



DEPARTMENT OF THE NAVY

CRANE DIVISION  
NAVAL SURFACE WARFARE CENTER  
300 HIGHWAY 361  
CRANE, INDIANA 47522-5000

IN REPLY REFER TO

5090  
Ser 095/8179

18 SEP 1998

U.S. Environmental Protection Agency, Region V  
Waste, Pesticides, & Toxics Division  
Waste Management Branch  
Illinois, Indiana, and Michigan Section  
Attn: Ms. Carol Witt-Smith (DRP-8J)  
77 West Jackson Blvd.  
Chicago, IL 60604

Dear Ms. Witt-Smith:

Crane Division, Naval Surface Warfare Center (NAVSURFWARCENDIV Crane) submits for review and approval four copies of the Soil Excavation Plan for Mine Fill B (Appendix E2) of the Final Full Scale Operational Plan for the Bioremediation Project as enclosure (1). The Morrison Knudsen Corporation will forward to your office an electronic copy of the plan. Enclosure (2) is the required certification statement.

NAVSURFWARCENDIV Crane point of contact is  
Ms. Christine D. Freeman, Code 09511, telephone 812-854-4423.

Sincerely,

A handwritten signature in cursive script, appearing to read "James M. Hunsicker".

James M. Hunsicker  
Commander, Environmental Protection Department  
By direction of  
the Commander

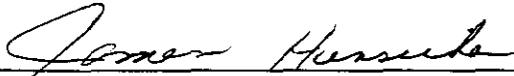
Encl:

- (1) Appendix E2 - Soil Excavation Plan for Mine Fill B
- (2) Certification Statement

Copy to:

ADMINISTRATIVE RECORD (2 copies)  
COMNAVSEASYSOM (SEA OOT) (w/o encls)  
IDEM (w/o encls)  
MK - NAVSURFWARCENDIV Crane (w/o encls)  
NAVSURFWARCENDIV ROICC (w/o encls)  
SOUTHNAVFACENCOM (Code 1864) (w/o encls)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

  
\_\_\_\_\_  
SIGNATURE

DIRECTOR, ENVIRONMENTAL PROTECTION DEPARTMENT  
TITLE

9/15/98  
DATE

**RESPONSES TO NSWC CRANE EPD COMMENTS  
ON THE  
DRAFT APPENDIX E-2: SOIL EXCAVATION PLAN FOR SWMU 13/14 - MINE FILL B  
FULL-SCALE OPERATIONAL PLAN FOR SOILS BIOREMEDIATION FACILITY**

***General Comments***

**Comment 1:** All Appendix E-2 page numbers need to include the letter, "E" to avoid confusion with the text pages of section 2.

**Response 1:** All pages in Draft Appendix E2 were numbered with the designation "E2-". It appears that the page numbering was not properly converted when the electronic file was converted from Word Perfect to Microsoft Word.

**Comment 2:** Remove all references to the non-screening effort.

**Response 2:** Comment noted and text has been revised.

***Specific Comments***

**Comment 1:** p. 2-4 Correct the first sentence as follows, ". . . includes excavating, screening (~~if required~~), and transporting. . ."

**Response 1:** Comment noted and text has been revised.

**Comment 2:** p. 2-4 §1.1 Correct the first sentence as follows, ". . . controls for excavation, screening (~~if performed~~), transporting, and storage . . ."

**Response 2:** Comment noted and text has been revised.

**Comment 3:** p.2-5 §1.2 ¶3 In the first sentence, Microsoft Word shows the word, "generator's" contains an "=" instead of an "'". Make sure this is just a conversion error.

**Response 3:** Hard copy and Word Perfect file indicate that the word is correctly spelled. It is believed to be a conversion error in your version.

**Comment 4:** p.2-11 §2.0 ¶1 Correct the first sentence as follows, ". . . soil screener location (~~if screening of soil is required~~), stockpiles area, etc. will be . . ."

**Response 4:** Comment noted and text has been revised.

**Comment 5:** p.2-13 §4.1 Add the following as the last sentence in this section, "In addition, a statement of clearance for safe access based on the removal or absence of unexploded ordnance in the work zone has been obtained and is included in Attachment E1-A of this Plan."

**Response 5:** Comment noted and text has been revised.

**Comment 6:** p.2-13 §4.2 ¶2 Rewrite the paragraph as follows, " Excavated soil will be screened as indicated in Section 4.3.1 of this Plan. ~~only when excessive quantities of rock/stone or construction debris are present. Otherwise, excavated soil will be directly loaded onto a dump truck or tractor and live bottom trailer for transport to the Bioremediation Facility as indicated in Section 4.5 of this Plan.~~ However, large rocks and stones, and vegetation waste ..."

**Response 6:** Comment noted and text has been revised.

**Comment 7:** p.2-14 §4.3.1 ¶1 Correct the first sentence as follows, "... will be screened, if required, at the excavation site ..."

Correct the fourth sentence as follows, "The screener is ~~a standard design, portable, road legal for towing, self-powered, and has a feed hopper with grizzly bars, fines stacking conveyor and a reject (oversized material) discharge conveyor~~ (add text describing the new screener).

