**DEPARTMENT OF THE NAVY**
CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE, INDIANA 47522-5000

IN REPLY REFER TO:

5090
Ser 095/9130

17 JUN 1999

12-1-1999

U.S. Environmental Protection Agency, Region V
Waste, Pesticides, & Toxics Division
Waste Management Branch
Illinois, Indiana, and Michigan Section
ATTN: Mr. Peter Ramanauskas (DW-8J)
77 West Jackson Blvd.
Chicago, IL 60604

Dear Mr. Ramanauskas:

Crane Division, Naval Surface Warfare Center (NAVSURFWARCENDIV Crane) provides two copies of the Interim Measures Completion Report for Construction of Cap System as enclosure (1). This report pertains to the Dye Burial Ground (Solid Waste Management Unit 02/11) and is presented as a draft report. The required certification statement is submitted as enclosure (2).

NAVSURFWARCENDIV Crane point of contact is Mr. Thomas J. Brent, Code 09510, telephone 812-854-6160.

Sincerely,

Thomas J. Brent

for JAMES H. [illegible]
[illegible]r, Environmental Protection Department
[illegible]ection of
the Commander

Encl:
(1) Draft Cap System Interim Measures Completion Report
(2) Certification Statement

Copy to:
ADMINISTRATIVE RECORD (w/2 copies)
COMNAVSEASYSCOM (SEA OOT) (w/o encl)
SOUTHNAVFACENGCOM (Code 1864) (w/o encl)
MORRISON KNUDSEN (Venky Venkatesh) (w/o encl)
TETRA TECH NUS (Karen Smecker)
IDEM (Mike Stickles)

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.

Tom Brent, acting
SIGNATURE

Environmental Protection Specialist
TITLE

17 JUN 1999
DATE

Enclosure (2)

Interim Measures Completion Report for
Construction of Cap System at
SWMU 02/11 – Dye Burial Ground

NSWC Crane
Crane, Indiana

Unit Identification Code: N00164
Contract No. N62467-93-D-1106

**VOLUME I OF II**
**REPORT – APPENDIX D**

December 1999

Revision 0

**Southern Division**
**Naval Facilities Engineering Command**
**North Charleston, South Carolina**
**29419-9010**

# Interim Measures Completion Report for Construction of Cap System at SWMU 02/11 – Dye Burial Ground

**NSWC CRANE**
**CRANE, INDIANA**

**December 1999**

**Revision 0**

**CONTRACT N62467-93-D-1106**
**DELIVERY ORDER #0009**
**STATEMENT OF WORK #007**

***Prepared for***

**SOUTHERN DIVISION**
**NAVAL FACILITIES ENGINEERING COMMAND**
2155 Eagle Drive
P.O. Box 190010
North Charleston, South Carolina 29419-9010

***Prepared by:***


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**PREPARED/APPROVED BY:**

Tom Long For — 12-13-99

B. Venky Venkatesh
MK Project Engineer

Date

**APPROVALS:**

Alan M Fosdick — 12/13/99

Alan Fosdick
Deputy Program Manager

Date

MORRISON KNUDSEN CORPORATION

MORRISON KNUDSEN PLAZA
P.O. BOX 73/BOISE, IDAHO U.S.A. 83729
PHONE: (208) 386-5000/TELEX: 368439

December 9, 1999

Subject: Letter of Certification from Certifying Engineer for Interim Measures Cap System at SWMU 02/11, Dye Burial Ground, at NSWC Crane

I have thoroughly reviewed the documentation for the subject cap system. Based on this review, I certify that, in my professional judgment, the cap system has been constructed in accordance with the plans, specifications, approved changes, and the Quality Control Plan for Interim Measures Cleanup at SWMU 02/11, Dye Burial Ground, at NSWC Crane.

Sincerely,

12/9/99

Kimball L. Ohsiek, P.E.
Indiana License No. PE19800045

KIMBALL L. OHSIEK
REGISTERED
19800045
STATE OF INDIANA
PROFESSIONAL ENGINEER

# EXECUTIVE SUMMARY

The purpose of the interim measures cap system at the Dye Burial Ground, located at the Naval Surface Warfare Center in Crane, Indiana, is to prevent surface water from infiltrating into dye burial trenches that were formerly used for disposal of dyes and dye-impacted materials. Site preparation, construction of support features, and construction of the engineered, multi-layer interim measures cap system over the dye burial areas began in June of 1996. Construction was completed in September of 1998. Construction was performed by the Navy's Remedial Action Contractor, Morrison Knudsen Corporation. The project scope of work included site clearing, relocating an access road, establishing storm water controls, excavating dye-impacted materials, constructing the multi-layered cap system, and managing and disposing of dye-impacted water.

This work was funded by the Defense Environmental Restoration Account and managed by Southern Division, Naval Facilities Engineering Command, under Contract # N62467-93-D-1106, Delivery Order #0009, Statement of Work #007.

This report describes the construction of the cap and appurtenant features from the initial site preparation activities through the completion of the final punch list items. Major construction activities are addressed in this report. Additional detailed supporting information is provided in the appendices.

At project completion, the Dye Burial Ground interim measures cap and appurtenant features were inspected and accepted by the Navy Resident Officer in Charge of Construction and the NSWC Crane Environmental Protection Department.

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ASTM | American Society for Testing and Materials |
| cm | centimeter |
| EDCI | Environmental Design & Construction, Inc. |
| EPD | Environmental Protection Department |
| FCR | field clarification request |
| GCL | geosynthetic clay liner |
| H | horizontal |
| HDPE | high-density polyethylene |
| IDEM | Indiana Department of Environmental Management |
| K | hydraulic conductivity |
| LGP | low ground pressure |
| MK | Morrison Knudsen Corporation |
| NSWC | Naval Surface Warfare Center |
| PSG | Philip Environmental Services Group |
| PVC | polyvinyl chloride |
| QC | quality control |
| RCRA | Resource Conservation and Recovery Act |
| ROICC | Resident Officer in Charge of Construction |
| sec | second |
| SET | Smith Environmental Technologies Corporation |
| SWMU | solid waste management unit |
| U.S. EPA | United States Environmental Protection Agency |
| V | vertical |

# SECTION 1
# INTRODUCTION

This *Interim Measures Completion Report* was prepared by Morrison Knudsen Corporation (MK) on behalf of Southern Division, Naval Facilities Engineering Command, in accordance with the scope of work defined in Delivery Order #0009, under Contract # N62467-93-D-1106, Statement of Work #007, and as prescribed in *the Work Plan for Interim Measures Cleanup at Solid Waste Management Unit 02/11* (MK, 1997). Solid Waste Management Unit (SWMU) 02/11 is the Dye Burial Ground. As the Environmental Response Action Contractor, MK provided project management services and completed the defined scope of work in the period between June 1996 and September 1998. Smith Environmental Technologies Corporation (SET) was MK's prime subcontractor until June 1997 when SET when out of business. In August 1997, Philip Environmental Services Group (PSG) was brought in as the new prime subcontractor for completion of the interim measure cap construction. This report describes the methods and materials used to construct the interim measures cap system over the Dye Burial Ground. Photographs documenting the various activities are provided in Appendix A (Volume I). Additional detailed supporting information is included in Appendices B, C and D (Volume I) and Appendices E through N (Volume II).

## 1.1 BACKGROUND

The Naval Surface Warfare Center (NSWC) Crane, located in southwestern Indiana (Figure 1-1), provides the U.S. Department of Defense with support for equipment, shipboard weapon systems, and ordnance. In addition, NSWC Crane supports the Crane Army Ammunition Activity including production and renovation, storage, shipment, demilitarization, and disposal of conventional munitions. The Crane munitions facility has been operating for almost 60 years.

Under the Resource Conservation and Recovery Act (RCRA), administrated by the United States Environmental Protection Agency (U.S. EPA), NSWC Crane was obligated to perform facility investigations at 33 SWMUs and to implement corrective measures if needed. The initial assessment study was conducted in 1981 to identify and assess sites of potential threats to health or the environment by contamination from past hazardous materials operations. On December 23, 1989, the U.S. EPA issued the federal portion of the final RCRA Part B permit for NSWC Crane to the U.S. Navy, and issued the permit renewal for a period of five years on July 31, 1995. This permit contains both the federal permit conditions and the state permit conditions, which were issued separately by the State of Indiana's RCRA program. The Dye Burial Ground was one of the sites identified as part of the Installation Restoration Program. This program was designed to identify contamination of Navy lands resulting from past operations and to institute corrective measures as needed.

The Dye Burial Ground is located in the eastern section of NSWC Crane, as shown in Figure 1-2, northeast of the Ammunition Burning Ground, and sits atop a northeast-trending ridge. The Dye Burial Ground was reported to be a series of at least four main trenches, each approximately 50 feet long, 10 feet wide, and 6 feet deep (Glynn et al., 1995). These trenches were used to dispose of dyes and dye-impacted material. The materials reportedly included magnesium, dye-impacted boxes and rags, and approximately 60 drums of dyes. The trenches were reportedly backfilled in 1972 to levels ranging from grade to 1 foot below adjacent grade but were not permanently capped.

## 1.2 SCOPE OF WORK

The purpose of this project was to design and construct an engineered, multi-layer interim measures cap system over the dye burial areas. The cap will prevent the infiltration of storm water, which could result in migration of leachate beyond the current dye burial area.

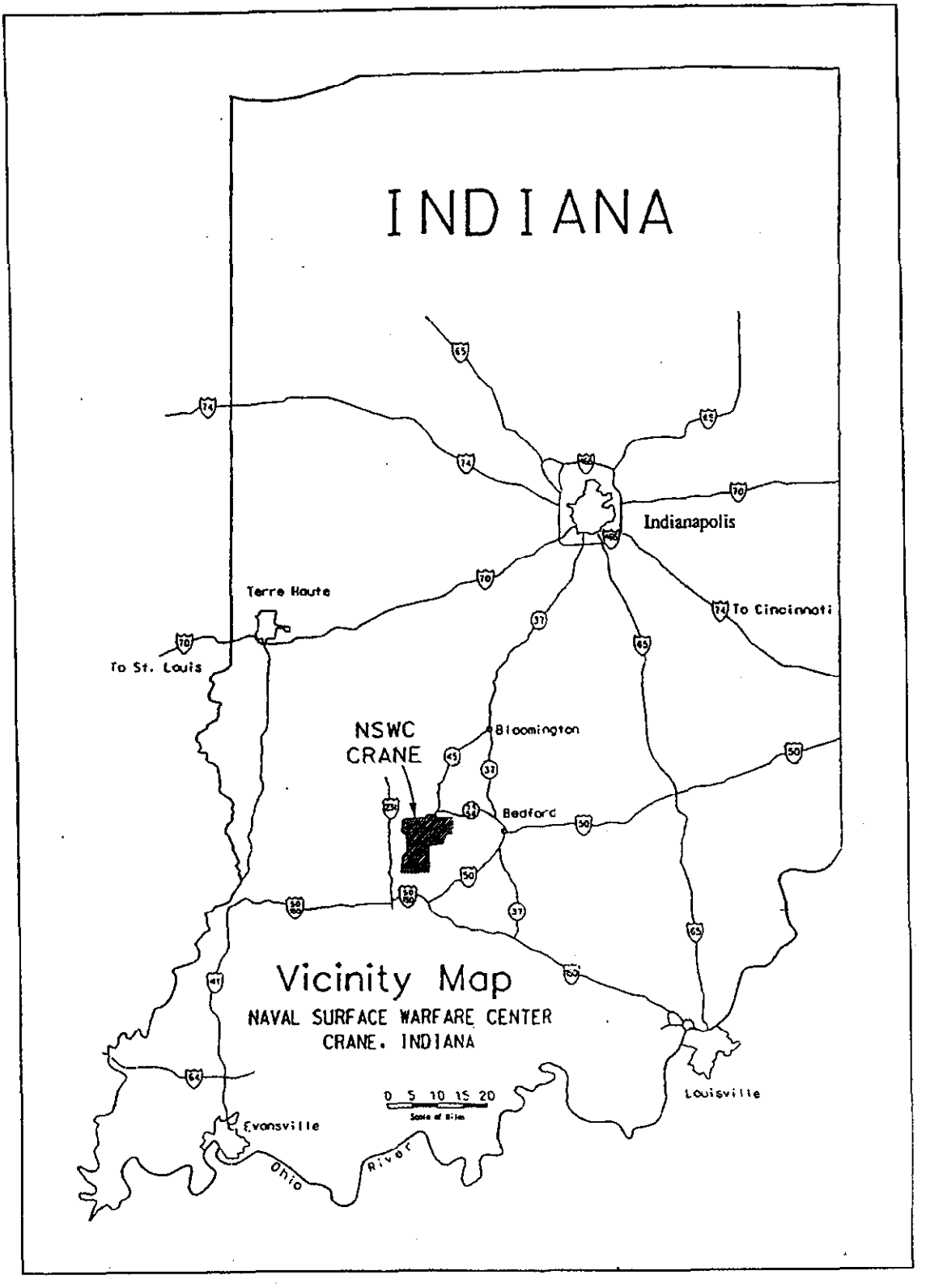



**Figure 1-1 Vicinity Map of NSWC Crane, Indiana (Glynn et al., 1995)**

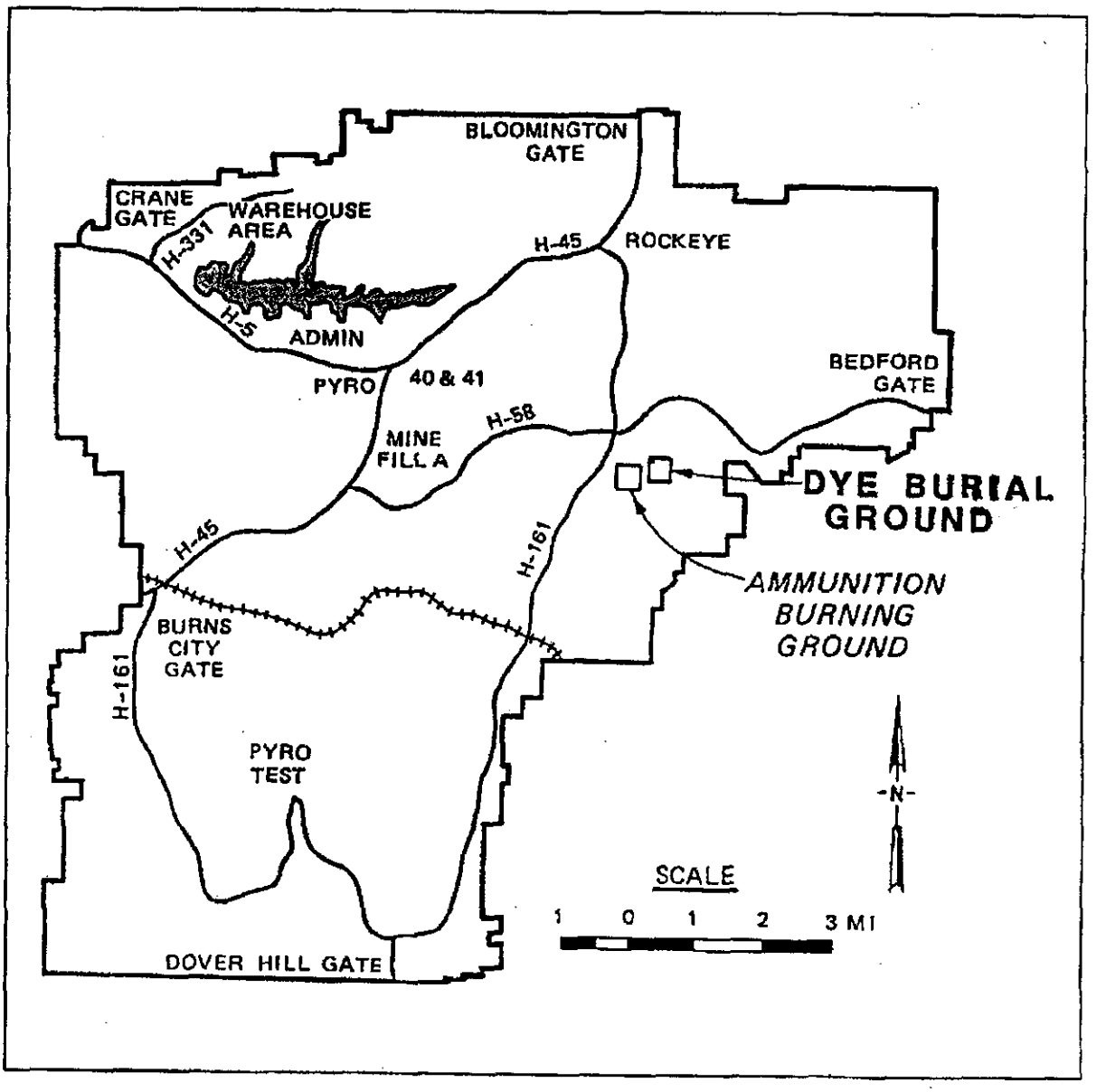



**Figure 1-2** **Location of Solid Waste Management Unit 02/11, Dye Burial Ground (modified from Glynn et al., 1995)**

### 1.2.1 Design

MK's scope of work for design was to prepare a detailed design package of drawings and technical specifications for construction of the interim measures cap. The conceptual "RCRA equivalent cover" design was prepared by the U.S. Army Corps of Engineers Waterways Experiment Station and is presented in *Recommended Remedial Measures at Naval Surface Warfare Center, Crane (NSWCC) Dye Burial Ground (DBG) Solid Waste Management Unit (SWMU) 02/11* (Glynn et al., 1995). MK prepared a preliminary design package, which was included in the November 1995 (Rev. B) issue of the *Work Plan* (MK, 1995). MK prepared a draft final design package, which was included in the April 1996 (Rev. 0) issue of the *Work Plan* (MK, 1996).

MK's April 1996 design package did not address additional dye-impacted soils that were located during the July and August 1996 field investigations conducted by the NSWC Environmental Protection Department (EPD) and the U.S. EPA. The design package also did not address handling, storage, and disposition of dye-impacted surface water and soil collected during the 1996-97 winter shutdown.

In June 1997, MK prepared a pre-final detailed design package for bidding purposes. Also in June, MK completed the final detailed design package that was included in the Revision 2 issue of the *Work Plan* (MK, 1997). The design specifications are included in Appendix C of the *Work Plan*. The design construction drawings are included in Appendix B (Volume I) of this *Interim Measures Completion Report*. Deviations from the drawings and specifications are documented in the Field Clarification Requests (FCRs) that are included in Appendix C (Volume I) of this report. (FCRs that were not approved are also included in Appendix C for information.)

### 1.2.2 Construction

The scope of work for constructing the interim measures cap included site preparation, cap system construction, and site restoration. During site preparation work, an uncontrolled release of dye-impacted surface water runoff occurred on January 22, 1997 (described in detail in Section 2). Following this event, the construction scope was expanded to include management and disposal of the dye-impacted water and decontamination and the release of Frac tanks and mud boxes that were used to store the water. The expanded scope was divided into two phases:

- **Phase I** involved site preparation and included:
  - Clearing vegetation
  - Establishing sediment and erosion control features
  - Excavating and placing dye-impacted soil
  - Site grading
  - Relocating an access road
  - Relocating storage (Frac) tanks and mud boxes
  - Developing a borrow area
- **Phase II** included cap system construction, site restoration, and decontamination and release of the Frac tanks and mud boxes, and disposal of the stored water and sludge. The interim measures cap system, from the bottom to the top, consists of:
  - Foundation fill
  - Geotextile cushion layer

- Geosynthetic clay liner with hydraulic conductivity (K) less than $1 \times 10^{-8}$ cm/sec (Glynn et al., 1995)
- High-density polyethylene geomembrane liner
- 6-inch sand drainage layer (K greater than $1 \times 10^{-2}$ cm/sec [Glynn et al., 1995]) with an overlying geotextile filter fabric
- Perimeter drainage collection system to transport infiltration water away from the cap
- 6-inch gravel biotic barrier layer (K greater than $1 \times 10^{-1}$ cm/sec [Glynn et al., 1995]) with an overlying geotextile filter fabric
- 27-inch cover layer with a vegetated surface

The site was restored by establishing permanent grass vegetation in all disturbed areas and removing debris and trash.

## 1.3 REPORT ORGANIZATION

This report generally reflects the sequence in which the interim measures cap was constructed. Section 2 describes the civil aspects of site preparation. Section 3 presents the methods and materials used to construct the cap system. The actions and temporary control measures taken for particular events during construction such as cap foundation winterization, dye-impacted water seepage collection, and erosion control are described in Section 4.

Section 5 describes the material testing and construction inspections that were conducted in accordance with the Quality Control Program, which is included as Appendix E to the *Work Plan* (MK, 1997). Section 6 discusses site restoration work, and Section 7 addresses the disposal of dye-impacted water.

Conclusions are presented in Section 8, and Section 9 lists the documents cited in this report. Additional detailed documentation is included as appendices to this *Interim Measures Completion Report.*

# SECTION 2
# SITE PREPARATION

Site preparation activities began in June of 1996. Copies of the daily summary reports describing daily events are included in Appendix D (Volume I).

## 2.1 INITIAL 1996 SITE PREPARATION AND FIELD INVESTIGATIONS

On June 20, 1996, MK gave SET notice to proceed, and SET began clearing, grubbing, stripping the topsoil, and preparing the subgrade. Within one week, the first subsurface dyes were encountered outside of the trench limits. In July, more dye was encountered outside of the trench limits. In response to these findings, MK initiated a limited field investigation to determine the extent to which the dye had spread in the vicinity of the trenches. The investigation included 12 shallow exploratory excavations, referred to as pot holes. Dye was found in eight of the pot holes, and MK directed SET to sop work and demobilize until a formal investigation could be completed, the results evaluated, and decisions made regarding the impacts on the cap design.

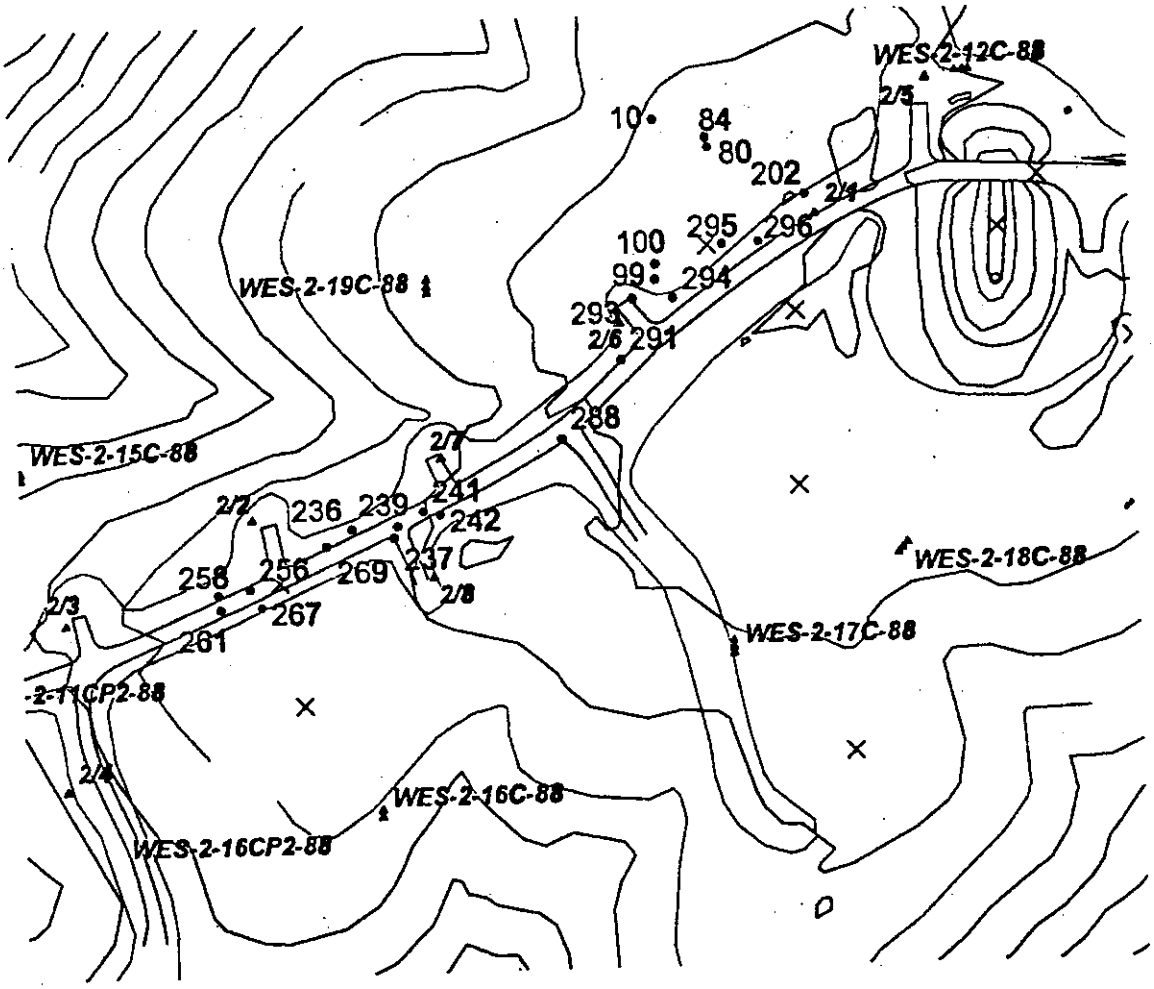
A formal field investigation was conducted in early August 1996 under the direction of the NSWC EPD and the U.S. EPA. The field investigation included shallow soil borings at multiple locations. The borings were advanced using hand-operated post-hole diggers. The results of the field investigation are shown on Figure 2-1.

## 2.2 FALL 1996 SITE PREPARATION AND FIELD INVESTIGATIONS

Site clearing, grubbing, and subgrade preparation work resumed in mid-October 1996. Dye-impacted soils and other materials were again encountered during stump removal. Work was not stopped, however, because the stumps were located within the cap limits. Clearing and grubbing was completed on October 31.

Excavation of dye-impacted soil outside of the cap limits and placement over the cap subgrade began in November 1996. Because of the amount of precipitation that had fallen during the late fall season, the soil was very wet and could not be sufficiently dried to achieve the required compaction. To allow work to continue, the wet dye-impacted soil was mixed with either portland cement or fly ash and then spread and compacted over the subgrade within the cap limits. By the end of December 1996, two lifts of cement- and fly ash-stabilized soil had been placed over the cap subgrade.

As runoff began collecting in the dye-impacted soil excavations, surface water management became a significant issue. As Excavation #4 at the west end of the site was expanded in response to the volume of runoff collected, additional dye-impacted soil was uncovered, exacerbating the spread of dye. To the extent possible, collected dye-impacted water had been pumped onto the cap subgrade to evaporate or be used to moisture condition the soil. However, because of the wet, cold weather, only a limited quantity of dye-impacted water could be removed in this manner. Winter shutdown became necessary when It became obvious that earthwork could not continue through the winter. Preparations for winterizing the work area began in early January 1997, with plans to resume work in April.




80 0 80 160 Feet

N
W E
S

▲ Welltags
⬢ Dbg

1996 DBG
Boring Locations

| Sample # | Location # | Color |
|---|---|---|
| 96RW01S61 | 261 | Purple |
| 96RW01S58 | 258 | Purple & Dark Blue |
| 96RW01S56 | 256 | Purple |
| 96RBWS67 | 267 | Purple & Blue |
| 96RBW01S69 | 269 | Yellow & Blue |
| 96RW01S36 | 236 | Yellow, Blue, Green, w/brown fiber mtl. |
| 96RW01S37 | 237 | Yellow w/fiber |
| 96RW01S39 | 239 | Blue |
| 96RW01S41 | 241 | Blue & Yellow |
| 96RW01S42 | 242 | Yellow |
| 96RBW01S88 | 288 | ?? |
| 96RBW01S91 | 291 | ??? |
| 96RW01S93 | 293 | Green |
| 96RW01S94 | 294 | Green |
| 96RB01S99 | 99 | Green Blue, Teal, Light Blue |
| 96RB01S100 | 100 | Light Blue |
| 96RBW01S95 | 295 | ??? |
| 96RBW01S96 | 296 | Dk Green, Yellow, Red, Purple, Orange Yellow |
| 96RW01S02 | 202 | Red |
| 96RB01S80 | 80 | Red |
| 96RB01S84 | 84 | Blues & Red |

**Figure 2-1 Dye Burial Ground – 1996 Field Investigation Locations (MK, 1997)**

## 2.3 1996-97 WINTER SHUTDOWN

Preparations for winter shutdown included sealing the surface of the dye-impacted soils that had been placed over the cap subgrade with a smooth-drum roller and covering the sealed surface with plastic sheeting. Standing water and cold, wet weather prevented the dye-impacted soil excavations from being backfilled, so plastic sheeting was installed over the open excavations. The sheeting was held in place with sandbags. Other winterization activities included managing clean and dye-impacted surface water runoff, installing sediment and erosion control measures, and inspecting and maintaining the site.

In early January, dye-impacted water was collecting in Excavation #4, and overtopping appeared imminent. In response, emergency dewatering began on January 10, 1997. Three 500-barrel Frac tanks were mobilized to the site to store the dye-impacted water. Dewatering continued intermittently on an as-needed basis. However, following a large storm event, there was an uncontrolled release of dye-impacted water from Excavation #4 on January 22, 1997.

The released dye-impacted water was pumped into Frac tanks. Some of the dye-impacted water froze on the ground surface before it could be collected. This dye-impacted ice was collected using construction equipment, along with frozen soil that was stuck to the ice, and placed in two mud boxes. About 9 cubic yards of dye-impacted soil were collected in each mud box.

Additional response measures were implemented in late January 1997 and included backfilling open excavations, installing additional erosion and sediment controls, constructing secondary containment around the Frac tanks and mud boxes, constructing covers over the mud boxes, and preparing winterization and contingency plans.

Site maintenance continued through July 1997 and consisted of daily site inspections including daily Frac tank and mud box inspections and repairs, maintaining erosion and sediment control features, pumping collected dye-impacted water into the Frac tanks, discharging collected clean water, and patching and maintaining the plastic sheeting. Approximately 150,000 gallons of dye-impacted water were collected during the 1996-97 shutdown, requiring eight Frac tanks.

SET went out of business in June 1997, and PSG was brought in as the new prime subcontractor. PSG arrived on site in August of 1997 and, under MK's direction, performed all of the remaining construction work, which is described in the following sections.

## 2.4 FALL 1997 SITE CLEARING

The plastic sheeting at the dye burial trench area was left in place while the site was cleared, and any holes in the plastic were patched. The areas that required clearing are shown on Construction Drawing Nos. C-02 and C-03 (Appendix B, Volume I) and included the dye-impacted areas outside of the plastic sheeting and the borrow area. No grubbing was performed at the Dye Burial Ground, and subsurface materials were left undisturbed to prevent any additional exposure of dye-impacted soil during the fall 1997 clearing activities.

Vegetation requiring removal consisted primarily of grasses, small shrubs, and trees. Trees within the clearing limits were cut, and the stumps were ground flush with the adjacent ground level using a stump grinder. The stumps within the cap limits were treated with commercial-grade Roundup™ to prevent regrowth. The herbicide was applied by TruGreen-ChemLawn, an Indiana-licensed pesticide applicator, in accordance with appropriate federal and state regulations.

All trees, limbs, and brush less than 3 inches in diameter and free of dye were chipped with a chipper. The wood chips were spread in a thin layer within the adjacent wooded area. All trees and limbs more than 3 inches in diameter were cut into 4- to 8-foot lengths, blocked, and stacked at a location approved for disposal by the Public Works Office.

## 2.5 SEDIMENT AND EROSION CONTROL

Sediment and erosion control measures were implemented at the Dye Burial Ground throughout the cap construction process. Control measures included straw-bale dikes, silt fencing, temporary plastic covers, and site grading. The straw-bale dikes were installed in the natural drainage features where storm water runoff flow is concentrated. Silt fencing was installed downgradient from disturbed areas. Temporary plastic covers were placed over stockpiled dye-impacted soil during precipitation events to prevent erosion of the loose soil. Site grading was used to divert, collect, and control runoff, and the amount of area disturbed was kept to the minimum required to perform the work.

## 2.6 FALL 1997 DYE-IMPACTED SOIL EXCAVATION

Dye-impacted soil was excavated from designated areas outside of the cap limits. Areal extents and depths of excavation were, at a minimum, to the lines and grades indicated on Construction Drawing Nos. C-02 and C-03 (Appendix B, Volume I). Soil removal ceased when no colors from dyes were visible within the excavated areas. Where areas of dye-impacted soil were located near the perimeter of the cap, excavation was extended a minimum of 2 feet inside of the perimeter drainage/anchor trench, in accordance with Specification Section 02200. The excavated areas were photographed to document that the excavations were visually clean. Selected photographs are included in Appendix A (Volume I).

To prevent cross-contamination of clean areas, excavation of the dye-impacted soil began at the areas farthest from the cap limits and progressed toward the cap. A rubber-tired backhoe and a hydraulic excavator were used for both excavation and placement of the dye-impacted material. Excavated soil was placed and spread in the central portion of the cap area in a 12-inch loose lift.

The excavated areas were backfilled with clean soil and compacted in lifts with a sheepsfoot roller in accordance with Specification Section 02200.

Other dye-impacted materials, including bagged personal protective equipment generated during 1996-97 work activities, were spread in a single layer within the cap limits to prevent detrimental cover subsidence. After dye-impacted materials were placed within the cap limits, they were covered with clean foundation fill soil and compacted in place. All dye-impacted materials placed within the cap limits were covered daily with either 6 inches of clean soil or 10-mil plastic sheeting to prevent runoff water from contacting dye-impacted materials.

## 2.7 SITE GRADING

After vegetation and dye-impacted materials were removed, the disturbed areas outside of the cap limits were graded to promote runoff to natural drainages, according to the grading plan in Construction Drawing No. C-03 (Appendix B, Volume I). Excavation outside of designated areas was avoided to prevent accidental exposure of dye-impacted subsurface materials.

## 2.8 ACCESS ROAD RELOCATION

A portion of an existing access road was located within the cap limits. During site preparation, this access road was relocated and upgraded. The new gravel access road follows along the east and south sides of

the cap limits, as shown on Construction Drawing No. C-03 and described in FCR No. 4324-0009-FCR-DBG-011 (Appendices B and C, respectively). The figure in FCR No. 4324-0009-FCR-DBG-011 shows the design and construction changes associated with extending the access road to bypass the ammunition bunker (North Extension) to access the cap area without going through the bunker area, as had been specified in the original design.

The new gravel road was constructed, generally following the existing contours of the area, to avoid subsurface disturbance. Woven geotextile (Type 3) was used beneath the road for subgrade stabilization. The new road section is 1 foot thick, consisting of 6 inches of No. 53 gravel placed over 6 inches of No. 2 stone. The road is 12 feet wide with 2H:1V side slopes. Two culverts were installed to drain clean surface water away from the cap.

A 10-foot-wide zone along the north side of the cap limits was also cleared of trees and brush to provide foot access to monitoring wells in the area.

## 2.9 FRAC TANK RELOCATION

The eight 500-barrel Frac tanks containing dye-impacted water collected during the 1996-97 winter shutdown were initially located within the work area. During site preparation, these tanks were relocated within two separate secondary containment berms and were used for holding dye-impacted water at the site. The containment berms had the capacity to hold over 110 percent of one Frac tank volume. Of the eight Frac tanks, six were filled to within 12 inches of the top, one was three-fourths full, and one was empty. Two additional 500-barrel Frac tanks were brought to the site on September 12, 1997. These two tanks were used to store dye-impacted water from the cap area, decontamination water, and water from the mud boxes.

The original design called for all Frac tanks to be moved to a central confinement relocation area. However, after U.S. Fish and Wildlife representatives toured the site, it was determined that the design location shown on Construction Drawing No. C-03 (Appendix B, Volume I) for the central confinement relocation area included potential Indiana bat habitat. The Indiana bat is an endangered species, and therefore this area could not be disturbed. The Frac tank confinement area was subsequently divided into the two areas shown in FCR No. 4324-0009-FCR-DBG-001 (Appendix C, Volume I). A typical cross section of the Frac tank confinement areas and berms is shown in Construction Drawing No. C-07 (Appendix B, Volume I).

The Frac tanks had to be emptied before they could be moved. To accomplish this, an empty tank was first moved to the new confinement area, and the contents of one of the full tanks were pumped into the empty tank. The newly emptied tank was then moved to the confinement area. This process was repeated until all of the Frac tanks had been relocated into the new confinement areas.

Before the Frac tanks were relocated, a small quantity of dye-impacted water leaked through a small pinhole near the top of one tank. On December 17, 1997, a small quantity of dye-impacted water escaped through a leaking gasket on a second tank and impacted a small area within the secondary confinement area. The leaks were stopped, the impacted area contained, and the affected soils were removed and disposed of within the cap limits.

## 2.10 MUD BOX REMOVAL

The two 220-barrel mud boxes were located within the west end of the cap limits. Each mud box contained water and approximately 9 cubic yards of dye-impacted sludge collected during January 1997. The water was pumped to one of the relocated Frac tanks. After receiving verbal agreement with EPD that

the sludge could be stabilized with fly ash or cement, the sludge was mixed with Type I/II cement using a backhoe to reduce moisture content and spread within the cap limits. A minimum of 1 foot of clean foundation fill was placed over the stabilized sludge. The mud boxes, which still contained some residual sediment, were then relocated, one within each newly constructed Frac tank confinement area. The mud boxes were covered to reduce the accumulation of rainwater. Rainwater that eventually accumulated in one of the mud boxes was again pumped to one of the Frac tanks in October of 1998. The water was subsequently disposed of as dye-impacted water, as discussed in Section 7.

## 2.11 BORROW AREA DEVELOPMENT

Clean soil for use in cap construction was acquired from two borrow sources. At the request of the U.S. Navy, clean soil from the spoil pile at the NSWC Crane Bioremediation Facility was used as cap foundation fill. This spoil pile contained about 3,500 cubic yards of material. After U.S. Fish and Wildlife representatives conducted a site investigation, the 161/822 borrow area was established approximately 2 miles west of the Dye Burial Ground site, as shown on the figure in FCR No. 4324-0009-FCR-DBG-002 (Appendix C, Volume I). Approximately 14,000 cubic yards of additional fill were obtained from this second borrow source. Analytical and geotechnical testing was performed to ensure that the materials were suitable for use as clean fill.

Site preparation activities at the 161/822 borrow area included site clearing and drainage and implementing erosion controls. Stumps at the borrow area were pulled and disposed of in adjacent wooded areas for use as animal habitat. The 161/822 borrow soils were used for site grading, cap foundation fill, and the lower 24 inches of the 27-inch cover layer.

# SECTION 3
# CAP SYSTEM CONSTRUCTION

The methods and materials used to construct the interim measures cap system at the Dye Burial Ground are described below in generally the same sequence as constructed.

## 3.1 CAP FOUNDATION FILL LAYER

The cap foundation fill layer acts as a protective layer between the dye-impacted materials and the cap cover system, establishes the shape of the cap, and establishes a firm subgrade for the cap system. Smith Environmental began placing excavated soils and grading the cap subgrade in June 1996, and continued again in November 1996 after the additional field investigation. No fill was placed on the cap subgrade after December 1996 until PSG resumed placing the cap foundation fill in September 1997.

A backhoe was used to spread and level the relocated dye-impacted materials. Localized high spots of dye-impacted soil within the cap limits and near the perimeter were leveled to ensure that all dye-impacted materials were covered with at least 6 inches of clean foundation fill.

Clean soil used to construct the cap foundation fill layer was obtained from the biofacility spoils pile and the 161/822 borrow area. Hanna Trucking hauled the clean soil from the borrow sources to the construction area under subcontract to PSG. The existing temporary plastic cover within the cap limits was cut and peeled back to expose the subgrade immediately before placing the first lift of foundation fill. This direct contact between the subgrade and the foundation fill allowed dissipation of excess pore pressures created during cap construction and enhances the stability of the cap system.

The cap foundation fill layer was constructed in 6- to 12-inch lifts. The foundation fill material was spread using a low-ground-pressure (LGP) dozer and compacted with a sheepsfoot roller. Before compaction, each lift was visually inspected and debris, roots, and rocks larger than 3 inches were removed by hand. Each lift was compacted to at least 90 percent of maximum dry density at a moisture content within minus 3 to plus 3 percent of optimum moisture content, as determined in accordance with ASTM D 698 (ASTM, 1998).

Placement of the foundation fill layer was suspended from July through October 1996, January through August 1997, and October 1997 through June 1998. Before the 1997-98 winter shutdown, the foundation fill layer was graded to drain and smooth-drum rolled to seal the surface. Winter shutdown activities are described in Section 4. Placement of the foundation fill layer resumed in June 1998 and was completed in July.

During construction, cement, fly ash, and quick lime were added to several areas of the foundation fill for moisture reduction and stabilization. The final graded surface was inspected and approved by MK and accepted in writing by the geosynthetics installer after all debris, organics, rocks, gravel, roots and other material that could potentially damage the geosynthetic components were removed. The as-built drawing titled *Clay* (Appendix B, Volume I) shows the foundation fill finish grade and contours. Soil test results are presented in Appendix E (Volume II).

## 3.2 DRAINAGE/ANCHOR TRENCH EXCAVATION

The drainage/anchor trench was excavated using a backhoe with a 2-foot-wide bucket. The 2-foot-wide and 1-foot-deep (minimum) drainage/anchor trench was excavated around the perimeter of the cap, as shown on Construction Drawing No. C-08 and on the as-built drawing titled *Final Dirt* (Appendix B, Volume I). Top and bottom corners of the trench were rounded to reduce bending stresses in the liner

materials. Protruding roots were cut off flush with the trench side walls. No dye was encountered during excavation of the trench. Excavation of the drainage/anchor trench was completed on July 12, 1998.

## 3.3 GEOTEXTILE CUSHION

A Synthetic Industries Geotex 1201 12-ounce, 120-mil non-woven geotextile cushion (Type 2) was installed over the foundation fill layer and the drainage/anchor trench subgrade to protect the liner components against puncture and other damage. The geotextile cushion was placed by Environmental Design & Construction Inc. (EDCI) during July 11 to 13, 1998. The geotextile extended 2 feet beyond the outside of the trench, as shown on Construction Drawing No. C-07 (Appendix B, Volume I). During placement, the geotextile panels were sewn together with a polymer thread using a locking stitch. Tears and defects were repaired by placing a patch that overlapped the edge of the tear by at least 1 foot in each direction. The seam locations were measured and recorded. The proposed panel layout plan, geotextile quality control certifications, and data are provided in Appendix F (Volume II). The as-built plan is provided in Appendix B (Volume I).

## 3.4 GEOSYNTHETIC CLAY LINER

A Bentofix Technologies, Inc. Bentofix NS geosynthetic clay liner (GCL) was installed over the geotextile cushion, and the GCL was overlain with a geomembrane liner. Together, the GCL and geomembrane liners form a composite liner. The GCL significantly restricts the flow of water through punctures or defects in the geomembrane liner. The composite liner forms an infiltration barrier, preventing infiltration from reaching the underlying dye trenches and dye-impacted materials.

The GCL was placed in accordance with the approved panel layout plan by PSG and EDCI using a wheel loader with a spreader bar and a 6x6 all-terrain vehicle over an approximate two-week period in July 1998. The GCL was extended to the edges of the Type 2 geotextile cushion, as shown on Construction Drawing No. C-07 (Appendix B, Volume I). The GCL was covered with a fully seamed high-density polyethylene (HDPE) geomembrane liner the same day it was installed to prevent premature hydration of the GCL. The GCL panels were overlapped to the manufacturer's match line (10 inches on side seams) and a minimum of 12 inches on end seams. Granular bentonite was applied to all overlaps at a minimum rate of 0.25 pound per linear foot. Areas with defects were patched in accordance with the specifications by placing a patch with the minimum-specified overlap on all sides and applying granular bentonite to the overlaps. The seam locations were measured and recorded. The GCL quality control certifications and data are provided in Appendix G (Volume II). The as-built plan is provided in Appendix B (Volume I).

## 3.5 HIGH-DENSITY POLYETHYLENE GEOMEMBRANE LINER

The HDPE geomembrane liner is the primary barrier against migration of moisture into the dye trenches and dye-impacted materials. The HDPE geomembrane acts in conjunction with the GCL to form a composite liner.

A 60-mil, double-textured Polyflex HDPE geomembrane liner was installed over the GCL within the cap limits and the drainage/anchor trench, as shown on Construction Drawing No. C-07 (Appendix B, Volume I). Installation of the HDPE liner began on July 14 and was completed on July 23, 1998. The HDPE geomembrane liner was placed simultaneously with the GCL by PSG and EDCI using a wheel loader with a spreader bar and a 6x6 all-terrain vehicle. The geomembrane panels were placed in accordance with the approved panel layout plan and seamed using a double-shoe fusion welder. The quality control measures implemented during placement of the HDPE liner are described in Section 5.5. Seams were generally oriented parallel to the slope on the cap side slopes (perpendicular to the contours). Damaged locations were patched by grinding the textured surface off of the liner and extrusion-

welding a patch of the same geomembrane liner material. The patch was extended at least 6 inches beyond the edge of the defect. The seam locations were measured and recorded. The proposed panel layout plan, geomembrane quality control certifications, and data are provided in Appendix H (Volume II). A copy of the as-built plan is provided in Appendix B (Volume I). The geomembrane liner is warrantied by the manufacturer for a period of 20 years.

## 3.6 DRAINAGE COLLECTION SYSTEM

The drainage collection system, which was constructed within the perimeter drainage/anchor trench, drains infiltration water away from the cap system. The drainage collection system collects any infiltration that reaches the impermeable geomembrane/GCL composite liner. The infiltration water flows to the cap perimeter through a sand drainage layer to the drainage/anchor trench, where it enters a perforated pipe set in drain gravel. The collected water is conveyed to one of four outlets and allowed to flow away from the cap.

PSG completed construction of the drainage collection system in July 1998. A Synthetic Industries Geotex 1201 non-woven (Type 1) 12-ounce geotextile was placed in the drainage/anchor trench and lapped over the edges.
After verification of proper drainage grades, 20-foot lengths of 4-inch perforated Advanced Drainage Systems (ADS) HDPE pipe were placed (as shown on Construction Drawing No. C-07 in Appendix B, Volume I) in the bottom of the geotextile-lined drainage/anchor trench. Rounded 2-inch-minus, ¼-inch-plus drain rock was then placed around the perforated pipe, filling the drainage/anchor trench. The Type 1 geotextile was then wrapped over the top of the gravel and overlapped a minimum of 1 foot.

Four outlets were constructed for the perimeter piping using standard tee connections. The 4-inch perforated outlet drain pipes emerge from the ground surface away from the cap, as shown on Construction Drawing No. C-08 (Appendix B, Volume I). Screens were installed over the outlets to prevent animal intrusion. Screens were preferred over "rat gates" because the spacing of the rat-gate grating is too wide to effectively prevent large rodents from entering the outlets. The as-built drawing entitled *Liner Area* (Appendix B, Volume I) shows the as-built locations. Each outlet trench was constructed with the same section and materials as the perimeter drainage/anchor trench. Construction of the drainage system began on July 21 and was completed on July 28, 1998.

## 3.7 SAND DRAINAGE LAYER

The sand drainage layer allows lateral drainage of infiltration and prevents hydraulic head build-up on the impermeable barrier. The water is diverted laterally to the perimeter drainage collection system.

The sand drainage layer was constructed over the completed HDPE geomembrane liner. The sand layer extends to the outer edge of the drainage/anchor trench. An LGP dozer was used to spread and grade sand on the 5 percent top slope. The sand, which was obtained from a local Roger Group quarry, was placed in a single lift and compacted by tracking with the LGP dozer. Sand for the 3H:1V side slopes was transported by track loader and spread by hand. The final constructed layer is 6 inches thick and has a tested hydraulic conductivity greater than $1 \times 10^{-2}$ cm/sec (Construction Drawing No. C-07, Appendix B, Volume I). Surveys and random depth checks were performed to verify layer thickness. The as-built drawing titled *Sand* (Appendix B, Volume I) shows the sand drainage layer configuration and contours. Construction of the sand drainage layer was completed during late June 1998.

## 3.8 GEOTEXTILE FABRIC – FIRST LAYER

A geotextile fabric was placed over the sand drainage layer to prevent particle migration between the sand drainage layer and the overlying biotic barrier layer. The fabric also provided subgrade reinforcement during placement of the biotic barrier layer, thereby preventing rutting of the completed sand drainage layer.

A TNS Mills, Inc. TNS R070 7-ounce non-woven geotextile (Type 1) was placed on the sand drainage layer, as shown on Construction Drawing No. C-07 (Appendix B, Volume I). A backhoe was used to stage the geotextile, which was then deployed by hand. The Type 1 geotextile extends to the outer edge of the HDPE geomembrane liner. The geotextile panels were seamed full length by sewing, and the seam locations were measured and recorded. The proposed panel layout plan and geotextile quality control certifications are provided in Appendix F (Volume II). The as-built plan is provided in Appendix B (Volume I). Placement of this geotextile layer began on July 28 and was completed on July 30, 1998.

## 3.9 BIOTIC BARRIER LAYER

The biotic barrier layer is a coarse gravel layer that is designed to discourage burrowing animals from penetrating into the underlying cap system components.

A 6-inch-thick biotic barrier layer was placed on the Type 1 geotextile, as shown on Construction Drawing No. C-07 (Appendix B, Volume I). The material for the biotic barrier was obtained from a local Roger Group quarry. The biotic barrier is composed of 2-inch-minus rounded gravel and has a hydraulic conductivity greater than $1 \times 10^{-1}$ cm/sec. The biotic barrier, which extends to the outer edge of the drainage/anchor trench, was spread in a single lift. To avoid rutting the underlying sand drainage layer with haul trucks, the biotic barrier material was placed onto the cap using a 60-foot electric conveyor and then spread with the LGP dozer. Surveys and random depth checks were performed to verify layer thickness. The as-built drawing titled *Gravel* (Appendix B, Volume I) shows the biotic barrier layer configuration and contours. Construction of the biotic barrier layer began on July 29 and was completed on August 3, 1998.

## 3.10 GEOTEXTILE FABRIC – SECOND LAYER

A second Type 1 geotextile fabric was placed over the completed biotic barrier layer to prevent particle migration between the 27-inch cover layer and the biotic barrier layer, allowing the biotic barrier material to also act as a drainage layer.

Following the same procedures used to place the previous layer of geotextile fabric, the Type 1 geotextile fabric was placed to the outer edge of the HDPE geomembrane liner, as shown on Construction Drawing No. C-07 (Appendix B, Volume I). The seam locations were measured and recorded. The proposed panel layout plan and geotextile quality control certifications are provided in Appendix F (Volume II); the as-built plan is provided in Appendix B (Volume I). Placement of the second geotextile layer began on August 4 and was completed on August 5, 1998.

## 3.11 COVER LAYER AND FINISH GRADE

The 27-inch cover layer supports vegetative growth and provides frost protection for the geomembrane liner. The uppermost 3 inches of the cover layer is topsoil to enhance establishment of the cap system vegetation. The topsoil was obtained from the Navy-approved Abram and Hawkins borrow source located near Graysville, Indiana, and was tested and analyzed to ensure that the material met the specifications

for topsoil. The remainder of the cover layer soil was obtained from the 161/822 borrow area. Borrow source information and analytical results are provided in Appendix E (Volume II).

The cover soil was spread using an LGP dozer. A 24-inch layer of soil cover was placed on the Type 1 geotextile in 12-inch lifts and compacted with a sheepsfoot roller to 90 percent of maximum dry density at a moisture content between optimum and 3 percent wet of optimum, as determined by ASTM D 698 (ASTM, 1998). Three inches of topsoil were placed on top of the cover soil and compacted lightly by tracking with the LGP dozer. Random depth checks were performed to verify topsoil thickness. Cover soil layer construction was completed on August 28, 1998, and the as-built condition is shown on the as-built drawing titled *Final Dirt* (Appendix B, Volume I).

## 3.12 COVER VEGETATION

Vegetation work for the cover was performed by the PSG landscaping sub-tier contractor, Woodland Farms Nursery. The cover was seeded in September 1998 to provide permanent protection against soil erosion. The 3-inch topsoil layer was disked in preparation for seeding. Seed and fertilizer were spread using a hand spreader. The seed was hand-raked ¼ to ½ inch into the topsoil layer on the 3H:1V side slopes. A cultipacker was used to embed the seed ¼ to ½ inch into the cap top slope. The cap top slope was mulched, crimped, and rolled, and erosion matting was placed over the side slopes and secured in place using wooden pegs. The seed mixture was 45 percent tall fescue, 31 percent perennial ryegrass, and 23 percent Kentucky bluegrass. Vegetation was satisfactorily established as of November 2, 1998.

# SECTION 4
# CONTROL MEASURES

This section describes the actions and temporary control measures taken for particular events, such as winterizing the cap foundation, collecting dye-impacted water seepage, managing storm water, and controlling erosion.

## 4.1 WINTERIZATION

A formal winterization plan was implemented after the uncontrolled release of dye-impacted water occurred in January 1997. The 1996-97 winterization activities are described in Section 2.

A formal winterization program was also implemented during the 1997-98 winter shutdown. The program began by increasing the thickness of clean soil over dye-impacted soil to a minimum of 1 foot, grading the surface to drain, and smooth-drum rolling the surface. Erosion mats were placed on the side slopes of the fill. In mid-October 1997, temporary seeding was broadcast over the disturbed areas outside the cap limits and within the borrow area. The secondary containment berm around the Frac tank confinement areas was also seeded.

As part of each winterization program, MK and the subcontractor conducted daily and weekly inspections of the construction site and the 161/822 borrow area. The foundation fill was inspected for areas that had eroded, settled, or otherwise deteriorated and threatened to expose underlying dye-impacted materials, and any defects were repaired. Inspections also encompassed the borrow and construction area silt fencing, straw bales, and plastic sheeting installations, and all dye-impacted water holding (Frac) tanks.

## 4.2 SEEPS

During the construction of the foundation fill in late 1997, seeps of dye-impacted water were observed in isolated areas, with associated softening and pumping of the foundation fill. The two primary areas of softening were in the northeast and northwest areas of the cap limits. The northwest area seepage was minimal and was repaired in June 1998 by excavating the soft, saturated soil and adding quick lime to the exposed subgrade. The lime was mixed into the subgrade with a sheepsfoot roller. The area was then backfilled with dry foundation fill and compacted satisfactorily.

A different solution was developed for the seep in the northeast area, which was producing a significant amount of liquid. The remedy involved constructing a seepage collection system, as described in FCR No. 4324-0009-FCR-DBG-012 (Appendix C, Volume I). A 2-foot by 2-foot sump was excavated at the seep location to the original ground surface to collect the liquid. The sump was lined with geotextile filter fabric, filled with coarse drain rock, and then covered with foundation fill and compacted. A perforated polyvinyl chloride (PVC) pipe in the sump was connected to approximately 90 feet of 2-inch PVC solid-wall pipe, allowing the sump to drain by gravity to a 250-gallon poly tank at the north edge of the cap. The drain pipe was installed in a trench, which was also backfilled with foundation fill and compacted. A secondary containment berm was constructed around the poly tank during the winter shutdown. In addition, straw bales were placed around the poly tank, and the tank was covered with plastic sheeting to prevent the liquid in the pipe and tank from freezing. Liquid collected in the poly tank was periodically pumped to the Frac tanks. Seepage collection continued through the 1997-1998 winter shutdown and was terminated when the cap foundation construction was resumed in May 1998.

The seepage collection system was closed after construction of the foundation fill to final grade was completed. The fill was excavated back 1 foot from finish grade at the pipe outlet, and the pipe was cut and capped. Seepage had nearly stopped by the time the collection system was closed. The excavation

was then backfilled with compacted foundation fill material and the collected seepage pumped into a Frac tank. In all, more than 225 gallons of liquid were collected from the northeast seep.

## 4.3 STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL

Storm water runoff and erosion and sediment control measures at the Dye Burial Ground were implemented throughout cap system construction and during the winter shutdowns. The control measures included grading, berms, plastic sheeting, silt fencing, and straw bales. Excavations and excavated materials were covered with plastic during precipitation events to minimize runoff from dye-impacted areas. Construction work was also scheduled around inclement weather.

Disturbed areas outside the cap limits and in the borrow area were seeded for erosion control during the 1997-98 winter shutdown. Minor erosion was observed on the foundation fill during the 1997-98 winter shutdown, so temporary plastic sheeting was placed over approximately 80 percent of the cap area and anchored with sandbags. These measures effectively stopped the erosion and prevented further infiltration of precipitation. Erosion matting was placed on side slopes of the cap foundation fill and on the berms of the Frac tank confinement areas. Straw bales and silt fences were used throughout construction in swales, areas of concentrated flow, and downgradient of disturbed areas. All dye-impacted runoff and liquids, including decontamination water and seepage from the northeast seep, were collected and stored in the Frac tanks.

## 4.4 WARNING SIGNS

Warning signs were placed around the entire perimeter of the interim measures cap to delineate the location of the cap system. The locations of the signs ensure visibility to vehicles traveling on the gravel access road, as shown on Construction Drawing No. C-09 (Appendix B, Volume I). Each of the 16 signs reads:

**KEEP OFF**
**DYE BURIAL GROUND**
**LANDFILL CAP**

**WARNING**
**MOW WITH SMALL**
**EQUIPMENT**

## 4.5 MONITORING WELLS

Three existing monitoring wells within the cap limits were extended up through the cap using PVC pipe risers and couplers. At least three rivets were used to secure each connection. The existing bollards were pulled before placing foundation fill, taking care not to damage the wells. Granular bentonite was placed around each well riser at the HDPE penetration. A field-constructed HDPE geomembrane boot was then placed around the well and extrusion-welded to the liner. Silicone sealant was placed around the top of the boot. A protective steel well casing and a concrete collar were constructed around the three wells within and one well outside of the cap limits. The casings were painted safety yellow and tagged with an identification tag provided by NSWC Crane Environmental Protection Department. Typical construction details for the boot and protective steel well casing are shown on Construction Drawing No. C-07 in Appendix B (Volume I).

# SECTION 5
# TESTING AND INSPECTIONS

Field tests and inspections were performed during construction to verify that the cap system was being constructed in accordance with the drawings and specifications. Testing was performed on materials before they were delivered to the site (pre-construction testing), during placement (conformance testing), and after placement (acceptance testing). The various types and frequencies of the required tests are detailed in the technical specifications and the quality control sections of the *Work Plan* (MK, 1997). Copies of the technical specifications have not been included in this report, but are provided in the *Work Plan* (MK, 1997). Pre-construction testing consisted of laboratory testing; conformance testing and acceptance testing consisted of both field and laboratory testing. Laboratory test results are provided in Appendices E through H, according to type of material tested. Field test results are provided in Appendix I (Volume II), and field inspection documentation is provided in Appendix J (Volume II).

## 5.1 EARTHWORK

Earthwork during the Dye Burial Ground cap construction included excavating dye-impacted soil, backfilling excavated areas, grading, and placing the foundation fill layer, the sand drainage layer, the biotic barrier layer, and the cover layer. Field inspections included visually examining dye-impacted soil excavations and visual observations for material uniformity, lift thickness and uniformity, complete coverage by compaction equipment, potential damage to underlying materials, and to ensure completed work was properly maintained. Field tests were performed to measure compacted density and moisture. The test methods used and sampling frequencies are summarized in Specification Section 02200.

Where the completed earthwork failed tests and/or inspections, the area was re-worked and re-tested until it met the specified requirements. In areas where re-work was required, the size of the re-worked area was extended to one-half the distance between the location of the failed test and the location(s) of adjacent passing tests. Laboratory soil test results are included in Appendix E (Volume II). Field test results are included in Appendix I (Volume II).

## 5.2 FIELD SURVEYS

Registered surveyors from MSE Corporation performed field surveys at the Dye Burial Ground to verify that the completed earthwork segments conformed with the construction drawings and specifications. These field surveys included:

- Clearing limits
- Fill grading for cap foundation
- Grading of drainage/anchor trench
- Thickness of sand drainage layer
- Thickness of biotic barrier layer
- Final grading of cover layer
- Dimensions and locations of the Frac tank storage and confinement areas
- Alignment of relocated access road
- Alignment of swale reconstruction
- Initial and final grading of the 161/822 borrow area

As-built surveys of panel placement were also performed during installation of the geotextiles, GCL, and HDPE geomembrane. As-built drawings are provided in Appendix B (Volume I).

## 5.3 GEOTEXTILES

The geotextile products were tested and certified by the manufacturer before they were delivered to the site and were inspected after they were placed. The quality control (QC) tests performed by the manufacturer are included in Specification Section 02249. MK, PSG, and EDCI (PSG's geosynthetics installation subcontractor) inspected all rolls upon delivery. In addition, confirmation samples were collected from each of the geotextile materials and tested. EDCI rejected six rolls of Type 2 geotextile due to inadequate thickness.

Before placing geotextiles, EDCI signed acceptance certificates after inspections showed that the subgrade conformed with their requirements. During deployment, the geotextiles were visually inspected to ensure that the products were not damaged and complied with the criteria described in Specification Section 02249.

Test results and inspection reports for the geotextile installation are presented in Appendix F (Volume II), which includes the seam inspection and test sheets, panel placement and deployment sheets, pre-construction conformance test sample log, and manufacturer's QC certificate. As-built drawings are provided in Appendix B (Volume I).

## 5.4 GEOSYNTHETIC CLAY LINER

Similar to the geotextiles, the Bentofix 120 GCL was tested and certified by the manufacturer before being delivered. EDCI, MK, and PSG visually inspected the roll covers and labels upon their arrival at the site. The GCL was visually inspected continuously during installation to ensure that the installation complied with the criteria described in Specification Section 02253. A confirmation sample was collected and tested by HTS, Inc., Consultants to verify that the fabric and bentonite materials met specifications. Visual inspections included checks for damage, prehydration, proper panel overlap, and use of granular bentonite at seam locations.

Test results and inspection reports for the GCL installation are presented in Appendix G (Volume II), which includes the as-built survey data, seam inspection and test sheets, panel placement and deployment sheets, pre-construction conformance test results/report, and manufacturer's QC certificate. The as-built drawing is provided in Appendix B (Volume I).

## 5.5 HDPE GEOMEMBRANE

Upon its arrival at the site, EDCI, MK, and PSG inspected the HDPE geomembrane rolls for proper labeling, defects, and damage such as striations, pinholes, and bubbles on the surface. Roll numbers were matched to QC certifications, and storage areas were inspected to ensure that they met both manufacturer and subcontract specifications. Field samples were also obtained for conformance testing by HTS, Inc. The conformance tests measured thickness, density, and tensile properties. The test results were reviewed and accepted by MK before the geomembrane was deployed. During and after deployment, the HDPE geomembrane was visually inspected to ensure that the product was not damaged and that it complied with the criteria described in Specification Section 02250.

The qualifications of the installers and seamers were verified for compliance with Specification Section 02250.

The field QC program required that all seams be tested. EDCI conducted destructive and non-destructive seam testing. The purpose of the destructive seam testing was to provide quantitative information on seam strength; the purpose of the non-destructive testing was to check the integrity of the seams. A pre-weld, midday, and end-of-day test seam was required each day for each welder. Destructive seam testing was conducted using a field tensiometer. Non-destructive seam testing was performed by pressurizing double seams with air. A vacuum box was used for non-destructive testing of extrusion-welded seams.

Test results and inspection reports for the HDPE geomembrane installation are presented in Appendix H (Volume II), which includes the as-built survey data, seam inspection and test sheets, installer and manufacturer's warranty, panel deployment sheets, and manufacturer's QC certificate. The as-built drawing is provided in Appendix B (Volume I).

## 5.6 SITE INSPECTIONS

Throughout the construction period, MK and its prime subcontractor regularly conducted site inspections. Following the uncontrolled release of dye-impacted water in January 1997, inspections were performed a minimum of two times a day and documented on site condition inspection checklists. Examples of the various checklist formats are included in Appendix J (Volume II).

# SECTION 6
# SITE RESTORATION

The finished topsoil layer of the interim measures cap and other areas disturbed during construction were seeded and mulched according to Specification Section 02936. The permanent seeding was native grass species and consisted of a mixture of fescue, perennial rye, and Kentucky bluegrass. All slope areas of 4H:1V or steeper were stabilized with erosion mats.

Upon completion of construction, all construction debris and litter were removed from the site and the 161/822 borrow area. Rutted or otherwise disturbed areas were restored. The borrow area was graded to drain and to match the surrounding topography. All construction equipment was cleaned, decontaminated as appropriate, and demobilized. The confinement relocation areas where the Frac tanks were staged were re-graded to match the surrounding terrain. All re-graded disturbed areas, including the 161/822 borrow area, were seeded and mulched.

Completion of the final punch list and final walkdown on September 4, 1998 led to final acceptance by the Navy Resident Office in Charge of Construction, NSWC Crane Environmental Protection Department, and MK on November 12, 1998. Appendix K (Volume II) contains the final project punch list, and Appendix L (Volume II) contains the final sign-off/acceptance letter.

# SECTION 7
# DISPOSAL OF DYE-IMPACTED WATER

The water stored in the Frac tanks and mud boxes was analyzed by the Navy in accordance with the *Quality Assurance Project Plan for Release Characterization at the Dye Burial Grounds, Solid Waste Management Unit 02/11 at NSWC Crane, Crane, Indiana* (MK, 1997a). The Navy reviewed the laboratory results and toxicological information on the dyes and concluded that the water is non-toxic. In July of 1998, the Navy submitted a proposal for disposing of the dye-impacted water (NSWC, 1998) to the Indiana Department of Environmental Management (IDEM). Analytical data associated with the dye-impacted water is included in this proposal. The IDEM approved the proposal in September 1998 (IDEM, 1998). A copy of this letter and the approved proposal are provided in Appendix M (Volume II).

The fieldwork for disposal of dye-impacted water stored in the ten Frac tanks began on October 19, 1998. This work was performed by MK consistent with the procedures provided in the *Work Plan for Disposal of Dye-Impacted Water* (MK, 1998). Water from the Frac tanks was first pumped into 2,000-gallon tanker trucks and then transported for discharge. The water was discharged into the sewer manhole located on the east side of the Pyrotechnics Facility Plant #3 (Building No. 122). The water was discharged at the rates shown on the inspection logs included in Appendix N (Volume II). These discharge rates were established by the NSWC Crane Environmental Protection Department so that the NSWC Crane wastewater treatment plant could meet the established discharge criteria. Periodic QC inspections were performed to ensure all activities conformed to the requirements of the *Work Plan for Disposal of Dye-Impacted Water* (MK, 1998).

After the water from each of the Frac tanks was discharged and the sediments (if any) were collected, the tanks were, at a minimum, triple-rinsed with potable water. All rinse water was discharged to the same sewer manhole. After completing the cleaning process, a sample of the rinse water from each of the Frac tanks was collected in a clear glass jar and visually inspected against a white background for the presence of dye color. When the sample indicated that the water was clear, the Frac tanks were considered clean and staged at Highway 45, North of Mine Fill "B" for pick-up by the owner (Baker Tanks, Inc.). All ten of the Frac tanks were picked up by the owner by December 1, 1998. The mud boxes were similarly rinsed and released. The residual sediments collected from the Frac tanks and mud boxes were temporarily stored in drums on site. A sample of the sediments was collected for testing. Upon receipt of the analytical test results and under the direction of EPD, the sediments were determined to be clean soil and were spread on the ground surface near the cap. The analytical data are included in Appendix N (Volume II). The drums were then removed from the site.

The tanker trucks and other equipment that had been exposed to the dye-impacted water were, at a minimum, triple-rinsed with potable water prior to reuse. All used personal protective equipment was collected and disposed of at the NSWC Crane solid waste landfill.

All actions proposed in the *Work Plan for Disposal of Dye-Impacted Water* (MK, 1998) for the dye-impacted water that was stored in Frac tanks are considered complete. Selected photographs of the transfer and discharging of water, decontamination of storage vessels, and site re-grading activities are included in Appendix A (Volume I).

# SECTION 8
# CONCLUSIONS

This report demonstrates that the interim measures cap system for the Dye Burial Ground was constructed in accordance with the approved drawings and specifications, and that quality assurance and quality control personnel oversaw the construction and ensured that all work met the requirements of these governing documents. All on-site changes (FCRs) were reviewed and approved by the professional engineer in charge of the design, the Navy, and the U.S. EPA. During construction, any elements determined to be contrary to the specifications were reworked or removed and brought into compliance. Appendix K includes the rework items list and the final project punch list master log. The cap system is expected to function as the design intended.

The U.S. Army Corps of Engineers Waterway Experiment Station design report (Glynn et al., 1995) recommends that for the first year after construction the cap be monitored monthly for settlement, and that the measurements be analyzed against predicted settlements to detect potential distress. Any depressions or sloughs which form should be documented and promptly repaired.

The Dye Burial Ground cap system was constructed safely with no lost-time accidents incurred during the construction period.

At project completion, the Dye Burial Ground interim measures cap and appurtenant features were inspected and accepted by the Navy Resident Officer in Charge of Construction and the NSWC Crane Environmental Protection Department (Appendix L, Volume II).

# SECTION 9
# REFERENCES


ASTM, 1998. ASTM D 698,Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft$^3$ (600 kN-m/m$^3$))[1], *1998 Annual Book of Standards, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics*. ASTM:Philadelphia.

Glynn, E., D. Bennett, and T. Stark, 1995. *Recommended Remedial Measures at Naval Surface Warfare Center, Crane (NSWCC) Dye Burial Ground (DBG) Solid Waste Management Unit (SWMU) 02/11*. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi. Prepared for Naval Surface Warfare Center Crane. Technical Paper GL-95-xx. July.

IDEM, 1998. Indiana Department of Environmental Management letter to Department of Navy, Crane Division, dated September 1998, referencing NSWC Crane letter dated July 17, 1998 concerning disposal of Dye Burial Ground water under NPDES Permit IN 0021539.

MK, 1995. *Work Plan and Task-Specific Site Safety and Health Plan for Interim Measures Cleanup at Solid Waste Management Unit #02/11, NSWC Crane, Crane, Indiana*. Revision B. Prepared by Morrison Knudsen Corporation for Southern Division, Naval Facilities Engineering Command. August 9.

MK, 1996. *Work Plan and Task-Specific Site Safety and Health Plan for Interim Measures Cleanup at Solid Waste Management Unit #02/11, NSWC Crane, Crane, Indiana*. Revision 0. Prepared by Morrison Knudsen Corporation for Southern Division, Naval Facilities Engineering Command. April 1.

MK, 1997. *Work Plan for Interim Measures Cleanup at Solid Waste Management Unit #02/11, NSWC Crane, Crane, Indiana*. Revision 2. Prepared by Morrison Knudsen Corporation for Southern Division, Naval Facilities Engineering Command. August 7.

MK, 1997a. *Quality Assurance Project Plan for Release Characterization at the Dye Burial Grounds, Solid Waste Management Unit – 02/11 at NSWC Crane, Crane, Indiana*. Prepared by Morrison Knudsen Corporation for Southern Division, Naval Facilities Engineering Command. November 20.

MK, 1998. *Work Plan for Disposal of Dye Burial Grounds Dye-Impacted Water, Solid Waste Management Unit #02/11, NSWC Crane, Crane, Indiana*. Revision 0. Prepared by Morrison Knudsen Corporation for Southern Division, Naval Facilities Engineering Command. October 8.

NSWC, 1998. NSWC Crane letter to Indiana Department of Environmental Management. Department of the Navy, Crane Division, Code 5090, Ser095/8137. July 17.

# APPENDIX A

# PROJECT PHOTOGRAPHS

MORRISON KNUDSEN CORPORATION

Photo 1 - DBG Prior to Cap construction, 09-18-97.

Photo 2 - Panorama 1 of 2. DBG prior to Cap construction. Site clearing and dye contaminated soil excavation in-progress, 09-16-97.

Photo 3 - Panorama 2 of 2, 09-16-97.

Photo 4 - Transferring bagged PPE onto Cap area, 09-18-97.

Photo 5 - Mixing cement into mud box sludge to stabilize wet material, 10-02-97.

Photo 6 - No. 53 Stone placed on No. 2 stone during access road relocation construction, 10-08-97.

Photo 7 - New culvert installed under relocated access road, 10-08-97.

Photo 9 - Before excavation of Area 1C dye contaminated soils, 09-15-97.

Photo 10 - After excavation of Area 1C dye contaminated soils, 09-15-97.

Photo 11 - Before excavation of Area 1A dye contaminated soils, 09-15-97.

Photo 12 - After excavation of Area 1A dye contaminated soils, 09-15-97.

Photo 13 - Excavation of dye contaminated soils, 09-13-97.

Photo 14 - Temporary plastic cover cut and peeled to facilitate dissipation of pore pressures and enhance stability, 09-19-97.

Photo 15 - Beginning foundation fill construction, 09-17-97.

Photo 16 - Constructing foundation fill, 09-19-97.

Photo 17 - Barricaded FRAC tank pad area, 02-03-97.

Photo 18 - NW weep before bailing - looking SE, 09-23-97.

Photo 19 - NW weep sump construction, 10-09-97.

Photo 20 - NW weep pipe line, 10-09-97.

Photo 21 - NW weep area bermed for weekend and possible showers, 09-27-97.

Photo 22 - Weep tank with insulative cover, 02-18-98.

Photo 23 - Removing/capping weep collection system. Looking NE, 06-26-98.

Photo 24 - DBG Cap covered with a dusting of snow. Looking south from top of magazine, 12-30-97.

Photo 25 - Plastic sheeting for temporary erosion control during winter shutdown period. Panorama 1 of 2, 02-19-98.

Photo 26 - Panorama 2 of 2, 02-19-98.

Photo 27 - Panorama 1 of 2. Foundation fill at end of winter shutdown period, 05-27-98.

Photo 28 - Panorama 2 of 2, 05-27-98.

Photo 29 - Cap foundation at end of winter shutdown period. Looking south from top of magazine, 05-27-98.

Photo 30 - Mixing quicklime with sheepsfoot, 06-27-98.

Photo 31 - PSG grading north end of Cap foundation, looking southwest, 06-25-98.

Photo 32 - Excavation of anchor/ drainage trench - on north end, 07-11-98

Photo 33 - Drainage/anchor trench excavation, 07-12-98.

Photo 34 - Panorama 1 of 2. Final graded surface of foundation fill ready for geosynthetics installation, 07-10-98.

Photo 35 - Panorama 2 of 2, 07-10-98.

Photo 36 - Sewing seam in Type 2 geotextile cushion, 07-12-98.

Photo 37 - Outlet trench extending from perimeter drain/anchor trench, 07-13-98.

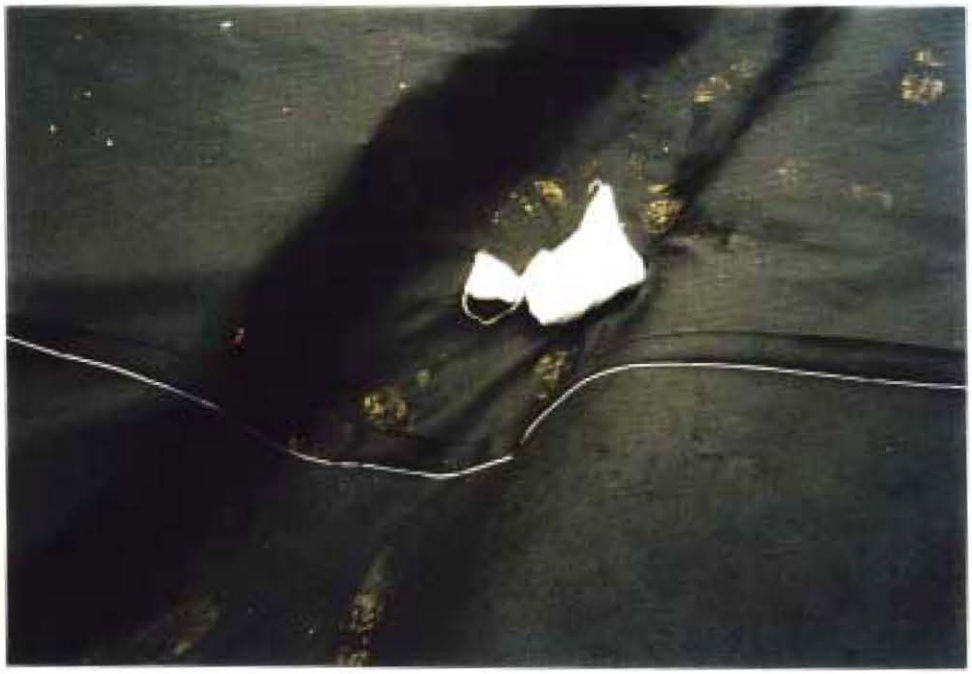


Photo 38 - Seam between adjacent geotextile panels - crossing drain/anchor trench, 07-13-98.

Photo 39 - Beginning to pull next panel of GCL, 07-14-98.

Photo 40 - Deploying GCL, 07-14-98.

Photo 41 - Placing bentonite to form seam between adjacent panels of GCL, 07-14-98.

Photo 42 - Deploying 60 mil HDPE liner, 07-14-98.

Photo 43 - Typical fusion seaming of HDPE liner, 07-14-98.

Photo 44 - Powdered bentonite placed around monitor well riser penetration prior to installing boot, 07-22-98.

Photo 45 - Welding HDPE boot for monitor well riser penetration, 07-22-98.

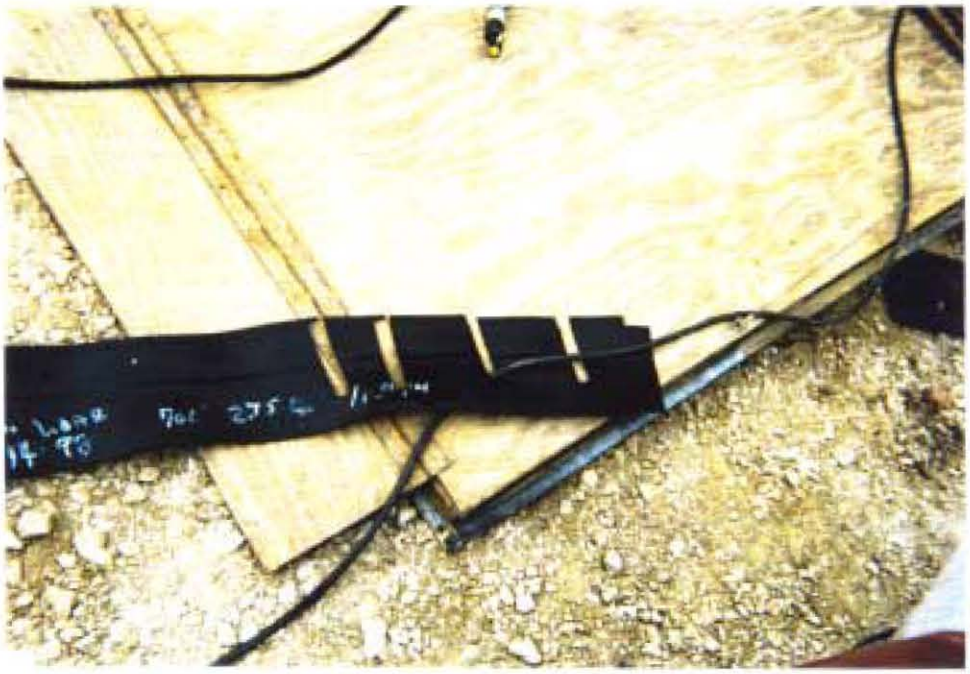


Photo 46 - Test seam in HDPE test strips have been cut out for on-site testing, 07-14-98.

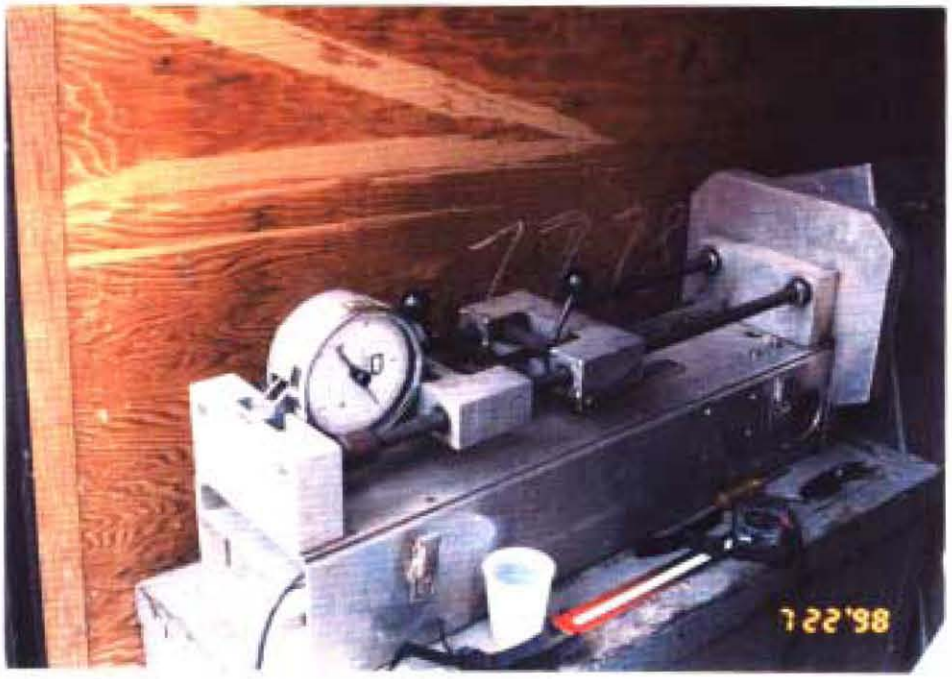



Photo 47 - Tensiometer for destructive testing of HDPE geomembrane seams, 07-22-98.

Photo 48 - Air test of fusion weld, 07-15-98.

Photo 49 - Expansion wrinkles in HDPE liner at end of shift (typical), 07-19-98.

Photo 50 - HDPE liner in a.m. after cool night air has contracted the liner, 07-20-98.

Photo 51 - Grinding HDPE geomembrane preparatory to patching, 07-21-98.

Photo 52 - Extrusion weld patch in HDPE liner, 07-21-98.

Photo 53 - Vacuum box testing of extrusion weld, 07-21-98.

Photo 54 - Testing temperature of HDPE geomembrane seam, 07-18-98.

Photo 55 - Close up of drain pipe stored on site. Note proposed device to prevent rodents from entering pipe at outlets, 07-14-98.

Photo 56 - First HDPE seam and anchor trench, 07-14-98.

Photo 57 - Installing 4" ADS pipe in drainage/anchor trench, 07-21-98.

Photo 58 - Gravel drain rock placed in drainage/anchor trench, 07-21-98.

Photo 59 - Completed drainage/anchor trench on north side of Cap, 07-24-98.

Photo 60 - Placing and spreading sand drainage layer, 07-25-98.

Photo 61 - Depth check on sand drainage layer, 07-28-98.

Photo 62 - Surveying sand drainage layer and placement of Type 1 geotextile, 07-28-98.

Photo 63 - Placing gravel for biotic layer, 07-29-98.

Photo 64 - Placing biotic layer material by conveyor and spreading by dozer, 07-29-98.

Photo 65 - Random depth check of biotic layer, 08-03-98.

Photo 66 - Placement and spreading of 1st lift of cover material over biotic layer geotextile. Looking west, 08-06-98.

Photo 67 - Placement and grading of 1st lift of 27" cover layer over biotic geotextile layer, 08-12-98.

Photo 68 - Performing nuclear moisture/density test on 1st lift of cover layer fill, 08-12-98.

Photo 69 - Typical excavation and framing of concrete well casing collar, 08-18-98.

Photo 70 - Typical well casing and collar on completed cap, 08-19-98.

Photo 71 - Spreading 3" topsoil layer, 08-24-98.

Photo 72 - Topsoil covering Cap area. Lightly compacted by tracking, 08-26-98.

Photo 73 - Installation of straw mats for erosion control during seeding on sloped area, 09-01-98.

Photo 74 - Blown straw mulch application continues on the final cap, 09-03-98.

Photo 75 - Completed monitoring well with new marker band, 09-04-98.

Photo 76 - Typical sign around final cap, 09-04-98.

Photo 77 - Grass established at the 161/822 borrow area, 11-16-98.

Photo 78 - Grass established on top surface of cap, 11-16-98.

MORRISON KNUDSEN CORPORATION

Photo 79-80 - Frac tanks and mud boxes have been cleaned and removed. Access roadway rebuilt. Bermed areas seeded and mulched. Completed grass coverage and completed access roadway, 11-16-98.

Photo 81 - DBG - Frac tank storage location - south, November 1998.

Photo 82 - DBG - Mudbox M281 decon, November 1998.

Photo 83 - DBG - Decon of Frac tank at staging area, November 1998.

Photo 84 - DBG - Frac tank storage location - north, November 1998.

Photo 85 - DBG - Frac tank storage location - south - site restoration activity, November 1998.

Photo 86 - DBG - Frac tank water disposal, November 1998.

C-01

MORRISON KNUDSEN

# SWMU # 02/II

# DYE BURIAL GROUND INTERIM MEASURES CAP

# AT

# EASTERN SECTION

# OF

# NSWC, CRANE DIVISION
# INDIANA

## DRAWINGS LIST

| DRAWING NUMBER | DRAWING TITLE |
|---|---|
| PHASE I | |
| C-01 | TITLE SHEET |
| C-02 | EXISTING SITE PLAN |
| C-03 | CAP FOUNDATION GRADING PLAN PHASE I CONSTRUCTION |
| C-04 | CAP CROSS SECTIONS |
| C-05 | CAP CROSS SECTIONS |
| C-06 | NOT USED |
| C-07 | TYPICAL CAP CROSS SECTIONS AND DETAILS |
| PHASE II TO BE SUBMITTED LATER | |
| C-08 | UNDERDRAIN DRAINAGE PLAN |
| C-09 | FINAL INTERIM COVER GRADING PLAN |
| C-10 | TO BE DETERMINED |

## GENERAL NOTES:

1. THE EXISTING SITE MAPPING, BASE MAPPING AND TOPOGRAPHY WERE DEVELOPED AND PROVIDED BY MSE CORPORATION, INDIANAPOLIS, INDIANA. THE MAPPING WAS PERFORMED IN APRIL, JUNE, AND AUGUST OF 1995 AND RESURVEYED IN JUNE 1997.

2. THE HORIZONTAL DATUMS ARE BASED ON STATE PLANE COORDINATES. ELEVATIONS ARE RELATIVE TO MEAN SEA LEVEL.

3. THIS DRAWING IS PREPARED ONLY ON DESIGN CRITERIA, PARAMETERS, AND GUIDANCE SET FORTH IN "RECOMMENDED REMEDIAL MEASURES AT NAVAL SURFACE WARFARE CENTER, CRANE (NSWCC), DYE BURIAL GROUND (DBG), SOLID WASTE MANAGEMENT UNIT (SWMU) 02/II" BY USACOE, WATERWAYS EXPERIMENTATION STATION, TECHNICAL PAPER GL-95-XX, JULY 1995 AND SUBSEQUENT COMMENTS BY THE THE U.S. EPA AND CORPS OF ENGINEERS WES.

