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**Mitigation Action Plan
300-FF-1 Operable Unit Remediation**



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1.0 INTRODUCTION

A Record of Decision (ROD) was issued, date X/XX/XXXX, for remediation of waste sites in the 300-FF-1 Operable Unit (OU) in the 300 Area of the Hanford Site. The selected remedy for 300-FF-1 and 300-FF-5 includes Selective Excavation and Disposal of contaminated soil and debris from the process waste units, Excavation and Removal of Burial Ground 618-4, and Institutional Controls for Groundwater. This mitigation action plan explains how cultural resources will be managed and how revegetation for these remedial activities will be planned and implemented. Actions required by the ROD may result in the redisturbance of areas of recovering vegetation. This plan presents a strategy for limiting these disturbances and identifies an opportunity for revegetating the 618-4 site to native species. The 300-FF-1 OU is being planned for continued industrial land use as identified in the Proposed Plan (DOE-RL 1995a). The 300 Area and surrounding land has also been identified by the Future Site Uses Working Group (1992) for Industrial and Research/Office use and development. However, the northern part of the 300-FF-1 OU has been proposed as a Resource of Concern by the Draft Biological Resources Management Plan (BRMAP) (DOE-RL 1996).

2.0 BACKGROUND

This section describes the cultural and natural resources at the waste sites and nearby support areas that are expected to be affected.

2.1 PROJECT AREA

This project involves the remediation of the following waste sites*:

Waste Site	Description	Approximate Size (acres)
618-4	Burial Ground	3
Process Trenches and Process Trenches Spoils	Process Water Disposal	2
North Process Pond	Process Water Disposal	7
South Process Pond	Process Water Disposal	8
Landfills 1a, 1b, 1d	Burial Grounds	5

* The following waste sites in the 300-FF-1 OU are expected to be clean, based on the RI data and will be sampled as part of final verification sampling. However, these sites may be recontoured and revegetated as part of final restoration activities. These sites are the sanitary sewer system and trenches area, the ash pits and filter backwash area, and landfill 1C.

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The 618-5 burial ground is not included in the ROD, and will be addressed as part of the 300-FF-2 OU remediation. All operations, transportation, and material handling facilities are currently planned to occur in previously disturbed areas, such as the soil borrow area south of the 618-4 burial ground.

2.2 CULTURAL RESOURCES

The Columbia River corridor passing through the Hanford Site has always been important to humans. As a result, archaeological sites, human burials, traditional-use areas, and historic buildings exist in the area. Any area within 400 m (1/4 mile) of the Columbia River that has not been extensively disturbed has a high probability of containing important cultural resources. Protection of these sites is required by Federal law.

The location of the 300-FF-1 OU is in an area considered to have high potential for cultural resources. Previous cultural resource project surveys by David Rice (1968) and the Hanford Cultural Resources Laboratory (HCRL) (1987-92) have recorded 4 prehistoric archeological sites and isolated human remains within the operable unit; however, these surveys have not covered the entire 300-FF-1 OU. One of these sites, 45BN163, has been determined eligible for the National Register of Historic Places. Archeological testing at this site has determined the presence of subsurface cultural material.

Other recorded cultural resource sites in the area consist of prehistoric and historic traditional-use areas such as housepits, fishing camps, and human burials. Also associated with the area is a reported "Indian trail" running along the river terrace. Historic use of the area prior to 1943 has been noted by the presence of scattered debris such as cans, glass, ceramics, cement foundation or irrigation system, and the possibility of "placer mining" activities common during the gold rush of 1858-68 (Rice 1985).

Waste sites that will be remediated in the 300-FF-1 OU consist of burial grounds, process ponds, and trenches. Remediation of these waste sites is anticipated to involve extensive excavation, which has the potential to impact cultural resources. ERC Cultural Resource Specialists will work with the project team to incorporate protection of known sites and potential subsurface discoveries into remedial alternatives and designs. This will include discussions with Tribal cultural resource staff; consultation with Tribal elders, as appropriate, will be coordinated through DOE-RL. Whenever possible, impacts to cultural resources will be avoided.

2.3 NATURAL RESOURCES

Small areas dominated by native plant species exist within the 300-FF-1 OU boundary, mainly in the vicinity of and including the 618-4 burial ground. Currently the 618-4 burial ground has a recovering mid-seral community of shrub, perennial grass, and annual grass species with fair quality habitat on sandy soils. The habitat in this area has been proposed as a Level III resource

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of concern by the Draft BRMAP (DOE-RL 1996, in review). Level III biological resources are of concern because of their state listing; potential for federal or state listing; unique or significant value for plant, fish, or wildlife species; special administrative designation; or environmental sensitivity. The reason for Level III designation is the presence of shrub-steppe vegetation.

The Draft BRMAP does not identify a resource level of concern for the southern portion of 300-FF-1 OU because of the disturbance and relative lack of vegetation. However, this area appears to be identified as containing a plant species of concern, which is the Columbia yellowcress. This riparian plant occurs along the rivershore near this OU, but will not occur on the uplands of the 300 Area. The Process Trenches, North Process Pond, and South Process Pond have a cobble surface that is generally bare of vegetation, but with some white and/or yellow sweet clover within the cobble. The site perimeters of the Process Trenches, North Process Pond, South Process Pond, and the landfills 1a, 1b, and 1d have early successional grass and shrub species (e.g., cheatgrass and rabbitbrush).

The proposed material handling facility south of the 618-4 burial ground has poorly established Siberian and thickspike wheatgrass. This particular area has been excavated to provide radiologically clean soils over the 618-2 and 618-3 burial grounds. West of the borrow area lies an intact sagebrush community with perennial grass species within the understory. This community, however, is a waste site in the 300-FF-2 OU, designated as the Aluminum Recycling Handling area, and is radiologically posted as a soil contamination area.

The other areas within the OU have been heavily disturbed, and have not returned to habitat dominated by native species.

3.0 MITIGATION ACTIONS

Mitigation refers to a series of prioritized actions designed to minimize or lessen potential project impacts on cultural or natural resources. The first choice of mitigation is to avoid the impact entirely, for instance, the project can be moved away from significant habitat or cultural resources. Mitigation may also involve minimizing the impact, rectifying the impact afterwards, and/or compensating for significant impacts. These mitigation actions have been developed following direction in the 300-FF-1 Proposed Plan (DOE-RL 1995a) that the future land use will be industrial.

3.1 CULTURAL RESOURCE MITIGATION

Activities that disturb the ground or buildings will be preceded by a Cultural Resource Review (CRR) and will comply with the recommendations resulting from that review. Cultural resource actions will be conducted in accordance with the Hanford Cultural Resources Management Plan (Chatters 1989). Discussions will be held with the State Historic Preservation Office and the

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Indian tribes and nations regarding the nature and extent of protective measures that may be needed. Mitigation measures such as archaeological excavations, human burial removal, or building documentation will be conducted when adverse impacts to cultural resources cannot be avoided.

The CRR process will include:

- Research of the areas to be impacted to determine the likelihood that additional cultural resources exist
- Field surveys, depending on factors such as the degree of previous ground disturbance, and the extent of previous field surveys in the area, to identify and record cultural resources within the areas of potential impact
- Development of appropriate mitigation actions such as:
 - Avoidance: Project activities will be moved away from sensitive areas, or sensitive areas will otherwise be protected where possible (e.g., not scraping the ground surface when placing support facilities).
 - Excavation: Test excavations will be made, when needed, to determine the presence/absence of subsurface cultural resources.
 - Monitoring: Project activities will be monitored to minimize disturbance to cultural resources.

Discovery of cultural resources during construction requires work to stop in the affected area. An assessment of the discovery will be made by an ERC Cultural Resource Specialist, who will also notify the appropriate Tribes, and, if necessary, arrange for mitigation of the find.

3.2 NATURAL RESOURCE MITIGATION

- Ecological surveys will be performed in project areas, before activities begin, to identify and avoid species and habitats of concern
- New roads and support facilities will be limited to existing disturbed areas
- Prudent fire control practices will be exercised while minimizing the vegetation disturbances for firebreaks (especially in years with heavy growths of cheatgrass and other weeds that could rapidly carry wildfire to areas with sagebrush). Plant communities dominated by perennial grasses and shrubs are more resistant to wildfire than areas dominated by annuals such as tumbleweed and cheatgrass

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- Backfill materials should come preferentially from excavated backfill, existing spoils piles, ash piles, and borrow site areas, and utilize previously undisturbed vegetated areas only as a last resort
- Where currently vegetated areas must be removed (for example, on Landfills 1a, 1b, and 1d), the topsoil (0.25 to 0.5 m depth) will be stockpiled, with the associated vegetation, and reused for the topsoil during site restoration

The following site-specific mitigation measures will be undertaken.

- Before the 618-4 burial ground is to be exhumed, bitterbrush growing on areas to be disturbed will be transplanted beyond the east perimeter of the burial ground. This action should be done in fall or winter after the seasonal precipitation has begun and the soils are moist. If needed, additional water can be added to the planting holes. The transplanting will depend on the depth of cover and likelihood of reaching contamination while removing the plants. The success of the effort will be monitored for at least five years to evaluate variables such as the height of the transplanted shrub versus survivability, and a report prepared at the end of the monitoring period.
- Other native plant species that will be lost from site restoration activities can be offered to other groups for transplanting. However, efforts must be made to ensure contaminants potentially near the roots of these plants are not also moved, and that workers are protected while collecting plants on the unremediated waste site.
- Topsoil (0.25 to 0.5 m depth) from the 618-4 burial ground will be stockpiled with associated vegetation adjacent to that project operational area and reused for the topsoil at the end of the 618-4 remediation project.
- The area disturbed for the material handling area will be limited to the minimum size necessary. These support facilities will be replanted with a native perennial grass mixture if commercially available or with non-native crested and Siberian wheatgrass for interim stabilization.

3.3 SITE RESTORATION

The aim of site restoration is to stabilize the sites with a perennial grass community that will provide soil erosion cover and limited habitat within an industrial-use scenario. Disturbed areas surrounding each remediated wastes site will also require revegetation with an interim perennial grass mixture.

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3.3.1 Backfill

Several sources of backfill exist. The order of preference is to (1) stockpile and reuse clean soil from the remediated site (the stockpiled soils may need to be covered with a crusting agent or crimped straw for interim dust control), (2) use backfill from nearby mounds left over from earlier facility construction, (3) use nearby ash piles, and (4) use materials from an existing borrow area. New borrow areas should be created only as a last resort because of the potential to disturb additional habitat and cultural resources. Backfill removal that involves disturbing overburden or topsoil will need an excavation permit. The amount of backfill required will depend on the final contour of each of the sites, and the revegetation goals for each site.

