor Response:* Reference to the SEMP has been removed from the revised LCAR. See revised LCAR Section 5.

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*Comment/Question #* 00-LCAR-024-Q      *Reviewer:* Polehn      *Date Opened:* 07/28/00

*Review Guidance:* Section 6.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor's revised RPP for limited construction is acceptable ...if it describes an acceptable radiation safety program for the identified limited construction activities and can be implemented.

*LCAR Reference:* The last sentence in Section 6.1, Radiation Protection, of the LCAR states "Conformance with the dose limits, contamination control, documentation, sampling, and surveying as required recording results will be addressed in the RCP (see Section 4.1) for activities associated with monitoring and potential discovery of legacy radioactive waste."

*Comment/Question:* This sentence is confusing. What is meant by the phrase "and surveying as required recording results...?"

*Contractor Response:* See revised LCAR Section 4.

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*Comment/Question #* 00-LCAR-025-Q      *Reviewer:* Hardwick      *Date Opened:* 07/28/00

*Review Guidance:* Section 4.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor conform to dose limits.

*LCAR Reference:* In Section 8, Approach to Implement the SRD and ISMP for LCA Activities, of the LCAR, Table 8-1, the Contractor incorrectly states that the chemical exposure standard applicable to industrial safety (LCAR Sect. 4.2, Industrial Safety) is Safety Criterion (SC) 2.0-2. The SC 2.0-2 standard applies to accidents involving process chemicals, not workplace exposure. The applicable industrial safety standards for protection of workers are the Permissible Exposure Limits (PELs) in 29 CFR 1910 Subpart Z. SRD Rev. 2 Appendix A (Sect. 4.3.1) addresses consequences of releases of hazardous chemicals (process safety, not industrial safety.)

*Comment/Question:* Does the Contractor plan to use the PELs for industrial safety standards for workers?

*Contractor Response:* Industrial health and safety has been removed from the LCAR. Also see revised LCAR Section 8.

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*Comment/Question #* 00-LCAR-026-Q      *Reviewer:* Gilbert      *Date Opened:* 07/28/00

*LCAR Reference:* Table 8-1, SRD Safety Criteria Pertaining to Limited Construction Activities, of the LCAR erroneously references LCAR Section 3.2.2.6, which does not exist, to address Safety Criteria 7.3-7 (Inspection and testing of specified items, services, and processes; calibration and maintenance of equipment).

*Comment/Question:* Where is Safety Criteria 7.3-6 addressed in the LCAR?

*Contractor Response:* See revised LCAR Section 3.2.

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*Comment/Question #* 00-LCAR-027-Q      *Reviewer:* Carier      *Date Opened:* 07/28/00

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Table 8-1 of the LCAR is confusing with regards to the rows associated with Safety Criterion 7.7-1 through 7.7-8. Safety Criteria 7.7-1 through 7.7-8 are related to incident reporting and investigation. The table implies that conformance to the Safety Criterion is described in LCAR Section 4.2. LCAR Section 4.2 addresses industrial safety. Safety Criteria 7.7-1 through 7.7-8 are associated with radiological, nuclear and process safety, not industrial safety. The table also implies that there is no information in the authorization basis that will address implementation of Safety Criterion 7.7-1 through 7.7-8.

*Comment/Question:* Please clarify Safety Criterion 7.7-1 through 7.7-8 are addressed in the LCAR and how implementation of the Safety Criterion is addressed in the authorization basis.

*Contractor Response:* See revised LCAR Section 8. SRD and ISMP requirements specific to an LCAR activity are identified in the discussions of the LCAR activities.

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*Comment/Question #* 00-LCAR-028-Q      *Reviewer:* Carier      *Date Opened:* 07/28/00

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 7.7 of the SRD addresses Safety Criterion for the reporting and investigation of incidents. The reviewers were unable to identify from information provided in the submittal a description of the program for incident reporting and investigation that will be in place for limited construction. Please respond to the following questions associated with incident investigation and reporting.

*Comment/Question:* 1. What types of incidents will be addressed under the program for limited construction? 2. What is the criteria or threshold for reporting incidents to the RU? 3. What are the timeliness criteria for reporting incidents to the RU? 4. How are incident reports initiated, reviewed, and approved? 5. How are incidents investigated? 6. How are incident causes determined and appropriate corrective actions developed and tracked? 7. What are the responsibility assignments for initiating, preparing, approving, and investigating incidents?

