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# Decontamination and Inspection Plan for Phase 3 Closure of the 300 Area Waste Acid Treatment System

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Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

**FLUOR DANIEL HANFORD, INC.**
Richland, Washington

Hanford Management and Integration Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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# GLOSSARY

| | |
|---|---|
| ALARA | as low as reasonably achievable |
| CERCLA | *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* |
| CFR | Code of Federal Regulations |
| Cr | chromium |
| CWC | Central Waste Complex |
| DIP | decontamination and inspection plan |
| DOE | U.S. Department of Energy |
| DOE/RL | U.S. Department of Energy, Richland Operations Office |
| Ecology | Washington State Department of Ecology |
| HEPA | high-efficiency particulate air (filter) |
| HNF | Hanford Nuclear Facility (document identifier) |
| LLBG | Low-Level Burial Grounds |
| NaOH | sodium hydroxide |
| NDA | nondestructive assay |
| PCB | polychlorinated biphenyls |
| PMM | project manager meeting |
| PVC | polyvinyl chloride |
| RCRA | *Resource Conservation and Recovery Act of 1976* |
| SAA | satellite accumulation area |
| TCLP | toxicity characteristics leaching procedure |
| TF | task forms |
| TSD | treatment, storage, and/or disposal |
| WAC | *Washington Administrative Code* |
| WATS | Waste Acid Treatment System |
| WCR | waste characterization report |
| WCS | waste certification summary |
| WHC | Westinghouse Hanford Company |
| WRRV | waste and residue removal verification |

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# DECONTAMINATION AND INSPECTION PLAN FOR PHASE 3 CLOSURE OF THE 300 AREA WASTE ACID TREATMENT SYSTEM

## 1.0 INTRODUCTION

This decontamination and inspection plan (DIP) describes decontamination and verification activities in support of Phase 3 closure of the 300 Area Waste Acid Treatment System (WATS). Phase 3 is the third phase of three WATS closure phases. Phase 3 attains clean closure conditions for WATS portions of the 334 and 311 Tank Farms (TF) and the 333 and 303-F Buildings. This DIP also describes designation and management of waste and debris generated during Phase 3 closure activities.

Information regarding Phase 1 and Phase 2 for decontamination and verification activities closure can be found in WHC-SD-ENV-AP-001 and HNF-1784, respectively.

This DIP is provided as a supplement to the closure plan (DOE/RL-90-11). This DIP provides the documentation for Ecology concurrence with Phase 3 closure methods and activities. This DIP is intended to provide greater detail than is contained in the closure plan to satisfy Ecology *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303-610 requirement that closure documents describe the methods for removing, transporting, storing, and disposing of all dangerous waste at the unit. The decontamination and verification activities described in this DIP are based on the closure plan and on agreements reached between Ecology and the U.S. Department of Energy, Richland Operations Office (DOE-RL) during Phase 3 closure activity workshops and/or project manager meetings (PMMs).

### 1.1 PHASE 3 CLOSURE STRATEGY AND STANDARDS

Phase 3 closure will implement the WATS partial clean closure strategy identified in the closure plan. Phase 3 closure activities will attain clean closure conditions for WATS portions of the 334 and 311 TFs; will complete clean closure activities for the 333 and 303-F Buildings by removing WATS piping from these buildings; and, will remove WATS piping from the WATS and U-bearing piping trench. As discussed in the closure plan, the WATS and U-bearing piping trench is a waste identification data system (WIDS) identified infrastructure (300-224) that constitutes the *Resource Conservation and Recovery Act* (RCRA)/*Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) interface between the WATS RCRA closure and the future 300-FF-2 CERCLA operable unit (OU) remedial action. As previously agreed to by RCRA and CERLCA regulators, the WATS and U-bearing piping trench infrastructure will be dispositioned as a portion of the 300-FF-2 CERCLA OU, outside the scope of WATS closure.

The clean closure standard for potentially contaminated WATS structures and components remaining after closure will be the 'clean debris surface' visual criteria. The clean debris surface standard is a visually verifiable performance standard promulgated for hazardous debris (even though these materials are not hazardous debris). The clean debris surface visual inspection criteria is defined in Section 4.0 of this DIP. When visual inspections indicate that a clean debris surface has been met, the unit structures will be considered acceptable for clean closure. No soil sampling will occur as a portion of Phase 3 closure activities. After completion of Phase 3 closure activities, a professional engineer will certify that the activities were in accordance with this DIP.

Soils beneath the 333 and 303-F Buildings and beneath the 334 and 311 TFs will be clean closed with regard to contamination from WATS RCRA operations. Closure of these locations will be based on inspections of concrete secondary containment structures indicating that these surfaces are intact and that no pathway to soil for contamination from WATS RCRA operations existed at these locations. Phase 2 closure inspections have verified secondary containment integrity at WATS locations of the 333 and 303-F Buildings. Inspections of 334 TF and 311 TF concrete structures that function as secondary containment also indicate that these surfaces are intact and that no pathway to soil for WATS RCRA contamination exists at these locations. RCRA soil closure will be without regard to documented (and undocumented) past-practice contamination that will be addressed as a portion of the future 300-FF-2 CERCLA OU remedial action outside the scope of WATS closure. Only soils beneath the WATS-affected portions of the WATS and U-bearing piping trench and the 313 Building (not a Phase 3 closure location) will remain within the scope of WATS closure and unclosed at the time of WATS partial closure. After WATS partial closure following Phase 3, the WATS will be transitioned to Environmental Restoration Programs to complete disposition of these soils as a portion of the future 300-FF-2 CERCLA OU remedial action and to complete final WATS closure.

## 1.2 BACKGROUND AND DESCRIPTION OF THE PHASE 3 CLOSURE AREA

WATS is a RCRA treatment, storage, and/or disposal (TSD) unit located in the 300 Area of the Hanford Facility. The 300 Area is a Federal National Priority List site investigated and remediated under CERCLA. WATS consists of tanks, piping, equipment, and secondary containment pads and structures. The WATS treated mixed waste acid generated by fuel fabrication operations occurring in the 333 Building and also compatible waste acid from other Hanford Site locations.

The WATS process occurred in portions of the 333, 334-A, 303-F, and 313 Buildings; in portions of the 311 and 334 TFs; and the WATS and U-bearing piping trench. Figure 1 shows the location of WATS buildings and trenches containing WATS piping. Figures 2, 3, 4, 5, and 6 show the WATS components of the 333 Building, 303-F Building, 334 TF, and 311 TF, respectively, addressed by Phase 3 closure. RCRA operations occurred at these locations in limited operational areas and for some locations, such as the 334 TF, only occasionally.

Waste acid treatment began in fuel fabrication process tanks 7 and 11, located in the 333 Building. Waste acid was treated in these tanks by reducing chromium from $Cr^{+6}$ to $Cr^{+3}$. Acid from seven other 333 Building process tanks was generated as WATS waste on exiting these tanks. From the 333 Building, waste acids gravity flowed to the 334-A Building where the waste was stored temporarily in tanks A, B, C, or was pumped to tank 4 of the 334 TF. From there, the acid was pumped through 2-inch polyvinyl chloride (PVC) piping in the WATS and U-bearing piping trench to the south room of the 313 Building for neutralization in tank 2.

Before 1985, the neutralized acid slurry was pumped to WATS tank 40 in the 311 TF. From there, the slurry exited the WATS by being off-loaded to tanker trucks that disposed of the neutralized slurry to the 183-H Solar Evaporation Basins in the 100 Areas.

After 1985, solids were separated from the neutralized slurry in the 313 Building using a centrifuge and filterpress. The solids removed from the slurry exited the WATS by discharge to containers mounted beneath the centrifuge and filterpress. The remaining effluent was pumped to tank 40 and new tank 50 (installed 1985) located in the 311 TF for storage to await disposal. Pumps installed in 1985 in the 303-F Building were used to pump effluent back to the 313 Building or to further clarify the effluent by circulation between tanks 40 and 50 through filters located in the 303-F Building. A complete description of WATS and unit processes is provided in DOE/RL-90-11.