3.3.2 Final Contour

Current and past topographic maps of the area indicate that the OU had a rolling terrain before Hanford activities began. The area will be returned to a similar topography by the conclusion of remedial and restoration activities.

3.3.3 Revegetation

618-4 Burial Ground

Because native vegetation recovering on the 618-4 burial ground will be lost from remedial activities, some of the antelope bitterbrush will be moved intact to sites directly east of the burial ground. The extent of these transplants will be limited by the possibility of inadvertently moving contamination with the soil surrounding the roots. The current top soil (~0.25 to 0.5 m) at 618-4 has value for reclamation and will be stockpiled and reused for topsoil at this site after remediation is complete. The habitat lost on and adjacent to the burial ground will be rectified by revegetating with regional genotype seeds of shrubs, forbs, and grasses. Species will include plants that favor sandy soils, such as bitterbrush, snow buckwheat, yarrow, ricegrass, and Sandberg's bluegrass, but the actual species used and seeding rates will depend on seed availability. The site will be seeded in fall, from approximately November to mid-December, and may be irrigated for one or two years in the spring, depending on rainfall amounts and timing. The success of the revegetation will be monitored after planting.

Other Sites

Because the remaining portions of the 300-FF-1 sites are adjacent to a current industrial site and have also been identified as future industrial land use, the primary goal of revegetation will be site stabilization. As such, local species will be seeded only if sufficient seeds are available; if not, non-native species such as crested and Siberian wheatgrass will be used at 15 kg/ha pure live seed. If suitable topsoil is currently covering the site, it will be reused as topsoil on the site after remediation. (Suitable soil is soil that has not been treated with long-lasting herbicides.)

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3.3.4 Weed Control

After remediation is completed and before reseeding has begun, annual weedy species will invade the exhumed and materials handling sites. The use of a straw interim cover, mechanical control methods, and if needed carefully timed herbicide applications of pre-emergent herbicides will be used to control annual species. If noxious weeds (as classified by the Benton County Weed Control Board and promulgated within Washington Administrative Code, Chapter 16-752, "Noxious Weed Control,") become established within revegetated areas, the infestations will be managed with mechanical and chemical means as necessary.

3.4 OTHER MITIGATION ACTIONS

The Phase III Feasibility Study Report for the 300-FF-1 OU (DOE-RL 1995b) lists additional aspects of the affected environment that may require mitigation actions. These aspects and mitigation actions to be employed are included in this section.

3.4.1 Air Quality

Preservation of air quality will require specific mitigation actions during remedial activities because of the dry, relatively windy climate at Hanford. The substantive requirements for air quality under the Clean Air Act and State technology requirements (WAC 246-247; WAC 173-400, -460, and WAC 173-400-040) must be met. Dust control will be a vital component to prevent the potential spread of contamination from exposed soils. Dust will be controlled by water spraying or other approved methods. A crusting agent or fixant will be applied as needed to any disturbed portion of the contamination area that will be inactive for more than 24 hours. Dust control will be maintained at all times, including when excavation or other work activities are not occurring.

3.4.2 Noise

Remedial activities will generate noise, primarily through the use of heavy earthmoving and transport equipment. Noise impacts will be highest inside the sites being remediated, with secondary effects along the roads. Because the most significant noise will be confined to the immediate project site and access areas, it is unlikely to significantly affect the environment.

3.4.3 Emergency Preparedness

Separate emergency and contingency plans are described in the Remedial Design Report. An evacuation plan and emergency equipment required for preparedness will be referenced.

3.4.4 Worker and Public Protection

Worker radiation exposure will be controlled in accordance with the Hanford Site Radiological Control Manual, DOE guidance for radiation exposure, ALARA process, and health and safety

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plans. Construction safety will be established from OSHA regulations, DOE Orders, and industry standard practices. Public safety will be ensured through the use of containment and control zones around remediation sites, surface water control, dust control, ALARA process, and by following U.S. Department of Transportation requirements for hazardous materials.

3.4.5 Traffic Planning

This project only handles transportation of wastes within the 300-FF-1 Operable Unit; transportation from the OU to ERDF is the responsibility of the ERDF operator. Impacts to Hanford Site traffic occurring from the transport of wastes has been addressed through ERDF's traffic control plan. Within the OU, only designated haul roads will be used for waste transport. Traffic corridors will be distinguished in accordance with the approved Subcontractor Traffic Control Plan. Mitigation for habitat disturbed from construction of new haul roads will be handled with other facility disturbance.

3.4.6 Surface Water Management

To prevent the spread of contaminated material from contaminated to clean areas during remediation activities, or the inflow of water into other areas where it could disrupt operations, certain mitigation actions will be taken. Where necessary, simple V-ditches and berms will be built, draining the water along the natural contour. In contaminated areas, water will be retained in selected areas, which will be remediated last. A key assumption is that the soils at the OU have sufficient infiltration capacity and will infiltrate rapidly except during extreme precipitation events or with frozen ground.

3.4.7 Reuse of Onsite Resources

To be added.

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4.0 REFERENCES

- Chatters, 1989, *Hanford Cultural Resources Management Plan*, PNL-6942, Pacific Northwest Laboratory, Richland, Washington.
- DOE-RL, 1995a, *Proposed Plan for the 3000-FF-1 and 300-FF-5 Operable Units*, DOE/RL-95-88, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 1995b, *Phase III Feasibility Study Report for the 300-FF-1 Operable Unit*, DOE/RL-94-49, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 1996, *Hanford Site Biological Resources Management Plan, DRAFT*, DOE/RL-96-32, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- Future Site Uses Working Group, 1992, *The Future for Hanford: Uses and Cleanup. The Final Report of the Hanford Future Site Uses Working Group*, Richland, Washington.
- G. R. Eidam to J. L. Murphy, "Responses to Washington Department of Fish and Wildlife Comments on 300-Ff-1 Phase III Feasibility Study Report," ERC CCN 028767.
- Rice, David G., 1968, *Archeological Reconnaissance, Hanford Atomic Works*, U.S. Atomic Energy Commission; National Park Service; Washington State University.
- Rice, David G., 1985, *Archeological Survey of a Potential Barge Unloading Site at the 300 Area at Hanford*, Westinghouse Hanford Company.
- Wright, M. K., 1993, *Letter Report - The 300 Area Treated Effluent Disposal Facility: A Finding of No Adverse Effect for a Prehistoric Site on the West Bank of the Columbia River*, Pacific Northwest Laboratory, Richland, Washington.
- Washington Administrative Code, Chapter 16-752, "Noxious Weed Control."

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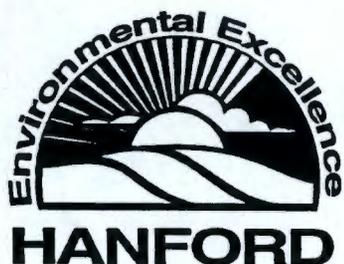
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SITE RESTORATION PLAN FOR THE 300-FF-1 OPERABLE UNIT LIQUID WASTE SITES, LANDFILLS, AND BURIAL GROUND 618-4

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Date Published
May 1996

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Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
Waste Management

Bechtel Hanford, Inc.
Richland, Washington

BHI-00799
REV: 00
OU: N/A
TSD: N/A
ERA: N/A

APPROVAL PAGE

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SITE RESTORATION PLAN

1.0 BACKGROUND

1.1 OBJECTIVES

The objectives of Site Restoration are to:

1. Remove all construction facilities.
2. Eliminate physical hazards.
3. Provide adequate drainage of remediated areas.
4. Stabilize disturbed areas against erosion.
5. Revegetate the site with appropriate plant species.

1.2 IMPLEMENTATION

The concepts described in this Plan have been incorporated in the Design Drawings, the Technical Specifications, the Remediation Contractor's Scope of Work, and supporting documents such as the cost estimate and bid schedule. Details of Site Restoration Plan implementation may be found in these documents.

1.3 LIMITATIONS

Because the future use of the 300-FF-1 OU has not been determined, extensive regrading of the remediated areas for specific purposes (e.g., slab foundations) will not be performed as part of restoration.

The regrading that is shown on the Design Drawings should be considered conceptual, because the amount of waste that will be removed, the locations of removal, and the amount of available backfill are not known. These factors will be determined as remediation proceeds, and final direction on regrading will be provided by CONTRACTOR at the end of waste removal, before restoration begins.

2.0 APPROACH

2.1 GENERAL

Site Restoration will incorporate the requirements of the Mitigation Action Plan (MAP) and the Record of Decision (ROD) for the 300-FF-1 Operable Unit.

2.2 BACKFILL

Backfill for excavated areas will be obtained from (1) existing clean soil stockpiles at the south end of the OU near the active Filter Backwash Pond and (2) excavated soil and debris that is below cleanup levels and has been stockpiled during remediation. No imported backfill will be used, and no borrow areas will be developed on site.

2.3 REGRADING

Sideslopes of excavations, process facilities, and any other steep areas will be regraded to minimize erosion, present an even appearance, and remove potential safety hazards. Slopes will be regraded to smooth, continuous surfaces with grades of 3H:1V or flatter. Regraded slopes will transition smoothly and evenly to the natural contour.

The floors of the process ponds and other large excavations will be graded smooth and flat. Small depressions will be filled, except those specifically excluded for wildlife habitat.

Regrading activities will minimize disturbance to existing vegetation at the edges of the regraded areas.

2.4 SURFACE WATER DRAINAGE

In general, surface drainage will be routed along natural contours. Closed depressions will be allowed where excessive quantities of backfill would be needed to achieve a flat grade..

Run on / runoff control that was established around storage pads for waste that did not meet ERDF WAC will be maintained as part of restoration, if this material is still on site. Typically, these controls will consist of shallow ditches and berms which can be readily integrated into the restored drainage pattern.