REVISIONS

| REV. | DATE | DESCRIPTION | BY | LEAD ENGR | DEPT. MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|
| A | 6/19/97 | ISSUED FOR BID AND REVIEW | | | | |
| 0 | 6/25/97 | ISSUED FOR CONSTRUCTION | | | | |

NOTES

SWMU#02/II
DYE BURIAL GROUND
INTERIM MEASURES CAP

NSWC, CRANE DIVISION
EASTERN SECTION
TITLE SHEET

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

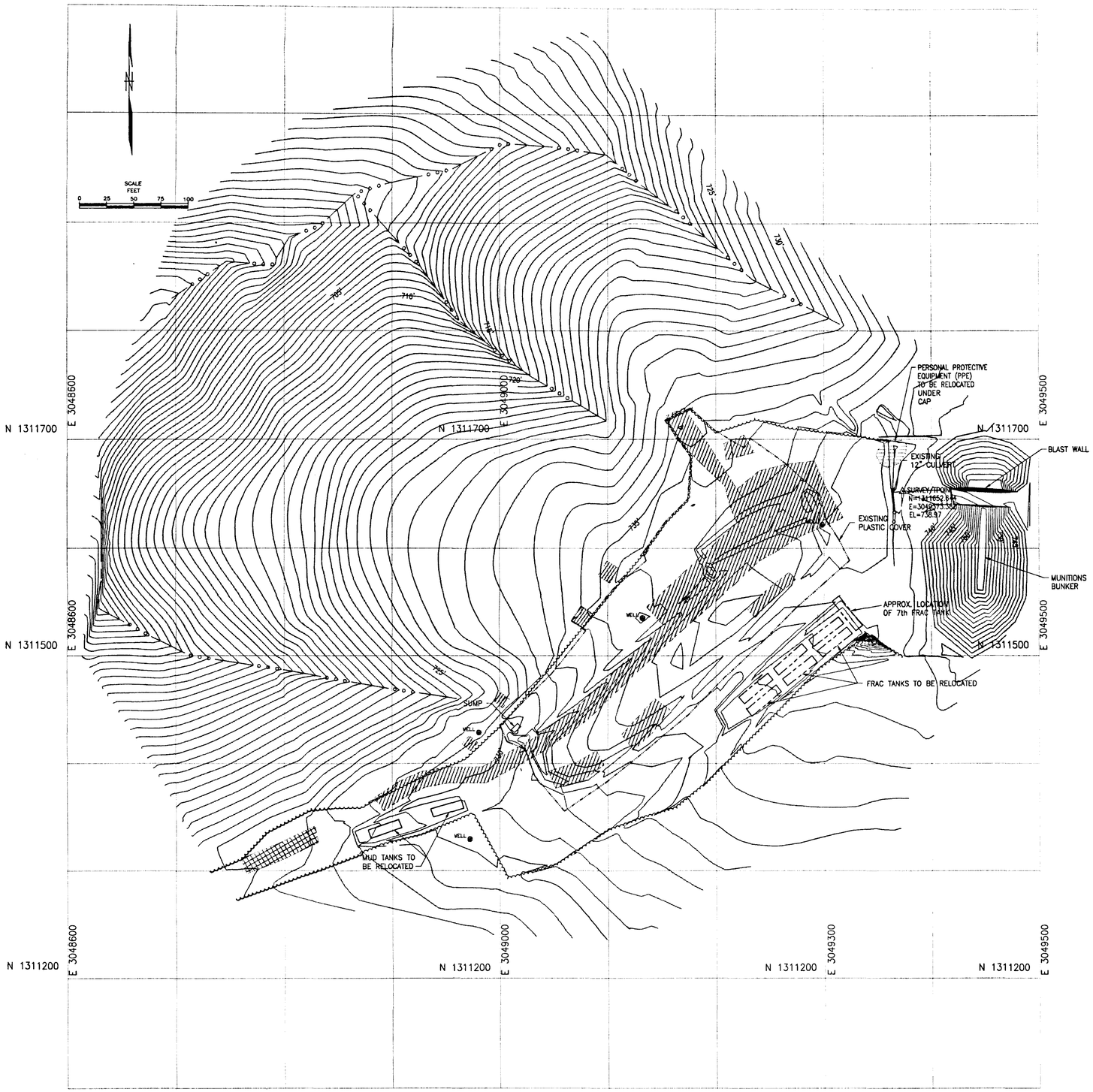
| DEPT | ARCH | STR/CIV | MECH | ELECT | PIPING | INST | Q/A | ENG MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|---|---|---|
| INIT | | | | | | | | | |
| DATE | | | | | | | | | |

| | | |
|---|---|---|
| SCALE: NTS | | WORK ORDER NUMBER |
| DRAWN: R. EVANS | 6/16/97 | 4324 |
| DESIGNED: C. WAITE | | |
| CHECKED: | | DRAWING NUMBER / REV |
| VERIFIED: | | C-01 / 0 |
| APPROVED: | | |
| AUTOCAD FILE NAME: 4324-01 | | |

MORRISON KNUDSEN

C-02

MORRISON KNUDSEN




MORRISON KNUDSEN

MORRISON KNUDSEN

MORRISON KNUDSEN

## REVISIONS

| REV. | DATE | DESCRIPTION | BY | LEAD ENGR | DEPT MGR | PROJ MGR |
|---|---|---|---|---|---|---|
| A | 6/13/97 | ISSUED FOR BID AND REVIEW | | | | |
| 0 | 6/25/97 | ISSUED FOR CONSTRUCTION | | | | |

## NOTES

### LEGEND

- EXISTING TREE LINE
- LIMIT OF PLASTIC COVER
- EXISTING MONITORING WELL
- AREAS OF WASTE PREVIOUSLY EXCAVATED AND REPLACED WITH CLEAN SOIL.
- AREAS PREVIOUSLY IDENTIFIED WITH DYE CONTAMINATION
- EXISTING FRAC TANKS
- SURVEY CONTROL POINT
- EXISTING MUD TANKS

SWMU#02/II
DYE BURIAL GROUND
INTERIM MEASURES CAP

NSWC, CRANE DIVISION
EASTERN SECTION
EXISTING SITE PLAN

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

| DEPT | ARCH | STR/CIV | MECH | ELECT | PIPING | INST | Q/A | ENG MGR | PROJ MGR |
|---|---|---|---|---|---|---|---|---|---|
| INT | | | | | | | | | |
| DATE | | | | | | | | | |

| | | |
|---|---|---|
| SCALE: | 1"=50'-0 | |
| DRAWN: | R. EVANS | 6/16/97 |
| DESIGNED: | C. WAITE | 6/17/97 |
| CHECKED: | | |
| VERIFIED: | | |
| APPROVED: | | |
| AUTOCAD FILE NAME: 4324-02.DWG | | |

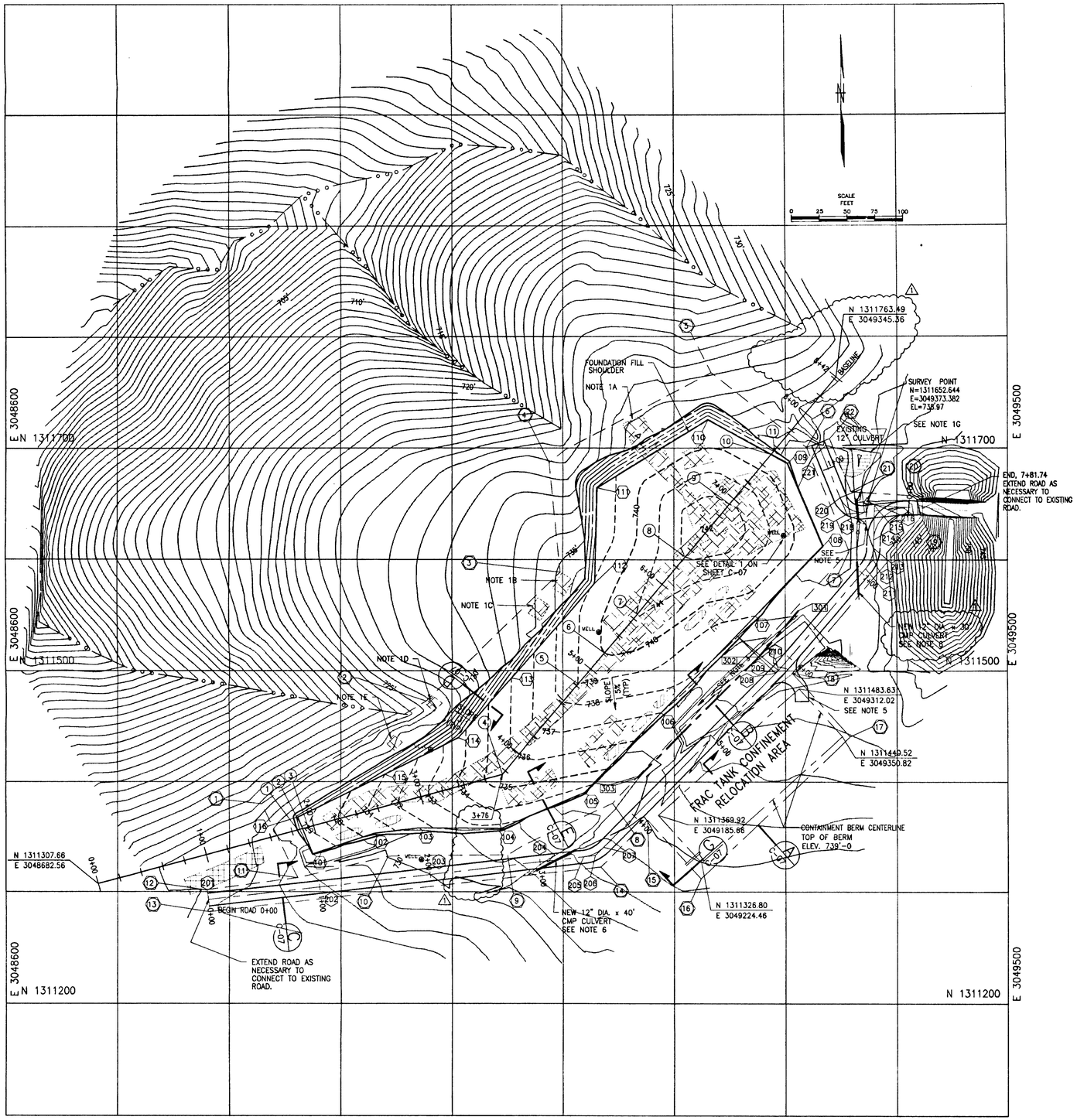
WORK ORDER NUMBER
4324

DRAWING NUMBER
C-02

REV
0

MORRISON KNUDSEN

MORRISON KNUDSEN




## BASE LINE CONTROL POINTS

| PT # | EASTING | NORTHING | ELEVATION |
|---|---|---|---|
| 1 | 3048861.10 | 1311356.43 | 727 |
| 2 | 3048865.66 | 1311357.67 | 728.8 |
| 3 | 3048870.72 | 1311359.05 | 729 |
| 4 | 3049045.12 | 1311406.70 | 735.3 |
| 5 | 3049113.49 | 1311487.93 | 739 |
| 6 | 3049137.41 | 1311516.61 | 740 |
| 7 | 3049166.27 | 1311551.98 | 741 |
| 8 | 3049209.99 | 1311602.98 | 742 |
| 9 | 3049249.91 | 1311650.05 | 742 |
| 10 | 3049287.16 | 1311694.32 | 739 |
| 11 | 3049290.14 | 1311697.87 | 737.6 |

## FOUNDATION FILL SHOULDER CONTROL POINTS

| PT # | EASTING | NORTHING | ELEVATION |
|---|---|---|---|
| 101 | 3048874.86 | 1311334.89 | 728.25 |
| 102 | 3048929.70 | 1311353.49 | 730.5 |
| 103 | 3048970.32 | 1311358.46 | 731.75 |
| 104 | 3049044.43 | 1311358.14 | 732.8 |
| 105 | 3049119.55 | 1311390.61 | 733.75 |
| 106 | 3049188.15 | 1311461.85 | 737 |
| 107 | 3049272.92 | 1311549.89 | 739 |
| 108 | 3049333.73 | 1311612.74 | 739 |
| 109 | 3049301.67 | 1311686.45 | 739 |
| 110 | 3049230.46 | 1311725.04 | 739 |
| 111 | 3049130.81 | 1311664.65 | 738.25 |
| 112 | 3049130.33 | 1311580.49 | 739 |
| 113 | 3049053.59 | 1311493.21 | 736 |
| 114 | 3049005.71 | 1311439.44 | 733.75 |
| 115 | 3048939.63 | 1311406.72 | 731 |
| 116 | 3048861.49 | 1311368.01 | 728.5 |

## CLEARING LINE CONTROL POINTS

| PT # | EASTING | NORTHING |
|---|---|---|
| 1 | 3048829 | 1311380 |
| 2 | 3048976 | 1311472 |
| 3 | 3049097 | 1311588 |
| 4 | 3049087 | 1311687 |
| 5 | 3049233 | 1311767 |
| 6 | 3049318 | 1311700 |
| 7 | 3049357 | 1311607 |
| 8 | 3049144 | 1311380 |
| 9 | 3049049 | 1311334 |
| 10 | 3048942 | 1311332 |
| 11 | 3048861 | 1311313 |
| 12 | 3048780 | 1311301 |
| 13 | 3048782 | 1311281 |
| 14 | 3049134 | 1311323 |
| 15 | 3049176 | 1311365 |
| 16 | 3049224 | 1311312 |
| 17 | 3049357 | 1311440 |
| 18 | 3049306 | 1311498 |
| 19 | 3049423 | 1311635 |
| 20 | 3049423 | 1311657 |
| 21 | 3049359 | 1311661 |
| 22 | 3049339 | 1311708 |

## CENTER LINE OF SWALE CONTROL POINTS

| PT # | EASTING | NORTHING |
|---|---|---|
| 301 | 3049311 | 1311554 |
| 302 | 3049276 | 1311512 |
| 303 | 3049167 | 1311404 |

## DYE BURIAL ACCESS ROAD CENTER LINE CONTROL POINTS

| PT # | | STATION | EASTING | NORTHING | DESCRIPTION |
|---|---|---|---|---|---|
| | | SECTION ONE | | | |
| 201 | | 0+00 | 3048781.30 | 1311292.70 | BEGIN CONSTRUCTION ROAD SECTION ONE |
| 202 | | 1+00 | 3048880.62 | 1311304.34 | |
| 203 | | 2+00 | 3048979.94 | 1311315.99 | |
| 204 | | 3+00 | 3049079.26 | 1311327.64 | |
| 205 | CURVE 1 | 3+39.47 | 3049118.46 | 1311332.23 | P.C. R=30'-0", Δ=38.7° |
| 206 | | | 3049128.92 | 1311333.46 | P.I. |
| 207 | | 3+59.73 | 3049136.31 | 1311340.95 | P.T. |
| 208 | CURVE 2 | 5+80.16 | 3049291.21 | 1311497.78 | P.C. R=50'-0", Δ=4.2° |
| 209 | | | 3049292.49 | 1311499.08 | P.I. |
| 210 | | 5+83.83 | 3049293.67 | 1311500.46 | P.T. |
| 211 | CURVE 3 | 7+05.99 | 3049371.77 | 1311592.02 | P.C. R=30'-0", Δ=39.2° |
| 212 | | | 3049378.70 | 1311600.14 | P.I. |
| 213 | | 7+26.52 | 3049378.94 | 1311610.82 | P.T. |
| 214 | CURVE 4 | 7+33.62 | 3049379.10 | 1311617.92 | P.C. R=30'-0", Δ=91.9° |
| 215 | | | 3049379.79 | 1311648.91 | P.I. |
| 216 | | 7+81.74 | 3049410.74 | 1311647.21 | P.T. END CONSTRUCTION, CONNECT TO EXISTING |
| | | SECTION TWO | | | |
| 216 | | 0+00 | 3049410.74 | 1311647.21 | BEGIN CONSTRUCTION ROAD SECTION TWO |
| 218 | CURVE 5 | 0+40.18 | 3049370.80 | 1311642.86 | P.C. R=21'-0", Δ=73.9° |
| 219 | | | 3049355.09 | 1311641.16 | P.I. |
| 220 | | 0+67.27 | 3049334.10 | 1311655.77 | P.T. |
| 221 | | 1+15.22 | 3049329.52 | 1311703.50 | END CONSTRUCTION |

NOTE:
STA 7+81.74 ROAD SECTION ONE=
STA 0+00 ROAD SECTION TWO

## REVISIONS

| REV. | DATE | DESCRIPTION | BY | LEAD ENGR. | DEPT. MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|
| A | 6/19/97 | ISSUED FOR BID AND REVIEW | | | | |
| 0 | 6/25/97 | ISSUED FOR CONSTRUCTION | | | | |
| 1 | 6/27/97 | RISSUED FOR CONSTRUCTION | | | | |

## NOTES

### LEGEND

- ACCESS ROAD CENTERLINE
- FILL CONTOUR
- CLEARING LINE
- SWALE CENTERLINE
- FRAC TANK RELOCATION AREA CONTAINMENT BERM CENTERLINE
- EXISTING MONITORING WELL
- (8) FILL BASE LINE POINTS
- (110) FILL SHOULDER POINTS (100 SERIES)
- (201) ROAD CENTERLINE CONTROL POINTS (200 SERIES)
- (1) CLEARING LINE CONTROL POINTS
- [301] SWALE CONTROL POINTS
- GENERAL WASTE AREAS
- ISOLATED AREAS OF BERMS TO BE LOWERED. SEE NOTE 1H
- PERSONAL PROTECTIVE EQUIPMENT TO BE RELOCATED UNDER FILL. SEE NOTE 1G
- AREAS OF WASTE PREVIOUSLY EXCAVATED AND REPLACED WITH CLEAN SOIL

1. AREAS OF WASTE TO BE EXCAVATED AND PLACED WITHIN CAP AREA: ALL AREAS ARE APPROXIMATE, AND MAY VARY IN SIZE FROM DIMENSIONS SHOWN. ALL WASTE AREAS CONTIGUOUS TO THE CAP SHOULD BE EXCAVATED FOR A DISTANCE OF AT LEAST 2 FEET INSIDE THE LOCATION OF THE PERIMETER DRAINAGE / ANCHOR TRENCH. MATERIALS SHOULD BE PLACED IN THIN LIFTS IN AREAS WHERE THE CAP FOUNDATION FILL IS THICKER, SO THEY DO NOT PROJECT ABOVE THE CAP FOUNDATION GRADE. LEAVE ROOM FOR AT LEAST 6 INCHES OF CLEAN FILL SOIL BETWEEN THE BOTTOM OF THE CAP AND THE WASTE. ANY AREAS WHERE EXISTING PLASTIC IS REMOVED SHALL BE RECOVERED WITH PLASTIC OR AT LEAST 6 INCHES OF CLEAN SOIL THE SAME DAY.
   A. NORTH LEG
   B. NORTH AREA (E) PLASTIC COVER 2/10/97
   C. NORTH AREA (W) PLASTIC COVER 2/20/97
   D. AREA OF RELEASE 01/27/97 (E)
   E. AREA OF RELEASE 01/27/97 (W)
   F. MISCELLANEOUS SPOTS (NOT SHOWN ON DRAWING) TYPICALLY LESS THAN 12 INCHES DIAMETER SHALL BE REMOVED BY HAND EXCAVATION.
   G. PERSONAL PROTECTIVE EQUIPMENT (PPE) TO BE REMOVED AND PLACED WITHIN THE CAP AREA.
   H. ISOLATED AREAS OF BERMS WITHIN THE CAP AREA SHALL BE LOWERED BY HAND EXCAVATION TO MAINTAIN A MINIMUM OF 6 INCHES OF CLEAN FILL BETWEEN POTENTIAL WASTE AND THE BOTTOM OF THE CAP. AREAS ARE APPROXIMATE, AND SHALL BE IDENTIFIED IN GREATER DETAIL IN THE FIELD.
2. CLEAR ZONE AROUND CAP PERIMETER AS SHOWN WILL BE USED FOR ACCESS TO THE PERIMETER OF THE CAP AND EXISTING MONITORING WELLS.
3. RE-ESTABLISH DRAINAGE ON SOUTHEAST SIDE OF CAP. MATCH EXISTING GRADE AT INLET AND OUTLET OF SWALE.
4. FIELD FIT VERTICAL ALIGNMENT OF ACCESS ROAD AS DIRECTED BY CONTRACTOR.
5. EXTEND ACCESS ROAD TO FRAC TANK CONFINEMENT RELOCATION AREA AND AT INTERSECTION OF SECTIONS ONE AND TWO AS DIRECTED BY CONTRACTOR.
6. FIELD FIT CULVERT ALIGNMENTS AND INVERT SLOPES AS DIRECTED BY CONTRACTOR.

SWMU#02/II
DYE BURIAL GROUND INTERIM MEASURES CAP

# CAP FOUNDATION GRADING PLAN PHASE ONE CONSTRUCTION

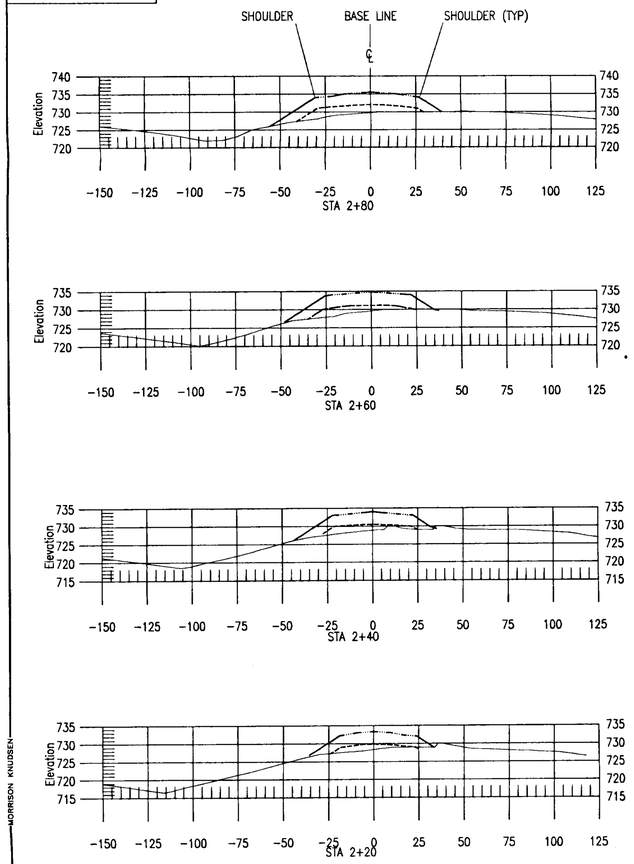
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

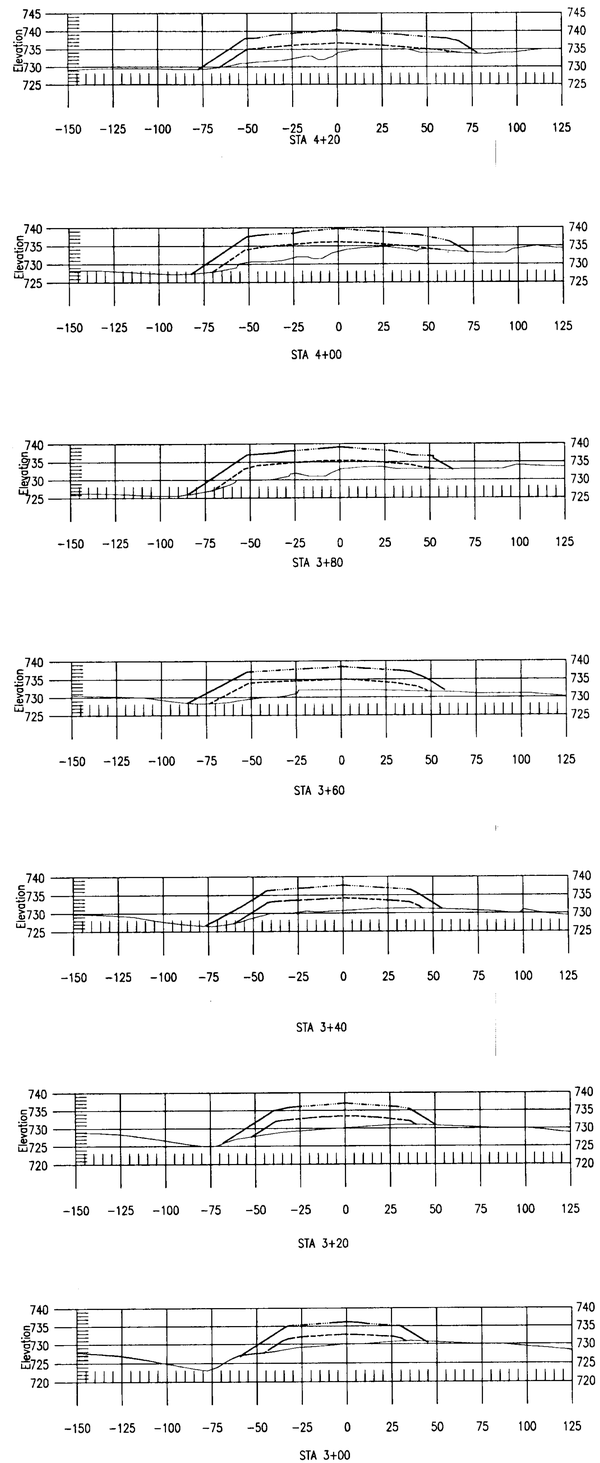
| DEPT | ARCH | STR/CIV | MECH | ELECT | PIPING | INST | Q/A | ENG MGR | PROJ MGR |
|---|---|---|---|---|---|---|---|---|---|
| INT | | | | | | | | | |
| DATE | | | | | | | | | |

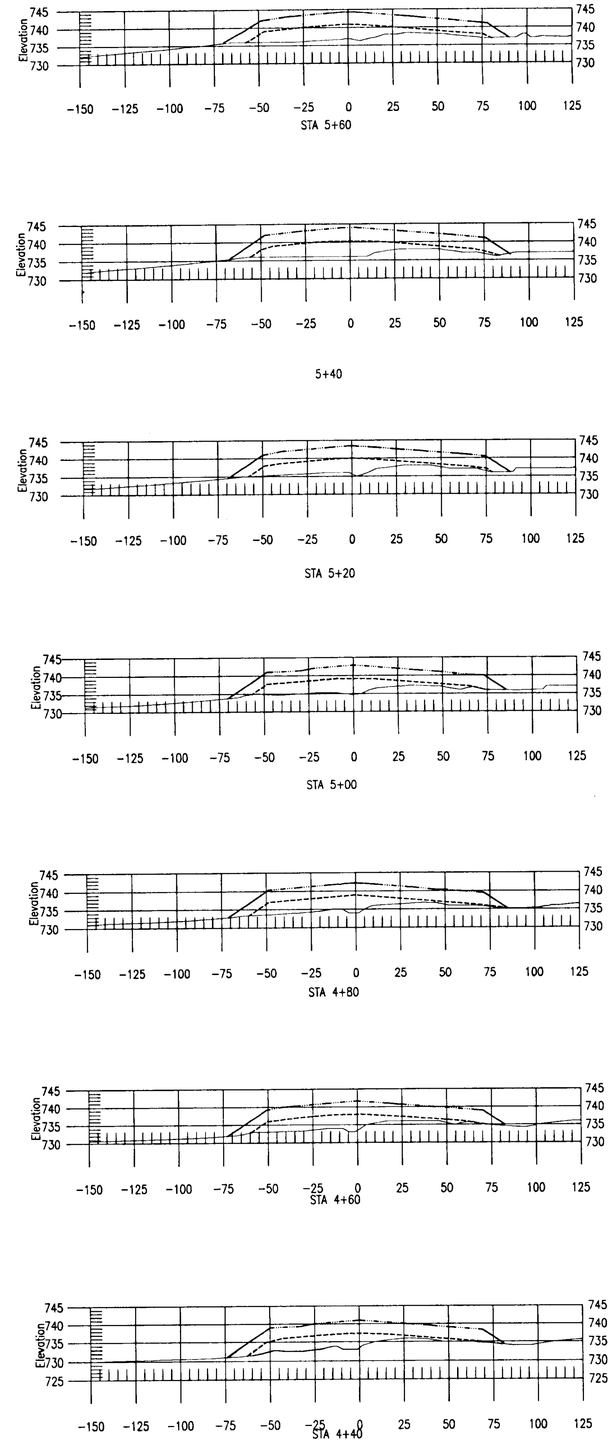
| | | |
|---|---|---|
| SCALE: 1"=50'-0 | | WORK ORDER NUMBER |
| DRAWN: R. EVANS | 6/18/97 | 4324 |
| DESIGNED: C. WAITE | 6/18/97 | |
| CHECKED: | | DRAWING NUMBER / REV |
| VERIFIED: | | C-03 / 1 |
| APPROVED: | | |
| AUTOCAD FILE NAME: 4324-03.DWG | | |

MORRISON KNUDSEN

C-04




SCALE 1" = 40'-0 HORIZONTAL
SCALE 1" = 20'-0 VERTICAL

MORRISON KNUDSEN

## REVISIONS

| REV. | DATE | DESCRIPTION | BY | LEAD ENGR. | DEPT. MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|
| A | 6/19/97 | ISSUED FOR BID AND REVIEW | | | | |
| 0 | 6/25/97 | ISSUED FOR CONSTRUCTION | | | | |

## NOTES

### LEGEND

—·—·—TOP OF CAP (PHASE TWO CONSTRUCTION)

- - - - - - - - - TOP OF FOUNDATION FILL (PHASE ONE CONSTRUCTION)

———— EXISTING GROUND SURFACE

SWMU#02/II
DYE BURIAL GROUND
INTERIM MEASURES CAP

NSWC, CRANE DIVISION
EASTERN SECTION
CAP CROSS SECTIONS

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

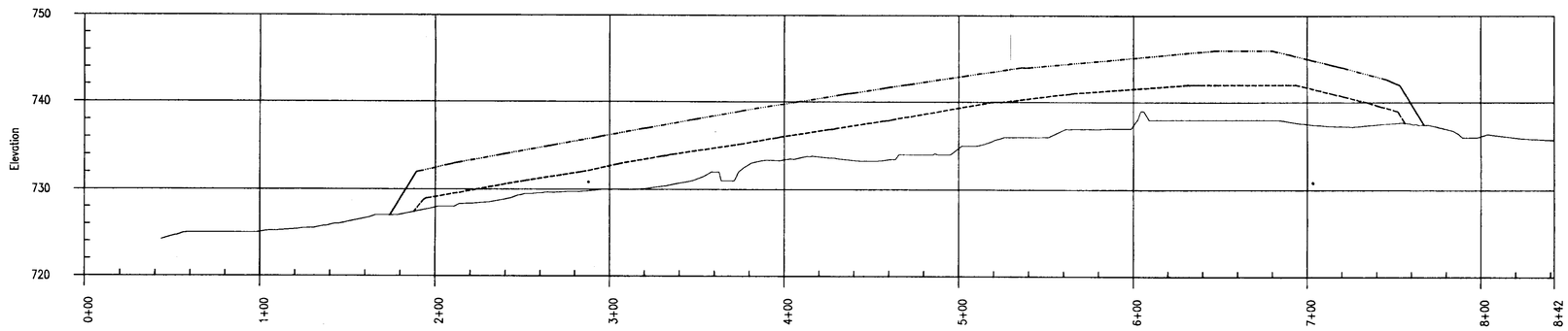
| DEPT | ARCH | STR/CIV | MECH | ELECT | PIPING | INST | Q/A | ENG MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|---|---|---|
| INT | | | | | | | | | |
| DATE | | | | | | | | | |

| | | |
|---|---|---|
| SCALE: 1"=40'-0 HORI. | | WORK ORDER NUMBER |
| DRAWN: R. EVANS | 6/20/97 | 4324 |
| DESIGNED: C. WAITE | 6/20/97 | DRAWING NUMBER: C-04 — REV: 0 |
| CHECKED: | | |
| VERIFIED: | | |
| APPROVED: | | |
| AUTOCAD FILE NAME: 4324-04.DWG | | |

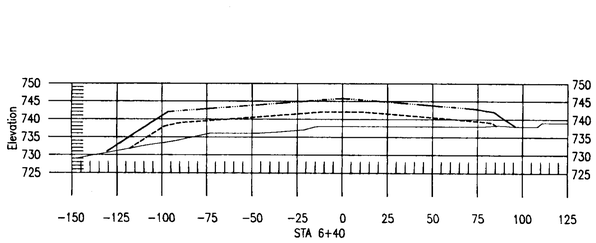
MORRISON KNUDSEN

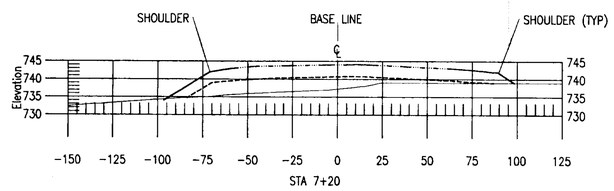
C-05

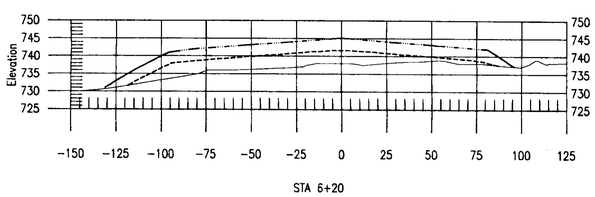
MORRISON KNUDSEN

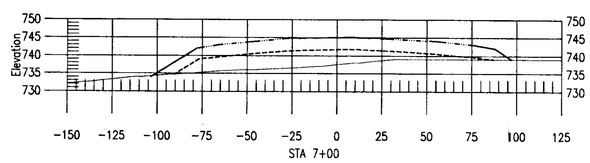


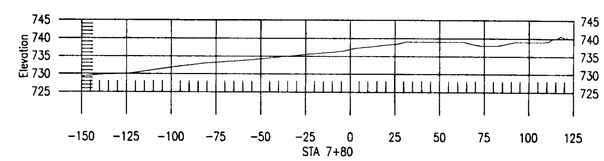

SCALE 1" = 40'-0 HORIZONTAL
SCALE 1" = 20'-0 VERTICAL
PROFILE ALONG BASE LINE

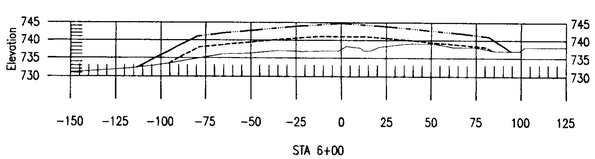


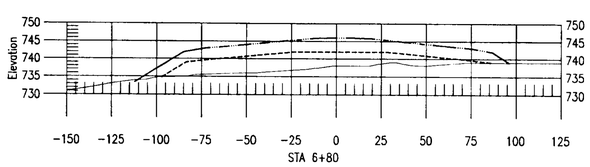



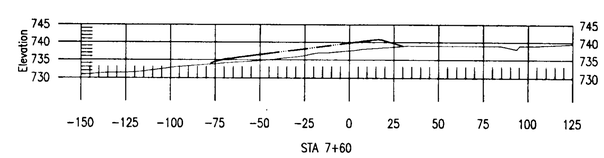



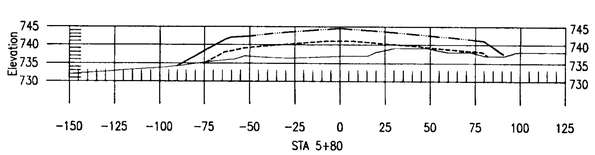



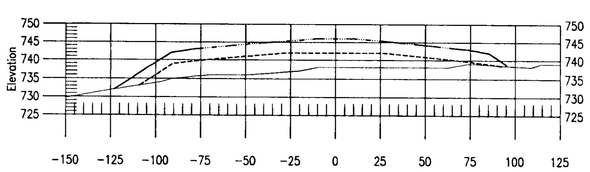



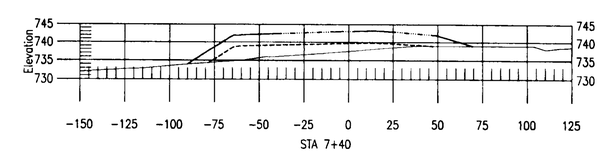




SCALE 1" = 40'-0 HORIZONTAL
SCALE 1" = 20'-0 VERTICAL

MORRISON KNUDSEN

MORRISON KNUDSEN

MORRISON KNUDSEN

## REVISIONS

| REV. | DATE | DESCRIPTION | BY | LEAD ENGR. | DEPT. MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|
| A | 6/19/97 | ISSUED FOR BID AND REVIEW | | | | |
| 0 | 6/25/97 | ISSUED FOR CONSTRUCTION | | | | |

## NOTES

### LEGEND

-·-·-·-·-TOP OF CAP (PHASE TWO CONSTRUCTION)

----------TOP OF FOUNDATION FILL (PHASE ONE CONSTRUCTION)

————EXISTING GROUND SURFACE

SWMU#02/II
DYE BURIAL GROUND
INTERIM MEASURES CAP

NSWC, CRANE DIVISION
EASTERN SECTION
CAP CROSS SECTIONS

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

| DEPT | ARCH | STR/CIV | MECH | ELECT | PIP/HVG | HIST | Q/A | CNG MGR | PROJ MGR |
|---|---|---|---|---|---|---|---|---|---|
| INT | | | | | | | | | |
| DATE | | | | | | | | | |

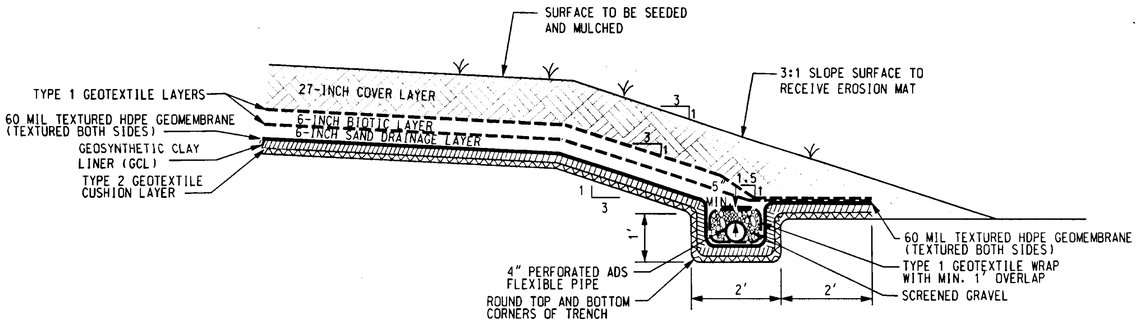
| | | |
|---|---|---|
| SCALE: | 1"=40'-0 HORIZ. | |
| DRAWN: | R. EVANS | 6/20/97 |
| DESIGNED: | C. WAITE | 6/20/97 |
| CHECKED: | | |
| VERIFIED: | | |
| APPROVED: | | |
| AUTOCAD FILE NAME: 4324-05.DWG | | |

WORK ORDER NUMBER
4324

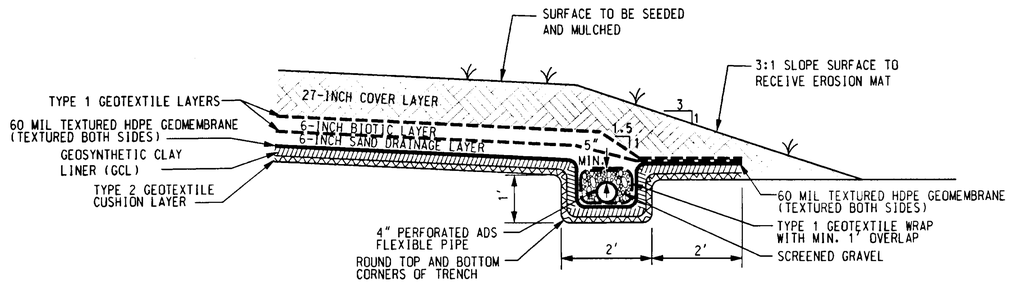
DRAWING NUMBER
C-05

REV
0

MORRISON KNUDSEN




TYPICAL COVER (D / 03)
N.T.S.

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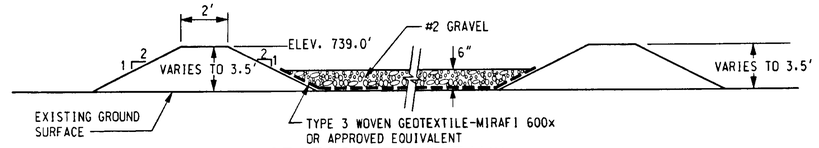
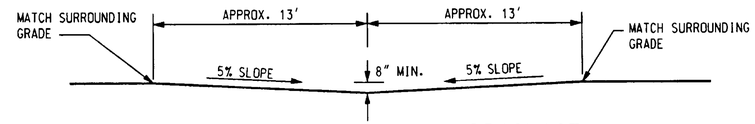
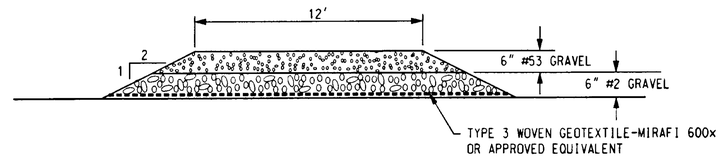
N.T.S.



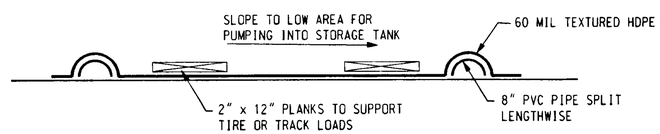

SECTION-FRAC TANK SECONDARY CONTAINMENT AREA BERM (A / 03)
N.T.S.



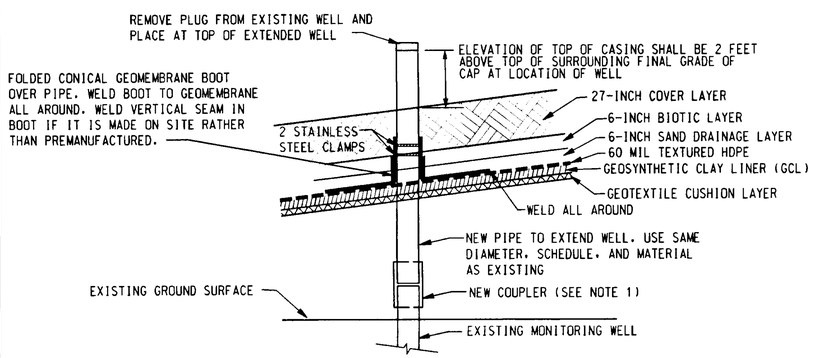

SECTION-SWALE TO RESTORE DRAINAGE ALONG SOUTHEAST SIDE OF CAP (B / 03)
N.T.S.



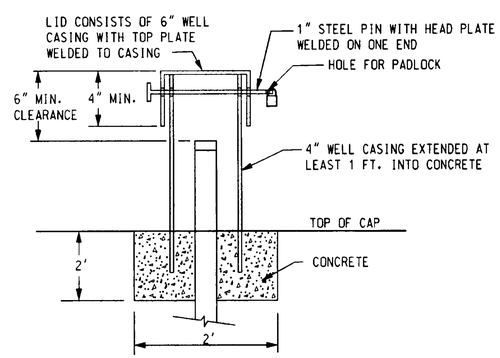

SECTION-RECONSTRUCTED ACCESS ROAD (C / 03)
N.T.S.



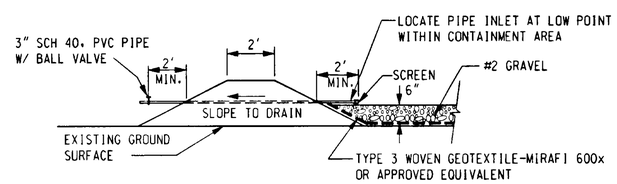

TEMPORARY DECONTAMINATION STATION DETAIL
N.T.S.




TYPICAL DETAIL OF EXTENSION OF EXISTING MONITORING WELL THROUGH CAP (1 / 03)
N.T.S.




DETAIL-WELL PROTECTIVE CASING
N.T.S.




SECTION-FRAC TANK SECONDARY CONTAINMENT AREA (G / 03)
N.T.S.

## REVISIONS

| REV. | DATE | DESCRIPTION | BY | LEAD ENGR. | DEPT. MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|
| A | 06/19/97 | ISSUE FOR REVIEW AND BID | | | | |
| 0 | 06/25/97 | ISSUE FOR CONSTRUCTION | | | | |

## NOTES

1. WELL EXTENSION COUPLER SHALL BE INSTALLED USING CONTRACTOR-APPROVED METHOD TO AVOID WELL CONTAMINATION.

SWMU#02/II
DYE BURIAL GROUND INTERIM MEASURES CAP

NSWC, CRANE DIVISION
EASTERN SECTION
TYPICAL CAP CROSS SECTIONS AND DETAILS

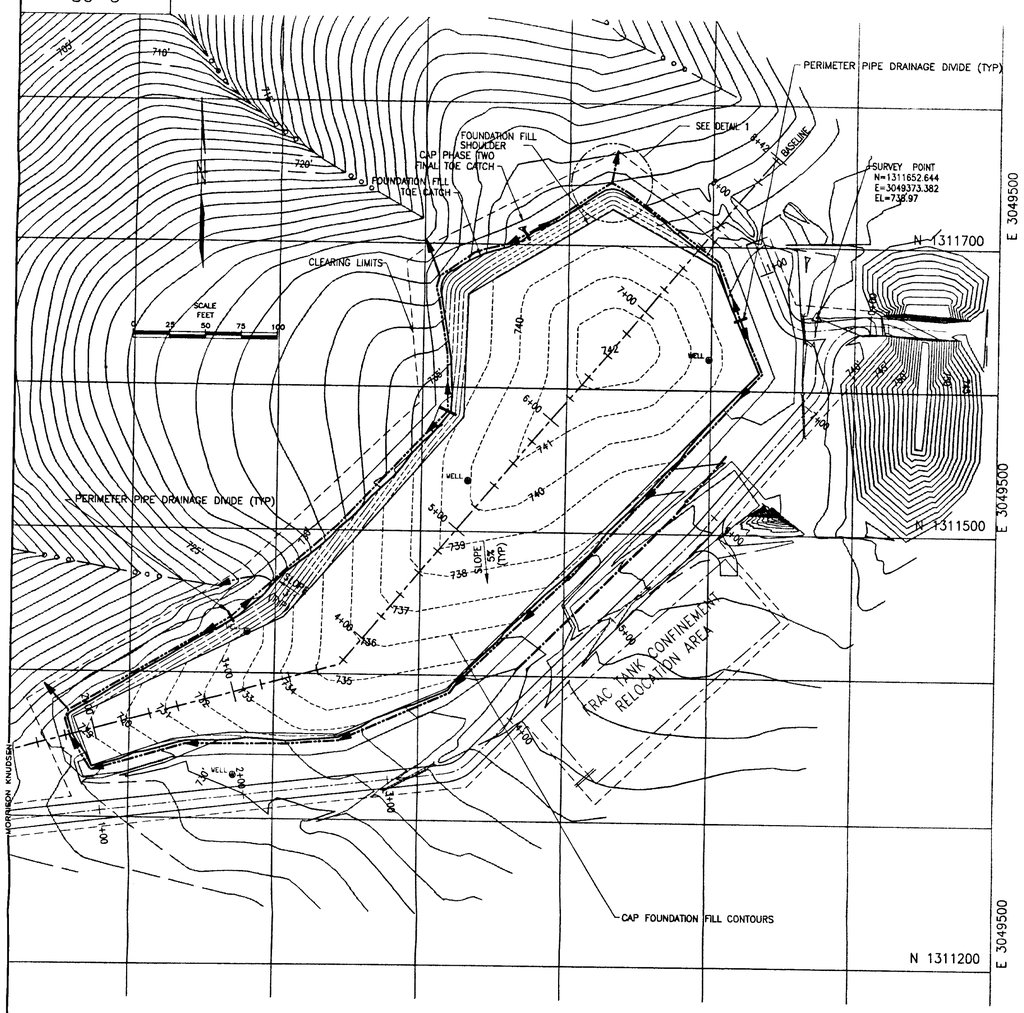
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

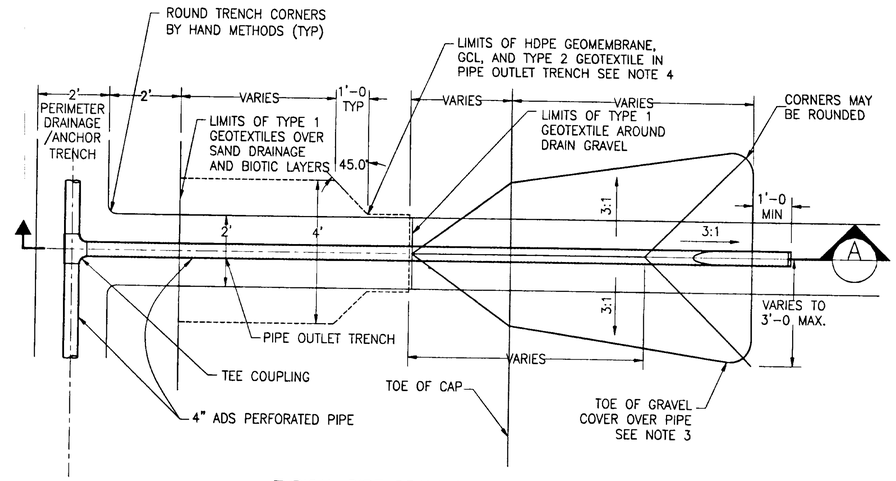
| DEPT. | ARCH | STR/CIV | MECH | ELECT | PIPING | INST | Q/A | ENG. MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|---|---|---|
| INT. | | | | | | | | | |
| DATE | | | | | | | | | |

| | | |
|---|---|---|
| SCALE: AS NOTED | | WORK ORDER NUMBER |
| DRAWN: B. MARKER | 06/24/97 | 4324 |
| DESIGNED: C. WAITE | | |
| CHECKED: | | DRAWING NUMBER / REV. |
| VERIFIED: | | C-07 / 0 |
| APPROVED: | | |
| FILE: W04324/DYE/DETAILS.DGN | | |

MORRISON KNUDSEN

C-08

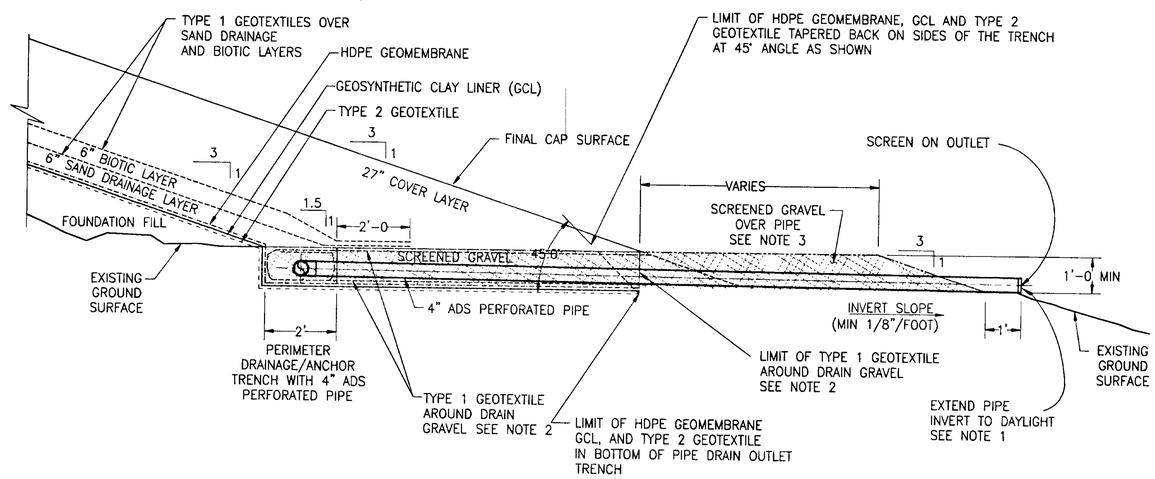



TYPICAL PIPE DRAIN OUTLET PLAN VIEW

DETAIL 1

1/2"=1'-0




SECTION A

1/2"=1'-0

## REVISIONS

| REV. | DATE | DESCRIPTION | BY | LEAD ENGR. | DEPT. MGR. | PROJ. MGR. |
|---|---|---|---|---|---|---|
| A | 7/7/97 | ISSUED FOR REVIEW | | | | |
| 0 | 7/23/97 | ISSUED FOR CONSTRUCTION | | | | |

## NOTES

### LEGEND

- DIRECTION OF PERIMETER PIPE FLOW
- ACCESS ROAD CENTERLINE
- CAP FOUNDATION FILL CONTOUR
- CLEARING LINE
- SWALE CENTERLINE
- FRAC TANK RELOCATION AREA CONTAINMENT BERM CENTERLINE
- EXISTING MONITORING WELL
- HDPE GEOMEMBRANE
- GEOSYNTHETIC CLAY LINER (GCL)
- TYPE 1 GEOTEXTILE
- TYPE 2 GEOTEXTILE

### NOTES:

1. FIELD ADJUST HORIZONTAL ALIGNMENT OF PIPE DRAIN OUTLET TO DISCHARGE INTO EXISTING SURFACE DRAINAGE CHANNEL.
2. OVERLAP TYPE 1 GEOTEXTILE A MINIMUM OF 1'-0 AROUND DRAIN GRAVEL.
3. DO NOT SEED OR MULCH GRAVEL COVER OVER PIPE.
4. SEAM /OVERLAP HDPE GEOMEMBRANES, GCLS, AND TYPE 2 GEOTEXTILES IN PIPE DRAIN OUTLET TRENCH TO CORRESPONDING MATERIALS IN THE PERIMETER DRAINAGE/ANCHOR TRENCH IN

SWMU#02/II
DYE BURIAL GROUND INTERIM MEASURES CAP

NSWC, CRANE DIVISION
EASTERN SECTION
UNDERDRAIN DRAINAGE PLAN

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

| DEPT | ARCH | STR/CIV | MECH | ELECT | PIPING | INST | Q/A | ENG MGR | PROJ MGR |
|---|---|---|---|---|---|---|---|---|---|
| INT | | | | | | | | | |
| DATE | | | | | | | | | |

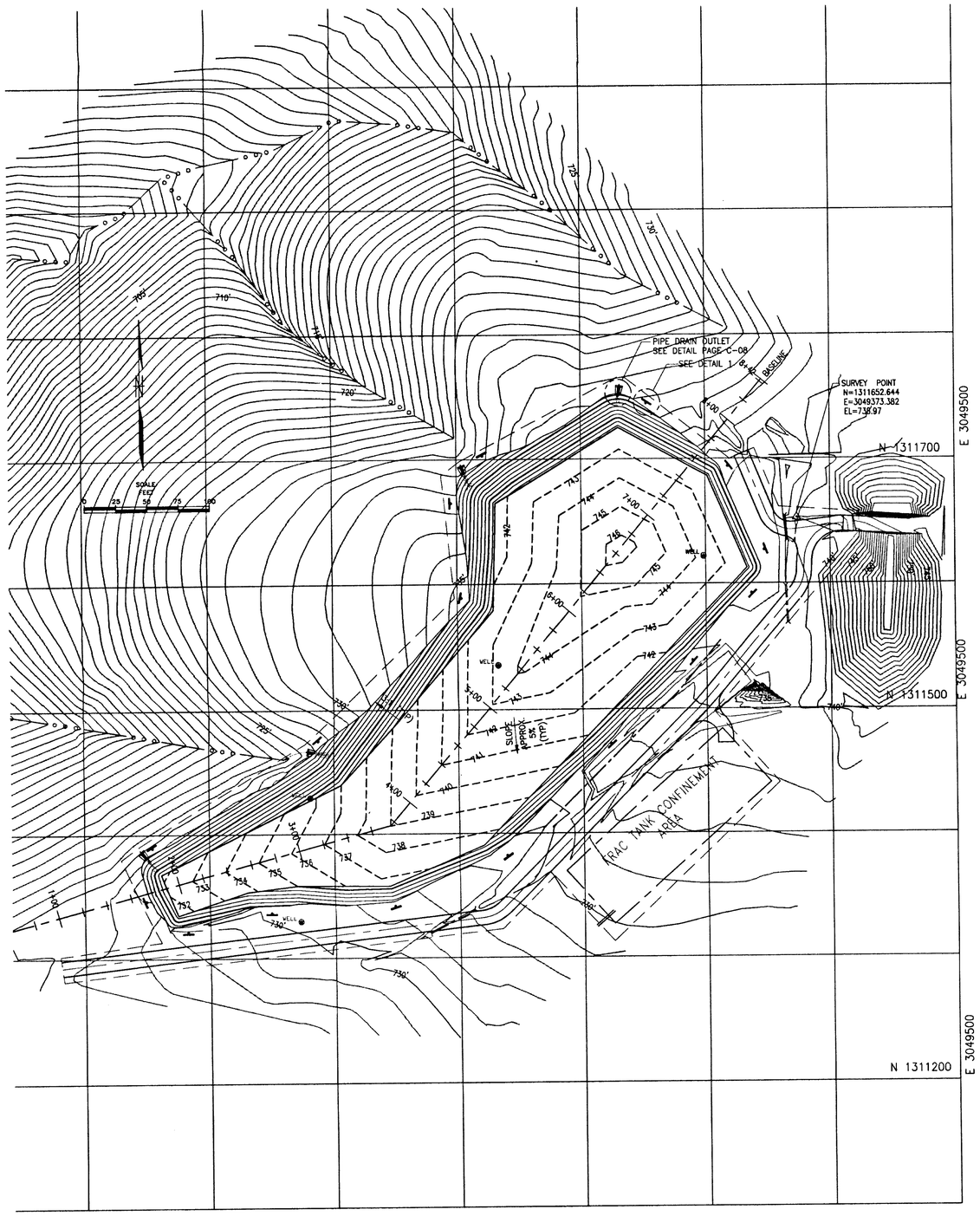
| | | |
|---|---|---|
| SCALE: | 1"=50'-0 | |
| DRAWN: | R. EVANS | 7/7/97 |
| DESIGNED: | K. OHSIEK | 7/7/97 |
| CHECKED: | | |
| VERIFIED: | | |
| APPROVED: | | |
| AUTOCAD FILE NAME: 4324-08.DWG | | |

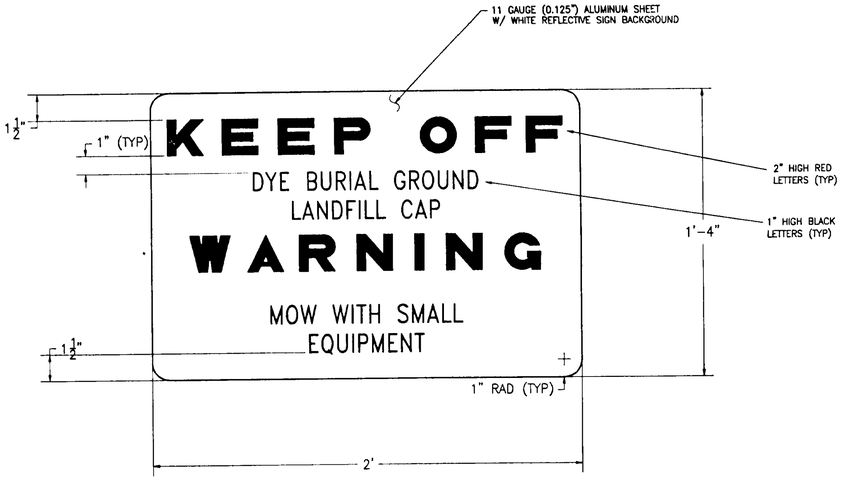
WORK ORDER NUMBER: 4324

DRAWING NUMBER: C-08

REV: 0

MORRISON KNUDSEN




1 DETAIL 1
3"=1'-0

## REVISIONS

| REV. | DATE | DESCRIPTION | BY | LEAD ENGR | DEPT MGR | PROJ MGR |
|---|---|---|---|---|---|---|
| A | 7/9/97 | ISSUED FOR REVIEW | | | | |
| 0 | 7/23/97 | ISSUED FOR CONSTRUCTION | | | | |

## NOTES

LEGEND

WARNING SIGN LOCATION SYMBOL

NOTE

SIGNS DESIGNATING THE EXTENT OF THE CAP SHALL BE INSTALLED IN THE APPROXIMATE LOCATIONS SHOWN, FACING AWAY FROM CAP CENTER. SIGNS SHALL BE MOUNTED ON STANDARD METAL TRAFFIC SIGN POSTS INSTALLED TO D.O.T. STANDARDS. CARE SHOULD BE TAKEN SO THAT THE SIGN POSTS DO NOT PUNCTURE THE COVER SYSTEM.

SWMU#02/II
DYE BURIAL GROUND
INTERIM MEASURES CAP

NSWC, CRANE DIVISION
EASTERN SECTION
FINAL INTERIM COVER GRADING PLAN

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES

| DEPT | ARCH | STR/CIV | MECH | ELECT | PIPING | INST | Q/A | ENG MGR | PROJ MGR |
|---|---|---|---|---|---|---|---|---|---|
| INT | | | | | | | | | |
| DATE | | | | | | | | | |

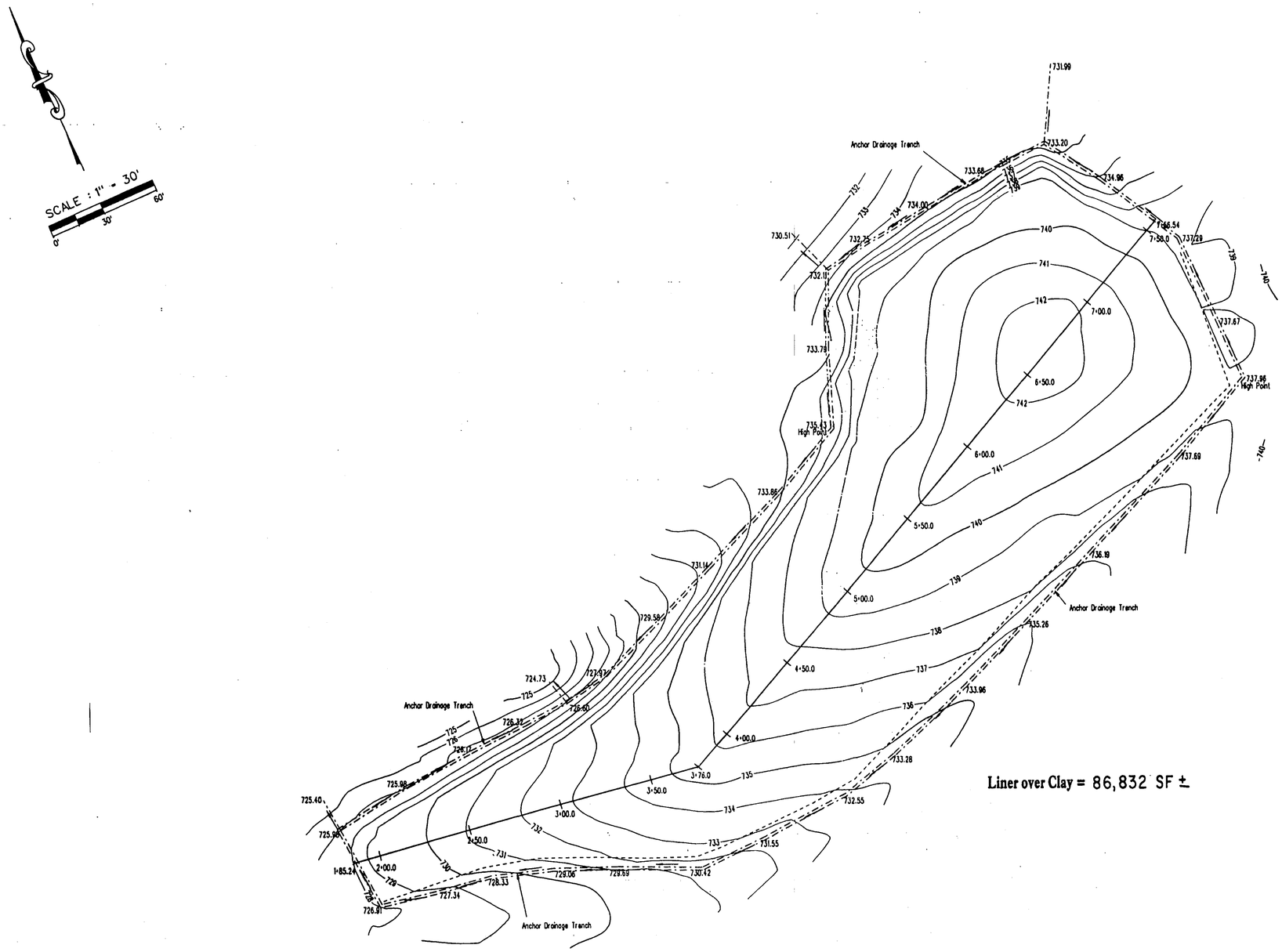
| | | |
|---|---|---|
| SCALE: | 1"=50'-0 | |
| DRAWN: | R. EVANS | 7/9/97 |
| DESIGNED: | C. WAITE | 7/9/97 |
| CHECKED: | | |
| VERIFIED: | | |
| APPROVED: | | |
| AUTOCAD FILE NAME: 4324-09.DWG | | |

WORK ORDER NUMBER
4324

DRAWING NUMBER
C-09

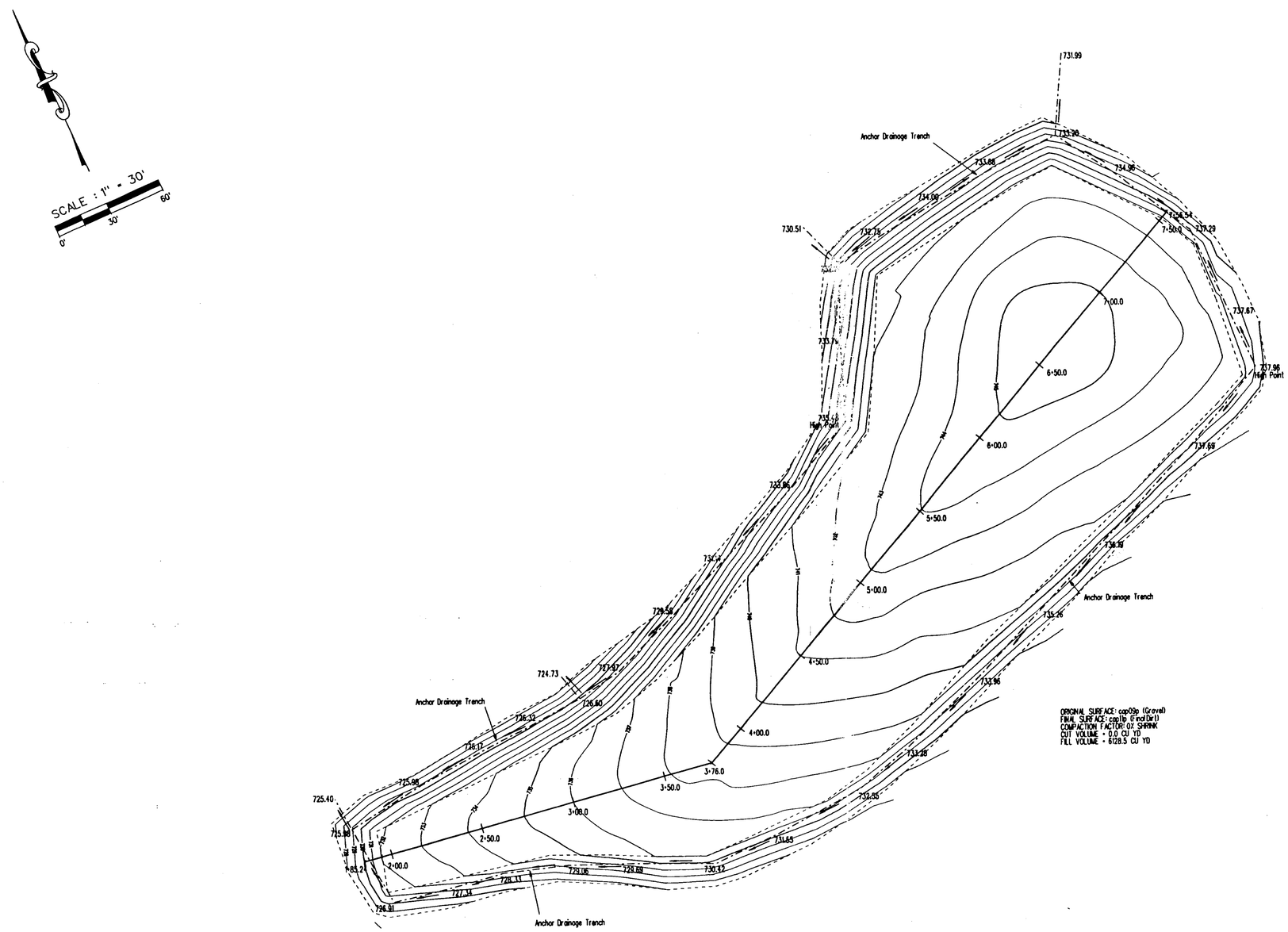
REV
0

MORRISON KNUDSEN




Liner over Clay = 86,832 SF ±

| REVISIONS AND DATES | DESIGNED BY: | | MSE Surveying | DyeBurial |
|---|---|---|---|---|
| REV 12-21-98 | DRAWN BY: CSB | | MSE CORPORATION<br>941 NORTH MERIDIAN STREET<br>INDIANAPOLIS, IN 46204 1061<br>317 634-1000<br>317 634-3576 FAX | and<br>Anchor Drainage Trench<br>Fieldwork performed August 29, 1998 |
| | CHECKED BY: RLB | | | Clay |
| | APPROVED BY: | DATE: September 16, 1998 | | SCALE: 1" = 30' JOB No.: 121-3585 SHEET No.: 1 of 1 |




| REVISIONS AND DATES | DESIGNED BY: | |
|---|---|---|
| | DRAWN BY: CSB | |
| | CHECKED BY: RLB | |
| | APPROVED BY: | DATE: September 16, 1998 |

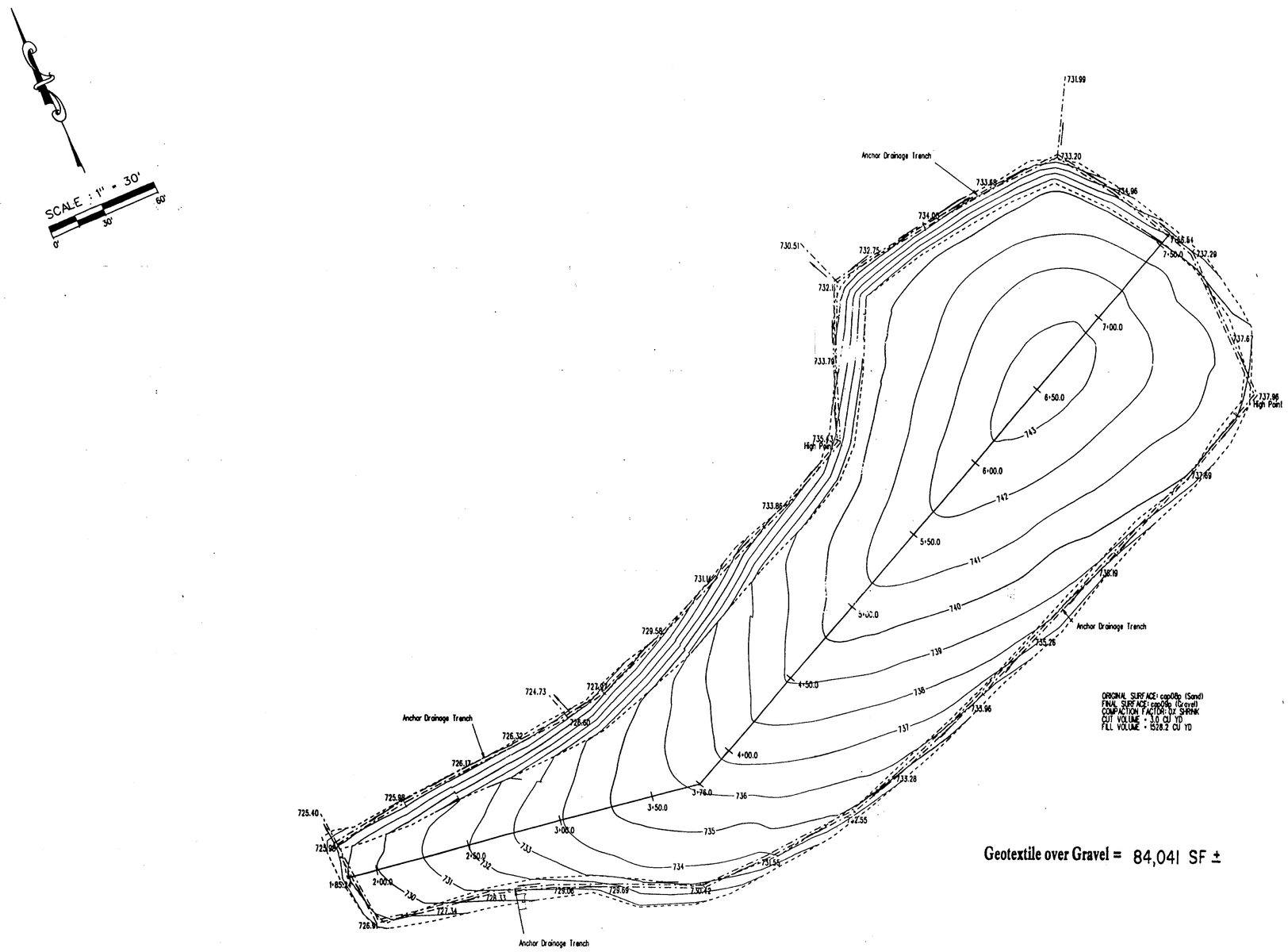
MSE Surveying
MSE CORPORATION
941 NORTH MERIDIAN STREET
INDIANAPOLIS, IN 46204 1061
317 634-1000
317 634-3576 FAX

**DyeBurial**
and
Anchor Drainage Trench
Fieldwork performed August 29, 1998

**Final Dirt**

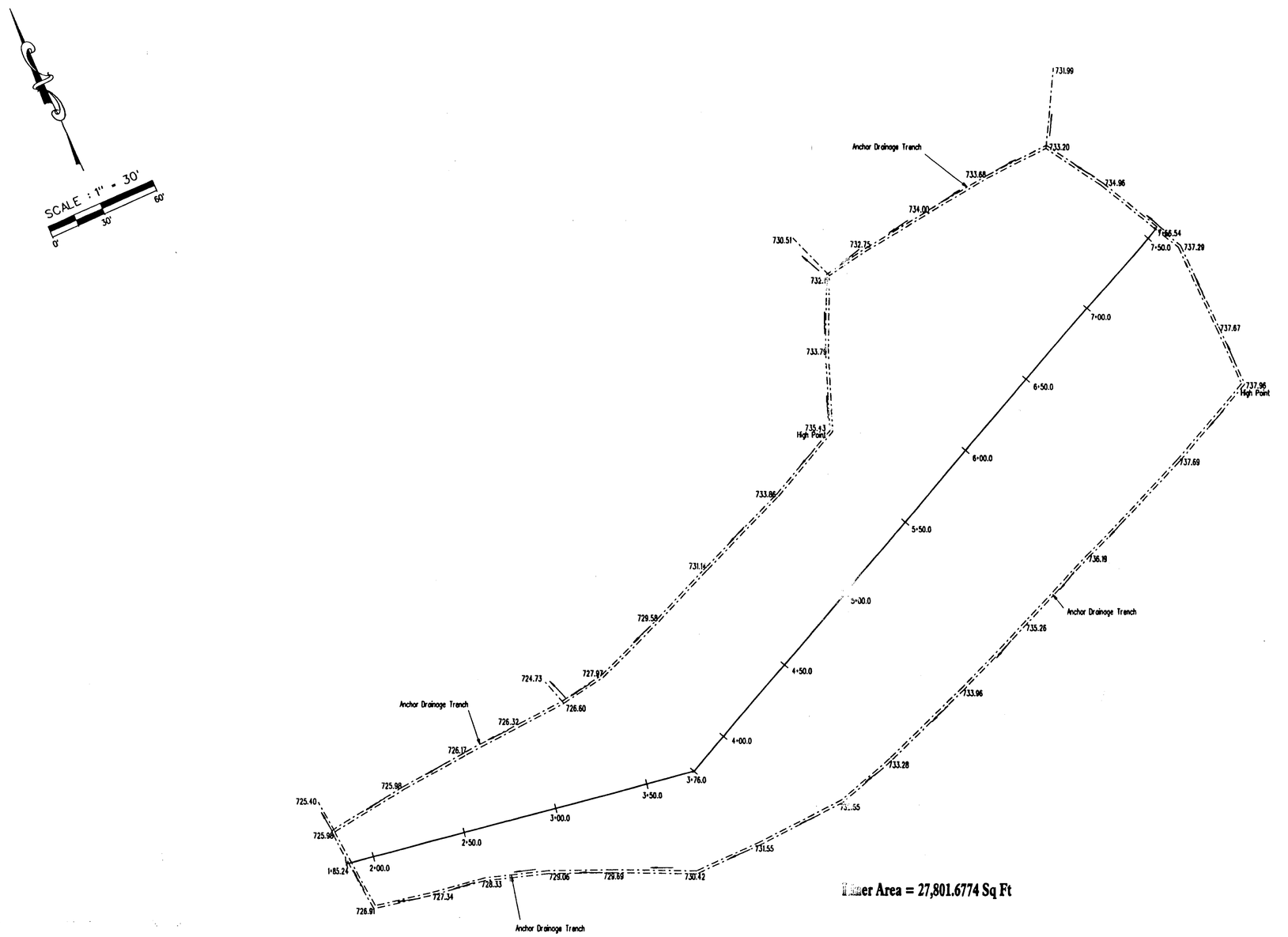
SCALE: 1" = 30' JOB No.: 121-3585 SHEET No.: 1 of

dyeactull.dgn




**Geotextile over Gravel = 84,041 SF ±**

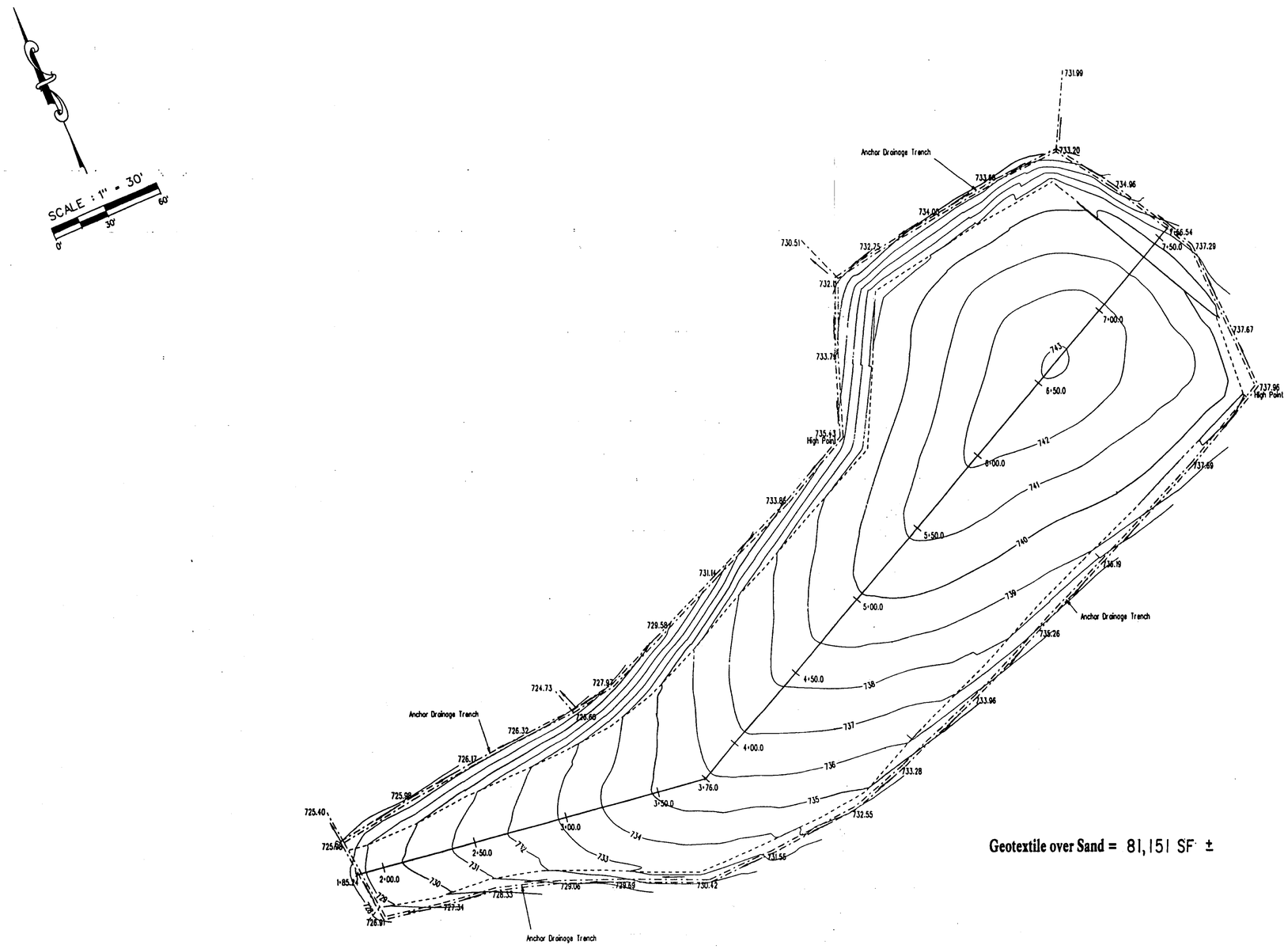
| REVISIONS AND DATES | DESIGNED BY: | | MSE Surveying | DyeBurial and Anchor Drainage Trench Fieldwork performed August 29, 1998 Gravel |
|---|---|---|---|---|
| REV. 12-21-98 | DRAWN BY: CSB | | MSE CORPORATION 941 NORTH MERIDIAN STREET INDIANAPOLIS, IN 46204 1061 317 634-1000 317 634-3576 FAX | |
| | CHECKED BY: RLB | | | |
| | APPROVED BY: | DATE: September 16, 1998 | | SCALE: 1" = 30' JOB No.: 121-3585 SHEET No.: 1 of 1 |




**Liner Area = 27,801.6774 Sq Ft**

| REVISIONS AND DATES | DESIGNED BY: | | MSE Surveying<br>MSE CORPORATION<br>941 NORTH MERIDIAN STREET<br>INDIANAPOLIS, IN 46204 1061<br>317 634-1000<br>317 634-3576 FAX | **DyeBurial**<br>and<br>Anchor Drainage Trench<br>Fieldwork performed August 29, 1998<br>**Liner Area** |
|---|---|---|---|---|
| | DRAWN BY: GSB | | | |
| | CHECKED BY: RLB | | | |
| | APPROVED BY: | DATE: September 16, 1998 | | SCALE: 1" = 30' JOB No.: 121-3585 SHEET No.: 1 of 1 |

dyeburial dgn




**Geotextile over Sand = 81,151 SF ±**

| REVISIONS AND DATES | DESIGNED BY: | | MSE Surveying | DyeBurial and Anchor Drainage Trench Fieldwork performed August 29, 1998 |
|---|---|---|---|---|
| REV 12-21-98 | DRAWN BY: GSB | | MSE CORPORATION<br>941 NORTH MERIDIAN STREET<br>INDIANAPOLIS, IN 46204 1061<br>317 634-1000<br>317 634-3576 FAX | **Sand** |
| | CHECKED BY: RLB | | | |
| | APPROVED BY: | DATE: September 16, 1998 | | SCALE: 1" = 30' JOB No.: 121-3585 SHEET No.: 1 of 1 |

# APPENDIX B

# AS-BUILT DRAWINGS AND CONSTRUCTION DRAWINGS

# APPENDIX B
# AS-BUILT DRAWINGS AND CONSTRUCTION DRAWINGS

## INDEX

### As-Built Drawings


Type 2 Nonwoven Geotextile (Cushion Layer)

Geosynthetic Clay Liner

60-mil HDPE Liner

Type 1 Nonwoven Geotextile (Over Sand Layer)

Type 1, On Top of Stone, Nonwoven Geotextile (Over Biotic Layer)

Final Dirt

Gravel

Sand

Liner Area

Clay


### Construction Drawings


C-01 NSWC Crane Division Eastern Section Title Sheet

C-02 NSWC Crane Division Eastern Section Existing Site Plan

C-03 Cap Foundation Grading Plan Phase One Construction

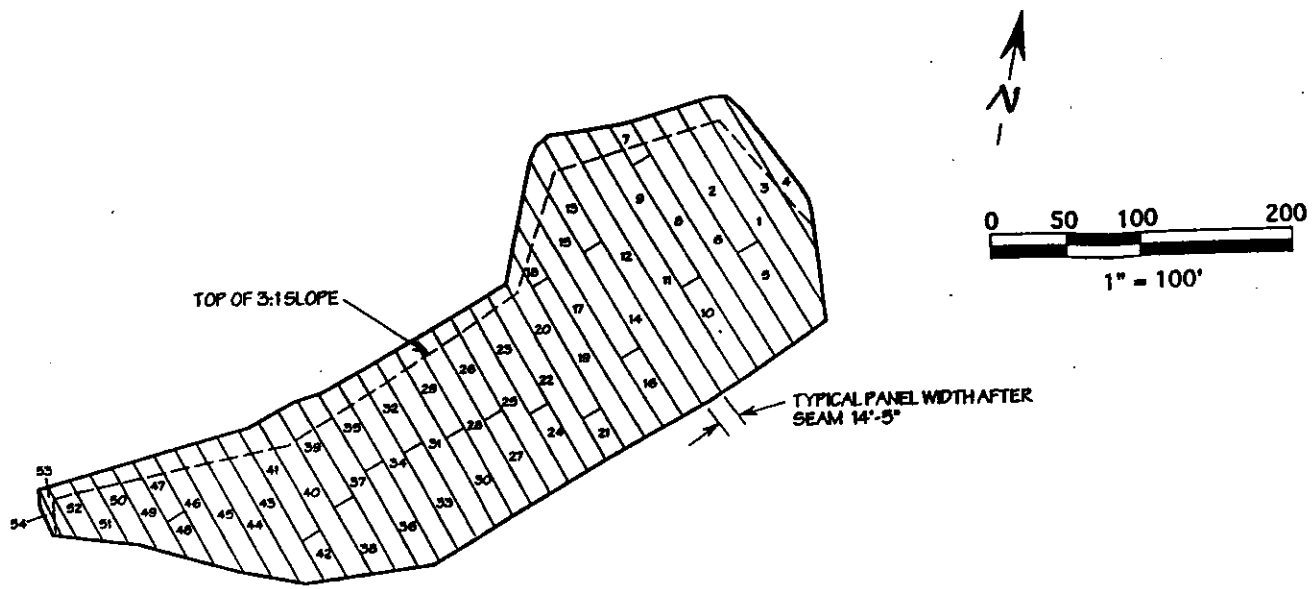
C-04 NSWC Crane Division Eastern Section Cap Cross Section

C-05 NSWC Crane Division Eastern Section Cap Cross Sections

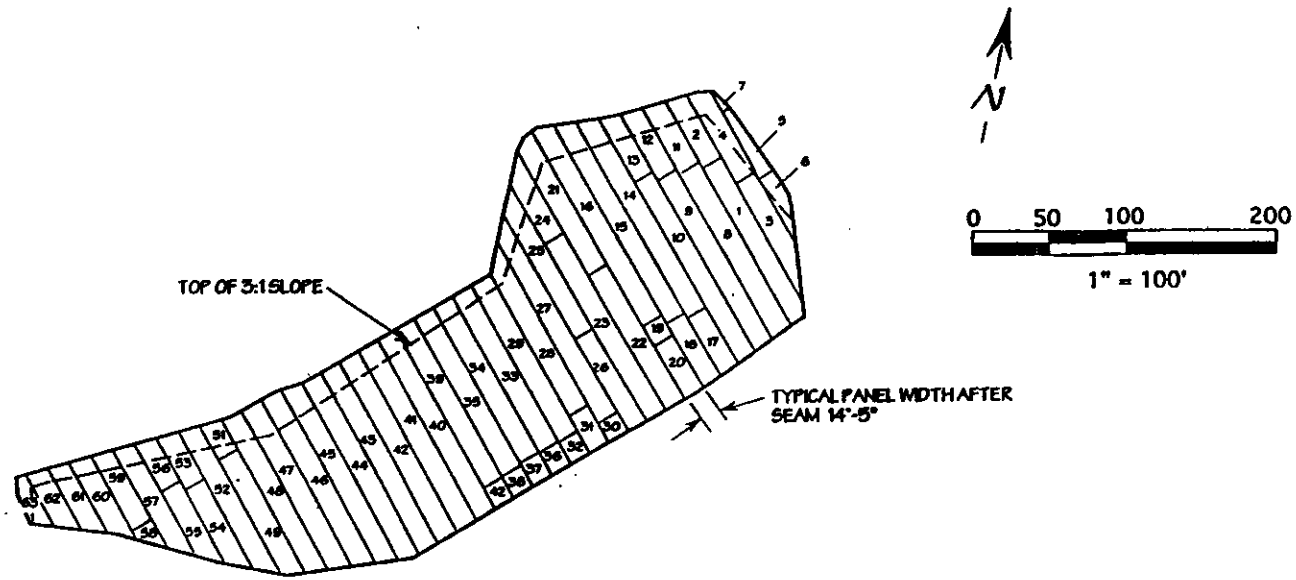
C-07 NSWC Crane Division Eastern Section Typical Cap Cross Sections and Details

C-08 NSWC Crane Division Eastern Section Underlain Drainage Plan

C-09 NSWC Crane Division Eastern Section Final Interim Cover Grading Plan




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SCALE 1"= 100'<br>DRAWN TAL<br>DATE 8-20-98<br>DRAWING MAY BE REDUCED<br>LINE EQUALS ONE INCH ON ORIGINAL DRAWING | NO. | DATE | REVISION | INIT. | ENVIRONMENTAL DESIGN AND CONSTRUCTION, INC.<br>HUNTSVILLE, ALABAMA | DYE BURIAL GROUND<br>INTERIM MEASURES<br>CRANE, INDIANA | PANEL LAYOUT OF<br>TYPE 2<br>NONWOVEN GEOTEXTILE | SHEET 1 of 1 |

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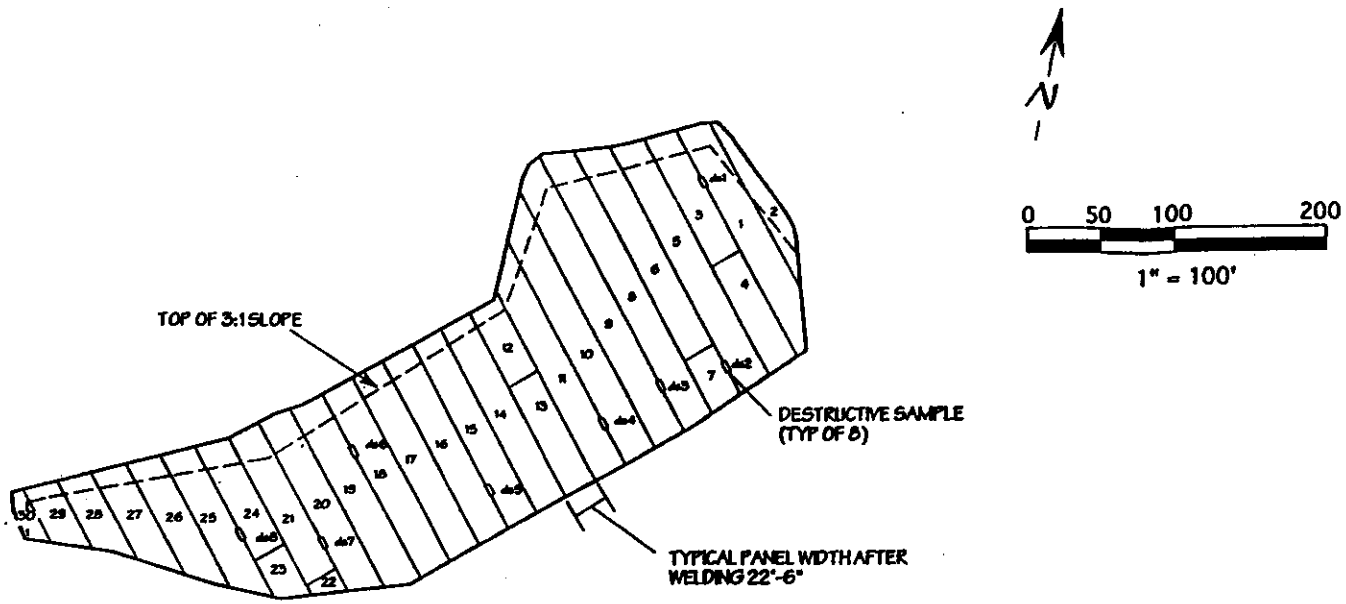
|---|---|---|---|---|---|---|
| SCALE 1"= 100'<br>DRAWN TAL<br>DATE 8-20-98 | NO. | DATE | REVISION | INIT. | *ENVIRONMENTAL DESIGN AND CONSTRUCTION, INC.*<br>*HUNTSVILLE, ALABAMA* | DYE BURIAL GROUND<br>INTERIM MEASURES<br>CRANE, INDIANA | PANEL LAYOUT OF<br>GEOSYNTHETIC CLAY LINER | SHEET 1 of 1 |

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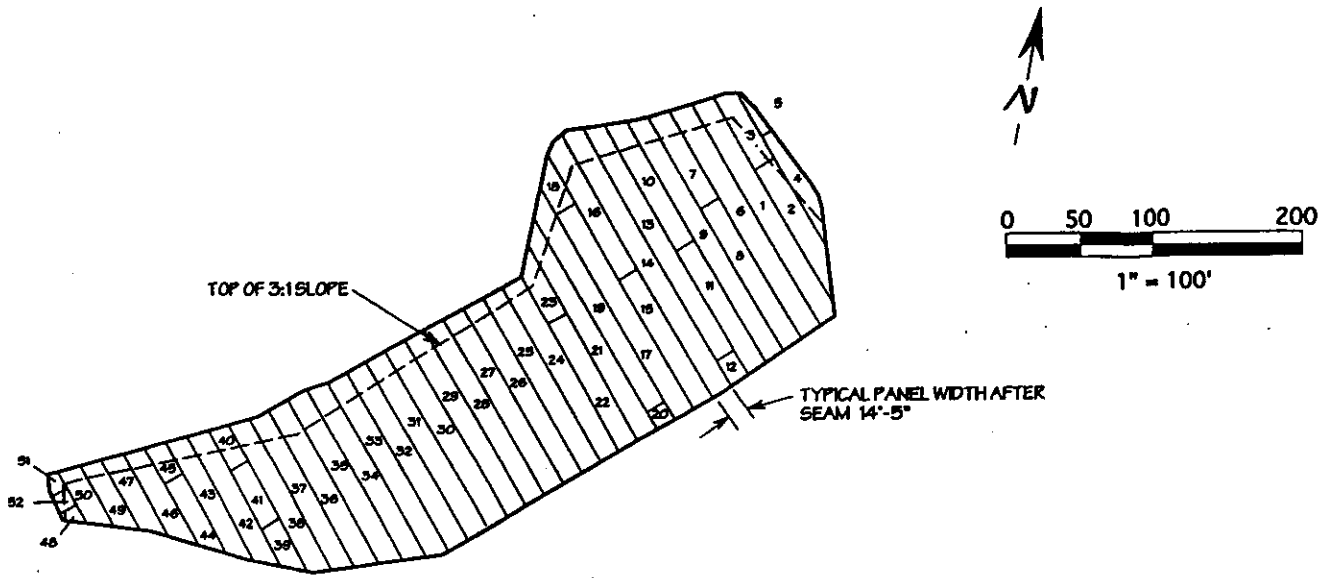
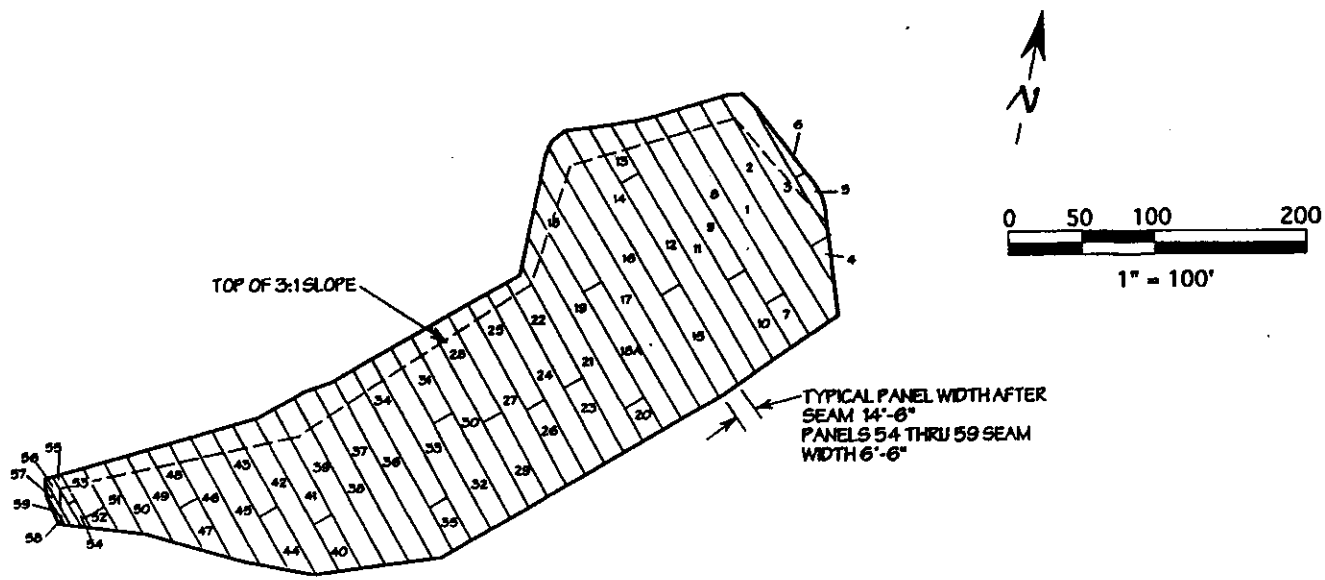
|---|---|---|---|---|---|---|---|
| SCALE 1"= 100'<br>DRAWN TAL<br>DATE 8-20-98<br>DRAWING MAY BE REDUCED<br>LINE EQUALS ONE INCH ON ORIGINAL DRAWING | NO. | DATE | REVISION | INIT. | ENVIRONMENTAL DESIGN AND CONSTRUCTION, INC.<br>HUNTSVILLE, ALABAMA | DYE BURIAL GROUND<br>INTERIM MEASURES<br>CRANE, INDIANA | PANEL LAYOUT OF<br>60 MIL HDPE LINER<br>SHEET 1 of 1 |




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SCALE 1"= 100'<br>DRAWN TAL<br>DATE 8-17-98<br>DRAWING MAY BE REDUCED<br>LINE EQUALS ONE INCH ON ORIGINAL DRAWING | NO. | DATE | REVISION | INIT. | *ENVIRONMENTAL DESIGN AND CONSTRUCTION, INC.*<br>*HUNTSVILLE, ALABAMA* | DYE BURIAL GROUND<br>INTERIM MEASURES<br>CRANE, INDIANA | PANEL LAYOUT OF<br>TYPE 1<br>NONWOVEN GEOTEXTILE | SHEET 1 of 1 |




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SCALE 1"= 100'<br>DRAWN TAL<br>DATE 8-24-98<br>DRAWING MAY BE REDUCED<br>LINE EQUALS ONE INCH ON ORIGINAL DRAWING | NO. | DATE | REVISION | INIT. | ENVIRONMENTAL DESIGN AND CONSTRUCTION, INC.<br>HUNTSVILLE, ALABAMA | DYE BURIAL GROUND<br>INTERIM MEASURES<br>CRANE, INDIANA | PANEL LAYOUT OF<br>TYPE 1, ON TOP OF STONE<br>NONWOVEN GEOTEXTILE | SHEET 1 of 1 |

# APPENDIX C
# FIELD CLARIFICATION REQUESTS (FCRs)

## APPENDIX C
## FIELD CLARIFICATION REQUESTS (FCRs)

### INDEX


C-1 FCR/CID Engineering Log

C-2 FCRs 4324-009-FCR-DBG-001 through -022

# C-1

# FCR/CID Engineering Log

# DBG
## FCR/CID Engineering Log

| FCR # | Description | CID # | reg. RFQ | Eng's Estimate | $ amount | Comments |
|---|---|---|---|---|---|---|
| 001 | FRAC TANK AREA RELOCATION | ✓ | 08/29 | $2,700 | | APPROVED |
| 002 | Borrow area; Spoils Pile | ✓ | 08/29 | $40,775 | | APPROVED |
| 003 | Use of Herbicide outside cap limits | ✓ | | -0- | | CAP CLEARING LIMITS TO BE |
| 004 | Use of Geonet -vs- Sand | — | — | — | — | DENIED |
| 005 | Exclude large tree @ SW corner | — | — | — | — | DENIED |
| 006 | Site Clearing Delete Chipping | | 9/12 | | | DBG DENIED 161/822 OK |
| 007 | Revise FRAC Tank Area Value | ✓ | | -0- | | APPROVED |
| 008 | Add drainage to the Entrance | | | | | Approved |
| 009 | Decontamination of MUD Boxes | | | | | Approved |
| 010 | Relocate Access Road | | | -0- | | Approved |
| 011 | Extend Access Road to the North. | ✓ | | $11,082.50 | | Approved |
| 012 | NW WEEP-DRAINAGE COLLECTION | ✓ | 10/06 | $1,135.00 | | Approved |
| 013 | WINTERIZATION | ✓ | | | | Approved |
| 014 | WOOD CHIPS | | | | | Approved |
| 015 | QAPP Changes | | | | | Approved |
| 016 | DBG Cap Erosion | | | | | Approved |
| 017 | Seepage Collect Sys | | | | | Approved |
| 018 | Soft Spots | ✓ 007 | 06/08 | $4560 | $5,520 | Approved |
| 019 | Drainage/Anchor Trench | — | n/a | -0- | | Approved |
| 020 | Grass coverage clarification | | | | | Approved |
| 021 | Clarification Drainage/ Anchor Trench Spec | | | | | Approved |
| 022 | Geotextile Seaming | | | | | Approved |

# C-2

# FCRs 4324-009-FCR-DBG-001 through -022

ORIGINAL

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-~~049~~ 48 106 | **FCR No.:** 4324-0009-FCR-DBG-001 |
| **RELOCATION OF FRAC TANK ~~CONFINEMENT~~ Storage AREA** | | Page 1 of 3 |

**Reference Documents** (Affected Document No., Revision No., Title):
DWG # C-03 Cap Foundation Grading Plan

**Problem / Change Description:**

After the, August 25, 1997, site tour of the Dye Burial Grounds, by U. S. Fish and Wildlife Rep., it was determined that the proposed location for the FRAC Tank Confinement Area contained potential Indiana bat habitat. The Indiana bat is on the endangered species list and this area should not be disturbed. An area to the Southwest was inspected and it was determined that this area could be cleared for the FRAC tank Confinement Area.

| Initiated by | Signature: Lois J Bigley | Organization: | Date: 08-26-97 |
|---|---|---|---|

**Resolution:**

Relocate the FRAC Tank Confinement Area, to the Southwest, to the approved area.
Due to the location of existing monitoring wells, the FRAC Tank Confinement Area may be broken in two secondary containment areas.
A drainage ditch in the new location may need to be rerouted depending on the exact location of the FRAC Tank Confinement Area.
See attached sketches for approximate location of single or dual FRAC Tank Confinement Areas. Actual locations of the containment areas are shall be documented on the AS-Built Drawings.