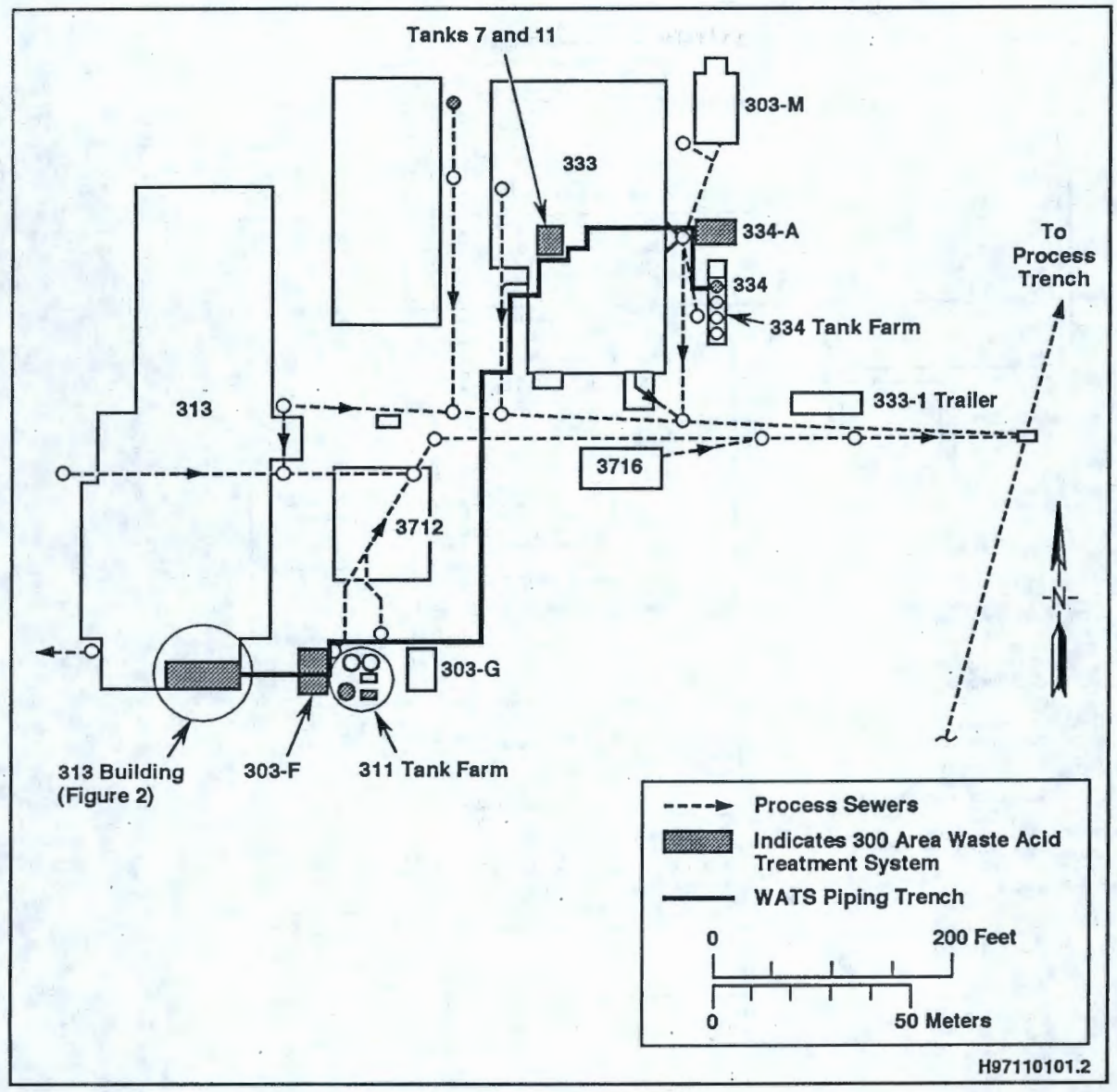



Figure 1. 300 Area Waste Acid Treatment System.

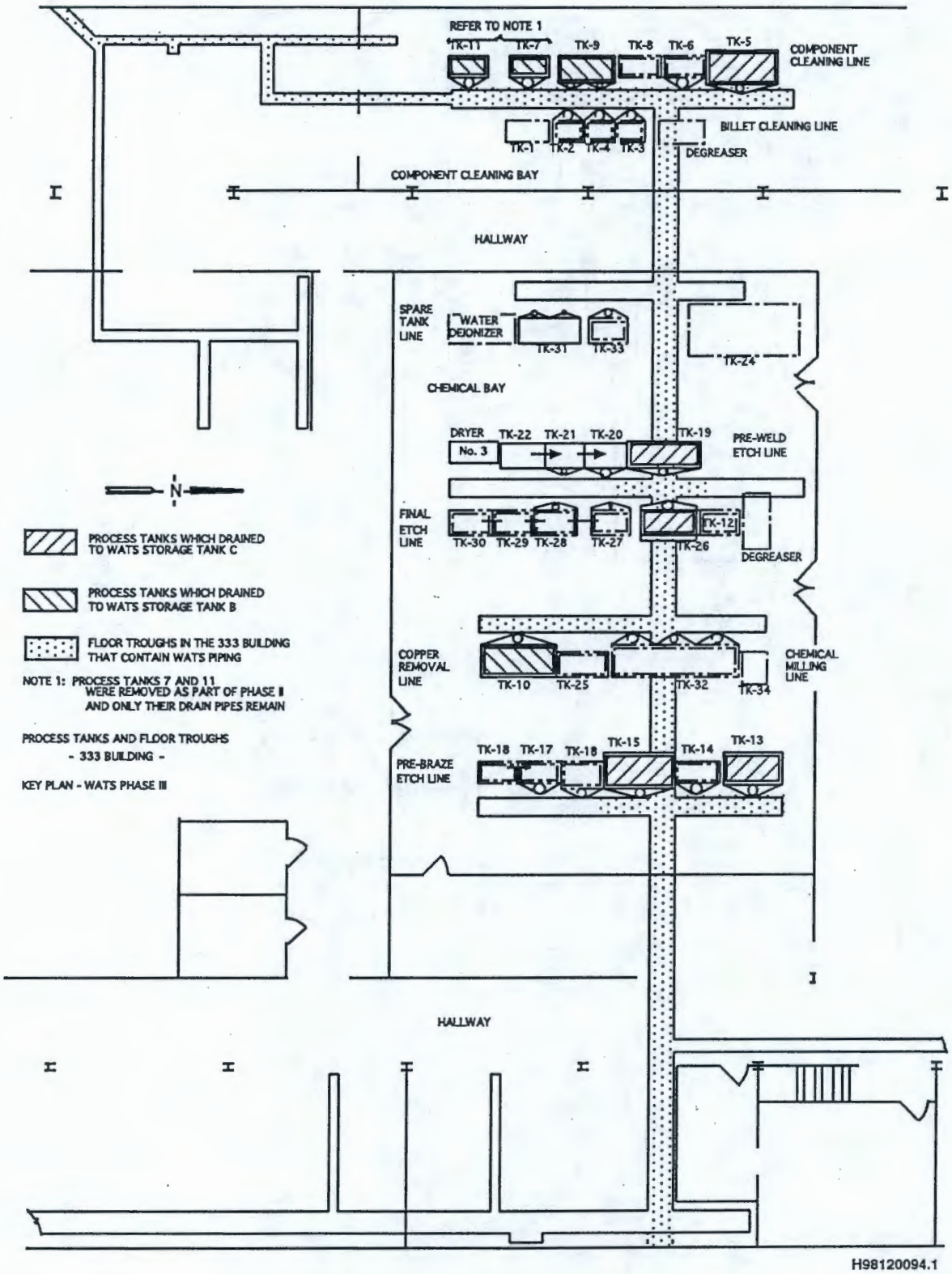



Figure 2. Location of Waste Acid Treatment System Piping Within the 333 Building.