1 **2.5 REVEGETATION**

2
3 When regrading has been completed, the disturbed areas will be revegetated. Details are
4 provided in the MAP. Revegetation will include seeding, mulch, fertilizing, and use of
5 herbicides as required. Revegetation will be performed at times of the year when sufficient
6 moisture is available for germination and initial growth.
7

8
9 **2.5.1 Burial Ground 618-4**

10
11 The topsoil removed from the BG will be replaced in a uniform layer on the regraded surface of
12 the excavation. The large antelope bitterbrush previously removed will be replanted. The area
13 will then be seeded with Sandberg's Bluegrass, if available, or a non-native selection of Crested
14 and Siberian Wheatgrasses.
15

16
17 **2.5.2 Other Areas**

18
19 Other areas where sandy or silty soils are present at the surface will be reseeded with a non-
20 native selection of Crested and Siberian Wheatgrasses. Where the ground surface is
21 predominately gravel or cobbles, it will be reseeded with a mixture of sagebrush and rabbitbrush.
22

23
24 **2.6 FACILITY REMOVAL**

25
26 All temporary facilities and equipment associated with remediation will be removed, except for
27 air monitoring stations, storage areas for materials that are above cleanup levels but do not meet
28 ERDF Waste Acceptance Criteria, and others as noted below. CONTRACTOR will screen all
29 facilities and equipment for contamination. Items that have been contaminated above cleanup
30 levels (such as decon pads) will be volume reduced and shipped to ERDF for disposal. If clean,
31 items will be shipped offsite or recycled in other projects. Items that are below cleanup levels
32 but cannot be released will be restricted to the Hanford Site or disposed of in accordance with
33 standard practice.
34

35 After all facilities have been removed, the underlying ground surface will be screened by
36 CONTRACTOR to verify that it is below cleanup levels. Should any soil above cleanup levels
37 be found, it will be removed and disposed of at ERDF.
38

39 All existing fencing will be removed.
40

41 Roadways within the OU will be removed only where they have been contaminated above
42 cleanup levels. Because the future use of the OU has not been defined, roadways are considered
43 potentially useful for industrial development.

- 1 Utilities, particularly water and power lines, will be left in place because they are considered
- 2 potentially useful for industrial development. After disconnection from temporary facilities, all
- 3 utilities will be terminated appropriately for safety and marked for future identification.

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DOE FIELD OFFICE, RICHLAND
HANFORD ENVIRONMENTAL RESTORATION PROGRAM

DOE CONTRACT NO.
DE-AC06-93RL12367

300-FF-1 OPERABLE UNIT
REMEDIAL DESIGN

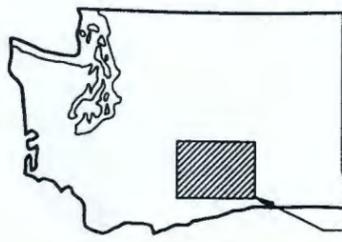
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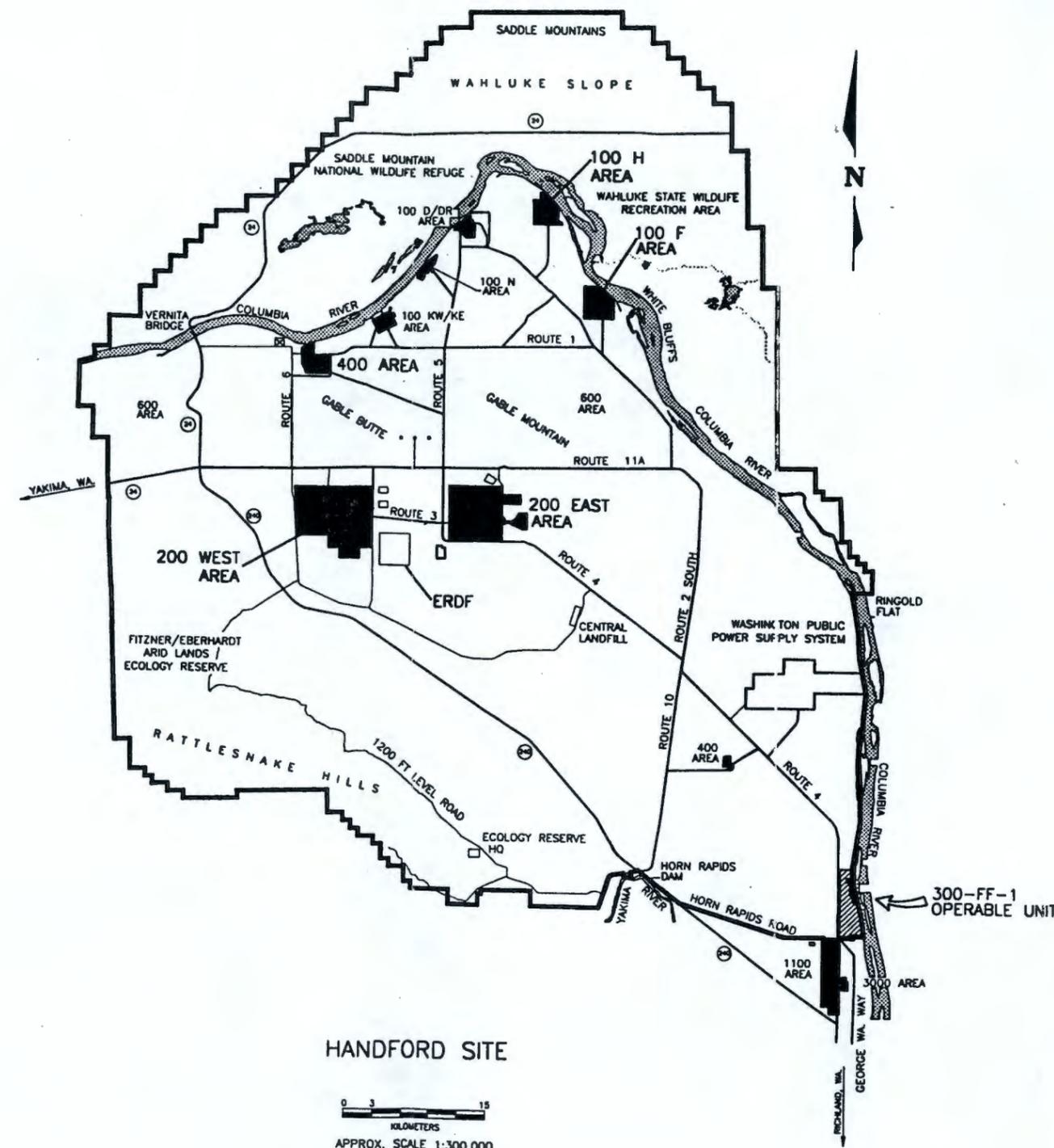
LIST OF DRAWINGS

DRAWING NUMBER	DRAWING TITLE
0300X-DD-G0001	DRAWING INDEX/SITE LOCATION
0300X-DD-C0001	OVERALL PROJECT PLAN
0300X-DD-C0002	REMEDATION FACILITIES PLAN
0300X-DD-C0003	REMEDATION AREAS - SHEET 1
0300X-DD-C0004	REMEDATION AREAS - SHEET 2
0300X-DD-C0005	REMEDATION AREAS - SHEET 3
0300X-DD-C0006	REMEDATION AREAS - SHEET 4
0300X-DD-C0007	REMEDATION AREAS - SHEET 5
0300X-DD-C0008	REMEDATION FACILITIES DETAILS
0300X-DD-C0009	GENERAL DETAILS
0300X-DD-C0010	UTILITIES PLAN
0300X-DD-C0011	RECLAMATION PLAN - SHEET 1
0300X-DD-C0012	RECLAMATION PLAN - SHEET 2
0300X-DD-C0013	RECLAMATION PLAN - SHEET 3



STATE OF WASHINGTON

APPROXIMATE LOCATION OF HANFORD SITE



HANFORD SITE



NOTES

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LEGEND

- HANFORD SITE BOUNDARY
- STATE HIGHWAY
- ROADS
- 300 AREA
- OTHER OPERATING AREAS

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REV.	DATE	DESCRIPTION	DRWN BY	DRAWN DATE	CHK'D BY	CHK'D DATE	APPROV'D BY	APPROV'D DATE

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DOE FIELD OFFICE, RICHLAND
HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC. RICHLAND, WASHINGTON
WASTREN/GOLDER RICHLAND, WASHINGTON

300-FF-1 OPERABLE UNIT
REMEDIAL DESIGN
DRAWING INDEX/SITE LOCATION

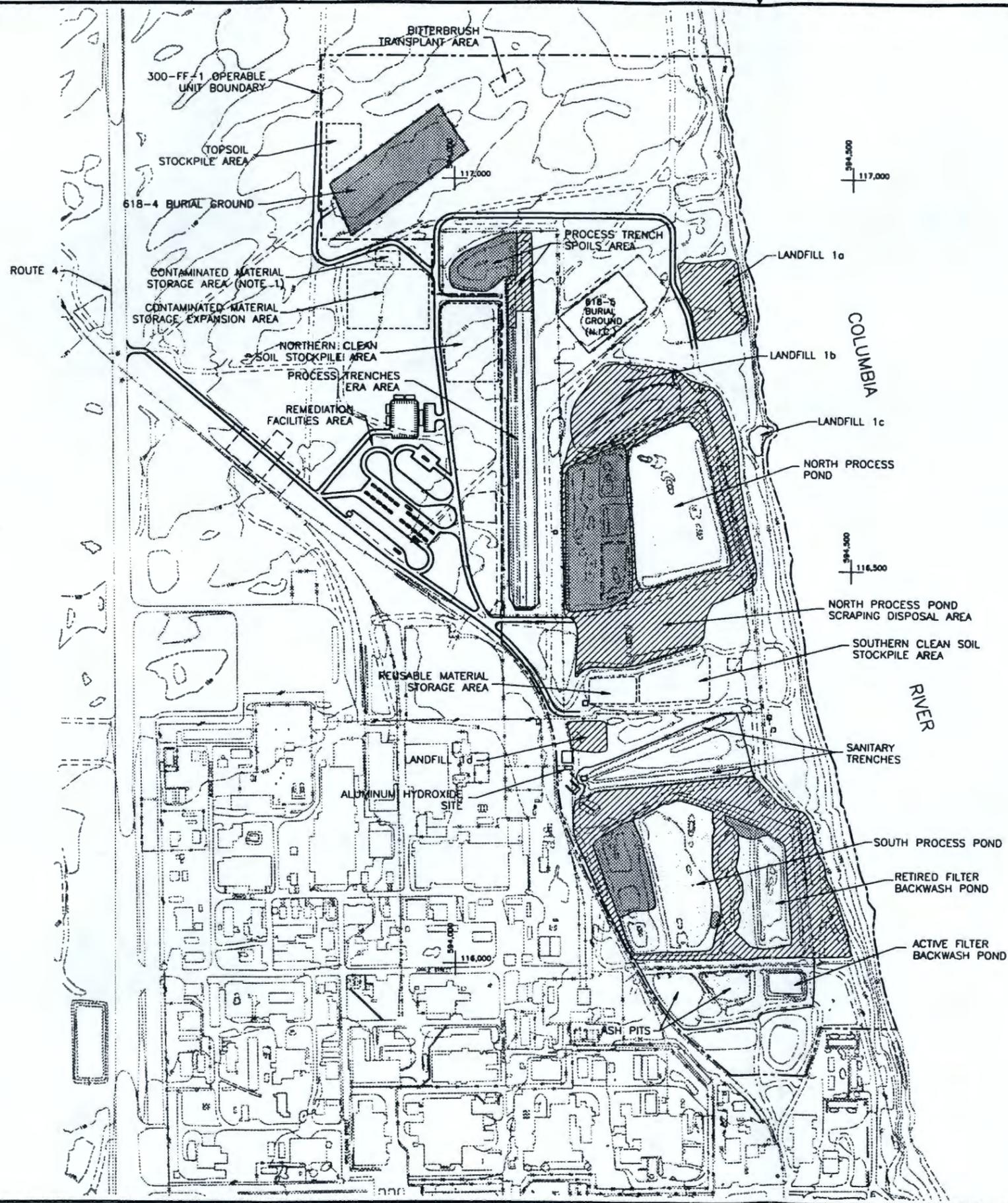
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TASK FF-1	DRAWING NO. 0300X-DD-G0001	REV. NO. B
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RECORD INFORMATION