**Response 7:** Comment noted and text has been revised. Note: Since it is unclear at this time what new screener will be selected, the text regarding the soil screener has been revised to refer to Section 9.0 of the Full-Scale Operational Plan. This would allow changing the screener by just changing the Operational Plan.

**Comment 8:** p. 2-14 §4.3.1 ¶2 Do we want to limit operations to direct loading? Should there be an option for stockpiling on the ground?

**Response 8:** Per discussions with NSWCC Crane EPD, currently there are no plans to stockpile the screened soil on the ground. If needed, an FCR will be issued at a later date for approval.

**Comment 9:** p.2-14 §4.3.2 ¶1 Add the following to the last sentence in this paragraph, "or will be taken to the Ammunition Burning Grounds for flashing.

**Response 9:** Comment noted and text has been revised.

**APPENDIX E2  
SWMU-13/14, MINE FILL B SOIL EXCAVATION PLAN  
FOR FULL-SCALE OPERATIONS**

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## 1.0 INTRODUCTION

The scope of work includes excavating, screening, and transporting explosives-contaminated soils to the Bioremediation Facility, and backfilling and restoring the excavated area with non-contaminated backfill material and/or treated compost. This Plan addresses the excavation, screening, and transportation of explosives contaminated soil from areas of SWMU-13/14, Mine Fill B. An estimated 22,000 cubic yards of explosives-contaminated soil is expected to be excavated and transported for bioremediation.

### 1.1 PURPOSE

The purpose of this Plan is to provide methods and controls for excavation, screening, transporting, and storage of explosives-contaminated soils during full-scale bioremediation operations. This Plan may be modified, amended, or revised, with the approval of the United States (U.S.) Navy and the U.S. Environmental Protection Agency (U.S. EPA) Region 5, to optimize system performance throughout the full-scale operation activities.

### 1.2 SITE ASSESSMENT

Mine Fill B is located in the west-central portion of NSWC Crane as shown in Figure 1-1 of the Full-Scale Operational Plan. The layout of Mine Fill B is provided in NSWC Crane Drawing Nos. 571927 and 571928 (see Attachment E2-A). Mine Fill B consists of 39 buildings and is situated along Highway H-45. Historically, its operations were similar to Mine Fill A. It is currently used for the renovation and rework of munitions. Activities include the application of enamel and bituminous solvent coatings, rotary grit blasting, spray painting, propellant removal, and fuse and configuration changes [Halliburton, 1992].

Concentrations of individual explosives in soils ranged from undetected to 24,000 mg/kg (RDX). TNT and HMX were reported as high as 2,410 mg/kg and 2,020 mg/kg respectively. The boiler system in Buildings 166 and 171, which used PCB oils, released PCBs into nearby soils. The boilers and known PCB-contaminated soil were removed from the area in 1989. Subsequent confirmation sampling, however, revealed that soils with PCB concentrations greater than 10 mg/kg still remain. Based on operational history, physical condition, location, waste characteristics, visual evidence, and analytical data, releases to ground water, surface water, soil, and air have occurred [Halliburton, 1992]. Refer to Section 6.0 of the RCRA Facility Investigation, Phase I Environmental Monitoring Reports - SWMU #13/14 [Halliburton, 1992] for additional site assessment. Analytical parameters for pre-excavation and post-excavation confirmation sampling for excavations are provided in Section 1.3.1 of the Full-Scale

Operational Plan. However, PCB analysis will be performed on samples collected from areas near or around Buildings 166 and 171 only.

Based on available site assessment data and generator's knowledge of past process operations, the areas of excavation will be near or around Buildings 165, 166, 167, 168, 171, 172, and 173. These buildings are depicted in Figures E2-1, E2-2, E2-3, E2-4, and E2-5. The building number and title are listed below:

<b><u>Building Number</u></b>	<b><u>Building Title</u></b>
165	Temporary Storage and Cooling
166	Bomb and Mine Filling
167	Box Emptying
168	Receiving Building (Explosives)
171	Bomb and Mine Filling
172	Box Emptying
173	Receiving Building (Explosives)

Based on review of the areas to be excavated, NSWCrane has provided an unexploded ordnance (UXO) survey clearance for work to proceed. A copy is provided in Appendix E1, Attachment E1-A of the Full-Scale Operational Plan. The excavation crew personnel have obtained awareness training in the associated hazards of potential UXO existing in subsurface soils. All work activities will stop if visual observations indicate potential UXO is encountered in the area. The NSWCrane Environmental Protection Department (EPD) representative will be contacted and a surface UXO survey will be performed to identify and remove any unexploded ordnance prior to resuming work actions. Digging permits will be obtained for all site activities prior to mobilization.

## **5.0 SAMPLING**

All sampling for waste, pre-excavation, in-process, and post-excavation characterization will be in accordance with the approved Quality Assurance Project Plan (QAPP) for Full-Scale Operations [MK, 1998].

### **5.1 SAMPLING AREAS**

Grid blocks will be approximately 40 feet by 20 feet and are not expected to be perfect rectangles (particularly those in the berms). Grid layout and boundaries will be affected by the presence of buildings, utilities, etc. Grid borders will be flagged in the field, and areas will be chosen which will be accessible by heavy equipment (i.e., individual grid blocks will not be placed in the midst of heavy utilities or surface structures). The grid layout will be approved by NSWC Crane EPD prior to sampling activities.