*Contractor Response:* See revised LCAR Section 5.

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*Comment/Question #* 00-LCAR-029-Q      *Reviewer:* Carier      *Date Opened:* 07/28/00

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, Approach to Implement the SRD and the ISMP for LCA Activities, of the LCAR, item 2, identifies Table 8-1 as a listing of SRD Safety Criteria pertaining to Limited Construction Activities. Table 8-1 includes a column titled AB. The purpose of this column is unclear. If the column refers to applicable authorization basis requirements, it fails to include the actual subject Safety Criterion or ISMP sections listed in the Safety Criterion as implementing standards. The SRD and ISMP are part of the authorization bases.

*Comment/Question:* Please clarify the purpose of the column titled "AB".

*Contractor Response:* See revised SRD Section 8.

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*Comment/Question #* 00-LCAR-030-Q      *Reviewer:* Carier      *Date Opened:* 07/28/00

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, Approach to Implement the SRD and the ISMP for LCA Activities, of the LCAR, Table 8-1, does not refer to Safety Criterion 4.4-4. This criterion concerns designing and constructing important to safety SSCs to permit appropriate inspection, testing and maintenance throughout their lives to verify their continued acceptability for service with an adequate safety margin.

*Comment/Question:* Please justify why this Safety Criterion was not included.

*Contractor Response:* See revised LCAR Section 8.

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*Comment/Question #* 00-LCAR-031-Q      *Reviewer:* Carier      *Date Opened:* 07/28/00

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, approach to implement the SRD and the ISMP for LCA Activities, of the LCAR, Table 8-1, does not refer to Safety Criterion 7.8-5. This criterion concerns coordination of the Emergency Response Plan with DOE Hanford Site and local community emergency response plans. Coordination of the Emergency Response Plan with DOE Hanford is necessary to ensure that events at the RPP-WTP are properly communicated and coordinated with the Hanford DOE emergency response organization in accordance with DOE/RL-94-02 (Contract Interface Description 25) and events at other Hanford facilities, especially those requiring RPP-WTP staff evacuation, are properly communicated to the RPP-WTP emergency response organization.

*Comment/Question:* Please justify why this Safety Criterion was not included.

*Contractor Response:* The emergency response plan is not required until the start of commissioning per contract table S7-1.

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*Comment/Question #* 00-LCAR-032-Q      *Reviewer:* Carier      *Date Opened:* 07/28/00

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, Approach to Implement the SRD and the ISMP for LCA Activities, of the LCAR, Table 8-2, does not refer to ISMP Section 2.1, Statutory Compliance. This Section states that “New laws, regulations, and guidance documents are identified and reviewed for applicability to design, construction operations, and deactivation of the Tank Waste Remediation System-Privatization (TWRS-P) Facility.

*Comment/Question:* Please justify why this ISMP Section was not included.

*Contractor Response:* See revised LCAR Section 8.

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*Comment/Question #* 00-LCAR-033-Q      *Reviewer:* Carier      *Date Opened:* 07/28/00

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, Approach to Implement the SRD and the ISMP for LCA Activities, of the LCAR, Table 8-2, does not refer to ISMP Section 2.5, Compliance with 10 CFR 820, ‘Procedural Rules For DOE Nuclear Facilities.’ This Section applies during all Contractor RPP-WTP activities.

*Comment/Question:* Please justify why this ISMP Section was not included.

*Contractor Response:* See revised LCAR Section 5.

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*Comment/Question # 00-LCAR-034-Q*

*Reviewer: Carier*

*Date Opened: 07/28/00*

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, Approach to Implement the SRD and the ISMP for LCA Activities, of the LCAR, states in paragraph 3 on page 56 that, "Hence, only column labeled Safety Criteria of Table 8-1 is part of the authorization basis." This statement is unclear.

*Comment/Question:* Please clarify the meaning of the above statement.

*Contractor Response:* See revised LCAR Section 8.0.