RECORD NO. H-3-307161SHT1	BLDG NO. 300X	INDEX NO. 0100
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NOTES

1) STORAGE AREA FOR SOIL AND DEBRIS THAT DOES NOT MEET EROF WASTE ACCEPTANCE CRITERIA.

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KEY:

-  ABOVE CLEANUP LEVELS
-  CONTAMINATION LEVEL UNDETERMINED
-  BELOW CLEANUP LEVELS
-  300-FF-1 OPERABLE UNIT BOUNDARY

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SCALE: 1:3000

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 WASTREN/GOLDER RICHLAND, WASHINGTON

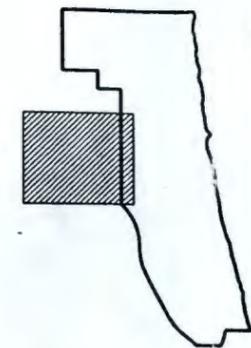
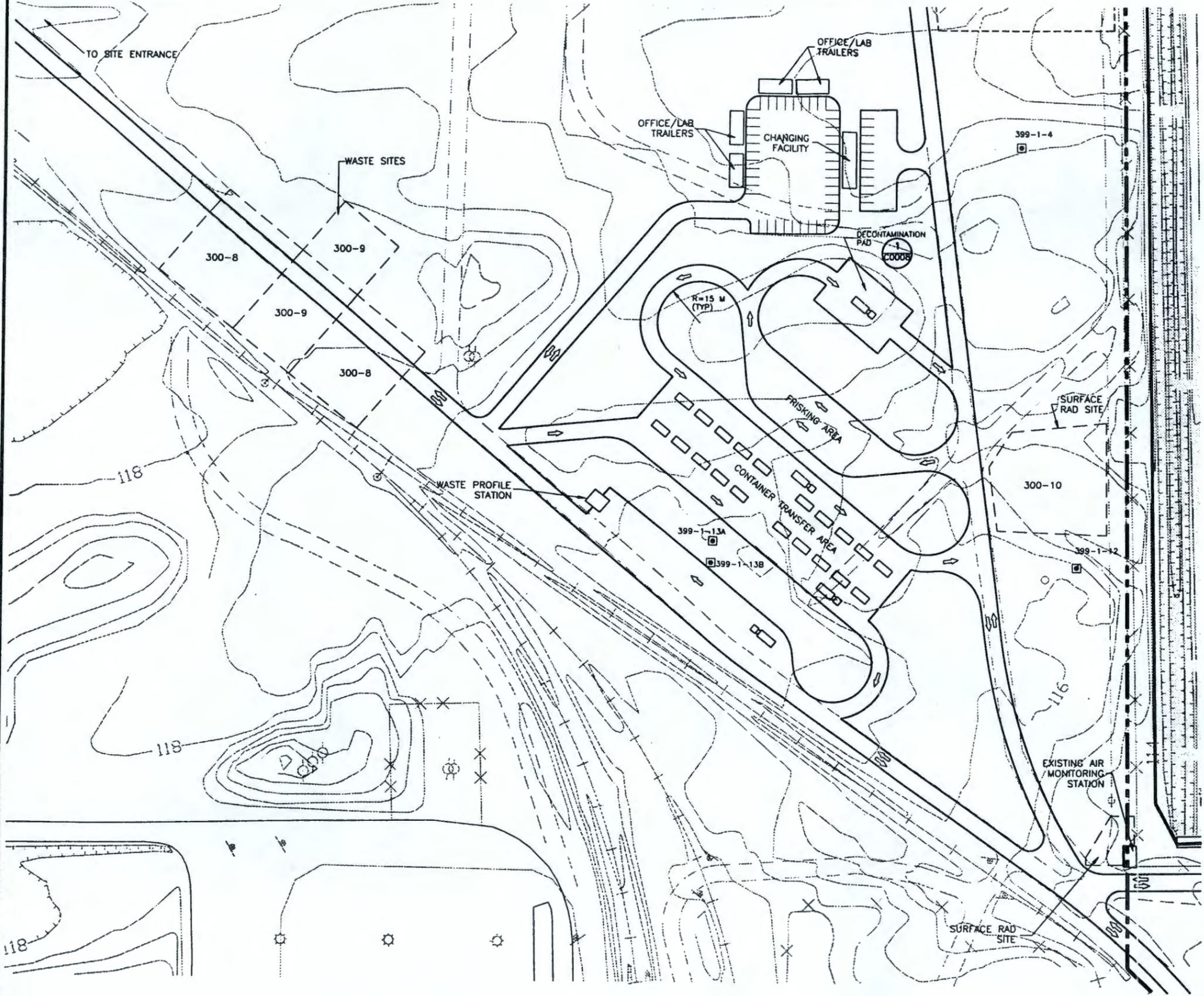
300-FF-1 OPERABLE UNIT
 REMEDIAL DESIGN
 OVERALL PROJECT PLAN

BECHTEL JOB NO. 22192	DOE CONTRACT NO. DE-AC06-93RL12367	CADD FILENAME .DWG
TASK FF-1	DRAWING NO. 0300X-DD-C0001	REV. NO. B

RECORD INFORMATION

RECORD NO. H-3-307139SHT1	BLDG NO. 300X	INDEX NO. 0109
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0300X-DD-C0001-4-0200Z



NOTES

DRAFT

- KEY:
- ABOVE CLEANUP LEVELS
 - CONTAMINATION LEVEL UNDETERMINED
 - BELOW CLEANUP LEVELS
 - 300-FF-1 OPERABLE UNIT BOUNDARY
 - CONTROL POINT
 - TRAFFIC FLOW
 - MONITORING WELL
 - EXPOSED PIPE



60%
REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

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REV.	DATE	DESCRIPTION	DRAWN BY	DRAFT DATE	ENG'G DATE	QC/APPR	DATE

SCALE: 1:750
U.S. DEPARTMENT OF ENERGY
 DOE FIELD OFFICE, RICHLAND
 HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC.
 RICHLAND, WASHINGTON

WASTREN/GOLDER
 RICHLAND, WASHINGTON

**300-FF-1 OPERABLE UNIT
 REMEDIAL DESIGN
 REMEDIATION FACILITIES PLAN**

BECHTEL JOB NO. 22192	DOE CONTRACT NO. DE-AC06-93RL12367	CADD FILENAME .DWG
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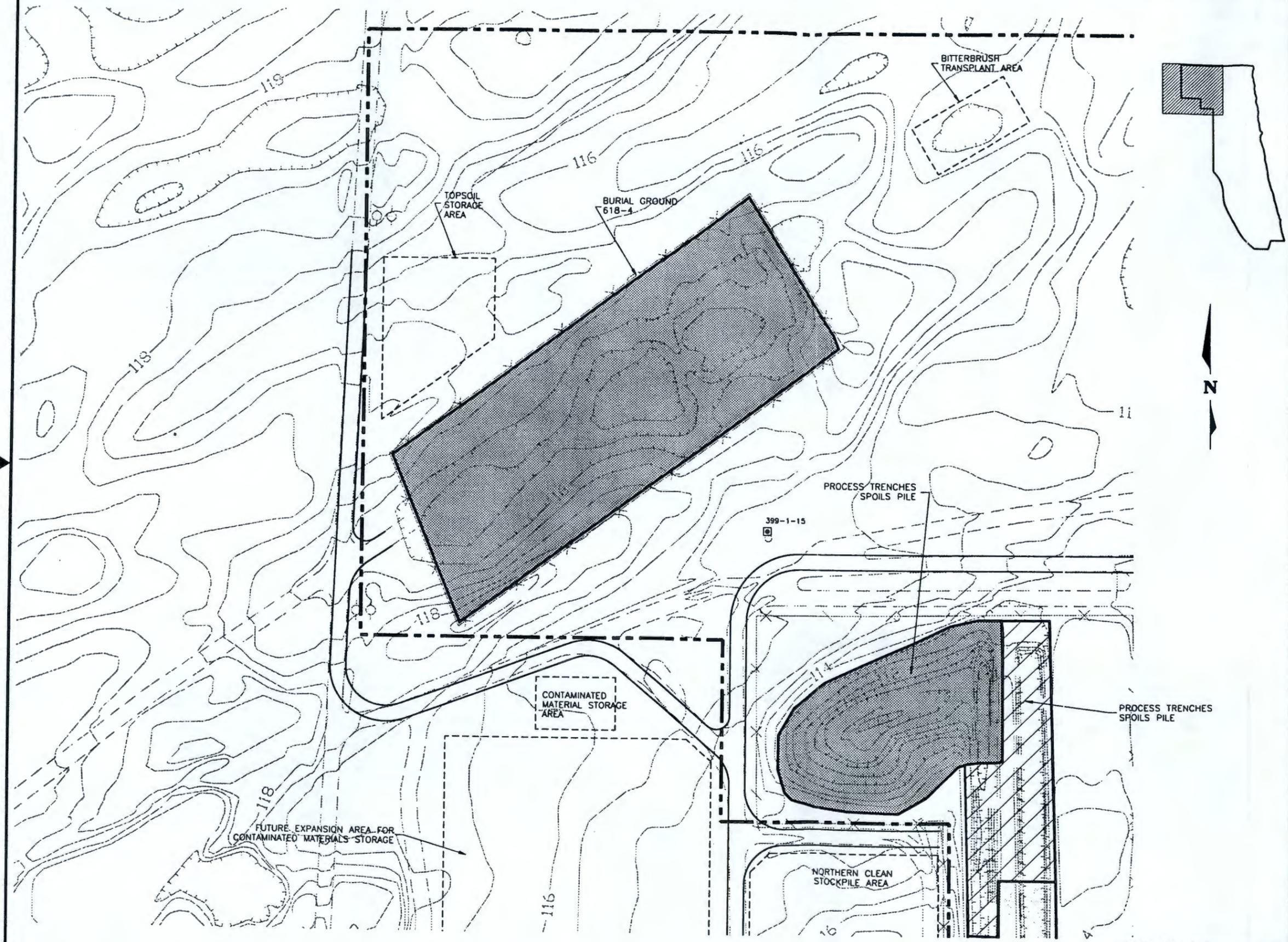
TASK FF-1	DRAWING NO. 0300X-DD-C0002	REV. NO. B
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RECORD INFORMATION

RECORD NO. I-3-307140SH1	BLDG NO. 300X	INDEX NO. 0109
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0300F-MR-G0001 -4-020-03



NOTES

1) SUBCONTRACTOR TO UTILIZE EXISTING ROADS FOR ACCESS AND HAULING UNLESS SHOWN OTHERWISE OR APPROVED BY CONTRACTOR.