**If this FCR affects a subcontract, indicate CID number:** _____

| | | | | | |
|---|---|---|---|---|---|
| **Approval by MK PE** | Signature: Lois J Bigley | Date: 08-26-97 | **Approval by ROICC/NTR or RPM** | Signature: [signature] | Date 9/4/97 |
| **Approval by MK PjM** | Signature: [signature] | Date: 8/26/97 | Additional Reviews: By/Date Thomas J. Brant 8/26/97 | | |
| **Approval by MK QC** | Signature: Lois J. Bigley | Date: 08/26/97 | | | |
| **Approval by MK RG. SPECIALIST** | Signature: Steven Cory | Date: 08/27/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐ [signature] 9/10/97

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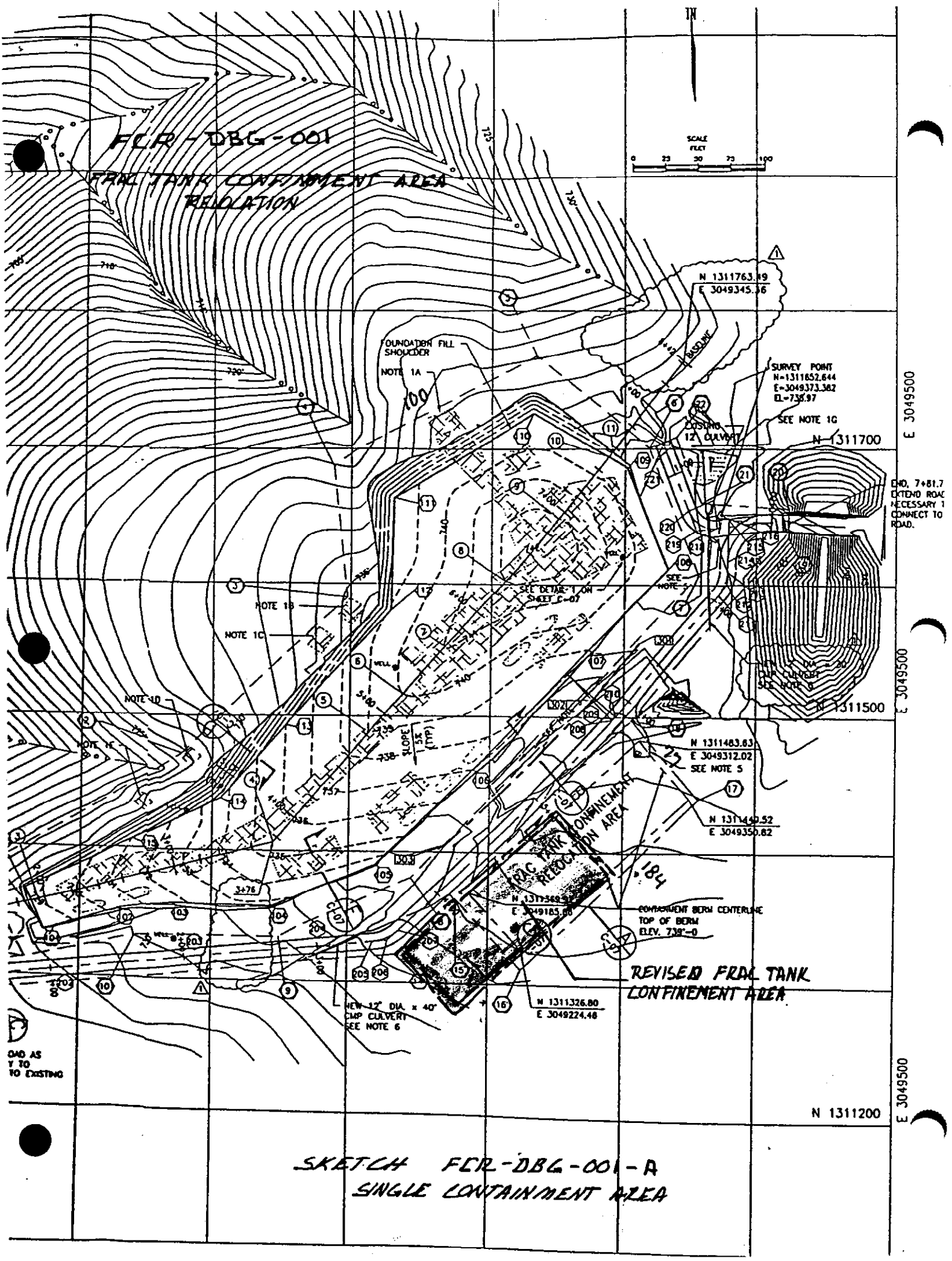
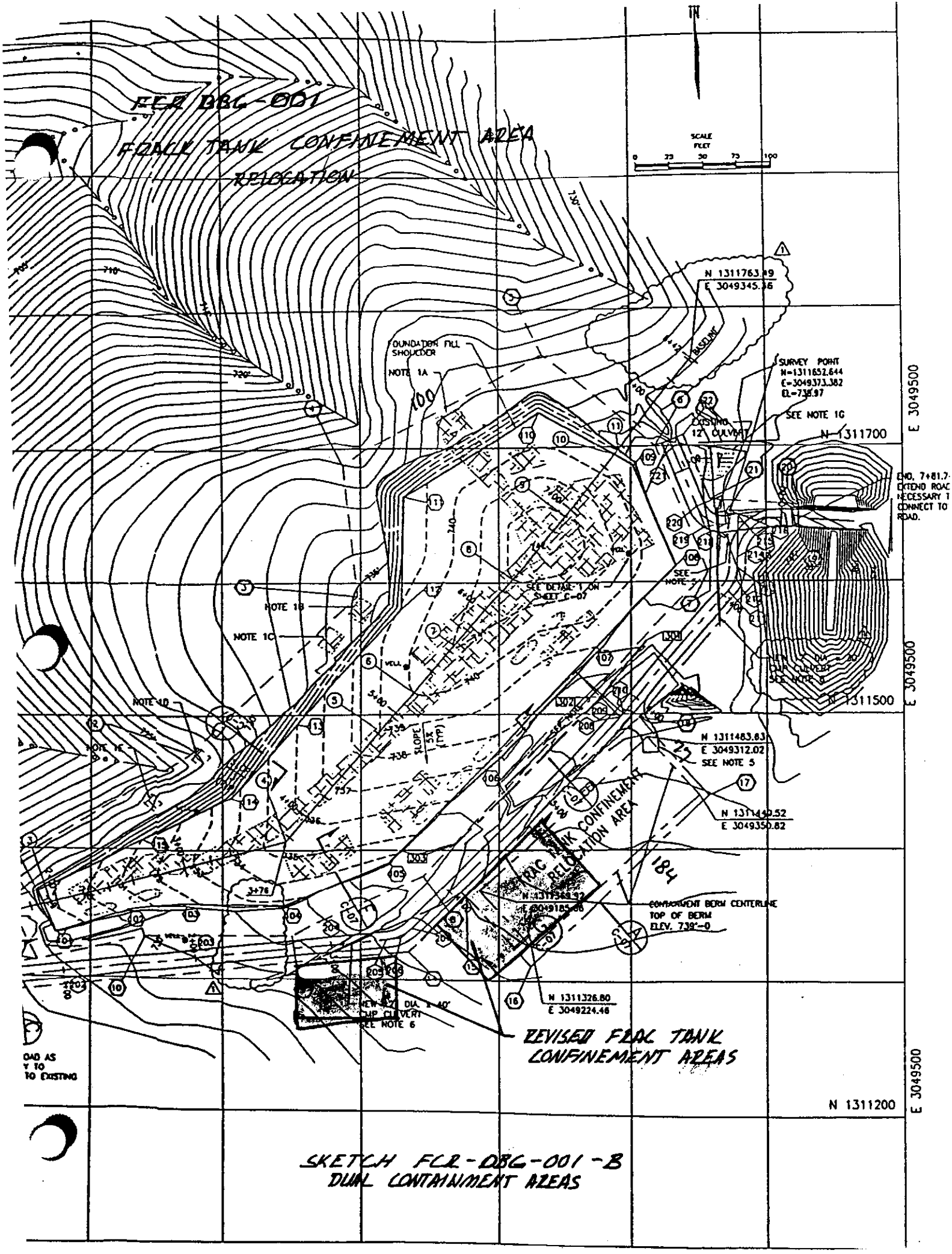



SKETCH FCR-DBG-001-A
SINGLE CONTAINMENT AREA




SKETCH FCR-DBG-001-B
DUAL CONTAINMENT AREAS

ORIGINAL

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-002 |
| **NSWC - DESIGNATED BORROW AREA** | | Page 1 of ~~X~~3 4B |

**Reference Documents** (Affected Document No., Revision No., Title):
Pre- bid meeting, site tour.

**Problem/ Change Description:**

A) The U.S. Navy has requested that MK utilize the clean soil spoils pile at the Bio-remediation facility for the Dye Burial Grounds Interim Measures Cap. This stockpile contains about 3,500 cy of material. Approximately 14,000 cy of borrow material will be needed for cap construction.

B) After a survey conducted by the U.S. Fish and Wildlife Service, it was determined that the designated borrow area 1.2 miles north of the Dye Burial Grounds contained potential Indiana Bat habitat and could not be used as a borrow source, for construction of the Dye Burial Grounds Interim Measures Cap.

| Initiated by | Signature: Lois J Bigley | Organization: | Date: 08-27-97 |
|---|---|---|---|

**Resolution:**

A) The spoils pile at the Bio-remediation facility is to be excavated; hauled; placed; spread in a 12" loose lift; inspected oversized material and pockets of gravel and organics and all oversized and detrimental material to be removed; and compacted within the Dye Burial Grounds Interim Measures Cap. The Bio-remediation facility spoils material is to be utilized for initial grading of the cap area, cap foundation material only.

B) U. S. Navy has designated an area off Hwy. 161 adjacent to magazine 822, at a distance of approximately 2 miles west of the DBG site. Soil test within the area revealed a hydraulic conductivity of $K = 10^{-5}$, with a CL soil classification. The U.S. Fish and Wildlife Services has inspected the area, on Aug. 25, 1997 and indicated that the area may be cleared. This area is to be used as the principal borrow source for site grading, cap foundation, and topsoil cover material in the construction of the Dye Burial Grounds Interim Measures Cap. *

**If this FCR affects a subcontract, indicate CID number:** _____

| | | | | | |
|---|---|---|---|---|---|
| **Approval by MK PE** | Signature: Lois J Bigley | Date: 08-27-97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] * May not be suitable for topsoil. | Date 9/4/97 |
| **Approval by MK PjM** | Signature: D Beall | Date: 8/28/97 | Additional Reviews: By/Date Thomas L. Brent 9/10/97 | | |
| **Approval by MK QC** | Signature: Lois J. Bigley | Date: 08/27/97 | | | |
| **Approval by MK RG. SPECIALIST** | Signature: Steven Cory | Date: 08/27/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐ Add map location to this FCR for borrow source - also attach USFWS approval. Carol [illegible] Smith 9/10/97

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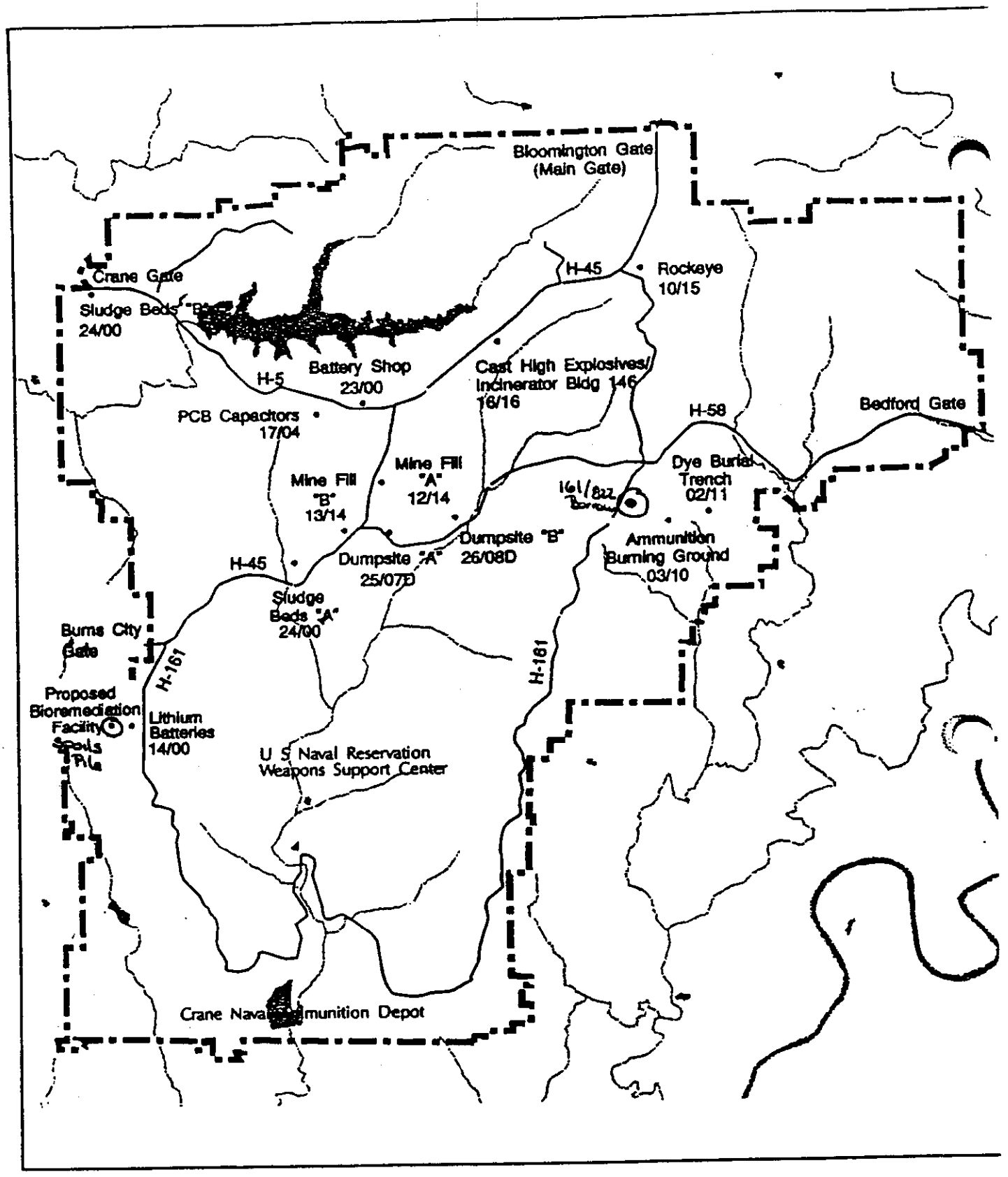


02/11 Dye Burial Ground
03/10 Ammunition Burning Ground Area
10/15 Rockeye
12/14 Mine Fill A
13/14 Mine Fill B
14/00 Sanitary Landfill and Lithium Batterey
16/16 Cast High Explosives Fill/Incineration complex
17/04 PCB Capacitor Burial/Pole Yard
23/00 Battery Shop
24/00 Sludge Drying Bed A
24/00 Sludge Drying Bed B
25/07D Highway 58 Dump Site A

**Figure 1-2**
**Location of Solid Waste Management Units**

MILE

MORRISON KNUDSEN CORPORATION

RECEIVED
AUG 26 1997
NK-CRANE

Commander
Crane Division, Naval Surface Warfare Center
Code 095, B3260
Crane, IN 47522

At your request a biologist from the Bloomington Field Office of the U.S. Fish and Wildlife Service inspected the proposed tree clearing at the Dye Burial Ground and cap borrow area at Crane Division, Naval Surface Warfare Center (NAVSURFWARCENDIV Crane), on August 25, 1997. This memo was prepared at NAVSURFWARCENDIV Crane immediately after the field inspection. The U.S. Fish and Wildlife Service will submit written comments verifying this memo. It was agreed during the inspection to avoid 2 potential Indiana bat (Myotis sodalis) roost trees by shifting the clearing area at the Dye Burial Ground away from those trees. Otherwise, due to the time of year and the quality of the habitat the project is not likely to adversely affect the Indiana bat, and may proceed.

Scott Pruitt
Fish & Wildlife Biologist

NSWC - CRANE
4324-0009

| PROJECT MEMBER | ACT | INFO | INIT |
|---|---|---|---|
| PROJECT MANAGER | | X | db R |
| PROJECT ENGINEER | | | |
| [illegible] SUPT | | | |
| SAFETY AND HEALTH | | | |
| QA/QC [illegible] | | X | R |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| [illegible]-CHARLESTON | | | |
| V. LOGAN | | X | R |
| D. ALBRETHSEN | | X | R |
| [illegible] | | | |
| FILE: | | | |
| FILE: | | | |

ORIGINAL

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-003 |
| **USE OF HERBICIDE OUTSIDE CAP LIMITS** | | Page 1 of 1 |

**Reference Documents** (Affected Document No., Revision No., Title):
Specification section: 01010, STATEMENT OF WORK

**Problem/ Change Description:**

It has been determined that the use of commercial grade Round-up, the approved herbicide, applied to the stump will have little or no benefit to the short term use of areas outside the cap footprint. Areas outside the cap footprint will continually vegetate themselves through the normal environmental cycles and continual maintenance (e.g., cutting and/or mowing) will need to be performed on a routine basis. This re-vegetation will take place irrespective of the stump treatment for area outside the cap footprint. Within the cap footprint the application of herbicide will provide some safeguard that trees will not sprout from the existing root from under the cap.

| **Initiated by** | Signature: Lois J. Bigley | Organization: | Date: 9/2/97 |
|---|---|---|---|

**Resolution:**

Eliminate the unnecessary use of herbicide for treating stumps outside the cap footprint. Maintain the use of commercial grade Round-up applied by either injection or painting, with in the cap footprint, for the Dye Burial Grounds Interim Measures Cap construction..

**If this FCR affects a subcontract, indicate CID number:** _____

| | | | | | |
|---|---|---|---|---|---|
| **Approval by MK PE** | Signature: Lois J Bigley | Date: 9/2/97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 9/4/97 |
| **Approval by MK PjM** | Signature: D Beall | Date: 9/2/97 | Additional Reviews: By/Date | | |
| **Approval by MK QC** | Signature: Lois J. Bigley | Date: 9/2/97 | Thomas J. Brent 9/11/97 | | |
| **Approval by MK RG. SPECIALIST** | Signature: Steven Cory | Date: 9/3/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐ Any trees removed along the inspection buffer also need treatment (and along the spill culvert for cap drainage) Carol Ann Smith 9/10/97
Treated w/in inside the clearance limit of the landfill cap.

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ORIGINAL

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-004 |
| **USE OF GEONET Vs OF SAND** | | Page 1 of 5 |

**Reference Documents** (Affected Document No., Revision No., Title):
Contract Specifications; Drawings C-07, C-08, C-09; Work Plan

**Problem/ Change Description:**

The Geosynthetic Clay Liner (GCL) should be protected from freezing. Freezing of soil liner materials can produce significant increases in hydraulic conductivity. It is therefore imperative that a frost/freeze buffer be placed over the GCL before winter temperatures adversely affect the liner. Placement of the 6" sand drainage layer is one of the longer duration activities prior to placement of the protective topsoil cover.

| **Initiated by** | Signature: Lois J Bigley | Organization: | Date: 9/2/97 |
|---|---|---|---|

**Resolution:**

Protection of the GCL from Freezing can be accomplished expeditiously by either increasing the sand drainage layer to 12" or by replacing the sand drainage layer with a geonet of equal or greater hydraulic conductivity.

While placement of 12" of sand in lieu of 6" of sand will have little affect on the duration of the drainage layer placement it will provide a greater level of protection from the freezing of the GCL. Increasing the thickness will increase the total ~~high~~ height of the cap and also increase the cost of the cap.

A second and better alternative would be to replace the sand with a geonet of equal or greater hydraulic conductivity. Because the geonet can be place directly and swiftly over the HPDE liner , it will reduce the duration of the time it takes to survey laps instead of the days need to place and grade the sand. By decreasing the time needed to place the drainage layer , the placement of the biotic barrier is hastened and thus the protective topsoil cover can be placed.

The use of a geonet as a drainage layer is described in the EPA Technical Guidance Document "Quality Assurance and Quality Control for Waste Containment Facilities"; EPA/600/R-93/182.

**If this FCR affects a subcontract, indicate CID number:** _____

| | | | | | |
|---|---|---|---|---|---|
| Approval by MK PE | Signature: Lois J. Bigley | Date: 9/2/97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 9/5/97 |
| Approval by MK PjM | Signature: D Hall | Date: 9/3/97 | Additional Reviews: By/Date Thomas J. Brent 9/11/97 | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 9-2-97 | | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Cory | Date: 9-3-97 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐ [illegible] 9/11/97

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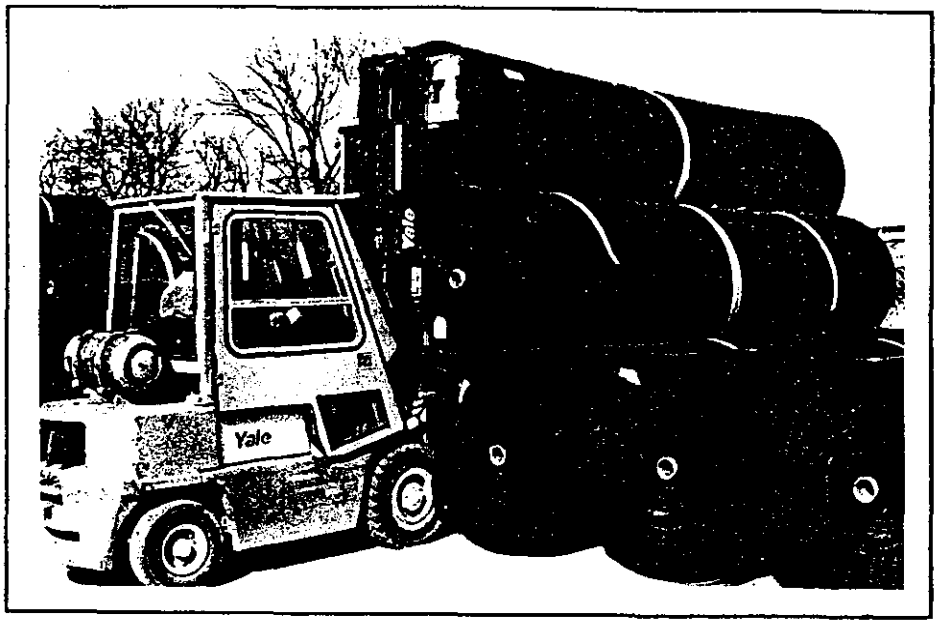
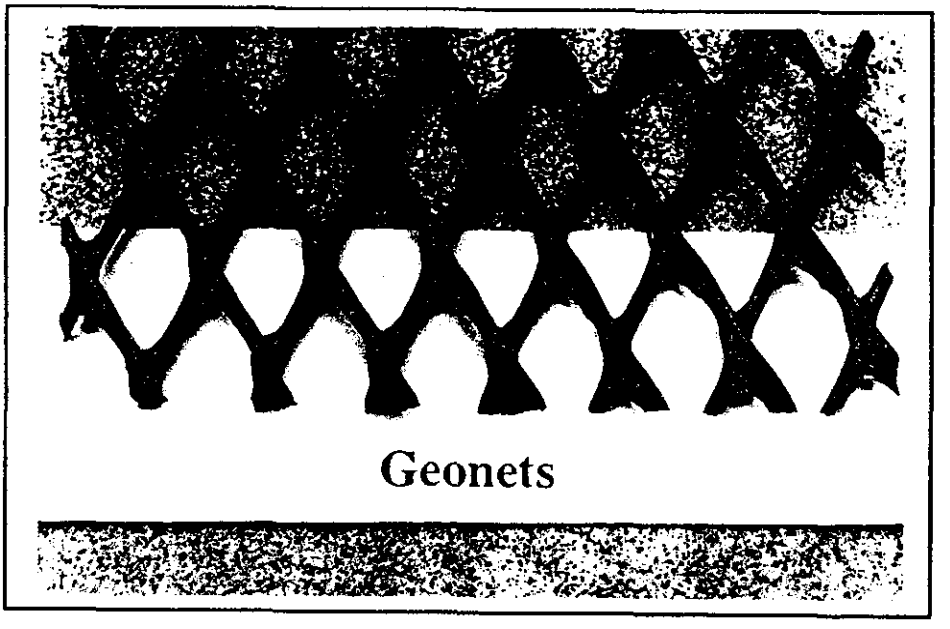



(a) Rolls of Drainage Geonets




(b) Closeup of Rib Intersection

Figure 6.8 - Typical Geonets Used in Waste Containment Facilities

Figure 6.10 - Geonets Being Temporarily Stored at the Job Site

6.3.2.6 Placement

The placement of geonets in the field is similar to that described for geotextiles. Refer to Section 6.2.2.6 for a complete description.

6.3.3 Joining of Geonets

Geonets are generally joined together by providing a stipulated overlap and using plastic fasteners or polymer braid to tie adjacent ribs together at minimum intervals, see Fig. 6.11.

Recommended items for a specification or CQA document on the joining of geonets include the following:

1. Adjacent roll edges of geonets should be overlapped a minimum distance. This is typically 75-100 mm (3-4 in.).

2. The roll ends of geonets should be overlapped 150-200 mm (6-8 in.) since flow is usually in the machine direction.

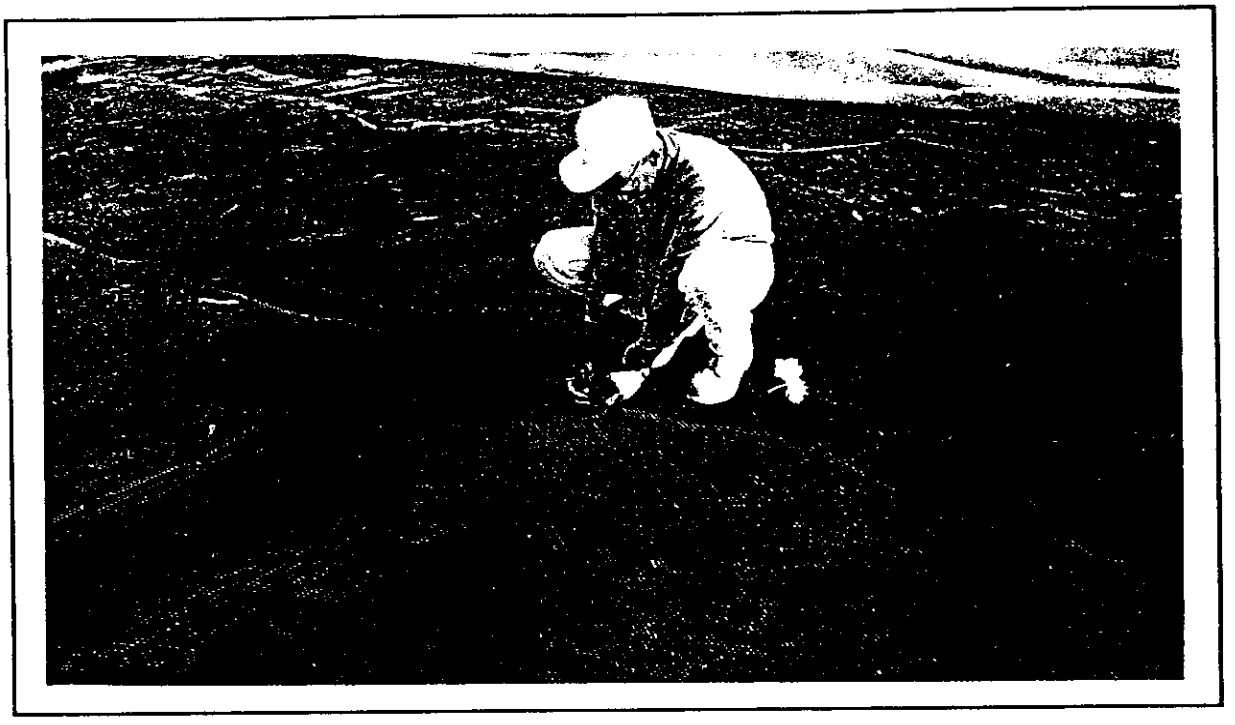


Figure 6.11 - Photograph of Geonet Joining by Using Plastic Fasteners

3. All overlaps should be joined by tying with plastic fasteners or polymeric braid. Metallic ties or fasteners are not allowed.

4. The tying devices should be white or yellow, as contrasted to the black geonet, for ease of visual inspection.

5. The tying interval should be specified. Typically tie intervals are every 1.5 m (5.0 ft) along the edges and every 0.15 m (6.0 in.) along the ends and in anchor trenches.

6. Horizontal seams should not be allowed on side slopes. This requires that the length of the geonet should be at least as long as the side slope, anchor trench and a minimum run out at the bottom of the facility. If horizontal seams are allowed, they should be staggered from one roll to the adjacent roll.

7. In difficult areas, such as corners of side slopes, double layers of geonets are sometimes used. This should be stipulated in the plans and specifications.

8. If double geonets are used, they should be layered on top of one another such that interlocking does not occur.

9. If double geonets are used, roll edges and ends should be staggered so that the joints do not lie above one another.

10. Holes or tears in the geonet should be repaired by placing a geonet patch extending a minimum of 0.3 m (12 in.) beyond the edges of the hole or tear. The patch should be tied to the underlying geonet at 0.15 m (6.0 in.) spacings.

11. Holes or tears along more than 50% of the width of the geonet on side slopes should require the entire length of geonet to be removed and replaced.

6.3.4 Geonet/Geotextile Geocomposites

Geonets are always covered with either a geomembrane or a geotextile, i.e., they are never directly soil covered since the soil particles would fill the apertures of the geonet rendering it useless. Many geonets have a geotextile bonded to one, or both, surfaces. These are then referred to as geocomposites in the geonet manufacturer's literature. In this document, however, geocomposites will refer to many different types of drainage core structures. Clearly, covered geonets are included in this group. However, geocomposites also consist of fluted, nubbed and cuspated cores, covered with geotextiles and/or geomembranes and will be described separately in section 6.4. Still further, some manufacturers refer to the entire group of geosynthetic drainage materials as "geospacers".

Regarding a specification or CQA document for geonet/geotextile drainage geocomposites, a few comments are offered:

1. The geotextile(s) covering a geonet should be bonded together in such a way that neither component is compromised to the point where proper functioning is impeded. Thus adequate, but not excessive, bonding of the geotextile(s) to the geonet is necessary.

2. If bonding is by heating, the geotextile(s) strength cannot be compromised to the point where failure could occur. The transmissivity under load test, ASTM D-4716, should be performed on the intended geocomposite product.

3. If bonding is by adhesives, the type of adhesive must be identified, including its water solubility and organic content. Excessive adhesive cannot be used since it could fill up some of the geonet's void space. The transmissivity under load test, ASTM D-4716, should be performed on the intended geocomposite product. The geotextile's permittivity could be evaluated using ASTM D-4491.

4. If the shear strength of the geotextile(s) to the geonet is of concern an adapted form of an interface shear test, e.g., ASTM D-5321, can be performed with the geotextile firmly attached to a wooden substrate, or other satisfactory arrangement. Alternatively, a ply adhesion test may be adequate, see ASTM D-413 which might be suitably modified for geotextile-to-geonet adhesion.

5. For factory fabricated geocomposites with geotextiles placed on both sides of a geonet, the geonet must be free from all dirt, dust and accumulated debris before covering.

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# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-005 |
| **SITE CLEARING - EXCLUDING ONE LARGE TREE** | | Page 1 of 2 |

**Reference Documents** (Affected Document No., Revision No., Title):
Contract Specifications; Drawings C-03

**Problem/ Change Description:**

At the Dye Burial Grounds at an approximate location of 3048860 easting and 1311312 northing, at the edge of the 10' clearing limit for the DBG Cap, between the cap and the access road a large double trunk tree exist. This tree could be excluded from the clearing without adversely effecting the Interim Measures Cap at the DBG. The access road may need to be shifted a foot to the south, but this can be accomplished without changing the road alignment. The tree is a double trunk tree with each trunk nearly 2.5' in dia. Preserving this tree will provide a less stark appearance and provide minimal erosion protection.

| | | | |
|---|---|---|---|
| **Initiated by** | Signature: Lois J. Bigley | Organization: | Date: 09/04/97 |

**Resolution:**

Exclude single large tree at 3048860 easting and 1311312 northing from site clearing.

**If this FCR affects a subcontract, indicate CID number:** _____

| | | | | | |
|---|---|---|---|---|---|
| Approval by MK PE | Signature: Lois J Bigley | Date: 09-04-97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 9/5/97 |
| Approval by MK PjM | Signature: D Ball | Date: 9/4/97 | Additional Reviews: By/Date<br>Thomas J. Brent 9/8/97<br>[redacted] Concern over maintenance (mowing and seed production) as well as root intrusion and limb falls. Little value added to leaving tree in-place. | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 09/04/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Cory | Date: 09/04/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐

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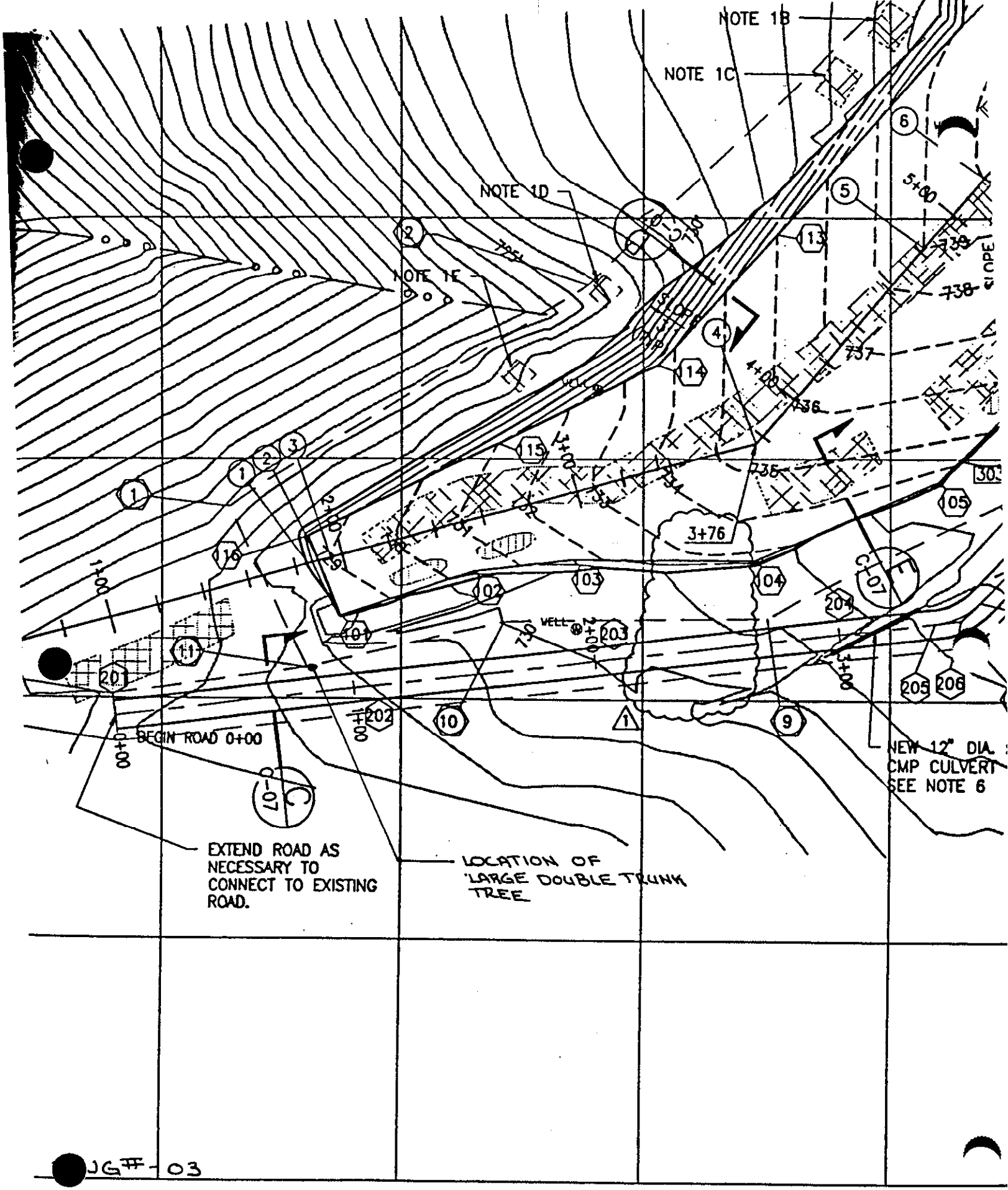
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
3+76
BEGIN ROAD 0+00
NEW 12" DIA.
CMP CULVERT
SEE NOTE 6
EXTEND ROAD AS NECESSARY TO CONNECT TO EXISTING ROAD.
LOCATION OF LARGE DOUBLE TRUNK TREE

JGFF-03

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# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-006 |
| **SITE CLEARING - DELETE CHIPPING** | | Page 1 of 1 |

**Reference Documents** (Affected Document No., Revision No., Title):
Contract Specifications 01010, Work Plan.

**Problem/ Change Description:**

The terrain north of the DBG cap is uneven and heavily vegetated, it is laborious to drag the chipper around and to drag out the logs to be blocked and stacked. A large quantity of dead fall is also located within this area, which will be pushed past the clearing limits it is therefore, suggested that the chipping requirement be deleted from the clearing specifications, and the work plan. The U.S. Navy is not requiring chipping at it's other NSWC Crane construction sites.

| **Initiated by** | Signature: Lois J. Bigley | Organization: MK | Date: 09/05/97 |
|---|---|---|---|

**Resolution:**

Revise specification and the Work Plan to read to delete chipping; revise blocking and stacking of logs that are easily retrievable, and denote that the brush and felled trees are to be disposed with in the adjacent wooded area.

**If this FCR affects a subcontract, indicate CID number:** _____

| Approval by MK PE | Signature: Lois J Bigley | Date: 09-05-97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 9/5/97 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Ball | Date: 9/5/97 | Additional Reviews: By/Date | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 09/05/97 | Not Req'd | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Cory | Date: 9/5/97 | Shawn J. Dean 9/11/97 | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐ Wetlands Clipping may be delayed as long as wood storage does not interfere w/cap construction or erosion controls. Chipped wood may be stored in a EPD approved area for later use at Biofacility.
9/11/97 Carol [illegible]

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# FIELD CLARIFICATION REQUEST (FCR)

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|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-007 |
| **REVISE FRAC TANK VALVE** | | Page 1 of 1 |

**Reference Documents** (Affected Document No., Revision No., Title):
Construction Drawing C-07 Section G - FRAC tank

**Problem/ Change Description:**

Drawing C-7 call for a 3" PVC valve to release clear water form the secondary containment area. The existing secondary containment areas utilize ~~a~~ 2" PVC valves. To Reduce waste it is suggested that 2 " valve be used in lieu of the 3" valve for the second secondary containment area.

| Initiated by | Signature: Lois J Bigley | Organization: MK | Date: 09/05/97 |
|---|---|---|---|

**Resolution:**

Revise drawing C-07 note to read, "2" or 3" PVC valve.

**If this FCR affects a subcontract, indicate CID number:** _____

| Approval by MK PE | Signature: Lois J Bigley | Date: 09-05-97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 9/5/97 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Beall | Date: 9/5/97 | Additional Reviews: By/Date Thomas J. Brent 9/8/97 | | |
| Approval by MK QC | Signature: Lois J Bigley | Date: 09/05/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Cory | Date: 9/5/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐ Approved 9/15/97 [illegible]

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# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-008 |
| **ADD DRAINAGE TO ENTRANCE AREA** | | Page 1 of 1 |

**Reference Documents** (Affected Document No., Revision No., Title):
Construction Drawing C-03

**Problem/ Change Description:**

Drawing C-03 Calls for a new 12' Dia. CMP culvert to be placed just south of the entrance. To drain water ~~form~~ from this area a shallow ditch will also need to be cut to drain water off to the south.

| **Initiated by** | Signature: Lois J. Bigley | Organization: MK | Date: 09/05/97 |
|---|---|---|---|

**Resolution:**

Add ditch to drain water.

**If this FCR affects a subcontract, indicate CID number:** _____

| Approval by MK PE | Signature: Lois J Bigley | Date: 09-05-97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 9/5/97 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Beall | Date: 9/5/97 | Additional Reviews: By/Date | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 09/05/97 | Thomas J. Brent 9/15/97 | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Cory | Date: 9/5/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐ Approved Paul W. Smith 9/11/97

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# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-009 |
| **DECONTAMINATION OF MUD BOXES AT DBG** | | Page 1 of 1 |

**Reference Documents** (Affected Document No., Revision No., Title):
Specification section 01010 - Statement of Work, and Work Plan

**Problem/ Change Description:**

Pursuant to the request of the U.S. EPA the decontamination of the mud boxes is to be delayed until a decontamination method is established for the holding tanks. Revise contract specification to delete decontamination of the mud boxes from the site preparation phase of the DBG Interim Cap Construction.

| **Initiated by** | Signature: Lois J Bigley | Organization: MK | Date: 09/19/97 |
|---|---|---|---|

**Resolution:**

Change Section 01010 Paragraph 3.3 - STORAGE TANKS RELOCATION, section E to read as follows:
"Pump Contents of two existing mud boxes into FRAC tanks, cover, and store boxes at the Dye Burial Grounds.

Revise Work Plan per above comments.

**If this FCR affects a subcontract, indicate CID number:** _____

| Approval by MK PE | Signature: Lois J Bigley | Date: 9-19-97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 9/23/97 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Beall | Date: 9/19/97 | Additional Reviews: By/Date Thomas J. Brent 9/24/97 mud boxes may be used for emergency storage provided they are placed in a bermed area and pass a visual one inspected after moving, prior to placing liquids. | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 9/19/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: D Miller for S. Cody | Date: 9/19/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☒

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# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBG-010 |
|---|---|---|
| ACCESS ROAD ALIGNMENT | | Page 1 of 2 |

**Reference Documents** (Affected Document No., Revision No., Title):
Construction Drawing C-03, rev. 1, CAP FOUNDATION GRADING PLAN

**Problem/ Change Description:**

The access road construction is to follow the lay of the existing ground surface, to avoid ground disturbing activities. Field location of the access has placed the roadway running between a previously cut area, (1996) and undisturbed area from about station 5+82 to 3+50. If the access road is constructed in the location indicated without cut and/or filling it will be lopsided, in the area denoted. Also the roadway in its present location runs close to the maternal roosting tree that the U.S. Fish and Wildlife would like to preserve.

| Initiated by | Signature: Lois J Bigley | Organization MK | Date: 9-22-97 |
|---|---|---|---|

**Resolution:**

Relocate the access road slightly to the Northwest, to avoid additional clearing and the existing bank. The relocation of the roadway will have no effect on the construction of the dye burial grounds interim measures cap construction. Majority of relocation will be absorbed within the 5' clearing zone of the roadway itself, the remaining 1 to 2' of need width for a short distance (<100') can easily be absorbed within the addition10' clear space between the north edge of the roadway and the 10' clearing around the toe of the cap. With the relocation of the access road there will still be over 18' of cleared area between the toe of the cap and the tree line on the south side of the cap in contrast with the nominal 10' width on the north side of the cap. The cleared area is for inspection and maintenance of the cap.

Field fit access road and drainage swale, no alteration to dye burial grounds interim measures cap.

**If this FCR affects a subcontract, indicate CID number:** _____

| Approval by MK PE | Signature: Lois J Bigley | Date: 9-22-97 | Approval by ROICC/NTR or RPM | Signature: [illegible] | Date 9/29/97 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: [illegible] | Date: 9/22/97 | Additional Reviews: By/Date Thomas J. Brent 10/1/97 | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 09/22/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: D. Mitchell for S. Cory | Date: 9/22/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ see attached

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# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBG-010 |
|---|---|---|
| ACCESS ROAD ALIGNMENT | | Page 1 of 2 |

**Reference Documents** (Affected Document No., Revision No., Title):
Construction Drawing C-03, rev. 1, CAP FOUNDATION GRADING PLAN

**Problem/ Change Description:**

The access road construction is to follow the lay of the existing ground surface, to avoid ground disturbing activities. Field location of the access has placed the roadway running between a previously cut area, (1996) and undisturbed area from about station 5+82 to 3+50. If the access road is constructed in the location indicated without cut and/or filling it will be lopsided, in the area denoted. Also the roadway in its present location runs close to the maternal roosting tree that the U.S. Fish and Wildlife would like to preserve.

| Initiated by | Signature: Louis J Bigley | Organization MK | Date: 9-22-97 |
|---|---|---|---|

**Resolution:**

Relocate the access road slightly to the Northwest, to avoid additional clearing and the existing bank. The relocation of the roadway will have no effect on the construction of the dye burial grounds interim measures cap construction. Majority of the relocation will be absorbed within the 5' clearing zone of the roadway itself, the remaining 1 to 2' of need width for a short distance (<100') can easily be absorbed within the addition10' clear space between the north edge of the roadway and the 10' clearing around the toe of the cap. With the relocation of the access road there will still be over 18' of cleared area between the toe of the cap and the tree line on the south side of the cap in contrast with the nominal 10' width on the north side of the cap. The cleared area is for inspection and maintenance of the cap.

Field fit access road and drainage swale, no alteration to dye burial grounds interim measures cap.

***If this FCR affects a subcontract, indicate CID number:*** _____

| Approval by MK PE | Signature: Louis J Bigley | Date: 9-22-97 | Approval by ROICC/NTR or RPM | Signature: [illegible] | Date 9/22/97 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: [illegible] | Date: 9/22/97 | Additional Reviews: By/Date Thomas J. Brent 10/1/97 | | |
| Approval by MK QC | Signature: Louis J. Bigley | Date: 09/22/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: D. Miller for S. Cory | Date: 9/22/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ Approved Carol [illegible] 10/1/97

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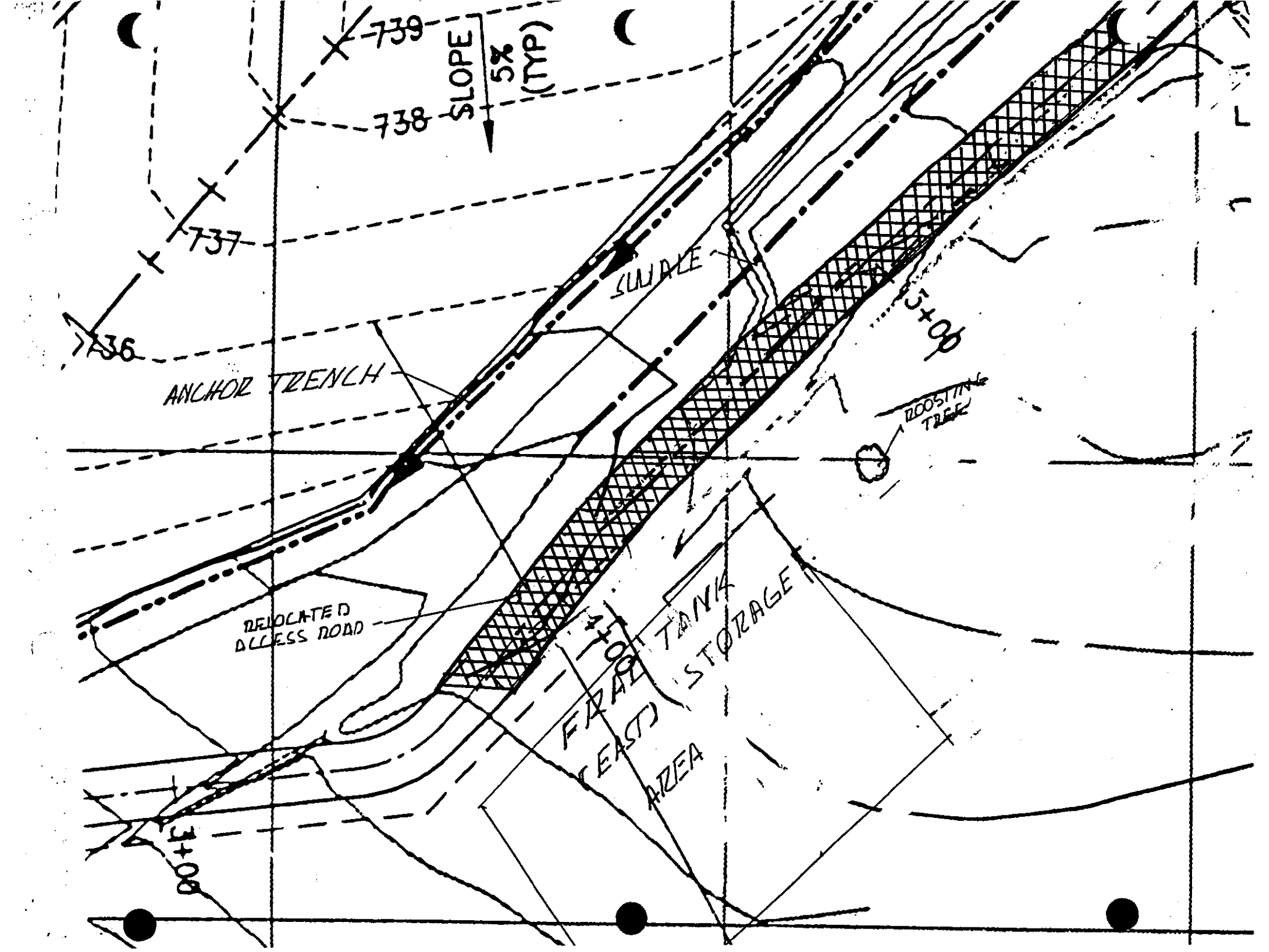
739
738
737
736
SLOPE
5%
(TYP)
SWALE
ANCHOR TRENCH
RELOCATED
ACCESS ROAD
3+00
ROOSTING
TREE
FRAC
TANK
STORAGE
(EAST)
AREA
3+00

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# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-011 |
| **EXTEND ACCESS ROAD TO THE NORTH** | | Page 1 of 3 |

**Reference Documents** (Affected Document No., Revision No., Title):
Construction Drawing C-03, C-07

**Problem/ Change Description:**

Pursuant to the direction of the U.S. Navy, MK and their subcontractors may no longer access the Dye Burial Ground through magazine #1518 and its retaining wall, and an access shall be constructed around the magazine.

| | | | |
|---|---|---|---|
| **Initiated by** | Signature: Lois J. Bigley | Organization: MK MK | Date: 10/2/97 |

**Resolution:**

Extend the DBG access road north around the magazine and construct per drawing C-07 cross-section.

A 12" diameter culvert is to be added at the beginning and end of the access road extention to maintain drainage of the area.

See attached sketch.

**If this FCR affects a subcontract, indicate CID number:** _____

| | | | | | |
|---|---|---|---|---|---|
| Approval by MK PE | Signature: LJ Bigley | Date: 10/2/97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 10/14/97 |
| Approval by MK PjM | Signature: D Hall | Date: 10/2/97 | Additional Reviews: By/Date Approved w/ Comment: J Norris J. Burt 10/15/97 Comment: affect drawings C-03, C-08, & C-09. Does not appear to impact C-07. | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 10/2/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Coy | Date: 10/2/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☒

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**DEPARTMENT OF THE NAVY**
**OFFICER IN CHARGE OF**
**NAVAL FACILITIES ENGINEERING COMMAND**
**CONTRACTS**
**CRANE DIVISION, NAVAL SURFACE WARFARE CENTER**
**BUILDING 2516**
**CRANE, INDIANA 47522-5082**

4330
OICC
25 Sep 97

RECEIVED
SEP 26 1997
MK-CRANE

Morrison Knudsen Corp.
P.O. Box 310
Crane Village, IN 47522

Subj: Contract N62467-93-D-1106, ENVIRONMENTAL RAC CONTRACT
Delivery Order 0009 NSWC-CRANE

Gentlemen:

This letter is to serve as technical direction for the following actions related to Dye Burial Grounds Cap Construction:

1) Suspend access for vehicles and personnel to the cap area via the magazine access drive immediately.

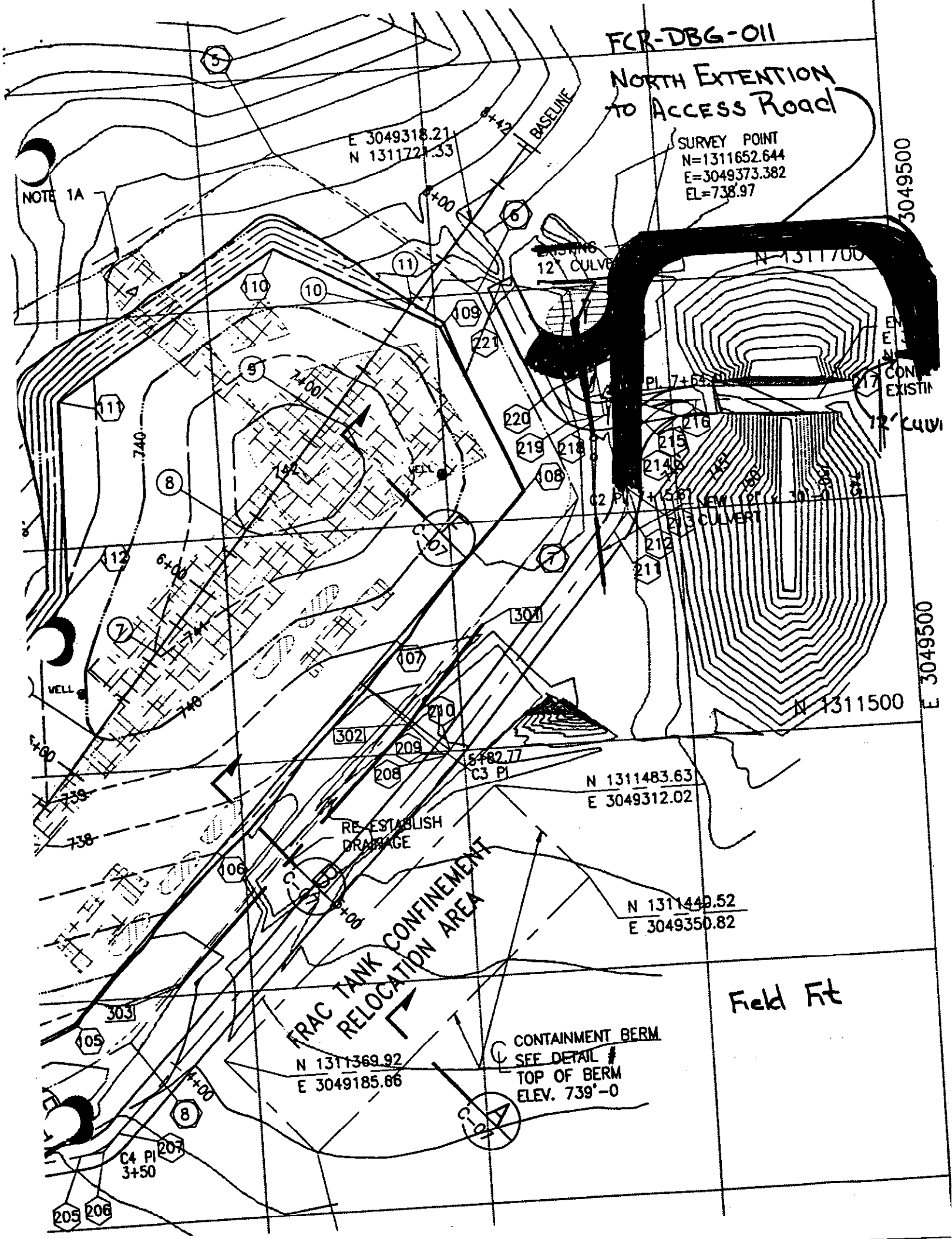
2) Construct a new access to the north of the magazine per the road details in the approved plan.

You shall proceed promptly with the performance of this technical direction. You are to provide a budgetary impact of this direction to the Contracting Officer within 5 days of its issuance. If in your opinion, this direction falls within any of the categories defined in paragraph (b) of the clause G8, Technical Direction, of your contract, you shall promptly notify the Contracting Officer in writing. You shall take no action until the Contracting Officer has issued a modification to the delivery order or otherwise resolved the issue. If you have any questions, contact myself at 812-854-3318.

Brent Robertson
Navy Technical Representative

| NSWC - CRANE 4324-0009 | | | |
|---|---|---|---|
| PROJECT MEMBER | ACT | INFO | INIT |
| PROJECT MANAGER | | X | |
| PROJECT ENGINEER | | | |
| SITE SUPT | | X | R |
| SAFETY AND HEALTH | | | |
| QA/QC | | X | R |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| PMO-CHARLESTON | | | |
| Doug | | X | |
| Vern | | X | R |
| | | | |
| FILE: 11.010.F | | | R |
| FILE: | | | |

cc: Tom Brent; NSWC Code 095
Jimmy Jones; SDIV Code 18011
Adrienne T. Wilson; SDIV Code 1864
Bob Hess; SDIV Code 0232
OICC Tim Sears
File


FCR-DBG-011
NORTH EXTENTION TO ACCESS ROAD
SURVEY POINT
N=1311652.644
E=3049373.382
EL=738.97
E 3049318.21
N 1311721.33
BASELINE
NOTE 1A
12" CULVERT
N 1311700
E 3049500
PI 7+65.40
C2 PI 7+15.61
213 CULVERT
N 1311500
E 3049500
WELL
740
742
744
746
739
738
C3 PI
N 1311483.63
E 3049312.02
RE-ESTABLISH DRAINAGE
N 1311449.52
E 3049350.82
FRAC TANK CONFINEMENT RELOCATION AREA
Field Fit
CONTAINMENT BERM
SEE DETAIL #
TOP OF BERM
ELEV. 739'-0
N 1311369.92
E 3049185.66
C4 PI
3+50

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
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# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBG-012 |
|---|---|---|
| NW WEEP ON THE NORTH LEG OF CAP AREA | | Page 1 of 3 |

**Reference Documents** (Affected Document No., Revision No., Title):
PAGE 2

**Problem/ Change Description:**
During the construction of the cap foundation fill, a small weep developed on the north leg of the cap foundation. After the first lift of clean fill was placed the weep was discovered and was producing a little over 1.5 gallons of dye impacted water per day. As additional lifts were added, the weep was monitored and water collected and placed in the designated construction holding tank, the rate of flow increased to over eight (8) gallons per day. At present the weep is producing about 4.5 gallons of water per day as monitoring and collection continues. As fall progresses into winter, a decision needs to be made on how to handle the weep.

| Initiated by | Signature: Lois J. Bigley | Organization: MK | Date: 10/6/97 |
|---|---|---|---|

**Resolution:**
1. Do nothing - backfill the weep area.
2. Continue monitoring and collecting from the present location.
3. Add a drain and collection system.

The advantages to #1 are: it is easily achieved and provides the specified drainage configuration to the cap foundation fill. The disadvantages: the present rate of flow, the weep will again surface before the cap construction is started, contaminating clean soil and creating a soft spot; the resurfacing weep will have to be contained at a future date. The location of resurfacing is unknown. The advantages of #2 are: it is easily achieved. The disadvantages are: the hole used to collect the dye impacted water will also trap rain water, the drainage configuration does not exist, and closure of the weep will need to be dealt with sometime in the future. The advantages of #3 are: the drainage configuration can be established while containing and controlling the weep waters. The construction of the drainage system can be easily completed. The disadvantage is that some decisions will need to be made when and if the collection system should be removed.

Of the three choices, MK believes alternative #3 is the best. A small 2' x 2' x 1' drain field shall be installed at the weep location. A 2" PVC pipe shall drain the dye impacted water off to the west where it shall be collected into a poly tank. There the flow rate can be monitored, and the water can be pumped into the designated construction holding tank as needed, and the cap foundation fill can be constructed to the specified drainage configuration. In the future when and if it is determined that the collection system is no longer wanted or needed, a section of the drainage pipe can be pulled and the remaining section capped or plugged.

**If this FCR affects a subcontract, indicate CID number:** _____

| Approval by MK PE | Signature: Lois J Bigley | Date: 10-06-97 | **Approval by ROICC/NTR or RPM** | Signature: | Date |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Ball | Date: 10/6/97 | Additional Reviews: By/Date Thomas J. Brant 10/6/97. management of this tank will need to be addressed in the winterization plan. currently there is no approved plan for poly tank decon. | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 10/06/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Cory | Date: 10/6/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ See attached

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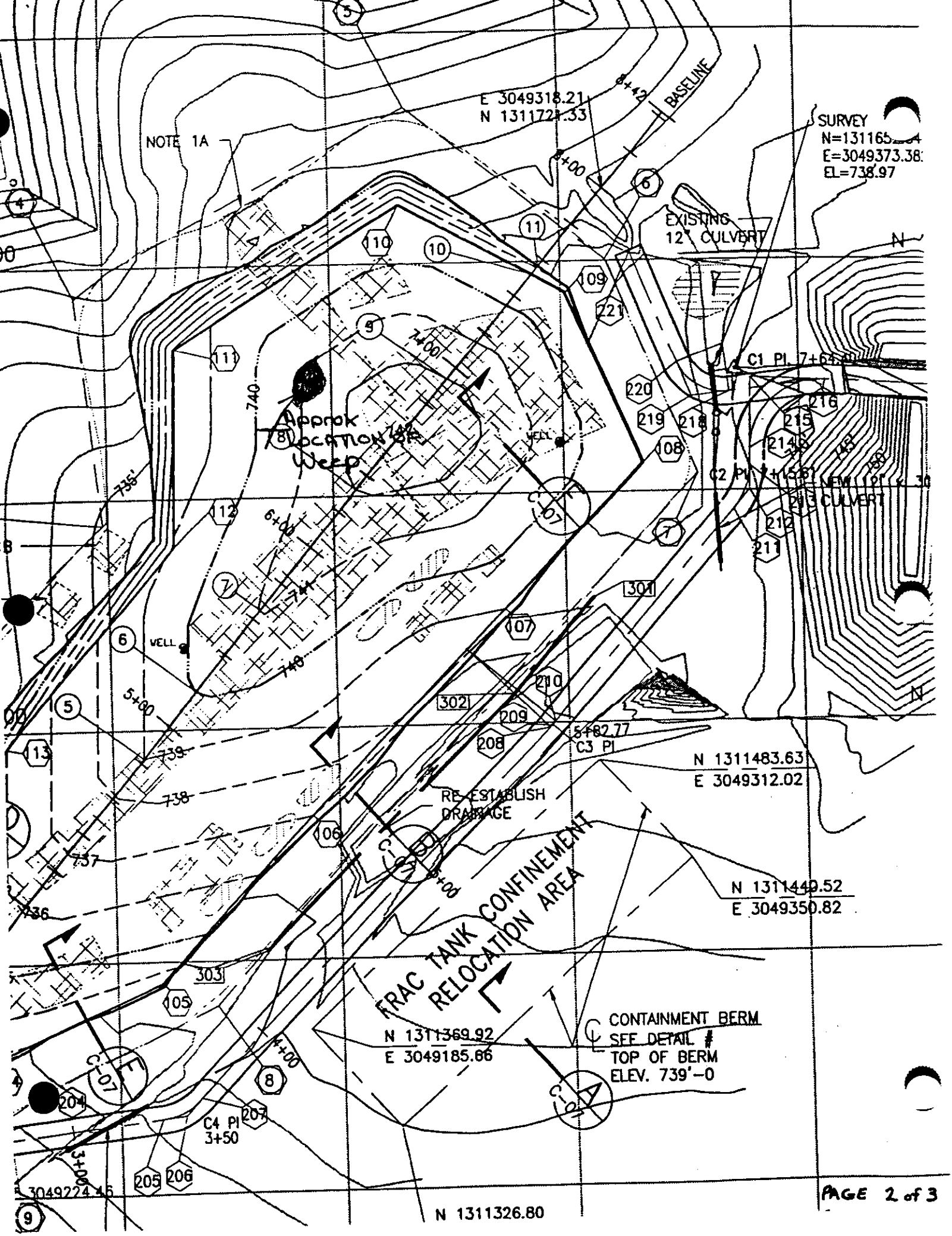
E 3049318.21
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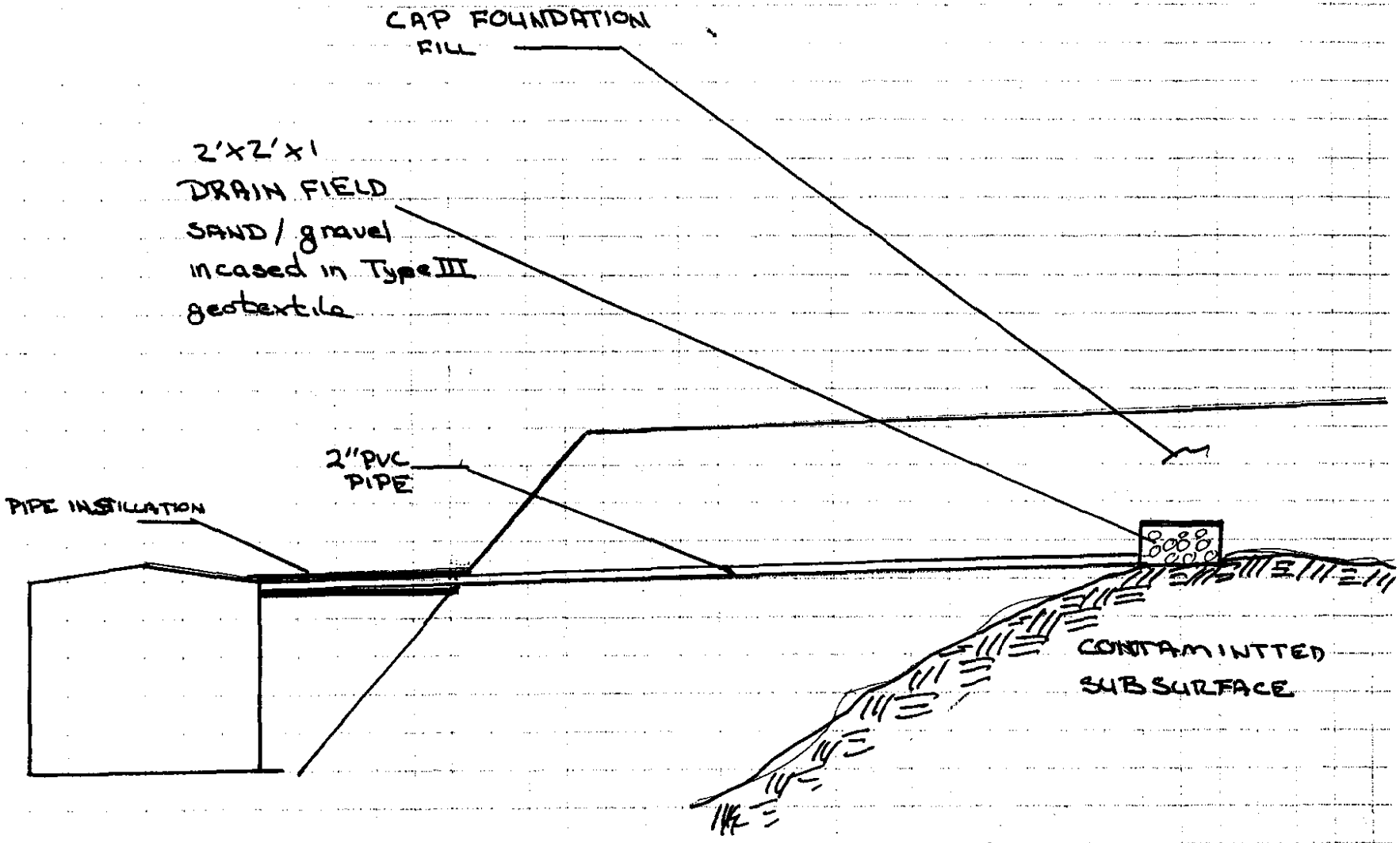
NOTE 1A
EXISTING
12" CULVERT
C1 PI 7+64.40
C2 PI 7+15.61
NEW 12" CULVERT
Approx Location of Weep
WELL
RE-ESTABLISH DRAINAGE
5+82.77
C3 PI
N 1311483.63
E 3049312.02
N 1311440.52
E 3049350.82
FRAC TANK CONFINEMENT RELOCATION AREA
CONTAINMENT BERM
SEE DETAIL #
TOP OF BERM
ELEV. 739'-0
N 1311369.92
E 3049185.66
C4 PI
3+50
N 1311326.80
3049224.46

# DRAINAGE COLLECTION SYSTEM



| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DHG-012 |
|---|---|---|
| WEEP ON THE NORTH LEG OF CAP AREA | | Page 1 of 3 |

**Reference Documents** (Affected Document No., Revision No., Title).
PAGE 2

**Problem/ Change Description:**
During the construction of the cap foundation fill, a small weep developed on the north leg of the cap foundation. After the first lift of clean fill was placed the weep was discovered and was producing a little over 1.5 gallons of dye impacted water per day. As additional lifts were added, the weep was monitored and water collected and placed in the designated construction holding tank, the rate of flow increased to over eight (8) gallons per day. At present the weep is producing about 4.5 gallons of water per day as monitoring and collection continues. As fall progresses into winter, a decision needs to be made on how to handle the weep.

| Initiated by | Signature: Lois J. Bigley | Organization. MK | Date: 10/6/97 |
|---|---|---|---|

**Resolution:**
1. Do nothing - backfill the weep area.
2. Continue monitoring and collecting from the present location
3. Add a drain and collection system.

The advantages to #1 are: it is easily achieved and provides the specified drainage configuration to the cap foundation fill. The disadvantages: the present rate of flow, the weep will again surface before the cap construction is started, contaminating clean soil and creating a soft spot; the resurfacing weep will have to be contained at a future date. The location of resurfacing is unknown. The advantages of #2 are: it is easily achieved. The disadvantages are; the hole used to collect the dye impacted water will also trap rain water, the drainage configuration does not exist, and closure of the weep will need to be dealt with sometime in the future. The advantages of #3 are, the drainage configuration can be established while containing and controlling the weep waters. The construction of the drainage system can be easily completed. The disadvantage is that some decisions will need to be made when and if the collection system should be removed

Of the three choices, MK believes alternative #3 is the best. A small 2' x 2' x 1' drain field shall be installed at the weep location. A 2" PVC pipe shall drain the dye impacted water off to the west where it shall be collected into a poly tank. There the flow rate can be monitored, and the water can be pumped into the designated construction holding tank as needed, and the cap foundation fill can be constructed to the specified drainage configuration. In the future when and if it is determined that the collection system is no longer wanted or needed, a section of the drainage pipe can be pulled and the remaining section capped or plugged.

**If this FCR affects a subcontract, indicate CID number:** _____

| Approval by MK PE | Signature: Lois J Bigley | Date: 10-06-97 | Approval by ROICC/NTR or RPM | Signature: | Date |
|---|---|---|---|---|---|
| Approval by MK PM | Signature: D Dell | Date: 10/6/97 | Additional Reviews: By/Date Jeremy Brown 10/6/97. management of this tank will need to be addressed in the sampling plan. Currently there is no approved plan for poly tank decon. | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 10/06/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Coy | Date: 10/6/97 | | | |

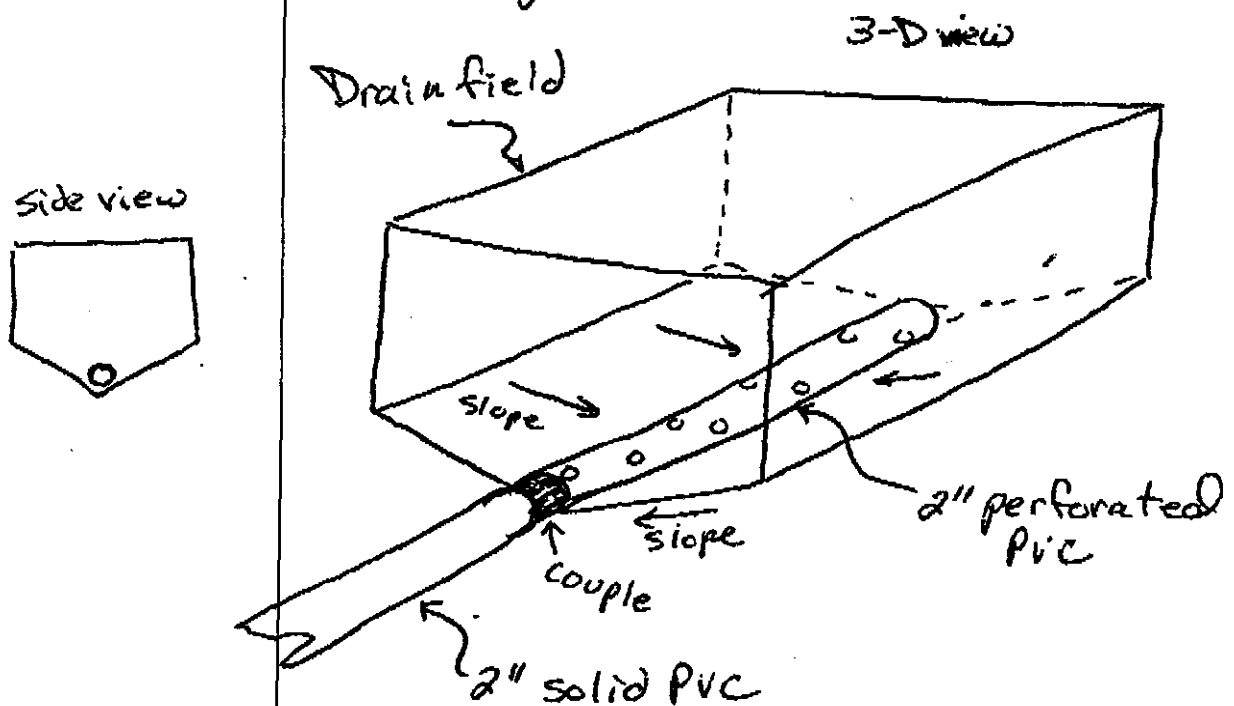
Regulator Approval/Notification Recommended:
Yes ☒ No ☐ Alternative #3 approved w/attached mod. 10/7/97 Carol Watt Smith
The PVC pipe has not received decon procedure approval.

FCR-DBG-012
Modification
C. Witt-Smith
10/7/97

# Drainage Collection System Redesign

1. The bottom will slope to the middle.
2. A 2" perforated pipe shall be attached to the solid pipe and placed in the bottom of the drain field.

See Diagram




3. The strength requirements of the pipe must be such that the loading above does not cause damage to the pipe.

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|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-013 Rev. 1 |
| **NW WEEP ON THE NORTH LEG OF CAP AREA** | | Page 1 of 8 |

**Reference Documents** (Affected Document No., Revision No., Title):
Section 4.6 of the Dye Burial Ground Work Plan

**Problem/ Change Description:**

Should winterization of the cap become necessary, a Winterization Plan and Inspection Checklist will be developed with coordination and approval of the NSWC-OICC and EPD.

| **Initiated by** | Signature: D Beall | Organization: MK | Date: 10/22/97 |
|---|---|---|---|

**Resolution:**

See attached Winterization Plan and Inspection Checklists.

**If this FCR affects a subcontract, indicate CID number:** _____

| | | | | | |
|---|---|---|---|---|---|
| Approval by MK PE | Signature: Lois J. Bigley | Date: 10-22-97 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 11/4/97 |
| Approval by MK PjM | Signature: D Beall | Date: 10/22/97 | Additional Reviews: By/Date Thomas J. Brewer (signed copy 10/22/97) | | |
| Approval by MK QC | Signature: Lois J Bigley | Date: 10/22/97 | | | |
| Approval by MK RG. SPECIALIST | Signature: Steven Cory | Date: 10/22/97 | | | |

Regulator Approval/Notification Recommended: Yes ☒ No ☐ Approved w/ minor mods for snow. with the FCR for weep currently in place [illegible] Smith 11/17/97

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# DYE BURIAL GROUND CAP WINTERIZATION PLAN AND CHECKLIST

## 1. General

The decision to follow the winterization option with cap building starting next spring has been made. The amount of work in place, the scheduled start of cap building, and the anticipated onset of unfavorable weather dictated the winterization/cap later decision.

## 2. Site Preparation/Winterization

Phase I - Site Preparation activities will be completed in accordance with the subcontract documents including the specifications and drawings and also in accordance with the DBG Work Plan. Initial mobilization, DBG site clearing, borrow site clearing/development/restoration, holding tank relocation, dye contaminated excavation, foundation fill construction, access road construction, and extension of monitoring wells will all be completed prior to the onset of unfavorable weather.

Foundation fill for winterization will provide a minimum of 12 inches of cover in accordance with the specification. The foundation fill will be shaped to the configuration required, inspected/tested, and sealed with a smooth drum roller. Erosion matting will be installed to protect sloped areas exceeding 4H:1V.

The holding tank relocation areas have been installed in accordance with FCR-DBG-001 with the holding tanks relocated to the areas designated east and west. Secondary containments have been built exceeding 110% of the capacity of a single holding tank. The bermed banks of the secondary containments will be winterized by seeding and placement of erosion matting.

## 3. Dye Contaminated Weeps

Dye contaminated material may find its way to the surface of the foundation fill. Should this occur, the material will be contained and MK will report the occurrence to the Navy. The location and size of the weep will dictate corrective actions. Actions similar to those undertaken for the northwest weep are anticipated. All weeps will be inspected at least weekly. and after major rain events or snow melt.

4. Dye Contaminated Seeps

Dye contaminated material may be forced out from under the foundation fill and seep out of the side of the fill. The material will be contained in accordance with figure 4-1 of the DBG Work Plan and MK will report the occurrence to the Navy. Further corrective actions may be directed by the Navy and the material collected will be pumped to the holding tanks. All seeps will be inspected at least weekly. and after major rain events or snow melt.

5. Daily Inspection

MK will perform a daily inspection in accordance with the daily inspection checklist. Inspections will be performed on normal workdays which may include holidays and weekends. A daily inspection will be performed after heavy (greater than 1 inch) rain events. These inspections will allow for more immediate actions should problems develop with the holding tanks, temporary seep/weep sumps, or their secondary boundaries. Any problems found will be reported to the Navy.

6. Weekly Inspections

MK's subcontractor will perform a weekly, in depth, inspection in accordance with the weekly checklist. The weekly inspection activity will include minor repairs due to erosion, freezing weather, or other factors. Complete inspection checklists, including notes concerning minor repairs made, will be maintained by MK. Any problems or unusual circumstances will be reported to the Navy. Routine inspections will be transmitted to the Navy for record.

7. Spill Prevention and Controls

Prior to demobilization of the site for the winter, MK's subcontractor, will mobilize a storage container which will contain the following items to respond to leaks from any tank containing dye contaminated water.

| | |
|---|---|
| 1 - 2" Water Pump | Suction Hose |
| 300'- Discharge Hose | 50 - Sand Bags |
| Absorbent Pads | 5 - Rolls of 6 mil Visqueen |
| Hay/Straw Bales | Hand Tools |

Approximately 10 cubic yards of soil will be stockpiled near the storage tank containment berm. A backhoe will be available on an "as needed" basis should one be required. During the weekly inspection, the water pump will be checked for proper working condition.

All drums, tanks, and storage areas which contain potentially hazardous or hazardous materials shall be properly labeled. The date for starting the fill of a hazardous or non-hazardous waste container will be marked on the container. Revisions and updates will be made as required.

Any spills or releases shall be reported to the Navy. Clean up will ensue in a timely manner.

Measures shall be taken to ensure rain water or snow/ice does not accumulate in the bermed storage areas which could compromise the designed storage capacities. This may constitute occasional dewatering by opening the valve in the berm. The valve will be closed after dewatering. Even in the absence of any obvious tank leak or failure, colored waters will not be released from the bermed area. The pump that is used to transfer dye contaminated waters will not be used to discharge clean water from the berms.

Proper curbing and berming shall be maintained around waste material containers.

## 8. Contingency Procedures

### 8.1 Minor Tank Failures or Leaks

In the event a minor leak is detected, the contents of the leaking tank shall be pumped a minimum of 12 inches below the level of the leak to a reserve tank. The location of the leak will be identified and checked during routine inspections.

### 8.2 Major Tank Failures or Leaks

In the event of a major leak, the tank shall be pumped into the reserve tank as quickly as possible. The contents at the low end of the tank containment will then be pumped into the reserve tank. The leaking tank will then be tagged "DO NOT USE" and another tank will be procured. The secondary containment area will be expanded if required.

### 8.3 Secondary Containment Failure

Should erosion or breakdown of berms be identified, a backhoe will be summoned and repairs will be completed within a reasonable length of time or before a pending storm. Dirt from the reserve pile will then be replaced. If the failure comes during a heavy rain, a secondary berm will be constructed using the "clean" dirt pile. Additional dirt will be transported from the borrow area as needed.

8.4 Storm Water Mitigation Controls

Silt fence and hay bales have been strategically placed around the project to control the silt from leaving the site. If at any time, the mitigation system becomes inadequate, or cannot fulfill the task as designed, the system will be modified and replaced, shifted, or fortified as necessary. The silt fence and hay bales will then be replaced to maintain an emergency supply.

8.5 Additional Water Storage Space Needed

In the event there is not a least one FRAC tank of storage space available, additional tanks will be procured within 24 hours. The two existing mud boxes have equal capacity to a single FRAC tank. Pumping to the mud boxes will be used in an emergency.

9. Resume Site Construction

The subcontractor will remobilize manpower, equipment, and materials in late spring of next year. The start of remobilization will be based on an MK recommendation to the Navy once favorable weather is reached and the subcontractor is deemed to be ready. Regrading and elevation verification of the foundation fill will be performed prior to the construction of the cap. The construction of the cap is expected to take two months from remobilization to completion.

10. Records

Copies of all daily and weekly inspections will be maintained in the MK Bio-facility office. Also records of any leaks, weeps, seeps, or other problems, along with corrective actions taken, will be maintained by MK. Copies of routine daily and weekly inspections will be transmitted to the Navy for record. Problems and unusual circumstances will be reported as they occur.

# DYE BURIAL GROUNDS CAP - WINTERIZATION
# WEEKLY INSPECTION CHECKLIST

DATE INSPECTED:_____

| | Initial | |
|---|---|---|
| **Holding Tanks** | Accept | Reject |
| 1. Free of Visible Cracks or Punctures | | |
| 2. Free of Noticeable Bulging | | |
| 3. Lids are Secure | | |
| 4. Free of Noticeable Tilt or Excess Settling | | |
| 5. Free of Noticeable Leaks | | |
| 6. All Valves are Visable and Free from Snow and Ice | | |
| 7. Berms are Free from Deterioration | | |
| 8. Storage Areas Free from Standing Water and Valves Closed & Accessive Snow/Ice | | |
| 9. Storage Areas Free from Colored Water | | |
| **Dye Burial Grounds Area** | | |
| 10. Foundation Surface Free from Noticeable Subsurface Weeps | | |
| 11. Perimeter of Foundation Free from Noticeable Subsurface seeps | | |
| 12. Foundation Surface Free from Erosions Greater than Four (4) inches in Depth | | |
| 13. Foundation Free of Noticeable Settlement | | |
| 14. Foundation Free of Visual Deterioration | | |
| 15. Erosion Matting in Place on all Side Slopes | | |
| 16. Area Surrounding Foundation Free from Erosion Greater than Eight (8) inches in Depth | | |
| 17. Sediment Laden Water Not Leaving Site | | |
| 18. Silt Fences Free of Deterioration | | |
| 19. Spill Response Container Stocked and Available | | |
| 20. Spill Response Pump Functions | | |
| **Borrow Area 161/822** | | |
| 21. Free From Erosions Greater than 12 inches in Depth | | |
| 22. Sediment Laden Water not Leaving Site | | |
| 23. Silt Fence is Free of Sediment Deposits Greater than 1/3 the Silt Fence's Height | | |
| **North West Weep** | | |
| 24. Weep, Piping, or Temporary Poly Tank Free from Leaks or Damage | | |
| 25. Temporary Poly Tank Less than 1/2 Full | | |
| 26. If Greater Than 1/2 Full, Quantity of Water Transferred to Holding Tank _____ Gals. | | |

# DYE BURIAL GROUNDS CAP - WINTERIZATION
# WEEKLY INSPECTION CHECKLIST

DATE INSPECTED:_____

| **Holding Tank Freeboard (Min 12")** | | Accept | Reject |
|---|---|---|---|
| East Area | West Area | | |
| S1647SD_____ | 1001MEA_____ | | |
| S47ST _____ | S1885EA _____ | | |
| GS88EA _____ | GS505EA _____ | | |
| GS522EA _____ | SDE1EA _____ | | |
| SB79NSD _____ | S65ONEA _____ | | |

| Explain Any Reject Item or Other Comment: |
|---|
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| |
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| |

_____
Inspected by/Philip Environmental Services Group

_____
Reviewed by/Morrison Knudsen

# DYE BURIAL GROUNDS CAP - WINTERIZATION
# DAILY INSPECTION CHECKLIST

DATE INSPECTED:_____

Holding Tanks are to be free from noticeable leakage, cracks, punctures, bulging, tilt, or excess settling.

| Holding Tank | Initial | |
|---|---|---|
| | Accept | Reject |
| 1. S1647SD | | |
| 2. S47ST | | |
| 3. GS88EA | | |
| 4. GS522EA | | |
| 5. S879NSD | | |
| 6. 1001MEA | | |
| 7. S1885EA construction water | | |
| 8. GS505EA mud box + water | | |
| 9. SDE1EA empty | | |
| 10. S650NEA | | |
| 11. Poly Tank - NW Weep | | |
| **Perimeter Inspection** | | |
| 1. Perimeter of Foundation Free from Noticeable Subsurface seeps | | |
| 2. Foundation Surface Free from Erosions Greater than Four (4) inches in Depth | | |
| 3. Foundation Free of Noticeable Settlement | | |
| 4. Foundation Free of Visual Deterioration | | |
| 5. Erosion Matting in Place on all Side Slopes | | |

| Explain Any Reject Item or Other Comment: |
|---|
| |
| |
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| |

_____

Inspected by/Morrison Knudsen

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# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBG-014 |
|---|---|---|
| WOOD CHIP STOCKPILES | | Page 1 of 1 |

**Reference Documents** (Affected Document No., Revision No., Title): FCR-DBG-006; Chipping and Spec Section 02936, Seeding, Work Plan

**Problem/ Change Description:**

Should wood chips ~~will~~ not be one of the amendments chosen for Full Scale Bioremediation mixes, the wood chips stockpiled from the DBG site clearing will require other means of disposal.

One method of disposing of the stockpiled wood chips, would be for use as a mulch material. However, the seeding specification, Section 02936, requires cereal straw of oats, rye, wheat, barley and or hay be used for mulch.

| Initiated by | Signature: Lois Bigley | Organization: MK | Date: 11/05/97 |
|---|---|---|---|

**Resolution:**

Wood chips are an industry acceptable mulching material. Revise specifications and work plan so that the wood chips from site clearing could be used as a mulching material or spread in a thin layer beyond the site clearing limit, at the DBG.

**If this FCR affects a subcontract, indicate CID number:** _____

| | | | | | |
|---|---|---|---|---|---|
| Approval by MK PE | Signature: Lois Bigley | Date: 11/6/97 | Approval by ROICC/NTR or RPM | Signature: [illegible] | Date 9/21/98 |
| Approval by MK PjM | Signature: [illegible] | Date: 11/6/97 | Additional Reviews: By/Date Thomas J. Brent 9/21/98 | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 11-06-97 | | | |
| Approval by MK RG. SPECIALIST | Signature: R. J. [illegible] | Date: 11/6/97 | | | |

Regulator Approval/Notification Recommended:

No ☑

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21.

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC | ORIGINAL |
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# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324- | FCR No.: 4324-0009-FCR-DBG-015 |
|---|---|---|
| | | Page 1 of 2 |

**Reference Documents Quality Assurance Project Plan for Release Characterization at the Dye Burial Grounds Solid Waste Management Unit - 02/11, Rev. 0, dated November 20, 1997, Section 4, page 2 and 3 of 5**

**Problem / Change Description:**

1. Delete the following paragraph (on page 2 of 5):

If the water is drummed, appropriate sized samples will be collected from each drum to yield an identical suite of 4 liter composite samples discussed immediately above. If the bailer(s) is (are) decontaminated between sampling events, for example, if water from multiple "events" or areas are to be sampled, two 4 l decontamination wash water samples will be collected, with one provided for use by both the Navy and EPA laboratories. In the event that samples are sent to the EPA lab, one 4-l lab blank will be provided by the Navy laboratory. The EPA has agreed that no field or trip blank is required to support the data quality objectives for this program.

2. Delete the following paragraph and replace with the paragraph on the attached page (on page 3 of 5):

The sampling equipment will be unused or decontaminated prior to use on a different tank or layer in a tank. The samplers will be wrapped in plastic or placed in a plastic bag while being moved from one tank to another to prevent dripping water onto surrounding surfaces. All sampling equipment which is not decontaminated (including carboys) shall be collected in and wrapped in plastic and disposed of per US Navy Crane Division Environmental Protection Department (EPD) procedures.

| Initiated by | Signature: Steven Cory | Organization: Morrison Knudsen | Date: 12/11/97 |
|---|---|---|---|

**Resolution: Proceed as recommended.**

**If this FCR affects a subcontract, indicate CID number: N/A**

| Approval by MK PE | Signature: Thomas Dell | Date: 12/12/97 | Approval by ROICC/NTR or RPM | Signature: Brent Thurston | Date 1/8/97 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Ball | Date: 12/12/97 | Additional Reviews: By/Date Thomas J. Brent 12/15/97 | | |
| Approval by MK QC | Signature: | Date: | | | |
| Approval by MK DEG SPT. | Signature: Steven Cory | Date: 12/12/97 | | | |

Regulator Approval/Notification Recommended:

Yes ☒ No ☐ See attached fax.

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Replacement paragraphs for second deletion of this FCR.:

The EPA has agreed that, as long as the sampling device contacting the fluid is dedicated to that one location, no field or trip blank is required to support the data quality objectives for this program. The sampling equipment dipper, sample bottles, and compositing buckets are not to be used on another tank or layer of a tank. Some portions of the sample devices (i.e.; handles) which contact dye impacted water shall be scrubbed with an Alconox solution and rinsed with deionized water prior to being introduced into another tank or tank layer. The solutions from decontamination shall be collected and deposited in tank S1885EA prior to sampling S1885EA. S1885EA shall be the last tank sampled. After sampling S1885EA, fluid from decontaminating the handles shall also be placed in S1885EA.

This procedure of washing the handle, but not sampling the rinse solution, is deemed acceptable by the EPA for this procedure since seven of the nine tanks are originally the same green/blue dye impacted waters from a run-off trench at the site. This is further warranted since the solutions have been moved from tank to tank to allow movement of the tanks during construction of the cap. This movement has caused trace cross-contamination already between the tanks. An eighth tank is expected to be similar in characterization to the first seven tanks since it contains what was snow and ice which were dye impacted by the same green/blue dyes as the first seven tanks. Tank S1885EA may have unique dye constituents since it was generated from items which were impacted by dyes of other colors but the water in this tank is also directly impacted by the green and blue dyes, and indirectly through cross-contamination for the reasons previously mentioned. As stated above, S1885EA will be sampled last.

Compositing buckets, waste bottles, waste dippers, and any other solid waste generated during the sampling effort shall be wrapped in plastic or placed in plastic bags and kept in or near the mud tanks pending release or disposal criteria.

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC | ORIGINAL |
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# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324- | FCR No.: 4324-0009-FCR-DBG-015 |
|---|---|---|
| | | Page 1 of 2 |

**Reference Documents** Quality Assurance Project Plan for Release Characterization at the Dye Burial Grounds Solid Waste Management Unit - 02/11, Rev. 0, dated November 20, 1997, Section 4, page 2 and 3 of 5

**Problem / Change Description:**

1. Delete the following paragraph (on page 2 of 5):

If the water is drummed, appropriate sized samples will be collected from each drum to yield an identical suite of 4 liter composite samples discussed immediately above. If the bailer(s) is (are) decontaminated between sampling events, for example, if water from multiple "events" or areas are to be sampled, two 4 l decontamination wash water samples will be collected, with one provided for use by both the Navy and EPA laboratories. In the event that samples are sent to the EPA lab, one 4-l lab blank will be provided by the Navy laboratory. The EPA has agreed that no field or trip blank is required to support the data quality objectives for this program.

2. Delete the following paragraph and replace with the paragraph on the attached page (on page 3 of 5):

The sampling equipment will be unused or decontaminated prior to use on a different tank or layer in a tank. The samplers will be wrapped in plastic or placed in a plastic bag while being moved from one tank to another to prevent dripping water onto surrounding surfaces. All sampling equipment which is not decontaminated (including carboys) shall be collected in and wrapped in plastic and disposed of per US Navy Crane Division Environmental Protection Department (EPD) procedures.

| Initiated by | Signature: Steven Cory | Organization: Morrison Knudsen | Date: 12/11/97 |
|---|---|---|---|

**Resolution:** Proceed as recommended.

If this FCR affects a subcontract, indicate CID number: N/A

| Approval by MK PE | Signature: | Date: 12/12/97 | Approval by ROICC/NTR or RPM | Signature: | Date |
|---|---|---|---|---|---|
| Approval by MK PJM | Signature: | Date: 12/12/97 | Additional Reviews: By/Date Thomas J. Brent 12/15/97 | | |
| Approval by MK QC | Signature: | Date: | | | |
| Approval by MK REG SPT. | Signature: Steven Cory | Date: 12/12/97 | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ Approved Carl W. Smith 12/17/97

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placement paragraphs for second deletion of this FCR.:

The EPA has agreed that, as long as the sampling device contacting the fluid is dedicated to that one location, no field or trip blank is required to support the data quality objectives for this program. The sampling equipment dipper, sample bottles, and compositing buckets are not to be used on another tank or layer of a tank. Some portions of the sample devices (i.e.; handles) which contact dye impacted water shall be scrubbed with an Alconox solution and rinsed with deionized water prior to being introduced into another tank or tank layer. The solutions from decontamination shall be collected and deposited in tank S1885EA prior to sampling S1885EA. S1885EA shall be the last tank sampled. After sampling S1885EA, fluid from decontaminating the handles shall also be placed in S1885EA.

This procedure of washing the handle, but not sampling the rinse solution, is deemed acceptable by the EPA for this procedure since seven of the nine tanks are originally the same green/blue dye impacted waters from a run-off trench at the site. This is further warranted since the solutions have been moved from tank to tank to allow movement of the tanks during construction of the cap. This movement has caused trace cross-contamination already between the tanks. An eighth tank is expected to be similar in characterization to the first seven tanks since it contains what was snow and ice which were dye impacted by the same green/blue dyes as the first seven tanks. Tank S1885EA may have unique dye constituents since it was generated from items which were impacted by dyes of other colors but the water in this tank is also directly impacted by the green and blue dyes, and indirectly through cross-contamination for the reasons previously mentioned. As stated above, S1885EA will be sampled last.

Compositing buckets, waste bottles, waste dippers, and any other solid waste generated during the sampling effort shall be wrapped in plastic or placed in plastic bags and kept in or near the mud tanks pending release or disposal criteria.

ORIGINAL

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
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# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** | **FCR No.:** 4324-0009-FCR-DBG-016 |
| **DBG CAP FOUNDATION EROSION** | | Page 1 of 2 |

**Reference Documents** (Affected Document No., Revision No., Title): FCR-DBG-013 Rev. 1; DBG Winterization Plan

**Problem/ Change Description:**

The DBG Cap Foundation Fill continues to have minor erosion exposure from winter precipitation. Attachment 1 lists alternatives to better control of the minor erosion during winter shutdown.

| **Initiated by** | Signature: | Organization: MK | Date: 01/22/98 |
|---|---|---|---|

**Resolution:**

MK shall proceed with the preferred alternative shown on Attachment 1 for erosion control of DBG Cap Foundation Fill during winter shutdown.

**If this FCR affects a subcontract, indicate CID number:** N/A

| | | | | | |
|---|---|---|---|---|---|
| Approval by MK PE | Signature: | Date: 1/22/98 | **Approval by ROICC/NTR or RPM** | Signature: | Date 1/22/98 |
| Approval by MK PjM | Signature: D Beall | Date: 1/22/98 | Additional Reviews: By/Date Thomas J. Brent 1/29/98 Will necessitate a change to the winter maintenance and inspection plan. | | |
| Approval by MK QC | Signature: R. J. Spurgeon | Date: 1/22/98 | | | |
| Approval by MK REG. SPECIALIST | Signature: | Date: | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☒ Rec'd. verbal approval 1/27/97

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**Alternatives for Foundation Fill erosion control during winter shutdown:**

- Do nothing. Erosion will continue, potentially cutting down to contaminated materials. This alternative requires the maximum reworking and regrading of the surface in the spring.
- Install geotextile cover using available leftover geotextile. Geotextile will require sandbag ballast. Geotextile will need to be removed prior to rework and regrading in the spring. Removal may be difficult due to UV degradation.
- Install straw erosion mat. Mat can be stapled to subgrade. Mat will need to be removed prior to reworking and regrading in the spring because it typically has plastic or fiber netting. Removal may be difficult.
- Install plastic sheeting. Plastic will need sandbag ballast. Plastic will need to be removed prior to reworking and regrading in the spring.
- Seed the surface. Seed will probably not germinate prior to spring. If it were to germinate and grow, all vegetation will need to be stripped prior to reworking and regrading the surface in the spring.