### **5.2 PRE-EXCAVATION SOIL SAMPLING**

Pre-excavation soil sampling will be performed in accordance with Section 4.0 of the approved QAPP for Full-Scale Operations [MK, 1998]. A total of two composites, one for the surface to 12-inch depth and one for the two-foot to three-foot depth, will be collected per grid block. One grab sample will be collected from the center of the grid block at 12 inches below ground surface using an Encore sampler and analyzed for site-specific VOCs. Each composite sample will be analyzed for site-specific explosives and metals listed in Section 1.3.1 of the Full-Scale Operational Plan. Additionally, PCB analysis will be performed on composite samples collected from areas near or around Buildings 166 and 171 only.

### **5.3 MARKING GRID BLOCKS FOR EXCAVATION**

Analytical results will be used to mark grid blocks or sampling areas requiring excavation. If a grid block or sampling area shows contamination (i.e., off-site laboratory results showing greater than cleanup goals in Table 1-2 of the Full-Scale Operational Plan) to a depth of three feet, the grid block or area will be marked for three feet of excavation. If a grid block or area shows contamination at the one-foot depth, the block or area will be marked for one foot of excavation. If a grid block shows no contamination at the one-foot and the three-foot depth, the grid block shall not be marked for excavation.

### **5.4 IN-PROCESS EXCAVATION SOIL SAMPLING**

Field test kits for explosives will be used to delineate the horizontal and vertical extent of contamination during excavation activities, followed by confirmation sampling using

laboratory analysis. After the initial and in-process excavation activities are complete in each grid, the horizontal and vertical extent of remaining contaminants will be determined by using colorimetric field test kits for TNT and RDX as described in Section 4.0 of the approved QAPP Full-Scale Operations [MK, 1998]. A sampling grid will be laid out along the base of the excavation(s), using a nodal spacing used during the pre-excavation sampling or based on site conditions observed during excavation. Each grid block will be sampled using procedures described in the approved QAPP for Full-Scale Operations [MK, 1998] for in-process excavation sampling. Discrete samples will be collected from the four corners and center of the grid block, from surface to six inches below ground surface within the excavation, using a drive sampler, composited and analyzed for TNT and RDX (field test kits).

Pin flags will be placed every 20 feet along sidewalls greater than one foot in depth. Samples will be collected at each pin flag location, using a drive sampler. One sample will be collected from 0-6 inches into the sidewall surface at the midpoint between the surface and bottom of excavation. The sample will be analyzed for TNT and RDX (field test kits).

After the soil is excavated to a depth where field screening indicate acceptable concentrations of explosives, post-excavation soil samples will be collected for analysis by a laboratory. Post-excavation soil samples will be collected as described in Section 5.5 of this Plan.

## **5.5 POST-EXCAVATION SOIL SAMPLING**

The purpose of post-excavation sampling of the excavation is to determine the level of contamination remaining, with respect to site-specific contaminants described in Section 1.3.1 of the Full-Scale Operational Plan. A sampling grid will be laid out along the base of the excavation(s), using a nodal spacing used during the pre-excavation sampling. Post-excavation soil sampling will be performed in accordance with Section 4.0 of the approved QAPP for Full-Scale Operations [MK, 1998]. One composite sample and one grab sample (for VOCs) will be collected from each grid block. The composite sample will be collected from the surface to six-inch interval in a manner similar to pre-excavation samples and analyzed for totals of site-specific metals and explosives. Additionally, the composite sample will be analyzed for PCBs if collected from areas near or around Buildings 166 and 171. The grab sample will be collected from the center of the grid block, six inches below ground surface, using an Encore sampler and analyzed for site-specific VOCs.

Pin flags will be placed every 20 feet along sidewalls greater than one foot in depth. Samples will be collected at each pin flag location. One grab sample will be collected from 0-6 inches into the sidewall surface at the midpoint between the surface and bottom of excavation. The sample will be analyzed for site-specific metals, explosives analysis, and site-specific VOCs. Additionally, the sample will be analyzed for PCBs if

## **6.0 DECONTAMINATION**

### **6.1 EXCAVATION DECONTAMINATION FACILITY**

The excavation site equipment decontamination facility will be constructed of a single sheet of 60-mil high-density polyethylene (HDPE), polyvinyl chloride (PVC) drain pipe, sandbags or cinder blocks, wood frame side walls, if necessary, and a container to collect decontamination water. The HDPE liner will be placed over sand or smooth clay bedding material. The sides will be constructed of the liner draped over sandbags or a bermed perimeter of other material such as 16 inch PVC pipe. The decontamination facility will be sloped to a sump or collection area. A single sheet of HDPE will cover the base of the decontamination facility. If the ground is too soft to support the decontamination pad, plywood may be used as a base for support. The decontamination facility will be clearly delineated with temporary construction fence, wire and signs, or equivalent.