DRAFT

KEY:

- [Solid Grey Box] ABOVE CLEANUP LEVELS
- [Hatched Box] CONTAMINATION LEVEL UNDETERMINED
- [White Box] BELOW CLEANUP LEVELS
- [Dashed Line] 300-FF-1 OPERABLE UNIT BOUNDARY
- [Circle with Crosshair] CONTROL POINT
- [Arrow] TRAFFIC FLOW
- [Square with Circle] MONITORING WELL
- [Line with T-bar] EXPOSED PIPE

0 7.5 15 30 METERS

60%
REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

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SCALE 1:750

U.S. DEPARTMENT OF ENERGY
DOE FIELD OFFICE, RICHLAND
HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC.
RICHLAND, WASHINGTON

WASTREN/GOLDER
RICHLAND, WASHINGTON

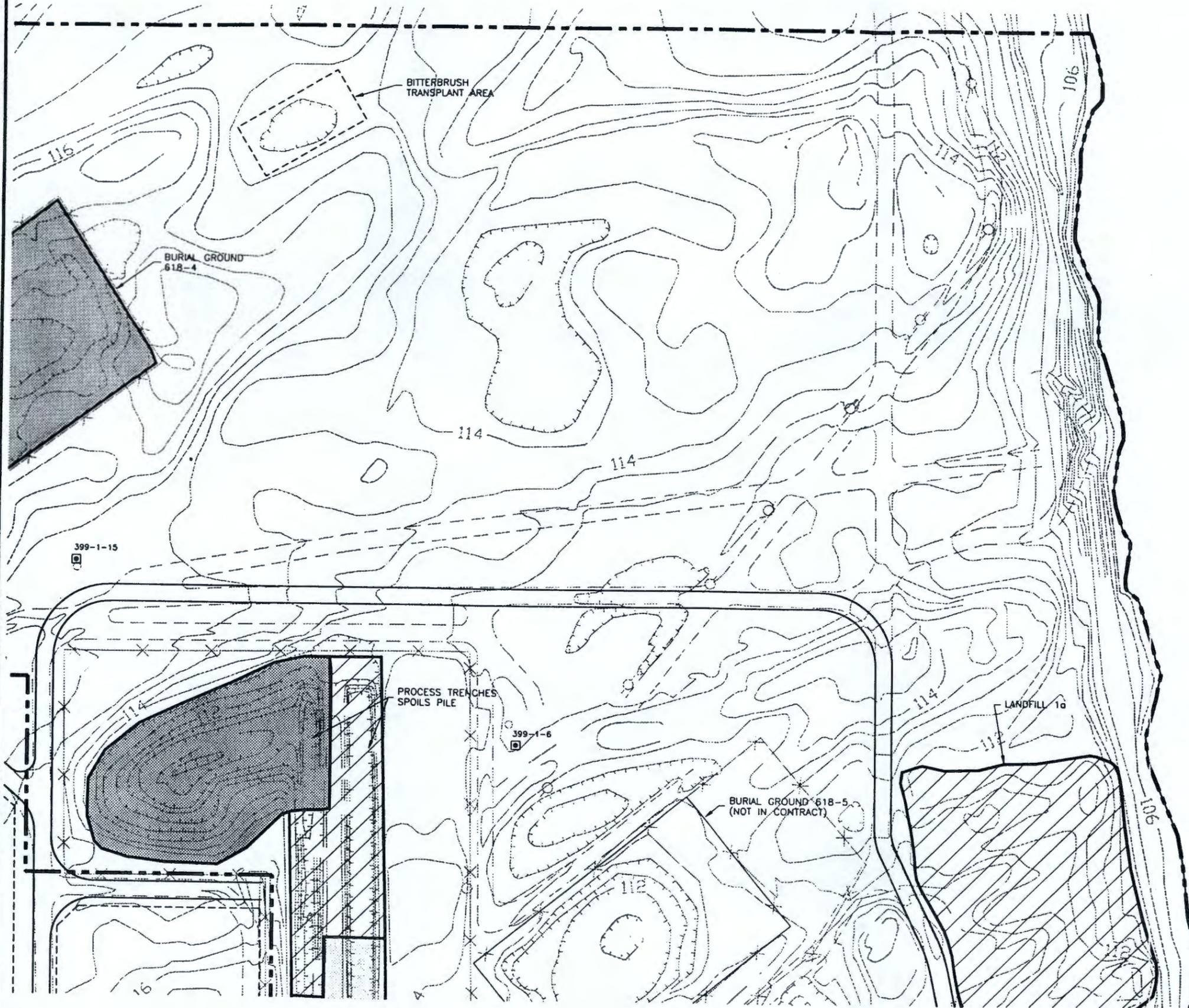
300-FF-1 OPERABLE UNIT
REMEDIAL DESIGN
REMEDICATION AREAS - SHEET 1

BECHTEL JOB NO.	DOE CONTRACT NO.	CADD FILENAME
22192	DE-AC06-93RL12367	.DWG
TASK	DRAWING NO.	REV. NO.
FF-1	0300X-DD-C0003	B

RECORD INFORMATION

RECORD NO.	BLDG NO.	INDEX NO.
H-3-307141SH1	300X	0109

0300F-MR-G0001-4-020-04



NOTES

1) SUBCONTRACTOR TO UTILIZE EXISTING ROADS FOR ACCESS AND HAULING UNLESS SHOWN OTHERWISE OR APPROVED BY CONTRACTOR.

DRAFT

- KEY:
- ABOVE CLEANUP LEVELS
 - CONTAMINATION LEVEL UNDETERMINED
 - BELOW CLEANUP LEVELS
 - 300-FF-1 OPERABLE UNIT BOUNDARY
 - CONTROL POINT
 - TRAFFIC FLOW
 - MONITORING WELL
 - EXPOSED PIPE



60%
REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

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REV.	DATE	DESCRIPTION	DRAWN BY	DRAFT DFX	CHK'D ENGR	ENGR'D DFX	CL/TL APPROV	INSTR ENGR

SCALE 1:750
U.S. DEPARTMENT OF ENERGY
DOE FIELD OFFICE, RICHLAND
HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC.
RICHLAND, WASHINGTON

WASTREN/GOLDER
RICHLAND, WASHINGTON

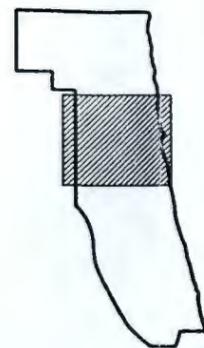
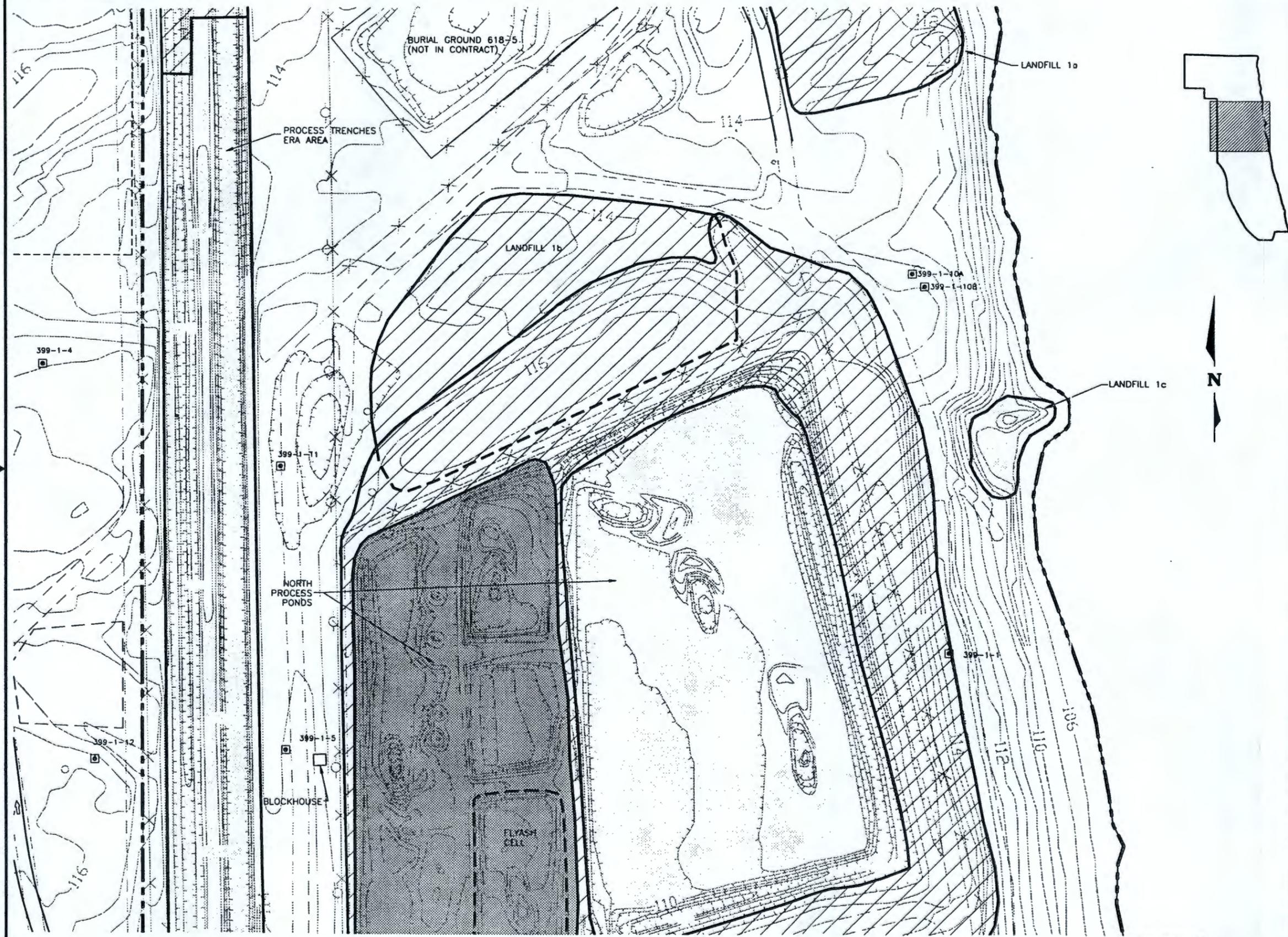
300-FF-1 OPERABLE UNIT
REMEDIAL DESIGN
REMIATION AREAS - SHEET 2