**Suggested Preferred Alternative:**

Install plastic sheeting. It is cheaper than erosion mat. It may be easier to remove than the erosion mat or the geotextile. It will be covering clean soil; therefore, the plastic can be removed and disposed of as a clean material. Small tears or punctures should not create an erosion problem.

ORIGINAL

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBG-~~016~~ 017 |
|---|---|---|
| | | Page 1 of 2 |

**Reference Documents: DWG C-03 Rev. 1; FCR #DBG-012**

**Problem/Change Description:**

The seepage collection system installed per FCR #DBG-012 requires closure to support completion of the Dye Burial Ground Cap activity.

| Initiated by | Signature: | Organization: Morrison Knudsen | Date: 5/4/97 |
|---|---|---|---|

**Resolution:**

Proceed as recommended on the attached memo from Design Engineering. Pipe penetration detail shall be the same as Detail 1 on DWG. C-07 Rev. 0.

* 05-29-98 Revise resolution as denoted per letter FMK-0009-044

**If this FCR affects a subcontract, indicate CID number:** N/A

| Approval by MK PE | Signature: For C. WAITE & K. OSIEK * WJB | Date: 5/4/98 05-29-98 | Approval by ROICC/NTR or RPM | Signature: Per TJB Comment | Date 6/2/98 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Beall | Date: 5/4/98 | Additional Reviews: By/Date DENIED - Thomas J. Brent 5/29/98 (per discussions w/ Tom Dogallon 5/13/98, & subsequent conversations w/ Joris Bigley). Accept - Revised Solution per letter FMK-0009-044 JJB 5/29/98 | | |
| Approval by MK QC | Signature: WJB R. J. [illegible] | Date: 05-29-98 5/4/98 | | | |
| Approval by MK REG SPT. | Signature: N/A | Date: — | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐

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MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL/GOVERNMENT GROUP

RECEIVED
MAY 01 1998
MK-CRANE

INTER-OFFICE CORRESPONDENCE

DATE: April 21, 1998

TO: Dave Beall / Lois Bigley

FROM: Clair Waite/Kimball Ohsiek

LOCATION: Crane / Louisville

LOCATION: Boise

SUBJECT: **NSWC CRANE DYE BURIAL GROUND - W.O. 4324-0009**
**SEEPAGE COLLECTION SYSTEM CLOSURE RECOMMENDATION**

As requested by Lois, we are presenting our recommendation for closure of the interim seepage collection system at the Dye Burial Ground. We expect additional seepage will be exuded from the trenches as more load is applied when final soil layers of the cover are added. If the existing path of seepage is blocked before the final loads are added, pressures will develop in the fluid, which will drive the seepage to find a new point of emergence. Leaving the existing collection system in place until final loads are in place will prevent pressures from developing, and will provide control of the seepage from the present known seep location. Monitoring of the seepage rate and volume will allow determination of when the excess pore pressures have dissipated. We recommend closure of the interim seepage collection system after the cap is completed and seepage stops. Closure after cap completion will also control swelling of the geosynthetic clay liner (GCL) because the full cap confining load will be in place prior to the GCL becoming hydrated by seepage. Upon closure, the collection system piping can be grouted in place or reamed out and then grouted. The liner penetration will require patching if the piping is reamed out.

Thank you for the opportunity to provide input. Please do not hesitate to contact us if you would like to discuss or if questions arise.

cc: Project File

| NSWC - CRANE | | | |
|---|---|---|---|
| 4324-0009 | | | |
| PROJECT MEMBER | ACT | INFO | INIT |
| PROJECT MANAGER | | X | db |
| PROJECT ENGINEER | | | |
| SITE SUPT. | | X | |
| SAFETY AND HEALTH | | | |
| QA/QC | | | |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| PMO-CHARLESTON | | | |
| | | | |
| | | | |
| MAIL: | | | |
| FILE: | | | |
| FILE: 11-9-0009 | | | |

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# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBG-018 |
|---|---|---|
| CORRECTION OF SOFT SPOT IN CAP FOUNDATION FINISH GRADE | | Page 1 of 1 |

**Reference Documents:**

**Problem/Change Description:**

During final grading of the cap foundation, soft spots have developed causing the subgrade to pump. This condition prevents the ability to construct a firm smooth foundation on which the DBG cap layer are to be constructed.

| Initiated by | Signature: Lois J. Bigley | Organization: Morrison Knudsen | Date: 6/4/98 |
|---|---|---|---|

**Resolution:**

Excavate the soft spot down six inches, by grading back the affected area, taking care not to disturb the underlying potential contaminated soil. There is a nominal depth of one (1) foot of clean soil over the entire cap area. Place quick lime into the excavated area at an approximate rate of 0.5 lb per square foot. Mix the lime into the exposed subgrade with five (5) passes of a sheepsfoot or pad roller. Place, compact and grade 6 inches of clean fill over the area and prepare subgrade surface, the grade and condition as specified in the work plan and subcontract specifications.

**If this FCR affects a subcontract, indicate CID number:** N/A

| Approval by MK PE | Signature: Lois J Bigley | Date: 06-04-98 | Approval by ROICC/NTR or RPM | Signature: [illegible] | Date 6/8/98 |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Beall | Date: 6/4/98 | Additional Reviews: By/Date Thomas J. Brent - approved 6/4/98 If equipment contacts soils wetted from below, equipment should be decontaminated. | | |
| Approval by MK QC | Signature: Lois J Bigley | Date: 06/04/98 | | | |
| Approval by MK REG SPT. | Signature: [illegible] | Date: — | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ Verbal approval [illegible] 6/4/98

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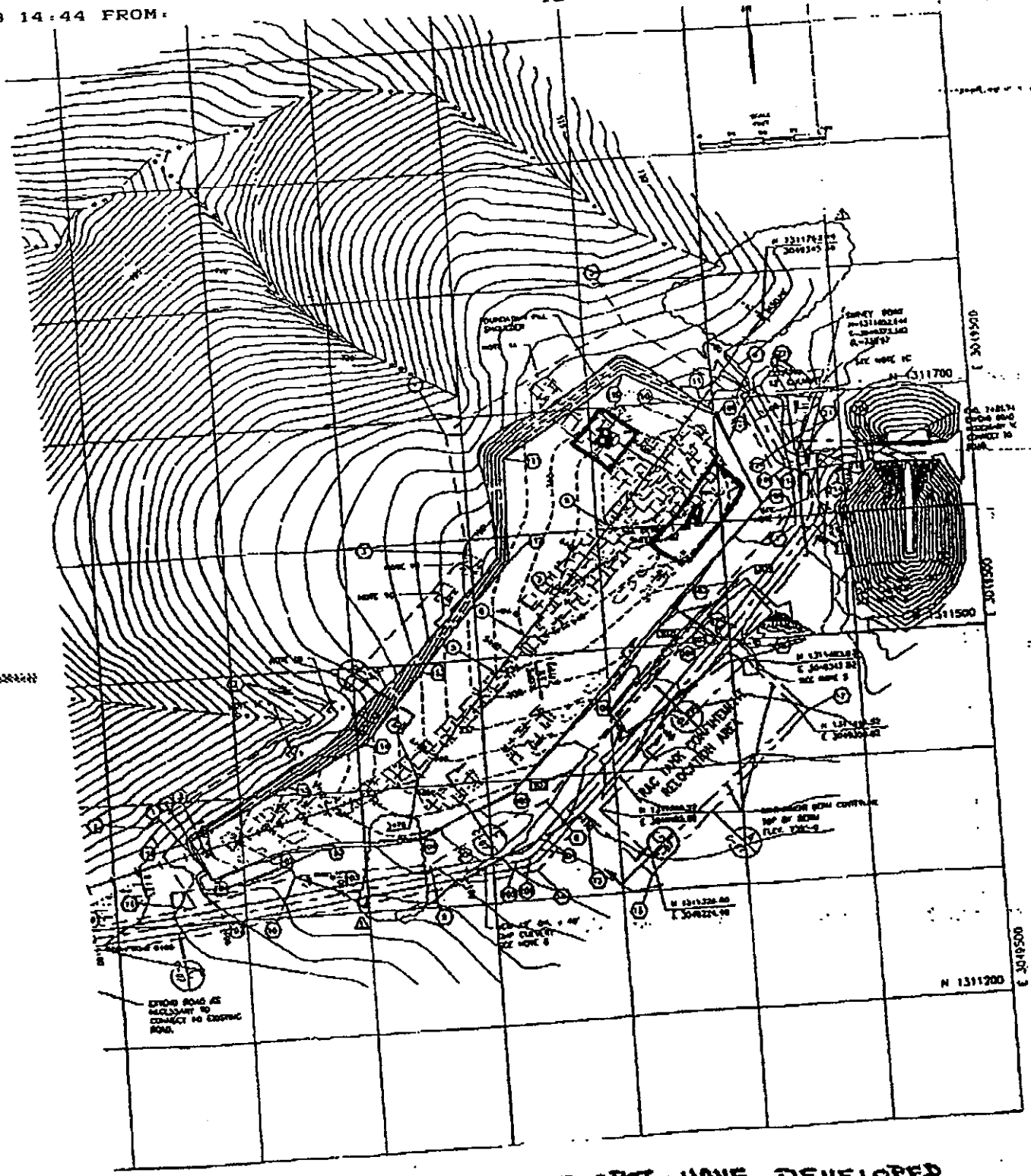


AS OF 06-03-98 TWO SOFT SPOT HAVE DEVELOPED

A- A 20' x 40' ON THE NE CORNER

B- A 30' x 30' ON THE NORTH LEG

IF LIME PROCESS IS SUCESSFUL WE WOULD LIKE TO USE THE SAME PROCESS ON OTHER SOFT SPOTS IF THE DEVELOPE, AS CBP FOUNDATION IS BEING GRADED

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC ORIGINAL |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.: 4324-106** | **FCR No.:** 4324-0009-FCR-DBG-019 |
| **DRAINAGE/ANCHOR TRENCH** | | Page 1 of 2 |

**Reference Documents: SUBCONTRACT #4324-106 Section 02200 para 3.4, E.**

**Problem/Change Description:**

The subcontract specifications states that, "only as much trench shall be excavated on any given day as can be constructed and backfilled on that day". However, for the following reasons, it would be more desirable to excavate the drainage/anchor trench ahead of the placement of the geosynthetic cap components and to permit the drainage/anchor to remain open until the drainage system can be constructed:

1. Dye impacted soil encountered during the excavation of the drainage/anchor trench shall be placed within the cap area. If the drainage/anchor is excavated ahead of the geosynthetic placement the choice of an area over which the contaminated material can be spread is greater therefore reducing the likelihood of altering the grading plan.

(this section continued next page)

| **Initiated by** | Signature: Lois J. Bigley | Organization: Morrison Knudsen | Date: 6/24/98 |
|---|---|---|---|

**Resolution:**

Revise aforementioned specification to read as follows: The subcontractor shall prevent the open exposed drainage/anchor trench from degradation and the spread or migration of any dye impacted soil encountered. The installation of the drainage collection system and backfill of the anchor trench shall follow the installation of the HDPE liner including review of all required test results.

Excavation of the drainage/anchor trench should begin at the downhill end and proceed in an uphill direction, to prevent entrapping stormwater runoff.

**If this FCR affects a subcontract, indicate CID number:** N/A

| | | | | | |
|---|---|---|---|---|---|
| **Approval by MK PE** | Signature: Lois J Bigley | Date: 6-24-98 | **Approval by ROICC/NTR or RPM** | Signature: Brent Robinson | Date 7/6/98 |
| **Approval by MK PjM** | Signature: D Beall | Date: 6/24/98 | Additional Reviews: By/Date Thomas J. Brent 7/6/98 | | |
| **Approval by MK QC** | Signature: Lois J. Bigley | Date: 6-24-98 | | | |
| **Approval by MK REG SPT.** | Signature: | Date: | | | |

Regulator Approval/Notification Recommended:

Yes ☐ No ☐

PROBLEM/CHANGE DESCRIPTION: (CONTINUED)

2. Excavation of the drainage/anchor trench ahead of the geosynthetic placement would provide a greater level of confidence that the drainage and a minimum 1' depth is maintained throughout the drainage/anchor trench, irrespective of ground surface irregularities or uneven grade.

3. Due to the limited size of the cap and the size of the proposed installation crew, the geosynthetic cap components will be placed quickly and the excavation of the drainage/anchor trench will nee to be maintained ahead of the installation crew to avoid delaying the installation of the liner.

4. According to the HDPE installer, the HDPE liner needs to be able to contract/expand for at least 24 hours after installation to avoid undue stress on the material. .

5. Destructive test results should be received and reviewed before the drainage system is installed and the drainage/anchor trench backfilled. Should a seam in the drainage/anchor trench fail the backfill and drainage system, for an entire length of pipe would need to be removed to repair one seam, this could damage the liner.

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBG-019 |
|---|---|---|
| DRAINAGE/ANCHOR TRENCH | | Page 1 of 2 |

**Reference Documents:** SUBCONTRACT #4324-106 Section 02200 para 3.4, E.

**Problem/Change Description:**

The subcontract specifications states that, "only as much trench shall be excavated on any given day as can be constructed and backfilled on that day". However, for the following reasons, it would be more desirable to excavate the drainage/anchor trench ahead of the placement of the geosynthetic cap components and to permit the drainage/anchor to remain open until the drainage system can be constructed:

1. Dye impacted soil encountered during the excavation of the drainage/anchor trench shall be placed within the cap area. If the drainage/anchor is excavated ahead of the geosynthetic placement the choice of an area over which the contaminated material can be spread is greater therefore reducing the likelihood of altering the grading plan.

(this section continued next page)

| Initiated by | Signature: Lois J Bigley | Organization: Morrison Knudsen | Date: 6/24/98 |
|---|---|---|---|

**Resolution:**

Revise aforementioned specification to read as follows: The subcontractor shall prevent the open exposed drainage/anchor trench from degradation and the spread or migration of any dye impacted soil encountered. The installation of the drainage collection system and backfill of the anchor trench shall follow the installation of the HDPE liner including review of all required test results.

Excavation of the drainage/anchor trench should begin at the downhill end and proceed in an uphill direction, to prevent entrapping stormwater runoff.

**If this FCR affects a subcontract, indicate CID number:** N/A

| Approval by MK PE | Signature: Lois J Bigley | Date: 6-24-98 | Approval by ROICC/NTR or RPM | Signature: | Date |
|---|---|---|---|---|---|
| Approval by MK PjM | Signature: D Beall | Date: 6/24/98 | Additional Reviews: By/Date | | |
| Approval by MK QC | Signature: Lois J Bigley | Date: 6-24-98 | | | |
| Approval by MK REG SPT. | Signature: | Date: | | | |

Regulator Approval/Notification Recommended? Yes ☐ No ☐ 7/2/98

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PROBLEM/CHANGE DE[illegible]

2. Excavation of the [illegible] level of confidence that [illegible] trench, irrespective of grou[illegible]

3. Due to the limited [illegible] components will be placed quickly and the excavation of the drainage/anchor trench will need to be maintained ahead of the installation crew to avoid delaying the installation of the liner.

4. According to the HDPE installer, the HDPE liner needs to be able to contract/expand for at least 24 hours after installation to avoid undue stress on the material.

5. Destructive test results should be received and reviewed before the drainage system is installed and the drainage/anchor trench backfilled. Should a seam in the drainage/anchor trench fail the backfill and drainage system, for an entire length of pipe would need to be removed to repair one seam, this could damage the liner.

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL** # of pages ▸ 2

| | |
|---|---|
| To Tom Brent | From Carol Witt-Smith |
| Dept./Agency Navy | Phone # 312 886 6146 |
| Fax # 812 854 4177 | Fax # 353 4788 |

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL** # of pages ▸ 2

| | |
|---|---|
| To Carol Witt-Smith | From Tom Brent |
| Dept./Agency U.S. EPA | Phone # (812) 854-6160 |
| Fax # | Fax # 4177 |

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

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# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.: 4324-106** | **FCR No.:** 4324-0009-FCR-DBG-020 |
| **CLARIFICATION OF ESTABLISHMENT OF GRASS** | | Page 1 of 1 |

**Reference Documents: SUBCONTRACT #4324-106 Section 02936 para 3.5 A and 4.1 C .**

**Problem/Change Description:**
The subcontract specifications require the subcontractor to maintain the seeded area until grass is well established and exhibits a vigorous growing condition. A final inspection shall be made before the last day of the turf establishment period, based upon a satisfactory stand of turf.

However, there is no quantitative requirement as to what is considered well established or a satisfactory stand of turf.

| **Initiated by** | Signature: | Organization: Morrison Knudsen | Date: 7/09/98 |
|---|---|---|---|

**Resolution:**
Revise aforementioned specification to include a quantitative measurement for turf establishment to read as follows:
**para 3.5 A** - Subcontractor shall maintain seeded areas immediately after placement until grass is well established, exhibits a vigorous growing condition, and has final acceptance.

**para 4.1 C** - Final acceptance will be based upon a satisfactory stand of turf, which shall be considered a stand of grass of not less than 2 inches in height with a minimum of 95 % ground cover and no bare or dwarfed area greater than a six inch square for the cap area and no bare or dwarfed area greater than 12 inch square for all remain areas including the borrow areas.

All remaining specifications remain unchanged.
**If this FCR affects a subcontract, indicate CID number:** N/A

| | | | | | |
|---|---|---|---|---|---|
| **Approval by MK PE** | Signature: Lois J Bigley | Date: 07-09-98 | **Approval by ROICC/NTR or RPM** | Signature: | Date |
| **Approval by MK PjM** | Signature: D Beall | Date: 7/9/98 | Additional Reviews: By/Date Thomas J. Brent 7/24/98 EPA VERBAL 7/24/98 | | |
| **Approval by MK QC** | Signature: Lois J. Bigley | Date: 07-09-98 | | | |
| **Approval by MK REG SPT.** | Signature: | Date: | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☐

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBO-020 |
|---|---|---|
| CLARIFICATION OF ESTABLISHMENT OF GRASS | | Page 1 of 1 |

**Reference Documents:** SUBCONTRACT #4324-106 Section 02936 para 3.5 A and 4.1 C.

**Problem/Change Description:**
The subcontract specifications require the subcontractor to maintain the seeded area until grass is well established and exhibits a vigorous growing condition. A final inspection shall be made before the last day of the turf establishment period, based upon a satisfactory stand of turf.

However, there is no quantitative requirement as to what is considered well established or a satisfactory stand of turf.

| Initiated by | Signature: | Organization: Morrison Knudsen | Date: 7/09/98 |
|---|---|---|---|

**Resolution:**
Revise aforementioned specification to include a quantitative measurement for turf establishment to read as follows:
para 3.5 A - Subcontractor shall maintain seeded areas immediately after placement until grass is well established, exhibits a vigorous growing condition, and has final acceptance.

para 4.1 C - Final acceptance will be based upon a satisfactory stand of turf, which shall be considered a stand of grass of not less than 2 inches in height with a minimum of 95 % ground cover and no bare or dwarfed area greater than a six inch square for the cap area and no bare or dwarfed area greater than 12 inch square for all remain areas including the borrow areas.

All remaining specifications remain unchanged.
If this FCR affects a subcontract, indicate CID number: N/A

| | | | | | |
|---|---|---|---|---|---|
| Approval by MK PE | Signature: Louis Bigley | Date: 07-09-98 | Approval by ROICC/NTR or RPM | Signature: | Date |
| Approval by MK PjM | Signature: D Ball | Date: 7/9/98 | Additional Reviews: By/Date | | |
| Approval by MK QC | Signature: Louis J. Bigley | Date: 07-09-98 | | | |
| Approval by MK REC SPT. | Signature: Steven Cory | Date: 07-09-98 | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☐

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|---|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.: 4324-106** | **FCR No.:** 4324-0009-FCR-DBG-021 |
| **CLARIFICATION DRAINAGE/ANCHOR TRENCH SPECIFICATION** | | Page 1 of 1 |

**Reference Documents: SUBCONTRACT #4324-106 Section 02200, Section 01010, and Drawings C-07 & C-08.**

**Problem/Change Description:**

Section 01010 3.9 states that the perimeter drain pipe shall be joined by standard tee fittings to a non perforated 4 inch ADS pipe....
Drawing C-08: shows a 4 inch perforated ADS pipe for the drainage outlet.
Section 02200 2.1 B states: Perforated and non-perforated drain pipe.....
Drawing C-07 & C-08: shows only perforated drain pipe to be used.
Section 02200 3.9 A: states "The surface drain outlet sections shall be bedded in sand and covered with 6 inches sand layer prior to backfilling the trench".
Drawing C08: shows the surface drain outlet sections bedded in screened gravel and covered with 6 inches of screened gravel.

| **Initiated by** | Signature: | Organization: Morrison Knudsen | Date: 7/09/98 |
|---|---|---|---|

**Resolution:**

Revise aforementioned specification as follows to remove conflict between subcontractor specifications and drawings and to comply with intended cap design.
Section 01010 3.9 A: change non-perforated to perforated
Section 02200 2.1 D: delete reference to non-perforated
Section 02200 3.9 A: change sand to gravel.

**If this FCR affects a subcontract, indicate CID number:** N/A

| | | | | | |
|---|---|---|---|---|---|
| **Approval by MK PE** | Signature: Lois J Bigley | Date: 07-09-98 | **Approval by ROICC/NTR or RPM** | Signature: Brent Robert | Date 7/30/98 |
| **Approval by MK PjM** | Signature: D Ball | Date: 7/9/98 | Additional Reviews: By/Date Thomas J. Brent 7/24/98 EPA VERBAL - 7/24/98 | | |
| **Approval by MK QC** | Signature: Lois J. Bigley | Date: 07-09-98 | | | |
| **Approval by MK REG SPT.** | Signature: | Date: | | | |

Regulator Approval/Notification Recommended:
Yes ☒ No ☐

A:FCRPAPER.DOC

| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| Delivery Order No.: 4324-0009 | Subcontract No.: 4324-106 | FCR No.: 4324-0009-FCR-DBG-021 |
|---|---|---|
| CLARIFICATION DRAINAGE/ANCHOR TRENCH SPECIFICATION | | Page 1 of 1 |

**Reference Documents:** SUBCONTRACT #4324-106 Section 02200, Section 01010, and Drawings C-07 & C-08.

**Problem/Change Description:**

Section 01010 3.9 states that the perimeter drain pipe shall be joined by standard tee fittings to a non perforated 4 inch ADS pipe....
Drawing C-08: shows a 4 inch perforated ADS pipe for the drainage outlet.
Section 02200 2.1 B states: Perforated and non-perforated drain pipe.....
Drawing C-07 & C-08: shows only perforated drain pipe to be used.
Section 02200 3.9 A: states "The surface drain outlet sections shall be bedded in sand and covered with 6 inches sand layer prior to backfilling the trench".
Drawing C08: shows the surface drain outlet sections bedded in screened gravel and covered with 6 inches of screened gravel.

| Initiated by | Signature: | Organization: Morrison Knudsen | Date: 7/09/98 |
|---|---|---|---|

**Resolution:**

Revise aforementioned specification as follows to remove conflict between subcontractor specifications and drawings and to comply with intended cap design.
Section 01010 3.9 A: change non-perforated to perforated
Section 02200 2.1 D: delete reference to non-perforated
Section 02200 3.9 A: change sand to gravel.

If this FCR affects a subcontract, indicate CID number: N/A

| Approval by MK PE | Signature: Lois J Bigley | Date: 07-09-98 | Approval by ROICC/NTR or RPM | Signature: | Date |
|---|---|---|---|---|---|
| Approval by MK PJM | Signature: D Ball | Date: 7/9/98 | Additional Reviews: By/Date | | |
| Approval by MK QC | Signature: Lois J. Bigley | Date: 07-09-98 | | | |
| Approval by MK REG SPT. | Signature: Steven Cory | Date: 07-09-98 | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☒

A:FCRPAPER.DOC

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| NAVFAC Southern Division/ Morrison Knudsen Corporation | District II RAC |
|---|---|

# FIELD CLARIFICATION REQUEST (FCR)

| | | |
|---|---|---|
| **Delivery Order No.:** 4324-0009 | **Subcontract No.:** 4324-106 | **FCR No.:** 4324-0009-FCR-DBG-022 |
| **GEOTEXTILE SEAMING** | | Page 1 of 1 |

**Reference Documents: SUBCONTRACT #4324-106 Section 02249**

**Problem/Change Description:**

Due to the problem associated with maintaining sewing machines in the field and low productivity, the liner installation proposes heat/fusion welding the Type 1 geotextile layer above the sand drainage and biotic layers.

See attached procedure and sample.

| | | | |
|---|---|---|---|
| **Initiated by** | Signature: | Organization: Morrison Knudsen | Date: 7/20/98 |

**Resolution:**

Revise subcontract specification to include both sewing and heat/fusion welding as a means of seaming the geotextile panels together. If heat fusion is used, overlap should be increased to a minimum of 12 inches.

Manufacturer recommendations include: sewing, heat bonding, and overlaping.

**If this FCR affects a subcontract, indicate CID number:** N/A

| | | | | | |
|---|---|---|---|---|---|
| **Approval by MK PE** | Signature: Lois J. Bigley | Date: 07-21-98 | **Approval by ROICC/NTR or RPM** | Signature: [illegible] | Date 7/30/98 |
| **Approval by MK PjM** | Signature: D Beall | Date: 7/22/98 | Additional Reviews: By/Date Thomas/ [illegible] 7/24/98 | | |
| **Approval by MK QC** | Signature: Lois J. Bigley | Date: 07-21-98 | | | |
| **Approval by MK REG SPT.** | Signature: | Date: | | | |

Regulator Approval/Notification Recommended:
Yes ☐ No ☐

A:FCRPAPER.DOC

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

# Procedures for heat bonding nonwoven geotextiles

1. Assure that both materials to be welded are the same or chemically near the same and that the weight / thickness of both materials are the same and that both materials are nonwoven geotextiles. It is okay if the geotextiles encapsulate a geonet or composite material. The textile to be seamed should be deployed with proper overlap and a minimum of wrinkles. Overlap width must be at least three inches.

2. Heat hot air apparatus to proper temperature according to weight and type of textile to be joined. Temperature settings for lightweight polyester nonwoven textiles is more sensitive to range variance than heavier polypropylene materials. Prior to production, run a test strip approximately 1 foot in width x 4 feet in length. Check that materials are fused together evenly and that temperature is satisfactory.

3. Bond textiles by using a continuous, non stopping motion in between overlap with hot air device while pressing down at approximately a forty five degree angle on the top sheet of material with a pressing / smoothing tool. Presser tool needs to move continuously at a two to four inch distance from the nozzle of the hot air device Check that seam is continuous. Any portions not bonded will need to be rewelded.

4. Any holes or tears should be repaired by patching. Patch should extend at least 12 inches beyond any portion of the damaged geotextile.

MORRISON KNUDSEN CORPORATION

INTER-OFFICE CORRESPONDENCE

| | | | |
|---|---|---|---|
| | | DATE: | July 21, 1998 |
| TO: | Lois Bigley/Dave Beall | FROM: | Clair Waite CAW |
| LOCATION: | NSWC Crane, Indiana | LOCATION: | BHO P1-5 |
| SUBJECT: | Heat-Bonded Seams - Geotextiles - Dye Burial Grounds Cover | | |

The following recommendations are given in response to a request to use heat bonded seams for the remaining geotextile installations instead of the specified sewn seam.

A minimum overlap of 12 inches shall be provided in conjunction with the heat bonded seam. This applies to both seams along the sides of a roll or panel, as well as to splices at the ends of rolls.

Seams or splices shall not be allowed in a transverse direction on slopes steeper than 10 to 1 (horizontal to vertical).

The heat bonded seam shall be continuous for the full length of the seam. Spot seaming is not permissible.

Seams may be heat bonded using a hot plate, hot knife or ultrasonic devices. All locations where heat bonding has melted through either geotextile panel shall be repaired at the subcontractors expense.

The geotextile panels shall be completely clean and dry prior to seaming. The geotextile panels shall lay flat against each other such that no gaps or wrinkles are formed in the seam. Heat seaming shall not be performed during rain or snow.

Underlying soil or geosynthetic layers shall be protected from damage. A seaming board or slip sheet may be used. Any damage or displacement of underlying soil or geosynthetic layers as a result of the seaming or placement operations shall be repaired and or replaced at the subcontractors expense.

# APPENDIX D

# DAILY SUMMARY REPORTS

**DAILY REPORT FOR JUNE 17th, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/18/96) 69,000. A total of 184,100 gallons of water have been processed through the stripper to date. There was 600 gallons of water processed today.

All seeding and mulching at SWMUS 24/00, 25/07D and 16/00 will proceed as weather permits.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

Reviewing the Biofacility equipment bid packages.

Negotiating subcontract changes with U.S. Tech for changes in quantities for site restoration and for minor modifications to the Biofacility Structures.

Smoke test was conducted at SWMU-16/16 east and west sump inlet piping by the Smith subcontractor Dana Williams & Assoc.. The smoke test confirmed previous suspicions (i.e. building floor drains and roof drains) and some new areas i.e. underneath 146 building, sanitary sewer manhole on the west side and manhole on the east side were found to have a flow path to the west sump.

SUMMARY OF SAMPLING AND TESTING

Samples were collected today (1 set) at the west sump and shipped to the lab for analysis (8240). Reviewing the sample results from SWMU 10/15 to determine the area to collect the "average" sample to send to GRACE Dearborn.

SUMMARY OF QUALITY CONTROL CONCERNS

There was no Quality Control Concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping. Held site specific Health and Safety meeting with the smoke test personnel prior entering SWMU-16/16.

Received from the Navy Fire/Safety Depts. Permit (from 6/17/96 to 9/01/96) to operate a gasoline powered pump to pump the east sump to the west sump and Hot Work Permit/Permit to use "Smoke Bomb" for 6/17/96 only.

Tested both east and west sumps with gas detection equipment prior to initiation smoke test, both sumps tested clear.

## LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Received from the EPA a copy of the letter of concurrence to proceed with the installation of the Dye Burial Cap.

Discussed landfill permit levels for metals and TCE with the EPA. This information was needed for the work plan. The EPD informed MK that a Special Waste Permit will be required prior to disposal of finished compost in the Crane landfill. Laboratory analysis will be required to obtain this permit. The time for approval of the permit is estimated to be approximately 30 days. This could impact full scale operation. The EPD also indicated a minor permit modification will be required prior to using compost material for the landfill cover (up to 90 day review cycle).

## COMMUNICATIONS,INTERFACES AND MEETINGS WITH TEAM MEMBERS

Skinner will give MK an estimate on an 8' X 10' building and concrete slab for the air stripper the week of 6/17.

Receiving pricing on wacking tamper from Brandeis Indiana Equipment, Diamond Equipment, and Wayne Supply for construction equipment.

Smith will be on site Wed. (6/19/96) to begin work at the Dye Burial Cap (SC-4324 054). There will be site orientation/site health & safety training, work plan/preparatory phase and badging starting at 0900 in CTR 12 conference room.

U.S. Tech indicated their subs cannot mobilize until site the 1st of Aug. to restart work at the Biofacility (SC-4324-48) and complete work activities on SC-4324-34. The MK Proj. Mgr. contacted U.S. Tech and informed them they need to mobilize immediately to take advantage of suitable construction weather and to avoid schedule delays. They were also advised of the schedule impact the will have on Smith Environmental if they do not proceed immediately.

MSE will be on site 6/19/96 to survey Biofacility buildings relocation, SWMU-26/08D approved area to be excavated and the location at SWMU-10/15 for the GRACE Dearborn sample.

Discussion With GRACE Dearborn and clarified that two 2 gal. pails (estimated wt 52 lbs.) would meet the request (45 lbs.). The Permit to Import number 186128 issued by the Agriculture Canada will be identified on the C of C, pails and the Cooler. Samples will be collected and shipped to GRACE Dearborn by the week of June 17th.

Contacted Splayer Specilities Inc. to purchase the 5 hp water pump and hose for pumping the east sump to the west sump.

**DAILY REPORT FOR JUNE 18th, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/19/96) 73,300. A total of 187,400 gallons of water have been processed through the stripper to date. There was 3,300 gallons of water processed today.

All seeding and mulching at SWMUS 24/00, 25/07D and 16/00 will proceed as weather permits.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

Reviewing the Biofacility equipment bid packages.

Negotiating subcontract changes with U.S. Tech for changes in quantities for site restoration and for minor modifications to the Biofacility Structures. The MK Proj. Mgr. will visit at U.S. Tech Wed. (6/19/96) to review and negotiate minor modifications and to layout the removal/disposal of contaminated soil for SWMU-26/08D.

The following CIDs were issued; CID-023-003, CID-048-001 and CID-034-019 (attached to report).

Received record copy of Delivery Order 0027 for investigation and stripper operations at SWMU-16/16.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today. Reviewing the sample results from SWMU 10/15 to determine the area to collect the "average" sample to send to GRACE Dearborn.

SUMMARY OF QUALITY CONTROL CONCERNS

There was no Quality Control Concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached).

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Received from the EPD the following; Information on the probable "dyes" buried at the Dye Burial Grounds, Letter from the EPD to the ROICC on Continued Work at Highway 58 Dumpsite B, Letter from the EPA on recommended areas to be inspected/verified/checked during installation of the Dye Burial Cap and Draft comments from the EPA on the "Draft Operational Plan" for the Bioremediation Facility.

## COMMUNICATIONS,INTERFACES AND MEETINGS WITH TEAM MEMBERS

Skinner Construction will give MK an estimate on an 8' X 10' building and concrete slab for the air stripper on 6/20/96.

Received pricing on 12" plug for east sump from Vincennes Industry, Wilson Hardware and Rich Graves Plumbing. Ordered the plug from Vincennes Industry.

Smith will be on site Wed. (6/20/96) to begin work at the Dye Burial Cap (SC-4324 054). There will be site orientation/site health & safety training, work plan/preparatory phase and badging starting at 0900 in CTR 12 conference room.

U.S. Tech indicated their subs cannot mobilize to the site until the 1st of July to restart work at the Biofacility (SC-4324-48) and complete work activities on SC-4324-34. The MK Proj. Mgr. contacted U.S. Tech and informed them they need to mobilize immediately to take advantage of suitable construction weather and to avoid schedule delays. They were also advised of the schedule impact they will have on Smith Environmental if they do not proceed immediately.

MSE will be on site 6/19/96 to survey Biofacility buildings relocation, SWMU-26/08D approved area to be excavated and the location at SWMU-10/15 for the GRACE Dearborn sample.

Discussion With GRACE Dearborn and clarified that two 2 gal. pails (estimated wt 52 lbs.) would meet the request (45 lbs.). The Permit to Import number 186128 issued by the Agriculture Canada will be identified on the C of C, pails and the Cooler. Samples will be collected and shipped to GRACE Dearborn by June 28th.

Contacted Sprayer Specilities Inc. to purchase the 5 hp water pump and hose for pumping the east sump to the west sump.

**DAILY REPORT FOR JUNE 19th, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/20/96) 74,700. A total of 189,800 gallons of water have been processed through the stripper to date. There was 1,400 gallons of water processed today.

All seeding and mulching at SWMUS 24/00, 25/07D and 16/00 will proceed as weather permits.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

Reviewing the Biofacility equipment bid packages.

Negotiating subcontract changes with U.S. Tech for changes in quantities for site restoration and for minor modifications to the Biofacility Structures. The MK Proj. Mgr. visited U.S. Tech Wed. (6/19/96) to review and negotiate minor modifications and to layout the removal/disposal of contaminated soil for SWMU-26/08D. All construction and reinforcing steel drawings for the Biofacility compost buildings were reviewed and approved construction. U.S. Tech gave a new mobilization date of June 27, 1996 in lieu of 7/1/96. U.S. Techs subcontractor (Castle Construction) gave us a letter from their steel supplier indicating the fabrication and delivery schedule for the building steel (copy attached). They indicated field erection can be accomplished in three weeks (given suitable weather) after all concrete work is complete.

MSE was on site surveying buildings #2/#3 and pond #2 at the Biofacility revised location, seeding/mulching footage on SWMUs 16/16, 24/00, 25/07D and 26/08D and hazard waste/special waste areas in SWMU 26/08D.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today. Reviewing the sample results from SWMU 10/15 has determine the area to collect the "average" sample to send to GRACE Dearborn. Awaiting DeTecK field testing Samples dilution kits ordered 6/18/96. Samples will be collected and shipped to GRACE Dearborn by June 28th.

SUMMARY OF QUALITY CONTROL CONCERNS

There was no Quality Control Concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached).

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

There was no instructions or guidance received from the government today.

COMMUNICATIONS,INTERFACES AND MEETINGS WITH TEAM MEMBERS

Received from Skinner Construction an estimate on an 8' X 10' building and concrete slab for the air stripper ($10,000).

Received pricing on 12" plug for east sump from Vincennes Industry, Wilson Hardware and Rich Graves Plumbing. Ordered the plug from Vincennes Industry.

Smith will be on site Wed. (6/20/96) to begin work at the Dye Burial Cap (SC-4324 054). There will be site orientation/site health & safety training, work plan/preparatory phase and badging starting at 0900 in CTR 12 conference room.

Contacted Sprayer Specilities Inc. to purchase the 5 hp water pump and hose for pumping the east sump to the west sump.

**DAILY REPORT FOR JUNE 20th, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/21/96) 74,700. A total of 189,800 gallons of water have been processed through the stripper to date. There was no water processed today.

All seeding and mulching at SWMUS 24/00, 25/07D and 16/00 will proceed as weather permits.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

Reviewing the Biofacility equipment bid packages.

Weekly Progress Meeting was held at 1300 at CTR 12 conference room today. The meeting minutes will be attached to the Daily report for 6/21/96.

Smith Environmental began mobilization for subcontract of work on SC-4324-054 and SC-4324-049.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today. Reviewing the sample results from SWMU 10/15 has determined the area to collect the "average" sample to send to GRACE Dearborn. DeTecK field testing Samples dilution kits were received today. Samples will be collected and shipped to GRACE Dearborn by June 28th. Discussed with the EPD the details of shipping "soil" to GRACE and determined that no manifest is required.

SUMMARY OF QUALITY CONTROL CONCERNS

Preparatory Phase Meeting was held with Smith Environmentalto review all required submittals, SWMU 02/11 Work Plan (specifically section 02200), viewed the tape on the Three Phases of QC. Meeting was documented on DBP-01 checklist. Item #4 on the checklist for Decontamination Plan (procedure from Smith) will be available 6/21/96. All required submittals were acceptable to begin this phase of work.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached). Held Site Construction and Site Specific meeting with Smith personal to review SWMU 02/11 Work Plan and Health and Safety requirements.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Received from the Base Fire and Safety Depts. Flame tool/Hot Work Permit and Safety & Building Availability Permit for the Dye Burial Cap, SWMU-02/11 area.

COMMUNICATIONS,INTERFACES AND MEETINGS WITH TEAM MEMBERS

Received revised drawings from U.S. Tech for the concrete slab at the Biofacility (transmittal attached).

**DAILY REPORT FOR JUNE 21st, 22nd and 23rd, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/24/96) 74,900. A total of 191,800 gallons of water have been processed through the stripper to date. There was 200 gal. water processed today.

All seeding and mulching at SWMUS 24/00, 25/07D and 16/00 will proceed as weather permits. SWMUs 16/16, 24/00 and 25/07D areas are dry with no standing water and ready to seed and mulch.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

Writing the work request for Jacobs to prepare the IMRs.

Copies of the Equipment bid packages, RFQs #4324-036, 038, 039, 040, 041, 042, 043, 044, 051 and 052, were recieved today. These had been issued from MK Cleveland on June 14th and 17th.

Weekly Progress Meeting Minutes are attached to this report.

Smith Environmental (SETC) mobilized for subcontract work on SC-4324-054 and SC-4324-049. SETC began clearing and cutting the Dye Burial Cap (DBC) area over the weekend. The first of two SETC trailers arrived on 6/21/96 and was set up at the DBC. The second trailer, for the Biofacility, has not arrived. Orange fencing was installed at the enterence of the site. Procceding to weed eat grass/small shrubs and cut small trees on trench #3.

CID (Draft) was written to clarify/expand the requirements of SWMU-02/11 Work Plan 4.0 Project Excution , 4.2.2 "Vegetation Removal". The change will be reviewed by the ROICC and the EPD Monday prior to issue.

MK met with landfill operator and has determined locations for stock piling top soil and compost material from the Biofacility and wood chips from the DBC.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today. Reviewing the sample results from SWMU 10/15 has determined the area to collect the "average" sample to send to GRACE Dearborn. DeTecK field testing Samples dilution kits were received today. Samples will be collected and shipped to GRACE Dearborn by June 28th.

SUMMARY OF QUALITY CONTROL CONCERNS

Preparatory Phase Meeting was held with Smith Environmental to review all required submittals, SWMU 02/11 Work Plan (specifically section 02200), viewed the tape on the Three Phases of QC. Meeting was documented on DBP-01 checklist

(attached). Item #4 on the checklist for Decontamination Plan (procedure from Smith) was recieved 6/22/96. All required submittals were acceptable to begin this phase of work.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached). Held Site Safety and POD meeting with Smith personal to review daily Health and Safety requirements.

Photoionzation Detecton equipment will be returned to MK next week.

Conducted safety check on 855 J/D tractor and brush hog. SETC made there checklist out (copy attached).

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Per EPD request, information on the disposal of soil/trash from SWMUs 24/00 and 23/00, was located. On 11/28/96 two roll-offs (1 with trash/1 empty) were picked up by Rumpke and disposed of off-site as trash (2 tons) from SWMU 23/00. On 10/16/96 and 10/17/96 a total of 18-(14yd trucks = (378 tons) of soil from SWMU 24/00 was disposed of on-site. These trucks from SWMU 24/00 were not weighed in or out.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

A conference call between the MK site and PMO is scheduled the 26th of June at 1000 hrs (0900 site time) and will become a weekly interface.

The Proj. Eng. in Cleveland has requested specific documents (E-Mail attached) from the PNO. The ROICC and the EPD may be able to provide copies of these documents if they have not been transmitted to PMO.

Contacted U.S. Tech as to the submittals for the 4,000 psi concrete mix design and curing method to be used.

**DAILY REPORT FOR JUNE 24th, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/24/96) 74,900. A total of 191,800 gallons of water have been processed through the stripper to date. There was no water processed today.

SWMUs 16/16, 24/00 and 25/07D areas are dry with no standing water and ready to seed and mulch.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

Writing the work request for Jacobs to prepare the IMRs.

Smith Environmental (SETC) mobilized for subcontract work on SC-4324-054 and SC-4324-049. SETC began clearing and cutting the Dye Burial Cap (DBC) area over the weekend. The first of two SETC trailers arrived on 6/21/96 and was set up at the DBC. Orange fencing was installed at the entrance to the site. Procceding to weed eat grass/small shrubs and cut small trees on trench #3. Trench #1 and #2 have been cleaned.

CID (Draft) was written to clarify/expand the requirements of SWMU-02/11 Work Plan 4.0 Project Execution , 4.2.2 "Vegetation Removal". The change will be reviewed by the ROICC and the EPD. The EPA will be on site Tuesday and will review the CID request with the EPD.

The second SETC trailer was received and set up at the Biofacility.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today. Reviewing the sample results from SWMU 10/15 has determined the area to collect the "average" sample to send to GRACE Dearborn. DeTecK field testing Samples dilution kits were received. Samples will be collected and shipped to GRACE Dearborn by June 28th.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached). Held Site Safety and POD meeting with Smith personal to review daily Health and Safety requirements.

Conducted safety check on 650 Series IV J/D tractor and brush hog. SETC

made there checklist out (copy attached).

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

There were no instructions or guidance from the government. The EPD were on site at the DBC in the afternoon.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

A conference call between the MK site and PMO is scheduled the 26th of June at 1000 hrs (0900 site time) and will become a weekly interface.

Contacted U.S. Tech as to the submittals for the 4,000 psi concrete mix design and curing method to be used.

The Proj. Mgr. and Gen. Superintendent will be in Cleveland July 1st to review RFPs for the Biofacility.

**DAILY REPORT FOR JUNE 25th, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/25/96) 74,900. A total of 191,800 gallons of water have been processed through the stripper to date. There was no water processed today.

SWMUs 16/16, 24/00 and 25/07D areas are dry with no standing water and ready to seed and mulch.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

Writing the work request for Jacobs to prepare the IMRs.

SETC clearing and cutting the Dye Burial Cap (DBC) area. The first of two SETC trailers arrived on 6/21/96 and was set up at the DBC. Orange fencing has been installed at the entrance to the site. Proceeding to weed eat grass/small shrubs and cut small trees. All trenches have been cleaned. Started top soil cutting on the east side of the trenches.

CID (Draft) was written to clarify/expand the requirements of SWMU-02/11 Work Plan 4.0 Project Execution , 4.2.2 "Vegetation Removal". The change will be reviewed by the ROICC and the EPD. The EPA will be on site Tuesday, Wed., and Thurs. and will review the CID request with the EPD.

CID (Draft) was written to expand the scope of work for Earth Exploration to include Concrete testing.

Milestone Schedule for Response Action Contract is attached to this report.

SUMMARY OF SAMPLING AND TESTING

Samples for GRACE Dearborn were collected today from SWMU 10/15 and weighed 61 lbs. DeTecK field test will be conducted on Wed. and samples will be shipped to GRACE Dearborn by June 28th.

Transmitted sample results from the stripper and UST fuel tank to the EPD.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached). Held Site Safety and POD meeting with Smith personal to review daily Health and Safety requirements.

Held the Monthly Safety meeting with MK personnel and discussed Safety News and Views, General Safety , Lead Abatement and Rigging Safety.

Held Site Specific Safety and Orientation with 4 SETC personnel, badging and training. All submittals were in order.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Received from the EPD, the EPA comments on the "Draft" Operational Plan for the Biofacility.

Received from the EPD, letter, July 31, 1995, on non impact on wetlands and endangered species as required by the Work Plans for the Dye Burial Cap and Biofacility.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

A conference call between the MK site and PMO is scheduled the 26th of June at 1000 hrs (0900 site time) and will become a weekly interface.

Contacted U.S. Tech as to the submittals for the 4,000 psi concrete mix design and curing method to be used.

Faxed Biofacility building coordinates to MSE per request from U.S. Tech.

Sent E-mail to PMO to address funding needs for smoke test, pump, hose, plug, etc. associated with the TCE at SWMU-16/16 (copy attached).

The Proj. Mgr. and Gen. Superintendent will be in Cleveland July 1st to review RFPs for the Biofacility.

**DAILY REPORT FOR JUNE 26th, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/26/96) 74,900. A total of 191,800 gallons of water have been processed through the stripper to date. There was no water processed today.

SWMUs 16/16, 24/00 and 25/07D areas are dry with no standing water and ready to seed and mulch.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

The work request for Jacobs to prepare the IMRs was transmitted to PMO for review.

SETC clearing and cutting the Dye Burial Cap (DBC) area. Continuing to weed eat grass/small shrubs and cut small trees. All trenches have been cleaned. Top soil cutting on the east side of the trenches and stock piling the same.

CID (Draft) was written to clarify/expand the requirements of SWMU-02/11 Work Plan 4.0 Project Execution , 4.2.2 "Vegetation Removal". The change will be reviewed by the ROICC and the EPD. The EPA will be on site Thurs. and will review the CID request with the EPD.

CID 032-003 was written to expand the scope of work for Earth Exploration to include Concrete testing.

Portolets were delivered to the sites (DBC and Biofacility).

The 12" plug for the east sump has been "lost" in shipment. The supplier is tracking the plug down.

SUMMARY OF SAMPLING AND TESTING

Samples for GRACE Dearborn were collected 6/25/96 from SWMU 10/15 and weighed 61 lbs. DeTecK field test will be conducted and samples will be shipped to GRACE Dearborn by June 28th.

Transmitted record results from the stripper and UST fuel tank to the EPD.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures,

barricades, and taping (Erosion Control inspection report attached).

Held Site Safety and POD meeting with Smith personal to review daily Health and Safety requirements.

Held Site training and field demonstration (SETC procedure DBC-054-002) on operation of chain saws and related equipment prior to starting work activities.

Audio Dosimeter tests were conducted on the site equipment to determine ear protection requirements.

Safety inspected the Gen. Pac. 17kw and the Case Backhoe 580L and were found to be acceptable.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Received from the ROICC the "Construction Safety Audit" (copy attached) to be conducted by the contractor (MK) once a week. The Proj. Mgr will designate the responsibility.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

A conference call between the MK site and PMO was held the 26th of June at 1000 hrs (0900 site time) and will become a weekly interface.

Still awaiting U.S. Tech submittals for the 4,000 psi concrete mix design and curing method to be used.

The Proj. Mgr. and Gen. Superintendent will be in Cleveland July 1st to review RFPs for the Biofacility.

**DAILY REPORT FOR JUNE 27th, 1996**
**DELIVERY ORDER 0009.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (6/27/96) 74,900. A total of 191,800 gallons of water have been processed through the stripper to date. There was no water processed today.

SWMU 24/00 was mulched and seeded and SWMU 16/16 will be started Friday.

Reviewing the Biofacility Operational Plan, Dye Burial Cap work Plan, U.S. Tech and Smith submittals for the Biofacility and Dye Burial Cap.

The work request for Jacobs to prepare the IMRs was transmitted to PMO for review.

SETC clearing and cutting the Dye Burial Cap (DBC) area. Continuing to weed eat grass/small shrubs and cut small trees. All trenches have been cleaned. Top soil cutting on the east side of the trenches and stock piling the same. Dye's (blue, red, yellow) were found in four places outside the trench areas (as far as 50' from the center). Smith procedure DBC-054-001 was implemented to control the areas, decon the equipment and clean up the areas.

CID (Draft) was written to clarify/expand the requirements of SWMU-02/11 Work Plan 4.0 Project Execution , 4.2.2 "Vegetation Removal". The change will be reviewed by the ROICC and the EPD. The EPA was on site today and reviewed the CID request with the EPD.

CID 032-003 was written to expand the scope of work for Earth Exploration to include Concrete testing.

The 12" plug for the east sump has been "lost" in shipment. The supplier is tracking the plug down. Recieved the suction hose for the pump and the missing fittings.

SUMMARY OF SAMPLING AND TESTING

Samples for GRACE Dearborn were collected 6/25/96 from SWMU 10/15 and weighed 61 lbs. DeTecK field test will be conducted and samples will be shipped to GRACE Dearborn by June 28th.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached).

Held Site Safety and POD meeting with Smith personal to review daily Health and Safety requirements.

Held Specific Health/Safety ans Site Orientation training with Smith and U.S. Tech and their subs for the Biofacility.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Received from the Navy QA/QC representative, the "Construction Safety Audit" to be conducted by the contractor (MK) once a week. The Proj. Mgr. designated the responsibility to the MK QA/QC Supervisor.

MK, EPD and the EPA met at SWMU-02/11 to discuss the CID for vegitation removal and the requirement for the "Soils Engineer". CIDs addressing the SWMU 02/11 Work Plan changes will be reviewed by the EPA Friday morning (0900) and if the EPA concurs they will sign the CIDs.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Still awaiting U.S. Tech submittals for the 4,000 psi concrete mix design and curing method to be used.

The Proj. Mgr. and Gen. Superintendent will be in Cleveland July 1st to review RFPs for the Biofacility.

**DAILY REPORT FOR JUNE 28th, 29th and 30th, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029.007**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/01/96) 74,900. A total of 191,800 gallons of water have been processed through the stripper to date. There was no water processed this weekend.

U.S. Tech (SC-4324-034) subcontractor (Webster Excavating) completed mulching/seeding SWMU 16/16 Saturday and started on SWMU-25/07D. When mulching/seeding is completed, all SWMUs will require periodic watering.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is conducting earth work activities, stripping the top soil and cut and fill for the 3 buildings at the Biofacility.

SETC (SC-4324-049) subcontractor (Bertram Electrical) hooking up the SETC Office Trailer at the Biofacility.

SETC (SC-4324-054) continuing to clear cut the area and subcontractor (Bertram Electrical) hooking up the SETC Office Trailer at SWMU-02/11. The "Dye in plastic bags" located 50' north of trench #1 is estimated to be 30' by 4' running north/south parallel to trench #1. Work was halted ( had been removing visible dye and piling it on trench #2/#3) in that area, marked off and pictures taken. The EPD was notified at 1700 (6/28/96). It was decided that measures will be taken to protect the area from possible rain and will be reviewed (7/1/96) by the EPD and ROICC to determine what actions will be taken. It is possible this area may not only be out from the cap but may also extend beyond the work scope area. Smith procedure DBC-054-001 is being implemented to control the areas, decon the equipment and clean up the areas.

The work request for Jacobs to estimate the preparation of the IMRs has approved by PMO.

CID 054-001 was issued to clarify/expand the requirements of SWMU-02/11 Work Plan 4.0 Project Execution , 4.2.2 "Vegetation Removal" and CID 054-002 was issued to clarify the requirements of SWMU-02/11 Work Plan Specification 01010 Part 4, 4.1 D "Soils Engineer" (the ROICC and EPA reviewed and signed approval). CID-054-003 was issued for Smith (SC-054-03) to conduct exploratory excavation at SWMU-16/16.

CID 032-003 was issued (6/30/96) to expand the scope of work for Earth Exploration to include Concrete testing.

The Weekly Progress Meeting Minutes are attached to this report.

SUMMARY OF SAMPLING AND TESTING

Samples for GRACE Dearborn were collected 6/25/96 from SWMU 10/15 and

weighed 61 lbs. DeTecK field test TNT/RDX will be conducted and samples will be shipped to GRACE Dearborn.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached).

Held Site Safety and POD meeting with Smith and U.S. Tech personal to review daily Health and Safety requirements.

Held Site Specific Health/Safety Orientation training with Smith subcontractors (Bertran Electrical SC-4324,054 and 049) and U.S. Tech subcontractors (Bush Excavating SC-4324-048 and Webster Excavating SC-4324-034).

The following equipment was inspected and in safe working order. Bush equipment 943 loader and D4H, Webster 580 case and 4650 Allied tractor.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Received from the Navy QA/QC representative, the "Construction Safety Audit" to be conducted by the contractor (MK) once a week. The Proj. Mgr. designated the responsibility to the MK QA/QC Supervisor.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Still awaiting U.S. Tech submittals for the 4,000 psi concrete mix design and curing method to be used.

The Proj. Mgr. and Gen. Superintendent will be in Cleveland July 1st to review Proposals for the Biofacility equipment.

Discussed what areas in SWMU-10/15 (Rockeye) and quantities based on previous sampling results will be excavated. Will need to collect analysis result, sample map locations and documentation to the Proj. Eng. in Cleveland.

# CID DISPOSITION REPORT

MORRISON KNUDSEN CORPORATION
ENGINEERING, CONSTRUCTION & ENVIRONMENTAL GROUP

DATE:

MK CID NO: 054-001

DELIVERY ORDER NO. 0009

SUBCONTRACT NO. SC-4324-054

ORIGINATOR PROBLEM NO. MK-033

SUBCONTRACTOR: ~~SMITH~~ ENVIRONMENTAL

## DISPOSITION CATEGORIES

- [ ] **Subcontractor RFI/Clarification** (issue Change Order)
- [x] **Work Plan Change**
- [ ] **Design Change** (Designb Eng. Approval req'd)
- [ ] **Subcontract Change < $5000** (proceed with change)
- [ ] **Subcontract Change > $5000** (proceed with change)
- [ ] **Delivery Order Scope Change**

- [x] No cost/schedule impact
- [ ] Cost/schedule impact
  - [ ] Cost increase / decrease _____
  - [ ] Schedule impact: _____ days
  - [ ] Engineering estimate attached? [ ] Yes [ ] No
  - Subcontractor Proposal Attached? [ ] Yes [ ] No
  - Funds Available? [ ] Yes [ ] No

## DETAILED DISPOSITION

Revise the SWMU 02/11 Work Plan as follows:
page 12, section 4.4.2 add the following statement after "... followed by stump grinding and removal."
"Trees greater than 20' from the edge of the ~~dye~~ burial trenches may be uprooted with heavy equipment for removal."

Approved 6/28/96 Carol [illegible] U.S. EPA Region 5 (312)886-6146

Dispositioned by: Steve Toomey Date: 6/27/96 Title: Project Manager

## APPROVALS

ROICC Notified? [x] Yes [ ] No
B2 R 6/28/96

MK Contract Admin. Mgr. Date

D M Kemph 6-22-96
MK Project Engineer Date

MK Program Manager (over $5000) Date

Steve Toomey 6/27/96
MK Project Manager Date

MK Project Controls Manager Date

MK Sr. Project Manager (over $5000) Date

D M Kemph 6-22-96
MK Quality Control Manager (Work Plan or Design Changes only) Date

COPY

# CONSTRUCTION INTERFACE DOCUMENT

MORRISON KNUDSEN CORPORATION
ENGINEERING, CONSTRUCTION & ENVIRONMENTAL GROUP

DATE: 6/27/96

MK CID NO: 054-001

DELIVERY ORDER NO. 4324-0009-007-30

SUBCONTRACT NO. SC-4324-054

ORIGINATOR PROBLEM NO. MK-033

SUBCONTRACTOR: Smith Environmental

TO: STEVE DOWNEY

PROJECT DESCRIPTION: SWMU 02/11, Dye Burial Grounds Cap

FROM: BILL KEMP

REFERENCE: WORK PLAN/DRAWINGS/SPECIFICATIONS: Work Plan for 02/11, Dye Burial Grounds Cap

SUBJECT: TREE REMOVAL

ATTACHMENTS: YES ☒ NO ☐ ~~PAGE 12 OF STATEMENT OF WORK 01010~~ PAGE 12 OF SWMU 02/11 WORK PLAN

PROBLEM / DEFICIENCY — CLARIFICATION ☐ CHANGE ☐ INFORMATION ☐

The referenced work plan states in section 4.4.2, Vegetation Removal, "Trees will be cut down, followed by stump grinding and removal." This same wording appears in subcontract package 4324-054 in E. 1. of Section 01010, Statement of Work. The subcontractor requests approval to uproot trees outside the immediate area of the cap by pushing them over with heavy equipment.

ADDITIONAL COSTS: YES ☐ NO ☒

SCHEDULE CHANGE: YES ☐ NO ☒

PROPOSAL: YES ☐ NO ☐

RECOMMENDED SOLUTION

Allow trees greater than 20' from the edge of the dye burial trenches (taped area) to be uprooted with heavy equipment.

**DAILY REPORT FOR JULY 1st, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/02/96) 74,900. A total of 191,800 gallons of water have been processed through the stripper to date. There was no water processed over night.

SETC (SC-4324-049) notified MK that The Rogers Group will be on site Wednesday morning, July 3rd, for Site Specific Training. The Rogers Group may possibly mobilize their equipment to the biofacility the same day.

SETC (SC-4324-054) built a decon station just inside the work area of SWMU 02/11. Work proceeded with picking up all pieces of dye out side of the trenches. These pieces are being placed on top of the existing trenches. No work is being performed within the new secured zone. The areas of concern were covered with plastic to protect the environment from possible airborne contaminates. Work continues to remove top soil from the areas east of the burial trenches.

U.S. Tech (SC-4324-034) subcontractor (Webster Excavating) dropped of a blower at SWMU 25/07D to spread mulch. This work is scheduled for completion Tuesday, July 2nd.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is removing the debris pile from the culdesac at the biofacility and disposing of the debris to the designated area behind the golf course.

SUMMARY OF SAMPLING AND TESTING

Samples for GRACE Dearborn were shipped out via Federal Express today.

Record Sample results from the Air Stripper, received from the laboratory were transmitted to the EPD.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping (Erosion Control inspection report attached).

Held Site Safety and POD meeting with Smith and U.S. Tech personal to review daily Health and Safety requirements.

The project manager was notified at 1230 hrs of site conditions at SWMU 02/11. For health and safety reasons, Morrison Knudsen Corporate Health & Safety

decided that analysis will be conducted on samples taken of dye that was exposed outside of the burial trenches. The analysis will be performed by test methods 8240 and 8270.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

MK was instructed to barricade and flag off the area of concern within SWMU 02/11. This area is approximately 50' by 100' and is located approximately 50' north of burial trench #1. The EPD will discuss the situation with the EPA to resolve the problem and make a formal decision on the steps to be taken to remediate the area of concern.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK placed a call to Tim Sears to request a base electrician to visit the Biofacility and inspect the temporary electrical service for Smith Environmental Technologies Inc. With the Fourth of July holiday, the inspection may not happen until next week.

A meeting at 0830 hrs with the EPD at the Dye Burial Ground (SWMU 02/11) was conducted to inspect an area 50' north of dye burial trench #1. Upon closer examination 15' west of this area, was found more plastic bags of dye on the surface, and approximately 20' north of the area, a large pushed over tree had dye and plastic bags wound in the root ball. An area approximately 50' by 100' has been flagged and barricaded off. A temporary decon station was constructed. Measures were taken to control the site and eliminate the spread of dye. The EPD will discuss the situation with the EPA. Possible options include: 1) Expand the CAP., 2) Dig a trench between trenches #1, & #2, and place the dye and contaminated soils from the area of concern within the new trench. In both cases, the existing scope of work will be affected, which results in cost and schedule increases and changes, respectively.

**DAILY REPORT FOR JULY 2nd, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/03/96) 74,900. A total of 191,800 gallons of water have been processed through the stripper to date. There was no water processed over night.

SETC (SC-4324-049) notified MK that The Rogers Group will not be on site Wednesday morning, July 3rd, for Site Specific Training. The Rogers Group may be here Friday to walk down the biofacility.

SETC (SC-4324-054) has built a decon station just inside the work area of SWMU 02/11. Completed picking up all pieces of dye out side of the trenches. No work is being performed within the new secured zone. The areas of concern are covered with plastic to protect the environment from possible airborne or leaching contaminants. Work continues to remove top soil from the areas east of the burial trenches. SETC surveyors set elevations. The area has been secured for the Holiday weekend.

U.S. Tech (SC-4324-034) subcontractor (Webster Excavating) completed mulching, seeding, crimping and watering of SWMUs 24/00, 16/16 and 25/07D.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is removing the debris pile from the cul-de-sac at the biofacility and disposing of the debris to the designated area behind the golf course. Started excavating soil to building #1 elevation.

Bid proposals for the Hay, Manure, Live-bottom trailer, Soil Screener, Dump Conveyor, and Grinder Mixer were review in Cleveland. Only one bid was received for the dump conveyor, so a modified bid package was reissued on July 23, 1996.

SUMMARY OF SAMPLING AND TESTING

Samples of the dye (5) from the DBC were collected and sent to the lab for Health and Safety analysis (8240, 8270 and 6010).

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

## SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping.

Held Site Safety and POD meeting with Smith and U.S. Tech personal to review daily Health and Safety requirements.

For health and safety reasons, Morrison Knudsen Corporate Health & Safety decided that analysis will be conducted on samples taken of dye that was exposed outside of the burial trenches. The analysis will be performed by test methods 8240, 8270 and 6010.

## LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The EPD is discussing the situation at SWMU 02/11 (DBC) with the EPA to resolve the problem and make a formal decision on the steps to be taken to remediate the area of concern.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK placed a call to Tim Sears to request a base electrician to visit the Biofacility and inspect the temporary electrical service for Smith Environmental Technologies Inc. With the Fourth of July holiday, the inspection may not happen until next week.

To: Steve Downey@NAVFAC@MKEnvironmental
Cc: Scott Newman@NAVFAC@MKEnvironmental
Greg Jones@NAVFAC@MKEnvironmental
Robert Hlavacek@NAVFAC@MKEnvironmental
Bill Kemp@NAVFAC@MKEnvironmental
Bcc:
From: Marvin Chidester@NAVFAC@MKEnvironmental
Subject: SWMU 02/11 Dye Burial Ground
Date: Tuesday, July 2, 1996 16:54:45 EDT
Attach:
Certify: N
Forwarded by:

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Steve;

On July 1, 1996, a meeting was conducted with the EPD at the Dye Burial Ground (SWMU 02/11) to inspect an area 50' north of dye burial trench #1. Upon closer examination 15' west of this area, was found more plastic bags of dye on the surface, and approximately 20' north of the area, a large pushed over tree had dye and plastic bags wound in the root ball. An area approximately 50' by 100' has been flagged and barricaded off. A temporary decon station was constructed. Measures were taken to control the site and eliminate the spread of dye. The EPD will discuss the situation with the EPA. Possible options include: 1) Expand the CAP. 2) Dig a trench between trenched #1 & #2, and place the dye and contaminated soils from the area of concern within the new trench. In both cases, the existing scope of work will be affected, which results in cost and schedule increases and changes , spectively.

The Project Manager was notified at 1230 hrs of site conditions at SWMU 02/11. For health and safety reasons, Morrison Knudsen Corporate Health & Safety decided that analysis will be conducted on samples taken of dye that was exposed outside of the burial trenches. The analysis will be performed by test methods 8240 and 8270.

Smith Environmental Technologies built a decon station just inside the work area of SWMU 02/11. Work proceeded with picking up all pieces of dye outside of the trenches. These pieces are being placed on top of the existing trenches. No work is being performed within the new secured zone. The areas of concern were covered with plastic to protect the environment from possible airborne contaminates. Work continues to remove top soil from the areas east of the burial trenches.

**DAILY REPORT FOR JULY 3nd, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the assumed reading was (7/05/96) 74,900, the gates at Cast High Explosives were locked. The Fourth of July was a base holiday and there was no access to the facilities. There was no rain recorded in the last 48 hour period.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is excavating soil and moving the excavated soil to the (west) end of the buildings.

Bid proposals for the Hay, Manure, Live-bottom trailer, Soil Screener, Dump Conveyor, and Grinder Mixer were review in Cleveland and recommendations to the Navy were presented.

SUMMARY OF SAMPLING AND TESTING

No samples were collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping.

Held Site Safety and POD meeting with Smith and U.S. Tech personal to review daily Health and Safety requirements.

Morrison Knudsen Corporation site staff personnel and subcontractors have accrued over 20,000 man hours worked without a recordable/lost time accident.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The EPD is discussing the situation at SWMU 02/11 (DBC) with the EPA to resolve the problem and make a formal decision on the steps to be taken to remediate the area of concern.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

EPD visited the Dye Burial Grounds and made another inspection of the area of concern to determine the severity of contamination. Twelve (12) pin flags were placed to identify possible locations of additional dye contamination. EPD would like to have Morrison Knudsen perform some exploratory excavating (Pot Holes) to help verify the magnitude of contamination in the area. Brent Robertson and Steve Downey were present at the Dye Burial Grounds when EPD made their inspection and solicitation. Brent Robertson will give MK technical direction in writing.

**DAILY REPORT FOR JULY 5nd, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the assumed reading was (7/06/96) 74,900, the gates at Cast High Explosives were locked. There was no rain recorded in the last 24 hour period.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is excavating soil and moving the excavated soil to the (west) end of the buildings. Bush brought on site a CAT 613 (pan) Scraper for use at the Biofacility and removed the CAT 943 Track Loader from the jobsite.

U.S. Tech (SC-4324-048) subcontractor (ATEC) was on site today to perform nuclear density testing of the compacted fill material. The technician performed two compaction tests. Both tests exceeded the specification requirements of a 95% compaction. The test results are 98% and 104% respectively. The test results are attached.

SUMMARY OF SAMPLING AND TESTING

No samples were collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

Two compaction tests were performed today at the Biofacility. The test results exceeded the specification requirements of 95%. All tests passed.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping.

Held Site Safety and POD meeting with Smith and U.S. Tech personal to review daily Health and Safety requirements.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

There was no instructions or guidance received from the government today.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

There were no communications or meetings with team members today.

**DAILY REPORT FOR JULY 6th and 7th, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/08/96) 83,300. There was rain recorded (2.2') and 8,400 gallons were processed over the weekend.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is continuing dirt work at the Biofacility. Bldg. #1 is almost to the required subgrade elevations and moving fill to the west end of building #2 and #3.

On (7/07/96), due to 2.2" of rain the stripper was started up and samples were collected. Rain accumulation was; DBC 2.5", Bio 3.0", Stripper 2.2" and office .75".

SUMMARY OF SAMPLING AND TESTING

Samples were collected (7/07/96) from the stripper and will be shipped to the lab Monday for analysis.

SUMMARY OF QUALITY CONTROL CONCERNS

There were no Quality concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping.

Held Site Safety and POD meeting (7/07/96) with U.S. Tech personal to review daily Health and Safety requirements.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

There was no instructions or guidance received from the government today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

There were no communications or meetings with team members today.

# DAILY REPORT FOR JULY 8, 1996
# DELIVERY ORDERs 0009, 0024, 0027 and 0029

## NSWC CRANE, INDIANA

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/09/96) 84,720. There was rain recorded (2.2") and 900 gallons were processed over night. The contents of the east sump was pumped to the west sump at 1600 hours.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is continuing dirt work at the Biofacility. Bush Excavating is continuing to move fill to the west end of building #2 and #3. U.S. Tech received three (3) loads of stone for base layer of Bldg. #1 slab. The trucks hauling in stone tracked mud onto the blacktop roadway, which was cleaned off by U.S. Tech's superintendent.

SETC (SC-4324-054) is continuing work on grading to specified elevations on the south east side of the Dye Burial Trenches. EPD has marked approximately 12 locations with pin flags, to be excavated to a specific depth and size;( 3'L x 6'W x 2'D), to assist in completing the investigation of additional dye contaminations outside of the work area.

Rain accumulation was; DBC 2.5", Bio 3.0", and Stripper 2.2".

SUMMARY OF SAMPLING AND TESTING

Two (2) samples were taken at the Air Stripper; 12I & 12E. These samples were for water that was pumped from the East Sump to the West Sump.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (ATEC) performed 7 nuclear density compaction tests at Bldg. #2. All tests performed passed specification requirements.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping.

Held Site Safety and POD meeting (7/07/96) with U.S. Tech personal to review daily Health and Safety requirements.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste was transported off-site for disposal.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

MK contacted the ROICC office to have the excavation permit updated to include the exploratory digging to be performed at SWMU 16/16. The Navy Technical Representative (Tim Sears) verbally approved the updated permit.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

There were no communications or meetings with team members today.

**DEPARTMENT OF THE NAVY**
OFFICER IN CHARGE OF
NAVAL FACILITIES ENGINEERING COMMAND
CONTRACTS
CRANE DIVISION, NAVAL SURFACE WARFARE CENTER
BUILDING 2516
CRANE, INDIANA 47522-5082

RECEIVED
JUL 03 1996
MK-CRANE

4330
OICC
03 July 96

Morrison Knudsen Corp.
CTR 12
NSWC Crane In
Crane, IN 47522

Subj: Contract N62467-93-D-1106, ENVIRONMENTAL RAC CONTRACT 4324-0009 NSWC-CRANE

Gentlemen:

This letter is to serve as technical direction for the following actions for SWMU 02/11, Dye Burial Grounds:

Take necessary action to dig approximately 12 potholes 24" deep in the locations marked by NSWC Code 096 personnel to verify the presence of buried dyes. Document the location of these potholes for inclusion in the IMR.

You shall proceed promptly with the performance of this technical direction. You are to provide a budgetary impact of this direction to the Contracting Officer within 5 days of its issuance. If in your opinion, this direction falls within any of the categories defined in paragraph (b) of clause G6, Technical Direction, of your contract, you shall promptly notify the Contracting Officer in writing. You shall take no action until the Contracting Officer has issued a modification to the delivery order or otherwise resolved the issue.

If you have any questions, contact Brent Robertson, ROICC Crane IN, at 812-854-3318.

Brent Robertson
Navy Technical Representative

| NSWC - CRANE 4324-0009 | | | |
|---|---|---|---|
| PROJECT MEMBER | ACT | INFO | |
| PROJECT MANAGER | | | |
| PROJECT ENGINEER | | | |
| GNL SUPT | | | |
| SAFETY AND HEALTH | | | |
| CA/CC SUPERVISOR | X | | |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| PMO-CHARLESTON | | | |
| SMITH / Dewey | | | |
| | | | |
| FILE: | | | |
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Copy to:
Sdiv Code 0232RH
Sdiv Code 1864
Sdiv Code 0514
Sdiv Code 18011JJ

**DAILY REPORT FOR JULY 9, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/10/96) 86,700. No rain was recorded over night.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is not working today.

SETC (SC-4324-054) is working on D.O.#0027; excavating the area where the storm sewer and the drain line to the west sump crosses at SWMU #16/16. MK and the ROICC inspected the excavation. The investigation revealed that the storm sewer piping had collapsed in two (2) places and the inlet pipe for the west sump had a 6" hole in top surface where the storm sewer pipe crossed over it. EPD visited the site to inspect the work involved twice. The ROICC instructed MK to repair and replace piping.

SUMMARY OF SAMPLING AND TESTING

One (1) sample was taken at the pipe excavation at SWMU #16/16. The samples taken 7/7/96, 7/8/96, and 7/9/96 were shipped off site to the analytical laboratory today.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at this time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping.

Held Site Safety and POD meeting (7/07/96) with U.S. Tech personal to review daily Health and Safety requirements.

Held Site Specific Safety & Preconstruction meeting for SETC (Rogers Group) subcontractor. After all training was completed, subcontract personnel were taken to security and badged.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste was transported off-site for disposal.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

MK notified EPD of a diesel spill at the Biofacility. The CAT 613 (pan) Scraper was leaking diesel fuel out of the rear of the machine. EPD stated that the diesel contaminated soil could be disposed of at the Base Landfill.

EPD requested samples of soil from the excavation at SWMU #16/16 be taken for analysis. The samples will be tested by Methods #8240 and 6010A.

The ROICC instructed MK to make the appropriate repairs to the sewer line and drain line to the west sump at SWMU #16/16 so the utilities could be placed back in service.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK notified U.S.Tech.'s SSHO of the diesel spill and corrective action was taken. The diesel contaminated soil will be excavated and disposed of 7/10/96.

The Navy representative (Tim Sears) notified MK that telephone service at the Bio-Facility could be available in two (2) weeks but will require MK to give up two (2) existing phone line that are in service now. Tim also stated that the Base Electrical Department will check out the electrical service to SETC's trailer, and that SETC should have power sometime Wednesday.

**DAILY REPORT FOR JULY 10, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/11/96) 86,700. No rain was recorded over night.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is continuing dirt work at the Biofacility. Bush Excavating is continuing to move fill to the west end of building #2 and #3. Compaction test of the fill areas are in progress. Bush will start installing the gravel base on Bldg. #1 on Thursday.

SETC (SC-4324-054) is working on D.O.#0027; began repairing the drain piping to the west sump, and the storm sewer piping. The drain pipe to the west sump was repaired in place. The storm sewer pipe repair began but was suspend because the elevations of the center line of the open ends of pipe were three (3) inches apart. Additional parts are required to successfully repair the piping.

SETC (SC-4324-054) started digging the exploratory pot holes at the pin flag locations predetermined by EPD. Twelve (12) pot holes were dug. Eight (8) holes discovered dye, four (4) did not. Most of the dye encountered was green, however one (1) hole outside of the cut/fill area of the original contract, contained bright yellow dye. EPD was on site during the excavation of the last five (5) pot holes.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (ATEC) performed six (6) nuclear density compaction tests at Bldg. #2 and #3. One (1) of the tests performed failed. The soil was re-compacted and retested. All tests performed thereafter passed specification requirements.

U.S. Tech (SC-4324-048) delivered to MK, three (3) sets of drawings that fulfill the open submittal items. MK will stamp "Approved for Construction" and distribute them the appropriate subcontractors.

## SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping.

Held Site Safety and POD meeting (7/07/96) with U.S. Tech personal to review daily Health and Safety requirements.

The CAT 613 (pan) scraper was repaired, cleaned, and inspected prior to being placed back in service.

## LIST OF ALL WASTE MATERIALS GOING OFF-SITE

One (1) cubic yard of diesel contaminated soil was excavated from the Biofacility and disposed of at the Base Landfill with prior EPD approval.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The Navy Representative (Tim Sears) informed MK that the restoration of SWMU's 25/07D, 16/16, and 24/00B will be accepted and approved. Sign-off forms will be completed by Friday.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

The Base Phone Department discovered that a twelve (12) pair phone cable is in service to the Biofacility. The need for MK to release two (2) more phone lines will not be required, but when the relocation takes place, a coordinated effort to maintain phone service will require phone service interruption due to equipment cut over. MK stated that a four (4) inch PVC conduit can be supplied for the road crossing to facilitate any future installation requirements of power, controls, or communications. The Base Phone Department stated that if this was done then the Base would supply an innerduct for the phone lines.

SETC's (SC-4324-049) subcontractor (The Rogers Group) will mobilize equipment to the Biofacility on Thursday or Friday in preparation to begin work activities on Monday, July 15, 1996. MK will have the Rogers' personnel badged on Friday.

U.S. Tech met with MK QCS to resolve QCS 010 letter. All concerns were closed out satisfactorily.

**DAILY REPORT FOR JULY 11, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/12/96) 86,700. No rain was recorded over night.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is continuing dirt work at the Biofacility. Bush Excavating is continuing to move fill to the west end of building #2 and #3. Bush started installing the gravel base (8 loads) on Bldg. #1. Compaction test of the fill areas are in progress.

SETC (SC-4324-054) is working on D.O.#0027; completed repairing the drain piping to the west sump, and the sanitary sewer piping. The drain pipe to the west sump was repaired in place. The area will be backfilled Friday morning.

SETC (SC-4324-054) is working on the east side of the trenches grading to the required cut depth.

MSE was at the DBC surveying the potholes that were dug to determine where possible dye is located.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (ATEC) performed four (4) nuclear density compaction tests at Bldg. #3. The four (4) of the tests performed on the North End of Bldg. #1 failed compaction tests. the gravel will require to be rolled (re-compacted) and then retested.

U.S. Tech (SC-4324-048) delivered to MK, three (3) sets of drawings that fulfill the open submittal items. MK will stamp "Approved for Construction" and distribute them the appropriate subcontractors.

## SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures, barricades, and taping.

Site tailgate Safety and POD meetings with U.S. Tech and Smith personal to review daily Health and Safety requirements.

## LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The Navy Representative (Tim Sears) informed MK that the restoration of SWMU's 25/07D, 16/16, and 24/00B will be accepted and approved. Sign-off forms will be completed by Friday.

The ROICC and MK walked down SWMU-02/11 where the potholing investigation was conducted. It was determined that work could continue on the east side of the trenches only. The ROICC, SOUTHDIV, EPD and the EPA will confer to decide what approach to take in resolving the issue of the new areas located with dye.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

The Weekly Progress Meeting was held at 1300 in CTR 12 conference room.

Smith will not be working SC-49 and 54 this weekend however U.S. Tech (Bush) will be working the Biofacility Saturday. Over time requests were turned to the ROICC noon today.

SETC's (SC-4324-049) subcontractor (The Rogers Group) will mobilize equipment to the Biofacility on Friday in preparation to begin work activities on Monday, July 15, 1996. MK will have the Rogers' personnel badged on Friday.

**DAILY REPORT FOR JULY 12, 13 and 14, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/15/96) 91,900. One inch rain was recorded over Sun. night.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) is continuing dirt work at the Biofacility. Bush Excavating is continuing to move fill to the west end of building #2 and #3. Bush installing the gravel base on Bldg. #1. Compaction test of the fill areas are in progress. Building #2 grade is complete, #3 will be completed with rock being compacted starting Monday.

SETC (SC-4324-054) is working on D.O.#0027; completed repairing the drain piping to the west sump, and the sanitary sewer piping. The drain pipe to the west sump was repaired in place. The area will be backfilled Friday morning.

SETC (SC-4324-054) is working on the east side of the trenches grading to the required cut depth (Did not work Sat. or Sun).

SETC (SC-4324-049) Rogers mobilized their equipment on site Friday to begin cut and grading activities Monday. MSE will be in 7/16/96 to survey Biofacility areas for Rogers.

The SWMU Acceptance and Turnover Form for physical work completed at SWMUs 24/00, 16/16 and 25/07D has been signed by the Navy site representatives and site MK (copy Attached).

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

The Construction Safety Audit (required by Navy QAD) was completed this week and there were no findings.

On 7/12/96 U.S. Tech (ATEC) performed nine (9) nuclear density compaction tests at Bldg. #3. 1 test failed compaction (#7) and was re-compacted, retested (#8) and passed.

On 7/13/96 U.S. Tech (ATEC) performed nine (8) nuclear density compaction tests at Bldg. #3. 1 test failed compaction (#5) and was re-compacted, retested (#6) and passed.

U.S. Tech (SC-4324-048) delivered to MK, three (3) sets of drawings that fulfill the open submittal items. MK will stamp "Approved for Construction" and distribute them the appropriate subcontractors.

MK QCS will be conducting an Audit (96-003) on Earth Exploration SC-4324-32 on Tuesday 7/16/96.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures (report attached), barricades, and taping.

Site tailgate Safety and POD meetings with U.S. Tech and Smith personal to review daily Health and Safety requirements.

Inspected all fire extingushers and smoke detectors in the trailers and trucks (report attached).

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The ROICC and MK walked down SWMU-02/11 (7/12/96) where the potholing investigation was conducted. It was determined that work will continue on the east side of the trenches only. The ROICC, SOUTHDIV, EPD and the EPA will confer to decide what approach to take in resolving the issue of the new areas located with dye. The resolution and action to be taken on these issues will be forth coming by 9/16/96.

Received keys to the locks for the gates at the landfill and Cast High Explosives.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

The Weekly Progress Meeting Relieved are attached to this report.

Smith was not working SC-49 and 54 this weekend however U.S. Tech (Bush) was working the Biofacility Saturday.

SETC's (SC-4324-049) subcontractor (The Rogers Group) will mobilize equipment to the Biofacility on Friday in preparation to begin work activities on Monday, July 15, 1996. MK will have the Rogers' personnel badged on Friday.

**DAILY REPORT FOR JULY 15, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/16/96) 91,900. One inch rain was recorded over Sun. night.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) not working today due to wet conditions.

SETC (SC-4324-054) is not working today due to wet conditions.

SETC (SC-4324-049) Rogers not working today due to wet conditions. MSE is scheduled to be here Tuesday morning to survey areas as required by Rogers.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (SC-4324-048) delivered to MK, three (3) sets of drawings that fulfill the open submittal items. MK will stamp "Approved for Construction" and distribute them the appropriate subcontractors.

MK QCS will be conducting an Audit (96-003) on Earth Exploration SC-4324-32 on Tuesday 7/16/96.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures (report attached), barricades, and taping.

Site Safety Orientation and QC Orientation was given to the U.S. Tech new SSHO.

MK Corp. Health and Safety Manager will be on site this week.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

At the Dye Burial Cap it was determined that work will continue on the east side of the trenches only. The ROICC, SOUTHDIV, EPD and the EPA will confer to decide

what approach to take in resolving the issue of the new areas located with dye. The resolution and action to be taken on these issues will be forth coming by 9/16/96.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

On reviewing the compaction results there was a question of compliance with frequency and number of test per cubic yards of backfill. The Engineer Of Record (Jacobs) was called for clarification of specification 02200, 3.6 D.1 or D.2 apply for the buildings. The clarification was D.2 "200 yds" applied for the building compaction test frequency.

**DAILY REPORT FOR JULY 16, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/17/96) 91,900. There was no water processed overnight.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) not working today due to wet conditions. U.S. Tech SSHO and Compaction tester are reviewing compaction reports verses required coverage to insure the correct amount of tests have been taken.

SETC (SC-4324-054) working today on grading the east side of the trenches and awaiting directions on grading the west side.

SETC (SC-4324-049) Rogers working today stripping and stock piling top soil. Smith is reworking and moving the silt fence in order for Rogers to strip the top soil (report attached).

MSE surveying the layout for the parking lot, office area, decon area, clearing boundaries, pond #2 and the center line for the amendment road.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (SC-4324-048) owes MK, three (3) sets of drawings that fulfill the open submittal items. MK stamped the one set "Approved for Construction" and stamp and distribute the copies when received.

MK QCS conducted an Audit (96-003) on Earth Exploration SC-4324-32 today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures (report attached), barricades, and taping.

Site Safety Orientation and QC Orientation was given to the U.S. Tech new SSHO.

MK Corp. Health and Safety Manager will be on site this week.

SETC has had the trailer set up company re-level the trailer and re-work the metal steps/railings to a sturdy/safe condition.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

At the Dye Burial Cap it was determined that work will continue on the east side of the trenches only. The ROICC, SOUTHDIV, EPD and the EPA will confer to decide what approach to take in resolving the issue of the new areas located with dye. The resolution and action to be taken on these issues will be forth coming by 9/19/96.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

On reviewing the compaction results there was a question of compliance with frequency and number of test per cubic yards of backfill. The Engineer Of Record (Jacobs) was called for clarification of specification 02200, 3.6 D.1 or D.2 apply for the buildings. The clarification was D.2 "200 yds" applied for the building compaction test frequency.

**DAILY REPORT FOR JULY 17, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/18/96) 91,900. There was no water processed overnight.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) working today stock piling top soil. Compaction testing was conducted on buildings #1 and #2. U.S. Tech SSHO and Compaction tester have reviewed compaction reports verses required coverage to insure the correct amount of tests had been taken.

SETC (SC-4324-054) working today on grading the east side of the trenches and awaiting directions on grading the west side.

SETC (SC-4324-049) Rogers working today stripping and stock piling top soil. Smith is reworking the silt fence per. direction of MK. Rogers removed the soft spot in SE area and is compacting back and pushed out the manholes up stream from #5 M/H.

MSE completed surveying the layout for the parking lot, office area, decon area, clearing boundaries, pond #2 and the center line for the amendment road.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (SC-4324-048) owes MK, three (3) sets of drawings that fulfill the open submittal items. MK stamped the one set "Approved for Construction" and stamp and distribute the copies when received.

MK QCS requested compaction testing of areas not requiring backfill on buildings #1 and #2. These tests were conducted in building #1 (3 tests), #2 (2 tests) and all tests were satisfactory (>95% compaction).

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures (report attached), barricades, and taping.

MK Corp. Health and Safety Manager is on site this week.

All subcontractor equipment is inspected daily with reports attached.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

At the Dye Burial Cap it was determined that work will continue on the east side of the trenches only. The ROICC, SOUTHDIV, EPD and the EPA will confer to decide what approach to take in resolving the issue of the new areas located with dye. The resolution and action to be taken on these issues will be forth coming by 9/19/96.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

On reviewing the compaction test requirements there was a question of testing areas other than requiring backfill i.e. cut areas. The Engineer Of Record (Jacobs) was called for clarification of specification 02200 as testing of cut areas not requiring. These areas should be compaction tested prior to laying the rock backfill however is not defined in the specification.

Communication with PMO gathered the following information, it probably will be necessary to continue exploration excavation at the DBC (possibility up to 100 additional small excavations). This may result in a significant scope and design change to the Dye Burial Cap. The Navy and the IEPA would be conferring on Thursday 7/18/96 and technical direction would be forth coming.

**DAILY REPORT FOR JULY 18, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/19/96) 92,300. There was 400 gallons of water processed today.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) working today stripping soil around building #2 and #3 to be stock piled in the designated area. There was no compaction testing conducted today.

SETC (SC-4324-054) working today on grading the east side of the trenches. They have reached a point where further work is awaiting directions on grading the west side.

SETC (SC-4324-049) Rogers working today stripping and stock piling soil.

Earth Exploration will be in Monday (7/22/96) to conduct compaction tests for SETC and MK.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (SC-4324-048) owes MK, three (3) sets of drawings that fulfill the open submittal items. MK stamped the one set "Approved for Construction" and stamp and distribute the copies when received.

MK QCS has requested Earth Exploration to conduct random "QC" compaction testing of areas around and in buildings #1. #2 and #3.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures (report attached), barricades, and taping.

MK Corp. Health and Safety Manager is on site this week.

All subcontractor equipment is inspected daily with reports attached.

Noise monitoring was conducted on the 815 compactor at the Biofacility.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

At the Dye Burial Cap it was determined that work will continue on the east side of the trenches only. The ROICC, SOUTHDIV, EPD and the EPA will confer to decide what approach to take in resolving the issue of the new areas located with dye. The resolution and action to be taken on these issues will be forth coming by 9/19/96.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

The Weekly Meeting was held at 1430 in CTR 12 Conference Room. The meeting minutes will be attached to the Daily Report for 7/19/96.

**DAILY REPORT FOR JULY 19, 20, 22, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/22/96) 94,000. There was 1,700 gallons of water processed over the weekend.

U.S. Tech (SC-4324-048) subcontractor (Bush Excavating) working today (7/19/96) stripping soil around building #1 and #2 to be stock piled in the designated area, backfilling and compaction testing. Due to wet conditions Bush was not working Saturday.

SETC (SC-4324-054) working today (7/19/96) on grading the east side of the trenches. They have reached a point where further work is awaiting directions on grading the west side. Letter (MKC/SMT-005) was received today (7/19/96) stating the "Suspension of Base Work" effective at 1400 on 7/19/96.

SETC (SC-4324-049) Rogers working today (7/19/96) stripping, stock piling and backfilling. SETC (Rogers) are not scheduled to work the weekend.

Earth Exploration will be in Monday (7/22/96) to conduct compaction tests for SETC and MK.

A side note the "plug" for the east sump at SWMU 16/16 had been installed about two weeks ago.

SUMMARY OF SAMPLING AND TESTING

There were no samples collected today.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (SC-4324-048) owes MK, three (3) sets of drawings that fulfill the open submittal items. MK stamped the one set "Approved for Construction" and stamp and distribute the copies when received.

MK QCS has requested Earth Exploration to conduct random "QC" compaction testing, Monday, of areas around and in buildings #1. #2 and #3.

Completed the Construction Safety Audit for this week (report attached).

Reviewed the compaction reports, 5 tests conducted-3 failed, verified equipment calibration and control.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures (report attached), barricades, and taping.

MK Corp. Health and Safety Manager is on site this week.

All subcontractor equipment is inspected daily with reports attached.

SWMU 02/11 has been secured with fencing, barricades, signs and taping. Erosion controls will be checked by the SETC SSHO as required.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Instructions and guidance received form the Government are in the Weekly Progress Meeting Minutes included with this report.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Letter MKC/SMT-005 stating "Suspension of Base Work" at the Dye Burial Cap was received on 7/19/96.

**DAILY RÉPORT FOR JULY 22, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the reading was (7/23/96) 94,000. There was no water processed today.

U.S. Tech (SC-4324-048) not working today (7/22/96) due to wet soil conditions from rains received over the weekend.

SETC (SC-4324-049) EEI obtaining soil samples today (7/22/96) for moisture-density evaluation.

Earth Exploration will be in Wednesday (7/24/96) to conduct compaction tests for SETC and MK.

MK and US Tech SSHO reviewed requirements to complete SWMU 26/08D.

SUMMARY OF SAMPLING AND TESTING

There was one sample collected today (7/22/96) from both the central and east sump at Cast High SWMU-16/16 for analysis of volatiles. No water was present in the west sump, therefore no sample was obtained.

SUMMARY OF QUALITY CONTROL CONCERNS

U.S. Tech (SC-4324-048) owes MK, three (3) sets of drawings that fulfill the open submittal items. MK stamped the one set "Approved for Construction" and stamp and distribute the copies when received.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected all active SWMUs and the Biofacility erosion control measures (report attached), barricades, and taping.

All subcontractor equipment is inspected daily with reports attached.

SWMU 02/11 and Biofacility were inspected for erosion controls by the SETC SSHO (inspection reports attached).

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions and guidance received form the Government today (7/22/96).

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MKC E-mail letters (attached) concerning purchase of the hopper/conveyor, status of work at SWMUs and Biofacility, and conversation with SOUTHDIV.

**DAILY REPORT FOR JULY 23, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 the meter reading on the air stripper at SMWU 16/16 (Cast High) was (7/24/96) 94,000. There was no water processed today.

U.S. Tech (SC-4324-048) not working today.

SETC (SC-4324-049) Rogers Group cutting and grading at Biofacility, including drainage swales south of Bldg. #3 and on east side of job site, and removing mud from weekend rains.

Earth Exploration will be in Thursday (7/25/96) to conduct compaction tests for SETC and MK.

Sent FAX to U.S. Tech on confirmation of analysis from SWMU 26/08D, to locate disposal company, and to profile waste as hazardous or special waste.

SUMMARY OF SAMPLING AND TESTING

No samples were obtained today.

SUMMARY OF QUALITY CONTROL CONCERNS

Received three (3) sets of drawings from U.S. Tech (SC-4324-048) that fulfill the open submittal items. MK stamped them "Approved for Construction" and distributed the copies.

SETC (SC-4324-049) Bertram Electric delivered conduit and two spools of wire but were not placed in designated area or on dunnage. MK will request SETC to correct.

Evidence of trash in fill at northeast end of Bldg. #3 at Biofacility indicates fill was not clean. Will inspect further.

EPD directed MK on 7/19/96 to stay minimum 5 feet from well in amendment haul road at Biofacility until further notice.

No submittal from U.S. Tech for personnel from Castle who took site specific training.

Joe Skelton, SSHO for U.S. Tech completed first aid and CPR over weekend, copied Red Cross cards for completion of submittal on him.

## SUMMARY OF HEALTH AND SAFETY CONCERNS

SETC inspected erosion control measures at SWMU 02/11 Dye Burial ground (report attached).

All subcontractor equipment is inspected daily with reports attached.

## LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions and guidance received form the Government today.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MKC E-mail letter (attached) indicates Biofacility work plan should be approved by Region V EPA week of 7/29/96. Letter from MK Sr. Subcontract Admin. (attached) to SETC (SC-4324-054) for suspension of work at dye burial ground.

MORRISON KNUDSEN CORPORATION
ENGINEERING, CONSTRUCTION
& ENVIRONMENTAL GROUP

2420 MALL DRIVE
CORPORATE SQUARE ONE, SUITE 211
NORTH CHARLESTON, SC 29406
PHONE: (803) 554-0100
FAX: (803) 740-0160

RECEIVED
JUL 23 1996
MK-CRANE

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MKC/SMT-005

July 19, 1996

Smith Environmental Technologies, Inc.
1110 Howard Drive
Deer Park, TX 77536

Attention: Mr. David Lee

Subject: Subcontract No. SC-4324-054
Delivery Order 0009, Statement of Work 007, NSWC Crane, IN
Dye Burial Ground Cap **"Suspension of Base Work"**

Pursuant to Subcontract General Provisions (FAR) (48 CFR Chapter I) Federal Acquisition Register Clauses incorporated by reference, Clause Number (FAR) 52-212-12 entitled "Suspension of Work"; this letter serves as the official notice of Suspension of Work on the Dye Burial Ground Cap base work of the subject subcontract.

The Subcontractor shall immediately suspend all work and demobilize as directed herein. The effective time and date was established via telephone at 2:00 p.m. EDST, Friday, July 19, 1996. This communication was between the Subcontractor's on-site representative. Mr. John Lewis and MK Corporation Senior Subcontract Administrator, Mr. Willard D. "John" McCumbers. The suspension of work will be in effect until further notice.

You are to track all costs associated with this suspension of work and provide Mr. Steve Downey and Mr. Willard D. "John" McCumbers with a detailed (supported) cost proposal for any allocable and allowable costs incurred resulting from this "Suspension of Work", and demobilization action.

If you should have any questions, please contact Mr. Willard D. McCumbers at (803) 554-0905.

Sincerely,

Willard D. "John" McCumbers
Sr. Subcontract Administrator

**Acknowledgment of Receipt:**

_____
**Name**

_____
**Date & Time**

cc: B. Hlavacek/MK PMO
R. Thompson/MK PMO
M. Wilson/MK PMO
R. Edmister/MK Cleveland
S. Downey/MK Crane
S. Newman/MK PMO
D. Miller/MK Cleveland
J. Lewis/Smith, Crane, IN

File SC-4324-054
11-2.9

**DAILY REPORT FOR JULY 24, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (7/25/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 100,800. Rainfall event occurred in the evening and there were 6,800 gallons of water processed overnight. Grass in seeded/mulched area on south side of bldg. is growing and green.

U.S. Tech (SC-4324-048) not working today.