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*Comment/Question # 00-LCAR-035-Q*

*Reviewer: Carier*

*Date Opened: 07/28/00*

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, Approach to Implement the SRD and the ISMP for LCA Activities, of the LCAR, states in paragraph 4 on page 56 that, "Hence, only column labeled Safety Criteria of Table 8-2 is part of the authorization basis." This statement is unclear. First of all, Table 8-2 refers to the ISMP, not the SRD Safety Criteria. Second, the Table, in other columns, list QAP, SRD, and LCAR Sections that are part of the authorization basis.

*Comment/Question:* Please clarify the meaning of the above statement.

*Contractor Response:* See revised LCAR Section 8.

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*Comment/Question # 00-LCAR-036-Q*

*Reviewer: Carier*

*Date Opened: 07/28/00*

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, Approach to Implement the SRD and the ISMP for LCA Activities, of the LCAR, states in paragraph 6, page 56, that "Hence, Table 8-3 is not part of the authorization basis." This statement appears to be incorrect. It appears that the statement should state "Hence, Table 8-4 is not part of the LCA authorization basis."

*Comment/Question:* Please clarify the meaning of the above statement.

*Contractor Response:* See revised LCAR Section 8.

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*Comment/Question # 00-LCAR-037-Q*

*Reviewer: Carier*

*Date Opened: 07/28/00*

*Review Guidance:* Section F.3.3, Regulatory Acceptance Criteria, of the review guidance requires that the Contractor identify which portions of the SRD and ISMP pertain to limited construction.

*LCAR Reference:* Section 8, Approach to Implement the SRD and the ISMP for LCA Activities, of the LCAR, does not cite Safety Criterion 2.0-3 as pertaining to limited construction. This criterion concerns maintaining dose in unrestricted areas at or below .002rem/year.

*Comment/Question:* Please justify why this Safety Criterion was not included in this section of the LCAR.

*Contractor Response:* See revised LCAR Section 4.2.

## **Attachment 4**

### **Waste Treatment Plant (WTP) Compliance with 10CFR830.206 Requirements for Limited Construction Authorization**

#### **INTRODUCTION**

The 10CFR830.206 rulemaking states “for new DOE Hazard Category 1, 2, or 3 facilities that DOE must approve the Preliminary Safety Analysis Report (PSAR) before the contractor can . . . begin construction activities provided that DOE may authorize the contractor to perform construction activities . . . without approval of the PSAR if DOE determines the activities are not detrimental to public health and safety and are in the best interests of DOE.” The draft DOE guidance for the commencement of limited construction activities before the PSAR is approved states “the contractor is to describe the activity requested, the reason for the request, the benefit to DOE of the request, the effect of the delay in conducting the activities, and the risks associated with performing the activity”.

#### **ACTIVITY DESCRIPTION**

In accordance with the requirements of 10CFR830.206, BNI is requesting DOE approval for the commencement of limited construction activities as defined in RPT-24590-CN00001, Rev.0, “Limited Construction Authorization Request (LCAR)”. The LCAR requests DOE approval of construction activities such as site preparation, excavations, administration building construction, mud mat and infrastructure installations.

#### **REASON FOR THE REQUEST**

The listed construction activities in the LCAR to be performed prior to PSAR approval are needed to support current project baseline schedules. The following major LCAR activities support the project schedules leading to Construction Authorization (CA) upon DOE approval of the PSAR:

- Installation of infrastructure facilities, excavations, soil compaction, and mud mat placement all support the project construction schedule beginning with initial mobilization and site development through CA.
- Installation of the concrete batch plant to support the concrete pour milestone.
- Installation of the Material Testing Laboratory to support the testing required to meet the technical specification for compaction of soils and/or backfill prior to mud mat installation and to support the concrete pour milestone.

### **BENEFIT TO DOE AND THE EFFECT OF DELAY**

The benefit to DOE for approving the commencement of limited construction activities prior to approval of the PSAR is the required support for the WTP project baseline. Delays in these activities will impact the WTP project baseline construction schedules with a potential day-for-day slip for as much as 14 months in the completion of the project. Approval of this request will allow the project to proceed in a manner to support the project schedules without incurring additional costs for schedule delays or expediting services. The limited construction activities will not compromise or otherwise adversely impact any ITS construction.