BECHTEL JOB NO.	DOE CONTRACT NO.	CADD FILENAME
22192	DE-AC06-93RL12367	.DWG

TASK	DRAWING NO.	REV. NO.
FF-1	0300X-DD-C0004	B

RECORD INFORMATION

RECORD NO.	BLDG NO.	INDEX NO.
H-3-307142SH1	300X	0109



NOTES

1) SUBCONTRACTOR TO UTILIZE EXISTING ROADS FOR ACCESS AND HAULING UNLESS SHOWN OTHERWISE OR APPROVED BY CONTRACTOR.

DRAFT

- KEY:
- ABOVE CLEANUP LEVELS
 - CONTAMINATION LEVEL UNDETERMINED
 - BELOW CLEANUP LEVELS
 - 300-FF-1 OPERABLE UNIT BOUNDARY
 - CONTROL POINT
 - TRAFFIC FLOW
 - MONITORING WELL
 - EXPOSED PIPE



60%
REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	DATE	APPROVED BY	DATE

SCALE: 1:750
U.S. DEPARTMENT OF ENERGY
 DOE FIELD OFFICE, RICHLAND
 HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC.
 RICHLAND, WASHINGTON

WASTREN/GOLDER
 RICHLAND, WASHINGTON

300-FF-1 OPERABLE UNIT
 REMEDIAL DESIGN
 REMEDIATION AREAS - SHEET 3

BECHTEL JOB NO. 22192	DOE CONTRACT NO. DE-AC06-93RL12367	CADD FILENAME .DWG
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TASK FF-1	DRAWING NO. 0300X-DD-C0005	REV. NO. B
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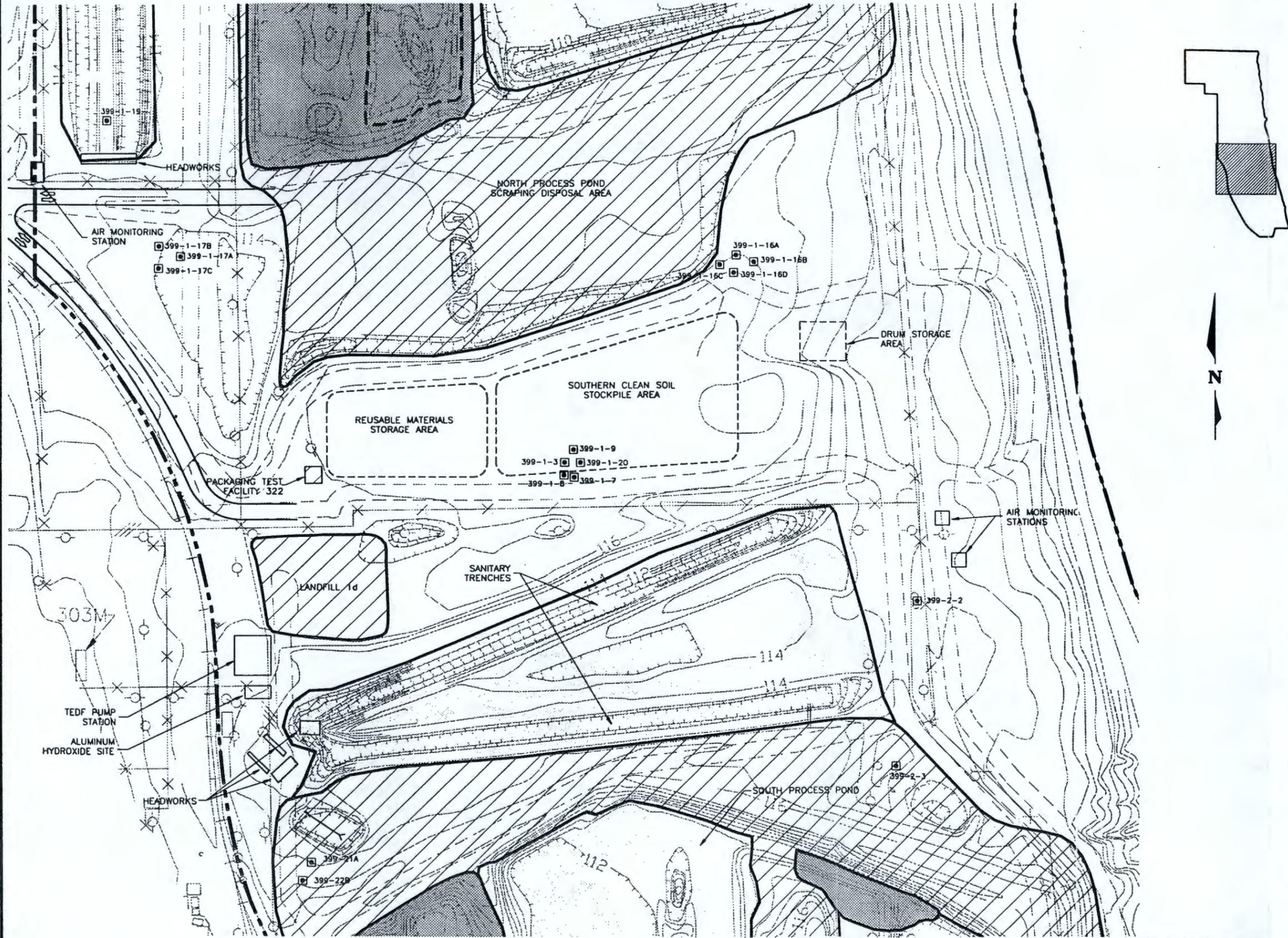
RECORD INFORMATION

RECORD NO. H-3-307143SH1	BLDG NO. 300X	INDEX NO. 0109
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0300F-MR-G0001-4-020-086 RD 639

DRAWING NO. 0300X-DD-C0006
REV. NO. B



NOTES

1) SUBCONTRACTOR TO UTILIZE EXISTING ROADS FOR ACCESS AND HAULING UNLESS SHOWN OTHERWISE OR APPROVED BY CONTRACTOR.

DRAFT

- KEY:
- ABOVE CLEANUP LEVELS
 - CONTAMINATION LEVEL UNDETERMINED
 - BELOW CLEANUP LEVELS
 - 300-FF-1 OPERABLE UNIT BOUNDARY
 - 1000 CONTROL POINT
 - TRAFFIC FLOW
 - MONITORING WELL
 - EXPOSED PIPE



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NOT FOR CONSTRUCTION

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REV.	DATE	DESCRIPTION	DRAWN BY	DRAWN CHK	ENG/CHK	EXC/CHK	CLT/CHK	BY	DATE
SCALE:	1:750								

U.S. DEPARTMENT OF ENERGY
DOE FIELD OFFICE, RICHLAND
HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC. RICHLAND, WASHINGTON
WASTREN/GOLDER RICHLAND, WASHINGTON