SETC (SC-4324-049) Rogers Group cutting and grading at Biofacility. Continuing to remove topsoil, excavating soft spots and replacing with clay and compacting, cutting along north side of amendment haul road.

Earth Exploration will be in Thursday (7/25/96) to conduct compaction tests for SETC and MK.

SUMMARY OF SAMPLING AND TESTING

No samples were obtained today.

SUMMARY OF QUALITY CONTROL CONCERNS

Discussed with SETC (SC-4324-049) materials laydown area. Bertram Electric will mobilize a flat bed trailer on Friday 7/26/96. Conduit and two spools of wire previously delivered will be placed behind the SETC on-site job trailer.

Inspection at Biofacility produced the following concerns:

Bldg. #1 - dirt under gravel is soft, north side still needs clay excavated to 15' out to start concrete form work;

Bldg. #2 - clay fill on west end was placed on top of existing grass and topsoil, cut and fill was not to the required distance of 15' out;

Bldg. #3 - clay fill on west end and south side was placed on top of existing grass and topsoil, cut and fill was not to the required distance of 15' out; evidence of brush and logs in top 8" lift at east end approx. 50' to 60' in from end of bldg.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility.

All subcontractor equipment is inspected daily with reports attached.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Memo received from SOUTHNAVFACENGCOM for approval to continue work at Biofacility while workplan is being reviewed by EPA (copy attached).

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Attached is a copy of the Biofacility equipment list stating purpose and urgency with respect to pilot scale operation.

Letter from MK to U.S. Tech (attached) expressing concern about work delays and decreasing number of days for their scheduled completion. Delays may impact subsequent contracts and start-up of facility.

MK inter-office memo outlines new schedule for weekly progress meeting.

MK transmittal letter lists information sent to J.E. Remediation Technologies, Inc. for completion of IMR for SMWU 23/00 and 24/00.

**DAILY REPORT FOR JULY 25, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

Pumped water at SMWU 16/16 (Cast High) from east sump to west sump to process through air stripper. As of 0630 (7/26/96) the meter reading on the air stripper was 106,700, with 5,900 gallons processed in last 24 hours.

U.S. Tech (SC-4324-048) Bush pulled off site today.

SETC (SC-4324-049) Rogers Group arrived on-site in morning but too wet from previous night's rain to work.

Earth Exploration not on-site, will reschedule for a later date.

SUMMARY OF SAMPLING AND TESTING

Three sets of water samples collected from the air stripper influent and effluent.

SUMMARY OF QUALITY CONTROL CONCERNS

Discussed with SETC (SC-4324-049) materials laydown area. Bertram Electric will mobilize a flat bed trailer on Friday 7/26/96. Conduit and two spools of wire previously delivered will be placed behind the SETC on-site job trailer.

An audit of Earth Exploration Inc. of Indianapolis was performed on July 16, 1996. The Quality Audit Report is being forwarded to MK PMO quality control for review (copy available upon request).

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.

All subcontractor equipment is inspected daily with reports attached.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received from the government.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Sent request to SETC (attached) requesting a proposal for redesign of amendment haul road including protective retaining wall around existing monitoring well.

Letter from MK Contract Admin. Mgr. to U.S. Tech (attached) expressing concern about lack of progress at NSWC Crane.

Weekly Progress Meeting was held in CTR-12 at 1200 hours. Meeting was held by conference call between PMO, SOUTHDIV, ROICC, EPD, and MK. Meeting minutes will be attached to Daily Report for 7/26/96.

**DAILY REPORT FOR JULY 26,27,&28, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

No water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (7/29/96) the meter reading on the air stripper was 106,700.

U.S. Tech (SC-4324-048) MSE on-site 7/26/96 surveying corner of all three buildings.

SETC (SC-4324-049) Rogers on-site 7/26/96 hauling dirt form area of sewers and organic matter from the soft spot on Bldg #3 to stockpile area at landfill. Replacing with fill and compacting.

SUMMARY OF SAMPLING AND TESTING

One set of water samples collected from behind the weir in the drainage ditch at SWMU 16/16.

SUMMARY OF QUALITY CONTROL CONCERNS

Material put down by Bertram Electric still on ground as of 7/26/96. Conduit and two spools of wire previously delivered will be placed behind the SETC on-site job trailer.

Completed Safety Audit for Contract #4324 (copy attached).

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
No US Tech representative on-site to supervise MSE.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received from the government.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly Progress Meeting was held in CTR-12 at 1200 hours. Meeting was held by conference call between PMO, SOUTHDIV, ROICC, EPD, and MK. Meeting minutes attached.

Met with U.S. Tech to discuss contractual disputes and overall progress of job. (meeting minutes attached).

MK correspondence on physical/chemical properties of dye from Dye Burial Ground is attached. Level D PPE is recommended for work at the site.

Monthly Project Status Report for July copy attached.

**DAILY REPORT FOR JULY 29, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

800 gallons of water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (7/30/96) the meter reading on the air stripper was 107,500.

U.S. Tech (SC-4324-048) not working today, held meeting to view Biofacility and discuss subcontractor work schedules. ATEC on-site but completed no compaction testing since US Tech completed no work to test.

SETC (SC-4324-049) Rogers finished hauling dirt form area of sewers and graded to drain. Sripped topsoil along amendment road.

Three more truck loads of steel arrived (total of 6).

SUMMARY OF SAMPLING AND TESTING

No samples obtained.

SUMMARY OF QUALITY CONTROL CONCERNS

Material delivered by Bertram Electric now satisfactorily stored on flat bed trailer behind SETC trailer.

Inspected questionable topsoil at Biofacility with US Tech, to be removed by US Tech.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.

All subcontractor equipment is inspected daily with reports attached.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received from the government.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Recieved FAX proposal from SETC for performing soil investigation at Dye Burial Ground.

Received FAX proposal from D TECH for TNT and RDX field kits.

Memo from EPD concerning monitoring well in amendment haul road at Biofacility, and initial equipment list for investigation at Dye Burial Ground.

**DAILY REPORT FOR JULY 30, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

No water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (7/31/96) the meter reading on the air stripper was 107,500.

U.S. Tech (SC-4324-048) not working today, held meeting to discuss subcontractor work schedules.

SETC (SC-4324-049) Rogers stripped topsoil along amendment road and unsuitable soil from Pond #2. Shut down after 1/2 day due to rain.

Four flat bed truck loads of steel arrived (total of 10 loads; 3 on 7/26, 3 on 7/29, and 4 on 7/30) for US Tech Castle.

SUMMARY OF SAMPLING AND TESTING

No samples obtained.

SUMMARY OF QUALITY CONTROL CONCERNS

EEI on-site to perform random QA/QC compaction testing at Biofacility.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received from the government.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Copy of letter attached from Castle Contracting (sub for US Tech) explaining their relationship to this job and reason Graber (concrete subcontractor) refused to perform work. MK understands that Graber refused to work was because it could not and would not meet the safety requirements required by MK. Castle is collecting bids from other concrete subcontractors and should know by end of this week on new sub. Castle will input a schedule by Monday, Aug. 5, 1996.

Meeting with MK, SETC, US Tech, and Rogers to discuss possibility of Rogers performing work for US Tech originally contracted to Bush. US Tech is to issue a 24 hour cure notice to Bush for remaining work contracted to Bush. US Tech has solicited Rogers to provide a proposal to complete the cutting and grading on the 15' area around the buildings.

Sent by FEDEX to Envirosolve the analytical data from SWMU 26/08D for hazardous and special waste characterization. Informed US Tech at meeting today that this was sent.

Requested from MSE the area footage at 2" deep for SWMU 26/08D.

Copy of the meeting minutes from 7/26/96 with US Tech and letter from US Tech dated7/23/96 are attached. This revised copy supercedes previous meeting minutes submitted with Daily Report for 7/26/96.

DAILY REPORT FOR JULY 31, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-63-D-1106

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

No water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (8/1/96) the meter reading on the air stripper was 107,500.

U.S. Tech (SC-4324-048) not working today, no response on updated work plan or which subcontractor will complete earth work around buildings (Bush or Rogers).

SETC (SC-4324-049) Rogers plowed up and recompacted parking area in northeast corner, stripped topsoil in Pond #1, and worked saturated soil in Pond #2 area.

SETC (SC-4324-049) Earth Exploration on-site to perform compaction testing (field notes attached).

MSE (SC-4324-023) on site to restake parking lot, Pond #2 & haul road, and set bottom elevations for ponds 1 & 2 (field notes enclosed).

SUMMARY OF SAMPLING AND TESTING

Samples obtained from SWMU 16/16 in sump beneath dock on east side building 146.

SUMMARY OF QUALITY CONTROL CONCERNS

FAXed square footage for SMWU 26/08D to US Tech (attached).

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received from the government.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Copy of letter from MK to ROICC concerning performance of US Tech at Biofacility attached.

Copy of Construction Interface Document and CID Disposition Report for change order to SETC to perform Dye Burial Ground investigation the week of Aug. 5, 1996 attached.

Met with ROICC, EPD, Navy Water Dept. & Public Works, and Art Sandford of SOUTHDIV at SWMU 16/16 to discuss water draining into the sumps (meeting minutes attached).

DAILY REPORT FOR Aug. 1, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-63-D-1106

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

No water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (8/1/96) the meter reading on the air stripper was 107,500.

U.S. Tech (SC-4324-048) not working today, no response on updated schedule plan when subcontractors will complete earth work around buildings and construction of the buildings (Bush or Rogers).

SETC (SC-4324-049) Rogers disking areas to help dry the soil to satisfy compaction requirements. Stripping topsoil in Pond #1, and excavating for Pond #2.

SETC (SC-4324-049) Earth Exploration on-site to perform compaction testing (field notes attached).

MSE (SC-4324-023) on site to restake parking lot, Pond #2 & haul road, and set bottom elevations for ponds 1 & 2.

SUMMARY OF SAMPLING AND TESTING

Compaction testing was conducted randomly at the biofacility. The test results were all below 95% (required) with moisture content an average of 4% high, based on the proctor. Have requested two proctors to be conducted (2 types of soil in the area) and Rogers is disking the areas to enhance reducing moisture content.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at the present time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received from the government.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly Progress Meeting conference call between the Site, ROICC, EPD, SOUTHDIV and PMO was held 1200 (1300 EST) in CTR 12. Note this meeting will be held every Thursday via conference call at CTR 12 at 1200 (1300 EST, PMO). Meeting minutes are included in this Daily Report.

**DAILY REPORT FOR Aug. 5, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

No water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (8/5/96) the meter reading on the air stripper was 107,500.

U.S. Tech (SC-4324-048) not working today. Bush was supposedly to have been on site at 0700 but ended up as a no-show. U.S. Tech SSHO/Superintendent was on site all day. Status has not changed from Friday.

SETC (SC-4324-049) Rogers cut and filling rock entrance roads and cut east drainage swale. MSE surveying entrance drive, area to be paved and ditch along south side of buildings and ponds. EEI conducted two compaction tests, both tests results were >95%.

SETC (SC-4324-054) conducting auguring investigations at SWMU-02/11 at the direction of the EPD, EPA, IDEM and MK. Ten (10) locations (points), sixteen (16) holes were augured and two (2) holes exhibited dye.

SUMMARY OF SAMPLING AND TESTING

Compaction testing was conducted at the biofacility. The test results were all >95%.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at the present time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.

All subcontractor equipment is inspected daily with reports attached.

Site safety orientation was held with the SETC employees who will be working with the EPD and EPA investigating the dye locations at SWMU-02/11.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The EPD and EPA met with MK and SETC to lay the scope of the investigation activities that will be conducted an SWMU-02/11. The EPD and EPA will maintain all logs and mapping (GPS will be utilized). MK may be requested to survey points. PPE will be modified level D or level C with respirators as warranted. Two team approached will be used. There are about 40 point (2 to 4 holes per point). MK and the EPD and EPA verified that all equipment requested was provided. Samples will be collected by the EPD and may request MK to send samples to the Compu Chem for analysis.

The objective of this investigation is to determine whether a new larger cap is required, several, or excavating areas of dye and relocate at the existing trenches.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

The MK QCS was notified that a transfer to NAS Glenview (DO-006) would occur on Aug. 14 1996. The ROICC was notified of this change.

**DAILY REPORT FOR Aug. 6, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

No water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (8/6/96) the meter reading on the air stripper was 107,500.

U.S. Tech (SC-4324-048) not working today. Rogers will be completing the Bush work however Rogers will start once there is a written agreement with U.S. Tech. Castle has issued a new contract for the concrete work however will not start until Aug. 19th. Received From U.S. Tech proposal for completion of additional remediation work at SWMU 26/08D. All issues are being reviewed by the site and PMO.

SETC (SC-4324-049) Rogers stripping and filling amendment road and amendment storage area.

SETC (SC-4324-054) conducting auguring investigations at SWMU-02/11 at the direction of the EPD, EPA, IDEM and MK. Request for additional equipment (small excavator) was approved via letter of direction from the ROICC. Investigations were conducted far end of ridge to the west of the trenches and across from the magazine at the entrance of ABG. A total of 16 points, 28 holes were dug and no trace of dye was located.

SUMMARY OF SAMPLING AND TESTING

There was no sampling or testing conducted today.

SUMMARY OF QUALITY CONTROL CONCERNS

There are no Quality Control concerns at the present time.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.

All subcontractor equipment is inspected daily with reports attached.

Site safety orientation was held with the SETC employees who will be working with the EPD and EPA investigating the dye locations at SWMU-02/11.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The EPD, EPA, MK and SETC held POD prior to starting investigation. Considering the weather, precaution for heat stress has dictated PPE as conditions warrant (down graded to level D with booties), areas to be investigated and equipment to be utilized.

The objective of this investigation is to determine whether a new larger cap is required, several, or excavating areas of dye and relocate at the existing trenches.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Keeping the ROICC and PMO updated on status of contract/work activities.

**DAILY REPORT FOR Aug. 7, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

No water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (8/8/96) the meter reading on the air stripper was 107,500.

U.S. Tech (SC-4324-048) not working today. Rogers will be completing the Bush work however Rogers will start once there is a written agreement with U.S. Tech. Castle has issued a new contract for the concrete work however will not start until Aug. 19th. Received From U.S. Tech proposal for completion of additional remediation work at SWMU 26/08D. All issues are being reviewed by the site and PMO.

SETC (SC-4324-049) Rogers stripping and filling south end, 15', from buildings (was Bushes work) There soft, top soil and grassy areas to be removed .

SETC (SC-4324-054) conducting auguring investigations at SWMU-02/11 at the direction of the EPD, EPA, IDEM and MK. Request for additional equipment (small excavator) was approved via letter of direction from the ROICC. Equipment was on the site at 0900. Proceeded to investigate areas to the west and south of the trenches. No dye was located investigation will proceed closer to the trenches (south). Investigation has been slow (3' to 4' depth) through roots, rock and hard soil and in some cases having to "cut" a path. Personnel were split into 3 crews; 2 men on the backhoe, 1 man and EPA on hand augering and 3 men/EPD on power augering. No dye detected within a few feet of previously pothole where dye was discovered. Late in the day dye was found (where yellow dye was located) in south end of the area. Crews went to level c PPE and used backhoe to start delineating the extent. Will proceed Thursday with investigation in this area.

SUMMARY OF SAMPLING AND TESTING

There was no sampling or testing conducted today.

SUMMARY OF QUALITY CONTROL CONCERNS

Problems of unacceptable fill on buildings #1, #2 and #3 (ref daily reports July 23rd and 24th). U.S. Tech is fully aware of the concern.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The EPD, EPA, MK and SETC held POD status update at CRT 12 prior to starting today. Discussed any extra equipment that may be required or the items needed to be restock. EPA will be working through friday. Considering the weather, precaution for heat stress has dictated PPE as conditions warrant (down graded to level D with booties), areas to be investigated and equipment to be utilized.

The objective of this investigation is to determine whether a new larger cap is required, several caps, or excavating areas of dye and relocate at the existing trenches.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Keeping the ROICC and PMO updated on status of contract/work activities.

U.S. Tech and Castle wants meeting with MK on Friday tentatively at 1400. will need PMO in on this meeting.

Received from SETC the design and proposal for the protective wall for the well at the biofacility.

**DAILY REPORT FOR Aug. 8, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

No water pumped at SMWU 16/16 (Cast High) through air stripper. As of 0630 (8/9/96) the meter reading on the air stripper was 107,500.

U.S. Tech (SC-4324-048) not working today. Rogers started with the outside 15' at the south end of building #1 cutting and grading. As work proceeded it was determined that building #1 had been backfilled, by Bush, over an unacceptable sub base. U.S. Tech ordered for Rogers to stop work on the buildings.

SETC (SC-4324-049) Rogers stripping and filling south end, 15', from buildings (was Bushes work) There soft, top soil and grassy areas to be removed .

SETC (SC-4324-054) conducting auguring investigations at SWMU-02/11 at the direction of the EPD, EPA, IDEM and MK. One crew with the power auger sampling north of the magazine, no dye was located. second crew was sampling to the west of the trenches using the backhoe and the hand auger, no dye located. In the afternoon one crew with backhoe and hand auger working on the west end on the west side of the dirt mound. Purple dye 20' to the west of the last test trench dug several weeks ago. Dye does not appear to be under the road. Second crew is working up toward the bunker with the power auger trying to define the limits in this area. No dye has been located on the south side of the trenches. Crew at the west end continuing to find purple dyes the go west. Will define northern limits Friday.

SUMMARY OF SAMPLING AND TESTING

There was no sampling or testing conducted today.

SUMMARY OF QUALITY CONTROL CONCERNS

Problems of unacceptable fill on buildings #1, #2 and #3 (ref daily reports July 23rd and 24th). U.S. Tech is fully aware of the concern. NCR 0009-02 has been issued to identify, control and resolve the issue of non-compliance with specification 02200 on sub contract 048. Details are documented in daily reports from the sub contractors (attached).

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

The EPD, EPA, MK and SETC held POD status update at CRT 12 prior to starting today. Discussed any extra equipment that may be required or the items needed to be restock. EPA will be working through friday. Considering the weather, precaution for heat stress has dictated PPE as conditions warrant (down graded to level D with booties), areas to be investigated and equipment to be utilized.

The objective of this investigation is to determine whether a new larger cap is required, several caps, or excavating areas of dye and relocate at the existing trenches.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Keeping the ROICC and PMO updated on status of contract/work activities.

U.S. Tech and Castle wants meeting with MK on Monday afternoon at 1300 (tentatively), PMO will join this meeting via conference call.

Received from SETC the design and proposal for the protective wall for the well at the biofacility.

**DAILY REPORT FOR Aug. 9,10, & 11, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/9/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 111,200, 3,700 gallons pumped the morning of 8/9/96.

U.S. Tech (SC-4324-048) not working today. Bush Excavating, sub for US Tech, on-site without permission. Met with US Tech to discuss which sub-contractors will finish the job for US Tech.

SETC (SC-4324-049) Rogers digging out Pond 2, filling west end of bldgs 1,2 &3 and Pond #1. Uncovered additional buried lithium batteries at 1145 hrs. while digging Pond #2. The area was barricaded and covered with plastic.

SETC (SC-4324-054) concluded auguring investigations at SWMU-02/11 under the supervision of the EPD, EPA, and MK. Crews continued to use hand augers, powered augers, and the small backhoe to deliniate area of contamination. Efforts today concentrated on area in the woods to the north of the trenches. Dye found Monday at location #5 was apparently at the end of a small trench running perpendicular to the trenches. An isolated area of dye and a small drum was located just east of the #5 trench.

SUMMARY OF SAMPLING AND TESTING

There was no sampling or testing conducted today.

SUMMARY OF QUALITY CONTROL CONCERNS

Problems of unacceptable fill on buildings #1, #2 and #3 (ref daily reports July 23rd and 24th). U.S. Tech is fully aware of the concern. NCR 0009-02 has been issued to identify, control and resolve the issue of non-compliance with specification 02200 on sub contract 048. Details are documented in daily reports from the sub contractors (attached).

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Carol Witt-Smith of the EPA indicated she was pleased with the performance of work at the Dye Burial Grounds during the dye investigation.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

U.S. Tech and Castle wants meeting with MK on Monday afternoon at 1300 (tentatively), PMO will join this meeting via conference call.

Three SETC crew members were requested by MK to remain on standby over the weekend for possible cleanup activities related to the lithium battery discovery.

Attached is an E-mail received from MKEnvironmental discussing a fatality of a Navy Public Works employee while performing an underground storage tank removal.

DAILY REPORT FOR Aug. 12, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC CRANE, INDIANA

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/13/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 111,200.

U.S. Tech (SC-4324-048) not working today. US Tech gave Rogers Group go ahead to perform earth work originally to be completed by Bush Excavating.

SETC (SC-4324-049) Rogers cut 3:1 slope along north edge of parking area, continuing to cut and grade site. Three technicians on stand-by awaiting directions for cleanup of lithium batteries.

SETC (SC-4324-049) EEI performed field density testing (field notes attached).

SUMMARY OF SAMPLING AND TESTING

One soil sample (consisting of four jars) was obtained of the soil/sludge at the lithium battery site (uncovered Friday, Aug. 9). Sent for RCRA and landfill characterization. Field density testing performed by EEI indicated that satisfactory compaction was achieved by Rogers.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Meeting minutes from weekly meeting held Aug. 8, 1996 attached.

Held meeting with MK, US Tech, and subcontractors for construction of the Biofacility. Agreed on a tentative work schedule to facilitate construction of the buildings. To accommodate erection of the steel structures, building #3 will be completed first, not building #1 as previously planned. The intent is to complete bldg. #3 to ensure that pilot scale start-up commences on schedule. Completion of the facility will be ongoing during pilot scale operation. US Tech is to provide a revised work schedule to MK on 8/13/96. Commencement of concrete work is tentatively scheduled for 8/19/96.

Construction Interface Document ~~and CID Disposition Report~~ PDC for SWMU 14/00 lithium battery site is attached.

**DAILY REPORT FOR Aug. 13, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/14/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 111,200.

U.S. Tech (SC-4324-048) Rogers stripping unacceptable topsoil from bldg #3 (placed by previous subcontractor), filling and recompacting. Stripped 15' area outside bldgs and topsoil from around manholes on south side of bldg #3.

SETC (SC-4324-049) three technicians on stand-by awaiting directions for cleanup of lithium batteries.

SUMMARY OF SAMPLING AND TESTING

No sampling or testing completed today.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Construction Interface Document and CID Disposition Report for SWMU 14/00 lithium battery site is attached, supercedes CID attached with yesterday's daily report.

DAILY REPORT FOR Aug. ~~13~~ 14, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC CRANE, INDIANA

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/15/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 112,000, 800 gallons pumped from west sump. Barricades and caution tape were removed. Seeded area was approved by Navy OICC.

U.S. Tech (SC-4324-048) Rogers stripping unacceptable topsoil from bldg #3 and west end of bldg #2 (placed by previous subcontractor), filling and recompacting.

U.S. Tech (SC-4324-048) ATEC on-site to test compaction on bldg #3 completed by Rogers.

SETC (SC-4324-049) three technicians on stand-by for cleanup of lithium batteries tomorrow. One rolloff and the backhoe were delivered to the site, a second rolloff is scheduled to be delivered tomorrow morning. MK picked up seven wooden crates for placing battery parts into.

SETC (SC-4324-049) Rogers fill bldg #3 and compact, cut swale along south side of Pond #2, and fill west end of bldg #2 & #3.

SUMMARY OF SAMPLING AND TESTING

No sampling completed today. ATEC on-site for US Tech to perform field density based on modified proctor. Results have not yet been submitted to MK.

SUMMARY OF QUALITY ~~CONTROL~~ CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

E-mail from OICC Brent Robertson on the dangers of using radio transmitters in prohibited areas.

E-mail from Steve Downey of MK discussing the tentative schedule for completion of the Biofacility based on the meeting with US Tech. Also addressed is the cleanup of the lithium batteries and possible avenues for completing the Dye Burial Cap.

DAILY REPORT FOR Aug. 15, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-63-D-1106

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/15/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 112,000.

U.S. Tech (SC-4324-048) Rogers filling and recompacting on bldg #3.

U.S. Tech (SC-4324-048) ATEC on-site to test compaction on bldg #3 completed by Rogers.

SETC (SC-4324-049) three technicians excavating contaminated soil from the lithium battery site and placing it into three rolloff boxes. Rolloffs were moved to the landfill area to await waste characterization for disposal. Filled 14 plastic lined wooden crates with battery parts to be disposed of by EOD.

SETC (SC-4324-049) Rogers filled west end of bldgs and compacted, and cut swale along amendment haul road.

SUMMARY OF SAMPLING AND TESTING

No sampling completed today. ATEC on-site for US Tech to perform field density based on modified proctor. All tests indicated sufficient compaction had been achieved.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today. Will need to receive an updated status from U.S. Tech on the profile and manifests for the hazardous and special waste at SWMU-26/08D.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Transmittal from Earth Exploration to MK regarding moisture density relations and daily construction monitoring summary.

US Tech assured MK Crane that its sub-tier originally scheduled to complete the concrete work at the Biofacility (Graber) will be on-site Monday morning Aug. 19, 1996.

**DAILY REPORT FOR Aug. 16 & 17, 1996**
***DELIVERY ORDERs 0009, 0024, 0027 and 0029***

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/19/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 112,000.

SETC (SC-4324-049) finished excavating contaminated soil from the lithium battery site and placing it into three plastic lined rolloff boxes. Rolloffs were moved to the landfill area to await waste characterization for disposal.

SETC (SC-4324-049) Rogers filled west end of bldgs 2 & 3 and compacted, and cut swale along amendment haul road.

U.S. Tech (SC-4324-048) Rogers finished filling and recompaction on bldg #3, haul off unsuitable soil from west end of bldg. #2, fill and compact.

U.S. Tech (SC-4324-048) MSE surveying bldgs 1, 2, & 3.

MSE (SC-4324-023) surveying lithium battery excavation and sampling points.

SUMMARY OF SAMPLING AND TESTING

Obtained ten soil confirmatory samples from the lithium battery excavation for analysis of Appendix IX metals and lithium.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Minutes of weekly progress meeting held Aug. 15, 1996 attached.

**DAILY REPORT FOR Aug. 19, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/20/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 112,000.

SETC (SC-4324-049) Rogers filled west end of bldgs 2 & 3 and compacted, and cut swale along amendment haul road.

U.S. Tech (SC-4324-048) Rogers fine grade and compact north end of bldg #3, fill and compact west end of bldg #2..

U.S. Tech (SC-4324-048) A-Tech testing compaction on bldg #3.

US Tech (SC-4324-048) Graeber received site specific health and safety training, moved job trailer on-site.

SUMMARY OF SAMPLING AND TESTING

Field density testing performed by A-Tech indicated compaction to 95% of a modified proctor.

SUMMARY OF QUALITY CONTROL CONCERNS

A visual inspection of the steel delivered for the Biofacility indicated that some of the welds are not satisfactory. A set of fabrication drawings indicating welding details is required to complete QC inspections of delivered material.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Graeber Agri-Builders (sub-tier for US Tech) received site specific health and safety training.

Steve Downey, PM at MK Crane, will be at PMO through Friday 8/23/96. Marvin Chidester is acting PM during his absence (E-mail attached).

Jim Peters, MK QCI, arrived on-site to perform QCI duties during concrete and building erection work at the Biofacility.

**DAILY REPORT FOR Aug. 20, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/20/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 112,000.

SETC (SC-0324-049) brought backhoe to SWMU 26/08D to knock down weeds and lay out site for MSE to survey areas of contamination.

SETC (SC-4324-049) Rogers fill to grade at bldgs 1 & 2, decon area, and office trailer area; cut to grade around well in amendment haul road.

U.S. Tech (SC-4324-048) Rogers cut out unsuitable fill at west end of bldgs 1 & 2.

U.S. Tech (SC-4324-048) Graeber on-site to layout footings at bldg #3.

SUMMARY OF SAMPLING AND TESTING

No sampling or testing performed today.

SUMMARY OF QUALITY CONTROL CONCERNS

MK reviewed the concrete layout drawings and details for compliance with standards and specifications. A detail change was found on the drawings after prior approval. The design contractor will be required to formally transmit a change request for review and approval prior to performing the work involved with the detail.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

No activity today.

**DAILY REPORT FOR Aug. 21, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/20/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 112,000.

SETC (SC-0324-049) obtained composite samples of hazardous and special waste areas at SWMU 26/08D for landfill waste characterization. Five rolloff boxes were delivered to site.

SETC (SC-4324-049) Rogers fill, grade, and compact office area, decon, and entrance; fill and compact west end of bldgs 1 & 2; cut swale on south side of project.

U.S. Tech (SC-4324-048) Rogers fill and compact at west end of bldgs 1 & 2.

U.S. Tech (SC-4324-048) Graeber on-site to layout and trench footings at bldg #3, brought in reinforcement steel and unloaded.

U.S. Tech (SC-4324-048) MSE set grades on bldg. #2.

MSE (SC-4324-023) layout trailer area, parking lot, driveways, and truck decon at Biofacility; lay out waste areas at SWMU 26/08D Dump site B.

SUMMARY OF SAMPLING AND TESTING

Smith Environmental obtained soil samples from SWMU 26/08D for waste characterization.

SUMMARY OF QUALITY CONTROL CONCERNS

MK awaiting clarification from US Tech on anchor bolt detail for concrete piers and water stop sealing methods for bldgs at Biofacility.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Inspected Erosion Control Measures at Biofacility and Dye Burial Ground. Subcontractor removed decontamination pad and replaced torn plastic at DBG.

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

Equipment delivered to site for Graeber lacks fire extinguishers, backup horns, and seat belts.

Held site specific safety training for Graber and Tri-County Builders crew members.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Held weekly conference call meeting between OICC, MK, EPD, SOUTHDIV, and PMO.

**DAILY REPORT FOR Aug. 22, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/23/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 112,000.

SETC (SC-0324-049) consolidated lithium battery parts into 12 crates and removed empty crates from site.

SETC (SC-4324-049) Rogers cut pond #2; fill and compact west end of bldgs 1,2, & 3; fine grade truck decon, office, and parking areas.

U.S. Tech (SC-4324-048) Rogers fill and compact at west end of bldgs 1 & 2.

U.S. Tech (SC-4324-048) Graeber digging trench for grade beams and piers on south side of bldg. #3, and tieing up re-steel for piers.

U.S. Tech (SC-4324-048) ATEC performing field density testing on west end of bldg #2.

SETC (SC-4324-054) measuring areas of dye contamination outside of trenches with MK and EPD; remove plastic from decon pad and replacing torn plastic over test holes with dye.

SUMMARY OF SAMPLING AND TESTING

ATEC field density tests on west end of bldg #2 met or exceeded the minimum project requirements of 95% of a modified proctor maximum dry density.

SUMMARY OF QUALITY CONTROL CONCERNS

US Tech sub-tier Graber changed the concrete pour schedule for the piers from a single monolithic pour shown on the drawings to four separate pours. MK questioned the validity of this procedure (including installation of water stop) and consequently the pour was canceled. Pour procedures will be clarified and approved before concrete placement proceeds.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Subcontractor removed decontamination pad and replaced torn plastic at DBG.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Field sketch of the dye contamination outside of the trenches at the Dye Burial Grounds is attached.

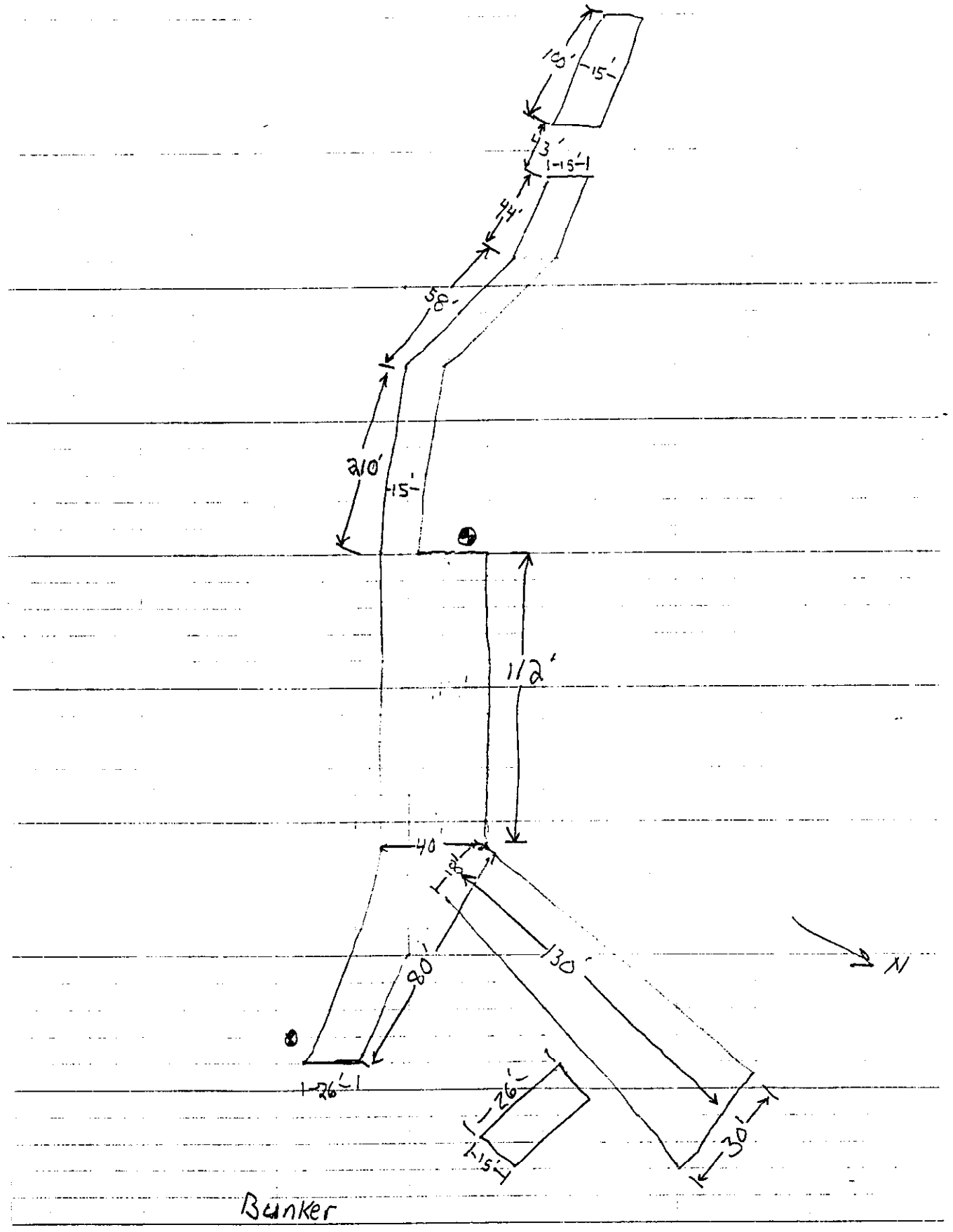
**MORRISON KNUDSEN CORPORATION**

Sheet 2

Project Dye Burial Ground — Contract No. — File No.

Feature Extra Dye Contamination — Designed — Date 8/22/96

Item — Checked — Date




ENG 375/91

**DAILY REPORT FOR Aug. 23, 24, & 25 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/26/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 121,500, 9,500 gallons pumped since stripper was turned on Friday evening 8/23/96. Rain measured 0.8" at CTR-12 and 1.5" at Biofacility.

SETC (SC-0324-049) finished consolidation of lithium battery parts from 14 crates into 12 crates.

SETC (SC-4324-049) Rogers cut south swale; fill and compact west end of bldgs. 1, 2, & 3.

U.S. Tech (SC-4324-048) Rogers fill and compact at west end of bldgs 1 & 2.

U.S. Tech (SC-4324-048) Graeber started digging trench for grade beams and piers on north side of bldg. #3.

U.S. Tech (SC-4324-048 ATEC on-site but unable to test concrete due to cancellation of pour.

SETC (SC-4324-054) site maintenance at DBG.

SUMMARY OF SAMPLING AND TESTING

ATEC scheduled to obtain concrete cylinders when Graber started placement of piers and grade beams, however pour was canceled and no samples were obtained.

SUMMARY OF QUALITY CONTROL CONCERNS

US Tech sub-tier Graber again changed the concrete pour schedule for the piers. Graber wanted to pour the piers to ground level as one 4' pier, thus eliminating the need to construct forms. MK determined this method was unacceptable since code would be violated and consequently the pour was canceled. A meeting at CTR-12 is scheduled for Monday morning 8/26/96 between MK, US Tech, Graber, Castle, and the PE for Castle to discuss and finalize the pour procedures.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Subcontractor removed decontamination pad and replaced torn plastic at DBG.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Preliminary analytical data on the waste characterization sample from SWMU 14/00 was Faxed to Crane by MK Cleveland. The data, which has not yet cleared MK QC checks, indicates lithium is the only constituent detected of concern for waste disposal.

**DAILY REPORT FOR Aug. 26 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/27/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 121,500.

SETC (SC-4324-049) Rogers fill bank on pond #1 and work on manholes.

U.S. Tech (SC-4324-048) Rogers cut bldg #2 to grade.

U.S. Tech (SC-4324-048) Graber pumping water and cleaning mud out of pier and grade beam trenches on bldg. #3.

MSE (SC-4324-023) surveyed new location for truck decon bldg 8' north of location indicated on drawings.

SUMMARY OF SAMPLING AND TESTING

No sampling or testing today.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Subcontractor removed decontamination pad and replaced torn plastic at DBG.

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

Equipment brought in by Graves Plumbing and Tri-County Builders lacks backup horns and seat belts.

Graves Plumbing employees received site specific safety and health training.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Meeting at CTR-12 with MK, US Tech and its sub-tiers was held to discuss changes to specification plans and drawings (meeting minutes attached).

Discussed location of truck decon bldg. with Jacobs Engineering. the bldg. was drafted in the proper location, however the coordinates were in error. The coordinates will be revised 8′ to the north.

**DAILY REPORT FOR Aug. 27 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/28/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 121,500.

SETC (SC-4324-049) Rogers fill bank on pond #1 and raised manholes.

U.S. Tech (SC-4324-048) Rogers cut and grade bldgs #1 & #2.

U.S. Tech (SC-4324-048) Graber finished digging footers on bldg. #3, and tying up rebar cages for piers.

SETC (SC-4324-049) off loaded rolloff boxes and began excavation of hazardous waste soil. Rolloffs are staged near site awaiting disposal approval.

SUMMARY OF SAMPLING AND TESTING

No sampling or testing today.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Subcontractor removed decontamination pad and replaced torn plastic at DBG.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No government instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK Crane received a safety milestone congratulations from MK Corporate for exceeding 20,000 man hours of work with an accident-free record.

MK Crane Project Manager received approval from MK PMO to proceed with work at SWMU 26/08D.

**DAILY REPORT FOR Aug. 28 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/29/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 121,500.

SETC (SC-4324-049) Rogers fill and grade the bank on pond #1, the west end of the bldgs., and the parking area.

U.S. Tech (SC-4324-048) Rogers grade and compact pads on bldgs #2 & #3.

U.S. Tech (SC-4324-048) poured approx. 34 yards of 3500 psi concrete on south side of bldg. #3.

SETC (SC-4324-049) continued work at SWMU 26/08D: off loaded rolloff boxes and excavated hazardous waste soil. Rolloffs are staged near site awaiting disposal approval. Excavated areas at SWMU 14/00 shown by previous analysis to be contaminated with chromium and nickel. Loaded contaminated soil into existing rolloff boxes staged at the landfill.

US Tech (SC-4324-048) MSE staking bldgs. #1 & #2.

US Tech (SC-4324-048) ATEC took concrete cylinders, air entrainment, and slump on concrete placed by Graber.

SETC (SC-4324-049) Tri County hit bedrock while excavating area for decon bldg.

SUMMARY OF SAMPLING AND TESTING

One soil sample was obtained from SWMU 14/00 from the north wall west end after excavation of contaminated soil. Two areas were shown by previous analysis to be contaminated (n wall w end and bottom middle), however the bottom was excavated down to bedrock, therefore no sample was obtained from the bottom.

SUMMARY OF QUALITY CONTROL CONCERNS

Another discrepency with the size of the steel rebar hoops used in the piers at the biofacility was resolved by MK Project Manager, US Tech, and Graber.

Tri County Builders was given a verbal approval from MK PMO to eliminate placement of #2 rock in bottom of sump since they encountered bedrock and place #53 rock only. Smith Environmental will submit a formal request.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Subcontractor removed decontamination pad and replaced torn plastic at DBG.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.
US Tech sub-tier Tri County Builders was warned about entering confined space excavation without a ladder.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

MK QCS met with Tom Brent of EPD to discuss sampling and analytical requirements for SWMU 14/00 (notes attached).

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

DAILY REPORT FOR Aug. 29 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-63-D-1106

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (8/30/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 121,500.

SETC (SC-4324-049) Rogers continued work on the bank on pond #1 and the west end of the bldgs. Dug the trench for the culvert under the amendment haul road.

U.S. Tech (SC-4324-048) Rogers grade and compact pads on bldgs #1 & #2.

U.S. Tech (SC-4324-048) Graber poured approx. 32 yards of 3500 psi concrete on remaining footers and piers on bldg. #3. Started layout and digging of footers on bldg. #2.

SETC (SC-4324-049) continued work at SWMU 26/08D: off loaded rolloff boxes and excavated hazardous and special waste soil. Started hand digging and sweeping bedrock under special waste area. Rolloffs are staged near site awaiting disposal approval.

US Tech (SC-4324-048) ATEC took concrete cylinders, air entrainment, and slump on concrete placed by Graber.

SETC (SC-4324-049) Tri County finished digging decon bldg. sump and placed #2 & #53 rock with compaction.

SUMMARY OF SAMPLING AND TESTING

No sampling today. ATEC testing concrete being placed by Graber at Biofacility.

SUMMARY OF QUALITY CONTROL CONCERNS

Concrete mix submitted by SETC for decon bldg. sump does not meet specification. SETC will submit revised mix for approval.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Subcontractor removed decontamination pad and replaced torn plastic at DBG.
All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

SOUTHDIV has authorized increased funding for cleanup at SWMU 26/08D (E-mail attached).

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly progress meeting minutes for Aug. 29, 1996 attached.

MORRISON KNUDSEN CORPORATION

ENVIRONMENTAL AND GOVERNMENT DIVISION

WEEKLY PROGRESS MEETING MINUTES

Contract N62467-93-D-1106, Delivery Order 0009; NSWC Crane Interim Measures Cleanup Weekly Progress Meeting Minutes for Aug. 29, 1996.

1. ATTENDEES:

| | |
|---|---|
| Christine Freeman | EPD |
| Bob Porter | MK Gen. Supt. |
| Peter Chevalier | MK QCI |
| Bob Hess | SOUTHDIV* |
| Bob Hlavacek | MK PMO* |
| Ron Thompson | MK PMO* |
| Tom Brent | EPD |
| Martin Wilson | MK PMO |

* - by telephone conference call

2. SCHEDULES, WORK PLANS, & COMMUNICATION

New MK General Superintendent scheduled to arrived at Crane 9/3/96.

Draft IMR for SWMU 14/00 and 17/00 was forwarded to MK PMO for comment.

3.ACTIVE PROJECTS:

SWMU 02/11

Waiting on Smith Environmental to draft a priced scope of work to excavate the dye contaminated soil and place it over the existing trenches. MK Project Manager suggests exploration to determine the depth of dye contamination, since excavation of all dye contaminated areas to a depth of 4' or more would result in a large volume of soil. The amount of contaminated soil present directly affects the redesign of the cap.

SWMU 10/15

MK will draft a priced scope of work for removal of asbestos wrapped steam pipes to facilitate removal of contaminated soil in the area of the pipes. This process will not delay excavation of other contaminated soil at the site.

SWMU-14/00 and 17/04

Waste characterization for the lithium battery waste is complete and disposal has been approved by Crane EPD.

SWMU-16/16

SOUTHDIV has requested MK to provide a proposal for a site investigation with a Geoprobe unit. EPD is considering the possibility of performing a soil vapor survey in the field north of bldg. 148. The underground storage tank in this area is the suspected source of TCE contamination.

SWMU-23/00

Draft IMR was received from Jacobs and is in Cleveland for MK review.

SWMU-24/00 B

The IMR due dates for SWMU 24/00A & B internal review is 10/10/96. 180 day due date to the regulator is 1/8/97.

SWMU-25/07D

The IMR due dates for SWMU 25/07D internal review is 10/10/96. 180 day due date to the regulator is 1/8/97.

SWMU-26/08D

Smith Environmental will complete excavation of hazardous and special waste soils by first week of Sept. 1996. Soils are staged in rolloff boxes awaiting disposal which is tentatively scheduled for Sept. 4, 1996. Approximately $33,000 remains in the original budget, however MK will need approval of additional funding to avoid an overcommitment.

Biofacility

Rogers Group continuing with cut, fill, and grade operations while working around the lithium battery excavation area. US Tech sub-tier Graber commenced excavation of footers, piers, and grade beams and placement of concrete in same on bldg. #3. Changes proposed by Graber to the pour schedule and pier steel rebar design were finalized. Smith has begun work on truck decon facility.

4. ISSUES:

MK Cleveland Environmental is preparing a bid package fro a new analytical lab for the Biofacility. The three labs which are pre-audited by the EPA will be the only labs solicited.

**DAILY REPORT FOR Aug. 30 & 31 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/3/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 121,500. 14,000 gallons were pumped in August and 227,000 gallons have been processed since the inception of the project.

SETC (SC-4324-049) Rogers fill and compact the bank on pond #1, fine grade the parking area, and work the west swale.

U.S. Tech (SC-4324-048) Rogers grade bldg. #1 pad.

SETC (SC-4324-049) finished cleanup of special waste area at SWMU 26/08D. Rolloffs are staged awaiting disposal approval.

SETC (SC-4324-049) Tri County formed up and tied steel for the sump floor on the decon bldg.

SUMMARY OF SAMPLING AND TESTING

No sampling or testing today.

SUMMARY OF QUALITY CONTROL CONCERNS

Revised concrete mix submitted by SETC for decon bldg. was approved by MK.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Tom Brent of EPD approved and signed waste disposal forms for disposal of hazardous waste from SWMU 26/08D, and special waste (lithium contaminated soil) from SWMW 14/00.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR SEPT. 3, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/4/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 121,500.

SETC (SC-4324-049) Rogers haul topsoil on slopes and cut parking area.

SETC (SC-4324-049) Tri County Builders placed concrete on the sump floor of the decon bldg., and excavated around the monitoring well in the haul road to pour the concrete retaining wall.

SETC (SC-4324-049) Graves Plumbing excavated along bldg. 2941 for installation of sewer line.

U.S. Tech (SC-4324-048) Rogers grade bldg. #1 pad.

U.S. Tech (SC-4324-048) Graber Agri-Builders continuing layout and excavation of footers, and tying of rebar cages on bldg. #2.

MSE (SC-4324-023) set survey stakes for monitoring well retaining wall, CMU wall, west edge of the pavement, and toe of slope at parking area.

SETC (SC-4324-049) coordinating and scheduling disposal of waste from SWMU 26/08D, and assisting MK is collection of confirmatory samples from site.

SUMMARY OF SAMPLING AND TESTING

Six confirmatory samples obtained from SWMU 26/08D sent to CompuChem for analysis.

SUMMARY OF QUALITY CONTROL CONCERNS

MK QCI issued two NCRs to SETC for sub-tier (Tri County Builders) work on the decon bldg. sump (copies attached). NCRs will be dispositioned after review by Jacobs Engineering (the engineer of record).

Installation of sewer pipe by SETC sub-tier (Graves Plumbing) was not to specifications. No NCR will be issued if work is corrected.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

SETC sub-tier cautioned about use of proper PPE while cutting and grinding rebar steel.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

There was no waste materials disposed of today

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

MK met with Tom Brent of EPD at SWMU 26/08D to discuss sampling and analytical requirements. Mr. Brent requested that a sample be collected from each of the three pits (one on the special waste side and two on the hazardous waste side) and a sweep sample be collected from each side. A total of six samples were collected. Mr. Brent requested analytical for total lead and total barium.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK, US Tech and its sub-tier Graber Agri-Builders met to discuss placement and compaction of rock for the building pads. Meeting minutes attached.

MK Project Manager met with OICC to review staffing plan for Biofacility operation and later reviewed the same with Crane EPD staff.

**DAILY REPORT FOR SEPT. 4, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/5/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 121,500.

SETC (SC-4324-049) Rogers cut parking area, cut east and west end of bldgs. #1 & #2, work on pond #1, cut swale on west end of bldgs.

SETC (SC-4324-049) Tri County Builders placed concrete on the sump floor of the decon bldg., and placed concrete footers on the monitoring well in the haul road.

U.S. Tech (SC-4324-048) Graber Agri-Builders finished layout and excavation of footers, and tying of rebar cages on bldg. #2, and placed approx. 95 yards of concrete on the south side of bldg. #2.

SETC (SC-4324-049) coordinating disposal of waste from SWMU 26/08D.

SUMMARY OF SAMPLING AND TESTING

ATEC on-site to perform concrete testing for concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

No status change on NCRs to SETC for sub-tier (Tri County Builders) work on the decon bldg. sump.

No status change on nstallation of sewer pipe by SETC sub-tier (Graves Plumbing) which was not to specifications. No NCR will be issued if work is corrected.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

Sound levels of the rebar cutting performed by Tri County Builders was measured at less than 85 db, therefore no hearing protection is required for this operation. Face shields are required during rebar cutting per Special Conditions of SC-4324-049.

Gave site specific health and safety training to three Tri County Builders employees.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

SETC manifested two rolloffs of hazardous waste from SWMU 26/08D for disposal at Heritage Environmental Services, Indianapolis, IN.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions recieved today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

No meetings today.

**DAILY REPORT FOR SEPT. 5, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/6/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 125,100.

SETC (SC-4324-049) Rogers cut parking area, haul topsoil for slopes, fill and compact bottom of pond #1.

SETC (SC-4324-049) Tri County Builders placed and tied rebar and placed water stop for the sump floor of the decon bldg., and formed the walls on the monitoring well in the haul road.

SETC (SC-4324-049) Graves Plumbing trenched from west end of landfill office to main entrance of biofacility, bedded sewer pipe under gravel road entrance with crushed rock.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed concrete on the north side of bldg. #2.

SETC (SC-4324-049) coordinating disposal of waste from SWMU 26/08D.

SUMMARY OF SAMPLING AND TESTING

ATEC on-site to perform concrete testing for concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

No status change on NCRs to SETC for sub-tier (Tri County Builders) work on the decon bldg. sump.

Installation of sewer pipe by SETC sub-tier (Graves Plumbing) corrected.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

SETC manifested four rolloffs of hazardous waste from SWMU 26/08D for disposal at Heritage Environmental Services, Indianapolis, IN.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly conference call with PMO canceled due to hurricane evacuation on the east coast. Weekly meeting held at CTR-12 with EPD meeting minutes included with Sept. 6 daily report.

**DAILY REPORT FOR SEPT. 6, 7,& 8, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/9/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 133,133.

SETC (SC-4324-049) Rogers worked site grade and drainage ditches, placed manhole extensions at southwest corner of bldg. #3, and worked on pond #1.

SETC (SC-4324-049) Tri County Builders placed 4.5 yards of concrete on the monitoring well retaining wall, and drilled holes and placed dowels with epoxy in decon bldg. sump floor.

SETC (SC-4324-049) Graves Plumbing installed water line from source to decon bldg. area.

U.S. Tech (SC-4324-048) Graber Agri-Builders dug trenches for footers on bldg. #1 and placed 20 yards of concrete on the south east side of bldg. #1.

U.S. Tech (SC-4324-048) ATEC testing for slump, air content, temperature, and took cylinders on concrete placed by Graber.

SETC (SC-4324-049) coordinating disposal of waste from SWMU 26/08D and SWMU 14/00, and moved MK lab trailer to biofacility.

MK Proj. Mgr. traveled to Knight Industries to inspect and witness demonstration of soil screener.

MK Proj. Mgr. prepared detailed staffing plan with ramp-up for pilot scale operation of the biofacility.

SUMMARY OF SAMPLING AND TESTING

ATEC on-site to perform concrete testing for concrete placed by Graber. Tri County Builders is recording slump, air content, and temperature, and taking cylinders on the concrete it places. MK will have the cylinders taken by Tri County tested for compression strength.

SUMMARY OF QUALITY CONTROL CONCERNS

Tri County placed straight rebar dowels in decon bldg. sump floor instead of L shaped rebar to tie existing slab into slab to be poured (NCR #049-004). MK will consult with Jacobs on acceptability of this design.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

SETC manifested two rolloffs of hazardous waste from SWMU 26/08D and three rolloffs from SWMU 14/00 for disposal at Heritage Environmental Services, Indianapolis, IN.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today. Digging permit for SETC issued by Navy OICC.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly meeting minutes for Sept. 5 meeting at CTR-12 with EPD attached.

**DAILY REPORT FOR SEPT. 9, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/10/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 138,953.

SETC (SC-4324-049) Rogers did not work (too wet)

SETC (SC-4324-049) Tri County Builders pumped water from decon bldg. sump in anticipation of placing concrete on Tuesday 9/10/96.

SETC (SC-4324-049) Graves did not work (too wet).

U.S. Tech (SC-4324-048) Graber Agri-Builders did not work (too wet).

SETC (SC-4324-049) coordinating disposal of waste from SWMU 26/08D.

SUMMARY OF SAMPLING AND TESTING

Sampled the east sump and the air stripper influent and effluent at SWMU 16/16 and sent for laboratory analysis.

SUMMARY OF QUALITY CONTROL CONCERNS

Tri County placed straight rebar dowels in decon bldg. sump floor instead of L shaped rebar to tie existing slab into slab to be poured (NCR #049-004). MK will consult with Jacobs on acceptability of this design.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

SETC manifested two rolloffs of hazardous waste and 1 rolloff of special waste from SWMU 26/08D for disposal at Heritage Environmental Services, Indianapolis, IN.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

*No instructions received today.*

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK Project Mgr. and Supt. inspected chicken and cow manure supplier sources. They determined that travel distances (60 + miles) may pose a problem for travel in winter. Supplier (Dayhoff) plans to stockpile a reserve supply at their facility which is much closer to Crane.

**DAILY REPORT FOR SEPT. 10, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/11/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 138,953.

SETC (SC-4324-049) Rogers drained standing water from work site.

SETC (SC-4324-049) Tri County Builders removed concrete forms from retaining wall in haul road, and poured 9 yards of concrete for decon bldg. sump floor.

U.S. Tech (SC-4324-048) Graber Agri-Builders did not work (too wet).

SETC (SC-4324-049) coordinating disposal of waste from SWMU 26/08D.

SUMMARY OF SAMPLING AND TESTING

No sampling performed today. Tri County performed its own concrete slump, air,and temperature testing.

SUMMARY OF QUALITY CONTROL CONCERNS

Tri County tied L shaped rebar to rebar mat and straight dowels in decon bldg. sump floor as per instructions from Jacobs Engineering.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

SETC manifested remaining two rolloffs of special waste from SWMU 26/08D for disposal at Heritage Environmental Services, Indianapolis, IN.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK, Crane EPD, SOUTHDIV, and EPA held a conference call to discuss work at Dump Site B, the Biofacility, and the Dye Burial Cap. E-mail on call is attached.

**DAILY REPORT FOR SEPT. 11, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/11/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 138,953.

SETC (SC-4324-049) Rogers installed 18" culvert at retaining wall and put 1 load of rip-rap at the outfall, and fine graded around pond #2.

SETC (SC-4324-049) Tri County Builders backfilled behind monitoring well retaining wall, and formed walls for sump walls on decon bldg.

U.S. Tech (SC-4324-048) Graber Agri-Builders finished placement of concrete on bldg. #1 south wall footers and placed concrete on east end of north wall of bldg #1 (27 yards total).

U.S. Tech (SC-4324-048) ATEC obtained one set of 3 compressive strength cylinders and tested slump, air, and temperature on concrete placed by Graber.

MSE (SC-4324-023) surveyed storm sewer pipes near amendment wall for SETC.

SETC (SC-4324-049) coordinated removal of remaining two empty rolloff boxes by Metropolitan Environmental from SWMU 26/08D.

SUMMARY OF SAMPLING AND TESTING

No sampling performed today. ATEC performing testing on concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

No QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Analytical results on sample #14/00-029 were determined by Tom Brent of Crane EPD to be below the Data Quality Levels releasing the lithium battery excavation area for final grading by Rogers.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

US Tech Supervisor drafted a tentative schedule for concrete and rock placement on the biofacility buildings.

MK Supervisor directed MSE to eliminate the drainage pipe under the access drive into the biofacility area. The area will be graded to either side of the drive for drainage.

**DAILY REPORT FOR SEPT. ~~11~~ 12, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/11/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 138,953.

SETC (SC-4324-049) Rogers installed 18" culvert at entrance to office parking area, and working wet area at pond #2.

SETC (SC-4324-049) Tri County Builders tied rebar and formed walls for decon sump walls.

U.S. Tech (SC-4324-048) Graber Agri-Builders finished tying rebar cages for piers on bldg. #1 and finished placement of concrete on bldg. #1 north wall footers and grade beams (26 yards total).

U.S. Tech (SC-4324-048) ATEC obtained one set of 3 compressive strength cylinders and tested slump, air, and temperature on concrete placed by Graber.

MK representative on-site to appraise and estimate removal of asbestos-wrapped piping from SWMU 10/15. This information will be used to assemble a bid package for a subcontract to remove the asbestos coated pipe.

SUMMARY OF SAMPLING AND TESTING

No sampling performed today. ATEC performing testing on concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

No QC concerns today. Randy Smith arrived today to assume position of Quality Control Supervisor.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Crane OICC Brent Robertson advised MK that only the asbestos coated pipe in the area of excavation at Rockeye shall be removed.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK QC staff and Proj. Mgr. met with Crane OICC and QC staff to discuss quality control concerns.

Held weekly conference call between MK, MK PMO, and SOUTHDIV.

Minutes of these meetings will be attached to the daily report for 9/13/96 which will be issued 9/16/96.

**DAILY REPORT FOR SEPT. 13, 14, & 15, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/16/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) prior to startup was 138,953. Rainfall as of 0630 9/16/96 was 1.3" at Cast High, Biofacility, and office trailers.

SETC (SC-4324-049) Rogers graded pond #2, south swale along bldg. #3, slopes around the office parking area, and the amendment haul road.

SETC (SC-4324-049) Tri County Builders tied rebar and formed walls for decon sump walls.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed rebar mat in sump floor of bldg. #3 and placed 4 yards of concrete, and started form work for slabs on south side of bldg. #3.

U.S. Tech (SC-4324-048) ATEC obtained one set of 3 compressive strength cylinders and tested slump, air, and temperature on concrete placed by Graber.

SUMMARY OF SAMPLING AND TESTING

No MK sampling performed today. ATEC performing testing on concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

No QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Minutes for quality control meeting with MK and Crane OICC, and weekly conference call are attached.

**DAILY REPORT FOR SEPT. 16, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 (9/17/96) the meter reading on the air stripper at SMWU 16/16 (Cast High) was 155,555. Rainfall total at Cast High was 2.1" since rain began Sunday night, Sept. 15, 1996.

SETC (SC-4324-049) Rogers did not work (too wet).
SETC (SC-4324-049) Tri County did not work (too wet).
U.S. Tech (SC-4324-048) Graber Agri-Builders did not work (too wet).
U.S. Tech (SC-4324-048) ATEC did not work (too wet).

SUMMARY OF SAMPLING AND TESTING

Sampled the air stripper influent and effluent after startup of the system, and sampled the east sump. Will sample the air stripper effluent after pumping the east sump into the west sump.

SUMMARY OF QUALITY CONTROL CONCERNS

No QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

No communications, interfaces, or meetings today.

**DAILY REPORT FOR SEPT. 17, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0900 on 9/17/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 155,555 before pumping contents of east sump into west sump and then through the air stripper. A total of 16,602 gallons of water were pumped from the west sump through the stripper (prior to pumping the east sump) and 4,212 gallons of water were pumped from the east sump to the west sump and through the stripper. A total of 20,814 gallons of water were processed through the air stripper from the 2.1" rainfall event of 9/15/96 & 9/16/96. End meter reading was 159,767.

SETC (SC-4324-049) Rogers did not work (too wet).

SETC (SC-4324-049) Tri County pumped water from the decon bldg. sump and continued forming the walls of the sump.

U.S. Tech (SC-4324-048) Graber Agri-Builders did not work (too wet).

U.S. Tech (SC-4324-048) ATEC did not work (too wet).

SUMMARY OF SAMPLING AND TESTING

Sampled the air stripper effluent after pumping approx. 500 gallons of water from the east sump through it. Results from Alt & Witzig for Tri County Builders on field compaction tests are attached.

SUMMARY OF QUALITY CONTROL CONCERNS

MK QCS met with a QC representative for A&S Bldg. Systems to inspect non-conformance welds on steel to be used for the biofacility buildings (report attached).

QC inspection report on Tri County Builders for the decon bldg. sump attached.

MK Proj. Mgr & Supt. witnessed demonstration of live bottom trailers and tub grinder. Demonstration was acceptable and two tracktors with live bottom trailers were delivered to site.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

No communications, interfaces, or meetings today.

**DAILY REPORT FOR SEPT. 18, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 on 9/18/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 159,767.

SETC (SC-4324-049) Rogers did not work (too wet).

SETC (SC-4324-049) Tri County did not work, will pour decon bldg. sump walls tomorrow.

U.S. Tech (SC-4324-048) Graber Agri-Builders did not work (too wet).

U.S. Tech (SC-4324-048) ATEC did not work (too wet).

Took delivery of 700 cubic foot tub grinder, QC receipt inspection will follow. The Navy will license and stencil all vehicles and equipment that is purchased for operation of the Biofacility.

Crane EOD destroyed lithium battery parts today.

Crane EPD gave approval to backfill excavations at SWMU 26/08D.

SUMMARY OF SAMPLING AND TESTING

No sampling or testing today.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

No communications, interfaces, or meetings today.

**DAILY REPORT FOR SEPT. 18, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0630 on 9/18/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 159,767.

SETC (SC-4324-049) Rogers graded the swale at the office parking area and along the amendment haul road.

SETC (SC-4324-049) Tri County poured 6.5 yards of concrete on decon bldg. sump wall.

U.S. Tech (SC-4324-048) Graber Agri-Builders installing forms on bldg. #3, and repairing water stop in sump of bldg. #3.

Site Safety and Health Officer for MK arrived today for temporary assignment through full scale operation of the biofacility.

MK Quality Control Supervisor held initial inspection meeting for concrete reinforcing and placement by Smith Environmental (minutes attached).

SUMMARY OF SAMPLING AND TESTING

No sampling or testing today.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Held weekly conference call between MK Crane, Crane OICC, Crane EPD, MK PMO, and SOUTHDIV (meeting minutes to be included with daily report for 9/20/96).

**DAILY REPORT FOR SEPT. 20 & 21, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 9/23/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 170,300. A total of 10,533 gallons of water were pumped from the west sump since Saturday morning. A total of 1" of rain fell at Cast High during the rain event from Friday night 9/20/96 through Saturday night 9/21/96. The east sump is approximately 3/4 full.

SETC (SC-4324-049) Rogers fine graded the office parking area and placed #2 rock along the amendment haul road.

SETC (SC-4324-049) surveyors at Dye Burial Ground for topographic survey of cap redesign.

SETC (SC-4324-049) Tri County dug the footer and poured 19.5 yards of concrete on amendment retaining wall.

U.S. Tech (SC-4324-048) Graber Agri-Builders installing forms on bldg. #3 sump, and working on sump of bldg. #2.

SUMMARY OF SAMPLING AND TESTING

Obtained influent and effluent water samples on Saturday 9/21/96 from the air stripper at Cast High at meter reading 161,000.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly conference call meeting minutes for 9/20/96 between MK Crane, Crane OICC, Crane EPD, MK PMO, and SOUTHDIV attached.

**DAILY REPORT FOR SEPT. 23, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 9/24/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 170,300.

SETC (SC-4324-049) Rogers not working today (too wet).

SETC (SC-4324-049) Tri County tied re-steel and continued forming the amendment retaining wall.

U.S. Tech (SC-4324-048) Graber Agri-Builders installing forms on all three bldgs., pumping water out of bldgs. #1 & #2 sumps, and placed 5 yards of concrete on bldg. #3 sump walls.

U.S. Tech (SC-4324-048) ATEC took 1 set of 3 compressive strength cylinders and tested for slump, air entrainment, and temperature on concrete placed by Graber.

SUMMARY OF SAMPLING AND TESTING

ATEC obtained samples of concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

No quality control concerns today. See attached follow-up inspections attached.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK Proj. Mgr. and Env. Spec. met with Garold Williams of Crane to discuss future sampling and excavation of contaminated soil at Rockeye and Mine Fills. Of concern is the stability of the structures adjacent to the planned excavation areas, and any possible limitation on access to certain areas due to Navy or Army ongoing activities. Mr. Williams indicated he will try to locate drawings which show foundation details for these areas.

Don Miller will be unable to report to Crane as previously planned due to his current work load in the Cleveland office. He will forward resumes of other potential candidates for our review.

**DAILY REPORT FOR SEPT. 24, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 9/25/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 170,300. Pumped east sump water into west sump.

SETC (SC-4324-049) Rogers grading berms and swales around site, and placing rock in amendment haul road.

SETC (SC-4324-049) Tri County formed the amendment road retaining wall, and stripped forms from decon bldg. walls.

U.S. Tech (SC-4324-048) Graber Agri-Builders excavated wet material from bldgs. #1 & #2 sumps, placed 5.5 yards of 4000 PSI concrete on bldg. #2 sump base, and removed forms on bldg. #3 sump walls.

U.S. Tech (SC-4324-048) ATEC performed field density on bldg. #2 sump, and took 1 set of 3 compressive strength cylinders and tested for slump, air entrainment, and temperature on concrete placed by Graber.

U.S. Tech (SC-4324-048) Webster Excavating spread approx. 620 tons of #53 rock for bldg. #3 slab.

SUMMARY OF SAMPLING AND TESTING

ATEC obtained samples of concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

Letter from A&S Building Systems stating building steel is acceptable as delivered is attached. MK scheduled ultrasonic testing on building steel welds for 9/27/96 (tentative).

Follow-up inspections on work performed today attached.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.

Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK letter to U.S. Tech and U.S. Tech response regarding extended work hours are attached.

**DAILY REPORT FOR SEPT. 25, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 9/25/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 170,300. Turned air stripper on in anticipation of forecasted rain.

SETC (SC-4324-049) Rogers grading east and west swales around site, and working stone on the amendment road.

SETC (SC-4324-049) Tri County formed and placed 30 yards of concrete on the amendment road retaining wall.

U.S. Tech (SC-4324-048) Graber Agri-Builders worked stone in base of bldg. #1 sump base, removed the forms and covered the concrete on bldgs. #2 & #3 sumps.

U.S. Tech (SC-4324-048) ATEC performed field density tests on bldg. #1 & #3 rock placed by Webster Excavating.

U.S. Tech (SC-4324-048) Webster Excavating spreading and compacting #53 rock for bldgs. #1 & #3 slab, and the north half of bldg. #2 slab.

Earth Exploration (SC-4324-032) performing field density tests on bldgs. #1 #2.

MK received delivery of the dump conveyor from Wilson Manufacturing.

SUMMARY OF SAMPLING AND TESTING

ATEC and Earth Exploration performed field density tests.

SUMMARY OF QUALITY CONTROL CONCERNS

Follow-up inspections on work performed today attached.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK letter to U.S. Tech and U.S. Tech response regarding extended work hours are attached.

**DAILY REPORT FOR SEPT. 26, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 9/26/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 172,600. 2,300 gallons of water pumped on 9/24/96 from the east sump were processed through the air stripper.

SETC (SC-4324-049) Rogers grading swales at west end of bldgs. and around pond #1.

SETC (SC-4324-049) Tri County backfilled behind the decon bldg. sump walls.

U.S. Tech (SC-4324-048) Graber Agri-Builders unable to work due to a discrepancy in the building hub elevations.

U.S. Tech (SC-4324-048) MSE verifying survey elevations of control point hubs.

SUMMARY OF SAMPLING AND TESTING

No sampling or testing performed today.

SUMMARY OF QUALITY CONTROL CONCERNS

Follow-up inspections on work performed today attached.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR SEPT. 27,28 & 29, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0900 on 9/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 198,000. Rain event started early Friday morning until mid-Saturday morning producing a total of 5.1" of rain at Cast High. East sump was pumped into west sump Friday 9/27/96 afternoon.

SETC (SC-4324-049) Rogers unable to work (too wet).
SETC (SC-4324-049) Tri County unable to work (too wet).
U.S. Tech (SC-4324-048) Graber Agri-Builders unable to work (too wet).

SUMMARY OF SAMPLING AND TESTING

*Sampled the air stripper influent and effluent on 9/28/96.*

SUMMARY OF QUALITY CONTROL CONCERNS

No QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

All subcontractor equipment is inspected daily with reports attached.
Site safety and POD held at all sites prior to starting work.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR SEPT. 30, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0900 on 9/30/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380. A total of 28,780 gallons of water were pumped through the air stripper from the rain event that started early Friday morning and lasted until mid-Saturday morning producing a total of 5.1" of rain at Cast High

SETC (SC-4324-049) Rogers scarifying the soil in the amendment storage area to facilitate drying and draining water from the site.

SETC (SC-4324-049) Tri County removed forms from the amendment storage retaining wall, and dug the footer for the fuel storage pad.

U.S. Tech (SC-4324-048) Graber Agri-Builders pumped water from bldgs. #1 & #2 sumps.

SUMMARY OF SAMPLING AND TESTING

No sampling or testing today.

SUMMARY OF QUALITY CONTROL CONCERNS

Deficiency issued to track rework of previous flawed field density reports.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

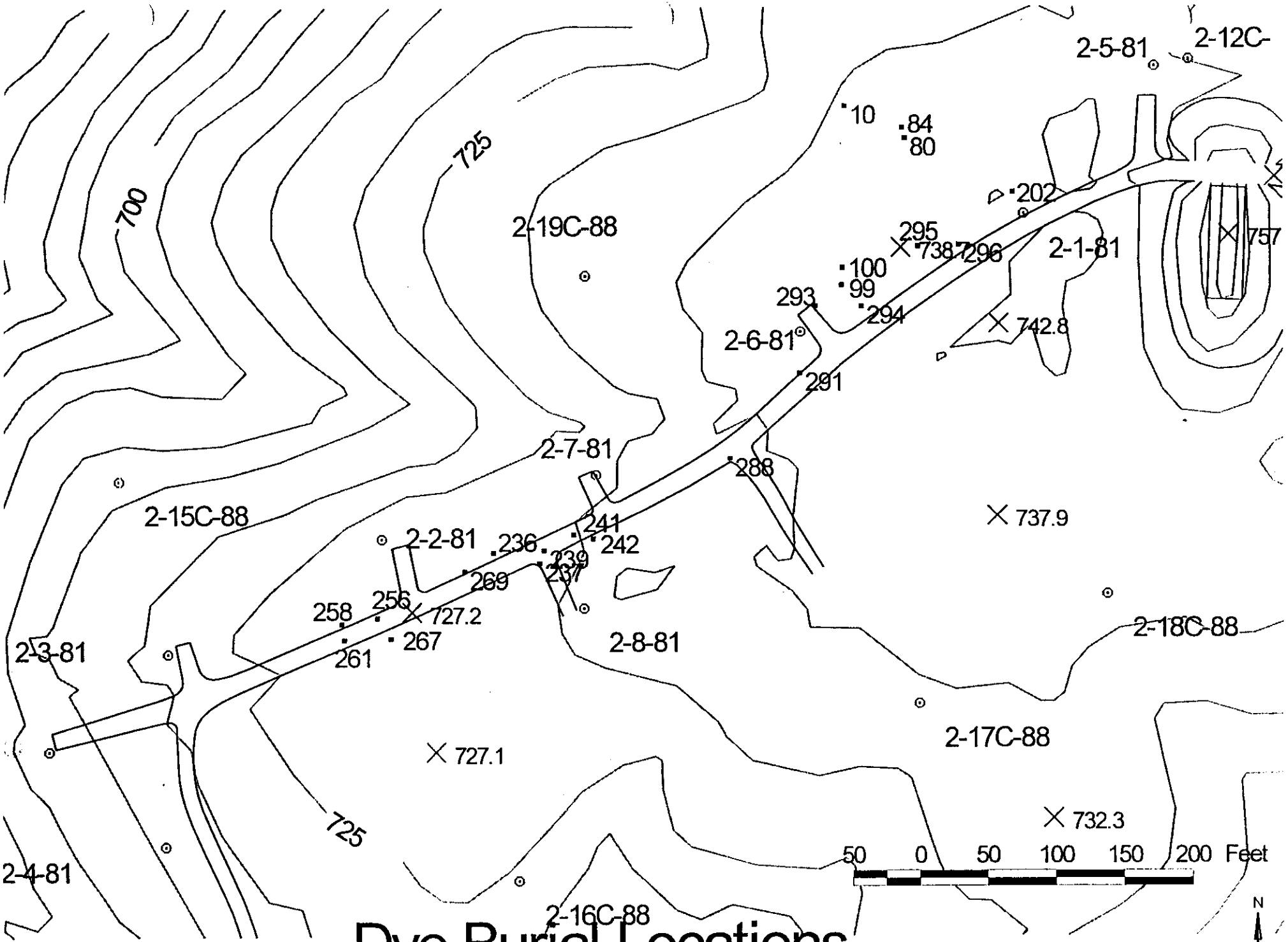
COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

A meeting was held between MK, U.S. Tech, and ATEC to discuss a remedy to the defective proctor tests utilized at the biofacility (meeting minutes attached).

A map of the sampling points at the Dye Burial Ground generated by Crane EPD is attached.

A meeting was held at 0800 hours between MK-Crane, SouthDIV, EPD, MK-PMO, and MK-Cleveland to discuss the QAPP, the Work Plan, and the Operations Plan for the Crane Bio Facility.

A meeting was held at 1400 hours between MK-Crane, SouthDIV, EPD, EPA-Region 5, MK-PMO, and MK-Cleveland to further discussions of the QAPP, the Work Plan, and the Operations Plan for the Crane Bio Facility.




# Dye Burial Locations

NOTE: Locations are estimated using GPS. Actual locations may be as much as 4 meters from the locations indicated

## SAMPLE LOCATIONS WHERE DYE WAS FOUND

| SAMPLE # | DYE COLOR | DEPTH OF SAMPLE |
|---|---|---|
| 202 | Red | 8" - 12" |
| 236 | Yellow & Blue | 1'5" - 32" |
| 237 | Yellow | 6" x 1' x 3' |
| 239 | Blue | 31" - 33" |
| 241 | Yellow & Blue | 2' X 1' X 1' |
| 242 | Yellow | 27.5" |
| 256 | Purple | 50" - 55" |
| 258 | Purple & Dark Blue | 1' x 5' x 47" |
| 261 | Purple | 34" - 39" |
| 267 | Purple & Blue | 14'7" x 32" x 37" |
| 269 | Yellow & Blue | 6'5" x 39" x shallow |
| 288 | ? | 9'8" x 27" x 29" |
| 291 | ? | 9' x 30" x 30" |
| 293 | Green | 4' x 18" x 2' |
| 294 | Green | 7' x 31" x 19" |
| 295 | ? | 9' x 35" x 24" |
| 296 | Purple, Green, Yellow, Red, & Orange-Yellow | 39' x 10' x 4'-6' |
| 10 | Green-Blue | 3' |
| 80 | Red | 6" |
| 84 | Blue & Red | 1' |
| 99 | Green-Blue | hit 3'2" (10" of dye) |
| 100 | Blue | 2' |

**DAILY REPORT FOR OCT. 1, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/1/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers grading the ponds and the storage areas to facilitate drying.

SETC (SC-4324-049) Tri County removed forms from the west side of the amendment storage retaining wall, placed 7 yards of concrete for the fuel storage pad, and backfilled around the decon bldg. sump walls and the amendment retaining wall.

U.S. Tech (SC-4324-048) Graber Agri-Builders installed forms and rebar for bldg.#2 sump walls, and preparing bldg. #1 sump to pour slab.

MQS on-site to perform ultrasonic testing on biofacility building structural steel. Inspection report is attached.

SUMMARY OF SAMPLING AND TESTING

Tri County performed testing on concrete it placed and took 3 cylinders for compression strength testing.

SUMMARY OF QUALITY CONTROL CONCERNS

Deficiency issued to track rework of previous flawed field density reports (copy attached).

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 2, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/2/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers graded pond #2 and installed the drain pipe.

SETC (SC-4324-049) Tri County patched the amendment retaining wall, and dug the footers and tied the steel for the decon bldg.

U.S. Tech (SC-4324-048) Graber Agri-Builders finished forming the walls of bldg. #2 sump and placed 5.25 yards of concrete in same.

U.S. Tech (SC-4324-048) ATEC perfomed field testing and took 3 cylinders on concrete placed by Graber.

SUMMARY OF SAMPLING AND TESTING

ATEC perfomed field testing and took 3 cylinders on concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

Deficiency issued to track rework of previous flawed field density reports has been dispositioned. Letter from Andy Easley Engineering, the engineer of record, is attached.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 3, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/2/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers graded pond #1 and installed the drain pipe.

SETC (SC-4324-049) Tri County formed the footers and tied the steel for the decon bldg. walls.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed 5.25 yards of concrete for bldg. #1 sump base.

U.S. Tech (SC-4324-048) ATEC performed field testing and took 3 cylinders on concrete placed by Graber.

U.S. Tech (SC-4324-048) Webster Excavating proof rolled bldgs. #2 & #3 and cut out and compacted soft spots with #53 stone, and continued hauling in #53 rock.

MSE (SC-4324-023) staked and graded pond #1 & #2, set pavement grades on CMU wall, set misc. pavement grades.

SETC (SC-4324-054) MSE performed topographic survey for revised dye burial cap.

SUMMARY OF SAMPLING AND TESTING

ATEC performed field testing and took 3 cylinders on concrete placed by Graber.

A 6 minute video of unacceptable welding on the structural steel (fabricated by A&S) was made and sent FEDEX to US Tech.

SUMMARY OF QUALITY CONTROL CONCERNS

Soft spots on bldgs. #2 & #3 discovered during proof rolling were cut out and recompacted with #53 rock.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly progress meeting conference call held today with PMO and SOUTHDIV. Meeting minutes will be included with daily report for 10/4/96.

**DAILY REPORT FOR OCT. 4, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/2/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers graded pond #1, pond #2, and the parking area.

SETC (SC-4324-049) Tri County formed the footers and tied the steel for the decon bldg. walls.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed 5.5 yards of concrete for bldg. #1 sump walls.

U.S. Tech (SC-4324-048) ATEC performed field testing and took 3 cylinders on concrete placed by Graber.

U.S. Tech (SC-4324-048) Webster Excavating proof rolled bldgs. #2 & #3 and cut out and compacted soft spots with #53 stone, and continued hauling in #53 rock.

SETC (SC-4324-054) MSE performed topographic survey for revised dye burial cap.

SUMMARY OF SAMPLING AND TESTING

ATEC performed field testing and took 3 cylinders on concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

Soft spots on bldgs. #2 & #3 discovered during proof rolling were cut out and recompacted with #53 rock.

Site Supt. for US Tech not on site today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Minutes from weekly progress meeting conference call held 10/3/96 meeting attached.

**DAILY REPORT FOR OCT. 5, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/2/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Tri County Builders placed 26 yards of concrete on the decon bldg. footers and piers.

U.S. Tech (SC-4324-048) Graber Agri-Builders removed forms from bldg. #1 sump walls and covered concrete with burlap and plastic.

U.S. Tech (SC-4324-048) Webster Excavating proof rolled bldgs. #2 & #3 and cut out and compacted soft spots with #53 stone, and continued hauling in #53 rock.

SUMMARY OF SAMPLING AND TESTING

Tri-County Builders performing its own concrete testing and taking concrete cylinders for compressive strength testing.

SUMMARY OF QUALITY CONTROL CONCERNS

Site Supt. for US Tech not on site today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 6, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/7/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

U.S. Tech (SC-4324-048) Webster Excavating finished proof rolling and compacting gravel on the buildings.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

Site Supt. for US Tech not on site today.

Gravel placed by Webster will require compaction testing before concrete can be placed.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 7, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/7/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers graded and compacted the amendment storage area, put down rock on the receiving side of the amendment retaining wall, and graded pond #1.

SETC (SC-4324-049) Tri County dug out between the decon bldg. footers.

SETC (SC-4324-049) Bertram Electric started trenching for installation of electric line.

U.S. Tech (SC-4324-048) Graber Agri-Builders began layout of pad on bldg. #3.

U.S. Tech (SC-4324-048) Webster Excavating fine graded rock on building pads.

U.S. Tech (SC-4324-048) ATEC performed nuclear field density testing on compacted gravel in all three buildings.

SUMMARY OF SAMPLING AND TESTING

ATEC performed nuclear field density testing on compacted gravel in all three buildings.

SUMMARY OF QUALITY CONTROL CONCERNS

Several compaction tests performed by ATEC on the rock were below the specified limit. The engineer of record was notified and he accepted the tests without further compactive effort.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

No instructions received today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Meeting minutes from Preparatory Inspection of electrical installation are attached.

Notice from MK to subcontractors concerning holiday observance in enclosed.

MK, US Tech and its sub-tiers met to discuss installation of water stop in the building pads. Meeting minutes will be included in daily report for tomorrow.

**DAILY REPORT FOR OCT. 8, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/8/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers graded and compacted the amendment storage area, put down rock on the receiving side of the amendment retaining wall, and graded pond #1.

SETC (SC-4324-049) Tri County tied the steel and formed the decon bldg. slab.

SETC (SC-4324-049) Bertram Electric installed the electric line in the underground conduit.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed rock around piers and formed the same, and set forms for slab along the north side of bldg. #3.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

None today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Verbal approval was given by Adrienne Wilson of SOUTHDIV to eliminate water stops in control joints in building slabs.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK, US Tech and its sub-tiers met yesterday to discuss installation of water stop in the building pads. Meeting minutes attached.

E-mail from MK Proj. Mgr. attached concerning days out of the office.

Copy of final report from Walsh Environmental Inc. (Grace Dearborn) attached.

**DAILY REPORT FOR OCT. 9, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/9/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers graded and compacted the amendment storage area, and put down rock on the receiving side of the amendment retaining wall.

SETC (SC-4324-049) Tri County tied the steel and formed the decon bldg. slab.

SETC (SC-4324-049) Bertram Electric installed the electric line in the underground conduit, and transformer layout.

U.S. Tech (SC-4324-048) Graber Agri-Builders sandblasted footers on bldg. #3, and installed forms and anchor bolts on center section of bldg. #3 slab.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

Misinterpretation of drawings by subcontractor for installation of water and sewer piping to washroom was corrected in field by subcontractor.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK Supt. informed Smith Environmental that Gunnite could not be used to prepare the ponds for installation of the liners.

**DAILY REPORT FOR OCT. 10, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/10/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers graded and compacted rock in the amendment storage area.

SETC (SC-4324-049) Tri-County placed 26.5 yards of concrete for decon bldg. slab, and 10 yards of concrete for the decon bldg. drain trench.

SETC (SC-4324-049) Bertram Electric placed 16 yards of concrete with dye for the electric duct bank.

U.S. Tech (SC-4324-048) Graber Agri-Builders prepared bldg. #3 slab for concrete placement.

SUMMARY OF SAMPLING AND TESTING

Tri-County Builders performing its own concrete testing.

SUMMARY OF QUALITY CONTROL CONCERNS

Deficiency report written to Smith Environmental for slump test in excess of specifications. MK Field Engineer accepted the concrete as-is.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Letter from MK QCS announcing preparatory inspection for Monday October 14, 1996 is attached.

Weekly Progress meeting conference call minutes are attached.

**DAILY REPORT FOR OCT. 11, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/11/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers hauling and laying #53 stone in amendments storage area.

SETC (SC-4324-049) Tri-County stripped forms on decon building slab and column bases.

SETC (SC-4324-049) Bertram Electric installed electrical grounding grid around the Biofacility buildings.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed 157 yards of concrete for center section of building #3 slab.

U.S. Tech (SC-4324-048) A & S Building Systems hauled out three loads of structural steel to be reworked.

SUMMARY OF SAMPLING AND TESTING

ATEC tested and took cylinders of the concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

MK field engineer set up instrument and checked slope of slab: within acceptable limits for grade and slope.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Interface meetings at field level only, no minutes recorded.
Weekly Progress meeting conference call minutes are attached.
MK Proj. Mgr. and Env. Spec. will be in MK Cleveland office through Tuesday, 10/15/96 to assist in preparation of the Pilot Scale QAPP and Operational Plan.

**DAILY REPORT FOR OCT. 12, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/12/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers hauling and placing #53 stone in amendments storage area.

SETC (SC-4324-049) Bertram Electric installing grounding grid west and north side of Biofacility building #1.

U.S. Tech (SC-4324-048) Graber Agri-Builders sawed control joints in center section of building #3 slab.

SUMMARY OF SAMPLING AND TESTING

No testing required today.

SUMMARY OF QUALITY CONTROL CONCERNS

Meeting set up with U.S. Tech, Graber, MK, and Jacobs Engineering for Monday 10/14/96 to discuss concrete floor finishes.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No areas of concern today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Field interfacing with subcontractors only.

**DAILY REPORT FOR OCT. 13 & 14, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/14/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Rogers compacting and fine grading #53 stone in amendments storage area.

SETC (SC-4324-049) Tri-County stripping and clean-up of decon building.

SETC (SC-4324-049) Bertram Electric installing underground conduits to office trailer area.

U.S. Tech (SC-4324-048) Graber Agri-Builders prepping east end slab on building #3 for concrete placement scheduled for 10/15/96.

SUMMARY OF SAMPLING AND TESTING

No testing performed today.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding QC concerns.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No extra safety issues today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Meeting with MK, Graber, U.S. Tech, Jacobs, and IMI concerning finish on floor slabs. Graber to bring in power trowel for next concrete placement. MK QC and Jacobs Engineering will monitor.

**DAILY REPORT FOR OCT. 15, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/15/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Whaley Construction began construction of block walls on decon bldg.

SETC (SC-4324-049) Bertram Electric installing underground conduits to office trailer area and placing concrete over same.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed 149.5 yards of 4,000 psi concrete on east end of bldg. #3. Graber improved finish on concrete with the use of a power trowel.

U.S. Tech (SC-4324-048) ATEC performed testing and took cylinders on concrete placed by Graber.

SUMMARY OF SAMPLING AND TESTING

ATEC performed testing and took cylinders on concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

Testing indicated slump on concrete placed by Graber was out of spec. QCI to issue a deficiency report.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No extra safety issues today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK Gen. Supt. discussed unacceptable condition of backhoe and front end loader with vendor (Whayne Equip.).

**DAILY REPORT FOR OCT. 16, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/16/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 201,380.

SETC (SC-4324-049) Whaley Construction continued with construction of block walls on decon bldg.

SETC (SC-4324-049) Bertram Electric installing grounding grid at bldg. #3.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed 149.5 yards of 4,000 psi concrete on east end of bldg. #3. Graber preparing west end of bldg. #3 slab for concrete placement.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

MK Supt., Field Eng., and QCI agreed with Rogers Group that tack coat over base rock was not necessary before placement of asphalt in amendment storage area.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No extra safety issues today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 17, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/18/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 205,536; 4,156 gallons of water pumped through air stripper from overnight rain event (late Thur. 17th to early a.m. Fri. 18th). Total rainfall recorded at Cast High was 1.5".

SETC (SC-4324-049) Rogers began asphalt paving of amendment storage area.

SETC (SC-4324-049) Tri-County formed and placed 2 yards of concrete for weirs.

SETC (SC-4324-049) Whaley Construction continued with construction of block walls on decon bldg.

SETC (SC-4324-049) Bertram Electric installing grounding grid at decon bldg.

U.S. Tech (SC-4324-048) Graber Agri-Builders preparing west end of bldg. #3 slab for concrete placement, completed saw cuts on east end of bldg. #3 slab.

SUMMARY OF SAMPLING AND TESTING

Tri-County performing its own concrete testing.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No extra safety issues today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly conference with PMO and SOUTHDIV held today. Meeting minutes included in tomorrow's report.

**DAILY REPORT FOR OCT. 18,19 & 20, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/21/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 205,536.

SETC (SC-4324-049) Rogers did not work (too wet).

SETC (SC-4324-049) Whaley Construction completed construction of block walls on decon bldg.

SETC (SC-4324-049) Bertram Electric roughed in electrical at decon bldg.

U.S. Tech (SC-4324-048) Graber Agri-Builders set grade on bldg. #3 for concrete placement on 10/21/96.

SETC (SC-4324-054) preparing for clearing and grubbing, set up decon pad.

SUMMARY OF SAMPLING AND TESTING

Earth Exploration performing compaction testing on the #53 gravel west of the amendment storage wall.

SUMMARY OF QUALITY CONTROL CONCERNS

Concrete slabs previously placed on bldg. #3 not draining properly, deficiency report was issued..

SUMMARY OF HEALTH AND SAFETY CONCERNS

No extra safety issues today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly conference with PMO and SOUTHDIV meeting minutes attached.

**DAILY REPORT FOR OCT. 21, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/21/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 205,536.

SETC (SC-4324-049) Rogers applied asphalt paving to amendment storage area.

SETC (SC-4324-049) Tri-County Builders stripped forms from weirs, and set sump covers and grating on decon bldg.

SETC (SC-4324-049) Bertram Electric roughed in electrical at decon bldg.

U.S. Tech (SC-4324-048) Graber Agri-Builders placed 134 yards of concrete on west section of bldg. #3, started forming slab for bldg. #1, and stripped the forms on the east end of bldg. #3.

U.S. Tech (SC-4324-048) ATEC took cylinders and performed testing on concrete placed by Graber.

SUMMARY OF SAMPLING AND TESTING

ATEC performed testing on concrete placed by Graber.

SUMMARY OF QUALITY CONTROL CONCERNS

None today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No extra safety issues today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 23, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/23/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 211,517 after processing 5,981 gallons of water from rain events of previous 48 hours (approx. 1.7" total). Meter was 215,555 after pumping 4,038 gallons of water from the east sump through stripper..

SETC (SC-4324-049) Rogers did not work.

SETC (SC-4324-049) Tri-County Builders started erecting steel columns on decon bldg.

SETC (SC-4324-049) Bertram Electric mounted electrical switches and boxes in decon bldg.

SETC (SC-4324-049) Whaley Construction filled CMU cells of fuel pad with grout and filled CMU cells of decon bldg. with perlite.

U.S. Tech (SC-4324-048) Graber Agri-Builders formed bldg. #1 slab and last section of bldg. #3 slab.

SUMMARY OF SAMPLING AND TESTING

Obtained samples for lab analysis at SWMU 16/16 from east sump and influent and effluent of air stripper.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding quality issues today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

Smith Environmental sub-tier Tri-Counry Builders attempted to erect steel columns on decon building without proper equipment. Smith will mobilize proper equipment before continuing with steel erection.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 23, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/23/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 215,555.

SETC (SC-4324-049) pumped water out of the ponds at the biofacility.

SETC (SC-4324-049) Rogers did not work (too wet).

SETC (SC-4324-049) Tri-County Builders did not work, waiting on proper equipment to erect steel columns.

U.S. Tech (SC-4324-048) Graber Agri-Builders did not work (too wet).

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding quality issues today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 24, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/24/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 215,555.

SETC (SC-4324-049) Rogers did not work (too wet).

SETC (SC-4324-049) Tri-County Builders did not work, waiting on proper equipment to erect steel columns.

U.S. Tech (SC-4324-048) Graber Agri-Builders forming up bldg. #1, and fine grading bldg. #1.

U.S. Tech (SC-4324-048) ATEC performing compaction testing on #53 gravel placed on bldg. #1.

SETC (SC-4324-045) clearing and grubbing, preparing site drainage and erosion control.

SUMMARY OF SAMPLING AND TESTING

ATEC perfoming compaction testing.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding quality issues today. Preparatory inspection report for concrete work at the biofacility attached.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

## DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

## COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly conference call held, meeting minutes included with tomorrow's report.

**DAILY REPORT FOR OCT. 25, 26, & 27 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 215,555.

SETC (SC-4324-049) subcontractors did not work.

U.S. Tech (SC-4324-048) Graber Agri-Builders forming for curbs on bldg. #3

U.S. Tech (SC-4324-048) ATEC performing compaction testing on #53 gravel placed on bldg. #1.

SETC (SC-4324-045) clearing and grubbing, preparing site drainage and erosion control.

SUMMARY OF SAMPLING AND TESTING

MK Environmental Specialist started initial screening of soil at Mine Fill A to get familiar with the test kits and procedures.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding quality issues today

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Weekly conference call meeting minutes attached.

**DAILY REPORT FOR OCT. 28, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

NSWC CRANE, INDIANA

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 215,555.

SETC (SC-4324-049) Tri-County Builders erected roof trusses for decon bldg. mechanical and rest room areas.

SETC (SC-4324-049) Bertram Electric roughed in electrical for decon bldg.

U.S. Tech (SC-4324-048) no work today, awaiting resolution of sub-grade problem on bldg. #1.

SETC (SC-4324-054) grading the area to dry the soil.

SETC (SC-4324-054) Earth Exploration performed compaction testing.

SUMMARY OF SAMPLING AND TESTING

Earth Exploration performed compaction testing for SETC at Dye Burial Ground.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding quality issues today

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 29, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 215,555.

SETC (SC-4324-049) Tri-County Builders continued with steel erection for decon bldg.

SETC (SC-4324-049) MSE staked out pond #1 and #2, and set grade for conduits at decon bldg.

U.S. Tech (SC-4324-048) no work today.

SETC (SC-4324-054) worked site drainage and silt fences.

SUMMARY OF SAMPLING AND TESTING

Continued with sampling at Mine Fill A for screening of explosives.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding quality issues today

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Preparatory inspection meeting minutes for asphalt paving and Dye Burial Ground excavation attached.

Held meeting with subcontractors to discuss scheduling.

**DAILY REPORT FOR OCT. 30, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 216,825. The air stripper was mounted permanently over the west sump.

SETC (SC-4324-049) Tri-County Builders installed nailer strips and prepared for installation of the roof at the decon bldg.

U.S. Tech (SC-4324-048) Graber forming curbs on bldg. #3.

SETC (SC-4324-054) worked site drainage, and buried dye-contaminated stumps in original trench area.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding quality issues today

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR OCT. 31, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

***MORRISON KNUDSEN CORPORATION*** ***N62467-63-D-1106***

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 216,825.

SETC (SC-4324-049) Tri-County Builders installed the stud walls and roof on the rest room/mechanical room at the decon bldg.

U.S. Tech (SC-4324-048) Graber continued to form the curbs and sandblast the concrete on bldg. #3 in preparation for concrete placement.

SETC (SC-4324-054) worked site drainage, buried dye-contaminated stumps in original trench area, graded site and worked soft spots, and repaired backhoe.

SETC (SC-4324-054) Earth Exploration conducted soil moisture and density testing.

SUMMARY OF SAMPLING AND TESTING

Mapped, gridded, and began sampling (for TNT screening) around bldg. 158 & 159 at Mine Fill A.

Earth Exploration conducted soil moisture and density testing at the Dye Burial Ground.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding quality issues today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK QCS Randy Smith will be absent next week. Mr. Azad Abrahim will be the designated QCS (memo attached).

Meeting minutes from weekly conference call attached.

**DAILY REPORT FOR NOV. 1, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 216,825.

SETC (SC-4324-049) Tri-County Builders installed roof trim stips on the rest room/mechanical room at the decon bldg.

SETC (SC-4324-049) Graves Plumbing installed lift station and backfilled.

SETC (SC-4324-049) Betram Electric installed conduit inside decon bldg.

U.S. Tech (SC-4324-048) Graber did not work.

SETC (SC-4324-054) placed soil over exposed dye, and graded and compacted the cap area.