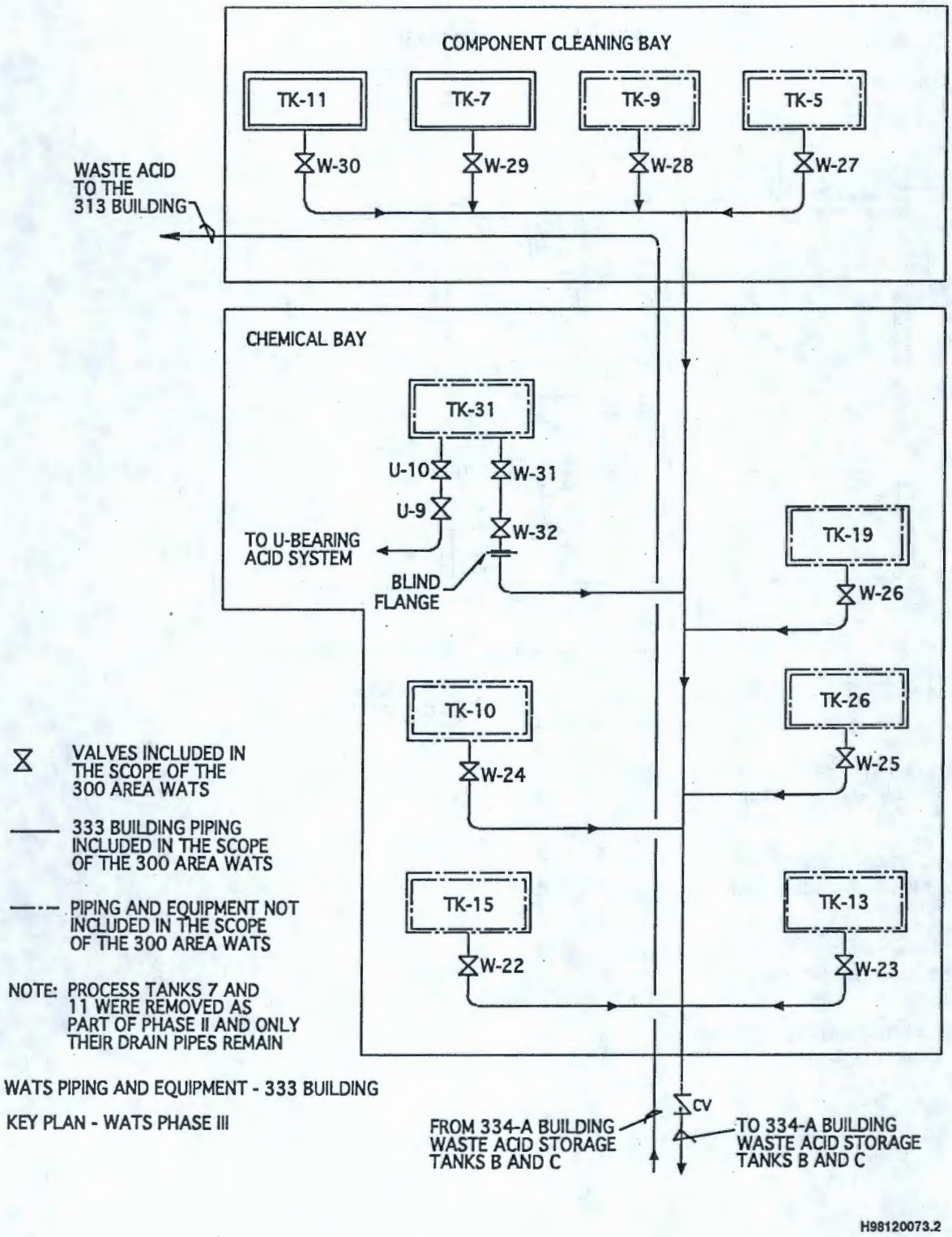



Figure 3. Component Cleaning Bay.

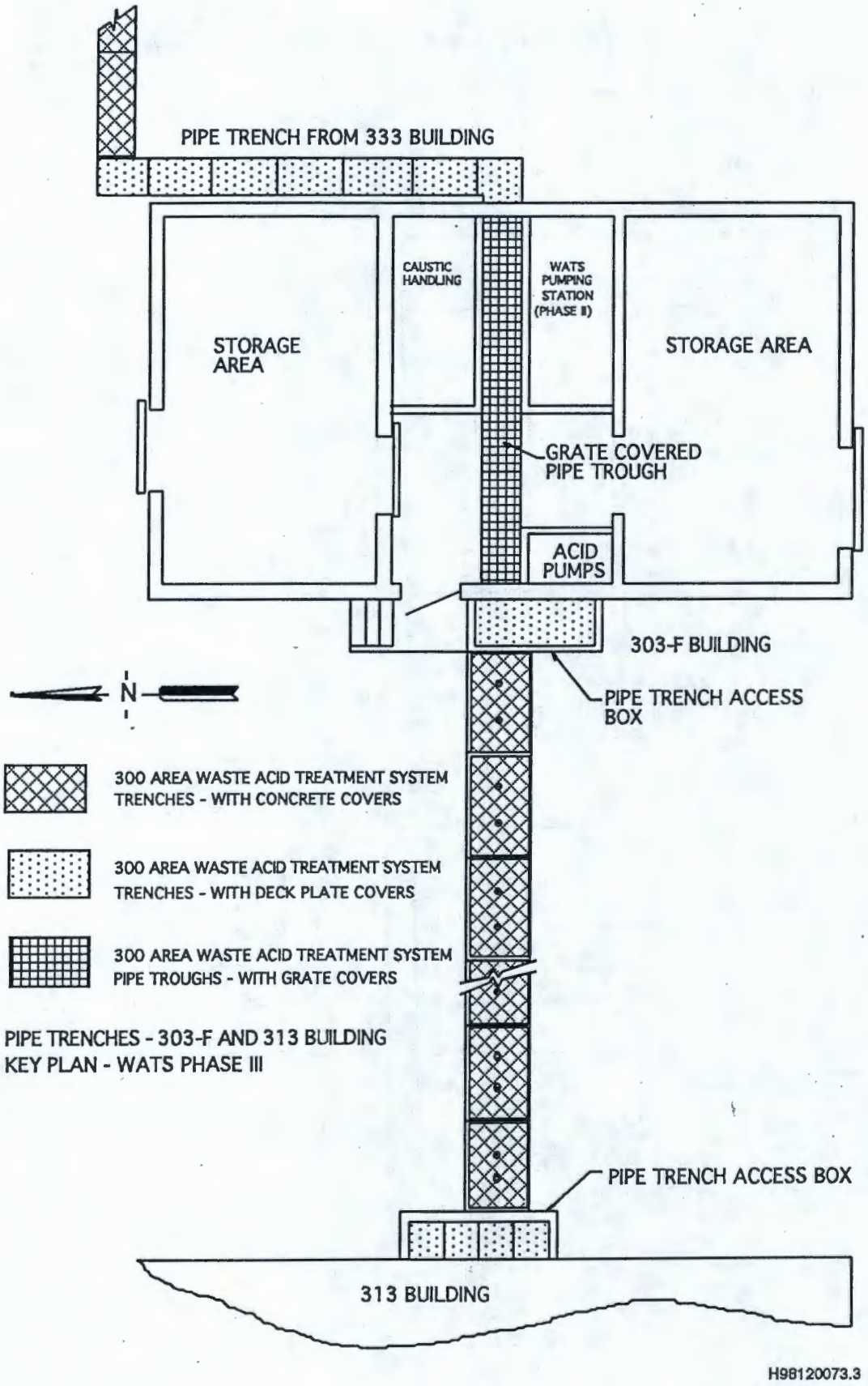



Figure 4. Location of Waste Acid Treatment System Piping Within the 303-F Building.