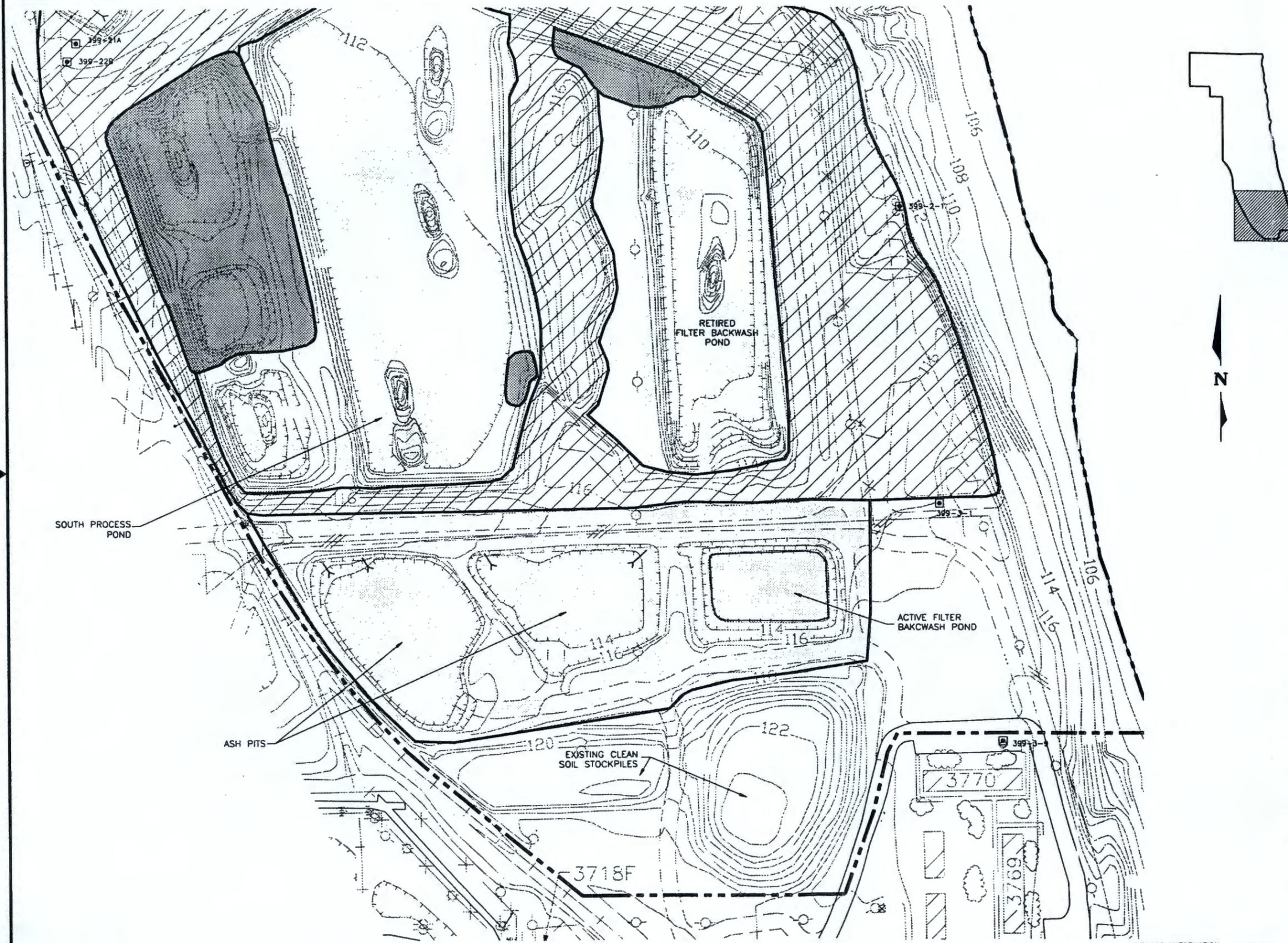
300-FF-1 OPERABLE UNIT
REMEDIAL DESIGN
REMEDATION AREAS - SHEET 4

BECHTEL JOB NO.	DOE CONTRACT NO.	CADD FILENAME
22192	DE-AC06-93RL12367	.DWG
TASK	DRAWING NO.	REV. NO.
FF-1	0300X-DD-C0006	B

RECORD INFORMATION

RECORD NO.	BLDG NO.	INDEX NO.
H-3-307144SH1	300X	0109

0300F-MR-G0001-4-020-07

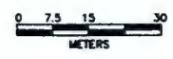


NOTES

1) SUBCONTRACTOR TO UTILIZE EXISTING ROADS FOR ACCESS AND HAULING UNLESS SHOWN OTHERWISE OR APPROVED BY CONTRACTOR.

DRAFT

- KEY:
- ABOVE CLEANUP LEVELS
 - CONTAMINATION LEVEL UNDETERMINED
 - BELOW CLEANUP LEVELS
 - 300-FF-1 OPERABLE UNIT BOUNDARY
 - CONTROL POINT
 - TRAFFIC FLOW
 - MONITORING WELL
 - EXPOSED PIPE



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REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

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REV	DATE	DESCRIPTION	DRAWN BY	DRAFT QTR	ORIG/ EXC'R	CHK'D QTR	CL/TRL APPROV	INP	DATE

SCALE: 1:750
U.S. DEPARTMENT OF ENERGY
DOE FIELD OFFICE, RICHLAND
HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC. RICHLAND, WASHINGTON
WASTREN/GOLDER RICHLAND, WASHINGTON

300-FF-1 OPERABLE UNIT
REMEDIAL DESIGN
REMEDIAATION AREAS - SHEET 5

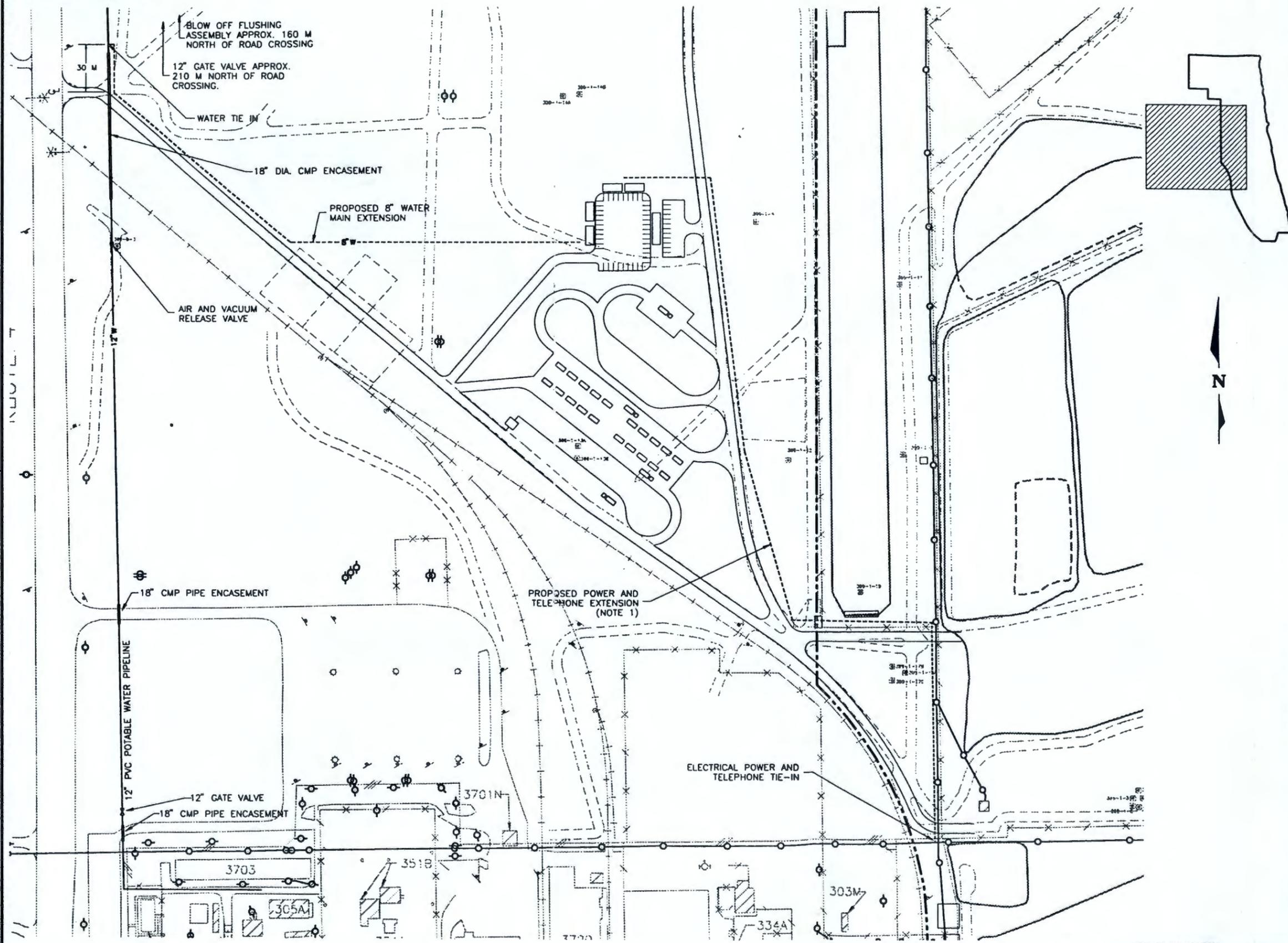
BECHTEL JOB NO.	DOE CONTRACT NO.	CADD FILENAME
22192	DE-AC06-93RL12367	.DWG

RECORD INFORMATION

RECORD NO.	BLDG NO.	INDEX NO.
H-3-307145SH1	300X	0109

TASK	DRAWING NO.	REV. NO.
FF-1	0300X-DD-C0007	B

DRAWING NO. 0300X-DD-C0010
REV. NO. B



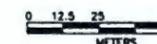
NOTES

1) POLES FOR OVERHEAD SERVICE, IF USED, NOT SHOWN.

DRAFT

KEY:

--- 300-FF-1 OPERABLE UNIT BOUNDARY



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REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

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REV.	DATE	DESCRIPTION	DRAWN BY	DRAFT CHK	ORIG/ ENGR	ENGR'S CHK	SL/TL APPROV	BY	DATE

SCALE: 1:1250
U.S. DEPARTMENT OF ENERGY
DOE FIELD OFFICE, RICHLAND
HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC. RICHLAND, WASHINGTON
WASTREN/GOLDER RICHLAND, WASHINGTON

300-FF-1 OPERABLE UNIT
REMEDIAL DESIGN
UTILITIES PLAN

BECHTEL JOB NO. 22192	DOE CONTRACT NO. DE-AC06-93RL12367	CADD FILENAME .DWG
TASK FF-1	DRAWING NO. 0300X-DD-C0010	REV. NO. B

RECORD INFORMATION

RECORD NO. H-3-307148SH1	BLDG NO. 300X	INDEX NO. 0109
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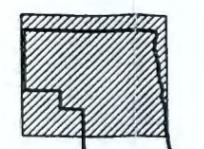
0300F-MR-G0001 -4-020-11

DRAWING NO. 0300X-DD-C0011
 REV. NO. B

NOTES

1) RECLAMATION AREAS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. FINAL EXTENT AND ELEVATIONS OF REGRADING WILL DEPEND ON ACTUAL VOLUME OF WASTE REMOVED AND AVAILABLE VOLUME OF BACKFILL. REGRADING REQUIREMENTS WILL BE DETERMINED BY CONTRACTOR IN FIELD AFTER REMEDIATION HAS BEEN COMPLETED.