The liner will be visually inspected before use on a daily basis to detect possible failures of the liner material. Inspection of the excavation site decontamination will be performed using checklist provided in Appendix F of the Full-Scale Operational Plan. The inspection process will consist of checking for the following:

- Evidence of tears and holes.
- Evidence of seepage.
- The sheeting is adequately fastened to the side walls.
- The liner adequately covers the sandbags or berms at the end section.

If the liner is damaged, it will be repaired or replaced before further use of the facility. Any soil beneath the liner in the area of the breach will be sampled and analyzed for contaminants of concern.

Records will be maintained specifying facility construction material and methods, disposition of liquids and solids, daily inspections, and any repairs and/or breaches of liner integrity.

All decontamination fluids collected in the sump will be containerized at the end of each shift during periods of predicted precipitation. The collected fluids will be sampled to determine disposal requirements. If precipitation is predicted, the decontamination pad will be covered to prevent accumulation of storm-water.

## **6.2 EQUIPMENT DECONTAMINATION**

Prior to exiting the excavation site, loaded trucks will be inspected for exterior cleanliness. In case of spillage of contaminated soil onto the truck exterior or if the truck is driven over a contaminated area, the decontamination process will take place at the excavation site decontamination pad. The equipment decontamination procedure is described in detail in Field SOP 7.0 provided in Appendix D of the Full-Scale Operational Plan.

## **6.3 GRAVEL/ROCK DECONTAMINATION**

Periodically, the need for washing of gravel and/or rocks will occur when excavating in roadway areas, near building foundations, or rocky terrain. The separated rocks or gravel will be loaded into container and taken to the decontamination pad. The rocks and or gravel will be thoroughly washed of all visible signs of soil with the high-pressure, low-volume spray wash unit as described in Field SOP 7.0 found in Appendix D of the Full-Scale Operational Plan. Visual examination and rinse water samples, tested for explosives using laboratory analysis, will be used for verification of rock decontamination. The wash and rinse water will be collected and treated in the Mine Fill A pre-treatment facility or sampled per Table 6-1 of the Full-Scale Operational Plan and disposed of at the on-site sewer treatment system or disposed of as directed by NSWCrane EPD. Figure 1-4 of the Full-Scale Operational Plan provides the decision-making flowchart for the rock decontamination.

## 7.0 SITE CLEANUP AND DEMOBILIZATION

As equipment is no longer required in the EZ it will be decontaminated and moved to the SZ. After all contaminated materials are containerized, the remaining equipment will be decontaminated and moved to the SZ. The decontamination equipment will then be cleaned and the work zone barriers removed. After all equipment has been decontaminated, the decontamination facility will be dismantled. The contaminated materials will be managed according to NSWCrane EPD requirements.

*All decontamination fluids will be collected, sampled, and either be disposed of at the on-site sewage treatment plant; or disposed at the Mine Fill A pre-treatment facility; or disposed of in a method approved by the NSWCrane EPD.*

After the decontamination facility has been dismantled and removed, the underlying surface will be visually inspected. Visibly contaminated material will be removed and managed as a potentially affected material, according to NSWCrane EPD management procedures.

## 8.0 BACKFILLING AND SITE RESTORATION

The extent of any excavation and the points at which post-excavation samples were taken will be surveyed to determine the volume of the excavation, to record the extent of the excavation, and to record the location of the post-excavation samples. The excavation will be backfilled with non-contaminated backfill material (from an on-site NSWC Crane EPD-approved borrow source) and/or treated compost at the end of the excavation period.

If an excavation is to remain open for an extended period of time due to equipment down time, berms will be placed around the excavation and the excavation covered to prevent run-on or run-off during a rain event.

The backfill material may be placed in 12-inch lifts or lifts based on use of area as approved by NSWC Crane EPD. Backfilled areas may be covered with a minimum of three inches of topsoil, seeded with native grasses, fertilized, and watered as approved by NSWC Crane EPD. Compost may only be used according to the approved remedial goals outlined in Section 1.3 of the Full-Scale Operational Plan. Erosion control measures, if used, will be maintained until the growth of grass is sufficient to prevent erosion.

If any utilities and/or other structures are destroyed during excavation, they will be restored to acceptable condition as approved by NSWC Crane EPD and Navy ROICC.