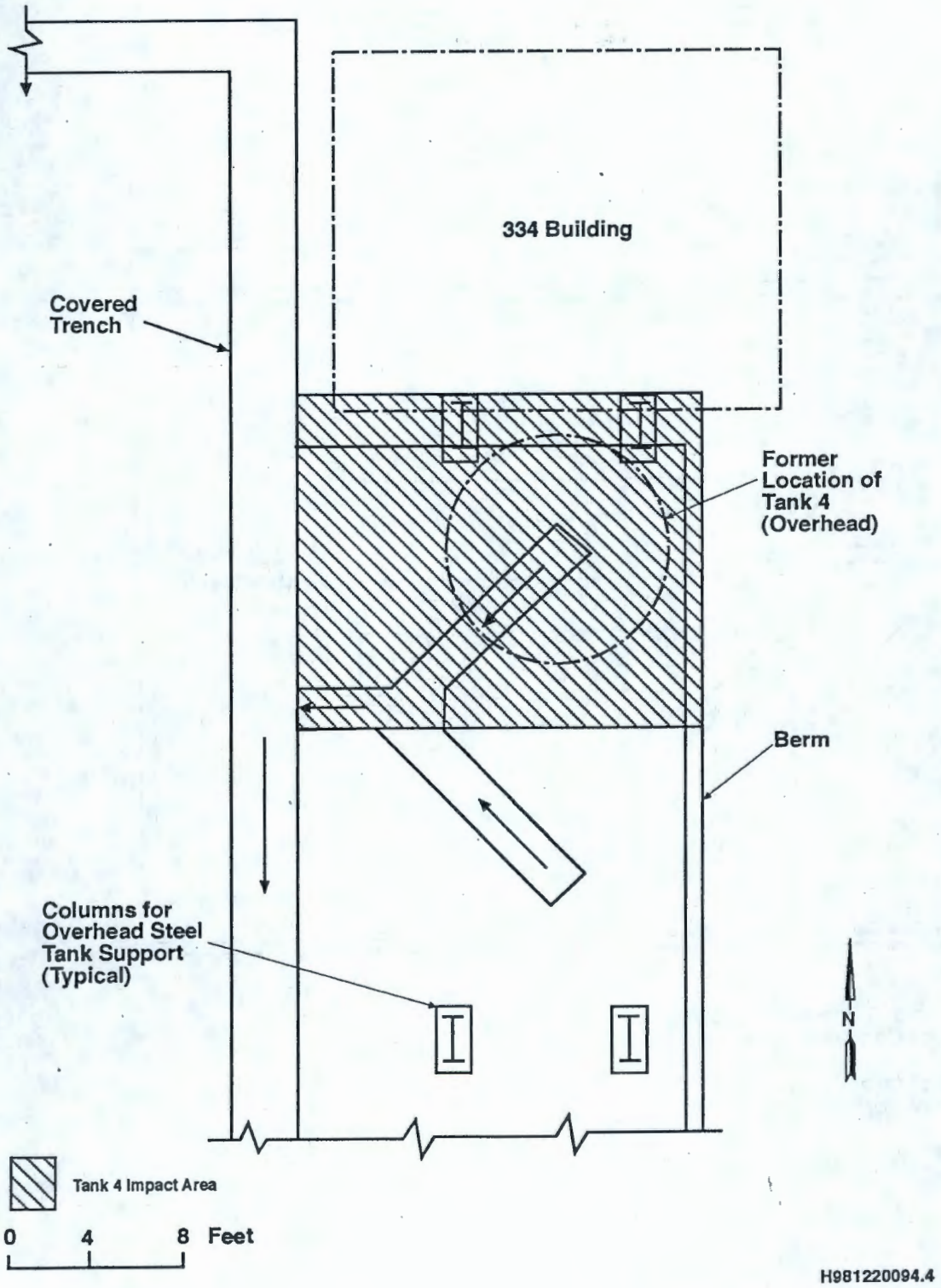



Figure 5. Waste Acid Treatment System Portion of the 334 Tank Farm.

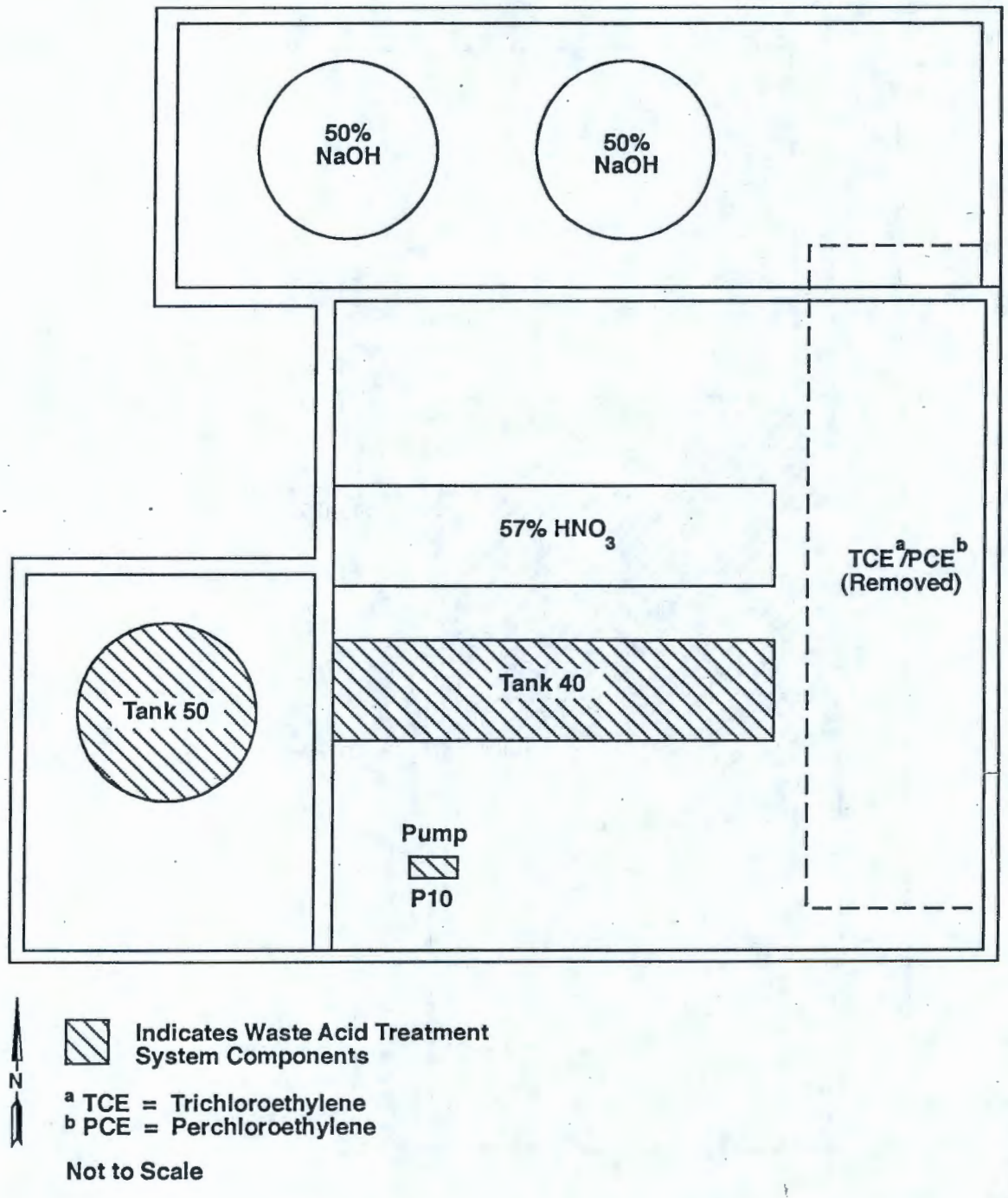



Figure 6. Waste Acid Treatment System Portion of the 311 Tank Farm.

# 2.0 WASTE DESIGNATION AND MANAGEMENT

This section describes designation of WATS waste residues, designation of Phase 3 closure waste and debris contaminated with waste residues, and designation of other closure waste. Management of closure waste also is described.