MSE (SC-4324-023) established as-built conditions on biofacility buildings, and checked remaining grade stakes.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

Compaction around lift station placed by Smith Environmental sub-tier Graves Plumbing does not meet specifications. Smith will address and rework as necessary.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

MK QCS Randy Smith will be absent next week. Mr. Azad Abrahim will be the designated QCS. Jim Peters will be acting QCS until arrival Mr. Abrahim arrives.

**DAILY REPORT FOR NOV. 2 & 3, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 216,825.

SETC (SC-4324-049) Graves Plumbing installed water lines to buildings and backfilled.

SETC (SC-4324-054) graded and scarified soil in the cap area to dry out.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

Piping installation and backfill by Graves Plumbing not to specifications.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 4, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 10/28/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 216,825.

SETC (SC-4324-049) reworked lift station backfill and pipe installation to meet specifications.

SETC (SC-4324-049) Graves Plumbing installed water lines to buildings, and roughed in plumbing to the decon bldg.

SETC (SC-4324-049) Bertram Electric installed conduit and electrical boxes in decon bldg.

SETC (SC-4324-049) Tri-County installed wash bay roof trim.

SETC (SC-4324-054) graded and scarified soil in the cap area to dry out.

U.S. Tech (SC-4324-048) contract terminated by mutual agreement between MK and U.S. Tech. Balance of work will be de-scoped from U.S. Tech's contract.

SUMMARY OF SAMPLING AND TESTING

Continued with soil sampling at Mine Fill A area around bldg. 158 for field screening of explosives (screening conducted at a later date).

SUMMARY OF QUALITY CONTROL CONCERNS

SETC reworked lift station backfill and pipe installation to meet specifications.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Carol Witt-Smith of Region V EPA and Tom Brent of Crane EPD, in a conference call with MK Crane Proj. Mgr. Steve Downey, approved the use of gunnite on the ponds at the biofacility in lieu of bentonite (Claymax) mat. The HDPE liner will be placed over the gunnite.

**DAILY REPORT FOR NOV. 5, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on ~~10/28/96~~ 11/5/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 216,825.

SETC (SC-4324-049) reworked lift station backfill and pumped out sump excavations.

SETC (SC-4324-049) Graves Plumbing installed water lines to buildings, and excavated for the water line to the decon bldg.

SETC (SC-4324-049) Bertram Electric installed conduit in decon bldg. and at transformer.

SETC (SC-4324-049) Tri-County installed wash bay roof trim, and placed 3 yards of concrete for transformer pads.

SETC (SC-4324-054) proof rolled cap area, and buried contaminated stumps.

Tenn. Scales (SC-4324-072) off-loaded scale pans.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

None today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Held preparatory inspection for truck scale installation with Tennessee Scales.

**DAILY REPORT FOR NOV. 6, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0800 on 11/6/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 216,825.

SETC (SC-4324-049) reworked lift station backfill and placed weirs at both ponds.

SETC (SC-4324-049) Bertram Electric roughed in the decon bldg. and set the transformer.

SETC (SC-4324-049) Tri-County installed roof panels for decon bldg.

Tenn. Scales (SC-4324-072) completed forms and started installing rebar mat for scale slab.

MSE (SC-4324-023) restaked horizontal controls for bldgs. 1 & 2

SETC (SC-4324-054) commenced excavation of dye contaminated soil at the northwest end and placed it in the cap area. Dye contamination exceeded 5 feet deep.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

None today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 7, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

As of 0700 on 11/7/96 the meter reading on the air stripper at SMWU 16/16 (Cast High) was 216,825. The discharge pump on the air stripper was broke when inspected at 0700, preventing operation of the unit. The sump at this time had approx. one foot of freeboard remaining. The gasoline powered pump was hooked up to the discharge pipe on the unit and the system was started at approximately 0900, but not before an unknown quantity of water had spilled over the sump walls and onto the ground.

SETC (SC-4324-049) did not work due to rain.
SETC )SC-4324-054) did not work due to rain.
Tenn. Scales (SC-4324-072) did not work due to rain.

SUMMARY OF SAMPLING AND TESTING

Sampled the east and west sumps.

SUMMARY OF QUALITY CONTROL CONCERNS

An unknown quantity of contaminated water from the west sump at SWMU 16/16 spilled over the sump walls and onto the ground.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

DAILY REPORT FOR NOV. 8, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-63-D-1106

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

A total of 4.6" of rainfall was recorded at Cast High from the rain event starting early Thurs. a.m. (11/7/96) and ending late Thurs. night. Completed pumping water from the west sump through the air stripper. The meter reading was 226,836 after finishing this task for a total of 10,011 gallons pumped from the west sump. The contents of the east sump was partially pumped into the west sump on Friday night 11/8/96 and completed Saturday morning. The meter reading after processing this water was 232,533 for a total of 5,687 gallons of water from the east sump processed through the stripper.

SETC (SC-4324-049) pumped water from the ponds and placed straw bales for erosion control.

SETC (SC-4324-049) Tri-County Builders installed flashing and roof panels on decon bldg.

SETC (SC-4324-049) Weddle Bros. checked the forms and grades and put down thermal blankets on the sub-grade for bldg. #1.

SETC )SC-4324-054) reestablished the exclusion zone and pumped water from excavation #4.

Tenn. Scales (SC-4324-072) did not work (too wet).

SUMMARY OF SAMPLING AND TESTING

Sampled the effluent from the air stripper.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 11, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

The meter reading on the air stripper at SWMU 16/16 Cast High was 232,533.

SETC (SC-4324-049) Graves Plumbing installed water and sewer lines.

SETC (SC-4324-049) Tri-County Builders installed flashing and roof panels on decon bldg.

SETC (SC-4324-049) Weddle Bros. prepared bldg. #1 slab for concrete placement tomorrow.

SETC (SC-4324-049) Bertram Electric roughed in electrical to decon bldg. and transformer.

SETC (SC-4324-049) PCI unloaded trucks and set up work site.

SETC (SC-4324-049) Earth Exploration performed compaction testing on gravel and backfill.

SETC )SC-4324-054 excavated contaminated soil and placed and compacted it on cap area.

Tenn. Scales (SC-4324-072) did not work (too wet).

SUMMARY OF SAMPLING AND TESTING

Earth Exploration performed compaction testing on gravel and backfill for Smith Environmental.

SUMMARY OF QUALITY CONTROL CONCERNS

Compaction deficiencies identified were corrected without delay.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

Per direction from the NSWC Crane Client Representative, no work may be performed on 11/17, 11,24,12/01,12/08 (memo attached).

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 12, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

Automatic controls were installed on the air stripper at SWMU 16/16 Cast High. The unit started automatically and pumped 1,889 gallons of groundwater (no rain event had occurred). The final meter reading was 234,422.

SETC (SC-4324-049) Graves Plumbing installed water and sewer lines.

SETC (SC-4324-049) Tri-County Builders installed flashing and roof panels on decon bldg.

SETC (SC-4324-049) Bertram Electric roughed in electrical to decon bldg. and transformer.

SETC (SC-4324-049) PCI applied a tack coat to a portion of pond #1 for application of Gunite.

SETC (SC-4324-049) Earth Exploration performed testing and took cylinders on concrete placed by Weddle Bros.

SETC )SC-4324-054 excavated contaminated soil and placed and compacted it on cap area.

Weddle Bros. (SC-4324-049) placed 158 cubic yards of concrete on bldg. #1 slab middle section, and prepared west section for concrete placement.

Tenn. Scales (SC-4324-072) removed rebar mats and dug out soft subgrade material.

SUMMARY OF SAMPLING AND TESTING

Earth Exploration performed testing and took cylinders on concrete placed by Weddle Bros. Sampled influent and effluent from air stripper (16/WS-39I and -39E respectively).

SUMMARY OF QUALITY CONTROL CONCERNS

Deficiency report written for installation of sewer lines by Graves Plumbing.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

Preparatory inspection held for application of Gunite material in ponds (meeting minutes attached).

**DAILY REPORT FOR NOV. 13, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

The meter reading on the air stripper at SWMU 16/16 Cast High was 234,422.

SETC (SC-4324-049) Graves Plumbing installed piping at the lift station, installed the sewer line to the shower trailer area, and started installation of piping from lift station to main line tie-in.

SETC (SC-4324-049) Tri-County Builders finished installation of the roof panels and installed the doors on decon bldg.

SETC (SC-4324-049) Bertram Electric installed electrical wires to decon bldg. and trailer location.

SETC (SC-4324-049) PCI applied a coat of Gunite to a portion of pond #1.

Weddle Bros. (SC-4324-082) saw cut the center section of bldg. #1, and prepared west section of bldg. #1 for concrete placement.

Tenn. Scales (SC-4324-072) removed soft subgrade material and replaced with gravel.

SETC (SC-4324-054) compacted soil in the cap area with a dozer and added Portland cement to increase compaction.

SUMMARY OF SAMPLING AND TESTING

Sampled Mine Fill A area 153 and 158 for TNT screening. No testing today.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 14, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

The meter reading on the air stripper at SWMU 16/16 Cast High was 235,397.

SETC (SC-4324-049) Graves Plumbing excavated fro domestic water line to ofice and lab trailer area.

SETC (SC-4324-049) Tri-County Builders working on the interior of the decon bldg.

SETC (SC-4324-049) Bertram Electric mounted lights under canopy in wash bay.

SETC (SC-4324-049) PCI applied tack coat to pond #1 for application of Gunite.

Weddle Bros. (SC-4324-082) prepared east and west section of bldg. #1 for concrete placement.

Tenn. Scales (SC-4324-072 placed 30 yards of concrete for scale beds.

SETC (SC-4324-054) compacted soil in the cap area with a dozer and added Portland cement to increase compaction.

SUMMARY OF SAMPLING AND TESTING

Earth Exploration tested west end of bldg. #1 for compaction.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 15, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

The meter reading on the air stripper at SWMU 16/16 Cast High was 235,397.

SETC (SC-4324-049) Graves Plumbing excavated and layed pipe for sanitary sewer line.

SETC (SC-4324-049) Tri-County Builders installed door hardware on the decon bldg.

SETC (SC-4324-049) Bertram Electric roughed in electrical in the wash bay.

SETC (SC-4324-049) PCE applied Gunite to pond #1.

SETC (SC-4324-049) Earth Exploration performed testing and took cylinders on concrete placed by Weddle Bros., and tested compaction on east end of bldg. #1.

Weddle Bros. (SC-4324-082) placed 140 yards of concrete on west end of bldg. #1 slab. Worked on west end of bldg. #2.

Tenn. Scales (SC-4324-072) not on site.

SETC (SC-4324-054) compacted soil in the cap area with a dozer and added Portland cement to increase compaction.

SUMMARY OF SAMPLING AND TESTING

Earth Exploration performed testing and took cylinders on concrete placed by Weddle Bros., and tested compaction on east end of bldg. #1.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 16, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

The meter reading on the air stripper at SWMU 16/16 Cast High was 235,397.

SETC (SC-4324-049) Graves Plumbing did not work.

SETC (SC-4324-049) Tri-County Builders did not work.

SETC (SC-4324-049) Bertram Electric did not work.

SETC (SC-4324-049) PCE applied Gunite to walls and floor of pond #1.

SETC (SC-4324-049) Earth Exploration did not work.

Weddle Bros. (SC-4324-082) worked forms on east end bldg. #1 and center section bldg. #2.

Tenn. Scales (SC-4324-072) not on site.

SETC (SC-4324-054) continued to work soil to achieve compaction, smoothed it with a drum roller, and covered with plastic.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 18, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

The meter reading on the air stripper at SWMU 16/16 Cast High was 237,352. 1,955 gallons processed over weekend and from overnight rain event (trace).

SETC (SC-4324-049) Graves Plumbing did not work.

SETC (SC-4324-049) Tri-County Builders preparing wash bay slab for placement of ramps.

SETC (SC-4324-049) Bertram Electric continued with electrical installation in decon bldg.

SETC (SC-4324-049) PCE started application of Gunite on pond #2 (east pond).

SETC (SC-4324-049) Earth Exploration did not work.

Weddle Bros. (SC-4324-082) preparing east end of bldg. #1 and bldg. #2 for concrete placement.

Tenn. Scales (SC-4324-072) removed thermal blankets, stripped forms, and started layout for approach ramps.

SETC (SC-4324-054) performed site maintenance.

SUMMARY OF SAMPLING AND TESTING

None today.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 19, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

The meter reading on the air stripper at SWMU 16/16 Cast High was 237,352.

SETC (SC-4324-049) Graves Plumbing did not work.

SETC (SC-4324-049) Tri-County Builders placed 4.5 yards of concrete for wash bay ramps.

SETC (SC-4324-049) Bertram Electric pulled wire through conduits to device boxes in decon bldg.

SETC (SC-4324-049) PCE placed Gunite on bottom of pond #2 (east pond).

SETC (SC-4324-049) Earth Exploration performed testing and took cylinders on concrete placed by Weddle Bros.

Weddle Bros. (SC-4324-082) placed 148 yards of concrete for slab on east end of bldg. #1, and prepared bldg. #2 for concrete placement.

Tenn. Scales (SC-4324-072) drilled and installed rebar dowels for tie-in to approach ramp concrete.

SETC (SC-4324-054) waiting on proctor and density tests for moisture content.

SUMMARY OF SAMPLING AND TESTING

Earth Exploration performed testing and took cylinders on concrete placed by Weddle Bros.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 20, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

The meter reading on the air stripper at SWMU 16/16 Cast High was 239,210: 1,858 gallons of seepage water processed since 11/18/96, no rain event recorded.

SETC (SC-4324-049) Graves Plumbing tap and pipe up 2" forced sewer main.

SETC (SC-4324-049) Tri-County Builders cleaned up decon bldg. from previous concrete placement.

SETC (SC-4324-049) Bertram Electric pulled wire through conduits to device boxes in decon bldg.

SETC (SC-4324-049) PCI placed Gunite on bottom and walls of pond #2 (east pond).

SETC (SC-4324-049) Earth Exploration performed testing and took cylinders on concrete placed by Weddle Bros.

SETC (SC-4324-049) ATEC performed testing and took cylinders on concrete placed by Tennessee Scales.

Weddle Bros. (SC-4324-082) placed 217 yards of concrete for slab on west end of bldg. #2, and saw cut east end of bldg. #1.

Tenn. Scales (SC-4324-072) placed 26 yards of concrete for approach ramps at each end of the scales.

SETC (SC-4324-054) no activity.

SUMMARY OF SAMPLING AND TESTING

Earth Exploration performed testing and took cylinders on concrete placed by Weddle Bros. ATEC performed testing and took cylinders on concrete placed by Tennessee Scales.

SUMMARY OF QUALITY CONTROL CONCERNS

No outstanding QC concerns today.

SUMMARY OF HEALTH AND SAFETY CONCERNS

No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE

No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT

None today.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

None today.

**DAILY REPORT FOR NOV. 21, 1996**
**DELIVERY ORDERS 0009, 0024, 0027, 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON AND OFF SITE

* Meter reading at SWMU 16/16, Cast High was 239,300; 80 gallons of seepage water processed since 11/20/96. No rain event recorded.
* S/C 4324-049: SMITH Environmental
  - Graves Plumbing not on site.
  - Tri-County Builders site cleanup and set door hardware at decon building
  - Bertram Electric terminated circuits at PPB panel.
  - PCE filled liner ballast tubes; demob from site.
  - Earth Exploration performed field testing during Weddle Brothers concrete placement activity at Building 2, east end.
* S/C 4324-080: SMITH Environmental
  - Weddle Bros. poured east half of Building 2 slab (218CY placed); strip forms at west end Building 1; forming Building 3 west end slab.
* S/C 4324-054: SMITH Environmental
  - No site activity this date; awaiting mix design from Earth Exploration Lab.
* S/C 4324-072: Tennessee Scales
  - Shamrock Scales set scale pans and load cells. Prep to pour beds 11/22/96.

SUMMARY OF SAMPLING AND TESTING

* Geotechnical field tests (concrete) by Earth Exploration; including test cylinders.
* Immunoassay testing (TNT) Mine Fill "A" soil samples by MK.

SUMMARY OF QUALITY CONTROL CONCERNS

* Concrete slump exceeded tolerance (1 truck). Completed rework of decon building grating and unacceptable Biofacility base grade compaction areas.

SUMMARY OF HEALTH AND SAFETY CONCERNS

* No outstanding concerns this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No waste materials transported off site this date.

INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH PROJECT TEAM

* Weekly project teleconference - meeting notes attached.

**DAILY REPORT FOR NOVEMBER 22, 1996**
**DELIVERY ORDERS 0009, 0024, 0027, and 0029**

**NSWC-Crane, Indiana**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

* Meter reading at SWMU 16/16, Cast High, was 239,310 gallons; 10 gallons of seepage water processed since 11/21/96 - no rain event recorded.

* S/C 4324-049: SMITH Environmental
  - Graves Plumbing not on site this date.
  - PCE activity completed 11/21/96; demob complete.
  - TriCounty Builders removed curing pads from decon building ramps and completed door hardware adjustments.
  - Bertram Electric terminated circuits at DP Panel and evaluated needs for power service to truck scales area.
* S/C 4324-080: SMITH Environmental
  - Weddle Bros. placed final slab concrete at west 12' of building 3. Partial removal of forms at Building 2.
  - Earth Exploration performed field tests during Weddle Bros. concrete pour.
* S/C 4324-054: SMITH Environmental
  - No site work this date; awaiting mix design results from Lab.
* S/C 4324-072: Tennessee Scale Works
  - Shamrock Scales placed concrete into scale beds and demob from site.

SUMMARY OF SAMPLING AND TESTING

* Earth Exploration performed concrete field testing, including test cylinders, during Building 3 concrete placement.
* MK immunoassay testing of Mine Fill "A" soil samples.

SUMMARY OF QUALITY CONTROL CONCERNS

* Completed rework of Biofacility drainage ponds base - gunite application complete. Final acceptance of finished surface will be by liner installer.

SUMMARY OF HEALTH AND SAFETY CONCERNS

* No outstanding concerns identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No waste materials transported off-site this date.

INSTRUCTIONS AND GUIDANCE RECEIVED FROM CLIENT

* None this date.

COMMUNICATIONS, INTERFACES, MEETINGS WITH PROJECT TEAM

* Quality control Preparatory Inspection meeting held with Weddle Bros. Construction; for upcoming Biofacility buildings steel erection. Minutes attached to CQCR.

**DAILY REPORT FOR NOV. 23, 1996**
**DELIVERY ORDERS 0009, 0024, 0027, 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON AND OFF SITE

No site work activity performed this date. All areas secured at end of shift 11/22/96. The current meter reading on the air stripper at SWMU 16/16 Cast High is 239,310. The previous reading was 239,310 - no water processed.

**DAILY REPORT FOR NOVEMBER 25, 1996**
**DELIVERY ORDERS 0009, 0024, 0027, 0029**

**NSWC-CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

* No site work performed this date by subcontractors; due to continual rain (overnight total 1.2")

SUMMARY OF SAMPLING AND TESTING

* MK gathered water samples at SWMU 16/16, Cast High for air stripper operation. One (1) set analytical samples gathered in a.m. and one (1) set in p.m.

SUMMARY OF QUALITY CONTROL CONCERNS

* No new concerns identified.

SUMMARY OF HEALTH AND SAFETY CONCERNS

* No outstanding concerns at this time.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

INSTRUCTIONS AND GUIDANCE RECEIVED FROM CLIENT

* None this date.

COMMUNICATIONS, INTERFACES, AND MEETINGS WITH PROJECT TEAM

* None this date.

**DAILY REPORT FOR NOVEMBER 26, 1996**
**DELIVERY ORDERS 0009, 0024, 0027, 0029**

**NSWC-CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

* SWMU 33/00 - **Bioremediation Facility**
  - 4324-023: MSE Survey surveyed grades around Biofacility buildings and unfinished paving areas.
  - 4324-049: Bertram Electric set light pole south of wash bay and continued termination of electrical devices at wash bay area.
  - 4324-080: Weddle Bros. Const. relocated building steel from staging area west of site to laydown east of Building 3. Concrete curing blankets removed from slabs.

* SWMU 02/11 - **Dye Burial Ground (DBG)**
  - 4324-054: SMITH Environmental performed no work this date.

* SWMU 16/16 - **Cast High**
  - Meter reading 252,050 gallons, last reading 11/25/96 was 243,700. 8,350 gallons seepage/rain water processed; 1.0" rain recorded since 11/25/96.

SUMMARY OF SAMPLING AND TESTING

* MK gathered water samples at SWMU 16/16, Cast High for air stripper operation. One (1) set analytical samples, effluent and influent, gathered in morning at meter reading 252,050.

SUMMARY OF QUALITY CONTROL CONCERNS
* No new issues identified.

SUMMARY OF HEALTH AND SAFETY CONCERNS
* No outstanding concerns at this time.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

INSTRUCTIONS AND GUIDANCE RECEIVED FROM CLIENT
* None this date.

COMMUNICATIONS, INTERFACES, AND MEETINGS WITH PROJECT TEAM
* None this date.

**DAILY REPORT FOR NOVEMBER 27, 1996**
**DELIVERY ORDERS 0009, 0024, 0027, 0029**

**NSWC-CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

* SWMU 33/00 - **Bioremediation Facility**
  - 4324-049: Bertram Electric performed housekeeping and site security activities in preparation for holiday weekend.
  - 4324-080: No site activity this date.

* SWMU 02/11 - **Dye Burial Ground (DBG)**
  - 4324-054: No site activity this date.

* SWMU 16/16 - **Cast High**
  - Meter reading 256,770 gallons, last reading 11/26/96 was 252,050. 13,070 gallons seepage/rain water processed; no rain recorded since 11/26/96 sampling.

SUMMARY OF SAMPLING AND TESTING

* No air stripper sampling gathered; processed water was transfer water from east sump to west sump following 11/25 sampling event.

SUMMARY OF QUALITY CONTROL CONCERNS
* No new issues identified.

SUMMARY OF HEALTH AND SAFETY CONCERNS
* No outstanding concerns at this time.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

INSTRUCTIONS AND GUIDANCE RECEIVED FROM CLIENT
* None this date.

COMMUNICATIONS, INTERFACES, AND MEETINGS WITH PROJECT TEAM
* None this date.

**DAILY REPORT FOR DECEMBER 02, 1996**
**DELIVERY ORDERS 0009, 0024, 0027, 0029**

**NSWC-CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

* SWMU 33/00 - **Bioremediation Facility**
  - 4324-049: BERTRAM Electric continued electrical device connections at decontamination building. ESM performed pre-testing electrical terminations for high voltage cables; testing scheduled for 12-03-96.
  - 4324-080: Weddle Brothers Construction erected scaffolding at Building 3, and mobilized a Grove crane, in preparation for steel erection this week. Column anchor bolts require additional threads, S/C started work per disposition of deficiency report.
* SWMU 02/11 - **Dye Burial Ground (DBG)**
  - 4324-054: SMITH Environmental continued administrative actions in preparation for restart of soil conditioning at DBG; no site work this date. Received soils treatability results from Earth Exploration late afternoon. MK review 12-03-96.
* SWMU 16/16 - **Cast High** 2030 ~~2170~~ 224.97
  - Meter reading 258,800 gallons, last reading 11/27/96 was 256,770. ~~2170~~ gallons seepage/rain water processed; 1.2" rain recorded since 11/27/96.

SUMMARY OF SAMPLING AND TESTING

* MK gathered water samples at SWMU 16/16, Cast High for air stripper operation. One (1) set analytical samples, effluent and influent, gathered in morning at meter reading 258,800.

SUMMARY OF QUALITY CONTROL CONCERNS

* Deficiency report 9-024 issued for excessive anchor bolt projections/insufficient threads length at Biofacility Building 3. REWORK disposition in progress.
* MK review of DBG soils study expected to lift partial stop work order.

SUMMARY OF HEALTH AND SAFETY CONCERNS

* No outstanding concerns at this time.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

INSTRUCTIONS AND GUIDANCE RECEIVED FROM CLIENT

* None this date.

COMMUNICATIONS, INTERFACES, AND MEETINGS WITH PROJECT TEAM

* None this date.

**DAILY REPORT FOR DECEMBER 04, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-63-D-1106**

SUMMARY OF WORK IN PROGRESS ON-AND OFF-SITE

**SWMU 33/00: BIOREMEDIATION FACILITY**

4324-049: Bertram Electric - performed resistance testing on electrical grounding system, all results satisfactory. Continued installation of wiring lighting at west end poles and SW of decon building.
Graves Plumbing, Tri-County Electric - not on site this date.
4324-080: Weddle Brothers - Continued progress in building 3 steel erection.

**SWMU 02/11: DYE BURIAL GROUND CAP**

4324-054: SMITH Environmental - Decontamination of D4 bulldozer. S/C changing equipment to facilitate use of disks in soil conditioning. Decon occurring within cap boundary containing contaminated soils. Additional S/C personnel mobilized to support effort.

SUMMARY OF SAMPLING AND TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* No new concerns identified this date.

SUMMARY OF HEALTH AND SAFETY CONCERNS
* No outstanding safety concerns today.

LIST OF ALL WASTE MATERIALS GOING OFF-SITE
* No waste materials removed from site today.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE RECEIVED FROM THE GOVERNMENT
* Per telecon with ROICC, EPD, and EPA, agreements as follows;
  1) Biofacility pilot scale operation may start prior to paving surface around building(s).
  2) Biofacility pilot scale operation may start without drainage ponds lining systems in place although M K is continuing to work with S/C to complete liners this year.
  3) Pilot scale operation to start with first four (4) batches using "clean" soil from borrow pit. 50% of batch will use cow manure, 50% chicken manure. Building

selection for initial batching is at M K descretion. Target start date: 13JAN97.

4) Proposed reduction of compaction testing at Dye Burial Ground. Current specification is one test per 500 square feet of each lift, proposed is eight test points per lift. All parties agreed; M K to provide client with EPA regulatory guideline on test frequency.
5) EPA reported review and approval of Operation/QA Plans would probably delay start of pilot scale operation, with contaminated soils, until February 1997.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

See above.

**DAILY REPORT FOR DECEMBER 05, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: BIOREMEDIATION FACILITY**

*4324-049: Bertram Electric, Graves Plumbing, Tri-County Builders inactive.
*4324-080: Weddle Brothers Const. relocated building steel to amendments storage area laydown. Steel erection continuing at Building 3.

**SWMU 02/11: DYE BURIAL GROUND**

*4324-054: SMITH Environmental improved drainage paths around excavation area outside of cap boundary. Dye area berms enhanced. Soil conditioning with flyash scheduled to start 12/6/96. Completed equipment decontamination of D4 bulldozer.

SUMMARY OF SAMPLING and TESTING
*No activity this date.

SUMMARY OF QUALITY CONTROL CONCERNS
*No new concerns identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
*Personnel fall protection system, for steel erection at Biofacility, in process of review/approval. Approval expected 12/6/96. All current work being performed in manner not affected by this system.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
*No waste materials transported off site this date.

DESCRIPTION OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
*None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* Weekly teleconference between M K, client, and EPA; minutes attached.

**DAILY REPORT FOR DECEMBER 06, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric installed wiring for sanitary sewer lift station.
*Graves Plumbing and Tri-County off site.*
MPC Containments mobilizing 12/9 for liner installations.

4324-080: Weddle Brothers continued erection of Building 3 steel.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental began soil conditioning using flyash additive. 75 tons delivered today. Dewatered far west excavation (No.3).

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

Gathered samples NSWC 16/ES-47, -48D, 16/WS-49I, -49IMS, -49IMSD, -49E, TB51 from east and west sumps. Recorded 0.6" precipitation since 12/5/96; 4559 gallons processed.

SUMMARY OF QUALITY CONTROL CONCERNS

* Delays in submittals for 4324-076, Steam Line Demolition. Sent correspondence to Ellen Environmental (11/25) with VDS and register.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* No new concerns identified.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No waste materials transported off site this date.

DESCRIPTION OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR DECEMBER 07, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility** - No work this date.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental continued soil conditioning via disking flyash into dye contaminated soils; noticeable improvements in soil moisture levels. In addition, berm enhancements completed at west end to prevent run off from cap area.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Modified run-on/off controls at west end of DBG will be closely monitored. S/C reminded that any dewatering of this area must be done to within cap boundary/contaminated soils areas.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No waste materials transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR DECEMBER 09, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric performed staging and initial assembly of materials and fixtures for Building 3 lighting.
MPC Containment mobilized for drainage ponds liner installations. Completed Preparatory Inspection and site safety training. SMITH Environmental augmenting MPC work force as needed.
Tri-County Builders and Graves Plumbing off site this date.

4324-080: Weddle Brothers continued structural steel erection at Building 3 (west half completed).

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental finalizing soil conditioning of first soil-dye lift. All work performed under direction of M K Soils Engineer. Compaction testing scheduled for 12/10/96.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Excavation water levels maintaining at DBG. Dewatering to occur into second dye-soil lift within cap boundary. No overflow to-date.
* MPC submittals require additional information to support 12/10 start of work. Project team members expediting necessary information.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Weddle Bros. fall protection system approved for single person. Modified shock absorbing harness equipment ordered to permit double person restraint.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off sites this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Preparatory Inspection meeting with M K, SMITH, and MPC for HDPE liner installations at Biofacility. Minutes attached to M K daily report.

**DAILY REPORT FOR DECEMBER 10, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

S/C 4324-049: Bertram Electric continued electrical installations for Building 3. MPC Containment Systems installed geotextile fabric in west drainage pond. Anchor trenches being prepared for liner. Tri-County Builders, Graves Plumbing off site this date.

S/C 4324-080: Weddle Brothers continuing structural steel erection of Building 3. Possible bolting material shortage noted; S/C to advise M K ASAP. S/C personnel demonstrating excellent workmanship and cognizance of quality requirements.

**SWMU 02/11: Dye Burial Ground**

S/C 4324-054: SMITH Environmental completed first soil lift; all test locations met compaction densities. Proceeding with development of 2nd lift under M K Soils Engineer direction.

SUMMARY OF SAMPLING and TESTING

* None this date. Note: Cast High air stripper under repair for broken level indicator

SUMMARY OF QUALITY CONTROL CONCERNS

* MPC instrument calibration records not yet received. MPC-Chicago expediting. HDPE installation pending calibration issue.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* M K working with Ellen Environmental to resolve H&S submittals.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No waste materials transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Pre-submittal meeting with Ellen Environmental and M K Safety.

**DAILY REPORT FOR DECEMBER 11, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

***MORRISON KNUDSEN CORPORATION*** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continued conduit and fixture work in Building 3. MPC, augmented by SMITH personnel, continuing anchor trench earthwork in preparation for liner installation at west pond. Graves Plumbing, Tri-County Builders off site.

4324-080: Weddle Brothers completed main frame structural steel erection at Building 3 and prepared for start of Building 2 steel erection. No injuries/accidents reported during Bldg 3 steel erection.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental excavating dye-soil north of cap boundary and relocating material onto 2nd lift within boundary. Dewatering excavations planned during upcoming lift developments. Excavation water levels being closely monitored.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Biofacility liner installation may be impacted by tensiometer calibration. S/C has previously been notified and is reportedly expediting this issue.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Held weekly teleconference between MK, client, and EPA. Meeting minutes attached.

MORRISON KNUDSEN CORPORATION

ENVIRONMENTAL AND GOVERNMENT DIVISION

WEEKLY PROGRESS MEETING MINUTES

Contract N62467-93-D-1106, Delivery Order 0009; NSWC Crane Interim Measures Cleanup Weekly Progress Meeting Minutes for December 11, 1996.

1. ATTENDEES:

| | |
|---|---|
| Brent Robertson | Crane OICC |
| Steve Downey | MK Proj. Mgr. |
| Bob Staub | MK SHO |
| Wally Medcalf | MK Supt.1 |
| Gerry Langlois | Jacob's Eng. |
| Marty Wilson | MK PMO |
| Bob Hlavacek | MK PMO* |
| Adrienne Wilson | SOUTHDIV* |
| Jimmy Jones | SOUTHDIV* |

* - by telephone conference call

2. SCHEDULES, WORK PLANS, & COMMUNICATION

Steve Downey reviewed the current status of the SWMUs.

The storage building proposal was discussed. MK was asked to review the costs differences between the lab trailer and the permanent structure. Brent Robertson stated that he had checked with base Navy personnel concerning the addition of a permanent structure The response was that it would not be much a problem to get approval.

There was a question on the progress of the Asbestos work at the Rockeye facility. Bob Staub had met with Ellen Environmental on Tuesday (12/11/96) to aid in the development of submittals. The tentative schedule is for Ellen Environmental to submit all required submittals by 12/16/96. If the submittals are approved, the ten day notice to the state can be made by 12/26/96. Ellen would mobilize on 1/02/97, start abatement on 1/06/97 (Monday), complete abatement on 1/10/97, and demobilize by 1/15/97. Bob Staub has contacted the state of Indiana and found that the information that had been requested by Ellen Environmental will not be necessary to file the ten day notice.

3. ACTIVE PROJECTS:

SWMU 02/11

The first lift using the required amendments is complete and all eight compaction tests have passed. Currently contaminated material is being excavated and placed

as the second lift. Smith Environmental ordered fly ash for tomorrow (12/12/96) and plan to disc it in this week.

Smith will place the waste rainwater that has accumulated within the exclusion zone, onto the cap area.

SWMU 16/16

The air stripper is operating as designed. There was one minor problem when a fitting broke during a maintenance function that consisted of changing filters. The fitting has been replaced. MK is still awaiting a proposal to bury the discharge line.

BIOFACILITY

Steel erection on building #3 is continuing. This includes installation of the purling, grits, endbraces and guide wires. Roof decking is expected to start this week or early next week.

Installation of the pond liner felt fabric is underway on Pond #2

Installation of electrical hardware has begun.

Smith is having performance problems with Graves Plumbing and is presently perusing other avenues.

MK is currently analyzing bids to furnish electrical power to the truck scale.

Awaiting a proposal from Smith to finish the approaches to the scales with #53 rock.

DAILY REPORT FOR DECEMBER 12, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric performed preinstallation fixture assemblies for Building 1 and 2.
MPC, Graves Plumbing, Tri-County Builders off site.

4324-080: Weddle Brothers off site this date due to continual rain.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental completed 2nd lift soil placement within boundary. Excavation dewatering planned during soil moisture stabilization activity. S/C to build shelter over open excavation at west end.

SUMMARY OF SAMPLING and TESTING

* **SWMU 16/16, Cast High.** Recorded 0.25" rain since 12/11/96. Sampled:
  NSWC 16/ES-50, east sump waters
  NSWC 16/WS-51I, air stripper influent
  NSWC 16/WS-51E, air stripper effluent
  NSWC 16/WS-TB-52, sample trip blank

SUMMARY OF QUALITY CONTROL CONCERNS

* New M K Soils Engineer arriving 12/16/96; preparatory meeting between M K and SMITH will be held 12/16 to review directives and progress to-date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* From T. Brent, EPD: to avoid potential of run-off from west end excavation, M K to have S/C erect rain shelter over excavation.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

DAILY REPORT FOR DECEMBER 13, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continued conduit and fixture work in Building 3. Completed north and south lighting conduit installation. MPC, Graves Plumbing, Tri-County Builders off site.

4324-080: Weddle Brothers installed wind braces in Building 3; continued structural steel erection at west end Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental working 2nd lift of dye-soil to remove excessive moisture. Began dewatering contaminated trench at west end of cap area. Modified decon station to provide improved access control. Additional storage area built for used PPE.

SUMMARY OF SAMPLING and TESTING

* TNT field screening soil samples from Mine Fill A, grids 5-9.

SUMMARY OF QUALITY CONTROL CONCERNS

* M K Soils Engineer demobilized from site today; following meeting with QC and subcontractor to provide directions on soil conditioning this weekend. New M K soils engineer on site 12/16/96. S/C maintenance for perimeter berms for cap area being closely monitored.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* T. Brent, EPD concurred with M K recommendation to not build shelter over DBG west end excavation containing contaminated waters. M K is to commence dewatering today in lieu of shelter; dewatering was commenced as directed.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Exit meeting with QC, S/C supervision, and Soils Engineer at DBG. Preparatory Inspection meeting with new M K Soils Engineer to be held Monday 12/16.

DAILY REPORT FOR DECEMBER 13, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continued conduit and fixture work in Building 3. Completed north and south lighting conduit installation. MPC, Graves Plumbing, Tri-County Builders off site.

4324-080: Weddle Brothers installed wind braces in Building 3; continued structural steel erection at west end Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental working 2nd lift of dye-soil to remove excessive moisture. Began dewatering contaminated trench at west end of cap area. Modified decon station to provide improved access control. Additional storage area built for used PPE.

SUMMARY OF SAMPLING and TESTING

* TNT field screening soil samples from Mine Fill A, grids 5-9.

SUMMARY OF QUALITY CONTROL CONCERNS

* M K Soils Engineer demobilized from site today; following meeting with QC and subcontractor to provide directions on soil conditioning this weekend. New M K soils engineer on site 12/16/96. S/C maintenance for perimeter berms for cap area being closely monitored.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* T. Brent, EPD concurred with M K recommendation to not build shelter over DBG west end excavation containing contaminated waters. M K is to commence dewatering today in lieu of shelter; dewatering was commenced as directed.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Exit meeting with QC, S/C supervision, and Soils Engineer at DBG. Preparatory Inspection meeting with new M K Soils Engineer to be held Monday 12/16.

**DAILY REPORT FOR DECEMBER 14, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric pulled in lighting wire for Building 3.
MPC, augmented by SMITH personnel, continuing anchor trench earthwork in preparation for liner installation at west pond.
Graves Plumbing, Tri-County Builders off site.

4324-080: Weddle Brothers erected structural steel in Building 2. Continued installation of Building 3 wind brace cables.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental working 2nd dye-soil lift. Disking flyash into lift, compacting with sheepsfoot roller and "sealing" lift with smooth drum roller and plastic cover at end of shift. Continued dewatering excavation at west end of cap boundary;' all waters sprayed onto 2nd lift.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* Non this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR DECEMBER 15, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
No site work this date.

**SWMU 02/11: Dye Burial Ground**
4324-054: SMITH Environmental worked 2nd lift in morning only due to rain forcasted after noon. Remainder of flyash was disked into dye-soil and lift smooth rolled and covered with plastic at end of shift.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* Excavation water levels being closely monitored. Approx. 1.5' freeboard at end of shift; perimeter berms in place.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR DECEMBER 16, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site activity due to snow.
4324-080: No site activity due to snow.

**SWMU 02/11: Dye Burial Ground**
4324-054: No site work due to snow. Field personnel completed 8 hour OSHA HAZWOPR Supervisor training provided on site by MK SSHO.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* Weather impact of DBG dye-soils lifts. Lift currently "sealed" by smooth drum roller and plastic cover being maintained by S/C. Situation will be closely monitored daily.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* Preparatory Inspection meeting with MK and SMITH Environmental for DBG soils excavation/relocation. New MK Soils Engineer, Reza Baradaran.

**DAILY REPORT FOR DECEMBER 17, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric, MPC, Graves Plumbing, Tri-County Builders off site. SMITH Environmental performing site housekeeping.

4324-080: Weddle Brothers removed snow from building walls concrete form areas and performed site housekeeping. No steel work due to unsafe conditions created by snow accumulations.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental maintaining perimeter berms and site barricades. West end excavation still has approx. 1.5' freeboard to accept upcoming precipitation; diversionary berm on east side of trench to control run-on. No dye-soil excavation due to weather.

SUMMARY OF SAMPLING and TESTING

* **SWMU 16/16: Cast High Air Stripper.**

NSWC 16/ES-52: east sump contents
16/WS-53ID: west sump, duplicate sample
16/WS-54I: west sump influent
16/WS-54E: west sump effluent
16/WS-TB53: samples trip blank

Stripper reading at sampling: 294,900. East sump contents transferred to west sump following stripper sampling event.

SUMMARY OF QUALITY CONTROL CONCERNS

* Forecasted cold weather has caused temporary delay in dye-soil excavation/ relocation. MK Soils Engineer evaluating temperature effects on existing lifts and temperature limits for further lift development(s).

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

**MK Daily Report Summary 16DEC96**

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Weekly construction meeting with MK and subcontractors. Meeting minutes attached. Holiday schedule published by MK CM.

**DAILY REPORT FOR DECEMBER 18, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental continuing pond liner anchor trench cleanup/preparation; performed general housekeeping. Tri-County Builders, MPC, Graves Plumbing, Bertram Elect. off site.

4324-080: Weddle Brothers Construction erecting structural steel at building 2. Started Building 3 sidewalls formwork; general site housekeeping. Cold temperatures reportedly creating equipment malfunctions.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental preparing site for holidays shut-down. Improved berming at east end for visible dye material within exclusion zone. Maintenance cap boundary berms and covers.

SUMMARY OF SAMPLING and TESTING

* **SWMU 16/16 - Cast High Air Stripper**
  NSWC 16/WS-55I: west sump influent; NSWC 16/WS-55E west sump effluent (samples shipped with 12/17/96 samples, incl. TB)

SUMMARY OF QUALITY CONTROL CONCERNS

* Issued D.R. for rebar/water stop deficiencies at Biofacility Building 3 (installed under S/C 4324-048).

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Personnel exposure to cole weather - MK and S/C monitoring regularly.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Biofacility S/C starting holidays shut-down 12/19, return 12/26.
* DBG S/C starting holiday shut-down 12/19, return 01/02/97.

**DAILY REPORT FOR DECEMBER 19, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: Bertram Electric brought as built drawing up to date.
Tri-County Builders, MPC, Graves Plumbing off site.
4324-080: Weddle Brothers site supervisor performed area walk through.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental supervisor and M.K. soil engineer conducted a site walk through and status review.

SUMMARY OF SAMPLING and TESTING
*None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
*None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

**DAILY REPORT FOR DECEMBER 20, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continued pre-installation assembly of electrical fixtures for Buildings 1,2.
SMITH Environmental personnel secured open trenches and prepared for weekend shutdown.
Graves Plumbing, MPC Inc, Tri-County Builders off site.

4324-080: Weddle Brothers supervision completing administrative duties only.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental off-site; site secured.

**SWMU 10/15: Rockeye**

4324-076: Ellen Environmental tansmitted initial pre-work submittals; MK review in process.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

*Level of waters in Cast High sumps. MK has poly-tank storage capability on site and will utilize if necessary until air stripper is fully operational.

*DBG site security including run-off. No problem as of this report; conditions will be checked daily.

SUMMARY OF SAFETY AND HEALTH CONCERNS

*None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

*No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

*None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

*None this date.

**DAILY REPORT FOR DECEMBER 24, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: Tri-County Builders, Grave Plumbing, MPC off site.
Bertram Electric assembling and installing Building 3 fixtures.
4324-080: Weddle Brothers on site for administrative activity only.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: S/C off site this date. Site conditions being monitored by MK.

SUMMARY OF SAMPLING and TESTING
*Cast High Air Stripper: NSWC 16/WS-56I, west sump influent
16/WS-56E, west sump effluent
16/WS-57TT, west sumps waters in Trailer Tank
16/WS-58FT, west sump waters in poly-tank
16/ES-59, east sump contents
16/WS-TB54, trip blank.

SUMMARY OF QUALITY CONTROL CONCERNS
* Water levels at DBG; condition being monitored daily by MK.
Sump water levels at Cast High; condition monitored daily by MK.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* C. Freeman-EPD requested analytical samples gathered from temporary storage tanks at Cast High; one (1) set of samples gathered from water wagon and one (1) from one of the poly tanks as requested.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* Weekly construction meeting with MK and S/C; minutes attached.

**DAILY REPORT FOR DECEMBER 26, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: Graves Plumbing, MPC, Tri-County Builders off site.
Bertram Electric continuing fixture installation at Building 3.
4324-080: Weddle Brothers nearing completion of Building 2 primary structural steel erection.
**SWMU 02/11: Dye Burial Ground**
4324-054: S/C off site.
**SWMU 16/16: Cast High Air Stripper**
MK transferred approx. 800 gallons water from west sump into poly tanks to increase sump freeboard. Stripper piping repairs continuing.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR DECEMBER 27, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continued installation of overhead lighting in Building 3.
Tri-County Builders, MPC, Graves Plumbing off site.

4324-080: Weddle Brothers Construction completed erection of Building 2 primary steel and commenced steel activity in Building 1. Began concrete formwork for Building 3 sidewalls/curbs.

**SWMU 02/11: Dye Burial Ground**

4324-054: S/C off site.

**SWMU 16/16: Cast High Air Strippper**

Stripper fully operational; temporary heat shelter erected around stripper to prevent further piping problems due to freezing weather.

SUMMARY OF SAMPLING and TESTING

* Cast High Air Stripper: NSWC 16/ES-60, east sump contents
16/ES-61TT, east sump waters in trailer tank
16/WS-62FT, west sump waters in poly-tank
16/WS-62FTMS, matrix spike
16/WS-62FTMSD, matrix spike duplicate
16/WS-63I, west sump influent
16/WS-63E, west sump effluent
16/WS-64ID, west sump influent duplicate
16/WS-TB55, trip blank.

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

MK Daily Report Summary
27DEC96

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

DAILY REPORT FOR DECEMBER 28, 1996
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric installing overhead lights in Building 3.
Grave Plumbing, MPC, Tri-County Builders off site.

4324-080: Weddle Brothers erecting primary steel for Building 1 and installing girts and bracing in Building 2. Drilled and epoxy set dowels for Building 3 sidewalls.

**SWMU 02/11: Dye Burial Ground**

4324-054: S/C off site.

**SWMU 16/16: Cast High Air Stripper**

Air stripper operational. Emptied trailer tank into west sump; pumped east sump to stripper; increased freeboard from 10" to 6'.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Wind hazard during steel erection at Biofacility. S/C supervision and personnel aware of hazard and taking extra caution during rigging/hoisting.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR DECEMBER 30, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric *completed rough installation of overhead lighting* fixtures in Building 3.
MPC, Graves Plumbing, Tri-County Builders off site.
SMITH Environmental personnel working pond trenches and general site barricading and housekeeping.

4324-080: Weddle Brothers forming Building 3 curb walls and erecting structural steel in Building 1.

**SWMU 02/11: Dye Burial Ground**

4324-054: S/C off site this date. Biofacility personnel performed minor berm work and replacing wind blown plastic covers.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Waterstop and rebar misplacement at Biofacility buildings 1,2. Deficiency Report issued to detail and track rework.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR DECEMBER 31, 1996**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric, Graves Plumbing, MPC, Tri-County off site. SMITH Environmental personnel working pond anchor trenches, maintaining site barricades and general housekeeping.

4324-080: Weddle Brothers Construction set dowels in Buildings 2,3; erecting structural steel at Building 1.

**SWMU 02/11: Dye Burial Ground**

4324-054: S/C off site; due back ½/97.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Improving barricading around Biofacility sumps. S/C to erect protective barricade or install wooden sumps covers.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Weekly project meeting with M K and S/C. Minutes attached.

**DAILY REPORT FOR January 2, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric installing electrical wiring from control panel to overhead lights. Panel to be relocated due to curb wall size increase.
SMITH Environmental personnel continue working drainage pond anchor trench.
MPC, Gravces Plumbing, Tri-County Builders off site.

4324-080: Weddle Brothers began concrete placement of Building 3 south curb wall; Building 1 primary steel erection 95% completed.
Earth Exploration performing concrete testing at Building 3.

**SWMU 02/11: Dye Burial Ground**

4324-054: S/C not on site, due back 1/3/97. Barricade maintenance being performed by personnel from Biofacility.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Decon of temporary storage tanks at Cast High. Equipment rinsate samples will be gathered and tanks not relocated until analytical results confirm "clean".

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Weekly telecon meeting with MK, PMO, EPA, Client; minutes attached.

**DAILY REPORT FOR January 03, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Graves Plumbing, MPC, Tri-County Builders off site.
SMITH Environmental maintaining drainage ponds anchor trenches.
Bertram Electric installing overhead lighting conduit in Building 2.

4324-080: Weddle Brothers completed primary steel erection at Building 1; installed sag angles on Building 3; grouted base column base plates at Building 2; forming curbwalls in Building 3.

**SWMU 02/11: Dye Burial Ground** (DBG)

4324-054: S/C back on site; repairing perimeter barricades, silt fences, and berms. Project meeting 1/8/97 to discuss status.

**SWMU 10/15: Rockeye Steam Line Demolition**

4324-076: Ellen Environmental preparing to mobilize next week. Pre-work submittals in with MK for review/approval.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* DBG water accumulation in west excavation. Previous soils engineer direction to permit water dispersal onto cap soils is still applicable but will increase soil moisture relative to compaction.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR January 4, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continuing installation of conduit and supports for Building 2 overhead lighting.
Tri-County Builders, MPC, Graves Plumbing off site.

4324-080: Weddle Brothers Construction installed wind brace cables and roof edge purlins for Building 1; continued framing Building 3 curbwalls and installing fall restraint system in preparation for start of roofing installation.

**SWMU 02/11: Dye Burial Ground**

4324-054: No site activity this date.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR January 6, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental assisting Meissler Transportation with removal of haul trailers from site; moving covers to building sumps. Bertram Electric installing conduit for Building 2 overhead lights. Graves Plumbing, Tri-County Builders, MPC off site.

4324-080: Weddle Brothers placed curbwalls concrete for Building 3 southwall; continued forming for continuing sections of curbwalls. Began installing misc. steel for roof panels and flange braces in Building 3. Earth Environmental testing concrete during curbwall placements.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental maintaining cap area covers and performing general site housekeeping and maintenance.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Personnel protection around Biofacility sumps. S/C scheduled to install metal sump lids 1/7/97.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR January 7, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continuing installation of Building 2 overhead lights MPC, Tri-County Builders, Graves Plumbing off site.

4324-080: Weddle Brothers installing sag bracing and curbwall concrete forms at Building 2; stripped concrete forms from Building 1; installing roof panels and curbwall forms at Building 3.

Client personnel completed high voltage tie-in for main power supply.

**SWMU 02/11: Dye Burial Ground**

4324-054: S/C on site continuing site maintenance activity only.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* NCR 0009-002, improper fill material at Biofacility, CLOSED.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Held weekly project meeting with S/C; meeting minutes attached.

**DAILY REPORT FOR January 8, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continuing overhead lighting conduit installations. SMITH personnel dewatering building sumps and installing covers. Tri-County Builders, MPC, Graves Plumbing off site.

4324-080: Weddle Brothers installing roofing on Building 3, roof braces on Buildings 1,2. Working concrete formwork in Building 3.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: S/C preparing site for FRAC location. Final seasonal demob plan under evaluation by MK and client.

**SWMU 10/15: Rockeye Steam Line Demolition**

4324-076: Completed Preparatory Inspection with S/C; start of work scheduled for 1/9/96, 0730.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Decon of FRACs proposed for DBG area needs to be thoroughly understood. Previous experience with suppliers has been the tanks must be free of all fluids and tested as "clean". Actual testing (visual or analytical sampling) needs to be defined.

  Introduction of possible high explosives in Rockeye lines may require change in work scope and S/C documents. Awaiting client testing of lines for further actions.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Impact of impending inclimate weather on Rockeye asbestos abatement efforts. Conditions will be closely monitored, all effort will be made to start abatement on the date specified by the State permit.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Received agreement-in-principal for SMITH demob actions at DBG. Plan will be submitted to MK for review and approval by MK and client. Disposition of west end excavation waters still an issue.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Meeting on DBG demob by SMITH Environmental. Final details still forthcoming.

**DAILY REPORT FOR January 9, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site work due to inclimate weather.
4324-080: No site work due to inclimate weather.

**SWMU 02/11: Dye Burial Ground**
4324-054: S/C removing snow from cap perimeter area. FRAC tank(s) scheduled for delivery 1/10/97.

**SWMU 10/15: Rockeye Steam Line Demolition**
4324-076: S/C removed 3' section of pipe insulation to provide access for base personnel testing of pipe contents. No other activity due to steady snow.

SUMMARY OF SAMPLING and TESTING
* 4324-076: Ellen Environmental air monitoring during removal of asbestos material.

SUMMARY OF QUALITY CONTROL CONCERNS
* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date; asbestos material from Rockeye piping was bagged, labeled, and stored in locked storage at Rockeye.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* DBG subcontractor to mobilize FRACs to site and immediately commence dewatering west end excavation.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR January 10, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site work due to inclimate weather.
4324-080: No site work due to inclimate weather.
**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: S/C removing snow for area to set tanks. Three 20,00 gallon FRAC tanks delivered.
**SWMU 10/15: Rockeye Steam Line Demolition**
4324-076: No site work

SUMMARY OF SAMPLING and TESTING
* None taken this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* Installation of secondary containment area at DBG after FRACs have been set. MK Soils Engineer is evaluating regulatory and work plan requirements to develop proposed containment.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* DBG dewatering into FRACs will not occur until client/EPA has approved secondary containment plan and containment is in place.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* Notified SMITH Environmental - no dewatering into FRACs until further notice.

**DAILY REPORT FOR January 13, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continued roughin of electrical fixtures for Bldg. 2. All other S/C off site due to inclimate weather.

4324-080: S/C off site due to inclimate weather.

**SWMU 02/11: Dye Burial Ground**

4324-054: General site maintenance activity only.

SUMMARY OF SAMPLING and TESTING

* **Cast High Air Stripper:** NSWC 16/WS-65I, west sump influent
  NSWC 16/WS-65E1, west sump effluent
  NSWC 16/WS-65E2, west sump effluent
  NSWC 16/WS-TB56, trip blank

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR January 14, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric continued electrical fixtures assembly for Building 2. All other S/C off site due to inclimate weather.

4324-080: SMITH Environmental loaded surplus rafters, and steel shipping racks, onto trailers for transport offsite by A&S Steel. Weddle Brothers off site due to inclimate weather.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: S/C performing equipment maintenance/repairs; breaking up ice in west excavation.

SUMMARY OF SAMPLING and TESTING

* **Rockeye:** NSWC 10/15-043, pipe wrap material (suspect asbestos).

NSWC-STP-001: Sample of POTW sludge from Sewage Treatment Facility.

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Held weekly coordination meeting with MK and S/Cs; meeting minutes attached.

**DAILY REPORT FOR January 15, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental personnel removing snow from work areas. All other S/C off site due to inclimate weather.

4324-080: S/C off site due to inclimate weather.

**SWMU 02/11: Dye Burial Ground**

4324-054: S/C prepping north and east areas of site for upcoming excavation activity. All other work on hold.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR January 16, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: S/Cs off site due to inclimate weather.
4324-080: S/Cs off site due to inclimate weather.

**SWMU 02/11: Dye Burial Ground**
4324-054: S/C on site for H&S inspection activity only.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* Visible discolored soil on outer surface of cap berm, west end. No evidence of migration beyond berm surface (frozen). Subcontractor to "seal" area with clay soil from outside exclusion zone area.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* Held weekly telecon with PMO and client; minutes attached.

**DAILY REPORT FOR January 17, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
No S/C activity due to inclimate weather
**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: S/C performing gross decon of heavy equipment.
**SWMU 16/16: Cast High Air Stripper**
4324-0009: Unusual influent since 1/16 exceeded west sump capacity. MK personnel activated stripper and processed all sump volume through stripper. No further problems noted. Unable to contact EPD for notification of incident.
**SWMU 10/15: Rockeye Steam Line Demolition**
S/C off site due to inclimate weather; awaiting lab test results.

SUMMARY OF SAMPLING and TESTING
* SWMU 16/16: Cast High Air Stripper
NSWC 16/WS-66I, west sump influent
NSWC 16/WS-66E, west sump effluent
NSWC 16/WS-TB56, trip blank
* SWMU 10/15: Rockeye Pipe Wrap Material Sample Results
NSWC 10/15-043: Material is non-asbestos.

SUMMARY OF QUALITY CONTROL CONCERNS
* Control of sump levels at Cast High. Discussed situation with P. Chevalier; MK is in process of erecting "permanent" heated structure over stripper and burying discharge piping (frozen discharge lines root cause for latest incident).

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Severe wind chill temperatures create risk of overexposure by personnel working the DBG site. Situation discussed with S/C SSHO; conditions being closely monitored.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Received SMITH Environmental proposal for winter demobilization from DBG. Submittal review in process by MK.

**DAILY REPORT FOR January 18, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
No S/C activity on site this date.
**SWMU 02/11: Dye Burial Ground**
4324-054: Performing gross decon of heavy equipment and filling sandbags in preparation for winter demobilization from site.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Personnel exposure to extreme cold temperature/wind chills; conditions being closely monitored by MK and S/C safety.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR January 19, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
No site activity this date.

**SWMU 02/11: Dye Burial Ground**
4324-054: S/C performing preparations for winter demobilization only.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR January 20, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental personnel removing snow/ice from general site area.
Bertram Electric assembling light fixtures.

4324-080: Weddle Brothers off site due to ice on slabs.

**SWMU 02/11: *Dye Burial Ground (DBG)***

4324-054: S/C continuing mechanical decon of equipment and preparing for final equipment decon.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Approval of winterization plan for DBG. Rain/snow potential this week create concern with existing bermed areas holding volumes. S/C and MK discussing contingencies in this event.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* PjM reviewed with OICC the possibility of emergency dewatering DBG impoundments into FRACs, in current stored position, to avoid release beyond exclusion zone areas. Site conditions will be regularly monitored and OICC contacted further if this action is deemed necessary.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR January 21, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric assembling fixtures for Building 1,2. MPC, Tri-County Builders, Graves Plumbing off site. Weddle Brothers Construction forming west end curbwalls for 1/22 pours; installing cable braces in Building 1,2; installing roof panels on Building 3.

4324-080: This S/C not longer active; all previously reported activity under -080 is now within scope of 4324-049.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: S/C on administrative hold for personnel issues. S/C and MK are regularly monitoring water levels/berm conditions for overflow potential.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC 16/ES-67, east sump in place water
16/ES-67MS, east sump matrix spike
16/ES-67MSD, east sump matrix spike duplicate
16/WS-68E, west sump effluent
16/WS-69E, west sump effluent duplicate
16/WS-TB58, trip blank

SUMMARY OF QUALITY CONTROL CONCERNS

* S/C notified to stop work at DBG until appropriate S/C supervision and H&S person(s) were present on site. Previously approved person scheduled back on site 1/22/97.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* PPE selection and decon procedures for equipment at DBG. S/C plan and AHAs being reviewed with notification to site representative as to needed changes.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* PjM reviewed 4324-054 winterization plans with EPD; comments forwarded to

S/C for incorporation into revised plan. Received OICC concurrence to change Biofacility buildings siding from mesh fabric to sheet metal panels.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Held weekly progress meeting with MK and SMITH Environmental; meeting minutes attached. Held telecons with S/C home office to expedite resolution of comments for approval of DBG winterization proposal.

**DAILY REPORT FOR January 22, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental personnel working perimeter areas of buildings to improve drainage of run-off water.
Weddle Brothers unable to work due to rain; covered curbwall forms prior to leaving site.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: Emergency dewatering of west excavation; to provide additional freeboard to accommodate rain/snow melt run-on. Experienced berm breach at west end excavation, at approx. 0850 hrs.

SUMMARY OF SAMPLING and TESTING

* SWMU 16/16, Cast High Air Stripper
  - NSWC 16/ES-70, east sump inplace water (a.m.)
  - NSWC 16/WS-71I, west sump influent (a.m.)
  - NSWC 16/WS-71E, west sump effluent (a.m.)
  - NSWC 16/WS-TB59, trip blank
  - NSWC 16/WS-72I, west sump influent from pipe in sump (p.m.)
* SWMU 02/11, Dye Burial Ground
  - NSWC 02/11-06, west excavation dye-contaminated water
  - NSWC 02/11-07, water from stream north of excavation

SUMMARY OF QUALITY CONTROL CONCERNS

* Uncontrolled release of dye-contaminated waters from northside berm of west excavation at DBG. Extensive visual inspections performed to determine extent of water migration; all evidence indicates release contained to area within approx. 40' north of berm. NCR being issued.
* 4324-034, numerous close-out submittals have not yet been received by MK. Details being provided to PMO for further review/action.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Limiting personnel and environmental impact of dye-contaminated water at DBG. In-depth review of S/C emergency preparedness will be performed once present situation is resolved.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* MK/Subcontractor to monitor DBG ponded waters and surrounding areas every two (2) hours through the night.
* OICC approved use of FRACs for emergency dewatering; EPD notified of actions.
* EPD expressed strong concerns with 4324-054 personnel's state of readiness for unusual/emergency events.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* DBG subcontractor directed to take immediate actions necessary to plastic cover entire DBG exclusion zone as soon as possible. Directed dewatering of west end excavation, into FRACs, to stop water flow from berm breach area.

**DAILY REPORT FOR January 23, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric installing wiring in Building 2 for lighting and power. Weddle Brothers placed concrete in Building 3 curbwalls; continuing placement of roof panels on west half of Building 3; installing sag angles on Bldg.1.
Earth Exploration on site for concrete testing during curbwall pours.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental completed placing plastic cover over entire cap area for protection of run-on/off; continued west end excavation dewatering into FRACs; additional FRAC delivered; established exclusion zone at 1/22/97 release area north of west excavation and covered area with plastic.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Water levels at DBG are below grade; no further run-off occurring from cap area; previous condition of run-off under control at this time. Requirements for decontamination of FRACS still needs to be defined. If analytical testing is required, impact on personnel and equipment decon should be evaluated ASAP.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Effect of extended work shifts on DBG personnel; personnel being monitored by S/C and MK SSHOs with corrective actions taken if necessary.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* EPD directed DBG excavation ice be placed into FRAC.
* Received directive from Code 095 detailing required actions and required completion date (Tuesday, January 28, 1997). In part, cap must be completely covered by 22:00 this date or, site emergency response contractor would be mobilized to complete required tasks. Further, EPD instructed MK to handle this activity as a continuous effort until all required tasks are controlled, contained,

and completed.

* T. Brent, EPD, requested silt fence and haybales be placed at all points of potential run-off from covered areas.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Received revised DBG dewatering plan; reviewed with EPD/OICC.
* Notified S/C to procure lighting for night work and pump this date until FRAC delivered today is full, or west excavation is empty (DBG).
* Approved use of double layer, 6 mil plastic in lieu of single, 10-mil layer for DBG.
* Established priority for S/C; use Biofacility personnel (that have required training) at DBG as necessary to complete dewatering/cap covering work.

DAILY REPORT FOR January 24, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No work due to weather.

**SWMU 02/11: Dye Burial Ground**
4324-054: SMITH Environmental continuing efforts to remove ice from west excavation; working on FRAC staging pad with plastic and stone lining; decon of equipment.

SUMMARY OF SAMPLING and TESTING
* SWMU 02/11, Dye Burial Ground
NSWC 02/11-06, west excavation waters (dye-contaminated)
02/11-07, water from stream north/downhill from west excavation.
02/11-TB61, trip blank

SUMMARY OF QUALITY CONTROL CONCERNS
* Run-off from plastic covered areas and 1/22/97 release area. Site conditions being monitored regularly by MK and S/C. 3 small puddles of green water found near north leg area; areas immediately bermed, plastic covered with grade to the north to prevent further problems. Briefed T. Brent-EPD during site visit.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Personnel stress due to extended work hours and cold weather; conditions being monitored by MK and S/C SSHOs.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* EPD/OICC requested M K work continuous through the weekend in an effort to complete Dye Burial Ground corrective actions no later than January 28, 1997 a.m. M K reported that corrective actions may be completed by January 26th p.m., if material logistics and weather permitted.
* EPD wants M K to assure incoming water containers (FRACs) are certified water tight. Later clarification was for M K to inspect containers for visible condition and record same.

* EPD directed that west excavation berm material be handled as waste and placed in excavation after ice is removed. M K to assure each backfill layer is demarcated for future reference.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* SMITH Environmental home office reported a January 26 p.m. completion at DBG is material deliveries are on schedule and weather permits.

**DAILY REPORT FOR January 25, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Weddle Brothers forming Building 3 north curbwall; installing roof panel components.
Bertram Electric installing overhead lighting in Building 2.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental continuing preparations for de-icing west excavation and establishing FRAC staging area (plastic lined with stone cover); S/C and M K performing periodic inspections of site conditions.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Integrity of Baker FRACs and mud boxes. Received leak/operational test reports for mud boxes. Visual inspection of FRACs and mud boxes received this date found no sheen, residues, or distinguishable odors inside; valves and ports appear operational and leak free.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Continued monitoring of personnel for stress due to extended work hours and weather conditions. One (1) reportable, non-lost time injury occurred.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* T. Sears/OICC notified M K he was assigned to oversee DBG activity and he would keep OICC informed of progress.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* SMITH notified M K of two (2) additional workers being mobilized to assist with DBG activities; scheduled in for nightshift.

**DAILY REPORT FOR January 26, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site work this date.

**SWMU 02/11: Dye Burial Ground**
4324-054: S/C completed west excavation backfill at approx. 2300 hours; dry decon of heavy equipment continuing; minor problems being corrected prior to equipment leaving decon area. Unable to commence transferring waters from FRACs due to cold weather.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* Acceptability/function of cap cover. Continuing regular inspections for site conditions, including run-off from covered areas - no problems found to-date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* Notified B. Robertson that due to freezing temperatures and major accomplishments with the corrective actions at DBG, nightshift personnel brought in to augment dayshift activities; nightshift on reduced schedule.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* Demarcation of west excavation layers to be: 1) yellow caution tape strips to run lengthwise at bottom of excavation after removal of ice. 2) black plastic to cover berm soil pushed in prior to completing backfill with "clean" soils. This demarcation was done /verified by M K.

DAILY REPORT FOR January 27, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric, Tri-County Builders, MPC, Graves Plumbing off site.
Weddle Brothers Construction removing forms from Building 3 curbwalls. Limited work shift due to rain.

**SWMU 02/11: Dye Burial Ground** (DBG)

4324-054: SMITH Environmental transferred waters from FRAC S1885EA into FRAC 1001MEA; continued developing crown atop west excavation backfill area; building lean-to style plywood and covers for mud boxes;

**SWMU 16/16: Cast High Air Stripper**

Morrison Knudsen continuing transfer pumping and operation of air stripper. Heavy rains/snow melt run-off causing over-capacity condition for air stripper operation. Situation being monitored and EPD informed of changing conditions.

SUMMARY OF SAMPLING and TESTING

* SWMU 16/16, Cast High Air Stripper
  NSWC 16/ES-73, east sump content
  NSWC 16/WS-74I, west sump influent
  NSWC 16/WS-74E, west sump effluent
  NSWC 16/WS-TB61, trip blank
  Note: samples to be shipped 1/28/97.

SUMMARY OF QUALITY CONTROL CONCERNS

* DBG - additional discovery of dye materials. Although very small, scattered areas found, reviewed situation with S/C and MK SSHOs and emphasized need for all personnel to stay alert to possibility of more encounters. S/C and MK are performing regular inspections of site conditions, including visible dyes.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Personnel and environmental exposures during transfer pumping of dye-contaminated waters being closely monitored; no incidents to-date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* All available personnel assigned to dayshift (0600-1800) due to stabilized site conditions. S/C will conduct a site inspection at approx. 2400 hrs.

**DAILY REPORT FOR January 28, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No activity this date due to freezing temperatures

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental continuing water transfer activities (FRAC-to-FRAC) and relocating emptied FRACs to new tank pad area; constructing berm around tank pad. Berm completed around mud box area at west end of site.

SUMMARY OF SAMPLING and TESTING
* Shipped samples gathered 1/27/97.

SUMMARY OF QUALITY CONTROL CONCERNS
* Status of FRACs/mud boxes at DBG (as of 15:10):

| | |
|---|---|
| FRAC GS522EA: 13" freeboard | FRAC S650NEA: 16" freeboard |
| FRAC GS505EA: 16" freeboard | FRAC SDE1EA: 14" freeboard |
| FRAC 1001MEA: 8'0" freeboard | FRAC S1885EA: 11'6" freeboard |
| MudBox MEA281: 90% full (ice) | MudBox MEA280: 80-85% full (ice) |

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Personnel protection during transfer of dye-impacted waters in FRACs; all personnel using proper PPE and no incident to-date. MK and S/C SSHO monitoring ongoing work.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* RAB meeting attended by Sr. PjM, PjM, CM.

**DAILY REPORT FOR January 29, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental cleaning off snow/ice melt from buildings slabs; installed additional run-off controls SW of lower drainage pond (silt fencing and haybales). Sand delivered to site for future use on ice surfaces.
Bertram Electric continuing electrical roughin of Building 2.
Weddle Brothers Construction installing curb forms for Building 2. Limited work shift due to ice on buildings slabs.

**SWMU 02/11: Dye Burial Ground**

4324-054: SMITH Environmental completed grade and berm work at west end of site; completed lean-to style covers atop mud boxes; completed water transfer from FRAC SDE1EA to FRAC S1885EA. Equipment decon difficult due to frozen soil on/about equipment. S/C ordered air compressor and air chisels to assist with decon (ETA 1/30/97).

**SWMU 16/16: Cast High Air Stripper**

SMITH Environmental staged bedding sand for upcoming activity to bury stripper discharge piping.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Leak control measures during DBG FRAC water transferring. NCR 4324-0009-006 issued, 2 leakage events occurred this date. Reviewed work practices with MK SSHO and CM; corrective measures to be implemented 1/30/97.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Received approval from T. Brent-EPD, to send Alan Debus-EPA advance copy of

Biofacility Pilot Scale QAPP. Advance copy will accommodate EPAs scheduling for timely review of plan.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Friday 1/31/97, 0800 meeting scheduled with Cmdr. Fred Smith to review material which was presented to RAB 1/28/97.
* Staff meeting with M. Wilson, MK Manager of Field Operations. Emphasis on cost/schedule tracking and accountability, positive team-building activities, and maintaining proactive communication with client.

**DAILY REPORT FOR January 30, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: *Bioremediation Facility***

4324-049: Bertram Electric continuing Building 2 electrical rough-in. Weddle Brothers placing roof panels on west half Building 3; installing rebar and concrete formwork for Building 3 curbwalls, and Building 2 curbwalls, east end-southwall. Tri-County Builders, MPC, Graves Plumbing off site this date.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental continuing transfer of waters from west end FRACs to FRACs on new tank pad; installing run-off control fencing/hay around site areas of concern; completed decon of smooth drum roller. Biofacility personnel filling sandbags for DBG use. 4 FRACs staged to-date at new tank pad area. S/C home office coordinating with MK in developing winterization/contingency plans; including incorporation of client input.

**SWMU 16/16: Cast High Air Stripper**

SMITH Environmental to begin burying discharge line 1/31/97.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Tracking equipment decon at DBG and FRAC "certification" tracking. Developed logsheets and inspection checklists for these activities.
* Water spillage during FRAC-to-FRAC pumping; no incidents this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Run-off control at DBG; continuing additional controls based upon site review and client input.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Weekly telecon meeting with PMO and client; meeting minutes attached.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Weekly project meeting between MK and S/C; meeting minutes attached.
* Met with CMDR F. Smith, NSWC-Crane, to review materials presented to RAB.

**DAILY REPORT FOR January 31, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Tri-County Builders, MPC, Graves Plumbing off site this date. Weddle Brothers Construction placed concrete for last section of Building 3 north curb wall; continuing roof installation on Building 3 west end; working concrete forms for Building 2 east curb wall. Bertram Electric started electrical rough-in for Building 1. SMITH Environmental filling/delivering sandbags to DBG. Jacobs Engineering-Baton Rouge continuing project support in disposition of open deficiency items and S/C requests for clarifications or as-built conditions.

4324-0009: MK Site and Cleveland continuing modifications/review of Operational QAPP.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental completed water transfers from original FRAC locations to new tank pad area, all FRACs now staged within plastic lined, stone-covered tank pad area; completed decon of 12' Miller discs, D5C bulldozer, and sheepsfoot compactor; installed silt fencing/haybales for run-off control into ditch at SW corner of site; conducted site conditions inspections.

**SWMU 16/16: Cast High Air Stripper**

4324-049: SMITH Environmental fabricating air stripper discharge line and installing in trench (approx. 30" below grade).

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Inspections of DBG site conditions, during snow melt from warmer weather, for signs of additional scattered dye material. S/C personnel aware of potential conditions.
* Control of equipment decon ingress/egress to prevent spreading contaminated soils/waters. Additional boot wash to be installed at decon zone as precautionary measure.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Assisting S/C with development of DBG Site Contingency Plan.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* B. Robertson-OICC off-site for extended period; MK contact is Mr. Jim Riggins.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR February 1, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Tri-County Builders, MPC, Graves Plumbing off site this date. SMITH Environmental personnel filling sandbags for 4324-054. Weddle Brothers working formwork for Building 2 south curbwall; sandblasting previously poured concrete in Building 2 in preparation for subsequent pours; continuing roof panel installation on Building 3; general site housekeeping.
Bertram Electric installing overhead lighting conduit in Building 1.

**SWMU 02/11: Dye Burial Ground**

4324-054: S/C continuing site clean-up for demobilization; completed decon of all heavy equipment within exclusion zone; completed replacement of plywood/plastic-covers for mudboxes; adding additional silt fencing and haybales at west end of site. Demob planned for 2-3/4-97.

**SWMU 16/16: Cast High Air Stripper**

4324-049: SMITH Environmental completed installation of buried PVC discharge piping. Stripper fully operational.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Issued Preparatory Inspection Notification (DBG Site Conditions Inspections); Monday, February 3, 1997 at 13:00.
* Containment and collection of incidental dye-waters and dye-soils during winterization period at DBG. S/C-MK contingency plan to include these concerns. Issued NCR 4324-0009-005 Rev. 1; green-water run-off from under NW corner of plastic cover over cap area. No visible into adjacent stream area.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 2, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site activity this date.
4324-0009: MK personnel delivered 4X4 hay bales to borrow pit area; for pilot scale operations use.

**SWMU 02/11: Dye Burial Ground**
4324-054: S/C completed decon of Kobelco bucket and hand tools used for decon; staged polytank and sump pump in preparation for dewatering accumulated waters at NW corner of cap area; completed final dress-up grading of S/W areas of site.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR February 3, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric installing conduit supports in Building 1.
Weddle Brothers Completed installation of Building 3 roof panels; poured curbwall sections in Building 2; installing eave angles on Building 2.
SMITH Environmental enlarged hole for heat pump, and installed pump shroud, in Decon Bldg.
Earth Exploration testing concrete during Building 2 pours.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental continued final stages of site winterization including, pumping water from north of 1/22 impact area into FRAC, pumping water from cap area sump into FRAC, site housekeeping, and equipment demob; conducted site conditions inspections as required.

**SWMU 26/08: Dump Site "B"**

4324-0009: MK-Crane personnel backfilled remaining excavations and performed site restoration activity.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Rescheduled 2/3/97 Preparatory Inspection for 2/4/97 due to client and MK scheduling conflicts.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Completion of barricades, signage, decon pad, etc. for DBG winterization. Site walk with S/C SSHO to be 2/4/97 and open items identified.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Reached agreement between MK, EPD, SOUTHDIV to proceed with Pilot Scale Operation plans as issued; with addendum forthcoming to address use of POTW sludge materials.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Delivered MK-S/C DBG Winterization Plan to client for review.

**DAILY REPORT FOR February 4, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: Lower-tier S/C on-site but short shift due to rain.
SMITH Environmental grading mud accumulation from site.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental completed their planned actions for winterization/demob of current DBG staff; attended MK Preparatory inspection meeting; transferred DBG materials to Biofacility trailer.
4324-0009: MK-site and Cleveland reviewing analytical results and investigating options for on-site treatment/disposal. MK regulatory specialist involved to assure any/all options are in compliance with applicable regulations.

SUMMARY OF SAMPLING and TESTING
**SWMU 16/16: Cast High Air Stripper**
NSWC 16/ES-75, east sump contents
NSWC 16/ES-75MS, matrix spike
NSWC 16/ES-75MSD, matrix spike duplicate
NSWC 16/WS-76I, west sump influent
NSWC 16/WS-TB62, trip blank

SUMMARY OF QUALITY CONTROL CONCERNS
* Coordination of DBG site turnover between S/C site staff. Held Preparatory Inspection meeting with MK, client, and S/C present; need final approval of winter closure plan as soon as possible.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Completion of H&S related actions for DBG winter closure. Site walk performed and S/C supervisor notified of open action items.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* Per OICC, 1) Biofacility power poles for truck scales area, require 25' setback from road and 25' clearance each side of pole, 2) electrical service required is primary, not secondary.

* On site meeting with MK-PMO, SOUTHDIV, EPD, OICC. MK Actions:
  1) Establish by 2/7, date for Biofacility Opening Ceremonies.
  2) MK, OICC, EPD, SOUTHDIV will start having on-site monthly meetings
  3) MK must improve accuracy of, and compliance to, project schedules.
  4) MK to increase level of detail in existing site plans (Erosion Control, Environmental Protection, etc.) or develop additional plans as necessary to address site issues. Detailed excavation plan of particular interest.
  5) Continued improvements with communications amongst project team; with extra attention to written communications.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Held weekly project meeting with S/C; meeting minutes attached.
* MK *assumed responsibility for procurement of Biofacility buildings siding from* A&S Buildings; scheduled delivery date - 2/8/97.

**DAILY REPORT FOR February 5, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: MPC, Graves Plumbing, Tri-County Builders off site this date. Bertram Electric installing conduit for Building 1 overhead lighting. Weddle Brothers installing Building 2, west end, roof panels; forming curbwalls for concrete placement.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental working open items for site winterization; performing site conditions inspections in a.m.and p.m. Office trailer to remain at site for operational support.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC 16/WS-77I, west sump influent
NSWC 16/WS-78I, influent duplicate
NSWC 16/WS-77E, west sump effluent.
(Samples shipped with 2/4/97 gathered samples)

SUMMARY OF QUALITY CONTROL CONCERNS

* Disposition of 4324-049 field clarification requests experiencing delays due to need for off-site engineering involvement. MK assignment of on-site engineer, effective 2/10/97 expected to resolve concern.
* Thoroughness of DBG site inspections by S/C, and implementation of remediation actions as necessary. MK quality continuing to monitor S/C performance; no problems at this time. See S&H comments.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Completion of open items at DBG; S/C personnel responsive MK requests.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Notified OICC of site engineer assignment by MK.

**DAILY REPORT FOR February 6, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: MPC, Tri-County Builders, Graves Plumbing off site this date. S/C reported that Graves Plumbing no longer involved with S/C; new plumbing crew scheduled for arrival on-site early next week.
Bertram Electric completed Building 1 conduit rough-in; preparing to install final service wiring for Building 3 lighting.
Weddle Brothers Construction installing Building 2 roof panels; completed formwork for curbwall pour 2/7/97.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performing site conditions inspections; pumping accumulated waters into FRAC; dewatering non-colored run-off from bermed areas around FRACs and mudboxes.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Approval of MK-S/C Winterization for DBG; plan with client for review/comments.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Received verbal approval, from Jim Riggins-OICC and Jimmy Jones-COTR, for purchase of laboratory/storage trailer for use at Biofacility.
* T. Sears-OICC ConRep relayed client's preference to have Biofacility truck scales electrical service routed underground. Power is to be primary service, not secondary.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Held weekly telecon with PMO, SOUTHDIV, MK; minutes attached.
* Notified EPD (memo attached) of dye water treatment options and status of EPA review/comments to the Biofacility QAPP and Operational Plan. Telecon 2/7/97.

**DAILY REPORT FOR February 7, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric completed service wiring to Building 3 panel; power pole guywork scheduled for early next week, followed by final preparations for high-voltage tie-in to site power.
SMITH Environmental improving site access roadways with mud removal and rock placements.
Weddle Brothers poured concrete in Building 2 north curbwall, east section; started roof panels installation on Building 2 west end.
Tri-County Builders, MPC, Graves Plumbing off site.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducting site conditions inspections; pumped approx. 200 gallons dye-impacted water from cap area sump into FRAC.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Unstable, muddy grade adjacent to Building 3 preventing timely completion of final wiring by Bertram Electric. Rock to be placed and hoist set-up will be checked prior to use.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* POTW Sludge Analytical testing - EPD currently has test data for metals and PCBs; MK to sample and have analysis for Volatiles, Semi-Volatiles, Herbicides, Pesticides. Associated costs yet to be determined, lab selection in-process.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 8, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: SMITH Environmental maintaining work area roadways.
Bertram Electric continuing Building 3 service installation.
Weddle Brothers working Building 2 concrete forms.
**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site conditions inspection, with oversight by MK. No remediation actions today.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR February 9, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site activity this date.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site conditions inspection; no concerns noted, no remediation activity this date.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* Repair of broken ladder section on FRAC S650NEA, to facilitate safe access for FRAC level verification. MK SSHO working with S/C to expedite repairs.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR February 10, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric Power pole guywork scheduled for this week, followed by preparations for high-voltage tie-in to site power. SMITH Environmental improving site access to buildings. Weddle Brothers Installing forms for Building 2 north curbwall, west section; worked on roof panels installation on Building 2 west end. Tri-County Builders, MPC, Graves Plumbing off site.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducting site conditions inspections; pumped approx. 200 gallons dye-impacted water from cap area sump into FRAC. Reset sand bags on north leg.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

*Hazard analysis needed for siding material at Bio-Facility buildings prior to installation.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 11, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric Continuing work on electrical installation for Bio-Facility buildings.
Weddle Brothers Poured concrete for building 2 north curbwall, west section; Installing sag straps on building #1 and housekeeping activities in all buildings.
Tri-County Builders, MPC, Graves Plumbing off site.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental Conducting site conditions inspections. Ground and small amounts of impounded water frozen.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 12, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric Completed electrical to heat pump for decon building.

Weddle Brothers Worked on forms for curb wall south-side west end of building #2. Started siding installation south wall bays 11 and 12 on building #3.

Tri-County Builders, MPC, Graves Plumbing off site.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental Conducting site conditions inspections. Cleared around drain nozzles of frac tanks to facilitate inspection.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Received authorization to proceed with sampling and analysis of Mine Fill A prior to approval of QAAP. EPD advised that some drain ports on frac tanks were embedded in gravel and could not be fully inspected. Received direction to analyze green water for metals, VOC's, and cyanide prior to and after treatability test.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 13, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric Completed installing light fixtures in building #1. Installed guy wire supports for power poles supplying Biofacility Buildings.
Weddle Brothers Worked on forms for curb/wall south-side bays 3, 4, 9, 10, and 12 of building #2. Installation of rebars for curb/walls, building #1. Install roof panels on building #2 and siding panels on building #3.
Tri-County Builders, MPC, Graves Plumbing off site.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental Conducting site conditions inspections. Pumped clean water from frac tank berm. Relocated sand bags on lining material.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR February 14, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electrical Completed terminations on electrical service. Weddle Brothers poured concrete for curb/wall south-side bays 3, 4, 9, 10, and 12 of building #2. Installation of forms for curb/walls, building #1. Install roof panels on building #2 and siding panels on building #3.
Tri-County Builders, MPC, Graves Plumbing off site.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental Conducting site conditions inspections. Pumped clean water from north leg berm.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 15, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric installed power distribution panel and conduit in Building 2.
Weddle Brothers relocated concrete forms to Building 1; completed Building 1 roof panels installation and started eave trim.
Tri-County Builders, MPC, Graves Plumbing off site this date.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted daily site conditions inspection; pumped approx. 250 gallons dye-water from cap area sump into FRAC 1001MEA.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None identified this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 16, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site activity this date.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted daily site conditions inspection; minor corrections to sand bags locations.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR February 17, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Bertram Electric installing electrical conduit and service panel in Building 2.
Weddle Brothers Construction installing Building 2 roofing panels; Building 2 formwork for southside curbwalls.
Graves Plumbing, Tri-County Builders, MPC off site this date.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site conditions inspections. Oversight by MK.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Safe transport of amendments to Biofacility area; partial load lost today. Reviewed with drivers the safe practices for loading and securing loads.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 18, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental performing site maintenance and drainage control activity.
Bertram Electric installed and tested device wiring in Building 2.
Weddle Brothers attempted to install Building 1 siding - discontinued due to high winds; Installing roof panels on Building 2; poured 200' of Building 1, southwall curb; testing by Earth Exploration.
MPC, Tri-County Builders, Graves Plumbing off site this date.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performing site conditions inspections; dewatered non-colored water from mudbox impoundment area; transferred approx. 200 gallons from sump into FRAC 1001MEA.

**SWMU 13/14: Mine Fill B**

MK and EPD conducted site walk and identified additional grading work required to support pilot scale operation material excavation. Awaiting SOUTHDIV authorization before commencing grade work

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC 16/WS-79I, UST pit water (work by others)
NSWC 16/WS-TB63, trip blank

**SWMU 13/14: Mine Fill B**

MK sampling personnel reviewing maps and SAP in preparation for sampling 2/20/97. MK Sampling Engineer - Ann Simonson.

SUMMARY OF QUALITY CONTROL CONCERNS

* PREPARATORY INSPECTION: 2/20/97, 0900 for Biofacility Plumbing.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* High wind effects on sheet metal work at Biofacility. Safety restraints in place and usage being monitored.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Adrienne Wilson, SOUTHDIV, instructed MK to hold today's samples until further notice. Sample holding times not compromised by delayed shipment.
* T. Brent directed MK to pump remaining UST pit water into polytank (previously staged at Cast High). Action followed air stripper shut down due to clogged filters from high solids content in pit water.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR February 19, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Weddle Brothers continued concrete placement for Building 1 south curbwall; continuing Building 1 roofing panels installation (siding work not performed due to high wind); forming Building 1 west ramp and curb areas.
Bertram Electric, MPC, Tri-County, Graves Plumbing off site today.
SMITH Environmental performing site cleanup work.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed daily site inspections with MK oversight; dewatered mudbox area (non-colored water).

SUMMARY OF SAMPLING and TESTING

**SWMU 02/11: Dye Burial Ground**
NSWC 02/11-08, FRACs composite
NSWC 02/11-TB64, trip blank
(Samples sent to Calgon for treatability study)

**SWMU 12/14: Mine Fill A Characterization Sampling**
**MPSICS01, composite soil sample - grid 1 (shallow)**
**MPSICS02, composite soil sample - grid 1 (deep)**
**MPSTB0219, trip blank**
(samples to be shipped 2/20/97)

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* Adrienne Wilson, SOUTHDIV, authorized shipment of samples gathered from Cast High 2/18/97. (See attached E-mail).

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

**DAILY REPORT FOR February 20, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental grading site area for access to buildings. Weddle Brothers installing Building 1 roof panels; forming Building 1 curbwalls; clean-up of Building 2,3 interiors. Tri-County Builders, MPC, Bertram Electric, Graves off site today.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducting site inspections as directed, with MK oversight; transferred waters from cap sump into FRAC; placed additional plastic over additional surface dyes found on northside of site adjacent to cap area; collected approx. 1 pound of soil/dye from outside of west end berm and placed under cap area plastic.

**SWMU 12/14: Mine Fill A**

MK-Cleveland providing field sampling personnel in support of Pilot Scale pre-startup activities.

SUMMARY OF SAMPLING and TESTING

**SWMU 12/14: Mine Fill A**

MPSFA0220, tap water source for decon (field blank)
MPSRB0220, equipment rinsate blank
MPSICS04, composite sample from grid 2 (deep)
MPSICS03, composite sample from grid 2 (shallow)
MPSFB0220, reagent decon water (field blank)
Samples from today and 2/19 shipped to lab.

SUMMARY OF QUALITY CONTROL CONCERNS

* Appearance of additional surface dyes at DBG. Reviewed situation with S/C inspection personnel and all are aware to closely watch surface areas; particularly during rain events. S/C continues to demonstrate excellent remediation response and is communicating well with MK about events and/or concerns.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None identified this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Held weekly telecon meeting with client, EPD, PMO; minutes attached.

**DAILY REPORT FOR February 21, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: MK off loading amendments into Building 2 for Pilot Scale Operation dry-run.
All other S/C off site due to rain.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental transferred waters from sump into FRAC; dewatered mud box berm off non-discolored waters; completed site conditions inspections, with MK oversight, as required.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**
NSWC 16/ES-80, east sump contents
NSWC 16/WS-81I, west sump influent (directly from incoming pipe)
NSWC 16/WS-82I, west sump influent
NSWC 16/WS-82E, west sump effluent
NSWC 16/WS-TB65, trip blank.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Completed incident review of 2/13/97 lost load of corn stalks; see attached.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* Received notification from S/C; Weddle Brothers Construction will not proceed with site activities until payment, for services rendered-to-date, is received from SMITH Environmental. This action effective immediately. MK-site and PMO pursuing with both parties an expeditious resolution of current situation.

**DAILY REPORT FOR February 22, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No S/C site activity this date.
MK staged chicken manure at Building 2.
**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted daily site inspection; transferred waters from sump to FRAC 1001MEA; dewatered FRAC and mudbox berm areas.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR February 23, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site activity this date.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental performed daily site inspection; no remediation actions required this date.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR February 24, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental supporting Pilot Scale dry-run preparations by grading site areas and moving rock for ramps.
MK loading dry-run materials into Building 2; developing access ramp at east end of building.
All lower-tier S/C off site this date. Daily communications between MK and SMITH are occurring; no return-to-work date yet established.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed daily site inspections as required; no remediation actions this date; oversight by MK.

**SWMU 16/16: Cast High Air Stripper**

MK transferred waters from east sump to west sump; increasing freeboard from 2' to 5'5". Stripper fully operational.

**SWMU 12/14: Mine Fill A Sampling For Pilot Scale Operation**

MK-Cleveland engineering on-site to direct sampling efforts. Grids 1-4 completed to-date.

SUMMARY OF SAMPLING and TESTING

**SWMU 12/14: Mine Fill A**

MPSICS05 - Grid 3 shallow
MPSICS06 - Grid 3 deep
MPSTB0224 - trip blank
MPSICS07 - Grid 4 shallow
MPSICS08 - Grid 4 deep

SUMMARY OF QUALITY CONTROL CONCERNS

* QA/QC staffing to support ongoing Biofacility construction, upcoming Pilot Scale Operation, and upcoming Dye Burial Ground restart. Notified PQM of concerns.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* MK and SMITH Environmental continuing discussions on status and upcoming actions to restart construction activities at Biofacility. Restart date not yet established.
* Meeting 2/25/97 with MK and client to discuss contract staffing.

**DAILY REPORT FOR March 3, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site activity this date

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspection with MK oversight;

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 4, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site activity this date

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspection with MK oversight; Checked sump water level and drained water from mud tank storage area.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* MK SSHO developed list of safety items that need to be addressed by Smith prior to starting work on the Biofacility buildings.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* Via telecon between Adrienne Wilson and Steve Downey, it was agreed that the first two test piles (mix #3 and #4) could be disposed of.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 5, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: Conducted preparatory with direct hire personnel for completion of Biofacility buildings 1, 2, and 3.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspection with MK oversight; Drained water from mud tank storage area.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Biofacility building completion safety concerns covered and preparatory meeting held this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* Tim Sears/Wally Medcalf - Chris Freeman of EPD okayed delivery of first two test piles (Mix #3 and #4) to be stored behind NSWC landfill in stock pile configuration. MK to document weight and location. Weigh tickets to be attached to daily reports.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 6, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: Smith Environmental personnel installing rebar and forms for building #1 North curb wall.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspection. (See attached check-list)

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* S. Downey (MK), C. Freeman (EPD), and T. Ellis (RAB) met to review the information package developed for the Biofacility. The information package will be finalized and a story board created from this information.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 7, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: Subcontractor continued installation of rebar and forms for North curb wall on building #1.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspection. Drained water form mud tank bermed area. Remaining area looked good.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
*None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 8, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Subcontractor continued installation of rebar and forms for North curb wall on building #1. Worked on cleaning ramp areas on West end of buildings #1 and #3. Started installation of siding material on South side of building #3.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site inspection. Drained water form mud tank bermed area. No problems noted and area secure.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

*None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR March 9, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: *No site activity this date.*
4324-0009: MK continuing work on dry-run stockpiles in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental performed daily site inspections; multiple inspections due to rain. *Dewatered accumulation areas, no runoff* observed from area.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 10, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental installing formwork for Building 1 north curbwall; placing rebar for Buildings 1&3 west end ramps; installing Building 3 southside siding.
SMITH and Graves Plumbing working on plumbing as-built info,
All other S/C off site this date.

4324-0009: MK working dry-run mixes in Building 1; transported 70,120 lbs. Mix #1 discard to stockpile area SW of landfill.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections with MK overview; dewatered FRAC and mudbox areas.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* MK CM notified by C. Freeman-EPD, EPD/EPA concerned about reoccuring overflows from Cast High sumps; future incidents will not be tolerated.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR March 11,1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental placed Building 1 north curbwall concrete with testing by Earth Exploration; completed siding installation on southside of Building 3.

4324-0009: MK continuing working dry-run mix in Building 2; transported mix #6 and 8 discard to area SW of landfill (240,820 lbs. total).

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH/MK conducting site inspections; dewatered minor accumulation of non-colored water from mudbox bermed area.

**SWMU 16/16: Cast High Air Stripper**

MK emptied polytanks into west sump; completed waters transfer from east-to-west sump. Completed installation of balanced sump pump and float actuator for air stripper; standby sump pump staged at stripper.

SUMMARY OF SAMPLING and TESTING

**SWMU 12/14: Mine Fill A**

MK completed characterization sampling in support of Biofacility Pilot Scale Operations (12 grids total).

CRA\MPSTB0311A, trip blank
CRA\MPSICS21, grid 10 shallow
CRA\MPSICS22, grid 10 deep
CRA\MPSICS23, grid 11 shallow
CRA\MPSICS24, grid 11 deep
CRA\MPSICS25, grid 12 shallow
CRA\MPSICS26, grid 12 deep
CRA\MPSTB0311B, trip blank
CRA\MPSRB0311, rinsate blank
CRA\MPSFA0311, field blank
CRA\MPSFB0311, field blank

All sample shipped to Southwest Labs, 14 day turnaround.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 12,1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental removed concrete forms from west end of Building 1 north curbwall, pour covered with plastic; completed waterstop repairs for Building 1 northwall pour; started Building 3 northside siding installation (west end).

4324-0009: MK continuing dry-run operations in Building 2; finalizing procurement actions for Laboratory Trailer.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site inspections; no remediation actions required this date.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Continued pumping non-colored waters from cap area sump (surrounding area) into FRACs. MK CM to review situation with client.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* PPE requirements for Biofacility operation. Dry-run experiences being used to evaluate possible H&S modifications to support actual operational needs.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR March 13, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental completing Building 1 northwall formwork; placing Building 1,3 west end ramps; layout/installing Building 3 siding (northside).

4324-0009: MK continuing work on Dry-run mixtures.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performing site inspections with MK overview; dewatered mudbox berm area; transferred sump area waters into FRAC.

**SWMU 16/16: Cast High Air Stripper**

MK reset actuator float to initiate at 3' freeboard due to pending rain event. Sump/stripper checked during evening, no problems encountered. Stripper on automatic operation.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Use of animal bloods in Bioremediation process. MK Safety Director reviewing situation to identify H&S regulations and modifications in site H&S practices in the event blood is used.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Weekly telecon meeting between MK, PMO, client; minutes forthcoming.

**DAILY REPORT FOR March 14, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental poured last sections of Building 1 northwall; all walls in all Buildings have been placed; continued installing siding on northside of Building 3.
All lower-tier S/C off site today.

4324-0009: MK working mixture #1 dry-run; forming mixture #2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections; dewatered mudbox area and transferred sump area waters into FRAC.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Site QC realigning tasks, SQCS will assume Biofacility construction inspections and maintain accountability for QCP implementation; P. Chevalier joins QC 3/17 and will support project surveillance, Dye Burial Ground daily inspection, and monitoring miscellaneous project activities.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* High wind hazards around Biofacility. Personnel have been advised of extra precautions to take and site conditions are being monitored.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Effective Monday 3/17/97, daily POD will be held at MK field office-Biofacility.

**DAILY REPORT FOR March 15, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: SMITH Environmental installing siding on Building 3 northside, approx. 1/3 complete; maintenance of concrete pour cure blankets.
4324-0009: MK continuing work on Mix #1, completed forming Mix #2, dry run.
**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducting site inspections.
**SWMU 16/16: Cast High Air Stripper**
Air stripper blower motor defective; new motor to be procured 3/17. West sump waters transferred into polytanks and water wagon; both sump levels low.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* Transfer Cast High west sump into polytanks and water wagon. If sumps levels become critical before stripper is again operational, MK to sample waters in tanks and discharge into sewer. Sump waters then to be pumped into tanks (T. Brent-EPD).