## 9.0 REFERENCES

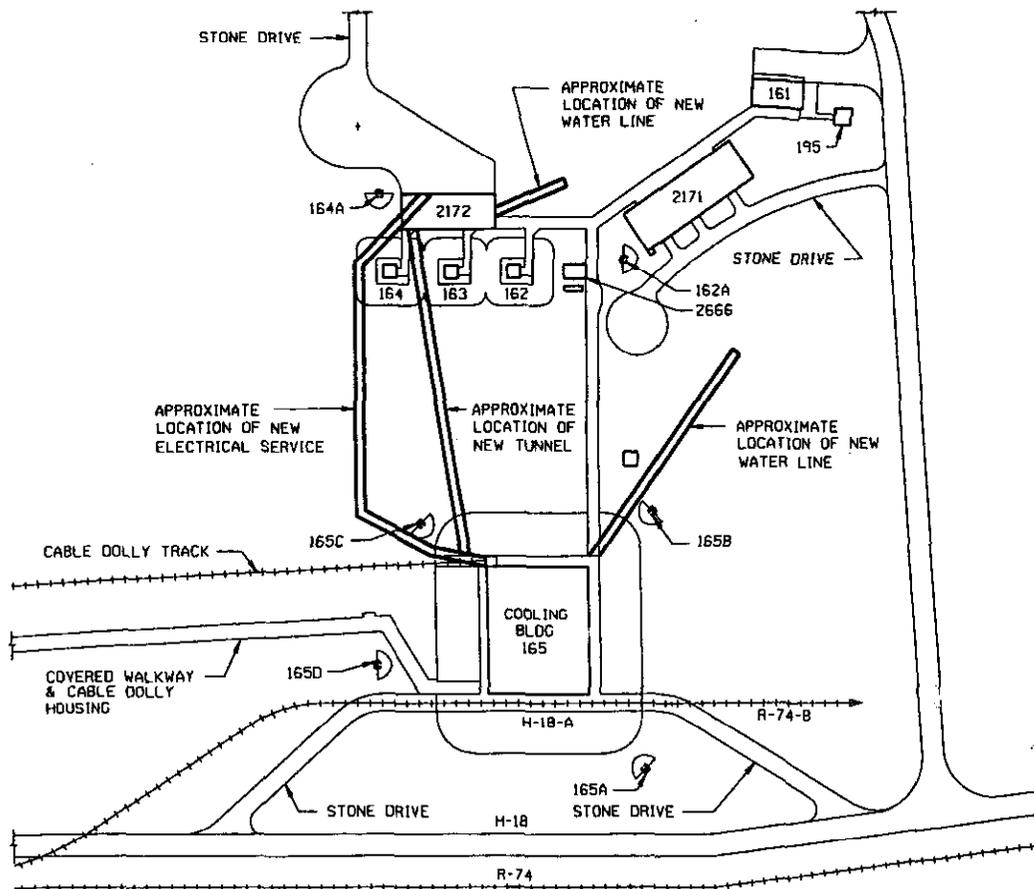
- Halliburton, 1992. *Final RCRA Facility Investigation Phase I, Environmental Monitoring Reports; Solid Waste Management Units #19/00, #08/17, #12/14, #13/14; Naval Surface Warfare Center, Crane Division, Crane, Indiana.* Halliburton NUS Environmental Corporation. August.
- MK, 1998. *Quality Assurance Project Plan (QAPP) For Full-Scale Operations at the Soils Bioremediation Facility at NSWC Crane, Crane, Indiana,* Delivery Order No. 0009, Contract No. N62467-93-D-1106. March 1998.

**ATTACHMENT E2-A  
LIST OF MINE FILL B DRAWINGS**

## LIST OF NSWC CRANE MINE FILL B DRAWINGS

THESE DRAWINGS WILL BE AVAILABLE IN THE OFFICE TRAILER AT THE BIOREMEDIATION FACILITY.

<b>Drawing No.</b>	<b>Description</b>
571927	Plot Plan Mine Filling Area B - General
571928	Plot Plan Mine Filling Area B - General
571929	Plot Plan Mine Filling Area B - Electrical, Telephone, Fire Alarm, Water, Steam and Sanitary Sewer
571930	Plot Plan Mine Filling Area B - Electrical, Telephone, Fire Alarm, Water, Steam and Sanitary Sewer



PARTIAL PLAN

NOTES:

1. EXCLUSION ZONE AND EQUIPMENT LAYOUT WILL BE ESTABLISHED AFTER INITIAL SAMPLING HAS BEEN PERFORMED.
2. INITIAL SAMPLING GRIDS WILL BE ALONG THE PROPOSED UTILITY TRENCHES AND TUNNEL.
3. INITIAL SAMPLING GRIDS WILL BE APPROXIMATELY 20 FT. X 40 FT.

SYMBOLS:

- +++++ RAILROAD
- ==== NEW TUNNEL, WATERLINE OR ELECTRICAL SERVICE

REFERENCE DWGS:

- 571928 PLOT PLAN, MINE FILLING AREA B GENERAL (DE LEUW, CATHER & CO. CHICAGO, ILLINOIS)

SCALE: 1" = 100'-0"