## 2.1 DESIGNATION OF SYSTEM RESIDUES

The dangerous waste managed at this unit is identified in the closure plan and unit-specific Part A, Form 3, permit applications as characteristic dangerous waste for ignitability (D001), corrosivity (D002), heavy metals (D004 through D009), and for state-only toxicity criteria (WT02) (DOE/RL-90-11). The waste and debris designation process must first determine if any of these waste numbers still apply to system residues in Phase 3 closure areas of the system.

System residue designation will follow the waste designation requirements of WAC 173-303-070(3)(a) and (5). Designation will be based on sampling of the residues from WATS tanks and piping components in the Phase 3 closure area and analysis of sample toxicity characteristics leaching procedure (TCLP) extracts. The analytical parameters will be based on process knowledge regarding waste managed at the unit and will include corrosivity (pH) and RCRA heavy metals. Residue designation for separate portions of the system (Section 3.2) will be documented in a Phase 3 closure waste characterization report (WCR) provided by the operating organization.

Residues removed from any portion of a tank system in which the residues designate as dangerous waste will be managed as mixed waste (Figure 7).

## 2.2 DESIGNATION OF DEBRIS CONTAMINATED WITH SYSTEM RESIDUE

The designation process for Phase 3 closure debris contaminated by system residues will follow the logic provided in Figure 7. Debris from portions of the system where the WCR identifies the residues as nondangerous waste will be managed as low-level waste.

Where system residues are identified in the WCR as dangerous, a designation threshold for the debris matrix (i.e., the quantity of residues that would cause a debris matrix to designate) will be identified. This threshold will be used by field personnel to determine if enough residues exist to designate the debris matrix. Debris will be designated only when enough residue exists to designate the entire debris matrix. Where residue quantities are indeterminate, debris either could be conservatively designated as mixed waste or could undergo further testing, such as nondestructive assay (NDA) or further sampling.

For waste designation purposes, the WCR will divide WATS piping and components in the Phase 3 closure area into five subsystems described in the following paragraphs. Tanks and piping within these subsystems will be designated in accordance with residue characterization and designation criteria for the subsystem.

Drain piping from the 333 Building tanks that discharged to WATS tanks B and C in the 334A Building will be divided into the tank B and tank C subsystems. The tank B subsystem will include piping from WATS tanks 7 and 11 and from non-WATS tanks 9 and 10. The waste solutions from these tanks were rich in copper and by procedure were routed to tank B. The tank C subsystem will include piping from tanks 4, 5, 13, 15, 19, and 26 that drained to WATS storage tank C. This was zirconium-rich waste that

was kept separate through the neutralization process. Designation of these subsystems will combine process knowledge and residue sample results from 334-A Building tanks.

The WATS piping from 334A Building tanks B and C to the 313 Building located in the WATS and U-bearing piping trench constitutes another subsystem. This piping will be designated based on samples of tank 2 residues taken during Phase I closure, samples of tank 2 PVC inlet piping removed during Phase 1, samples of liquid recovered during Phase 2 from the WATS tanks B and C transfer piping, and samples of residue found in tanks B and C in the 334A Building during Phase 2.

The 311 TF constitutes two subsystems. These include tank 40 and associated piping and components (tank 40 subsystem) and tank 50 and its associated piping and components (tank 50 subsystem). Both tanks are located within the bermed 311 TF basins. The tank 50 subsystem includes piping from the 313 Building to tank 50 (including piping in the 303-F Building trench and to loadout pump P-10. Tank 50 subsystem debris will be designated based on process knowledge, sample results from tank 11 (removed during Phase 1 closure), samples of liquid/sludge (drained from the piping during Phase 2), and samples of the residue recovered from tank 50 during the Phase 3 characterization. Tank 40 subsystem debris closure will be designated based on process knowledge and samples of residue taken from the tank during the Phase 3 characterization. Samples of the liquid drained from the isolated pipe section from tank 40 during Phase 2 also will be considered.

## 2.3 DESIGNATION OF OTHER CLOSURE WASTE

The designation of other waste generated during Phase 3 closure will occur using a combination of process knowledge and sampling or by process knowledge alone as described in this section.

All WATS system material removed during Phase 3 closure will be managed as debris. Phase 3 closure is not anticipated to generate any recyclable metal or excess equipment.

Free liquids from system components (if encountered) will be collected and sampled for designation purposes.

Lubricating and hydraulic oils removed from the pump 10 reservoir will be sampled for purposes of waste designation. Samples will be analyzed for polychlorinated biphenyls (PCB) and RCRA metals.

Rags and any solutions from decontamination of system components or structures could be 'worst-case' designated, similar to the residue in the portion of the system where decontamination occurred. However, where practicable and cost effective, this waste could be designated using other methods (e.g., NDA, sampling).

## 2.4 WASTE MANAGEMENT

Closure waste and debris will be managed based on the results of waste designation (Sections 3.2 and 3.3). After designation, waste and debris will be managed with respect to packaging, transport, and receiving facility acceptance, using an appropriate waste profile. A waste profile will be generated as a portion of the Hanford Site solid waste acceptance program.

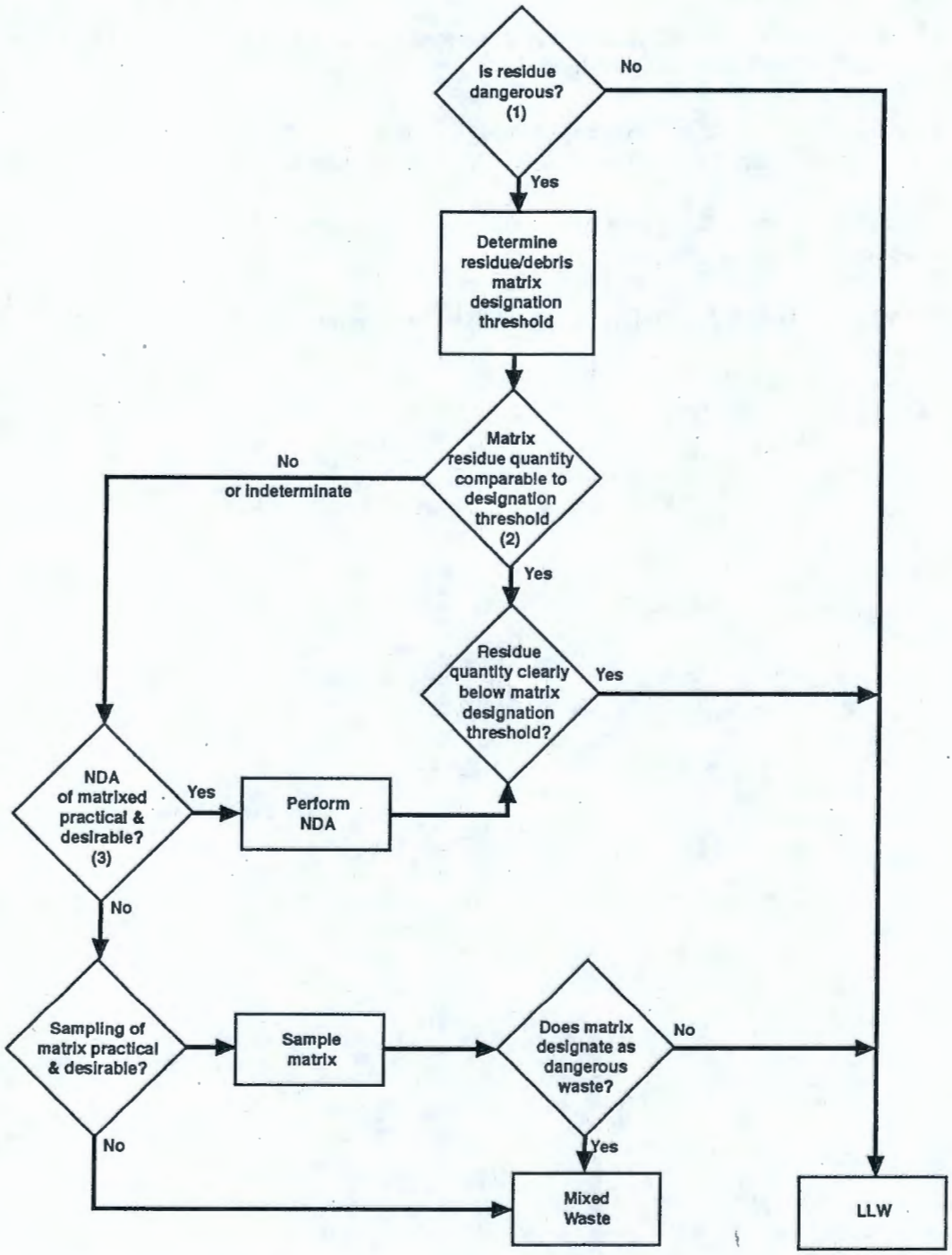
The WATS waste contained small amounts of uranium and so all waste and debris will undergo radiological survey. The survey and applicable release procedures will be in accordance with the *Hanford Site Radiological Control Manual* (DOE/RL-96-109). It is anticipated that little, if any, waste