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 16, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No S/C work this date.
4324-0009: MK working dry-run mixtures in Building 2.
**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspections; no remedation actions necessary.
**SWMU 16/16: Cast High Air Stripper**
4324-0027: MK monitoring sump levels, both sumps near "empty".

SUMMARY OF SAMPLING and TESTING
**SWMU 16/16: Cast High Air Stripper**
*Late Entry from 3/15/97 Sampling*
NSWC 16/WS-89E, direct effluent west sump-to-sewer (15:15)
NSWC 16/WS-90E, direct effluent west sump-to-sewer (18:15)

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 17, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: SMITH Environmental installing siding on northside Building 3 (approx. 50% completed).
4324-0009: MK working dry-run mixtures in Building 2.
**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspections; repaired silt fencing and minor holes in plastic cover area.
**SWMU 28/06D: Dump Site B**
Completed site review of Interim Measures Report, comments forwarded to MK-Cleveland.

SUMMARY OF SAMPLING and TESTING
**SWMU 33/00: Bioremediation Facility Dry-Run**
CRA\BDR107A1,2,3-D1,2,3: Day 7 cross-sections for Mix #1.
CRA\BDR200A1,2,3-D1,2,3: Day 0 cross-sections for Mix #2.

SUMMARY OF QUALITY CONTROL CONCERNS
* Dye Burial Ground, mudbox sidewall bulge. Contacted Baker Tanks-Chicago, condition not detrimental to container integrity if no punctures exist. Field verified no punctures at this time.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 18,1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No S/C work due to rain.
4324-0009: MK continuing work on dry-run mixtures in Building 2.
**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspections; dewatered FRAC, mudbox, and cap area accumulations, all water verified free of discoloration.
**SWMU 16/16: Cast High Air Stripper**
MK replaced defective air blower motor with QICC providing electrician services. Received back-up sump pump from vendor. discovered west sump overflow in progress at 0830 (started since 0610 inspection of area), water samples taken. Stripper returned to automatic operation at 13:25. Pumped approx. 4000 gallons of water direct from west sump to sewer.

SUMMARY OF SAMPLING and TESTING
**SWMU 16/16: Cast High Air Stripper**
NSWC 16/WS-92E, west sump water pumped into sewer.
NSWC 16/ES-93, east sump contents.
NSWC 16/WS-TB70, trip blank.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Respiratory PPE for Biofacility Operations - MSA representative to be on site 3/24/97 to perform fit testing of personnel.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.
DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.
COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* MK PjM attending meeting with client and EPA in Chicago.

DAILY REPORT FOR March19,1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental completed formwork for Bldgs 1,3 east inside ramps; completed siding installation on Building 3 northside.

4324-0009: MK continuing dry-run mixture processing in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site inspections; dewatered mudbox berm area.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* MK to provide client with updated as-built drawings within 2 weeks.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Weekly construction meeting between MK and Smith Environmental.

DAILY REPORT FOR March 20, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Smith Environmental placed concrete ramps on Bldgs. 1 & 3.

4324-0009: MK continued with Dry Run operations in Bldg. #2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: Smith Environmental performed site inspections: constructed three additional silt fences in southwest drainage ditch; and dewatered FRAC tank secondary containment.

SUMMARY OF SAMPLING and TESTING

* Concrete testing performed by Earth Exploration.

SUMMARY OF QUALITY CONTROL CONCERNS

* Staffing levels in support of ongoing construction, upcoming DBG restart, and Biofacility QAPP; MK PQM evaluating needs.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Meeting between MK and Smith Environmental to discuss change orders, project status, etc.

**DAILY REPORT FOR March 21,1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental started form removal from northside Building 1 wall; began initial floor/joints cleaning in Building 3. Lower-tier S/Cs not on site this week.

4324-0009: MK continued processing dry-run mixtures in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site inspections; no remediation activity required this date.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Biofacility Electrical Installations S/C. Reviewed with MK Field Mgr.. the excellent quality of work performed to-date by Bertram Electric and recommended he pursue with our S/C to keep same electrician until the scope of work is completed.
* Cast High Geoprobe Sampling - Preparatory Inspection meeting, set for 3/24/97, postponed due to extended facility operations. New date/time will be announced.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Escalated MK inspection and water management at Cast High; see attached memorandum to OICC.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Notified SMITH Environmental - qualified electrical S/C to be on site Monday morning.
* Per S/C, Biofacility plumbing activity to restart on April 7, 1997.

DAILY REPORT FOR March 22,1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

SWMU 33/00: Bioremediation Facility
4324-049: SMITH Environmental: removed concrete forms from northside Building 1 wall; cleaned floor/joints in Building 3; installed anchor channel on Bldg. #1 for siding installation; pumped water from decon building.
4324-0009: MK continued processing dry-run mixtures in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspections; no remediation activity required this date.

SWMU 16/16: Cast High Air Stripper
4324-0009: MK performed twice daily monitoring of air stripper and related sumps.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* Entry of site personnel into Cast High to perform work during thunderstorms.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None received this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 23,1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

SWMU 33/00: Bioremediation Facility
4324-049: SMITH Environmental: removed concrete form bracing from northside Building 1 wall; cleaned floor/joints in Building 3; installed anchor channel on Bldg. #1 for siding installation; pumped water from decon building.
4324-0009: MK continued processing dry-run mixtures in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspections; no remediation activity required this date.

SWMU 16/16: Cast High Air Stripper
4324-0009: MK performed twice daily monitoring of air stripper and related sumps.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None received this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

DAILY REPORT FOR March 24, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental continuing cleaning floor/joints in Building 3; installed angle steel for attaching siding in Building 3; gradework between Buildings 1,2 for manlift access; removing concrete form ties.

Lower-Tier S/C ,off site this date.

4324-0009: MK working dry-run mixtures in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducting site inspections with MK oversight. No remediation actions this date.

**SWMU 16/16: Cast High Air Stripper**

MK began 24 hour standby to monitor air stripper activity and sump levels. (Refer MK letter 4324-382).

SUMMARY OF SAMPLING and TESTING

**SWMU 02/11: Dye Burial Ground**

MK received first test results from Calgon; decolorization methods successful. TOC and EPD-specified analytical testing forthcoming.

SUMMARY OF QUALITY CONTROL CONCERNS

* Increased QC involvement (24 hour monitoring) reduces QC oversight at other areas; staffing recommendation forwarded to PQM-PMO.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* Per PMO, site personnel to been on site 24 hours per day to monitor Cast High air stripper and sumps. Staffing impacts being evaluated.

DAILY REPORT FOR March 25, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental completed wet cleaning of Building 3 floor; completed angle installation on Building 1 walls; installed Building 1 southside starter strip.
Lower-tier S/C off site this date. Drywall contractor secured; possible mobilization 3/27/97.

4324-0009: MK continuing dry-run mixture in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducting site inspections with MK oversight; no remediation actions this date.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK modified 24 hour standby for air stripper monitoring; personnel will be at Cast High area; posted HAZCOM labels on storage tanks.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC-16/WS-93I, air stripper influent
NSWC-16/WS-93E, air stripper effluent
NSWC-16/WS-TB71

At time samples were gathered, light rain in progress, west sump level was at 4'11" freeboard. Stripper was manually started to accommodate sampling; steady low-volume flow coming into stripper from 8" pipe. 0.2" rain at site so far. Samples to be shipped via FedEx 3/26/97.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Completed respirator fit testing for site personnel.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* PMO modified Cast High standby - MK personnel commencing 24 hour standby at Air stripper location.

DAILY REPORT FOR March 26, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: Lower Tier S/C off site this date. Scheduled MK Preparatory Inspection for 3/27 on Drywall Installation at Decon Building.
SMITH Environmental installing siding on Building 1 southside; started dewatering buildings sumps and fuel storage tank area.

4324-0009: MK processing dry-run mixtures in Building 2. MK subcontracts department continuing contact with SMITH-Houston/site to improve on overall performance of 4324-049.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site inspections; no remediation actions this date.

**SWMU 16/16: Cast High Air Stripper**

MK continuing on-site standby for air stripper operations and sumps.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* QC backlog expected to increase daily with involvement at Cast High Air Stripper. Situation discussed with PjM and PQM; staffing being evaluated.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

DAILY REPORT FOR March 27, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental installing drip edge on Building 1 southside; started installation of wall angle on northside Building 1; continued dewatering sumps.
Richardville Drywall completed MK Preparatory Inspection and H&S training; hung sheetrock in Decon Bldg. bathroom area.
Other Lower-tier S/C off site this date.

4324-0009: MK processing dry-run mixtures in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site inspections; modified mudbox plastic covers to expose valves and ports.

**SWMU 16/16: Cast High Air Stripper**

MK continuing 24 hour monitoring at air stripper.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Completed Preparatory Inspection for 4324-049 Drywall Installation.
* Postponed 3/28 Preparatory Inspection (Cast High Geoprobe Sampling) due to conflicting project schedules; approved plan not yet received.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* Evacuation of personnel at Cast High air stripper standby during severe weather. Reviewed with personnel the actions to be taken.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

DAILY REPORT FOR March 28, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental continued siding installation on Building 1 southside; dewatered sumps due to heavy rains; Fall Protection Plan expected to be submitted for MK review/approval 3/31/97.
Richardville Drywall completed hanging all sheetrock in Decon Building; finish work scheduled for 3/31.
Other lower-tier S/C off site this date.

4324-0009: MK completed dry-run mixture processing in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections; dewatered sump area into FRAC GS522EA; dewatered non-colored waters from mudbox, FRAC areas; completed repair of small hole in cap plastic.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK continuing 24 hour monitoring at air stripper. Personnel evacuations occurred between 1) 0448-0630 and 2) 1917-2055 due to lightning in immediate vicinity. Inspections upon return found no evidence of sumps overflows during absence.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC 16/WS-TB72, trip blank
NSWC 16/WS-94I, air stripper influent
NSWC 16/WS-94E, air stripper effluent
NSWC 16/WS-96E, duplicate for -94E
NSWC 16/WS-95EMS, matrix spike from effluent
NSWC 16/WS-95EMSD, matrix spike duplicate from effluent

At time of sampling, public radio announced severe thunderstorms headed towards site; overcast at site. Stripper manually activated with west sump at 3'7" freeboard and 0.1" rainfall so far this date. Upon return to site at 2055, water from 1" line in sump east wall was flowing heavily into sump. Samples to be shipped 3/29/97.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

**MK Daily Report Summary 28MAR97**
N62467-93-D-1106 NSWC-Crane

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR March 29, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental installed siding on Building 1 northside.

4324-0009: MK continued dry-run mixture processing in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections; dewatered: sump area into FRAC GS522EA, FRAC tank area, north leg area, and mud box area.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK continuing 24 hour monitoring at air stripper.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC 16/WS-97I, air stripper influent
NSWC 16/WS-97E, air stripper effluent
NSWC 16/ES-98, east sump
NSWC 16/WS-TB73, trip blank

Samples shipped 3/29/97.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

**MK Daily Report Summary 29MAR97**
N62467-93-D-1106 NSWC-Crane

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

DAILY REPORT FOR March 30, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental no work on site this date.

4324-0009: MK continued dry-run mixture processing in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections; dewatered mud box berm area.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK continuing 24 hour monitoring at air stripper.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC 16/ES-99, east sump
NSWC 16/WS-100I, air stripper influent
NSWC 16/WS-100E, air stripper effluent
NSWC 16/WS-TB74, trip blank

Samples shipped 3/30/97.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

**MK Daily Report Summary 30MAR97**
N62467-93-D-1106 NSWC-Crane

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

DAILY REPORT FOR March 31, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental installed siding on north side of bldg. #1; sandblasted fuel storage tank containment pad.

4324-0009: MK continued dry-run mixture processing in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections; dewatered mud box berm area.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK continuing 24 hour monitoring at air stripper.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

**MK Daily Report Summary 31MAR97**
N62467-93-D-1106 NSWC-Crane

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

DAILY REPORT FOR April 1, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental installed siding on bldg. #1 and north side of bldg. #2; sandblasted and primed fuel storage tank containment pad; Graves Plumbing installed fixtures in decon bldg.

4324-0009: MK continued dry-run mixture processing in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections; dewatered mud box berm area.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK continuing 24 hour monitoring at air stripper; equipped site with tool box and spare parts.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC 16/WS-RB01, rinse blank
NSWC 16/WS-FB01, field blank
NSWC 16/WS-TB75, trip blank

These samples correspond to the decontamination of the broken sump pump.

**MK Daily Report Summary 1APR97**
N62467-93-D-1106 NSWC-Crane

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

DAILY REPORT FOR April 2, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental installed siding on north side of bldg. #1; sandblasted bldg. #3 sump; applied 2 coats of epoxy on fuel storage tank containment dike; Graves Plumbing installed fixtures in decon bldg; Betram Electric working high voltage drops to buildings.

4324-0009: MK continued dry-run mixture processing in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections; MSE determining drainage at perimeter of site.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK performing periodic 24 hour monitoring at air stripper.

SUMMARY OF SAMPLING and TESTING

* None this date.

**MK Daily Report Summary 2APR97**
N62467-93-D-1106 NSWC-Crane

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR April 3, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental continued siding southside Building 2; sandblasting sumps and decon building surfaces for epoxy coating; improving site grade for drainage control.
Bertram Electric completed mounting transformers on poles and installing service drops to buildings.
Graves Plumbing installing finish plumbing in decon building; began installing bootwash and pressure washer plumbing.

4324-0009: MK continuing process of dry-run mixtures in Building 2.
MK-Cleveland working on updating as-built drawings.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site conditions inspections.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK continuing regular monitoring of sump/equipment status. No overflows identified today.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* Continuous "bleeding" of moisture into Biofacility sumps. MK Project Engineer requested to evaluate for corrective actions.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* S/C working in Biofacility sumps are subject to confined space requirements; working with S/C SSHO to assure adequate measures are taken.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

DAILY REPORT FOR April 4, 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental began Building 1,3 floor cleaning in preparation of joint sealing; installing siding on Building 2 southside; grading site areas.
Bertram Electric continuing finish work on electrical services.
Graves Plumbing working on decon building plumbing.

4324-0009: MK processing dry-run mixtures in Building 2.
MK-Cleveland continues to work on updating as-built drawings.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspections - no problems.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK monitoring sumps/equipment status; pumped east sump water to west sump due to forecasted rain event.

SUMMARY OF SAMPLING and TESTING

**SWMU 16/16: Cast High Air Stripper**

NSWC 16/ES-102, east sump contents
NSWC 16/WS-102I, air stripper influent
NSWC 16/WS-102E, air stripper effluent
NSWC 16/WS-TB76, trip blank

Samples gathered from east sump prior to pumping water over to west sump; in preparation for forecasted rain. Samples from air stripper gathered when stripper automatically activated. No rain as of time samples were gathered.

SUMMARY OF QUALITY CONTROL CONCERNS

* Completed Preparatory Inspection for Geoprobe Sampling at Cast High.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* Transformers set at Biofacility are wrong voltage, but are as specified on drawings. MK tp pursue corrective actions with client.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

DAILY REPORT FOR April 5 , 1997
DELIVERY ORDERs 0009, 0024, 0027 and 0029

NSWC - CRANE, INDIANA

MORRISON KNUDSEN CORPORATION N62467-93-D-1106

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental performed housekeeping inside buildings; completed installing top rail for Building 2 siding.
Bertram Electric performed housekeeping and materials storage only.
Graves Plumbing off site this day.

4324-0009: MK processing dry-run mixture in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental performed site inspection; drained non-colored waters from berm areas and pumped sump area waters into FRAC GS522EA.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK on-site standby to monitor sumps and air stripper operations; no overflows encountered today; stripper operating on automatic mode.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* None this date.

**DAILY REPORT FOR April 6 , 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**
4324-049: No site work this date.
4324-0009: MK working dry-run mixtures in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**
4324-054: SMITH Environmental conducted site inspections; minor work to resecure wind-blown cover areas.

**SWMU 16/16: Cast High Air Stripper**
4324-0027: MK monitoring sumps and air stripper equipment; no problems identified this date.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**DAILY REPORT FOR April 7, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental began dewatering drainage pond #2; installing siding on southside Building 2; general site housekeeping.
Bertram Electric on site for general electrical work; awaiting answer on pole-mounted transformers.
Graves Plumbing off site this date.

4324-0009: MK processing dry-run mixtures in Building 2.
MK-Cleveland continuing work on as-built drawing updates.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site inspections; minor work on sandbag locations, dewatering non-colored waters from berm areas.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK monitoring sumps/equipment; no problems noted.

SUMMARY OF SAMPLING and TESTING

* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS

* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS

* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE

* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT

* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS

* MK meeting in Chicago with client and EPA to resolve open comments and issues with Biofacility Operations Plans.

**DAILY REPORT FOR April 8, 1997**
**DELIVERY ORDERs 0009, 0024, 0027 and 0029**

**NSWC - CRANE, INDIANA**

**MORRISON KNUDSEN CORPORATION** **N62467-93-D-1106**

SUMMARY OF WORK IN PROGRESS ON and OFF SITE

**SWMU 33/00: Bioremediation Facility**

4324-049: SMITH Environmental completed Building 2 southside siding; started corner pieces layout on all buildings; cleaned Building 3 floor joints for sealer application; cleaning decon building sump in preparation for epoxy coatings; notified MK of material shortages to complete building sidings.
Bertram Electric wiring services for decon building; need answer on pole-mounted transformers before completing service to main buildings.
Graves Plumbing off site this date.

4324-0009: MK-Cleveland working on updated as-built drawings.
MK processing dry-run mixtures in Building 2.

**SWMU 02/11: Dye Burial Ground (DBG)**

4324-054: SMITH Environmental conducted site inspections; installed drainage pipe in FRAC area west berm.

**SWMU 16/16: Cast High Air Stripper**

4324-0027: MK monitoring site for sump levels and equipment operations; no problems noted, stripper operating on automatic mode.

SUMMARY OF SAMPLING and TESTING
* None this date.

SUMMARY OF QUALITY CONTROL CONCERNS
* None this date.

SUMMARY OF SAFETY AND HEALTH CONCERNS
* None this date.

LIST OF ALL WASTE MATERIALS GOING OFF SITE
* No wastes transported off site this date.

DESCRIPTIONS OF INSTRUCTIONS AND GUIDANCE FROM THE CLIENT
* None this date.

COMMUNICATIONS, INTERFACES AND MEETINGS WITH TEAM MEMBERS
* None this date.

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #001**

---

**Date:** 08-26-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and mild
**Temperature:** High 80s **Cloud Cover:** Partly cloudy **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
The construction kick-off meeting for the Dye Burial Grounds was held today at the MK field trailer. After introductions, the following items were discussed with Philip Service Group for construction of the Dye Burial Ground Interim Measures Cap: correspondence and communication; safety including decontamination and potential hazards from dyes; waste management; construction schedule; quality control including inspections and testing; and documentation. Notice to Proceed was given to Philip Service Group for the construction of the cap.

---

**Construction Activity:**
Construction kick-off meeting and a tour of the DBG site, the 161/822 borrow area, and the Biofacility spoils area.

---

**Equipment and Personnel:**
In attendance at the kick-off meeting were representatives from Philip Service Group, Morrison Knudsen Corporation, and the Environmental Protection Department of the U.S. Navy.

---

**Inspection and Observations:**
Testing and inspection requirements were reviewed as part of the construction kick-off meeting.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
Construction material submittals which have been received to date:

1. #53 road base,
2. #2 stone for secondary containment,
3. #8L drainage stone for anchor/drainage trench,
4. #RLS biotic stone,
5. Sand drainage layer,
6. Silt fence,
7. Type 3 geotextile, woven fabric for under roadways,
8. Geotextile, types 1 and 2, non-woven cushion and non-woven fabric,
9. GCL,
10. HPDE liner.

Construction materials which have been received to date:

1. Five rolls of silt fencing,
2. Seven rolls of Type 3 geotextile woven fabric for under roadbeds.

---

**Approvals/Problems/Corrective Action:**

- The following material has been approved for construction use: #53 stone, #2 stone, silt fencing, Type 3 geotextile.
- The U.S. EPA has given tentative approval to proceed with construction of the DBG cap.
- The U.S. Fish and Wildlife Service has given approval for clearing the designated DBG and the borrow area off 161 near the 822 magazine.

- The following submittals were disapproved: sand drainage material missed permeability data; #8L drainage stone does not meet specs; biotic stone missed permeability data.
- A portion of the FRAC containment area for the DBG is located within the area the U.S. Fish and Wildlife Service wants to preserve. The containment area was relocated via FCR.
- The original NSWC designated borrow area contained potential Indiana Bat habitat. A new area was requested and the U.S. Navy designated a number of potential borrow sites. These areas were investigated and an area off Hwy 161 by the 822 ammunition magazine was selected and revised by FCR. The U.S. Navy has directed the use of a spoils pile at the Bioremediation Facility for use as construction material. The soils were investigated and tested for suitability as cap foundation material and was added as a borrow source via FCR when material was proved to be suitable.

---

**Supporting Documentation:**

1. Approved submittals - XMTL #026,
2. Disapproved submittals - XMTL #017,
3. Letter from C. Witts-Smith, U.S. EPA, DRP-8J dated August 19, 1997,
4. Memo from Scott Pruitt of the Fish and Wildlife Service,
5. FCR-DBG-001, Revise FRAC tank confinement area,
6. FCR-DBG-002, Revise designated borrow area and use of the Biofacility spoils pile,
7. Borrow source investigations report for borrow source 161/822 and the Biofacility spoils area.

---

by: Lois J Bigley

Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #002**

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**Date:** 08-27-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Haxy, sunny, mild; clouding over in the afternoon
**Temperature:** Mid 80s **Cloud Cover:** Partly cloudy **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**

MK is continuing to perform the site daily inspection and monitoring on the existing holding tanks and protective cover until Philip Service Group (PSG) has substantially completed mobilization, is prepared for the responsibility, and has been properly trained by MK monitoring personnel. Hopefully on September 7, after Labor Day, they will resume these duties.

---

**Construction Activity:**

- PSG continues Dye Burial Ground mobilization, site personnel were badged and received first aid, CPR, and Bloodborn Pathogen Training. Site orienttion and site safety and health plan were reviewed.
- MSE performed site survey and set clearing limites for the DBG.

---

**Equipment and Personnel:**

Training:

- 1 SSHO
- 1 superintendent
- 2 laborers
- 2 operator/laborers
- 2 surveyors (MSE)

---

**Inspection and Observations:**

Observed MSE, a subcontractor to PSG setting site clearing limits per drawing C-03, cap foundtion grading plan. Note: FCR-DBG-001 revised location of FRAC tank storage area. MK personnel took part in first aid, CPR, bloodborn pathogen training conducted by PSG SSHO, D. Kunkelmann.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
None.

---

**Approvals/Problems/Corrective Action:**
FRAC tank storage area had to be devided into two separate areas to avoid potential Indiana Bat roosting tree, monitoring wells, and a drainage ditch.

---

**Supporting Documentation:**
1. FCR-DBG-001
2. Daily Inspection Report #002
3. Training Records

---

by: Lois J Bigley

Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #003**

---

**Date:** 08-28-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Partly cloudy to sunny and warm
**Temperature:** High 80s **Cloud Cover:** Partly cloudy **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**

Preparatory meeting for site clearing was held between MK and PSG. Weekly NSWC conference call. Questioned if cap foundation fill could be started, it was not specifically identified in the EPA's limited approval of the work plan. T. Brent, EPD, to make determination next week. EPD to consider not using herbicide on three stumps outside the cap area. MK to make recommendation on whether to winterize or continue cap construction on September 10th to the core team.

---

**Construction Activity:**

- Surveying: MSE completed setting site clearing limits at DBG and 161/822 borrow.
- Site Clearing: PSG began clearing east FRAC tank storage area.
- Mobilization: Received Vermeer Autofeed 2 Chipper and a Caterpillar 426 Backhoe.

---

**Equipment and Personnel:**

- Surveying: 2 surveyors (MSE)
- Site clearing: 2 laborers (10 hours); 2 operator/laborers (10 hours); 3 chainsaws (8 hours); 1 Kobelco SK 200 Trackhoe (2 hours); 1 Cat 426 Backhoe (2 hours)
- Miscellaneous: 1 superintendent; 1 SSHO

---

**Inspection and Observations:**

Clearing limits were verified in accordance with Drawing #C-03 annotated FCR-DBG-001.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
None.

---

**Approvals/Problems/Corrective Action:**
Surveyors had set the west FRAC tank storage area over the main drainage ditch on the south side of the site. MK project engineer and PSG superintendent relocated the west area approximately 20 feet further west to avoid the ditch.

---

**Supporting Documentation:**
1. Daily Inspection Report #003
2. Preparatory meeting minutes
3. NSWC Crane/conference call minutes
4. Site preparatory checklist

---

by: Lois J Bigley

Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #004**

---

**Date:** 08-29-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Partly cloudy to sunny and mild
**Temperature:** Mid 80s **Cloud Cover:** Partly cloudy **Precipitation:** none

---

## Meeting Held/Action Recommended or Taken:

The divided west portion of the FRAC tank storage area was relocated approximately 100 feet further west along the clearing limit to avoid a hickory tree and the drainage ditch in the area.

---

## Construction Activity:

Continued site clearing of the FRAC tank storage areas; the Kebelco Trackhoe is being used as a tag line to ensure trees being cut fall in the proper direction.

---

## Equipment and Personnel:

Site clearing: 1 superintendent - 5 hours; 1 SSHO - 5 hours; 2 laborers/operators - 5 hours each; 2 laborers - 5 hours each; trackhoe - 1 hour; backhoe - 1 hour; 3 chainsaws - 3 hours each.

---

## Inspection and Observations:

Confirmed protection of existing physical features not to be disturbed per specification section 02200 and clearing limits are clearly defined. Initial phase control field inspection for site preparatory work completed.

---

## Testing Equipment:

None to date.

---

## Materials and Submittals:

None.

---

## Approvals/Problems/Corrective Action:

Relocation of west FRAC tank storage area to avoid drainage area. The subcontractor, PSG, only worked 1/2 day.

---

**Supporting Documentation:**
Daily Inspection Report

by: Lois j Bigley

Certifying Engineer Kilbe O'Neil

## Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

### Report #005

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**Date:** 09-02-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and mild with light late evening showers
**Temperature:** Low 80s to low 90s **Cloud Cover:** clear **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
It was determined that the application of herbicide to the stumps outside cap limit was not necessary and could be deleted to hasten construction. FCR# DBG-003 was written to cover this change; it has been pre-approved by the Navy.

---

**Construction Activity:**
Continued site clearing of the FRAC tank storage areas located on the southwest end of the DBG.

---

**Equipment and Personnel:**
Site clearing: 1 superintendent - 5.5 hours; 1 SSHO - 5.5 hours; 2 laborers/operators - 5.5 hours each; 3 laborers - 5.5 hours each; trackhoe - 4 hours; backhoe - 4 hours; 3 chainsaws - 4 hours each; chipper - 2 hours.

---

**Inspection and Observations:**
Verified clearing in accordance with specification 01010 - Statement of Work.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
None.

---

**Approvals/Problems/Corrective Action:**
The clearing operation has taken longer than anticipated. In an attempt to reduce clearing time and hasten the construction of the FRAC tank storage area, the Navy is permitting construction activities to proceed outside the cap limits without treating the stumps with herbicide. Verbal approval was given to Dave Beall by A. Wilson, SouthDiv, and T. Brent, EPD-Crane (FCR - DBG - 003 was written to document this decision). If construction of the cap is to proceed this

year, means to shortening the construction duration are needed to ensure successful completion. The six inch sand drainage layer has a scheduled duration of six days. It is the field project engineer's opinion that this is an under estimated duration. To reduce the duration of placement of the sand drainage layer, the sand thickness could be increased, reducing the precision and therefore the time needed to grade the sand drainage layer. A second alternative would be to replace the six inch layer of sand with a geonet. Use of the geonet would reduce drainage layer placement duration to about a day. FCR - DBG - 004 was written to submit this option to the Navy and the EPA.

Subcontractor, PSG, only worked 1/2 day; employees turnaround, Monday holiday.

---

**Supporting Documentation:**

1. Daily Inspection Report
2. FCR-DBG-003, deletion of herbicide
3. FCR-DBG-004, geonet versus sand drainage layer

---

by: Lois J Bigley

Certifying Engineer

## Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

### Report #006

---

**Date:** 09-03-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Lightly overcast in the morning, clearing in the afternoon
**Temperature:** Low 70s **Cloud Cover:** light overcast **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
None noted today.

---

**Construction Activity:**
Continued site preparatory clearing by continuing clearing the FRAC tank storage areas.
Continued site mobilization; field trailer connected to generator.

---

**Equipment and Personnel:**

- Site clearing: 2 laborers/operators - 10 hours each; 3 laborers - 10 hours each; trackhoe - 4 hours; backhoe - 4 hours; 2 chainsaws - 6 hours each; chipper - 6 hours; chipper - 6 hours.
- Miscellaneous: 1 superintendent - 10 hours; 1 SSHO - 10 hours.
- Mobilization: 2 electricians (Rosebrock) - 2 hours each.

---

**Inspection and Observations:**
Observed site preparation, clearing, felling of trees.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
None.

---

**Approvals/Problems/Corrective Action:**
None.

---

**Supporting Documentation:**
Daily Inspection Report

---

by: Lois j Bigley

Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #007**

---

**Date:** 09-04-97 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny and clear with cool morning, warming in the afternoon

**Temperature:** Upper 40s to low 70s **Cloud Cover:** clear **Precipitation:** none

---

## Meeting Held/Action Recommended or Taken:

B. Robertson of the OICC for the Navy visited the site last week and is giving written technical direction to push trees and brush into the woods deleting chipping.

---

## Construction Activity:

Philip Service Group continues preparatory site clearing of the FRAC tank storage area, access road, and began clearing cap clearing limits. Began installation of additional erosion controls, silt fencing along area newly cleared. Completed connection of field trailer's generator by Rosebrock Electric.

---

## Equipment and Personnel:

- Site clearing: 2 laborers/operators - 9 hours each; 2 laborers - 10 hours each; 1 laborer - 8 hours; trackhoe - 3 hours; backhoe - 3 hours; 1 loader - 3 hours; 2 chainsaws - 6 hours each; chipper - 4 hours.
- Miscellaneous: 1 superintendent - 11 hours; 1 SSHO - 10 hours; 2 electricians (Rosebrock) - 1 hour each.
- Erosion control: 2 operators/laborers - 1 hour each; 1 laborer - 2 hours; 1 backhoe - 2 hours.

---

## Inspection and Observations:

Observed installation of silt fencing and site preparatory clearing.

---

## Testing Equipment:

None to date.

---

## Materials and Submittals:

None.

---

**Approvals/Problems/Corrective Action:**
Received the revised Stormwater Erosion Control Plan and the Liner Testing Lab Qualifications. Approved use of clean berm as fill as needed for site grading.

---

**Supporting Documentation:**
Daily Inspection Report; PSG's transmittals 019A and 029; Engineer's Daily Report.

---

by: Lois J Bigley

Certifying Engineer

## Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

### Report #008

---

**Date:** 09-05-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny and clear with cool morning, warming in the afternoon
**Temperature:** Upper 40s to low 80s **Cloud Cover:** clear **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
The OICC has given direction to push trees and brush into the adjacent woods deleting chipping. FCR-DBG-006 was written to provide a tracking documentation for changes in the specifications and work plan for the Dye Burial Grounds.

---

**Construction Activity:**
Philip Service Group continues preparatory site clearing, bulk clearing of the southwest side of the cap working northward.

---

**Equipment and Personnel:**
Site clearing: 1 superintendent - 10 hours; 1 SSHO - 10 hours; 2 operators - 10 hours each; 3 laborers - 10 hours each; trackhoe - 6 hours; backhoe - 6 hours; 3 chainsaws - 6 hours each.

---

**Inspection and Observations:**
Observed preparatory site clearing.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
None.

---

**Approvals/Problems/Corrective Action:**
MK gave PSG approval to push trees into adjacent woods in lieu of chipping per the Navy's direction. The existing FRAC tank storage areas have 2 inch drain valves whereas the construction drawing calls for 3 inch drain valves. To reduce cost on the split FRAC tank storage area and to reduce waste, 2 inch drain valves could be reused. FCR-DBG-007 was written to revise drain valves for storage areas from 3 inch valves to 2 inch or 3 inch valves. An area southwest of the magazine near the entrances ponds water after a rain event. To remove this

pond, additional excavation and/or fill will be required in this area. Because the area is just outside the construction zone and may require excavation, FCR-DBG-008 was written to document and get approval for this change.

---

**Supporting Documentation:**
Daily Inspection Report; FCR-DBG-006, chipping and technical direction; FCR-DBG-007, FRAC tank storage valves; FCR-DBG-008, drainage at entrance.

---

by: Lois J Bigley

Certifying Engineer Kilian O'Neil

## Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

### Report #009

---

**Date:** 09-06-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and clear.
**Temperature:** 70s to mid 80s **Cloud Cover:** clear **Precipitation:** none

---

## Meeting Held/Action Recommended or Taken:

The Weekly NSWC conference call (held 9/4/97) discussed the following items: status of construction at DBG; the DBG workplan approval will need to be obtained prior to contaminated soil excavation and this work activity is scheduled for next week, MK to make its recommendation to complete cap construction or to winterize 10 September 1997.

---

## Construction Activity:

Philip Service Group continues preparatory site clearing at the DBG. Majority of bulk clearing has been completed excluding a line of trees beside the cap's protective plastic cover. Repaired and installed erosion control measures at the DBG including a hay dike and silt fence in the southwest quadrant across the main draw.

---

## Equipment and Personnel:

- Site clearing: 1 operator - 10 hours; 1 operator - 6 hours; 2 laborers - 6 hours each; 1 laborer - 7 hours; trackhoe - 6 hours; front end - 8 hours; 2 chainsaws - 8 hours each.
- Miscellaneous: 1 superintendent - 10 hours; 1 SSHO - 10 hours.
- Erosion control: 1 operator - 4 hours; 2 laborers - 4 hours; 1 backhoe - 6 hours.

---

## Inspection and Observations:

Observed site preparatory clearing and installation of silt fence. Verified three-acre clearing area staked at 161/822 borrow area.

---

## Testing Equipment:

None to date.

---

## Materials and Submittals:

None.

---

**Approvals/Problems/Corrective Action:**
Plastic protective sheet placed January 1997 is becoming brittle due to UV damage; need to limit foot traffic across the plastic.

---

**Supporting Documentation:**
Daily Inspection Report; Meeting minutes.

---

by: Lois J Bigley

Certifying Engineer [illegible]

## Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

### Report #010

---

**Date:** 09-08-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast and warm
**Temperature:** 70s to mid 80s **Cloud Cover:** overcast **Precipitation:** none

---

## Meeting Held/Action Recommended or Taken:

The weekly progress meeting was held between MK and their subcontractor, Philip Service Group. Safety, deliverables, and schedule were discussed.

---

## Construction Activity:

Philip Service Group continues preparatory site clearing, trimming, stumps flush to the ground, and removing debis and unsuitable material from the East and West FRAC tank storage area. Transported the 963 track loader from the DBG to the 161/822 borrow area and began clearing and stripping the area by pushing the trees and brush. After the East FRAC tank storage area and the SE end of the West FRAC tank storage area were inspected and approved for completion of clearing, the Philip Service Group proceeded with spreading Type 3 geotextile over the area, anchoring the material in place using #2 stone. The Type 3 geotextile is Synthetic Industries GEOTEX 300ST, a polypropylene woven fabric. Silt fence was installed in the draw along the West and North side of the site and on the down gradient end of the West confinement area.

---

## Equipment and Personnel:

- Site clearing: 2 operators - 8 hours; 3 laborers - 7 hours each; trackhoe - 5 hours; 1 loader - 8 hours (borrow site); 1 backhoe - 3 hours each.
- Miscellaneous: 1 superintendent - 10.5 hours; 1 SSHO - 10 hours.
- Erosion control: 1 operator - 2 hours; 2 laborers - 2 hours; 1 backhoe - 2 hours.
- Storage Area Conts: 1 operator - 2 hours; 2 laborers- 1 hour; 1 laborer - 1 hour; 1 backhoe -2 hours

---

## Inspection and Observations:

Verified that stumps had been cut flush to the ground surface and debris had been removed from the East FRAC tank storage area. Confirmed use of SI 300 ST woven fabric-the approved Type 3 geotextile. Observed installation of the silt fence.

---

**Testing Equipment:**
None to date.

**Materials and Submittals:**
Reviewed submittal on drainage layer permeability Sub #17A.

**Approvals/Problems/Corrective Action:**
Approved Submittals: Geotextile Resin Supplier, Needle free cert panel layout, and panel layout for geomembrane Sub #25.
Disapproved Submittals: Remaining submittals for geotextiles and geomembrane (see Sub #25). Submittal for geomembrane did not meet the specifications. The subcontractor will need to submit an alternative material.
Philip Service Group is behind schedule to date; they have been unable to concentrate a main effort on more than one activity.

**Supporting Documentation:**
Daily Inspection Report; Progress Meeting minutes, Contractor Approval Form (clearing), and submittals #97A, 25 and 26.

by:

Certifying Engineer

# Dye Burial Grounds Interim Measures Cap Construction
# Daily Summary Report
## Report #011

---

**Date:** 09-09-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast with clearing in the p.m.
**Temperature:** 70s **Cloud Cover:** overcast **Precipitation:** 0.1 (overnight)

---

## Meeting Held/Action Recommended or Taken:

A preparatory meeting for Run on/Run off Control was conducted between MK and their subcontractor, Philip Service Group. Conference call between D. Flowers of PSG and MK Crane EDI. The liner installer will not provide a crew until after October 1, 1997; due to construction schedule and possibility of poor weather. The consensus is to recommend site stabilization with cap construction and completion in 1998 for the Dye Burial Grounds Interim Measures Cap. The project team of MK-PMO, USEPA, and U.S. Navy will make the final determination to continue cap construction or to stabilize the site later this week.

---

## Construction Activity:

Philip Service Group continues clearing the borrow area. Placed and spread #2 stone from the Roger's Group quarry in the East and West FRAC tank storage areas. Installed erosion control at the 161/822 borrow and DBG site. Continued site clearing, removing logs, limbs, etc. from the north side clearing limits. Patched DBG temporary liner with duct tape.

---

## Equipment and Personnel:

- Site clearing: 1 operator - 10 hours; 1 operator - 5 hrs; 3 laborers - 5 hours each; trackhoe - 2 hours; 1 loader - 10 hours; 1 backhoe - 3 hours.
- Const. of FRAC area: 1 operator - 5 hrs; 1 laborer - 5 hrs; 1 backhoe - 5 hrs.
- Erosion control: 2 laborers - 5 hours.
- Miscellaneous: 1 superintendent - 11 hours; 1 SSHO - 10 hours.

---

## Inspection and Observations:

MK observed clearing of the North end; approximately 17 trees remaining. Verified material delivered by Hanna Trucking to site was #2 stone from Roger's Group quarry. Confirmed installation of silt fence and hay bale dikes at 161/822 borrow and DBG sites.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
Seven (7) loads (145.25 tons) of #2 stone.

---

**Approvals/Problems/Corrective Action:**
Approved Submittals: Approved subcontractor's Storm water erosion control plan. Plan review as part of the Run on/Run off Preparatory Meeting.

---

**Supporting Documentation:**
Preparatory Meeting Minutes (Run on/Run off); Daily Inspection Report; Submittal #19A, Storm water erosion control plan.

---

by:

Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #012**

---

**Date:** 09-10-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Partly cloudy and mild
**Temperature:** High 70s **Cloud Cover:** Partly cloudy **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**

A face to face meeting was held between MK PMO, MK Crane, ROICC US Navy, EPD, and EPA. One item for discussion was to determine if DBG should continue with construction for completion or winterize the site for a 1998 completion date. Other issues discussed: final approval of work plan, capacity of FRAC tank storage area, substitution of sand drainage layer.

---

**Construction Activity:**

Site Preparatory Work - Philip Service Group spread and compacted #2 stone in both the east and west FRAC tank storage areas. Using soil hauled from the 161/822 borrow area, Philip Service Group constructed berms around the FRAC tank storage area.

---

**Equipment and Personnel:**

Construction of FRAC tank storage area is adequate to hold 110% the volume of one 500 BBL FRAC tank; therefore, meeting requirement for secondary containment.

2 Operators - 10 hrs. each 1 backhoe - 5 hrs. 1 loader - 10 hrs.
1 compactor - 5 hrs. 3 Laborers - 10 hrs. each 1 Superintendent - 10 hrs.
1 SSHO - 10 hrs.

---

**Inspection and Observations:**

Site Preparatory Work - MK confirmed removal of debris from the west FRAC tank storage area prior to the placement of the approved Type 3 Geotextile. MK verified use of Type 3 Geotextile under #2 stone in the FRAC tank storage area. MK verified height and location of bermed area of the FRAC tank storage area without geonet, status of FCR.

**Testing Equipment:**
None to date.

**Materials and Submittals:**
Submittals on corrugated metal pipe (#1-119), Certificate of Compliance for Drain Pipe (#1-49) along with contractually required submittal were received by MK for review and approval.

**Approvals/Problems/Corrective Action:**
The U.S. EPA gave permission to begin contaminated soil excavation. FCR-DBG-005 to leave a large tree near clearing point #11 was denied.

**Supporting Documentation:**
1. Daily Inspection Report
2. September 10, 1998 Face to Face Meeting Minutes

By: Lois J Bigley Date: 09-10-99

Certifying Engineer [illegible]

Daily Summary Report # 012

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #013**

---

**Date:** 09-11-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and mild
**Temperature:** High 60s-low 80s **Cloud Cover:** Sunny **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
C. Witt-Smith, EPA and T. Brent, EPD along with their guests visited the site. Meeting was held between MKand PSG concerning excavation of dye contaminated soil. It was determined PSG was not prepared to start dye contamination excavation and rescheduled for 9/12/97.

---

**Construction Activity:**
Site Clearing - PSG cut large tree located near clearing point #11, including chipping limbs, and stacking logs.
Cap Foundation Fill - MSE (sub to PSG) surveyed and staked cap foundation. Grade stakes set for shoulder and baseline.
Site Preparatory Work - PSG leveled #2 stone in FRAC tank storage area; stockpiled soil at borrow area.

---

**Equipment and Personnel:**
Site Clearing: 1 Operators - 10 hrs. ea. 1 backhoe - 5 hrs. 1 loader - 10 hrs.
3 Laborers - 10 hrs. ea.
Cap Foundation Fill: 2 Surveyors - 8 hrs.
Site Prep Work: 1 Operator - 10 hrs. 1 track loader: 10 hrs.
Miscellaneous: Superintendent - 10 hrs. 1 SSHO - 10 hrs.

---

**Inspection and Observations:**
Site Clearing - MK observed felling of tree; proper safety precautions were performed.
Cap Foundation Fill - Grades set on stakes were reviewed against construction drawings by MK.

Site Preparatory Work - 500 BBL tank was delivered to the DBG by Baker Tanks, was rejected, and returned. FRAC tank was not top loading and was not equipped with required hand rails.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
Received revised construction schedule for review and approval.

---

**Approvals/Problems/Corrective Action:**
C. Witt-Smith, EPA and T. Brent, EPD approved FCR-DBG-001 FRAC tank confinement area relocation; FCR-DBG-002 Borrow Source Location; FCR-DBG-003 Deletion of Herbicide Use Outside Cap Limits; FCR-DBG-007 Revised FRAC tank Area Value; FCR-DBG-008 Add Drainage to Entrance; FCR-DBG-004 Use of A Geonet. FCR-DBG-006 Delete Chipping of Small Brush was rejected by EPA and EPD. The panel layout for the geotextile and HDPE liner were approved. A 500 BBL tank was delivered by Baker Tanks about 1230. This tank was rejected by MK because it was not a top loading tank and did not have the required hand rails. This tank was returned without ever being accepted or put to use.

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois Bigley Date: 09-11-97

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Certifying Engineer [signature]

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DAILY SUMMARY REPORT # 013

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #014**

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**Date:** 09-12-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and mild
**Temperature:** High 60s-low 80s **Cloud Cover:** Sunny **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
NONE

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**Construction Activity:**
Site Clearing - PSG walked the trackhoe out onto the plastic sheeting covering the cap area and felled the seven trees from around the edge of the cover, chipping the branches and stacking logs from the trees.
Cap Foundation Placement & Grading - At the 161/822 borrow area PSG continued stockpiling soil for the cap foundation fill using a trackloader.
Site Preparatory Work - Two FRAC tanks #S1647SD and S47ST were delivered by Baker Tanks today and set in the east containment area. The empty tank, GS88EA, from northeast of the entrance was relocated to the east FRAC tank confinement area by Baker Tanks. PSG began transferring dye impacted water from tank #GS522EA to GS88EA by pumping water from the bottom of one tank to the top of the other. The pump and all hose couplings were set on plastic as a precaution.

---

**Equipment and Personnel:**
Site Clearing: 1 Operator - 8 hrs. 1 backhoe - 4 hrs. 1 loader - 4 hrs.
1 Laborer - 10 hrs. 1 Operator - 4 hrs. 2 Laborers - 3 hrs. 1 trackhoe - 4 hrs.
Cap Foundation Placement & Grading: 1 Operator - 10 hrs. 1 trackloader - 10 hrs.
Site Prep Work: 1 Operator/Laborer - 6 hrs. 1 Laborer: 6 hrs. 1 Truck Driver (Baker tank driver) - 5 hrs. 1 backhoe - 6 hrs.
Miscellaneous: 1 Superintendent - 10 hrs. 1 SSHO - 10 hrs.

---

**Inspection and Observations:**
MK and PSG inspected protective plastic cover for tears where planks were set for the trackhoe to aid in felling trees next to the cap. Only a few small holes were noticed in the first of two layers of 5 mil plastic sheeting. Plastic sheeting was repaired using duct tape.
MK inspected FRAC tanks upon delivery. No odor or sheen was detected on either of the two tanks delivered today. Some minor cosmetic damage was noted on both tanks.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
Received Submittal 1-50: Certificate of Pesticide License
1-51: Category 6, Right of Way Pesticide License for application of commercial grade Roundup.

---

**Approvals/Problems/Corrective Action:**
Again PSG had planned to excavate contaminated soil today, but was unable to get the soil needed to build the C-07 decon pad. Spoke with T. Brent, EPD, and got his acceptance to use 10 mil plastic for a small CRZ to decontaminate personnel, small hand tools, and the bucket to the trackhoe and backhoes.
Approved Submittals:
1-50: Certificate of Pesticide License
1-51: Category 6, Right of Way License
1-81: Test Laboratory Qualifications
1-30: Personnel Training Certificates
1-119: CMP cut sheet

---

**Supporting Documentation:**
Daily Inspection Report
Tank Certifications for #S1647SD and S47ST
Submittals: 1-30, 1-50, 1-51, 1-81, and 1-119

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By: Lois J. Bigley Date: 09/12/97

Certifying Engineer [signature]

Daily Summary Report # 014

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #015**

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**Date:** 09-13-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and mild **Temperature:** High 60s-low 70s
**Cloud Cover:** Cloudy-Ptly Cloudy **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**

Attempts were made to contact the EPD to inform them that contaminated soil excavation would begin today. Were unable to reach EPD representatives. Preparatory meeting on Contaminated Excavation was held today, between MK and PSG at the DBG.

---

**Construction Activity:**

Site Preparatory Work - PSG completed pumping dye impacted water from tank #GS522EA to #GS88EA and began pumping water from tank #S650NEA to S47ST.

Dye Contamination Excavation - A preparatory meeting was held at the DBG between MK and PSG including all of the crew before beginning impacted soil excavation. PSG set up a contamination reduction zone (CRZ) and removed the protective plastic sheeting from the area where excavated dye impacted soil for area 1a is to be placed. PSG began excavation of dye impacted soil from area 1a, using a trackhoe; care was taken to only contaminate the bucket. After area 1a was excavated to what appeared to be clean soil, the soil placed over the cap area was covered with 10 mil plastic sheeting, and the trackhoe bucket was decontaminated. The decontamination process consisted of a gross decon to remove soil; a hand trowel was used for the procedure, followed by a soap and water wash and rinse using long handle brushes, and finally an acetone wipe. If no color or contamination was noticed, decontamination was considered complete.

Site Grading: Bredwed Stump Removal, a subcontractor of PSG, ground 20 stumps around the cap clearing area.

---

**Equipment and Personnel:**
Site Preparatory Work: 2 Laborer - 7 hrs. ea.
Site Clearing: 2 Operator - 6 hrs. (1 sub) 1 stump grinder - 4 hrs.
Dye Contaminated Excavation: 1 Operator - 10 hrs. 3 Laborers - 8 hrs. ea.
2 Laborers - 8 hrs. ea. 1 trackhoe - 4 hrs. 1 backhoe - 4 hrs.
Miscellaneous: 1 Superintendent - 10 hrs. 1 SSHO - 10 hrs.

---

**Inspection and Observations:**
MK observed the excavation of contaminated soil from the north leg area 1a. Verified that dye impacted material excavated was placed a minimum of two feet beyond the limit of the cap foundation toe.
MK witnessed decontamination of the trackhoe bucket. Photo taken of the process; gross decon: soap and water wash (liquidex); rinse: acetone/alcohol wipe rinse and final visual inspection. Area of excavation was visually inspected and photographed. However, due to shadows, area was barricaded and covered with plastic to prevent personnel and run-off water from entering the area.
MK verified contaminated soil placed in cap area was covered by plastic sheeting at the end of the shift.
MK confirmed that the tree stumps around/in the cap area were ground to surface level.

---

**Testing Equipment:**
None to date.

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**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
None

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**Supporting Documentation:**
Daily Inspection Report
Preparatory Meeting Minutes

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By: Lois J. Bigby Date: 09/13/99

Certifying Engineer

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Daily Summary Report # 015

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #016**

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**Date:** 09-14-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Warm, and mild **Temperature:** Mid 60s-upper 70s
**Cloud Cover:** Lt. Clouds **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
None

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**Construction Activity:**
Site Preparatory Work - PSG transferred dye impacted water from tank #S650NEA to S47ST. There was A small area where some dye impacted water from a leaking gasket escaped the pumps secondary containment area. This area was immediately contained and the affected soil was excavated and placed into the cap area and covered with plastic.

---

**Equipment and Personnel:**
Site Preparatory Work: 2 Laborer - 4 hrs. ea. (pumping water)

---

**Inspection and Observations:**
MK inspected area to be excavated; the area that had appeared to be clear of dye now shows spots of bright green color today. Area will require additional excavation.
MK observed water transfer and clean-up of affected soil from leak.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
Excavation of area 1a, which appeared clear of color yesterday, now shows evidence of color (due to oxidation?). Additional excavation of area will be required.
Water from leaking gasket of the pump escaped the secondary containment. All affected (wet) soil was contained and placed on the fill.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09/14/97

Certifying Engineer [illegible]

Daily Summary Report # 016

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #017**

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**Date:** 09-15-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Warm and mild **Temperature:** High 60s- Low 70s
**Cloud Cover:** Lt. Clouds increasing in p.m. **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**

T. Brent, EPD, was contacted concerning the green shale; he contacted a base geologist. We were informed that there is a natural green shale in the area. He did not think there would be a problem leaving the green shale material, but he would like a sample of the material. An area 5' x 5' at a depth of 13' of green shale was left in the excavation.

---

**Construction Activity:**

Contaminated Soil Excavation: PSG completed excavation of area 1a, the north leg. An estimated 385 cy of material was excavated from the area over the two days of excavation, range in depth from 3' to 14' using the trackhoe. Area 1c and 1e were excavated to a depth of one foot; no color was noticed during excavation. All dye impacted soil excavated was placed within the cap area and covered with plastic sheeting. PSG began backfill area 1a with clean fill.

Site Preparatory Work - Dye impacted water was transferred from tank #SDE1EA to #S1645D by PSG. Tank #GS322EA was relocated to the east area and tank #G650NEA and #SDE1EA into the west area by Baker Tanks at the direction of PSG.

---

**Equipment and Personnel:**

Site Preparatory Work: 1 Truck driver (Baker) - 6 hrs. 2 Laborer - 3 hrs. ea.
1 Laborer - 8 hrs. 1 Operator - 6 hrs. 1 backhoe - 6 hrs.
Contaminated Excavation: 1 Operator - 11.5 hrs. 1 Operator - 5.5 hrs.
1 backhoe - 5.5 hrs. 2 Laborers - 8.5 hrs. 1 Laborer - 3.5 hrs.
1 trackhoe - 11.5 hrs.
Miscellaneous: 1 Superintendent - 11 hrs. 1 SSHO - 10.5 hrs.

---

**Inspection and Observations:**
MK took verification photos (DBG Roll #59) of dye contaminated excavation areas: 1a, 1c, 1e. after visual inspection of the areas were complete.
MK observed excavation of dye contamination and verified all excavated material was placed in the cap area and covered with plastic.
MK witnessed placement of some of the dye impacted soil is above the acceptable elevation; to ensure a minimum of one foot of cover, some will need to be relocated. PSG decon of both the trackhoe and backhoe buckets. Verified final inspection of equipment.
MK observed replacement of containment berm around the existing temporary FRAC tank storage area, once empty tanks were relocated to new storage areas.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
Placement of excavated dye contaminated material higher than finished elevation of cap foundation; material to be spread to ensure minimum one foot layer of clean fill between top of excavated contamination and final cap foundation elevation.
Natural shale in the area (Pennsylvania shale) has a natural green tint that darkens with excavation.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09/15/97

Certifying Engineer

Summary Report # 017

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #018**

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**Date:** 09-16-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Warm **Temperature:** High 60s- Low 80s
**Cloud Cover:** Overcast **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Contaminated Soil Excavation: Prior to placement of cap foundation, PSG used the backhoe bucket to spread and level contaminated fill.
Site Preparatory Work - PSG continued transferring dye impacted water. Pumped water from tank #S879NSD to #GS522EA and began pumping tank #S1885EA to S650NEA. Using a John Deere dozer to spread material and an Ingersoll Rand compactor with a sheeps foot roller, PSG placed and compacted soil from the Biofacility stockpile into the 1a excavation.
Cap Foundation Placement and Grading - PSG hauled 25 truck loads of soil from the Biofacility spoils pile to the DBG (using Hanna trucking). PSG began placing clean soil (cap foundation) cover over the cap area beginning in the N corner. This is where the dye contaminated material from the 1a excavation was placed using a John Deere dozer to spread cap foundation in a one foot loose lift; approximately 300 sf of area was covered.

---

**Equipment and Personnel:**
Cap Foundation Placement & Grading: 3 truck drivers - 8.5 hrs.
1 operator - 12 hrs. 1 operator - 11.5 hrs. 1 trackhoe - 11.5 hrs.
1 dozer - 8 hrs. 1 roller - 8 hrs. 1 Laborer/crew - 11.5 hrs.
Contaminated Excavation: 1 Operator/Laborer - 5 hrs. 1 backhoe - 3 hrs.
1 Laborer - 2 hrs.
Miscellaneous: 1 Superintendent - 12 hrs. 1 SSHO - 11.5 hrs.

---

**Inspection and Observations:**
MK observed pumping operation of dye impacted water from tank #S879NSD to #GS522EA and #S1885EA to #S650NEA.
MK witnessed compaction effort for area 1a backfill.
MK confirmed existence of standard protection for Biofacility spoils pile material and verified sections of the protective plastic covering was removed or relocated before placement of the first lift of the cap foundation material.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
One truck load of #2 stone.
26 truck loads of fill from the Biofacility spoil pile.

---

**Approvals/Problems/Corrective Action:**
Material from the Biofacility contains terra cotta, plants, and miscellaneous debris; PSG removing unsuitable fill as it is located.
PSG used the backhoe bucket to spread and level excavated contaminated fill that had been placed within the cap area above finish cap foundation; leveled to an elevation of one to two feet below the final cap foundation elevation.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09-16-98

Certifying Engineer

Daily Summary
Report # 18

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #019**

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**Date:** 09-17-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Lt. drizzle in a.m.; clearing p.m. **Temperature:** Mid 70s
**Cloud Cover:** Overcast then clearing **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
Preparatory meeting for Cap Foundation held at the DBG with MK and PSG.

---

**Construction Activity:**
Contaminated Soil Excavation: MSE, sub to PSG, cross-sectioned cap area to determine field location of high spots to be excavated to lower; identified as 1h on the drawing C-03.
Site Preparatory Work - Pumping water from tank #S1885EA to S650NEA, PSG continues transferring water to facilitate relocation of the FRAC tanks.
Cap Foundation Placement and Grading - PSG continues placing cap foundation fill in the NE corner working southwest. Material being hauled from the Biofacility spoils pile to the DBG (using Hanna trucking). Using a John Deere dozer to spread cap foundation in a one foot loose lift compacting it with a Ingersall Rand roller with sheeps foot front roller. Fifty loads of fill was hauled and placed.

---

**Equipment and Personnel:**
Site Prep Work: 2 Laborers - 8 hrs.
Cap Foundation Placement & Grading: 5 truck drivers - 8 hrs.
2 operator - 10.5 hrs. 2 Laborers - 3.5 hrs. 1 Laborer - 10.5
1 trackhoe - 10.5 hrs. 1 dozer - 8 hrs. 1 roller - 6 hrs.
Contaminated Excavation: 2 Surveyors - 4 hrs.
Miscellaneous: 1 Superintendent - 11 hrs. 1 SSHO - 10.5 hrs.

---

**Inspection and Observations:**
MK observed pumping operation of dye impacted water from #S1885EA to #S650NEA.

PSG inspected fill for suitability removing miscellaneous debris.
MK verified removal and disposal of existing plastic in sections prior to placement of cap foundation fill.

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
Fifty truck loads of fill from the Biofacility spoils pile.

---

**Approvals/Problems/Corrective Action:**
A soft spot has developed approximately 50 feet east of survey point #112; truck traffic is being diverted around the area.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09 - 17 - 98

Certifying Engineer Kibler Oliel

Daily Summary Report # 19

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #020**

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**Date:** 09-18-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild **Temperature:** Upper 50s - Mid 80s
**Cloud Cover:** Clear **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**

Weekly Conference Call with MK, Navy and EPA. The decision to winterize and not complete the cap this fall is being implemented. MK is to develop a winterization checklist. Revised Work Plan is to be reissued for final approval and a schedule for DBG water treatment is to be developed.

---

**Construction Activity:**

Contaminated Soil Excavation: The PPE stockpile was relocated within cap limit, in a single lift located within the existing berm area at N1311590 to N1311650 and E3049190 to E3049260 by PSG.

Site Preparatory Work - Pumping water from tank #GS505EA to #SDE1EA, PSG continues transferring water to facilitate relocation of the FRAC tanks.

Cap Foundation Placement and Grading - PSG continues hauling cap foundation fill material from the Biofacility spoils pile (using Hanna trucking). The cap foundation material is being spread in 6 to 12 inch loose lifts over the cap area after the subgrade has been prepared by cutting 15 foot sections out of the protective plastic sheeting . PSG is preparing an area outside the plastic covering but within the cap area, by cutting the weeds and removing the clippings.

---

**Equipment and Personnel:**

Site Prep Work: 1 Laborer - 11.5 hrs.

Cap Foundation Placement & Grading: 5 truck drivers - 11.5 hrs.

2 operator - 11.5 hrs. 2 Laborers - 8.5 hrs. 1 QC Tech - 11.5 hrs.

1 trackhoe - 11 hrs. 1 dozer - 8 hrs. 1 roller - 5 hrs.

Contaminated Excavation: 2 Surveyors - 4 hrs.

Miscellaneous: 1 Superintendent - 12 hrs. 1 SSHO - 11.5 hrs.

---

**Inspection and Observations:**
PSG - Perform four density/moisture tests on cap foundation fill. Two passed and two failed.
MK confirmed cap foundation loose lift thickness less than 12 inches.
MK verified density/moisture test performed by PSG on placed and compacted first lift of cap foundation.

---

**Testing Equipment:**
Troxler nuclear gauge.

---

**Materials and Submittals:**
Received a construction schedule up date.
67 truck loads of fill from the Biofacility spoils pile.

---

**Approvals/Problems/Corrective Action:**
Because spoil pile from the Biofacility is not homogenous, another proctor is needed. PSG ran a new proctor on material.

---

**Supporting Documentation:**
Daily Inspection Report
Meeting minutes from 9/18/98 weekly conference call.

---

By: Lois J. Bigley Date: 09-18-97

Certifying Engineer Kim Ochil

Daily Summary Report # 020

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #021**

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**Date:** 09-19-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild w/p.m. winds **Temperature:** Upper 50s - Mid 80s **Cloud Cover:** Clear **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Contaminated Soil Excavation: The plastic sheeting along the 1h high spots running along the existing berm were cut away by PSG and excavated using a backhoe bucket by pushing the material into the adjacent low area, ~~effecting~~ effectiv removing the high spots designated 1h on drawing C-03.
Site Preparatory Work - The guard rails from around two wells, each well having three rails, were pulled by PSG and placed in the cap area near the inner most well, E3049120 N1311520.
Cap Foundation Placement and Grading - PSG continues hauling cap foundation fill material from the Biofacility spoils pile (using Hanna trucking). The cap foundation material is being spread in 12 inch loose lifts over the cap area after the subgrade has been prepared by cutting 15 foot sections out of the protective plastic sheeting.

---

**Equipment and Personnel:**
Site Prep Work: 2 Laborer - 2 hrs. 1 backhoe - 1 hr.
Cap Foundation Placement & Grading: 3 truck drivers - 6 hrs.
2 operator - 6 hrs. 1 Laborer - 6 hrs. 1 QC Tech - 6 hrs.
1 trackhoe - 5 hrs. 1 dozer - 5 hrs. 1 roller - 4 hrs.
Contaminated Excavation: 2 Laborers - 4 hrs. 1 backhoe - 2 hrs.
Miscellaneous: 1 Superintendent - 6 hrs. 1 SSHO - 4.5 hrs.

---

**Inspection and Observations:**
PSG - Perform two density/moisture tests and three re-tests on cap foundation fill. One test failed moisture. All three retested and passed.
PSG - performed 2 density/moisture test on all backfill material. Both tests passed.
MK - verified density/moisture test performed by PSG.
MK - verified that wells were not damaged doing extraction of guard rails. Rails were constructed ~~for~~ from 40 foot sections of train track embedded in concrete footing.
MK - confirmed excavation of high spots along the existing south berm.

---

**Testing Equipment:**
Troxler nuclear gauge.

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**Materials and Submittals:**
19 truck loads of fill from the Biofacility spoils pile.

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**Approvals/Problems/Corrective Action:**
None

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09/19/97

Certifying Engineer Eileen Olive

DAILY SUMMARY
REPORT # 021

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #022**

---

**Date:** 09-22-97 (Mon) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild **Temperature:** 48-74$^0$
**Cloud Cover:** Ptly Cloudy to Sunny **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory Work - PSG pumped standing water from the ditch line into a holding tank (poly); approximately 600 gallons. Water was collected from water trapped under the plastic sheeting. Three FRAC tanks S879NSD, S1885EA, and GS505EA were relocated by Baker Tanks. One to the east area and two to the west area.
Site Clearing - Five large trees from the northwest and northeast edges of the plastic were cut down by PSG by felling trees onto the soil covered cap area.
Cap Foundation Placement and Grading - Compaction of all previously placed cap foundation was performed by PSG, using an Ingersoll Rand SD-40D compactor with sheeps-foot roller.

---

**Equipment and Personnel:**
Site Prep Work: 2 Laborer - 2 hrs.
Cap Foundation Placement & Grading: 2 truck w/drivers (Hanna) - 5 hrs.
2 operator - 5 hrs. 1 Laborer - 5 hrs.
1 trackhoe - 5 hrs. 1 dozer - 2 hrs. 1 roller - 3 hrs.
Site Clearing: 1 Laborer - 2 hrs. 1 Operator - 2 hrs. 1 backhoe - 2 hrs.
Miscellaneous: 1 Superintendent - 8 hrs. 1 SSHO - 7 hrs.

---

**Inspection and Observations:**
MK - witnessed dewatering of cap area and confirmed water was being segregated from dye impacted water produced before the onset of 1997 construction activity.
MK - verified trees being cut were within the clearing limit.
MK - observed compaction of first lift of cap foundation using sheeps-foot roller.

---

**Testing Equipment:**
NONE

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
Cap area has developed three weeps; 1 on the NE end and 2 on the NW end, all in areas of soft spots were explored.
An area where the plastic covering has bubbled near the surface that had previously been covered, due most likely by the weight of the construction equipment, was excavated and recovered.
T. Brent expressed concern about the Winterization Plan having only a weekly inspection of the FRAC tanks.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09/22/97

Certifying Engineer

Daily Summary Report # 022

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #023**

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**Date:** 09-23-97 (Tues) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast w/light showers **Temperature:** 58-60$^0$
**Cloud Cover:** Overcast **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
Weekly construction meeting held at DBG between MK and PSG.

---

**Construction Activity:**
Site Preparatory Work - Water was transferred from tank #1001MEA to #S879NSD by PSG to aid relocation of the FRAC tanks.
Cap Foundation Placement and Grading - PSG resumed hauling cap foundation fill from the Biofacility spoil pile to the DBG. After the subgrade was prepared by removing/perforating the protective plastic covering, The first lift of the fill was placed over the southwest section of the cap previously covered with plastic. A soil cover has been placed over the entire area previously covered with plastic.

---

**Equipment and Personnel:**
Site Prep Work: 2 Laborer - 7 hrs. 1 backhoe - 7 hrs. 1 Laborer - 3 hrs.
Cap Foundation Placement & Grading: 6 truck w/drivers (Hanna) - 6 hrs.
2 operator - 7 hrs. 1 Laborer - 7 hrs.
1 trackhoe - 6 hrs. 1 dozer - 6 hrs. 1 compactor - 3 hrs. 1 Soil Tech - 2 hrs.
Miscellaneous: 1 Superintendent - 10 hrs. 1 SSHO - 7 hrs.

---

**Inspection and Observations:**
MK - confirmed plastic sheeting was being removed/perforated prior to placement of first lift of cap foundation fill. Verified placement of cap foundation in lifts less than or equal to 12 inch loose lifts.
MK - observed dye impacted water being transferred from tank #1001MEA to S879N50.
MK - verified vegetation removal from southern section of the cap.

---

**Testing Equipment:**
NONE

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**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
B. Robertson gave his permission for MK to leave the remaining Biofacility spoil pile for the landfill to use.
The weep on the northwest side of the cap has produced approximately 1 1/2 gallons of water with a decidedly green tint. All concerned parties were notified.
c. Waite/K. Ohsiek to prepare a list of options.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09/23/97

Certifying Engineer

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Daily Summary Report #023

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #024**

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**Date:** 09-24-97 (Wed) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast and warm **Temperature:** 58-70$^0$
**Cloud Cover:** Overcast **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory Work - The transfer of dye impacted water from tank #1001MEA to #S879NSD by PSG continues. PSG graded entrance road from paved road to DBG.
Site Clearing - PSG cut the last remaining two trees from the clearing limits. The trackhoe was re-mobilized from the Biofacility to DBG for use as a tag line in felling trees.
Cap Foundation Placement and Grading - PSG moved trackhoe from the Biofacility to 161/822 borrow site for excavation of cap foundation fill. Along the southern portion of the cap, vegetation was cut and removed by PSG in preparation for cap foundation fill.

---

**Equipment and Personnel:**
Site Prep Work: 2 Laborer - 6 hrs. 1 backhoe - 3 hrs. 1 operator - 3 hrs.
Cap Foundation Placement & Grading: 1 Soil Tech - 9 hrs.
Site Clearing: 2 operators - 6 hrs. 2 laborers - 6 hrs. Dozer - 4 hrs.
1 trackhoe - 4 hrs.
Miscellaneous: 1 Superintendent - 10 hrs. 1 SSHO - 9 hrs.

---

**Inspection and Observations:**
MK - observed felling of two trees on the northwest side of the cap.
MK - verified completion of vegetation removal from the southwest end of the cap area.

MK - witnessed transfer of dye impacted water from tank #1001MEA to #S879NSD.
MK - confirmed density and moisture tests performed by PSG.
PSG - performed six density moisture tests and three re-tests on cap foundation fill.

3 test passed
3 test failed (two on density and moisture and one on moisture alone)
3 re-test passed

---

**Testing Equipment:**
3411 B Troxler Nuclear Density Gauge, ID #9142

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**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
Weep on the northwest side of the cap producing water.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09/24/97

Certifying Engineer Kilian Olivil

Daily Summy Report # 024

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #025**

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**Date:** 09-25-97 (Thurs.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny and mild **Temperature:** 58-70$^0$
**Cloud Cover:** Clear **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**

Weekly conference call with U.S. Navy, MK, U.S. EPA; discussed cap winterization, completion schedule, dye impacted water weeping, and fill. Recommendations have been proposed for resolution of future concerns and will be held on file for future reference. Work Plan revised-pages to be issued. Draft water treatment schedule has been developed. The winterization checklist for DBG has been issued to the EPD, U.S. Navy for approval. The need for an access road around the magazine was also discussed.

---

**Construction Activity:**

Site Preparatory Work - ~~The~~ transferred water from the mud boxes to tank #GS505EA in west area and pumped contents of poly tank into #S1885EA, the designated construction water tank. Tank #101MEA was relocated by Baker Tanks to the west storage area. All FRAC tanks have been relocated. Mud boxes contain 0.5 to 1.5 feet of mud in the bottom of the box. Poly tank used to transfer water was decontaminated by PSG.

Cap Foundation Placement and Grading - 20 loads of soil from the 161/822 borrow area were hauled to the DBG by PSG using Hanna Trucking ~~to~~ for cap foundation fill over the southwest end. Cap foundation fill was spread using a JD LGP dozer in a one foot lift and compacted.

Contaminated Excavation - The last of the 1h designated high spots have been excavated by PSG using the front of the backhoe bucket to excavate the mud box containment berms. PSG backfilled area 1e with fill from the 161/822 borrow site.

---

**Equipment and Personnel:**
Site Prep Work: 2 Laborer - 3 hrs. 1 backhoe - 3 hrs.
Cap Foundation Placement & Grading: trackhoe - 8 hrs. dozer - 8 hrs.
compactor - 6 hrs. 2 operator - 9 hrs. 1 operator - 6 hrs. 1 laborer - 9 hrs.
1 Geo Tech - 8 hrs. 2 dump truck w/driver - 6 hrs.
Site Clearing: 2 operators - 3 hrs.
Contaminated Excavation: 1 operator - 3 hrs. 1 backhoe - 3 hrs. 2 laborers - 3 hrs.
Miscellaneous: 1 Superintendent - 10 hrs. 1 SSHO - 9 hrs.

---

**Inspection and Observations:**
PSG - performed one density/moisture test of 1e backfill; test passed.
MK - confirmed density/moisture testing by PSG.
MK - observed stump grinding operations by PSG; stumps to be flush with existing surface.
PSG - performed two density/moisture tests on foundation fill; both tests passed.
MK - witnessed PSG conducting density/moisture testing at a rate of one test per 500 sq.ft.

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**Testing Equipment:**
3411 B Troxler Nuclear Density Gauge, ID #9142

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**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
Commander Smith has decided that the pathway between the magazine could no longer be used for construction traffic. A roadway will need to be constructed around the magazine. One of the two poly tanks still showed signs of color after decontamination and will be returned to site.
Returned subcontractor's construction schedule update; marked for information only.

---

**Supporting Documentation:**
Daily Inspection Report
Conference Call meeting minutes

By: Lois J. Bigley Date: 09/25/97

Certifying Engineer Eileen O'Neil

Daily Summary Report #025

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #026**

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**Date:** 09-26-97 (Fri.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and mild **Temperature:** 57-80$^0$
**Cloud Cover:** Clear **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
None

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**Construction Activity:**
Site Preparatory Work - PSG constructed an access road around the magazine by hauling fill from the 161/822 borrow area to level the north extension of the access road. Covered the fill with Type 3 (woven) geotextile, followed by four truck loads of #2 stone from the Roger's Group quarry. To maintain drainage, 80 feet of CMP culvert, 40 feet at each end were installed by PSG. PSG continues dewatering mud boxes and transferring water into a FRAC tank. Completed containment berm around FRAC tank storage area.
Cap Foundation Placement and Grading - MSE, subcontractor to PSG, cross-sectioned the cap area. PSG began placing the second lift of cap foundation along the northeast end extending the fill limits toward the cap area limits. Reworked, compacted, and tested the center section of the cap area; which had failed compaction/moisture requirements earlier.
Site Grading - Representative of True Green, a subcontractor of PSG, on-site to treat stumps with commercial grade Round-up.

---

**Equipment and Personnel:**
Site Prep Work: 2 Laborer - 6 hrs. 2 Hanna trucks w/driver - 3 hrs.
3 operators - 6 hrs. 1 dozer - 6 hrs. 1 trackhoe - 6 hrs.
1 compactor - 5 hrs. 1 Geo Tech - 3 hrs.
Cap Foundation Placement & Grading: trackhoe - 5 hrs. 1 dozer - 5 hrs.
3 operator - 5 hrs. 2 laborer - 5 hrs. 1 roller - 3 hrs.
1 Geo Tech - 5 hrs. 2 Hanna trucks w/driver - 5 hrs.

Site Grading: 2 True Green Reps - 5 hrs.
Miscellaneous: 1 Superintendent - 12 hrs. 1 SSHO - 9 hrs.

---

**Inspection and Observations:**
PSG - inspected fill for suitability; remove roots, debris, etc. as needed.
MK - verified approved Type 3 geotextile was placed under the north extension of the access road per drawing C-07.
PSG - performed six density/moisture tests and four re-tests; all tests passed both moisture and density.
MK - observed and confirmed moisture density tests taken by PSG. Rework section of the cap foundation fill per section 02200.

---

**Testing Equipment:**
3411 B Troxler Nuclear Density Gauge, ID #9142

---

**Materials and Submittals:**
80 feet of 12 inch CMP
4 loads of #2 stone from Roger's Group quarry

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**Approvals/Problems/Corrective Action:**
Rate of weep increased with commencement of second lift of cap foundation fill.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bailey Date: 09/26/97

Certifying Engineer

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Daily Summary Report #026

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #027**

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**Date:** 09-27-97 (Sat.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and mild **Temperature:** 58-78$^0$
**Cloud Cover:** Clear **Precipitation:** none

---

**Meeting Held/Action Recommended or Taken:**
None

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**Construction Activity:**
Site Preparatory Work - Four loads of #53 stone were spread and compacted by PSG on north extension of the access road. Water from #SDE1EA was transferred to #1001MEA by PSG. Tank #SDE1EA has a small hole in the top of one of the side panels.
Cap Foundation Placement and Grading - PSG continued placing, spreading, and compaction of second lift of cap foundation fill in less than 12 inch loose lift over the northeast end of the cap working southward along the north half. Laborers continue to hand pick root from the fill as it is placed. A total of 47 truck loads of fill were hauled from the 161/822 borrow area today.

---

**Equipment and Personnel:**
Site Prep Work: 2 Laborer - 3 hrs. 2 operators - 3 hrs. 1 dozer - 3 hrs.
1 compactor - 3 hrs.
Cap Foundation Placement & Grading: 1 trackhoe - 8 hrs. 1 dozer - 6 hrs.
1 operator - 9 hrs. 2 laborer - 6 hrs. 2 operators - 6 hrs.
1 compactor - 6 hrs. 1 Geo Tech - 8 hrs.
Miscellaneous: 1 Superintendent - 9 hrs. 1 SSHO - 9 hrs.

---

**Inspection and Observations:**
PSG - performed five density/moisture tests on cap foundation fill; all tests passed both moisture and compaction requirements.

MK - confirmed placement of second lift of cap foundation and moisture density tests taken by PSG. All area tests passed with 95% compaction and +/- 3% optimum moisture as determined by ASTM D-698.
MK - verified construction of north extension of access road per the U.S. Navy's directive and drawing C-07.
MK - observed transfer of dye-impacted water from #SDE1EA to #1001MEA as requested by the EPD.
MK - verified grade via cross-section stakes.

---

**Testing Equipment:**
3411 B Troxler Nuclear Density Gauge, ID #9142

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**Materials and Submittals:**
4 loads of #53 stone from Roger's Group quarry

---

**Approvals/Problems/Corrective Action:**
On the northeast end of the cap, 27 dime size green spots were discovered. All spots had a root associated with them. Spots were hand excavated and root and colored soil were placed in a plastic bag for placement under one foot of clean fill. Northwest weep still active.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09/27/99

Certifying Engineer

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Daily Summary Report #027

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #028**

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**Date:** 09-29-97 (Mon.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, and mild **Temperature:** 54-81$^0$
**Cloud Cover:** Clear **Precipitation:** 0.3" Sunday

---

**Meeting Held/Action Recommended or Taken:**
Weekly construction meeting held at the DBG site office.

---

**Construction Activity:**
Cap Foundation Placement and Grading - Using a LGP dozer to spread and a SD-70D sheep-foot roller for compaction, PSG completed placing, spreading, and compacting second lift of cap foundation fill on the west end of the cap; began the lift on the northeast corner working west then south.
Site Clearing - PSG removed debris, roots, limbs, etc. from existing ground surface prior to placement of the cap foundation fill. Application of commercial grade Round-up was performed by True Green, an Indiana licensed pesticide applicator, subcontractor to PSG. The commercial grade Round-up was mixed with pruning tar and painted on the stumps' cambium layer.

---

**Equipment and Personnel:**
Site Clearing: 2 Laborer - 9 hrs.
Cap Foundation Placement & Grading: 1 trackhoe - 8 hrs. 1 dozer - 8 hrs.
3 operator - 9 hrs. 1 laborer - 8 hrs. 1 compactor - 8 hrs.
1 Geo Tech - 8 hrs. 3 Hanna trucks w/drivers - 8 hrs.
Miscellaneous: 1 Superintendent - 10 hrs. 1 SSHO - 9 hrs.

---

**Inspection and Observations:**
PSG - performed three density/moisture tests and two re-tests on the second lift of the cap foundation fill.
PSG - continues to inspect fill for suitability and removing roots, etc. from the fill.
MK - confirmed lift thickness of cap foundation is less than 12 inches.

MK - verified debris had been removed from the limits of the cap and stumps within the cap area were treated with Round-up prior to the placement of cap foundation fill.
MK - observed application of Round-up on stumps cut flush to the existing ground surface within the limits of the cap.
MK - verified license of herbicide applicator, Curt Rose, submittal #1-50 and 1-51.

---

**Testing Equipment:**
3411 B Troxler Nuclear Density Gauge, ID #9142

---

**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
Green spots - In the morning, no evidence of any green spots were noticed, however as the day warmed, to green spots appeared through the cap area and borrow area. EPD was informed of the problem and shown that the spotting is associated with organics from the borrow and not dye. EPD concurred; no action to be taken.
Weep - Northwest weep continues to produce water however, rate of flow seems proportional to loading.
Have received contradictory directions from EPD and ROICC concerning disposal of brush from clearing.

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois Bigley Date: 09/29/97

Certifying Engineer [signature]

Daily Summary Report #028

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #029**

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**Date:** 09-30-97 (Tues.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny and clear w/light cloud cover in p.m. **Temperature:** 61-74$^0$
**Cloud Cover:** Clear to partly cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

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**Construction Activity:**
Cap Foundation Placement and Grading - PSG continued placing cap foundation on the northeast and northwest sides of the cap, building fill to grade at the shoulders and extending fill to the limit of the cap. Two laborers continue to hand remove debris.
Contaminated Excavation - Using the CAT backhoe bucket, PSG began removing sludge from the mud boxes and placing material within the cap area along the south end. The consistency of the mud box sludge is about that of cake batter. Both the sludge from the mud box and the mud boxes were covered with plastic sheeting at the end of shift. (Only a few buckets of material were removed from mud box #280 before the backhoe broke.)

---

**Equipment and Personnel:**
Cap Foundation Placement & Grading: 1 trackhoe - 10 hrs. 2 operator - 10 hrs.
1 compactor - 10 hrs. 1 Geo Tech - 8 hrs.
3 Hanna trucks w/drivers - 8 hrs.
Contaminated Excavation - 2 laborers - 10 hrs. 1 operator - 10 hrs.
1 backhoe - 10 hrs.
Miscellaneous: 1 Superintendent - 11 hrs. 1 SSHO - 10 hrs.

---

**Inspection and Observations:**
PSG - performed ten density/moisture tests and two re-tests; eight test passed, two test failed density. Areas were re-worked and re-tested; both tests passed.

PSG - continues to inspect fill for suitability and removing roots, etc. from the fill.
MK - verified site clearing along the west edge of the north leg prior to placement of the cap foundation fill.

---

**Testing Equipment:**
3411 B Troxler Nuclear Density Gauge, ID #9142

---

**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
Consistency of sludge from the mud boxes is that of cake batter; material will need to be consolidated for final placement.
Weep - It has been determined that the weep on the northwest corner will create no additional problems and could be backfilled once the rate of the weep drops to under one gallon per day. Weeps on the northeast have stopped and are backfilled.

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 09/30/97

Certifying Engineer

Daily Summary Report #029

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #030**

---

**Date:** 10-01-97 (Wed.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild **Temperature:** 50-62$^0$
**Cloud Cover:** Clear to partly cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

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**Construction Activity:**
Cap Foundation Placement and Grading - PSG continues placing, spreading, and compacting fill from the 161/822 borrow as cap foundation. Material is placed using a LGP dozer to spread and a S-070D roller for compaction.
Contaminated Excavation - After receiving a JD 310E backhoe, PSG began to empty the sludge from the mud box #280. Sludge was mixed with Lone Star Type I Portland cement and placed in the cap area along the south end, where a minimum of one foot of clean cap foundation fill would cover the area. Both the sludge from the mud box and the mud boxes were covered with plastic sheeting at the end of shift.
Site Preparatory Work - Using a two-inch PVC pipe and a coupler, two of the three wells were extended. A minimum of three rivets were used to secure the PVC pipe to the coupler. (no adhesives were used)

---

**Equipment and Personnel:**
Cap Foundation Placement & Grading: 1 trackhoe - 10 hrs. 3 operator - 11 hrs.
1 compactor - 10 hrs. 1 dozer - 10 hrs. 3 Hanna trucks w/drivers - 10 hrs.
Contaminated Excavation - 2 laborers - 6 hrs. 1 backhoe - 3 hrs.
Site Prep Work: 2 laborers - 5 hrs.
Miscellaneous: 1 Superintendent - 12 hrs. 1 SSHO - 11 hrs.

---

**Inspection and Observations:**
MK - took analytical soil samples to confirm borrow site is clean.

PSG - performed six passing nuclear density tests on cap foundation fill placed today using a Troxler nuclear density gauge.
MK - observed removal of roots by PSG during placement of cap foundation fill.
EPD - witnessed extension of center well, #02-06.
MK - verified sludge removed from mud boxes was covered by plastic sheeting prior to end of shift.

---

**Testing Equipment:**
3411 B Troxler Nuclear Density Gauge, ID #9142

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**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
EPD (T. Brent) agreed that fly ash or cement could be used to stabilize the sludge from the mud boxes. Each box contained approximately nine cubic yards of sludge.

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigby Date: 10-01-97

Certifying Engineer

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Daily Summary Report #030

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #031**

---

**Date:** 10-02-97 (Thurs.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild **Temperature:** 46-72$^0$
**Cloud Cover:** Clear to partly cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**

Weekly conference call with U.S. Navy, MK, U.S. EPA, discussed construction schedule. Cap foundation is 95% complete and should reach 100% by 10/3/98.

- Remaining work includes: building the access road, removal of tree debris, pre-winterization, and temporary demobilization.
- Mud boxes are in the process of being cleaned and mixed with cement.
- T. Brent asked that monitoring well extensions be re-worked.

---

**Construction Activity:**

Cap Foundation Placement and Grading - PSG continues placing, spreading, and compacting fill from the 161/822 borrow by building the baseline to grade and sloping the fill to cap shoulder; after the compacted material was hauled from the borrow area and stockpiled at the DBG for future placement and compaction.
Contaminated Excavation - PSG completed mucking out mud boxes #280 and #281. Sludge from the bottom of the mud boxes was mixed with Type 1, Portland Cement and placed in the southeast corner of the DBG. A total of 35 bags of Lone Star cement was mixed with approximately 18 cubic yards of sludge. Both mud boxes were relocated to the FRAC tank storage area and covered with plastic sheeting at the end of shift. Backhoe bucket was decontaminated. Front berms were constructed around both storage areas completing the FRAC tank storage area and relocation of FRAC tanks by PSG.

---

**Equipment and Personnel:**

Cap Foundation Placement & Grading: 1 trackhoe - 10 hrs. 2 operator - 11 hrs.
1 operator - 4 hrs. dozer - 10 hrs. 3 Hanna trucks w/drivers - 9 hrs.
Contaminated Excavation - 2 laborers - 11 hrs. 1 backhoe - 6 hrs.
1 operator - 7 hrs.

Miscellaneous: 1 Superintendent - 11 hrs. 1 SSHO - 11 hrs.

**Inspection and Observations:**
PSG - performed no nuclear density testing today.
PSG - visually inspected cap foundation fill as it was spread for suitability; removing undesirable material, rocks, etc.
MK - verified PSG decontaminated both backhoe buckets per specifications and visually inspected equipment.
MK - confirmed construction of front berms for both FRAC tank storage areas by PSG. Material was placed but not shaped or compacted.

**Testing Equipment:**
None

**Materials and Submittals:**
None

**Approvals/Problems/Corrective Action:**
Steve Cory checked with the EPD concerning additional decon procedures are needed for demobilization of equipment.

**Supporting Documentation:**
Daily Inspection Report
Conference call meeting minutes

By: Lois J. Bigley Date: 10-02-97

Certifying Engineer [illegible]

Daily Summary Report #031

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #032**

---

**Date**: 10-03-97 (Fri.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild **Temperature:** 59-83$^0$
**Cloud Cover:** Partly cloudy to clear **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Cap Foundation Placement and Grading - PSG spread and compacted cap foundation fill hauled 10/2/97.
Site Preparatory Work: PSG installed a three-inch drainage valve in the east storage area and 2 two-inch drainage valves in the west storage area.

---

**Equipment and Personnel:**
Cap Foundation Placement & Grading: 2 operator - 5 hrs. 1 laborer - 5 hrs.
1 dozer - 5 hrs. 1 roller - 5 hrs.
Site Preparation - 2 laborers - 5 hrs. 1 backhoe - 5 hrs.
Miscellaneous: 1 Superintendent - 5 hrs. 1 SSHO - 5 hrs.

---

**Inspection and Observations:**
PSG - performed four (passing) nuclear density testing on cap foundation.
PSG - visually inspected cap foundation fill for suitability.
MK - confirmed standard was run on the 3411 B Troxler Nuclear Density gauge ID #9142 daily per manufacturer's specifications and observed testing and placement of fill.
MK - verified drainage valve installation per specifications (FCR-DBG-007).

---

**Testing Equipment:**
3411 B Troxler Nuclear Density gauge, ID #9142

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
NW weep flow rate increase as fill is added to the area.

---

**Supporting Documentation:**
Daily Inspection Report
FCR-DBG-007

---

By: Lois J. Bigley Date: 10-03-97

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Certifying Engineer Linda Olive

---

Daily Summary Report #032

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #033**

---

**Date:** 10-06-97 (Mon.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild **Temperature:** 57-82$^0$
**Cloud Cover:** Clear to partly cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Cap Foundation Placement and Grading - MSE, surveying subcontractor to PSG, cross-sectioned the cap foundation.
Site Preparatory Work: At the 161/822 borrow area PSG graded and cleared trees previously uprooted.

- PSG received 15 rolls of erosion matting and 16 warning signs.

---

**Equipment and Personnel:**
Cap Foundation Placement & Grading: 2 surveyors - 8 hrs.
Site Preparation - 3 laborers - 7 hrs. 2 operators - 7 hrs. 1 trackhoe - 4 hrs. 1 dozer - 4 hrs.
Miscellaneous: 1 Superintendent - 8 hrs. 1 SSHO - 8 hrs.

---

**Inspection and Observations:**
MK - observed survey of cap foundation fill. Additional fill is required to bring cap foundation to a final grade for winterization, cap foundation must have a minimum elevation of the specified grade.
MK - observed clearing and grading of the 161/822 borrow area.
MK - inspected the perimeter of the cap; no additional weeps or seeps were denoted.
MK - confirmed 16" x 24" "Keep Off" signs meet requirement of C-09 drawing.
MK - verified erosion matting meets requirements of section 02255.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
Received 15 rolls of erosion matting; received 16 "Keep Off" signs for around perimeter of cap area.
Received the following submittals:

- #106 - Certification of Completion for Erosion Matting
- #107 - Manufacturer Instruction for Erosion Matting
- #108 - Material Sample of Erosion Matting
- #30 - MSDS

---

**Approvals/Problems/Corrective Action:**
FCR-DBG-012 was issued addressing a weep collection system. It has been determined through discussion between EPD/MK Field/and MK Boise (design engineers) that if the flow of the NW weep decreased to under one-gallon per day, then the weep area could be backfilled; however, present flow rate is about five-gallons per day. It was therefore determined that construction of a weep collection system was the best alternative.
The following submittals were approved:

- #106 - Certificate of Compliance on Erosion Matting
- #107 - Manufacturer Instruction for Erosion Matting
- #108 - Material Sample for Erosion Matting

The MSDS on Round-up is for information only

---

**Supporting Documentation:**
Daily Inspection Report
FCR-DBG-012

---

By: Joice J. Bigley Date: 10-06-97

Certifying Engineer

Daily Summary Report #033

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #034**

---

**Date**: 10-07-97 (Tues.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild w/cloud cover **Temperature:** 62-86$^0$
**Cloud Cover:** Sunny to partly cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Cap Foundation Placement and Grading - PSG completed excavation and hauling of cap foundation fill. All material excluding area over the weep has been placed, spread, and compacted. Laborers continue hand picking roots from the fill.

---

**Equipment and Personnel:**
Cap Foundation Placement & Grading: 3 operators - 11 hrs. 1 laborer - 11 hrs.
3 Hanna trucks w/drivers - 9 hrs. 1 trackhoe - 10 hrs. 1 dozer - 10 hrs.
1 compactor - 10 hrs.
Miscellaneous: 1 Superintendent - 11 hrs. 1 SSHO - 11 hrs.

---

**Inspection and Observations:**
PSG - performed five nuclear density tests using a Troxler Nuclear gauge on cap foundation fill; one test passed, two failed, and two re-tests passed.
MK - observed loading, hauling, placing, spreading, compaction, and testing of cap foundation.

---

**Testing Equipment:**
3411 B Troxler Nuclear Density gauge, ID #9142

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
FCR-DBG-012: Received EPA approved design on drainage collection system for NW weep. Including an annotated detail on the drain field.

---

**Supporting Documentation:**
Daily Inspection Report
FCR-DBG-012

---

By: Lois J Bigley Date: 10-07-99

Certifying Engineer [illegible]

Daily Summary Report # 034

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #035**

---

**Date**: 10-08-97 (Wed.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild w/cloud cover in p.m. **Temperature:** 59-84$^0$
**Cloud Cover:** Clear to mostly cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Cap Foundation Placement and Grading - Using an Ingersoll-Rand SD-70D compactor, PSG smooth drum rolled the surface of the cap foundation in preparation for winterization.
Site Preparatory Work - PSG resumed construction of access road. Two CMP culverts at the entrance. Earthen berm around the FRAC tank storage areas were shaped by PSG.
Winterization - PSG continued shaping the 161/822 borrow in preparation for winter shut down.

---

**Equipment and Personnel:**
Cap Foundation Placement & Grading: 1 operator - 5 hrs. 2 laborer - 4 hrs. 1 compactor - 5 hrs.
Site Preparatory: 1 backhoe - 2 hrs. 2 laborers - 6 hrs. 2 operators - 5 hrs. 1 dozer - 5 hrs. 1 compactor - 5 hrs.
Winterization: 1 trackhoe - 2 hrs. 1 dozer - 3 hrs. 1 operator - 5 hrs.
Miscellaneous: 1 Superintendent - 11 hrs. 1 SSHO - 10 hrs.

---

**Inspection and Observations:**
MK - verified the use of S1300, the approved Type 3 geotextile, under aggregate fill for access road construction. Confirmed placement of #2 stone as a sub-base and #53 stone as a wearing surface for access road construction.

MK - observed smooth drum rolling of the cap foundation, creating a smooth surface; however, the surface contains a large amount of irregularities that will require regrading.
MK - confirmed placement of two CMP, set to drain and in approximate locations as shown on drawing C-03.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
Received:

- 30 foot section of CMP
- 20 foot section of CMP and coupler bands
- 200 ton of #2 stone
- 100 ton of #53 stone

---

**Approvals/Problems/Corrective Action:**
FCR-DBG-013: Winterization plan has been sent to the Navy.

---

**Supporting Documentation:**
Daily Inspection Report
FCR-DBG-012

---

By: Lois J Bigley Date: 10-08-97

Certifying Engineer [illegible]

Daily Summary RT # 035

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #036**

---

**Date:** 10-09-97 (Thurs.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast, cool w/intermittent showers **Temperature:** 71-76$^0$
**Cloud Cover:** Overcast **Precipitation:** 0.15"

---

**Meeting Held/Action Recommended or Taken:**

Weekly conference call meeting with U.S. Navy, U.S. EPA, and MK discussed the following:

- Winterization plan and checklist for approval (FCR-DBG-013)
- Foundation fill complete; access road about 50%
- Phase I activities, site preparation, and pre-winterization activities should be complete by the middle of next week.

---

**Construction Activity:**

Cap Foundation Placement and Grading - Six loads of clean fill was hauled from the 161/822 borrow by PSG and stockpiled for removal of irregularities in the cap foundation surface.

Site Preparatory Work - PSG continued construction of access road by placing and spreading #2 and #53 stone.

- Approximately three inches of dye impacted water was transferred from FRAC tank #S879NSD to #GS522EA by PSG to provide a minimum 12 inch freeboard.

Weep - the drainage collection system for the NW weep was installed by PSG.

---

**Equipment and Personnel:**

Cap Foundation Placement & Grading: 1 operator - 7 hrs. 1 laborer - 4 hrs.
1 compactor - 4 hrs. 1 trackhoe - 6 hrs. 1 dozer - 4 hrs.
2 operators - 4 hrs. 2 Hanna trucks w/drivers - 4 hrs.
Site Preparatory: 1 laborer - 3 hrs. 2 operators - 5 hrs. 1 dozer - 5 hrs.
1 compactor - 5 hrs.
Miscellaneous: 1 Superintendent - 10 hrs. 1 SSHO - 10 hrs.
1 backhoe - 2 hrs. 1 operator - 2 hrs. 4 laborers - 2 hrs.

**Inspection and Observations:**
MK - confirmed construction of the access road in accordance with drawing C-07 at the approximate location shown on drawing C-03 and FCR-DBG-011.
MK - verified transfer of dye impacted water from #S879NSD to #GS522EA to increase freeboard to 12 inches.
MK - observed construction of NW weep's drainage collection system in accordance with FCR-DBG-012. Verifying fall of drain pipe 10'-9" of fall in 80 feet of length.

**Testing Equipment:**
David White LP6-20 sight level

**Materials and Submittals:**
Received:
- 40 tons of #2 stone
- 270 ton of #53 stone

**Approvals/Problems/Corrective Action:** (plumb)
EPD is concerned that the wells are not straight. Wells are to be tied to support guards.

**Supporting Documentation:**
Daily Inspection Report
Conference call meeting minutes

By: Lois J Bigley Date: 10-09-97

Certifying Engineer [illegible]

Daily Summary Report #036

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #037**

---

**Date:** 10-10-97 (Fri.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast, mild **Temperature:** 53-78$^0$
**Cloud Cover:** Overcast to partly cloudy **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory Work - PSG completed construction of access road by grading the #53 stone and compacting the material.