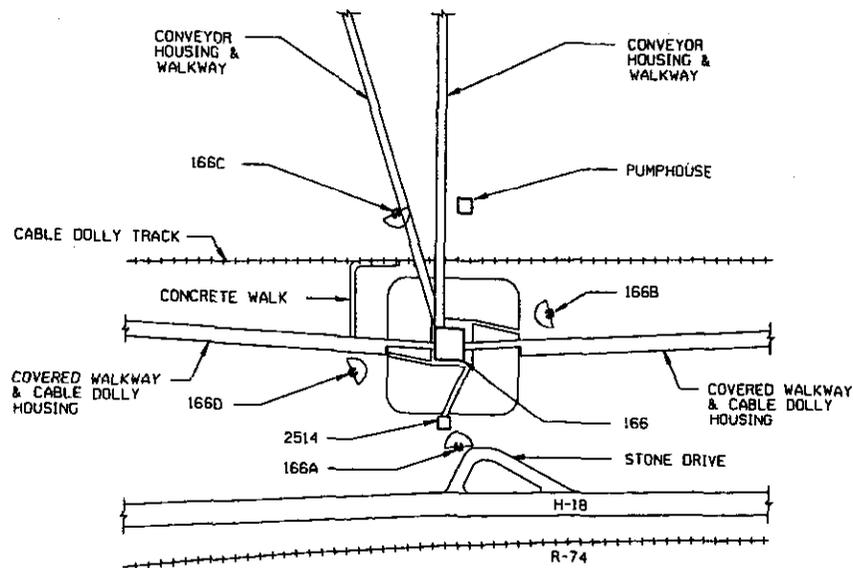
FULL SCALE OPERATIONAL PLAN  
NSWC CRANE  
CRANE, IN

A	04/30/98	ISSUED FOR REVIEW	
REV	DATE		APPROVE



MORRISON KNUDSEN CORPORATION  
ENVIRONMENTAL SERVICES

FIGURE E2-1  
SOIL EXCAVATION PLAN  
MINE FILL 8, BLOC 165



PARTIAL PLAN

NOTES:

1. EXCLUSION ZONE AND EQUIPMENT LAYOUT WILL BE ESTABLISHED AFTER INITIAL SAMPLING HAS BEEN PERFORMED.
2. INITIAL SAMPLING GRIDS WILL BE APPROXIMATELY 20 FT. X 40 FT.

SYMBOLS:

+++++ RAILROAD

REFERENCE DWGS:

571928 PLOT PLAN, MINE FILLING AREA B GENERAL (DE LEUW, CATHAR & CO. CHICAGO, ILLINOIS)

SCALE: 1" = 100'-0"



FULL SCALE OPERATIONAL PLAN  
NSWC CRANE  
CRANE, IN

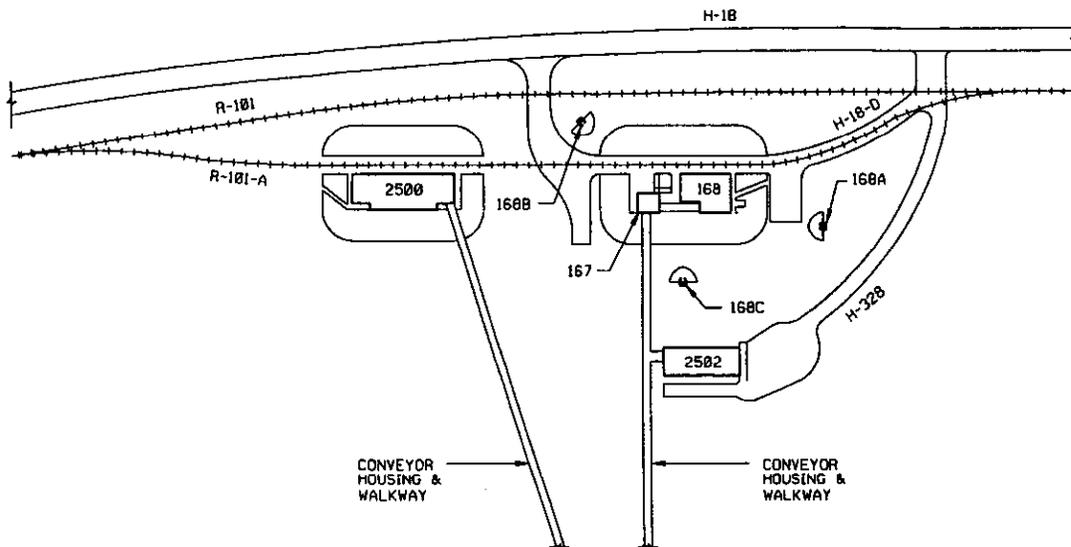
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REV	DATE		APPROVE



MORRISON KNUDSEN CORPORATION  
ENVIRONMENTAL SERVICES

FIGURE E2-2  
SOIL EXCAVATION PLAN  
MINE FILL B, BLDG 166

DWG DATE: 05/07/98 | FILE NAME: FIGe2-2.DGN



PARTIAL PLAN

NOTES:

1. EXCLUSION ZONE AND EQUIPMENT LAYOUT WILL BE ESTABLISHED AFTER INITIAL SAMPLING HAS BEEN PERFORMED.
2. INITIAL SAMPLING GRIDS WILL BE APPROXIMATELY 20 FT. X 40 FT.

SYMBOLS:

+++++ RAILROAD

REFERENCE DWGS:

571928 PLOT PLAN, MINE FILLING AREA B GENERAL  
 (DE LEUW, CATHER & CO. CHICAGO, ILLINOIS)

SCALE: 1" = 100'-0"