will be radiologically releasable and will, at a minimum, be managed as low-level waste and transported to the Low-Level Burial Grounds (LLBG) for disposal.

Hazardous debris or dangerous waste that exceeds radiological release limits will be managed as mixed waste and transported to the Central Waste Complex (CWC) to await future treatment and disposal.

Nonradioactive hazardous debris or dangerous waste, although not expected, would be shipped to an offsite TSD facility for treatment or disposal.

Nondangerous, nonradioactive metal materials (if any) will be managed as recyclable scrap or disposed as nonregulated waste.




Notes:
(1) Dangerous determination for residues based on residue sampling results.
(2) Debris matrix designation begins at this point.
(3) Nondestructive assay performed to determine the quantity of dangerous waste residues on component based on the relationship of radionuclides to dangerous waste constituents in resides.
(4) NDA = nondestructive assay.
LLW = low-level waste.

HG97110101.1

Figure 7. Logic Flowpath for Designation of Waste Acid Treatment System Debris that Contacted System Residues.

# 3.0 SCOPE OF WORK

This section identifies removal, decontamination, and verification activities for Phase 3 closure. Waste designation and management referred to in this section will follow the processes previously described in Section 2.0.

## 3.1 REMOVAL OF COMPONENTS

During waste generation, suspected dangerous waste or hazardous debris could be accumulated or otherwise temporarily staged in nearby satellite accumulation areas (SAA). Such waste will be kept in appropriate final or interim storage containers. Once a container is full, the container will be removed, appropriately packaged, and transported to the appropriate receiving unit or moved to a 90-day storage area to await transport to an appropriate receiving unit. Larger items (e.g., pipe spools, pumps) could be managed similarly at a 90-day storage area.

As an as low as reasonably achievable (ALARA) measure, loose or readily smearable residues could be damp wiped from component exteriors using a detergent-water solution that could include sodium bicarbonate if corrosivity is a concern to personnel safety.

Field personnel will be prepared to catch, absorb, designate, and appropriately manage free liquids if found in piping or pumps.

Where appropriate, piping spools will be removed in sections that facilitate visual designation inspections.

Void-filling of low-level waste burial containers will be required. Void-fill material and void filling will be in accordance with onsite methods. Waste will be packaged for transport to meet Washington State Department of Transportation requirements.

Decontamination in-place of components before removal to avoid generation as mixed waste is not expected to be necessary. However, if decontamination is judged to be a cost-effective means of preventing the generation of mixed waste, the components will be decontaminated to below dangerous waste designation levels by damp wiping, using rags and a nonregulated detergent (e.g., De-Solv-It*) and water solution. Sodium bicarbonate could be used if corrosivity is a concern. Hazardous debris (i.e., a debris matrix that is dangerous waste when removed from the system) will be managed as mixed waste.

## 3.2 333 BUILDING

Phase 3 closure will complete RCRA clean closure activities for the 333 Building begun during Phase 2 closure. Phase 3 closure activities for the 333 Building will consist of removal and disposal of WATS PVC drain piping from non-WATS product tanks 5, 9, 13, 15, 19, 26, and 31, and from WATS tanks 7 and 11, to the 334-A Building storage tanks. These lines are located in pipe trenches within the 333 Building (Section 1.0, Figure 2). The trenches are a portion of the WATS and U-bearing piping trench and so are outside the scope of RCRA closure.

* De-Solv-It is a registered trademark of Orange-Sol, Inc., Gilbert, Arizona.

Trench grating will be removed to gain access to piping for removal. Piping will be disconnected from the manually operated drain valves beneath the process tanks and removed from the trench. Piping debris will be designated and managed as described in Section 2.0. Removal of this piping will be documented in the field logbook. No waste and residue removal verification (WRRV) will be generated for this activity.

## 3.3 303-F BUILDING

Phase 3 closure will complete clean closure activities for the 303-F Building begun during Phase 2 closure. Phase 3 closure activities for the 303-F Building are limited to the activities required for removal and disposal of WATS stainless steel piping located in the WATS and U-bearing piping trench between the 313 and 303-F Buildings and in the 303-F Building. The building trench is a portion of the WATS and U-bearing piping trench that is outside the scope of WATS closure.

Trench grating will be removed to gain access to piping for removal. Piping debris will be designated and managed as described in Section 2.0. Removal of this piping will be documented in the field logbook. No WRRV will be generated for this activity.

## 3.4 334 TANK FARM

Tank 4 failed in 1986 and was removed in 1988. Tank 4 was the only WATS tank in the 334 TF. Closure of WATS portions of the 334 TF will address the remaining painted metal structure that supported tank 4 and the concrete containment pad directly beneath. The concrete drainage trench directly beneath the tank 4 location is a portion of the WATS and U-bearing piping trench and is outside the scope of WATS closure.

### 3.4.1 Tank 4 Support Structure

The tank 4 metal support structure will remain after closure and must meet the clean debris surface standard. The paint on the structure surface predates RCRA operations. Portions of the painted surface exhibit rust. Years of exposure to weather are expected to have rendered the support structure and concrete pad decontaminated from the single spill in 1986 when tank 4 failed. However, portions of the structure that potentially contacted waste from the spill will be decontaminated to a clean debris surface by hand washing, scrubbing, or wiping. Loose rust, scale, and visible residues will be removed by scraping, brushing, and/or scrubbing. All rinsates or decontamination materials (e.g., rags, brushes) will be collected, designated, and managed as described in Section 2.0. Decontamination will be documented on a WRRV, Figure 8.

Because the paint is an integral part of the debris matrix, the clean debris surface standard is achievable without removal of the paint. The structure surface after decontamination will be bare metal, likely having indications of corrosion (rust or pitting), and/or will have tightly adhered paint with indications of weathering or oxidation. Visible rust or oxidation that is not stained from dangerous waste could remain on portions of the structure and will not affect achievement of a clean debris surface.

### 3.4.2 Containment Pad

The bermed concrete pad will remain after closure and must meet the clean debris surface standard. No WATS piping remains to disposition or to threaten release of dangerous waste. Years of exposure to weather are expected to have rendered the concrete pad decontaminated of the characteristic waste from the single spill in 1986. However, before pad inspection, any loose dirt or debris will be removed, and the pad will be washed down/scrubbed using scrub brushes, abrasive pads, nonregulated detergents, and/or bleach. The pad will be inspected to verify the absence of dangerous waste staining using clean debris surface visual criteria. The decontamination and final inspection will be documented on a WRRV, Figure 9. The drainage trench directly below tank 4 (Section 1.0, Figure 5) is a portion of the WATS and U-bearing piping trench and is outside the scope of WATS closure.