### **RISKS and MITIGATION STRATEGIES**

The WTP project is unique in that there is an existing DOE approved authorization basis for the project that includes the standards for the development of the engineering and quality assurance specifications for the limited construction activities. The design basis for the WTP project is established and the technical requirements for construction activities will be developed in accordance with the approved design basis and the approved Quality Assurance Program (QAP). In addition, the LCAR, upon DOE approval, actually establishes the safety basis for the limited construction activities and will be added to the project's authorization basis.

LCAR Section 1.4 addresses the potential for design changes that may require rework of installations scheduled to be completed during limited construction. It is concluded in LCAR Section 1.4 that it is unlikely that excavation work or permanent installations completed during limited construction would require rework.

If the situation arises where the WTP project installs during the limited construction activities incorrect and/or nonconforming material, the project QAP will provide the controls to deal with these issues.

The limited construction activities defined in the LCAR have no effect on the "health and safety" of the public other than normal risks associated with the construction activities at the Hanford site. These risks are addressed in the WTP project Environmental Impact Statement.

## **SUMMARY**

BNI is submitting the Limited Construction Authorization Request for DOE approval in accordance with the requirements of 10CFR830.206. This attachment provides the justification for proceeding with the limited construction activities as required by the draft DOE guidance. The justifications for proceeding with the limited construction activities far outweigh the risks. Proceeding with construction is essential for the project to meet the commitments in the project's baseline schedules.

**Attachment 5**  
**LCAR – Review Guidance matrix**

<b>RL/REG-99-17 Requirement</b>	<b>LCAR Section</b>	<b>Comments</b>
D.1	1.1	
D.2	1.3.3	
D.3	1.3.2	
D.4	1.3.1	
D.5	1.3.1	
D.6	1.3.1.2.1	
D.7	Table 1-1	The only ITS procurement is for soil compaction inspection services.
D.8	3.4.1	
D.9	1.3.2.3	Process building electrical grounding system is not being installed. Only the non-ITS perimeter loop for the site grounding grid is being installed as discussed in section 1.3.2.3.
D.10	1.3.1.3	
D.11	1.3.3.6	
D.12		
D.13	1.4	
D.14	2., 2.1, 2.2, 2.3, Figure 2-1	
D.15	3.1	
D.16	4.2	
D.17	1.3.1, 1.3.2	
D.18	1.3.1.2.3, 1.3.1.2.5, 3.4	
D.19	1.	
<b>Section E</b>		
1.3.3(1)	1., 4.1, 4.2	
1.3.3(2)		Included in cover letter and attachments 3 and 4.
1.3.3(3)		Included in cover letter and attachments 3 and 4.
1.3.3(4)	1.2.1, 1.3	
1.3.3(5)	N/A	DOE action
1.3.3(6)	Whole document	Number missing in review guidance document (looks like a typo)
2.3.3(1)	1.1	The facility location and distances to nearest public receptors in all directions is provided in lieu of the requested distances to the site boundary and the nearest resident.
2.3.3(2)	1.2	

<b>RL/REG-99-17 Requirement</b>	<b>LCAR Section</b>	<b>Comments</b>
2.3.3(3)	1.3.1.2	
2.3.3(4)	1.3.2.1.1	
2.3.3(5)	1.3.2.1	No ITS ductbanks will be installed during limited construction
2.3.3(6)	1.3.3.2	
2.3.3(7)	1.3.3.6	
2.3.3(8)	1.3.1.2.5	
2.3.3(9)	1.3.1.2 (all)	
2.3.3(10)		Codes and standards are specified in the applicable sections.
2.3.3(11)		No ITS electrical systems or components will be installed during limited construction
3.1.3.3	3.2	
3.2.3.3(1)	5	
3.2.3.3(2)	5	
4.3.3(1)	4.2	
4.3.3(2)	4.2	
4.3.3(3)	4.2	
4.3.3(4)	4.2	
4.3.3(5)	4.2	
5.3.3(1)	7.2	
5.3.3(2)	7.1	
6.3.3	4.1	
F.3.3(1)	8	
F.3.3(2)	8	
F.3.3(3)	8	
G.3.3(1)	8	
G.3.3(2)	8	