FULL SCALE OPERATIONAL PLAN  
 NSWC CRANE  
 CRANE, IN

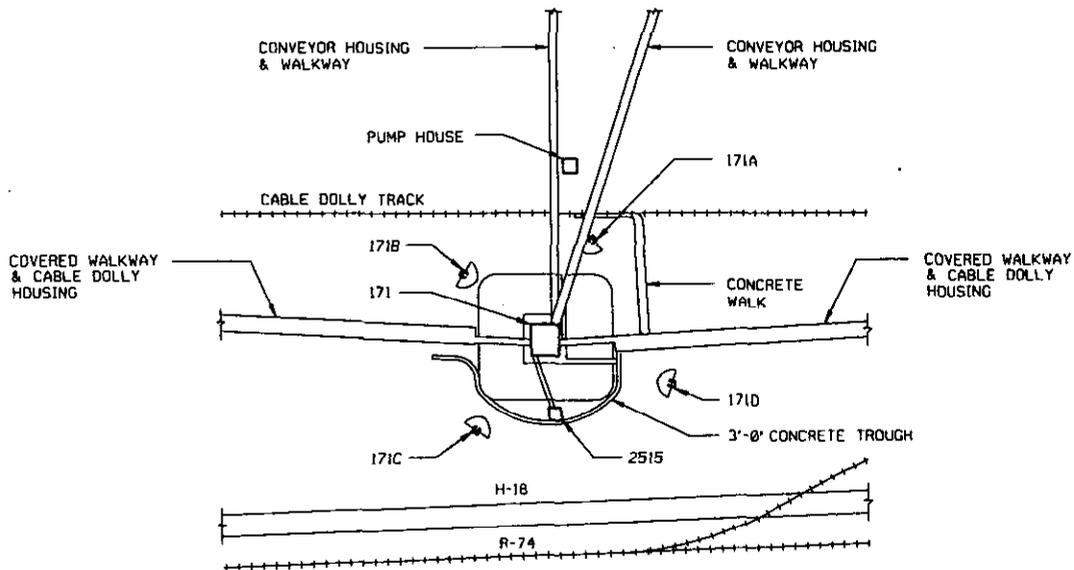
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REV	DATE		APPROVE



MORRISON KNUDSEN CORPORATION  
 ENVIRONMENTAL SERVICES

FIGURE E2-3  
 SOIL EXCAVATION PLAN  
 MINE FILL B, BLDG 167 & 168

DWG DATE: 05/07/98 FILE NAME: FIGe2-3.dgn



PARTIAL PLAN

NOTES:

1. EXCLUSION ZONE AND EQUIPMENT LAYOUT WILL BE ESTABLISHED AFTER INITIAL SAMPLING HAS BEEN PERFORMED.
2. INITIAL SAMPLING GRIDS WILL BE APPROXIMATELY 20 FT. X 40 FT.

SYMBOLS:

+++++ RAILROAD

REFERENCE DWGS:

571927 PLOT PLAN, MINE FILLING AREA B GENERAL (DE LEUW, CATHER & CO. CHICAGO, ILLINOIS)

SCALE: 1" = 100'-0"



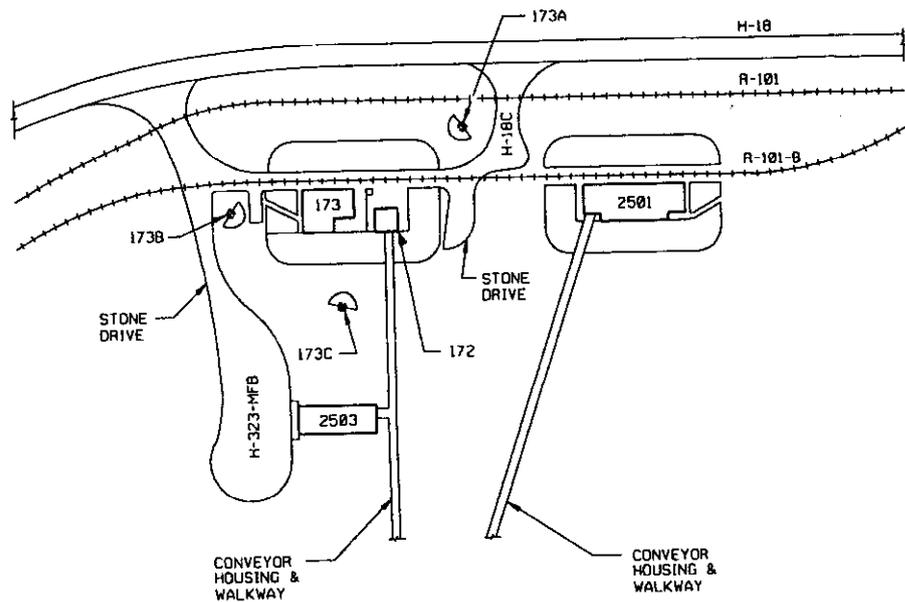
FULL SCALE OPERATIONAL PLAN  
NSWC CRANE  
CRANE, IN

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MORRISON KNUDSEN CORPORATION  
ENVIRONMENTAL SERVICES

FIGURE E2-4  
SOIL EXCAVATION PLAN  
MINE FILL B, BLDG 171



PARTIAL PLAN

NOTES:

1. EXCLUSION ZONE AND EQUIPMENT LAYOUT WILL BE ESTABLISHED AFTER INITIAL SAMPLING HAS BEEN PERFORMED.
2. INITIAL SAMPLING GRIDS WILL BE APPROXIMATELY 20 FT. X 40 FT.