## 3.5 WASTE ACID TRANSFER PIPING IN THE WATS AND U-BEARING PIPING TRENCH

Stainless steel and PVC piping that exists in the WATS and U-bearing piping trench located between buildings and TFs (Section 1.0, Figure 1) will be removed as debris. Concrete blocks, cover plates, and grating covering the trench will be removed to gain access to piping. The blocks, cover plates, and grating will be replaced after piping removal. After removal, the piping will be surveyed for radioactivity, designated, and managed as described in Section 2.4. Piping removal will be documented in the field logbook. No WRRV will be generated for this activity. The WATS and U-bearing piping trench itself is outside the scope of WATS closure.

## 3.6 THE 311 TANK FARM

Closure of the 311 TF will address waste storage tanks 40 and 50, loadout pump 10, transfer piping at the TF, and the concrete catch basins around tanks 40 and 50.

### 3.6.1 Tanks 40 and 50

Tanks 40 and 50 are both expected to be clean closed and remain in-place after closure. Alternatively, if during closure, removal is determined to be a cost-effective method of dispositioning these tanks, the tanks would be removed as debris,

Remaining tank(s) will have the interior and exterior decontaminated to a clean debris surface using a high-pressure water wash or by hand washing. Before decontamination, piping will be disconnected from the tank. The tank 40 stainless steel outer jacket will be removed to gain access to exterior surfaces for decontamination. Decontaminated tank surfaces will be inspected to verify achievement of a clean debris surface and the inspections documented on a WRRV, Figure 10 for tank 40, and Figure 11 for tank 50. Because tank 40 is carbon steel, the surfaces after decontamination will be bare metal, likely having indications of corrosion (rust or pitting) and/or, if painted under the existing jacket, will have tightly adhered paint with indications of weathering or oxidation. Visible rust or oxidation that is not stained from dangerous waste could remain on portions of the tank and will not affect achievement of a clean debris surface. Decontamination solutions and materials will be collected, such as using liners placed in the existing catch basins, and will be containerized, designated, and managed as described in Section 2.0.

Alternatively, tanks 40 and 50 could be removed as debris. If removed, tank interiors would be vacuumed of all but tightly adhered residues to facilitate designation as low-level waste and thereby reducing the generation of mixed waste. The tanks will be removed whole or in sections, whichever is deemed most appropriate at closure. On removal, the tanks or tank sections would be designated as low-

level waste and transported to LLBG for disposal. The concrete supports for each tank would remain in place and would be addressed as discussed in Section 3.6.3.

### 3.6.2 Pump 10 and Transfer Piping

Loadout pump P-10 and stainless steel transfer piping from the 303-F and 313 Buildings will be removed from the TF as debris. The material will undergo waste designation and be managed as described in Section 2.0.

### 3.6.3 Concrete Catch Basin for Tank 40.

The tank 40 concrete containment catch basin and tank concrete support pedestals will remain after closure so must meet the clean debris surface standard. The coatings on these surfaces were installed in 1988. These surfaces were aggressively decontaminated by sandblasting in preparation for the coating. Basin coatings were still intact when operations ceased in 1995 with the last loadout of WATS process waste from tank 50 of the 311 TF. Since 1995, the coating at basin lowpoints has deteriorated. However, because no spills occurred to this location after the recoating in 1988, and because no waste was managed at the location before the coatings began to fail after 1995, the bare concrete will be addressed in the same fashion as the coated concrete surfaces. The bottom of the basin and 30.5 centimeters up the basin sides will be decontaminated by hand washing or scrubbing to a clean debris surface. This decontamination will be documented on a WRRV, Figure 12. Decontamination solutions and materials will be collected, designated, and managed as described in Section 2.0.

A low-point drain exists at the northwest corner of this basin where the north basin wall meets the basin floor. The drain assembly consists of approximately 10 feet of small bore, stainless steel piping with a manually operated valve at the end. The valve remained closed during operations except when draining precipitation accumulations. The basin drained to the 300 Area Process sewer via the WATS and U-bearing piping trench. After known spills, basin effluent from this line was pumped back into the WATS. Before draining normal precipitation, the effluent was sampled for pH (because the neutralized waste generally was caustic) to confirm that there had been no spills. The drain is now kept open to preclude precipitation accumulation. This drain piping was removed and replaced in 1996 after WATS operations ceased. This piping is considered new, noncontaminated material and will not require inspection or removal. The original drain valve was reused when piping was replaced in 1996 and so will be removed and replaced with a new valve at closure. The drain through-wall penetration sleeve will be decontaminated and inspected for dangerous waste staining. This decontamination will be documented on a WRRV, Figure 12. All decontaminated portions of the basin, including the drain penetration sleeve, will be inspected to verify achievement of a clean debris surface and the inspection documented on WRRV, Figure 12.

### 3.6.4 Concrete Catch Basin for Tank 50.

The tank 50 concrete containment catch basin will remain after closure and so must meet the clean debris surface standard. The original surface coatings remain intact. There have been no documented spills to this location and preliminary inspections indicate no visual evidence of spills or waste residues existing at this location. However, before inspection of the basin, any loose dirt or debris will be removed and the basin bottom and 30.5 centimeters up each basin wall will be washed down/scrubbed. The pad will be inspected to verify existence of a clean debris surface and the inspection will be documented on a WRRV, Figure 13. Decontamination solutions and materials will be collected, designated, and managed as described in Section 2.0.

A low-point floor drain exists at the northwest corner of the tank 50 basin. This drain discharges to the 300 Area process sewer via the WATS and U-bearing piping trench located beside the basin. The drain is connected to a pipe stub with a manually operated valve located just outside the basin wall. During operations, this valve remained closed except during draining. This valve is now kept open. Although there were no reported spills to this location, the drain will be washed down and inspected. The piping and valve will be removed, designated, and disposed. The drain cover will be removed and the drain will be cleaned and inspected for dangerous waste staining. The cleaning activity will be documented on a WRRV, Figure 13.

**WASTE AND RESIDUE REMOVAL VERIFICATION**
**300 Area Waste Acid Treatment System**

This documents decontamination and 'clean debris surface' verification inspections for the following:.

1. TSD unit: 300 Area Waste Acid Treatment System
2. Building/location: 334 Tank Farm
3. Component(s)/area(s) Tank 4 support structure
4. Material (e.g., concrete metal, plastic): painted steel
5. Decontamination:
   A. Method[1] (NA here if no decontamination performed): Hand washing
   B. Parameters (check appropriate parameters):
      - ☐ Temperature
      - ☐ Propellant
      - ☐ Solid media (e.g., shot, grit, beads)
      - ☐ Pressure
      - ☐ Residence time
      - ☐ Surfactant(s)
      - ☒ Detergents — De-Solv-It or equivalent nonregulated cleaner
      - ☐ Grinding/striking media (e.g., wheels, piston heads).
      - ☐ Depth or surface layer removal
      - ☒ Other — Applicators (rags, etc.)
   C. The decontamination identified in steps 1 through 4 was completed as specified in step 5.

Signature _____ Date _____

6. Verification of Performance Standard: The identified materials have been inspected visually and have attained a clean debris surface[2].

Authorized Representative:

Signature _____ Date _____

[1] Although not mandatory, decontamination could use a physical extraction method from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45).

[2] Definition of 'clean debris surface' from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45): "'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."

NOTE: This form does not originate in dangerous waste regulations or closure guidance documents.

Figure 8. 334 Tank Farm Support Structure Decontamination Verification.

**WASTE AND RESIDUE REMOVAL VERIFICATION**
**300 Area Waste Acid Treatment System**

This documents decontamination and 'clean debris surface' verification inspections for the following:

1. TSD unit: 300 Area Waste Acid Treatment System
2. Building/location: 334 Tank Farm
3. Component(s)/area(s) Bermed catch basin and trench
4. Material (e.g., concrete metal, plastic): Concrete
5. Decontamination:
   A. Method[1] (NA here if no decontamination performed):
   B. Parameters (check appropriate parameters):
   - ☐ Temperature
   - ☐ Propellant
   - ☐ Solid media (e.g., shot, grit, beads)
   - ☐ Pressure
   - ☐ Residence time
   - ☐ Surfactant(s)
   - ☒ Detergents — De-Solv-It or equivalent nonregulated cleaner
   - ☐ Grinding/striking media (e.g., wheels, piston heads).
   - ☐ Depth or surface layer removal
   - ☒ Other — Brushes, mops, rags, etc.