DRAFT



KEY:
 - - - - - 300-FF-1 OPERABLE UNIT BOUNDARY
 □ MONITORING WELL



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 REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

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REV.	DATE	DESCRIPTION	DRAWN BY	DRAFT CHK	ENCL/ ENCL	DATE CHK	DATE APPROV	BY	DATE

SCALE: 1:1000

U.S. DEPARTMENT OF ENERGY
 DOE FIELD OFFICE, RICHLAND
 HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC. RICHLAND, WASHINGTON
 WASTREN/GOLDER RICHLAND, WASHINGTON

300-FF-1
 REMEDIAL DESIGN
 RECLAMATION PLAN - SHEET 1

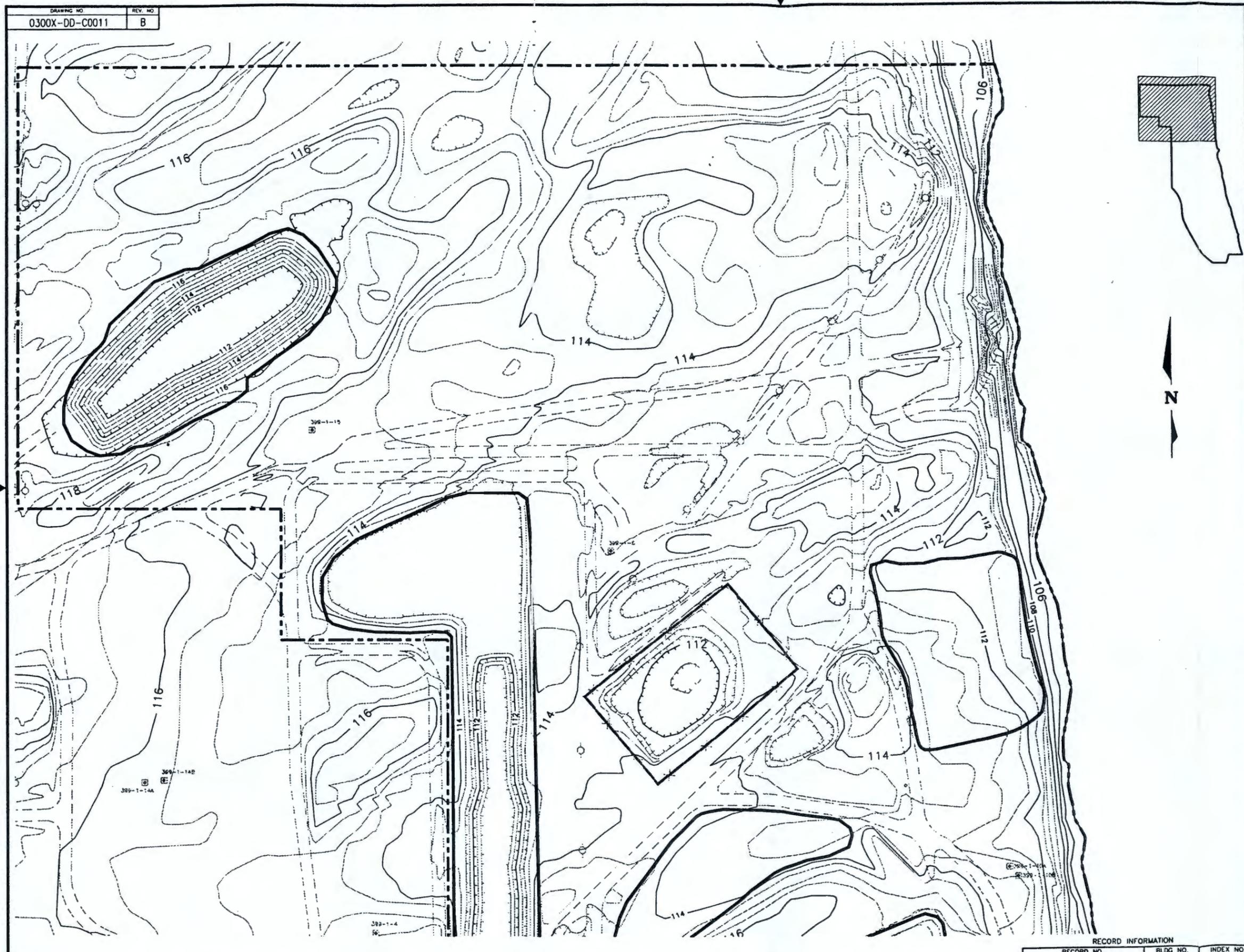
BECHTEL JOB NO.	DOE CONTRACT NO.	CADD FILENAME
22192	DE-AC06-93RL12367	.DWG

TASK	DRAWING NO.	REV. NO.
	0300X-DD-C0011	B

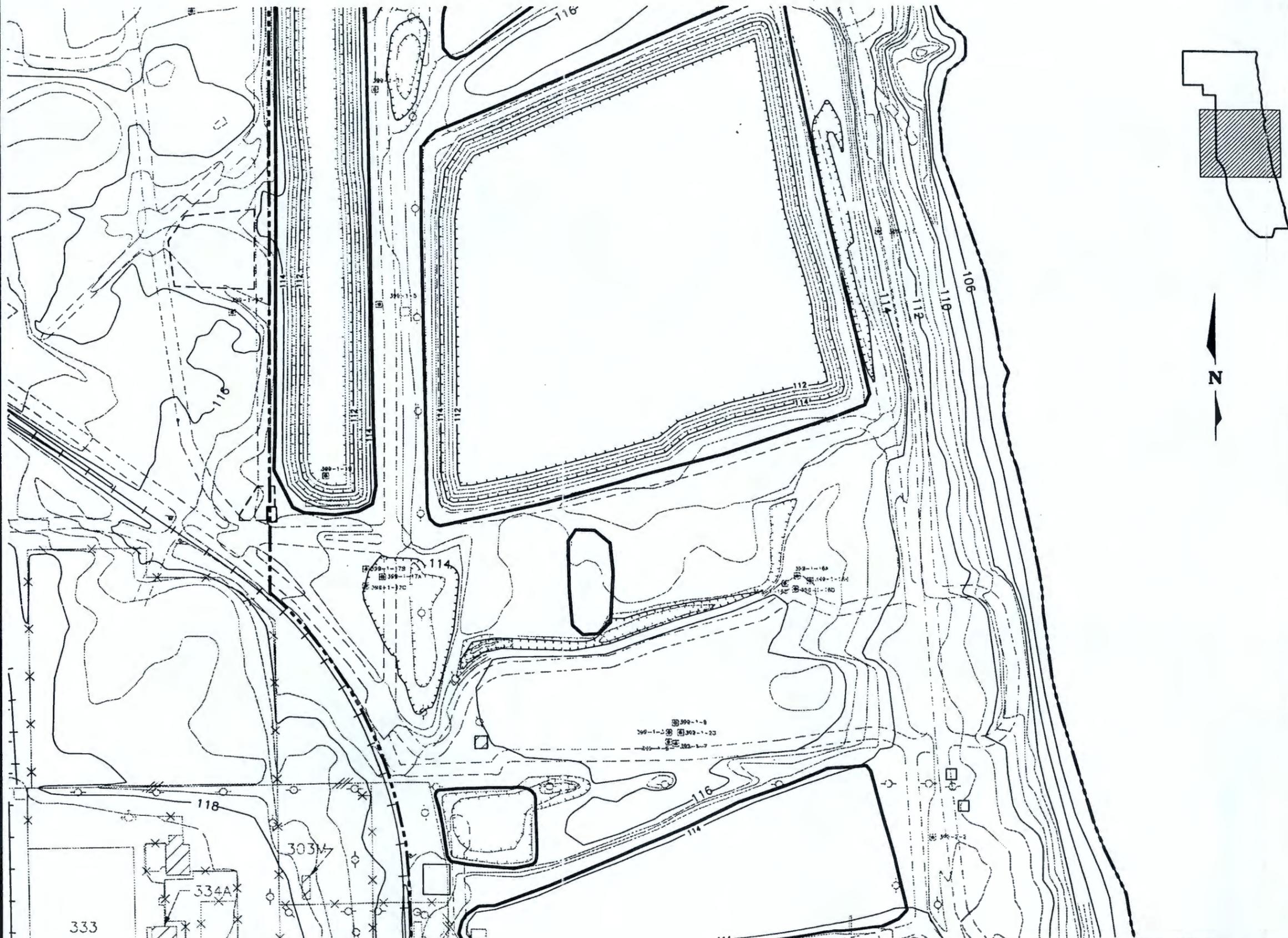
RECORD INFORMATION		
RECORD NO.	BLDG NO.	INDEX NO.



0300F-MR-G0001 -4-020-12



DRAWING NO. 0300X-DD-C0012
REV. NO. B



NOTES

1) RECLAMATION AREAS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. FINAL EXTENT AND ELEVATIONS OF REGRADING WILL DEPEND ON ACTUAL VOLUME OF WASTE REMOVED AND AVAILABLE VOLUME OF BACKFILL. REGRADING REQUIREMENTS WILL BE DETERMINED BY CONTRACTOR IN FIELD AFTER REMEDIATION HAS BEEN COMPLETED.

DRAFT

- KEY:
- 300-FF-1 OPERABLE UNIT BOUNDARY
 - MONITORING WELL
 - EXPOSED PIPE



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REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

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REV.	DATE	DESCRIPTION	DRAWN BY	DRAFT DYE	CHKD/ ENGR	ENGR DYE	CL/TL APPROV	BY	DATE

SCALE 1:1000
U.S. DEPARTMENT OF ENERGY
DOE FIELD OFFICE, RICHLAND
HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC.
RICHLAND, WASHINGTON

WASTREN/GOLDER
RICHLAND, WASHINGTON

300-FF-1
REMEDIAL DESIGN
RECLAMATION PLAN - SHEET 2

BECHTEL JOB NO.	DOE CONTRACT NO.	CADD FILENAME
22192	DE-AC06-93RL12367	.DWG
TASK	DRAWING NO.	REV. NO.
	0300X-DD-C0012	B

RECORD INFORMATION

RECORD NO.	BLDG NO.	INDEX NO.



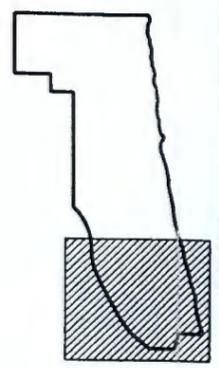
0300F-MR-G0001-4-020-13



NOTES

1) RECLAMATION AREAS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. FINAL EXTENT AND ELEVATIONS OF REGRADING WILL DEPEND ON ACTUAL VOLUME OF WASTE REMOVED AND AVAILABLE VOLUME OF BACKFILL. REGRADING REQUIREMENTS WILL BE DETERMINED BY CONTRACTOR IN FIELD AFTER REMEDIATION HAS BEEN COMPLETED.

DRAFT



KEY:
 - - - - - 300-FF-1 OPERABLE UNIT BOUNDARY
 ○ MONITORING WELL



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REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	DATE	APPROVED BY	DATE

SCALE 1:1000

U.S. DEPARTMENT OF ENERGY
 DOE FIELD OFFICE, RICHLAND
 HANFORD ENVIRONMENTAL RESTORATION PROGRAM

BECHTEL HANFORD INC.
 RICHLAND, WASHINGTON

WASTREN/GOLDER
 RICHLAND, WASHINGTON

300-FF-1
 REMEDIAL DESIGN
 RECLAMATION PLAN - SHEET 3

BECHTEL JOB NO. 22192	DOE CONTRACT NO. DE-AC06-93RL12367	CADD FILENAME .DWG
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TASK	DRAWING NO. 0300X-DD-C0013	REV. NO. B
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RECORD INFORMATION		
RECORD NO.	BLDG NO.	INDEX NO.