SYMBOLS:

----- RAILROAD

REFERENCE DWGS:

571927 PLOT PLAN, MINE FILLING AREA B GENERAL (DE LEUW, CATHER & CO. CHICAGO, ILLINOIS)

SCALE: 1" = 100'-0"



FULL SCALE OPERATIONAL PLAN  
NSWC CRANE  
CRANE, IN

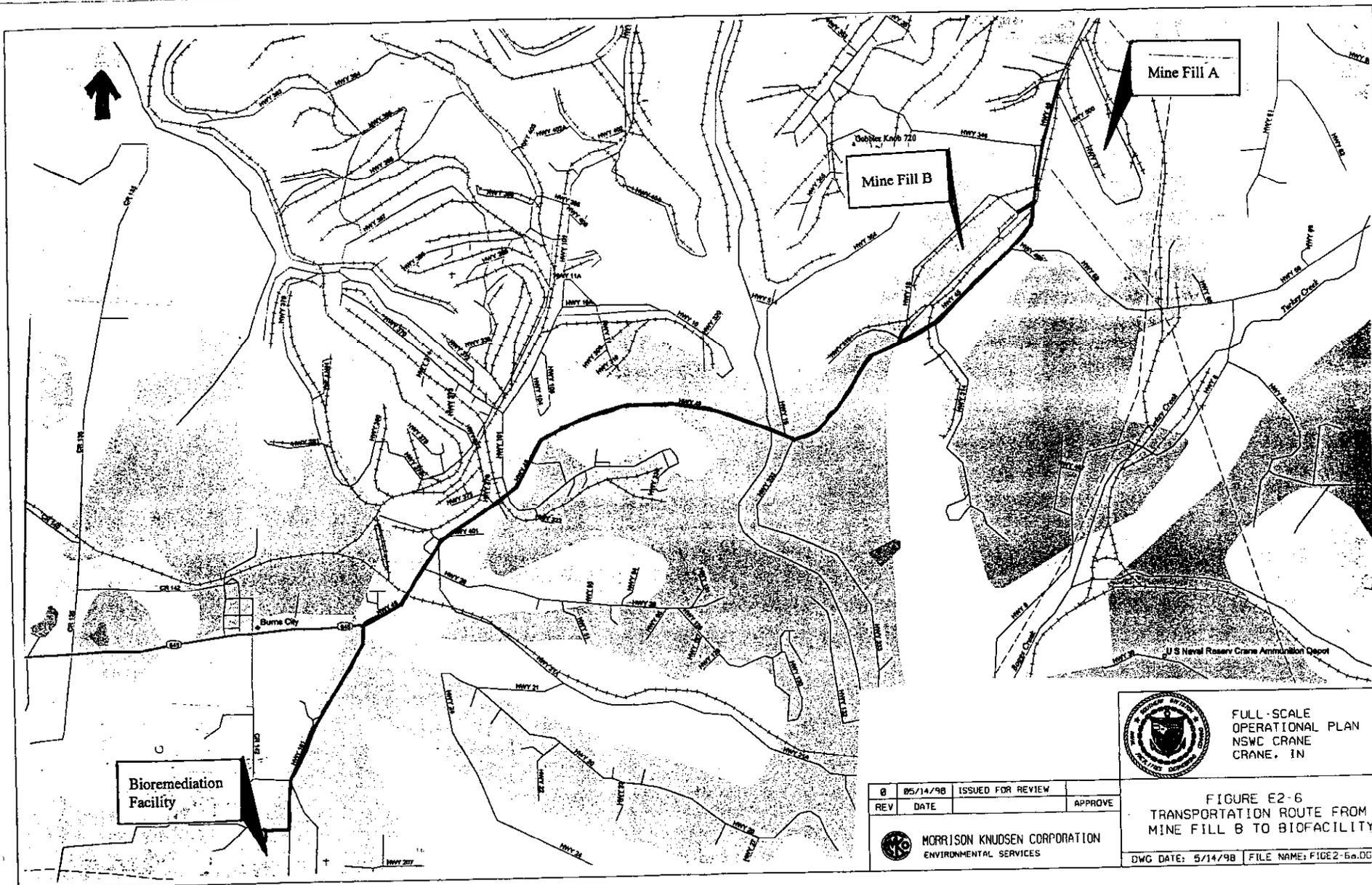
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REV	DATE		APPROVE



MORRISON KNUDSEN CORPORATION  
ENVIRONMENTAL SERVICES

FIGURE E2-5  
SOIL EXCAVATION PLAN  
MINE FILL B, BLDG 172 & 173

DWG DATE: 05/07/98 FILE NAME: F1Ge2-5.dgn



Mine Fill A

Mine Fill B

Bioremediation Facility

Burns City

U.S. Naval Reserve Crane Ammunition Depot



FULL-SCALE OPERATIONAL PLAN  
NSWC CRANE  
CRANE, IN

REV	DATE	ISSUED FOR REVIEW	APPROVE

MORRISON KNUDSEN CORPORATION  
ENVIRONMENTAL SERVICES

FIGURE E2-6  
TRANSPORTATION ROUTE FROM  
MINE FILL B TO BIOFACILITY

DWG DATE: 5/14/98 FILE NAME: FIGE2-6a.DGN