   C. The decontamination identified in steps 1 through 4 was completed as specified in step 5.

Signature _____ Date _____

6. Verification of Performance Standard: The identified materials have been inspected visually and have attained a clean debris surface[2].

Authorized Representative:

Signature _____ Date _____

[1] Although not mandatory, decontamination could use a physical extraction method from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45).

[2] Definition of 'clean debris surface' from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45): "'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."

NOTE: This form does not originate in dangerous waste regulations or closure guidance documents.

Figure 9. 334 Tank Farm Concrete Pad and Trench Decontamination Verification.

**WASTE AND RESIDUE REMOVAL VERIFICATION**
**300 Area Waste Acid Treatment System**

This documents decontamination and 'clean debris surface' verification inspections for the following:

1. TSD unit: 300 Area Waste Acid Treatment System
2. Building/location: 311 Tank Farm
3. Component(s)/area(s) Metal tank 40
4. Material (e.g., concrete metal, plastic): Carbon steel
5. Decontamination:
   A. Method[1] (NA here if no decontamination performed): High pressure water spray and/or hand-washing
   B. Parameters (check appropriate parameters):
   - ☐ Temperature
   - ☐ Propellant
   - ☐ Solid media (e.g., shot, grit, beads)
   - ☐ Pressure
   - ☐ Residence time
   - ☐ Surfactant(s)
   - ☒ Detergents — De-Solv-It or equivalent nonregulated cleaner
   - ☐ Grinding/striking media (e.g., wheels, piston heads).
   - ☐ Depth or surface layer removal
   - ☒ Other — Applicators (rags, etc.)

   C. The decontamination identified in steps 1 through 4 was completed as specified in step 5.

   Signature _____ Date _____

6. Verification of Performance Standard: The identified materials have been inspected visually and have attained a clean debris surface[2].

   Authorized Representative:

   Signature _____ Date _____

[1] Although not mandatory, decontamination could use a physical extraction method from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45).

[2] Definition of 'clean debris surface' from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45): "'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."

NOTE: This form does not originate in dangerous waste regulations or closure guidance documents.

Figure 10. Tank 40 Decontamination Verification.

**WASTE AND RESIDUE REMOVAL VERIFICATION**
**300 Area Waste Acid Treatment System**

This documents decontamination and 'clean debris surface' verification inspections for the following:

1. TSD unit: 300 Area Waste Acid Treatment System
2. Building/location: 311 Tank Farm
3. Component(s)/area(s) Metal tank 50
4. Material (e.g., concrete metal, plastic): Carbon steel
5. Decontamination:
   A. Method[1] (NA here if no decontamination performed): High-pressure water spray and/or hand-washing
   B. Parameters (check appropriate parameters):
      - ☐ Temperature
      - ☐ Propellant
      - ☐ Solid media (e.g., shot, grit, beads)
      - ☐ Pressure
      - ☐ Residence time
      - ☐ Surfactant(s)
      - ☒ Detergents — De-Solv-It or equivalent nonregulated cleaner
      - ☐ Grinding/striking media (e.g., wheels, piston heads).
      - ☐ Depth or surface layer removal
      - ☒ Other — Applicators (rags, etc.)
   C. The decontamination identified in steps 1 through 4 was completed as specified in step 5.

Signature _____ Date _____

6. Verification of Performance Standard: The identified materials have been inspected visually and have attained a clean debris surface[2].

Authorized Representative:

Signature _____ Date _____

[1] Although not mandatory, decontamination could use a physical extraction method from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45).

[2] Definition of 'clean debris surface' from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45): "'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."

NOTE: This form does not originate in dangerous waste regulations or closure guidance documents.

Figure 11. Tank 50 Decontamination Verification.

**WASTE AND RESIDUE REMOVAL VERIFICATION**
**300 Area Waste Acid Treatment System**

This documents decontamination and 'clean debris surface' verification inspections for the following:

1. TSD unit: 300 Area Waste Acid Treatment System
2. Building/location: 311 Tank Farm
3. Component(s)/area(s) Tank 40 Catch Basin
4. Material (e.g., concrete metal, plastic): Coated concrete
5. Decontamination:
   A. Method[1] (NA here if no decontamination performed): Handwashing/scrubbing
   B. Parameters (check appropriate parameters):
      - ☐ Temperature
      - ☐ Propellant
      - ☐ Solid media (e.g., shot, grit, beads)
      - ☐ Pressure
      - ☐ Residence time
      - ☐ Surfactant(s)
      - ☒ Detergents — De-Solv-It or equivalent nonregulated cleaner
      - ☐ Grinding/striking media (e.g., wheels, piston heads).
      - ☐ Depth or surface layer removal
      - ☒ Other — Brushes, mops, rags, etc.
   C. The decontamination identified in steps 1 through 4 was completed as specified in step 5.

Signature _____ Date _____

6. Verification of Performance Standard: The identified materials have been inspected visually and have attained a clean debris surface[2].

   Authorized Representative:

Signature _____ Date _____

[1] Although not mandatory, decontamination could use a physical extraction method from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45).

[2] Definition of 'clean debris surface' from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45): "'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."

NOTE: This form does not originate in dangerous waste regulations or closure guidance documents.

Figure 12. 311 Tank Farm Tank 40 Catch Basin Decontamination Verification.

**WASTE AND RESIDUE REMOVAL VERIFICATION**
**300 Area Waste Acid Treatment System**

This documents decontamination and 'clean debris surface' verification inspections for the following:

1. TSD unit: 300 Area Waste Acid Treatment System
2. Building/location: 311 Tank Farm
3. Component(s)/area(s) Tank 50 Catch Basin
4. Material (e.g., concrete metal, plastic): Coated concrete
5. Decontamination:
   A. Method[1] (NA here if no decontamination performed): Hand washing/scrubbing
   B. Parameters (check appropriate parameters):
   - ☐ Temperature
   - ☐ Propellant
   - ☐ Solid media (e.g., shot, grit, beads)
   - ☐ Pressure
   - ☐ Residence time
   - ☐ Surfactant(s)
   - ☒ Detergents — De-Solv-It or equivalent nonregulated cleaner
   - ☐ Grinding/striking media (e.g., wheels, piston heads).
   - ☐ Depth or surface layer removal
   - ☒ Other — Brushes, mops, rags, etc.

   C. The decontamination identified in steps 1 through 4 was completed as specified in step 5.

Signature _____ Date _____

6 Verification of Performance Standard: The identified materials have been inspected visually and have attained a clean debris surface[2].

Authorized Representative:

Signature _____ Date _____

[1] Though not mandatory, decontamination could use a physical extraction method from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45).

[2] Definition of 'clean debris surface' from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45): 'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."

NOTE: This form does not originate in dangerous waste regulations or closure guidance documents.

Figure 13. 311 Tank Farm Tank 50 Catch Basin Decontamination Verification.

# 4.0 DECONTAMINATION VERIFICATION

Decontamination verification will be by visual inspections. After floor and wall decontamination (described in Section 3.0), the assigned field team leader or other building representative will inspect the decontaminated surfaces to verify achievement of a 'clean debris surface' (40 CFR 268.45, Table I). A clean debris surface is defined by 40 CFR 268.45, Table I (the Debris Rule) as follows:

"'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."

The 'clean debris surface' verification inspections will be documented on WRRVs (Section 3.0, Figures 8 through 13) that also will be used to document the decontamination activity.

# 5.0 REFERENCES

DOE/RL-90-11, *The 300 Area Waste Acid Treatment System Closure Plan,* U.S. Department of Energy, Richland Operations Office, Richland, Washington.

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WHC-EP-0846-0, *Waste Specification System*, Westinghouse Hanford Company, Richland, Washington, 1995.

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