- Using sch 40 two inch PVC pipe and couplers riveted to the existing well, PSG extended the NE 02-01 monitoring well. Shaping of the west FRAC tank storage area was completed by PSG.

Winterization - temporary well protection of three t-posts ~~sur~~round the well was installed by PSG with flagging posted around each of the wells on the cap area. PSG rough graded and smooth drum rolled the cap foundation in preparation for winter shutdown. MSE, subcontractor to PSG, surveyed the cap foundation to provide documentation that clean cap foundation cover material exists over the cap area. North American Green SC 150 erosion matting was placed along the NE end of the cap in preparation for winter shutdown by PSG.

---

**Equipment and Personnel:**
Site Preparatory: 1 laborer - 4 hrs. 2 operators - 4 hrs. 1 dozer - 4 hrs. 1 compactor - 4 hrs.
Winterization: 3 operators - 4 hrs. 1 dozer - 4 hrs. 1 compactor - 4 hrs. 1 laborer - 4 hrs. 2 surveyors - 11 hrs. 2 laborers - 2 hrs. 1 backhoe - 2 hrs. 1 trackhoe - 4 hrs.
Miscellaneous: 1 Superintendent - 10 hrs. 1 SSHO - 10 hrs.

---

**Inspection and Observations:**
MK - verified construction of the access road in accordance with drawing C-07 with six inches of #2 stone and six inches of #53 stone.
MK/EPD- observed extension of the NE, 02-01 well and installation of the temporary well protection.
MK - confirmed use of approved erosion matting; material was not pinned; PSG used metal staples, specification requires wooden pegs.
MK - observed cross-section survey by MSE.
MK - witnessed rough grading of the cap foundation fill and verified are was being smooth drum rolled.
MK - verified 161/822 borrow site was rough graded to drain in preparation for winter shut down. Area is acceptable for winter shut down; additional clearing and grading is required for final release next year at completion of the cap construction.

---

**Testing Equipment:**
None

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**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
None

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois J Bigley Date: 10-10-97

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Certifying Engineer [signature]

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Daily Summary Report #037

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #038**

---

**Date:** 10-11-97 (Sat.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild **Temperature:** 56-82$^0$
**Cloud Cover:** Clear **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Cap Foundation - The rough grading and smooth drum rolling of the cap foundation was completed by PSG in preparation for winter shut down. Hand pick roots.
Site Preparatory Work - the stacking of logs was performed by PSG using the CAT 426 backhoe with forks.
Winterization -PSG continues laying erosion matting along the NW side slope of the cap foundation.

---

**Equipment and Personnel:**
Site Preparatory: 1 laborer - 2 hrs. 1 backhoe - 2 hrs.
Cap Foundation: 2 operators - 7 hrs. 1 compactor - 6 hrs. 1 dozer - 6 hrs.
Winterization: 1 laborer - 5 hrs.
Miscellaneous: 1 Superintendent - 7 hrs. 1 SSHO - 7 hrs.

---

**Inspection and Observations:**
MK - observed rough grading and smooth drum rolling of the cap foundation.
MK - confirmed matting being placed is approved erosion matting, North American Green SC 150, and is being laid in accordance with manufacturer's instructions.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
Because of the chipping controversy between the Navy ROICC and EPD/EPA, chipping of the brush, new and old, will not be performed yet.

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**Supporting Documentation:**
Daily Inspection Report
Submittal #107

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By: Lois J Bigley Date: 10-11-97

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Certifying Engineer [signature]

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Daily Summary Report #038

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #039**

---

**Date:** 10-13-97 (Mon.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast with rain showers **Temperature:** 55-72$^0$
**Cloud Cover:** Overcast **Precipitation:** 0.95"

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Run on/Run Off Controls - PSG worked on repairing silt fence and general site clean-up.

- A temporary secondary containment was constructed by PSG around the northwest weep collection system.

Winterization -PSG replaced and pinned erosion matting disturbed by winds.
Demobilized equipment for winterization.

---

**Equipment and Personnel:**
Run on/Run off: 2 laborer - 3 hrs. 1 operator - 1 hrs. 1 dozer - 1 hr.
Winterization: 2 laborer - 4 hrs. 1 laborer - 3 hrs.
Miscellaneous: 1 Superintendent - 8 hrs. 1 SSHO - 5 hrs.

---

**Inspection and Observations:**
MK - observed that erosion matting meets requirements of approved submittals. The specifications require wooden pegs be utilized to secure erosion matting for final seeding; however, there are no directions concerning pins for temporary matting for winterization.
MK - observed construction of secondary containment around the 200 gallon poly tank of the NW weep.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
Use of metal staple in lieu of wooden peg for both staples and matting to be removed next year was approved by MK for use in temporary matting.

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois J. Bigley Date: 10-13-97

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Certifying Engineer

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Daily Summary Rt #039

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #040**

---

**Date:** 10-14-97 (Tues.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast w/clearing **Temperature:** 36-62$^0$
**Cloud Cover:** Overcast to partly cloudy **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Winterization - clean-up and partial demobilization were performed by PSG. PSG will return next week and complete remaining winterization activities and commence weekly site inspections.

---

**Equipment and Personnel:**
Winterization: 1 Superintendent - 8 hrs. 1 laborer - 8 hrs.

---

**Inspection and Observations:**
MK - observed demobilization.
MK - previewed seeding requirement with True Green representative.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
Received the following submittals:
07 - Site Safety and Health Officer (resubmittal)
29 - SSHO Qualifications (resubmittal)

---

**Approvals/Problems/Corrective Action:**
The following submittals were approved:
07 - SSHO
29 - SSHO Qualifications

---

**Supporting Documentation:**
Daily Inspection Report

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By: Lois J Bigley Date: 10/14/97

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Certifying Engineer [signature]

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Daily Summary Report #040

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #041**

---

**Date:** 10-15-97 thru 10-21-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, cool, and mild **Temperature:** 37-58$^0$
**Cloud Cover:** Sunny to partly clear **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**

A preparatory meeting was held with True Green covering specification requirements after seeding.

Weekly conference call was held October 15, 1997 between U.S. Navy, EPA, and MK, MK PMO. The following items were discussed concerning the DBG cap:

- Phase I site preparations have been completed and the subcontractor has left the site. Weekly inspections will begin next week. Minor maintenance will be performed when inspection dictate. Seeding of disturbed areas off the cap will occur when weather dries, possibly next week.

---

**Construction Activity:** (10-21-97)

Site Preparatory - MK using On-Site personnel, resumed clearing activity by pulling brush, limbs, and logs out from the clearing limits at the southwest end and working northward.

Site Restoration and Seeding - True Green, a subcontractor to PSG, prepared and seeded berms and area around the tank storage area. Due to the slope and limited spacing, the area was hand raked, seed broadcast and then soil was raked over the permanent seeding.

Winterization - Repair of five minor erosion areas were completed by PSG using a skid loader. PSG resumed completion of winterization activities including, grading the area between the cap and road to drain, insulating the northwest weep collection tank. The majority of the 161/822 borrow area and all disturbed areas outside the cap and road were temporarily seeded with an annual rye and mulched by True Green.

- PSG performed weekly site inspection.
- MK performed daily site inspection.

**Equipment and Personnel:**
Site Preparatory: 1 skid loader - 5 hrs. 3 laborer/operators - 6 hrs.
2 backhoes - 6 hrs.
Site Restoration: 3 laborer/landscapers - 8 hrs. (lower tier) 1 operator/laborer-8 hrs 1 trackhoe - 8 hrs.

**Inspection and Observations:**
MK - observed winterization activities and repair of minor erosions.
MK - rejected erosion blanket (Futerra) - material does not meet the contract specifications.
MK - witnessed site clearing activities and confirmed clearing with the limits.
MK - continues daily site monitoring.
MK - confirmed seeding within fall allotted time frame.

**Testing Equipment:**
None

**Materials and Submittals:**
On 10/16/97 received insurance certificate for lower tier.
10/21/97 received 12 rolls of erosion matting.

**Approvals/Problems/Corrective Action:**
FCR-DBG-013, Winterization Plan, was rejected by EPD.

**Supporting Documentation:**
Daily Inspection Report

By: Lois J. Bigley Date: 10/21/97

Certifying Engineer

Summary Report # 041

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #042**

---

**Date:** 10-22-97 (Wed.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, cool, and mild **Temperature:** 29-45$^0$
**Cloud Cover:** Clear **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory - Site clearing of old and new brush previously pushed beyond or to the clearing limits continued with On-Site personnel; by stacking logs while stockpiling the brush and other material to be chipped at a later date.
Winterization - PSG continued winterization activity including placing additional matting on cap side slopes.

---

**Equipment and Personnel:**
Site Preparatory: 1 skid loader - 2 hrs. 3 laborer/operators - 8 hrs.
2 backhoes - 8 hrs.
Winterization: 1 Supervisor/Laborer - 5 hrs.

---

**Inspection and Observations:**
MK - observed winterization activities and confirmed use of approved erosion matting.
MK - observed site clearing activities.
MK - continues daily site monitoring.
MK - witnessed site clearing.

---

**Testing Equipment:**
None

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**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
None

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois J Bigley Date: 10-22-99

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Certifying Engineer [illegible]

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Daily Summary RT # 042

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #044**

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**Date:** 10-24-97 (Fri.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast and cool w/showers **Temperature:** 50-60$^0$
**Cloud Cover:** Overcast **Precipitation:** 0.2"

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory - On Site personnel continues site clearing by pulling brush from the treeline on the north end of the cap working eastward.

---

**Equipment and Personnel:**
Site Preparatory: 6 laborer/operators - 9 hrs. 2 backhoes - 8 hrs.

---

**Inspection and Observations:**
MK - observed site clearing activity on north end of cap.
MK - continues daily site monitoring.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
None

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**Supporting Documentation:**
Daily Inspection Report

By: Lois J Bigley Date: 10-24-97

Certifying Engineer [illegible]

Daily Summary RT #044

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #045**

---

**Date**: 10-25-97 (Sat.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Windy, partly cloudy and warming **Temperature:** 50-60$^0$
**Cloud Cover:** Overcast **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory - On Site personnel continues site clearing by pulling brush from the treeline in preparation of chipping.

---

**Equipment and Personnel:**
Site Preparatory: 5 laborer/operators - 8 hrs. 2 backhoes - 8 hrs.

---

**Inspection and Observations:**
None

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
None

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois J Bigley Date: 10-25-97

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Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #046**

---

**Date:** 10-27-97 (Mon.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast clearing in p.m. **Temperature:** 39-45$^0$
**Cloud Cover:** Partly cloudy **Precipitation:** 0.4" over weekend

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory - On Site personnel continues site clearing along the east side of the site using a backhoe to move material and a Vermeer auto-feed chipper to chip material. Larger material is being blocked and stacked; smaller material is being chipped per FCR-DBG-006, wood chips are to be stockpiled not spread.

---

**Equipment and Personnel:**
Site Preparatory: 2 laborer/operators - 8 hrs. 2 backhoes - 8 hrs.
5 laborers - 8 hrs. 1 Vermeer chipper - 8 hrs.

---

**Inspection and Observations:**
MK - observed On-Site personnel chipping operations in accordance with Statement of Work with noted change per FCR-DBG-006.
MK - continues daily site monitoring.

---

**Testing Equipment:**
None

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**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
None

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**Supporting Documentation:**
Daily Inspection Report
FCR-DBG-006

By: Lois J Bigley Date: 10-27-97

Certifying Engineer

Daily Summary Report # 046

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #047**

---

**Date:** 10-28-97 (Tues.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny and clear **Temperature:** 25-53$^0$
**Cloud Cover:** Clear **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**

Weekly conference call between the U.S. Navy, U.S. EPA, MK PMO, and MK field office was held today. The following items were discussed concerning the DBG cap:

- Daily and weekly site inspections continue with no problems identified.
- Installation of erosion mats was completed this week.
- MK forces are continuing the wood chipping of small materials and anticipate completion next week.
- The current schedule for installation of the cap shows a start in June 1998. This is based on historical precipitation data. Expected rain fall typically declines beginning in June. Should the weather allow, cap construction could begin as early as April 1998.

---

**Construction Activity:**

Site Preparatory - On Site personnel continues site clearing with crew working in two teams. One team is working clockwise around the site's clearing limit, chipping and stacking logs; the other team works counter clockwise. Both On-Site and MK personnel are being used. The north and east ends are nearly complete.

---

**Equipment and Personnel:**

Site Preparatory: 2 operators - 8 hrs. 2 backhoes - 8 hrs.
4 laborers - 8 hrs. 2 Vermeer chipper - 8 hrs.

---

**Inspection and Observations:**

PSG - performed weekly site inspection; no areas in need of repair.

MK - observed site clearing activities in accordance with specifications; some logs greater than three inches in diameter are being chipped, this is a nominal size and has no affect on the cap construction.
MK - continues daily site monitoring; verified weekly site inspection by PSG.

---

**Testing Equipment:**
None

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**Materials and Submittals:**
None

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**Approvals/Problems/Corrective Action:**
FCR-DBG-013, Winterization Plan was approved per 10/28/97 meeting.

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**Supporting Documentation:**
Daily Inspection Report

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By: Lois J Bigley Date: 10-28-97

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Certifying Engineer [illegible]

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Daily Summary Report #047

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #048**

---

**Date:** 10-29-97 (Wed.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny and clear **Temperature:** 36-52$^0$
**Cloud Cover:** Clear **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory Work - On Site and MK personnel continue site clearing. Chipping is approximately half complete, west side remains to be chipped.

---

**Equipment and Personnel:**
Site Preparatory: 2 operators - 10 hrs. 2 backhoes - 10 hrs.
4 laborers - 10 hrs. 2 Vermeer chipper - 10 hrs.

---

**Inspection and Observations:**
MK - observed chipping operations; wood chips are being stockpiled per EPD's request (FCR-DBG-006).
MK - continues daily site monitoring.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
FCR-DBG-013, Winterization Plan was approved per 10/28/97 meeting.

---

**Supporting Documentation:**
Daily Inspection Report

By: Lois J. Bigley Date: 10/29/97

Certifying Engineer

Daily Summary Rt # 048

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #049**

---

**Date**: 10-30-97 (Thurs.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Sunny and warm **Temperature:** 37-64$^0$
**Cloud Cover:** Clear to partly cloudy **Precipitation:** 0

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory Work - On Site and MK personnel continue site clearing by chipping brush along southwest side of the cap.

---

**Equipment and Personnel:**
Site Preparatory: 4 operators/laborers - 9 hrs. 2 backhoes - 9 hrs.
2 Vermeer chipper - 9 hrs.

---

**Inspection and Observations:**
MK - observed clearing activity including chipping of brush greater than three inches in diameter and often up to eight inches using a Vermeer auto-feed chipper.
MK - continues daily site monitoring.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
FCR-DBG-014, Disposal of wood chips as mulch if not used at Biofacility, was issued.

---

**Supporting Documentation:**
Daily Inspection Report

By: Lois J. Bigley Date: 10-30-97

Certifying Engineer

Daily Summary Rt # 049

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #050**

---

**Date:** 10-31-97 (Fri.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast w/rain **Temperature:** 45-52$^0$
**Cloud Cover:** Overcast **Precipitation:** 0.2"

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory Work - On Site and MK personnel continue site clearing by pulling brush out and chipping material.

---

**Equipment and Personnel:**
Site Preparatory: 6 operators/laborers - 8 hrs. 2 backhoes - 8 hrs.
2 Vermeer chipper - 8 hrs.

---

**Inspection and Observations:**
None

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
None

---

**Supporting Documentation:**
Daily Inspection Report

By: [illegible] Bigley Date: 10-31-99

Certifying Engineer [illegible]

Daily Summary Report #050

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #051**

---

**Date:** 11-3-97 (Mon.) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast w/snow **Temperature:** 34-36$^0$
**Cloud Cover:** Overcast **Precipitation:** wet snow

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory Work - On Site and MK personnel continue site clearing by chipping trees.

---

**Equipment and Personnel:**
Site Preparatory: 6 operators/laborers - 6 hrs. 2 backhoes - 6 hrs.
1 Vermeer chipper - 6 hrs.

---

**Inspection and Observations:**
MK continues winterization monitoring
PSG weekly inspection of site

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
None

---

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #052**

---

**Date:** 11-4-97 (Tues) **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cloudy, cold **Temperature:** 36-40$^0$
**Cloud Cover:** Overcast **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
Site Preparatory Work - On west side of cap, mulching and seeding were completed.

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK continues winterization monitoring. Observations: 3 areas of erosion-1) NW corner of north leg; 2) NW weep outlet; 3) central well (erosion no deeper than 3")
PSG weekly inspection of site

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
None

---

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #053**

---

**Date:** 11-5-97-11/11/97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Ptly Sunny, mild **Temperature:** 37-50$^0$
**Cloud Cover:** Ptly cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**

* Daily and weekly site inspections continue with no problems.
* Installation of seed and mulch on west side of cap completed.
* Current schedule for installation of the cap shows a start in June 1998. This is based on historical precipitation data. Expected rain fall typically declines beginning in June. Cap construction could begin as early as April 1998.

---

**Construction Activity:**

None

---

**Equipment and Personnel:**

None

---

**Inspection and Observations:**

MK continues winterization monitoring.

---

**Testing Equipment:**

None

---

**Materials and Submittals:**

Sampling plan of DBG water was discussed with EPA on Thursday (11/6/97) in Chicago.

---

**Approvals/Problems/Corrective Action:**

Minor erosion on N corner of north leg was backfilled.

---

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #054**

---

**Date:** 11/12/97-11/18/97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cloudy, Cold **Temperature:** 15-45$^0$
**Cloud Cover:** Ptly cloudy **Precipitation:** Light rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK continues winterization monitoring.
PSG continues weekly inspections.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
11/12/97: Mud box in east storage has had a section of plywood cover fall into box, allowing rain water to weigh down plastic and drain into box. To be repaired by PSG. Water transferred to FRAC tank next week. 11/13/97: PSG on site repairing erosion problems ( all less than one inch dep or three inches wide). Replaced cover on mud box.

---

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #055**

---

**Date:** 11/19/97-11/25/97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cold warming p.m. **Temperature:** 28-56$^0$
**Cloud Cover:** Cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**

Weekly Conference Call 11/20/97: Daily and weekly site inspections continue. A small amount of rain water entered the mud boxes as a result of a shift in the box covers. Water will be pumped to the appropriate FRAC tank during next weeks regular inspection.

- Steve Cory reported that Alan Debus of the U.S. EPA is close to approval on the QAPP. Alan plans to forward the document to the EPD for final edit and comment.
- Sampling activities will take place after the QAPP is approved.
- Steve Cory has also prepared a DBG water treatment schedule discussion. EPD comments are being incorporated. This summary will be attached to the minutes.

---

**Construction Activity:**

None

---

**Equipment and Personnel:**

None

---

**Inspection and Observations:**

MK continues winterization monitoring.
PSG continues weekly inspections.

---

**Testing Equipment:**

None

---

**Materials and Submittals:**
None

**Approvals/Problems/Corrective Action:**
None

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #056**

---

**Date:** 11/26/97-12/2/97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cold warming p.m. **Temperature:** 27-51$^0$
**Cloud Cover:** Ptly Cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**

Weekly Conference Call 12/1/97: Daily and weekly site inspections continue. Rain water previously leaked in the mud boxes will be pumped to the appropriate FRAC tank on 12/2/97.

- The DBG water treatment QAPP has been approved by the U.S. EPA. MK will issue QAPP from PMO. Tom Brent is collecting approval signatures.
- MK is making arrangements to sample the water including a one week advance notification for the U.S. EPA.
- The current DBG water treatment schedule discussion is attached to the minutes for information.

---

**Construction Activity:**

None

---

**Equipment and Personnel:**

None

---

**Inspection and Observations:**

MK continues winterization monitoring.
PSG continues weekly inspections.

---

**Testing Equipment:**

None

---

**Materials and Submittals:**

None

---

**Approvals/Problems/Corrective Action:**
Dewatered mud box that accumulated a small amount of rain water to FRAC tank GS505EA. Water transferred from tank S650NEA to increase freeboard to 12" +.

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #057**

---

**Date:** 12/3/97-12/9/97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cold **Temperature:** 27-37$^0$
**Cloud Cover:** Ptly Cloudy **Precipitation:** Light Snow

---

**Meeting Held/Action Recommended or Taken:**

Weekly Conference Call 12/9/97: Daily and weekly site inspections continue. Rain water previously leaked in the mud boxes has been pumped to the appropriate FRAC tank. Mud box covers were previously repaired.

- The DBG water treatment QAPP will be issued from PMO today. The signature sheet is at PMO for sign-off.
- Water samples will be taken next Monday and Tuesday. This has been coordinated with the Navy and U.S. EPA.

---

**Construction Activity:**

None

---

**Equipment and Personnel:**

None

---

**Inspection and Observations:**

MK continues winterization monitoring.
PSG continues weekly inspections.

---

**Testing Equipment:**

None

---

**Materials and Submittals:**

None

---

**Approvals/Problems/Corrective Action:**

**Approvals/Problems/Corrective Action:**
Minor erosion around perimeter; repair next week by PSG.

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #058**

---

**Date**: 12/10/97-12/16/97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Cold **Temperature:** 24-44$^0$
**Cloud Cover:** Ptly Cloudy **Precipitation:** Light Snow

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK continues winterization monitoring. Commenced sampling of FRAC tank water for treatment study.
PSG continues weekly inspections.

---

**Testing Equipment:**
Hand tools used for sampling FRAC tanks.

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
Minor erosion areas repaired by PSG.

---

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer [illegible]

## Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

### Report #058-A

---

**Date:** 12-15/12-19-97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Began cold and clear, became warm through the week
**Temperature:** 30s to 50s **Cloud Cover:** Mostly sunny **Precipitation:** none

---

## Meeting Held/Action Recommended or Taken:

Weekly conference call was held on December 18, 1997. The following items were discussed: Daily and Weekly inspections of the Dye Burial Cap continue; Water Treatment QAPP has been issued, and water samples have been taken from the FRAC tanks and shipped to the Navy and U.S. EPA. On December 16, Baker Tanks was notified (also T. Brent, EPD) there was a minor leak in the volume indicator gauge. Robert Craft of Baker Tanks spoke with Lois Bigley, MK concerning the leak of the gauge (tank #S879NSD) and the pin hole (tank #SDE1EA). Baker Tanks sent a tube of Pig Repair Putty, epoxy stick, the MSDS and a letter of authorization for MK to perform the repair work. MK repaired both FRAC tanks.

---

## Construction Activity:

December 16: A minor leak on tank #S879NSD was reported and contained. Baker Tanks was contacted and a method of repairing the tank, using a two part epoxy putty, was provided. Philip Service Group lowered volume in tanks #S1647SD, S47ST, and GS88EA to a freeboard greater than twelve inches (12"). Water was pumped from the overfull tanks to #S188SEA. Plastic sheeting was placed over some of the tanks to prevent possible infiltration. Also plastic sheeting was placed on the side slopes as preventive measure where minor erosion had occurred.
December 17: Repairs were made to tanks #S879NSD and #S1E1ED by MK using Baker Tank supplied repair putty. MK Environmental Techs sampled the nine tanks.

---

## Equipment and Personnel:

- Sampling: 3 Environmental Techs - 3 days.
- Daily Inspections and Repairs: 1 - 1 1/2 hours.
- Weekly Inspection/Water Transfer: 1 Tech - 8 hours .
- Miscellaneous: 1 operator - 6 hours; 1 laborers- 6 hour.

---

## Inspection and Observations:

Daily Inspection of DBG by MK Staff
Weekly Inspection of DBG by Philip Service Group

---

**Testing Equipment:**
None to date.

---

**Materials and Submittals:**
None.

---

**Approvals/Problems/Corrective Action:**
Tank repairs.

---

**Supporting Documentation:**
Daily Inspection Checklist; Meeting minutes; Weekly Inspection Checklist; Letter from Baker Tanks.

---

by: K. Olivil for Louis Bigby 11/18/98

Certifying Engineer Kirk Olivil

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #059**

---

**Date:** 12/17/97-12/23/97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cold with warming p.m. **Temperature:** 26-56$^0$
**Cloud Cover:** Ptly Cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**

Weekly Conference Call 12/18/97: Daily and weekly site inspections continue.

- The DBG water treatment QAPP has been issued from PMO, the signature sheet signed and sent to V. Venkatesh, Cleveland.
- Water samples have been taken and shipped to the Navy and U.S. EPA.

---

**Construction Activity:**

None

---

**Equipment and Personnel:**

None

---

**Inspection and Observations:**

MK continues winterization monitoring. Completed sampling of FRAC tank water for treatment study.

PSG continues weekly inspections.

---

**Testing Equipment:**

Hand tools used for sampling FRAC tanks.

---

**Materials and Submittals:**

None

---

**Approvals/Problems/Corrective Action:**

Small drip vol. gauge; drip contained in a small bucket. Corrective action: lowering three tanks with freeboard more than 12". Lowered water level to ensure a minimum of 12" freeboard. Surface erosion on foundation were amended to reduce additional erosion in area.

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #060**

---

**Date:** 12/24/97-12/30/97 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Snow and rain mix **Temperature:** 45-32$^0$
**Cloud Cover:** Ptly Cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK continues winterization monitoring.
PSG continues weekly inspections.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
Tank #S879NSD continued to have a small leak at the volume indication gauge; a second application of the two part epoxy putty supplied by Baker Tanks was made. Dripping seams have been stopped also. Tank will continue to be inspected w/attention to the area of repair. Cap covered with snow 12/30/97.

---

**Supporting Documentation:**
Daily Inspection Report

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #061**

---

**Date:** 12/31/97-1/4/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Snow and rain mix **Temperature:** 23-45$^0$
**Cloud Cover:** Ptly Cloudy **Precipitation:** Rain/Snow mix

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK continues winterization monitoring.
PSG continues weekly inspections.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
None

---

**Supporting Documentation:**
Daily Inspection Report

---

By: D. Beall, PM D Beall Date: 11/11/98

---

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #062**

---

**Date:** 12/31/97-1/4/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild with rain **Temperature:** 31-66$^0$
**Cloud Cover:** Cloudy **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist.
PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Some minor erosions (less than 4" deep) resulting from rain were detected and repaired.
- Repaired leak at depth gauge in tank S879NSD
- Covered GS88EA with plastic to keep rain water out of the tank. A small amount of water was pumped from GS88EA to maintain freeboard.
- Identified area of settlement outside of cap area for monitoring.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #063**

---

**Date:** 1/12/98-1/18/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cold with rain **Temperature:** 17-41$^0$
**Cloud Cover:** Cloudy **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist.
PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
- Some minor erosions (less than 4" deep) noted.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

---

By: D. Beall, PM D Beall Date: 11/11/98

---

~~(for)~~ Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #064**

---

**Date:** 1/19/98-1/25/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cold to mild **Temperature:** 25-46$^0$
**Cloud Cover:** Cloudy **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist.
PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- No change in settlement area outside the cap.
- Added erosion control (straw matting) to minor erosion areas.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #065**

---

**Date:** 1/26/98-2/1/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cool to mild **Temperature:** 31-52$^0$
**Cloud Cover:** Cloudy **Precipitation:** Misty Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- No change in settlement area outside the cap.
- Retightened fitting at S879NSD depth gauge-no leaks.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

---

By: D. Beall, PM D Beall Date: 11/11/98

---

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #066**

---

**Date:** 2/2/98-2/8/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cool **Temperature:** 26-48$^0$
**Cloud Cover:** Cloudy **Precipitation:** Snow/Rain/Sleet

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- No change in settlement area outside the cap.
- Weep tank has 1 3/4" liquid.
- New snow (3"-5") on cap.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #067**

---

**Date:** 2/9/98-2/15/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cool **Temperature:** 23-49$^0$
**Cloud Cover:** Cloudy **Precipitation:** Light Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Some new minor (less than 4" deep) erosion noted.
- Snow cover is now gone.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

---

By: D. Beall, PM D Beall Date: 11/11/98

---

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #068**

---

**Date:** 2/16/98-2/22/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild **Temperature:** 38-53$^0$
**Cloud Cover:** Cloudy **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Began laying plastic sheeting to stop new erosion. About 80% of cap covered.
- 125 gallons of liquid pumped from the weep tank to S1885EA as liquid level exceeded 50% of capacity.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #069**

---

**Date:** 2/23/98-3/1/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild **Temperature:** 30-61$^0$
**Cloud Cover:** Cloudy **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
None

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

---

By: D. Beall, PM D Beall Date: 11/11/98

---

~~(for)~~ Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #070**

---

**Date:** 3/2/98-3/8/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild **Temperature:** 24-74$^0$
**Cloud Cover:** Cloudy **Precipitation:** Sleet/Snow

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Reset plastic out of place due to wind; re-sand bagged to hold in place.
- Pumped 100 gallons from weep tank to S1885EA. Liquid was visually clear.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #071**

---

**Date:** 3/9/98-3/15/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cold warming later in week **Temperature:** 8-44$^0$
**Cloud Cover:** Cloudy **Precipitation:** Rain/Snow

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
Completed coverage of remaining areas with plastic.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

---

By: D. Beall, PM D Beall Date: 11/11/98

---

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #072**

---

**Date:** 3/16/98-3/22/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild and warm **Temperature:** 38-64$^0$
**Cloud Cover:** Cloudy **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Repaired/installed silt fence.
- Weep tank depth is 4" (less than 50%)

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #073**

---

**Date:** 3/23/98-3/29/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild and warm **Temperature:** 28-78$^0$
**Cloud Cover:** Cloudy **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Reset silt fences.
- Pumped from GS88EA to maintain freeboard.
- Wind damage to plastic sheeting repaired.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #074**

---

**Date:** 3/30/98-4/5/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** High winds **Temperature:** 40-80$^0$
**Cloud Cover:** Clear- Ptly Sunny **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
None

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

---

By: D. Beall, PM D Beall Date: 11/11/98

---

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #075**

---

**Date:** 4/6/98-4/12/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild **Temperature:** 38-72$^0$
**Cloud Cover:** Clear- Ptly Sunny **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
ROICC (B. Robertson) also inspected the site.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

---

By: D. Beall, PM D Beall Date: 11/11/98

---

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #076**

---

**Date:** 4/13/98-4/19/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild **Temperature:** 42-72$^0$
**Cloud Cover:** Clear- Ptly Sunny **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**
Weep tank depth is 11 1/2" (less than 50%). Heavy rains then filled weep tank to 80%. Contents pumped to S1885EA.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #077**

---

**Date**: 4/20/98-4/26/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Mild **Temperature:** 41-76$^0$
**Cloud Cover:** Clear- Ptly Sunny **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Replaced sand bags
- Repaired silt fence
- Set straw bales at borrow area

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #078**

---

**Date**: 4/27/98-5/3/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Mild **Temperature:** 43-67$^0$
**Cloud Cover:** Clear- Ptly Sunny **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Repaired silt fence/straw bales at borrow area
- Added new silt fence near drain pipe under the temporary road

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #079**

---

**Date**: 5/4/98-5/10/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Mild to warmer **Temperature:** 58-78$^0$
**Cloud Cover:** Clear- Ptly Sunny **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Pumped 120 gallons from weep tank to S1885EA
- Some erosion and rutting evident in various locations. No evidence of dye.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer [illegible]

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #080**

---

**Date**: 5/11/98-5/17/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By**: Morrison Knudsen Corp.
**Weather:** Mild to warmer **Temperature:** 54-90$^0$
**Cloud Cover:** Clear- Ptly Sunny **Precipitation:** None

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Weep tank has 4" liquid on bottom (less than 50% full)
- MK has removed plastic covering and sand bags in preparation for subcontractor's return.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer

**Dye Burial Grounds Interim Measures Cap Construction**

# Daily Summary Report

**Report #081**

---

**Date:** 5/18/98-5/24/98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Mild to warmer **Temperature:** 56-95$^0$
**Cloud Cover:** Clear- Ptly Sunny **Precipitation:** Rain

---

**Meeting Held/Action Recommended or Taken:**
None

---

**Construction Activity:**
None

---

**Equipment and Personnel:**
None

---

**Inspection and Observations:**
MK winterization checklist. PSG weekly checklist.

---

**Testing Equipment:**
None

---

**Materials and Submittals:**
None

---

**Approvals/Problems/Corrective Action:**

- Weep tank approximately 1/3 full
- Some erosion near the toe of the side slopes (3" depth)
- Subcontractor to remobilize next week.

---

**Supporting Documentation:**
Daily and Weekly Winterization Inspection Checklists

By: D. Beall, PM D Beall Date: 11/11/98

~~(for)~~ Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #[redacted] 082

**Date:** 5-27-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny/Ptly Cloudy

**Temperature:** 70s-80s **Cloud Cover:** Overcast **Precipitation:** 0.1"

## Meeting Held/Action Recommended or Taken:

Philip drove to area on 5/26/98, Philip was to begin remobiliation on 5/26/98, however due to a defective tire they were unable to arrive until 5/27/98. Philip arrived onsite @ 7:30 a.m. to deliver equipment, check site, and attend preparation meeting. Preparation Meeting for resumption of placement and grading of the DBG cap foundation was held. Philip Environmental Service Group began re-mobilization of personnel and equipment for resumption of construction of the Dye Burial Ground Interim Measures Cap. Plans and spec review, submittal requirements reviewed; test plan and quality control reviewed; safety concerns and A&H reviewed; and work method and schedule were discussed. Determined the procedure for eliminating the seepage collection system at or below the final cap foundation grade.

## Construction Activity:

None.

## Equipment and Personnel:

1 Superintendant – 8 hrs. 1 laborer – 8 hrs.

1 cat backhoe – 0 hrs. 1-ton truck w/flatbed

## Inspection and Observations:

Prepared meeting minutes for the placement and grading of cap foundation subgrade.

## Testing Equipment:

None

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None

## Supporting Documentation:

Daily Inspection Report; Engineer's Daily; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] 11/13/98 for Louis Bagley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 083

**Date:** 5-28-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm and mild

**Temperature:** 60s-85 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Philip Environmental Service Group removed and disposed of erosion matting used to stabilize the cap foundation side slope during winter shut down, as preparatory work for the resumption of placement and grading of the cap foundation. Mobilized roll off box from Rumpke for disposal of construction debris.

## Equipment and Personnel:

3 Laborer/operators: 18 hrs.

1 Superintendent: 0

## Inspection and Observations:

Witnessed placement and grading of cap foundation preparatory work by a two man PSG crew who removed and disposed of erosion matting from the cap foundation side slope.

## Testing Equipment:

Cat backhoe – 3 hrs.

## Materials and Submittals:

Received 20 yd rolloff box from Rumpke for debris disposal (mostly erosion matting).

## Approvals/Problems/Corrective Action:

None

## Supporting Documentation:

Daily Inspection Report; Engineer's Daily; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #084

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 5-29-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, warm, and mild | | | | |
| **Temperature:** | 68-85 | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

Morning tailgate meeting – discussed work plan and back safety.

## Construction Activity:

Placement and grading of cap foundation fill – Philip Service Group continues preparatory work, for resumption of placement and grading of the cap foundation fill, by loading and removing pins and pegs from the foundation fill that were used to secure the erosion matting during winter. Request that the excavation permit for the DBG and the 161/822 borrow area be reissued.

## Equipment and Personnel:

2 Laborer: 7 hrs.
1 Superintendent: 1 hr.

## Inspection and Observations:

Confirmed removal of the pins and pegs by walking the side slope and visually inspecting the area. This inspection was performed by MK and PSG. Greg Jones, MK PMO QC Manager has scheduled an audit of the DBG for mid June.

## Testing Equipment:

Cat backhoe – 0 hrs.
John Deere 550G LGP - 0 hrs.

## Materials and Submittals:

HDPE and geotextiles submittals are being submitted for review.

## Approvals/Problems/Corrective Action:

FCR-DBG-017 was revised to close the seepage collection system at the cap foundation final grade

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 085

**Date:** 5-30-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny and warm

**Temperature:** 60s-72 **Cloud Cover:** 0 **Precipitation:** 0

**Meeting Held/Action Recommended or Taken:**

None.

**Construction Activity:**

None.

**Equipment and Personnel:**

None.

**Inspection and Observations:**

None.

**Testing Equipment:**

None.

**Materials and Submittals:**

None.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Contractor Production Report; Contractor Quality Control Report

by: [signature] 11/13/98 for Louis Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 086

**Date:** 5-31-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast/windy

**Temperature:** 72-88 **Cloud Cover:** Overcast **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

None.

## Equipment and Personnel:

None.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: [signature] 11/13/98 for Lotes Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 037

**Date:** 6-1-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm and mild

**Temperature:** 60-80 **Cloud Cover:** Sunny **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Placement and grading of cap foundation fill – Philip Service Group continues preparatory work, for resumption of placement and grading of the cap foundation fill, including mobilization of personnel and inspection of side slopes for pins and pegs.

## Equipment and Personnel:

6 Laborer: 18 hrs.

1 Superintendent: 3 hrs.

## Inspection and Observations:

PSG inspected side slopes for pins and pegs used to secure erosion matting by walking the side slope, manually removing and disposing of any pin and pegs found. MK performed visual inspection of site activities.

## Testing Equipment:

Cat 426 – 0 hrs.

John Deere 550 – 0 hrs.

## Materials and Submittals:

General supplies, 50 KW generator

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control report; Daily Report.

by: Kilber O'Neil 11/13/98 for Lois Bigley

Certifying Engineer Kilber O'Neil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 088

**Date:** 6-2-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm and mild
**Temperature:** 60-84 **Cloud Cover:** Sunny **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

Preparatory meeting for proof rolling cap foundation scheduled for 1000, June 3, 1998 at the DBG.

## Construction Activity:

Surface of the cap was scarified using the cleats of the 550 LGP John Deere dozer. Erosion, rills, and washes on the top and side slopes were graded out. MSE, a state licensed surveyor, surveyed and set stakes for final site grading of the cap foundation.

## Equipment and Personnel:

6 operator/laborer: 41 hrs. 1 SSHO: 8 hrs. 1 Superintendent: 8 hrs
2 Surveyor: 16 hrs., 1 hr. OT
Cat 426 – 1 hr. D57 Komatsu Track Loader – 5 hrs. JD 550 LGP Dozer – 6 hrs.
IR Propac 70 Compactor – 0 hrs.

## Inspection and Observations:

PSG confirmed proper grades and had base line double checked. MK witnessed performance of cap foundation preparatory work.

## Testing Equipment:

None.

## Materials and Submittals:

Komatsu D57 track loader, IR ProPac 70 compactor

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: 11/13/98 for Lois Bigley
Certifying Engineer

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 089

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-3-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny to partly cloudy | | | | |
| **Temperature:** | 58-75 | **Cloud Cover:** | Partly cloudy | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

Held Preparatory meeting for Proof Rolling of Cap Foundation.

## Construction Activity:

Philip Environmental Service Group began final grading of cap foundation starting at the north end working south. Working to grade stakes set by MSE. Fill obtained from approved borrow souce, 161/822 borrow. The abandoned access road on the NE end of the cap foundation fill was graded out by Phillip Service Group to eliminate a layer of gravel at the interface between the existing ground and the Dye Burial Grounds Cap. PSG covered loose fill not compacted today with plastic and the cap foundation was smooth drum rolled in anticipation of possible rain showers tonight and tomorrow. Weep collection system releases water in a spurt of ½ to 1 cup of water when the 8 ton smoothdrum roller rolls over the collection inlet area.

## Equipment and Personnel:

| | | |
|---|---|---|
| 550 LGP dozer – 8 hrs | Front end loader – 6 hrs. | Backhoe – 8 hrs. |
| 8 ton roller – 4 hrs. | Dump truck – 6 hrs. | Office Trailer, 3 company trucks |
| 5 operator/laborer: 40 hrs. | 1 SSHO: 8 hrs. | 1 Superintendent: 8 hrs. |

## Inspection and Observations:

PSG – continuously checks fill for suitability (i.e., removing roots as located); MK-confirms PSG inspection of fill/subgrade for suitability; MK-Two soft spots developed in cap foundation during final site grading of the north end, needing to be addressed for correction; MK-checked grade stakes, no fills greater than six (6) inches were noticed over top of cap.

## Testing Equipment:

None.

## Materials and Submittals:

29 loads fill dirt

## Approvals/Problems/Corrective Action:

FCR-DBG-017 was returned approved to terminate seepage collection system at the final grade of the cap foundation. Two soft spots developed during final grading of the cap foundation. Subgrade is too soft to support the 8 ton smooth drum roller or pneumatic tire equipment, areas are pumping. An FCR is being written to address this problem, however a resolution will need to be agreed upon no later than 6/8/98 to prevent delays to the project.

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Meeting Minutes Dye Burial Interim Measures Cap; Activity Hazard Analysis (AHA); Dye Burial Ground Interim Measures Cap SWMU 02/11 Sign In Sheet/Placement and Grading of Cap Foundation Preparatory Meeting

by: [illegible] 11/13/98 for Louis Bigley

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 090

**Date:** 6-4-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy/SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Light rain and overcast

**Temperature:** 60-70 **Cloud Cover:** Cloudy **Precipitation:** 0.8"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Due to rain showers, no field work was performed today. EDCI received base security badges and left the site for the dayPut sheeps foot back on compactor.

## Equipment and Personnel:

Cat 426 Backhoe – 0 hrs.; Komatsu D57 Track Loader – 0 hrs.; IR Pro Prac 70 Compactor – 0 hrs.; JD 550 LGP Dozer – 0 hrs.; Received Volvo L70 Front End Loader – 0 hrs.

5 operator/laborer: 18 hrs. 1 SSHO: 3.5 hrs. 1 Superintendent: 3.5 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

Submittal of liner show crew are primarily legal residents and not U.S. citizens.

## Approvals/Problems/Corrective Action:

FCR-DBG-018: Subgrade repair was submitted to EPD for approval. Recommended procedure to repair soft subgrade is to add lime to the subgrade six (6) inches below the final grade. Was informed EPA has approved the procedure.

## Supporting Documentation:

Engineer's Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 091

**Date:** 6-5-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Rain, overcast

**Temperature:** 55-61 **Cloud Cover:** Overcast **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Due to poor weather conditions no field work was performed today. A Volvo front end loader was mobilized to the site and the 550 LGP was traded out for a second LGP dozer with smaller cleats.

## Equipment and Personnel:

550 LGP dozer – 0 hrs. Track loader – 0 hrs. Backhoe – 0 hrs.

8 ton roller – 0 hrs. Office trailer – 0 hrs.

## Inspection and Observations:

MK visted site – no field activity.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

Spoke with B. Robertson-ROICC concerning the possibility of getting authorization for EDCI liner crew admitted to the site, but not possible.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 092

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-6-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny | | | | |
| **Temperature:** | 58-72 | **Cloud Cover:** | None | **Precipitation:** | 0 |

**Meeting Held/Action Recommended or Taken:**

None.

**Construction Activity:**

No activity.

**Equipment and Personnel:**

None.

**Inspection and Observations:**

None.

**Testing Equipment:**

None.

**Materials and Submittals:**

None.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Contractor Production Report; Contractor Quality Control Report

by: [signature] 11/13/98 for Louis Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 093

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-7-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Partly sunny | | | | |
| **Temperature:** | 48-69 | **Cloud Cover:** | Ptly sunny | **Precipitation:** | 0 |

**Meeting Held/Action Recommended or Taken:**

None.

**Construction Activity:**

No activity.

**Equipment and Personnel:**

None.

**Inspection and Observations:**

None.

**Testing Equipment:**

None.

**Materials and Submittals:**

None.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Contractor Production Report; Contractor Quality Control Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 094

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-8-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Overcast with intermittent rain showers | | | | |
| **Temperature:** | 50-60 | **Cloud Cover:** | Cloudy/ showers | **Precipitation:** | 0.8" |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Philip Service Group resumed placement and grading of cap foundation fill working on grading the west 3:1 side slope and compacting the surface of the cap foundation. PSG transported gravel from the abandoned access road at the northeast corner of the cap to an area southwest of the cap. PSG worked approximately 2 hours until rain showers halted for the day.

## Equipment and Personnel:

5 operator/laborer: 30 hrs. 1 SSHO: 6 hrs. 1 Superintendent: 6 hrs.
Volvo Wheel Loader L70: 7 hrs. John Deere 550 Dozer: 4 hrs. IR ProPac 70 Compactor: 3 hrs.
Cat 426 Backhoe: 1 hr. Komatsu D57 Track Loader: 0 hrs.

## Inspection and Observations:

PSG – continues inspection of fill suitability, removing roots, etc. as located. MK – confirmed fill from approved borrow stockpiled is being utilized for cap foundation fill.

## Testing Equipment:

None.

## Materials and Submittals:

Switched out JD 550 LGP with JD 550 LT.

## Approvals/Problems/Corrective Action:

The Navy stated that only U.S. Citizens would be permitted access for subcontract work at the DBG. Informed Philip via a telephone conversation and drafted a letter. J. McCumbers, Subcontract Administrator, to send. FCR-DBG-018 for correction in soft spots of the cap foundation finish grade was approved and returned today. Negotiation for pricing of the FCR work was completed with Philip today. EDCI, the liner installer lower tier, had requested use of legal residents. Request for admittance of non-U.S. Citizens was denied today.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 095

**Date:** 6-9-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Partly Sunny, heavy rain in a.m.

**Temperature:** 53-83 **Cloud Cover:** Partly sunny **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No field work was performed today. A week delay in starting the liner due to: 1) poor weather; 2) subgrade not complete; 3) lack of liner installation staff.

## Equipment and Personnel:

Tract loader, backhoe, front end loader, dozer, compactor, office trailer

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

Three week construction schedule was submitted.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineers Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: Kirk Olin 11/13/98 for Lois Bigley

Certifying Engineer Kirk Olin

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 096

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-10-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Partly cloudy, warm-humid | | | | |
| **Temperature:** | 60-75 | **Cloud Cover:** | Partly cloudy | **Precipitation:** | 2.5" |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Philip Service Group graded off topsoil/root layer from the north end of 161/822 borrow area. A dozer and track loader were used to strip off topsoil and root layer in preparation of excavation of cover material and site grading once cap biotic layer has been completed. Silt fence in east outlet drainage ditch was repaired and an additional row was installed by Philip Service Group.

## Equipment and Personnel:

5 operator/laborer: 40 hrs. 1 SSHO: 8 hrs. 1 Superintendent: 8 hrs.
JD 550 LT Dozer – 7 hrs. Komatsu D57 Track Loader – 7 hrs. IR ProPac 70 Compactor – 0 hrs.
CAT 426 Backhoe – 0 hrs.

## Inspection and Observations:

MK: Confirmed that a digging permit by Crane Public Works has been issued for 161/822 borrow area. Permit #2287. MK/PMO: Greg Jones, PMO QA Manager, conducted an internal audit. No findings were noted. PSG: Weekly inspection of erosion controls, secondary containment, and FRAC tanks. MK: Areas of erosion on west side slope will be repaired after site dries out. Confirmed documentation of the Site Condition Inspection

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

Tire on Volvo (new) leaving green mold powder in wet clay. PSG washed tires to remove powder, disposed of tracks where powder had come off. Powder could easily be confused with dye contamination, therefore tires were washed.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Site Conditions Inspection Checklist

by: [illegible] 11/13/98 for Lois Bigley

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 097

**Date:** 6-11-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, South Div **By:** Morrison Knudsen Corp.

**Weather:** Overcast, rain

**Temperature:** 74-84 **Cloud Cover:** Overcast **Precipitation:**

## Meeting Held/Action Recommended or Taken:

Bi-weekly QC meeting was held between Philip Service Group and MK.

## Construction Activity:

No field activity was performed today due to wet site conditions.

## Equipment and Personnel:

Dozer, track loader – 0 hrs.; wheel loader, compactor, backhoe – 0 hrs.

## Inspection and Observations:

Bi-weekly QC meeting was held between PSG and MK.

## Testing Equipment:

None.

## Materials and Submittals:

Technical Submittals were transmitted.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: [signature] 11/13/98 for Lorry Bigbey

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 098

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-12-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny to partly cloudy, light wind | | | | |
| **Temperature:** | 70-90 | **Cloud Cover:** | Partly cloudy | **Precipitation:** | |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No field activity was performed today due to wet site conditions. Philip Service Group arrived on side at 0700 and decided not to work today due to poor site conditions. There is erosion on the west side slope. This is material that has been placed but not compacted. The cap is wet and attempts to correct erosion will only cause additional rutting. Repair will be made on the first day it is accessible.

## Equipment and Personnel:

Dozer, track loader – 0 hrs; wheel loader, compactor, backhoe – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: Kiber Ohl 11/13/98 for Lois Bigley

Certifying Engineer Kiber Ohl

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 099

**Date:** 6-13-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, partly cloudy

**Temperature:** 65-74 **Cloud Cover:** Partly cloudy **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

None.

## Equipment and Personnel:

Dozer, track loader – 0 hrs; wheel loader, compactor, backhoe – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 100

**Date:** 6-14-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast

**Temperature:** 62-64 **Cloud Cover:** Overcast **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity today.

## Equipment and Personnel:

Dozer, track loader – 0 hrs; wheel loader, compactor, backhoe – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: 11/13/98 for Lois Bigley

Certifying Engineer

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 101

**Date:** 6-15-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast, cool and cloudy with afternoon showers

**Temperature:** 60-80 **Cloud Cover:** Overcast **Precipitation:** 1.3"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Placement and grading of cap foundation: Philip Service Group resumed grading of cap foundation from baseline point #6 (N1311516.61 E304913.4) working southward on east side of baseline cutting 0.2' to .7'. Approximately 0.2 feet of fill was placed on the north side of baseline between points 6 and 7. Fill was placed but not graded or compacted. Run on/run off controls: Graded out erosion along west side slope. PSG worked approximately 5 hrs. before afternoon rain shower halted field activity. Due to unexpected rains, opened areas were not sealed and became saturated. Moved dozer and trackloader from 161/822 borrow area to DBG. Due to 1.3 inches of rainfall over the weekend erosion formed along the west side. On 6/13/98: Minor diversion trenches were constructed on the west side to divert water from areas of erosion to a protected area.

## Equipment and Personnel:

Compacter – 3 hrs; dozer – 5 hrs; front end loader – 3 hrs; track loader – 2 hrs; backhoe – 0 hrs.
5 operator/laborer: 30 hrs 1 SSHO: 6 hrs. 1 Superintendent: 6 hrs.

## Inspection and Observations:

PSG – Continues to inspect all fill for suitability; removing roots, debris, etc. as encountered. PSG – Verified grade for cut or fill via a string line between two grade stakes. MK – Visually confirmed PSG inspection of fill for suitability, and use of string line for grade verification.

## Testing Equipment:

None

## Materials and Submittals:

Philip Service Group continued transmittal of required submittals for review and approval.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 102

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-16-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Rain | | | | |
| **Temperature:** | 60-70 | **Cloud Cover:** | Rainy | **Precipitation:** | 0.7" |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No fieldwork today due to continued adverse weather conditions.

## Equipment and Personnel:

3 operator/laborer: 6 hrs.

Compactor – 0 hrs; dozer – 0 hrs. front end loader – 0 hrs. track loader – 0 hrs.; backhoe – 0 hrs.

## Inspection and Observations:

MK – Performed a site walk down where erosion deeper than 6" (along the northwest side slope) were found. PSG was notified and responded immediately. The northwest side slope was covered with plastic sheeting to prevent additional erosion, until area can be repaired. MK – noted that the silt fence west of the northwest corner of the cap is incorrectly installed. This is denoted Deficiency DBG Def-001. Looking at June 25 as the earliest date of placement with material delivery schedule this week.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 103

**Date:** 6-17-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Partly sunny
**Temperature:** 62-80s **Cloud Cover:** Sunny **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None. Preparatory meetings for Installation of Geotextiles Cushion, GCL, and HDPE liner are scheduled for 0900 at the DBG, 18 June.

## Construction Activity:

MK – performed a site walkdown. Geotextiles, GCL, HDPE: PSG set up lay down area. Cap Foundation Grading: Cuts and fills for cap foundation grading were marked out by PSG. PSG attempted to resume grading of cap foundation, however soil was still too wet. No fieldwork today due to continued adverse weather conditions.

## Equipment and Personnel:

Compactor – 0 hrs; dozer – 1 hr.; front-end loader – 0 hrs.; track loader – 0 hrs; backhoe – 0 hrs.
5 operator/laborer: 21 hrs. 1 SSHO: 4 hrs. 1 Superintendent: 4 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

PSG – continues submitting the required submittals for GCL. After review of submittals added one item note listed and deleted two items approved earlier. QC test certifications do not include test method or what grouping the tests represent.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kibbe Olive 11/13/98 for Lois Bigley

Certifying Engineer Kibbe Olive

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 104

**Date:** 6-18-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny hot/humid
**Temperature:** 65-90s **Cloud Cover:** Sunny **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

Held preparatory meeting on Geotextile cushion, GCL, and HDPE with MK, Philip Service Group and EDCI (liner installer).

## Construction Activity:

PSG – prepared laydown for geotextiles. Type 1 and Type 2 geotextiles were delivered, off-loaded, and stored on site by PSG under the direction of EDCI. Type 1 and Type 2 geotextiles were stored on wooden pallets and covered with plastic sheeting. Subgrade still wet from previous rain showers but PSG able to perform rough grading. Using a John Deere 550 LG dozer, PSG continued grading the southern half of the cap foundation. Excess fill was relocated using a front-end loader and the cap foundation fill was compacted and sealed. Eight (8) rolls of HDPE liner were delivered, off-loaded, and stored on site.

## Equipment and Personnel:

Compactor – 8 hrs; dozer – 11 hrs.; front end loader – 4 hrs; track loader – 0 hrs.; backhoe – 0 hrs.
5 operator/laborer: 4 hrs. 1 SSHO: 11 hrs. 1 Superintendent: 11 hrs.

## Inspection and Observations:

EDCI – (liner installer) over saw the off-loading and storage of 21 rolls of Type 2 geotextile cushion, 40 rolls of Type 1 geotextile, and eight (8) rolls of HDPE liner. PSG – continued checking grade by string lining between grade stakes and marking the area for cuts and fills during rough grading of the cap foundation. MK – confirmed proper storage of geotextiles. Geotextiles were stored on wooden pallets and covered with plastic sheeting. MK – observed PSG's cap foundation grading and grade checking. MK – conducted preparatory meeting for Geotextile Cushion, GCL, and HDPE with PSG ~~with~~ and EDCI.

## Testing Equipment:

None.

## Materials and Submittals:

40 rolls of Type 1 Geotextile; 21 rolls of Type 2 Geotextile; 8 rolls of 60 mil HDPE Liner Material was delivered and stored on site in accordance with the specifications by PSG & EDCI. The HDPE was delivered and stored on site in accordance with the installer's directions, by PSG & EDCI using the front-end loader and slings.

**Approvals/Problems/Corrective Action:**

Type I Geotextile: Only one roll matched initial QA/QC certificates.

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Meeting Minutes: Dye Burial Interim Measures Cap/Preparatory Meeting 6/18/98;

by: Kirk Olin 11/13/98 for Lois Bigley

Certifying Engineer Kirk Olin

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 105

**Date:** 6-19-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Warm and overcast to partly sunny

**Temperature:** 67-92 **Cloud Cover:** Overcast **Precipitation:** 1.25"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No field activity today due to poor (wet) site conditions.

## Equipment and Personnel:

Compactor – 0 hrs; dozer – 0 hrs.; front-end loader – 0 hrs.; track loader – 0 hrs. backhoe – 0 hrs.
4 operator/laborer: 21 hrs. 1 SSHO: 5 hrs. 1 Superintendent: 5 hrs.

## Inspection and Observations:

PSG – took confirmation samples: 3 from HDPE, 2 from Type 1 geotextile and 1 from Type 2 geotextile. Each sample was approximately 3 foot by width of roll. EDCI – rejected six (6) rolls of Type 2 geotextile due to QC test results grouping. MK – chose the rolls to be sampled and observed the sampling by PSG. Coordinated with D. Davis to annotate submittal on GCL for approval. Benofix uses the Methylene Blue test for percent of montmorillonite in lieu of the x-ray diffusion method denoted in the specification. However, the EPA guidance documents accept both methods. Kimball Ohsiek, Certifying Engineer, accepted the use of the methylene blue test method for determination of percentage of montmorillonite. PSG called off work and headed home for the weekend after it was learned that the first delivery of GCL will not be on base until 6/22/98. PSG and EDCI on site for approximately five (5) hours today awaiting delivery.

## Testing Equipment:

None.

## Materials and Submittals:

GCL Liner.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 106

**Date:** 6-20-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny

**Temperature:** 68-86 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Compactor – 0 hrs.; dozer – 0 hrs.; front end loader – 0 hrs.; track loader – 0 hrs.; backhoe – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: [signature] 11/13/98 for Lois Bigley

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 107

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-21-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny | | | | |
| **Temperature:** | 70s-80s | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

**Meeting Held/Action Recommended or Taken:**

None.

**Construction Activity:**

No activity.

**Equipment and Personnel:**

Compactor – 0 hrs; dozer – 0 hrs; front end loader – 0 hrs; track loader – 0 hrs; backhoe – 0 hrs.

**Inspection and Observations:**

None.

**Testing Equipment:**

None.

**Materials and Submittals:**

None.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Contractor Production Report; Contractor Quality Control Report

by: K. O'Neil for Lois Bigley 11/18/98

Certifying Engineer

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 108

**Date:** 6-22-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Partly cloudy, thunderstorms, heavy rain, lightening

**Temperature:** 67-88 **Cloud Cover:** Partly cloudy **Precipitation:** 0.1"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

GCL Installation – PSG prepared a laydown area for GCL rolls off (west) of the east FRAC tank storage area. 17 rolls of Bentofix GCL were delivered to the DBG site. PSG off loaded, inspected, and stored the rolls on site. Cap Foundation Placement and Grading – while waiting for delivery of GCL, PSG resumed grading of the cap foundation fill, on the southwest portion west of the baseline. After heavy rain operations were halted.

## Equipment and Personnel:

Compactor – 1 hr; dozer – 1 hr; front end loader – 5 hrs; track loader – 0 hrs; backhoe – 5 hrs
4 operator/laborer: 26 hrs. 1 SSHO: 6.5 hrs. 1 Superintendent: 6.5 hrs.

## Inspection and Observations:

MK – confirmed GCL rolls stored in accordance with the specifications (i.e. wooden pallets and covered with a water proof tarp) (10 mil plastic sheeting). MK – verified inspection of the GCL rolls for damage, opaqueness, cover wraps, and tags. PSG – inspected rolls of GCL as they were off loaded to ensure rolls were undamaged, wrapper was intact and tags affixed. PSG – continue checking grade during grading of cap foundation fill using a JD 550 LT dozer.

## Testing Equipment:

None.

## Materials and Submittals:

17 rolls GCL

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Lois Bagley 11/18/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 109

**Date:** 6-23-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Partly cloudy

**Temperature:** 68-94 **Cloud Cover:** Partly cloudy **Precipitation:** 1.2"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

GCL Installation – PSG prepared a laydown area south of the magazine for the incoming rolls of GCL. Using both a wheel loader and a backhoe, PSG off loaded and stored the 23 rolls of Bentofix, GCL delivered today. Due to poor (wet) site conditions only preparatory work was performed today.

## Equipment and Personnel:

Wheel loader – 6 hrs; backhoe – 6 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
5 operator/laborer: 33.5 hrs. 1 SSHO: 8 hrs. 1 Superintendent: 8 hrs.

## Inspection and Observations:

MK – verified that the GCL rolls were stored in accordance with the specifications (i.e. on wooden pallets and covered with a waterproof tarp). MK – confirmed rolls were delivered in an opaque wrapper and tagged with the product identification roll number, roll dimension and weight. PSG – inspected rolls of GCL for damage during off loading. PSG – took a confirmation sample from roll #051700.

## Testing Equipment:

Sampled GCL Roll #051700 from Lot B8061202 and sent to HTS Inc. Houston, TX for testing.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 11/18/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 110

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-24-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, hot, humid | | | | |
| **Temperature:** | 90s | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Cap Foundation Placement and Grading – Philip Service Group continued grading the cap foundation south of the baseline point #8. Area is near final cap foundation grade based on string line and grade stakes. Site Grading – hay bales and silt fence in swale area along the east side of cap area was removed and disposed of in the on-site dumpster. PSG began grading out the swale by first removing soil stockpiled in the area. Relocated soil stockpiles NE of the east FRAC tank storage area. Geotextile Cushion – six rolls of Type 2 geotextile was delivered to the DBG to replace the six rejected rolls of material. PSG off loaded, inspected, and stored the rolls of 120 mil, S11201 geotextile. Drainage Collection System – ADS perforated piping and fittings were delivered, off loaded, and stored at the site for future use by PSG.

## Equipment and Personnel:

Wheel loader – 10 hrs; backhoe – 3 hrs; trackloader – 5 hrs; compactor – 6 hrs; dozer – 10 hrs.
5 operator/laborer: 40 hrs 1 SSHO: 10 hrs. 1 Superintendent: 10 hrs.

## Inspection and Observations:

PSG – continued checking grade and slope during grading of cap foundation fill. PSG – inspected rolls of Type 2 geotextile for damage during off loading. PSG – inspected and counted ADS piping for drainage collection system. (75-20' section of pipe; 96 couplers, 7 tees, 7 rat guards). MK – Observed PSG checking grade. MK confirmed ADS piping per specification. Perforated 4" ADS conforming to AASHTO M-252 requirements. Submittal for drainage piping is in and approved. MK – inspected rolls of 120 mil Type 2 geotextile cushion for damage and tags. (Roll #402099A – QA certification needed; Roll #4094557A-QA certification needed; Roll #4102021A – Approved; Roll #4102035A – Approved; Roll #4102010A – Approved; Roll #4104606A – Approved.

## Testing Equipment:

None.

## Materials and Submittals:

Received 6 replacement rolls of Type 2 geotextile; Received 75-20' section of ADS pipeline for drainage collection system.

**Approvals/Problems/Corrective Action:**

During grading, the plastic covering the original subgrade (located approximately between shoulder points 105 and 106 and centerline points 4 & 5) was cut. The plastic was cut out and the area was covered with fresh clay and compacted. Based on survey this area is still ≈4" above grade. Survey must be checked. Issued FCR-DBG-019 concerning excavation of the drainage/anchor trench for review and approval today. Anticipating repair of soft spots this week if weather permits along with closure of the weep collection system.

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Fikre Olil for Lois Bigley 11/18/98

Certifying Engineer Fikre Olil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 111

**Date:** 6-25-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, hot, humid

**Temperature:** 90s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

Bi-weekly QC meeting scheduled for 1000, June 26, 1998. MSE to perform a confirmation survey of the DBG on June 26. Repair of soft spots scheduled for June 27. Removal of weep collection system scheduled for June 27. Start of cap construction scheduled for 7/8/98. Liner installation mobilization 7/7/198.

## Construction Activity:

Cap Foundation Placement and Grading – Philip Service Group continues rough grading the cap foundation fill using a JD 550 LT dozer. Working the north end both east and west of the baseline between point #7 and #8. Using both the track loader and wheel loader, excess soil is removed and stockpiled for future use. Removed protective plastic sheets from the west side slope of the north end and began grading out erosions. Run on/Run off Controls – removed build up sediment from around culvert and silt fences with a backhoe, continued clearing and grading swale east of the cap area.

## Equipment and Personnel:

Wheel loader – 10 hrs; backhoe – 2 hrs; trackloader – 5 hrs; compactor – 8 hrs; dozer – 10 hrs.
5 operator/laborer: 40 hrs. 1 SSHO: 10 hrs. 1 Superintendent: 10 hrs.

## Inspection and Observations:

PSG – continues checking grade using grade stakes, string line, and marker paint. MK – confirms PSG's checking grade. Tree roots continue to give off a green powder as they are exposed and dried.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Lois Bigley 11/30/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 112

**Date:** 6-26-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm, humid

**Temperature:** 90s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

Bi-weekly QC meeting was held between MK and PSG.

## Construction Activity:

Cap Foundation Placement and Grading – Philip Service Group completed the rough grade on the 5% top slope using a JD 550 LT dozer. Work began on the west side slopes. Fill material was graded with a dozer and compacted with the IR 70 Propac compactor with the sheeps foot shell. The weep collection system was removed by cutting the drainage line approximately one foot into the bank, capping the line and backfilling. Water in the collection tank will be transferred to one of the FRAC tanks. Run on/Run off Controls – PSG repaired the silt fence on the west side of the north end of the cap by adding a new section of silt fence in front of the existing section. PSG removed a root ball at the toe of cap that would have fell into the drainage/anchor trench.

## Equipment and Personnel:

Wheel loader – 6 hrs; backhoe – 2 hrs; trackloader – 2 hrs; compactor – 6 hrs; dozer – 10 hrs.
2 Surveyors: 26 hrs.

## Inspection and Observations:

PSG – continues checking grade using grade stakes and string line. MK – observes grading and surveying operations. MK – confirms the weep collection system was terminated per FCR-DBG-017.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

DBG-DEF-001: A new section of silt fence was installed west of the cap area by PSG. MSE – performed a confirmation survey for MK on the cap foundation grade and DBG benchmarks: 1) There is a 0.27' variance between benchmarks. The higher two benchmarks are correct. 2) The baseline and shoulder grade stakes are correct. 3) Center point beween baseline points at elevation 724 was left out causing the north end to be low in the center.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report (2); Contractor Quality Control Report;

by: [signature] for Lois Bigley 11/30/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 113

**Date:** 6-27-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, hot, humid

**Temperature:** 75-94 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Cap Foundation Placement and Grading – Philip Service Group graded both the NE and NW soft spots taking care not to intrude into the underlying contamination. After the areas were laid back, Quick lime was added at a rate of 0.5 lb./sf. 17 bags were added to the NE area, and 23 bags were added to the NW area. The lime was mixed into the subgrade using the IR 70 Propac compactor with the sheeps foot shell and backfilled with dry cap foundation fill. Using the dozer for grading and the compactor with sheepsfoot for compacting and without to smooth the surface, PSG added the required fill to the center of the north end of the cap foundation fill. PSG also worked on compacting and grading the west side slope.

## Equipment and Personnel:

Wheel loader – 8 hrs; backhoe – 1 hr; trackloader – 0 hrs; compactor – 8 hrs; dozer – 10 hrs.
6 operator/laborer: 40 hrs. 1 SSHO: 10 hrs. 1 Superintendent: 10 hrs.

## Inspection and Observations:

PSG – provided a spotter while grading back the soft spots to ensure dye impacted soil was not encountered. MK – verified rate of lime placement and mixing with a sheepsfoot compactor.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

Soft spot repair was performed in accordance with FCR-DBG-018.

## Supporting Documentation:

Engineer's Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 11/18/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 114

**Date:** 6-28-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Clear, sunny

**Temperature:** 80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: [illegible] for Lois Bigley 11/13/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 115

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 6-29-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Partly cloudy, hot, humid | | | | |
| **Temperature:** | 72-92 | **Cloud Cover:** | Partly cloudy | **Precipitation:** | 1.0" |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Cap Foundation Placement and Grading – Philip Service Group continues grading of foundation fill. Cut out NE corner to grade and filled area west of the baseline between points #4 and #5. Primarily worked on grading the side slope, working from the west side down the south end and up around the east. Graded out the toe of the slope around the cap, removing root balls as needed to facilitate the future excavation. Began final surface preparation on north end of the cap, smooth drum rolling the surface, and removing rocks, roots, and miscellaneous debris.

## Equipment and Personnel:

Wheel loader – 2 hrs; backhoe – 0 hrs; trackloader – 4 hrs; compactor – 4 hrs; dozer – 8 hrs.
5 operator/laborer: 30 hrs. 1 SSHO: 10 hrs. 1 Superintendent: 10 hrs.

## Inspection and Observations:

MK – performed random spot checks on grade. PSG corrected any variance greater than 0.1" found. MSE to verify grade and perform an As-Built Survey (6-30-98).

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 11/18/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 116

**Date:** 6-30-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast, mild, clearing in afternoon

**Temperature:** 80s **Cloud Cover:** Cloudy **Precipitation:** 1.3"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Cap Foundation Placement and Grading – Due to rainfall overnight, field activities are limited to grade verification and as-built survey performed by MSE Surveying, a subcontractor to PSG.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

PSG – Inspected site conditions. A tree was uprooted and fell into the cap foundation along with a number of limbs, branches and leaves. Minor erosion along the side slopes was noticed; area will need to be back dragged. Because of the wet site conditions, PSG will be unable to correct grade on any area out of tolerance. MK – confirmed use of a licensed land surveyor. MSE – verified at a minimum 50' centers shall be used to cross section the cap foundation for grade verification and drafting of the Cap Foundation As Built drawing. MSE agreed to mark all areas out of tolerance for PSG to correct at a future date and supply MSE with cut/fill data for annotating the as-built drawing.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: [signature] for Lois Bigley 11/18/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 117

**Date:** 7-1-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm, mild

**Temperature:** 86 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Cap Foundation Placement and Grading – PSG fine grading cap foundation fill for preparation of the surface for placement of the cap liners. Cut and removed tree that had fallen on the cap and removed leaves and twigs by raking.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

MK – Verified completion of the as-built survey and confirmed repair of high/low areas. MK – Witnessed fine grading operations. PSG is planning to perform fine grading and cap foundation surface preparation today and will report to job site 7/02/98 before starting home for the holiday. On 7/06/98, PSG will take a travel day for return to the site. Spoke with Brent, EPS concerning drainage/anchor trench operation. EPD/EPA have some concerns with exposed open trench.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Site Conditions Inspection Checklist

by: Kirk Olin for Lois Bigley 11/18/98

Certifying Engineer Kirk Olin

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 118

**Date:** 7-2-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, clear

**Temperature:** 80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: Kirk Olin for Lois Bigley 11/13/98

Certifying Engineer Kirk Olin

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 119

**Date:** 7-3-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, clear

**Temperature:** 80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor's Production Report; Contractor Quality Control Report

by: [illegible] 11/13/98 for Lois Bigley

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 120

**Date:** 7-4-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Rain

**Temperature:** 80s **Cloud Cover:** **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: [illegible] for Louis Bigley 11/13/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 121

**Date:** 7-5-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Cloudy

**Temperature:** 80s **Cloud Cover:** Cloudy **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: Ellen Olivo for Lois Bigley 11/18/98

Certifying Engineer Ellen Olivo

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 122

**Date:** 7-6-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny

**Temperature:** 80s **Cloud Cover:** Sunny **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Remobilized from holiday weekend.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: Kelly O'Neil for Lois Bigley 11/18/98

Certifying Engineer Kelly O'Neil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 123

**Date:** 7-7-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast with thunderstorms

**Temperature:** 72 **Cloud Cover:** Cloudy **Precipitation:** 0.3"

## Meeting Held/Action Recommended or Taken:

Preparatory meeting for drainage trench excavation and drainage system installation has been rescheduled for 0900, 8 July. Liner installer mobilization has been rescheduled for 10 July.

## Construction Activity:

Cap Foundation Placement and Grading – Due to rain showers, field activities were limited. PSG prepared a laydown area and received a load of sand for use in sand bags as ballast in placement of liner components

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
4 operator/laborer: 10 hrs 1 SSHO: 2.5 hrs. 1 Superintendent: 2.5

## Inspection and Observations:

MK – Performed a site overview walk down. No deficiencies noted. PSG – Performed 3 nuclear density/moisture tests on cap foundation placed this season. All tests passed both moisture and compaction requirements. MK – Confirmed density test performed by PSG. All cap foundation fill has been tested and passed compaction requirements of 95%.

## Testing Equipment:

None.

## Materials and Submittals:

One load sand for making sand bags.

## Approvals/Problems/Corrective Action:

EPA has approved FCR-DBG-019, excavation of drainage/anchor trench without comment. EPD (T. Brent) has reservations concerning possible migration of dye contamination. Therefore, EPD is requiring Visqueen be placed over exposed ditch excavation.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Field Testing Report

by: Filer O'Neil for Lois Bigley 11/18/98

Certifying Engineer Filer O'Neil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 124

**Date:** 7-8-09 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast, humid, foggy

**Temperature:** 70s-80s **Cloud Cover:** Cloudy **Precipitation:** 1.4"

## Meeting Held/Action Recommended or Taken:

Preparatory meeting was held on excavation and construction of the drainage/anchor trench and drainage collection system.

## Construction Activity:

PSG performed only minor preparatory activities toward field activities (i.e., replaced backhoe bucket, received porta-let, etc.).

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
4 operator/laborer: 21.5 hrs. 1 SSHO: 5 hrs. 1 Superintendent: 5 hrs.

## Inspection and Observations:

Preparatory meeting held on excavation and construction of the drainage/anchor trench and drainage collection system.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Meeting Minutes/Dye Burial Interim Measures cap/Preparatory Meeting 7/8/98

by: [signature] for Lois Bigley 11/13/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 125

**Date:** 7-9-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, partly cloudy

**Temperature:** 80s **Cloud Cover:** Partly cloudy **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activities due to wet site conditions. EDCI, liner installer, is scheduled to arrive 7/10/98.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Request

by: [signature] for Louis Bigley 11/13/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 126

**Date:** 7-10-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm, light overcast in a.m.

**Temperature:** 69-88 **Cloud Cover:** Light overcast in a.m. **Precipitation:** 0.1"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Cap Foundation Placement and Grading – Using a JD 550 dozer to back blade the surface of the cap, the Ingersoll Rand Compactor to smooth drum roll the surface and hand labor to pick roots, rocks and debris from the surface, PSG prepared the surface for placement of the cap liner. Geotextiles Cushion and GCL Installation – EDCI and PSG proof rolled the cap foundation using a six wheeled ATV on 12-foot centers. Preparatory Site Work – Miscellaneous site preparatory work was performed throughout the day by PSG (construct a laydown area, graded the access road, etc.) Clair Waite of MK Boise, to be on site Monday.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 2 hrs; trackloader – 0 hrs; compactor – 7 hrs; dozer – 7 hrs.
4 operator/laborer: 41 hrs. 1 SSHO: 10 hrs. 1 Superintendent: 10 hrs.
EDCI: 10 hrs.

## Inspection and Observations:

PSG – performed inspection of the cap foundation surface and removed rocks, roots and debris. EDCI – inspected surface of cap foundation for acceptance of surface for liner placement. MK – performed a visual inspection of the surface of the cap foundation; small irregularities were corrected by floating with sand. Any roots, sticks, or twigs that could puncture or damage the liner were removed. EDCI & PSG – performed a proof rolling of the cap foundation area using a six-wheeled Polaris 6 x 6 ATV loaded with a generator. MK – observed proof rolling of cap foundation, no crumbling or deflection of the subgrade was noticed. MK – received and reviewed confirmation test results: HDPE (Polyflex) – three samples passed all parameters tested; Type 2 Geotextiles – S11201-1 sample passed all parameters tested; GCL – Bentofix – one sample passed all parameters tested; Type 1 Geotextile – TNS R70 two samples (1 sample passed all parameters, 1 sample failed thickness requirements (62 mil when 75 mil required). Roll is to be retested for thickness alone.

## Testing Equipment:

None.

## Materials and Submittals:

None.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kirk Olivel for Lois Bigley 11/18/98

Certifying Engineer Kirk Olivel

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 127

**Date:** 7-11-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, partly cloudy

**Temperature:** 60s-80s **Cloud Cover:** Partly Cloudy **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Drainage/Anchor Trench – PSG began excavation of the 2' by 1' drainage/anchor trench along the perimeter of the cap starting at the north end. Geotextile Cushion Installation – After a final inspection of the cap foundation surface, EDCI a sub to PSG, began deployment of the geotextile cushion, SI 1201 a 120 mil geotextile, starting at the northeast end and working southward. Using a Union Sewing Machine and KemFast, a polymer thread, panels of geotextile cushion are continuously sewn together with a locking stitch. The first 13 panels cover nearly 25,000 square feet, approximately 140 feet of the north end and were laid and three sections sewn. Sewing progress is slow. Per EPD's request, all exposed trenches were covered by plastic sheeting at the end of the shift.

## Equipment and Personnel:

Wheel loader – 5 hrs; backhoe – 11 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 2 hrs.
3 operator/laborer: 46 hrs 1 SSHO: 11.5 hrs. 1 Superintendent: 11.5 hrs.

## Inspection and Observations:

PSG – inspected the trench line rounding corners, cut protruding roots, and checked depth, width and grade. MK – performed spot check on depth and condition of trench. Inspected entire trench line and spoils for dye contamination – no evidence of dye was found in any part of the trench. EDCI – prior to deployment of the geotextile cushion, inspected the cap foundation surface. MK – confirmed that the first panel was deployed straight. EDCI is deploying the geotextile by lifting the roll using the wheel loader and pulling the material across the cap. EDCI – inspected the geotextile panel for irregularities, rips, holes, tears and unspent raw material prior to seaming geotextile panels.

## Testing Equipment:

None.

## Materials and Submittals:

None.

**Approvals/Problems/Corrective Action:**

MK – confirmed that SI 1201 meets the subcontract specifications (all required submittals in and approved). Six rejected rolls set aside – material did not meet thickness requirements per manufacturer's QC certificates. PSG has asked if the rejected Type 2 geotextile can be used as Type 1 material (all minimum valves for Type 1 are exceeded). MK – verified that approved thread, KemFast Tex 210, meets or exceeds the UV resistance of the geotextile. MK – visually inspected the following seams by walking down the entire length of the seam and that the panels are free of irregularities, flaws, holes, rips, or tears.

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Certificate of Acceptance of Soil Subgrade

by: Kirk Olsen for Lois Bigley 11/18/98

Certifying Engineer Kirk Olsen

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 128

**Date:** 7-12-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm

**Temperature:** 65-85 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Drainage/anchor Trench: PSG completed excavation of the drainage/anchor trench and four outlet trenches using a Cat 246 backhoe with a 2' wide bucket. Standing water was uncovered near the southeast corner of the cap. No evidence of dye contamination. Geotextile Cushion and GCL Installation – the remainder of the cap was covered with SI 1201 120 mil geotextile cushion by EDCI, a sub of PSG. Using Union Sewing Machines the panels were seamed with a continuous seam.

## Equipment and Personnel:

Wheel loader – 7 hrs; backhoe – 8 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 4 hrs.
4 operator/laborer: 38 hrs. 1 SSHO: 9.5 hrs. 1 Superintendent: 9.5 hrs.

## Inspection and Observations:

PSG – inspected the trench line rounding corners and cutting protruding roots. PSG – using a survey level, PSG checked grade of the trench line to ensure all areas flow at a minimum of 1% grade to the four outlets. MK – verified PSG's inspection and grade check and performed random confirmation of the trench depth 1' minimum, width 2' and rounding the corners. MK – visually inspected trench and spoil material. No evidence of dye contamination was found. EDCI – inspected the geotextile panels for irregularities, rips, holes and unspent raw materials prior to seaming. MK – visually inspected the following seams and panels by walking the entire length of the seam. Any defects were identified and EDCI repaired the area: Seams: GT-3-GT-4; GT-7 & 8-GT 6; GT-9 & 10 – GT-7 & 8; GT-11 – GT-9 & 10; GT-12 – GT-11; GT –13 & 14-GT-12; GT-15 & 16 – GT-13 & 14. EDCI – tracked and measured panel layout for the as-built.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Louis Bigley 11/18/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 129

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-13-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, partly cloudy | | | | |
| **Temperature:** | 65-85 | **Cloud Cover:** | Partly cloudy | **Precipitation:** | Trace |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Drainage/anchor Trench – PSG prepared lay down areas and received 10 loads of RH 5, 1 ½" maximum rounded gravel for use as drainage rock in the drainage/anchor trench. Excess may be used in the biotic layer. Site Prep Work – PSG performed general site clean-up, constructed lay down areas, and removed and consolidated excess soil from the drainage/anchor trench. Geotextile Cushion and GCL Installation – Using KemFast thread, EDCI (sub to PSG), completed sewing panels of geotextile cushion together.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 5 hrs; trackloader – 3 hrs; compactor – 0 hrs; dozer – 5 hrs.
5 operator/laborer: 32 hrs. 1 QA Inspector: 8 hrs 1 SSHO: 8 hrs. 1 Superintendent: 8 hrs.

## Inspection and Observations:

EDCI – inspected the geotextile panels for irregularities, rips, holes, and unspent raw materials prior to seaming the remaining panels.

## Testing Equipment:

None.

## Materials and Submittals:

211.86 tons rounded stone for drainage/anchor trench from Rogers.

## Approvals/Problems/Corrective Action:

MK – visually inspected seams and panels by walking the entire length of the seam. Any defects were identified and EDCI repaired the area then checked by MK to confirm area had been repaired. A hole at seam between panel GT-18 and GT-19 of geotextile cushion was inadequately patched using two 3"x3" pieces to cover the hole. Deficiency identified as rework item DEF-DBG-002. Due to the angle of the panel layout in relation to the drainage/anchor trench, a corner of panel #49 of the geotextile cushion, does not extend the full two feet beyond the anchor trench. Identified as DEF-DBG-003 on rework list. MK – randomly spot-checked drainage/anchor trench and found soil clods had fallen into the trench and would not permit proper drainage. This item is identified as DEF-DBG-004 on the rework list. MK – verified stone for drainage rock delivered today meets subcontract specification (2" to 1/2") rounded stone

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kirk Olivil for Lois Bagley 11/12/98

Certifying Engineer Kirk Olivil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 130

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-14-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Cloudy | | | | |
| **Temperature:** | 71-82 | **Cloud Cover:** | Cloudy | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

GCL Installation – using Bentofix GCL, EDCI began installation of the GCL. Starting on the northeast (uphill) corner and working south. Seams overlapped to the manufacturer's match line vertically and a minimum 10 inch overlap on the horizontal seam. HDPE Installation – Using the Volvo L70 wheel loader with the lifting device/spreader bar and a Polaris six wheeler, the 60 mil double textured HDPE by Polyflex was deployed over the GCL.

## Equipment and Personnel:

Front-end loader – 8 hrs; backhoe – 3 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
4 operator/laborer: 40 hrs 1 QC Technician: 12 hrs. 1 SSHO: 10 hrs. 1 Superintendent: 10 hrs.

## Inspection and Observations:

EDCI – measured panel layouts for as-built drawings for both the GCL and the HDPE. MK – inspected each panel of the GCL deployed for irregularities, flaws, and proper overlap. Roll #051716; #051687; #051705; #051693; #0511697; #051688; #051712. MK – verified that GCL material, Bentofix conforms to subcontract specification. EDCI – performed start of the day seam field tests; two peels and a shear were taken for each test using a Nelson Tension meter. Both tests passed and archive samples were taken. MK – verified GCL overlap to match line on edges and 10 inch minimum on sides of panels. Bentonite granules were placed at a minimum rate of ¼ pound per linear foot of seam. MK/PSG – witnessed field test of pre-seam test. MK/PSG – inspected deployed HDPE liner panels. MK/PSG – observed seaming. MK-confirmed that HDPE liner material, conforms to subcontract specification. MK – verified that the first panel was deployed straight. EDCI – performed end of day field test on fusion seams using the Nelson Tension meter. MK/PSG – confirmed field testing at end of day seam testing – two peel and one shear; both tests passed and confirmation sample taken. MK – verified all GCL deployed was covered by HDPE and open end secured with ballast. MK/PSG – identified location of irregularity in the surface of HDPE Roll #0260 for repair using an extrusion bead. PSG – inspected trench line by walking entire trench line; removing any obstructions and ensuring proper drainage.

## Testing Equipment:

Nelson Tension Meter. Rescission R-8 EDCI #313 and EDCI #315, double shoe fusion welders.

## Materials and Submittals:

6 sheet plywood; 4 90° elbows for drainage trench; 4 45° elbows for drainage trench.

## Approvals/Problems/Corrective Action:

Drainage/anchor Trench – PSG removed soil clods from the drainage/anchor trench by hand. This corrected DEF-DBG-004. Geotextile Cushion Installation – the hole at seam #18-19 was patched by EDCI, correcting DBG-DEF-002. DEF-DBG-003 deficiency issued for geotextile cusion panel #49 not extending to required placment limt.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Lois Bigley 11/18/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 131

**Date:** 7-15-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Overcast, rainy
**Temperature:** 60-70s **Cloud Cover:** Overcast **Precipitation:** 0.6"

## Meeting Held/Action Recommended or Taken:

Bi-Weekly QC meeting was held. Preparatory meeting on Sand Drainage Layer was conducted.

## Construction Activity:

Due to intermediate rain showers, no GCL or HDPE liner was deployed.

## Equipment and Personnel:

Front-end loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
4 operator/laborer: 13 hrs. 1 QA Technician: 2 hrs. 1 SSHO: 2 hrs. 1 Superintendent: 2 hrs.

## Inspection and Observations:

EDCI searched for leak on panels 1–¾ when it was determined that weather conditions would not support additional activities.

## Testing Equipment:

Air Testing was performed on the existing seams until 0900, the end of shift due to inclement weather. Crew returned to the motel. EDCI – performed air testing on panel seams. MK/PSG – observed and confirmed air testing of double shoe fusion welded seams by pressurizing the air channel between the weld to 30-35 psi and holding the pressure +/-3 pounds for five minutes then slicing the opposite end of the channel to release the pressure.

## Materials and Submittals:

PSG received an electric conveyor for transporting sand and biotic layer onto the cap area.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kirk Olive for Lois Bigley 11/18/98
Certifying Engineer Kirk Olive

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 132

**Date:** 7-16-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Clear, sunny

**Temperature:** 90s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

HDPE Installation – due to the wet site conditions, GCL or HDPE liner was not deployed. EDCI completed air testing the remaining double shoe fushion welds. Drainage/Anchor Trench – PSG dewatered the drainage/anchor trench covered by liner by removing sand bags, liner blocks, and graded outlet. Run off/Run on controls – Silt fence was installed down gradient from the northwest drainage/anchor trench by PSG. EDCI has proposed fusion welding geotextile in lieu of sewing.

## Equipment and Personnel:

Front-end loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
4 operator/laborer: 10 hrs 1 QA Tech: 2 hrs 1 SSHO: 2 hrs. 1 Superintendent: 2 hrs.

## Inspection and Observations:

MK/EDCI/PSG – inspected the subgrade and determined it was too wet to proceed with GCL and HDPE liner placement.

## Testing Equipment:

EDCI – performed air testing on the following double shoe fushion welds: panel 1-3 passed; panel 1-4 passed (2 sections); panel 3-4 passed. MK/PSG observed and confirmed air tests by EDCI.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report;

by: [signature] for Lois Bigley 7/18/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 133

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-17-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny | | | | |
| **Temperature:** | 90s | **Cloud Cover:** | Sunny | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

GCL Installation – Deployment of GCL resumed today, working southwest down the cap area, panel layout across the width of the cap. EDCI and PSG deployed six widths of GCL across the cap. Granular bentonite was applied at a minimum rate of ¼ pound per linear foot to all overlaps of the GCL. HDPE Installation –approximately 18,500 square feet of 60 mil Polyflex double textured HDPE liner was deployed by EDCI and PSG across the DBG cap area. HDPE liner panels were seamed together using a double shoe fusion welder. Panels P-6 through P-10 were placed today, equaling 4 widths. Drainage/Anchor Collection System – MSE, a sub to PSG, surveyed the drainage/anchor trench for confirmation of drainage and as-built drawing.

## Equipment and Personnel:

Wheel loader – 8 hrs; backhoe – 3 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
Laborers: 52.5 hrs 1 Superintendent: 10.5 hrs.

## Inspection and Observations:

MK – confirmed granular bentonite was applied to overlaps of GCL for panel from rolls #051701, 051689, 051707, 051708, 051696, 051720 and 051715.

## Testing Equipment:

EDCI – performed six field tests consisting of a minimum of two peels and one shear each on two pre-seams, end of the day, and two midday. Problems in the morning pre-seam test were due to dirt and moisture in the seams. EDCI took extra precaution to ensure seams were clean and dry. A second pre-seam test passed before the double show fusion welder was used to seam panels of the liner together. Mid and end of the day field tests passed. Passing results were recorded for all tests. MK-PSG – verified field-test procedures and EDCI testing field-test FT-5 through FT-10. 3 samples were taken from each test panel: 1 PSG, 2 MK (1 MK archive/1EPD archive). EDCI-PSG – pulled two destructive tests from locations identified by MK. After passing field tests, one sample from each test was sent to an independent lab for testing, the remaining two samples for archiving by MK and EPD. MK – verified field test of destructive tests passed. Selected location of destructive tests. MK – confirmed field test performed on a tensiometer capable of a constant rate. Nelson Machine and Welding Tensometer s/n 261 c.p. Jan 8, 1998. EDCI conducted an air test on seams 5-6 and 5-7, both seams passed. MK – observed air pressure tests of seams 5-6 and 5-7. Seams were pressurized to 30 psi. Pressure held for a minimum of five minutes with no loss in pressure (allow a variance of 3 psi in 5 minutes). The end opposite the gauge is cut and the pressure released.

**Materials and Submittals:**

None.

**Approvals/Problems/Corrective Action:**

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kirk Olind for Lois Bigley 11/18/98

Certifying Engineer Kirk Olind

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #134

**Date:** 7-18-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny and humid
**Temperature:** 60-90s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

GCL Installation – EDCI and PSG continue placement of GCL over the cap area working down the slope with panel layout across the width of the cap and across the top slope running NW to SE. The following rolls of Bentofix were placed today from approximately 6+20 to 5+20: #051691, 051705, 051704, 051714, 051711, 051710, 051718, 051679, 051713, 051680 and a portion of roll #051681, then covered by Polyflex 60 mil HDPE. HDPE Installation – Approximately 21,000 square feet of 60 mil HDPE liner was deployed over the GCL liner placed today by EDCI and PSG.

## Equipment and Personnel:

1 Superintendent: 9.5 hrs. 4 Laborers: 38 hrs.

## Inspection and Observations:

Expansion wrinkles are prevalent over the liner surface, however size of the wrinkles is relatively small, ranging from around 6" in amplitude and running across the width of a panel. Typical patterns and size. Due to extreme heat and humidity, crew is required to take short breaks to avoid heat exhaustion. Hard hats and work boots have been waived for the installation of the liner components. MK – verified granular bentonite was placed at a minimum rate of ¼ pound per linear foot to overlap Bentofix, GCL. MK – inspected panels GCL for signs of hydration or damage and proper over lay. EDCI – performed field tests on fusion welds. MK – visually inspected panels of Polyflex HDPE for signs of damage, flaws and unspent raw product. Unacceptable areas were marked for test and/or repair. MK – witnessed air and field tests and collected samples from field seaming. All tests passed. MK – observed fusion welding of panels and confirmed that welder operator was checking that seams were clean and dry and there was a 6" – 4" overlap for welding. Double shoe fusion welder with continuous read out was used for all welding. MK – observed deployment and placement of GCL and HDPE liner. EDCI seamed the HDPE liner placed today using #313 and #315 Rescission, double shoe fusion welder.

## Testing Equipment:

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

**Supporting Documentation:**

Engineer's Daily Report; Daily Inspection Report; Contractor Quality Control Report; Daily Report

by: Kirk O'Neil for Louis Bigley 12/1/98

Certifying Engineer Kirk O'Neil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 135

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-19-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, warm, humid | | | | |
| **Temperature:** | 80-90s | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

GCL Installation – EDCI and PSG continue deployment of Bentofix GCL over the width of the cap. Granular bentonite is applied to all overlaps at a minimum rate of ¼ pound per linear foot. From approximately 5+20 to 4+00 the following rolls were placed: #051699, 051719, 051686, 051695, 051703, 051685 and then covered by Polyflex 60 mil HDPE. HDPE Installation – the deployment, placement and fusion welding of the double textured 60 mil HDPE liner continues. Approximately 13,500 square feet of Polyflex 60 mil HDPE liner was placed and welded using a double shoe fusion welder by EDCI, the liner installation subcontractor, and PSG. A spreader bar and two box rollers attached to a Volvo L70 wheel loader and a 6x6 ATV are used along with hand labor to deploy and place the liner.

## Equipment and Personnel:

Wheel loader – 6 hrs; backhoe – 3 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
3 Operator/laborer: 18 hrs. 1 Superintendent: 6 hrs. 1 SHSO: 6 hrs.

## Inspection and Observations:

Due to extremely hot and humid conditions, work hours were shortened to prevent heat exhaustion. To date 68,800 square feet of 60 mil liner has been placed across the cap area. An estimated 82,800 square feet total area to be covered, leaving 14,000 square feet. MK – verified granular bentonite was applied all GCL overlaps. MK – inspected panels of GCL for signs of hydration or damage and proper overlap. No signs of damage or hydration were noticed in the rolls of GCL placed today. Vertical overlaps were to the manufacturers match lines exeed 2" and horizontal overlaps were over 24". GCL panels extend 12' beyond the anchor trench. EDCI – performed four sets of field tests on fusion welds of the 60 mil HDPE liner. MK – visually inspected panels of Polyflex HDPE for signs of damage, flaws, and unspent raw product. Unacceptable areas were marked for test and/or repair. MK – observed field testing for pre-seam and end of the day welds and collected samples from test seams. MK – witnessed fusion welding of panels and confirmed that welder operator was checking that seams were clean, dry and proper overlap. Machine #315 chain's came undone during seaming P-18 and P-22 and was reattached. The east end of the seam where a burn out occurred will require a patch. MK – received results from HTS, an independent lab, that destructive samples 1 and 2 passed all peel and shear requirements. Due to temperature extremes, no liner or GCL was deployed after 10:00 a.m.

## Testing Equipment:

A Nelson Machine and Welding Tensometer s/n #261 capable of maintaining a constant strain rate of 2 inches per minute was used for all field testing

**Materials and Submittals:**
None.

**Approvals/Problems/Corrective Action:**
None.

**Supporting Documentation:**
Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kirk O'Neil for Louis Bigley 12/1/98
Certifying Engineer Kirk O'Neil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #136

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-20-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny in a.m., cloudy in afternoon | | | | |
| **Temperature:** | 80s | **Cloud Cover:** | Cloudy in afternoon | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

GCL Installation – EDCI and PSG continue deployment of Bentofix-GCL over the width of the cap until 11:00 when adverse conditions halted production for the day. Granular bentonite was applied to all overlaps. GCL was placed from approximately station 4+00 to 3+00 using the following rolls: remainder #051681, 051684, 051683, and 051692 and a portion of roll #051694. HDPE Installation – PSG and EDCI continued placement SW down the slope covering the GCL. Approximately 10,000 square feet to Polyflex 60 mil HDPE liner was placed and seamed today using a double shoe fusion welder at a temperature of 700°F with continuous temperature read out.

## Equipment and Personnel:

Wheel loader – 5 hrs; backhoe – 2 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
5 Operator/laborer: 40 hrs. 1 Superintendent: 8 hrs. 1 H&S Officer: 8 hrs.

## Inspection and Observations:

MK – witnessed granular bentonite was applied to GCL overlaps. MK – inspected panels of GCL for signs of hydration or damage and proper overlap. No signs of damage or hydration were noticed in the rolls of GCL placed today. Verified by visual inspection that vertical overlaps were to manufacturers match lines and horizontal overlaps were a minimum of 12". EDCI performed four sets of field tests on fusion welds of the 60 mil HDPE liner. Rain showers at 11:00 halted production and prevented an End of the Day field test on the seams welded today until after the welding machine was turned off. MK – visually inspected panels of Polyflex HDPE for signs of damage, flaws, and unspent raw product. Unacceptable areas were marked for test and/or repair. MK – witnessed seaming and field testing of pre-seam welds and collected samples. MK – observed fusion welding of panels and confirmed that the Master Seamer was present and that the welder operators were checking seams were clean, cry and with proper overlap. Excess material cut from the top panel with a hook knife. MK - verified that GCL placed today was covered by HDPE liner and that sandbags covered the edge. Photographs were taken of the folding of the GCL under the HDPE liner.

## Testing Equipment:

None.

## Materials and Submittals:

None.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Lois Bigley 12/1/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #137

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-21-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, warm, humid | | | | |
| **Temperature:** | 70-90s | **Cloud Cover:** | 0 | **Precipitation:** | 0.4" |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Sand Drainage Layer – PSG cleaned asphalt off the conveyor, in preparation for use in transporting sand for placement as the sand drainage layer. After bulk material was removed PSG power washed the conveyor. Drainage/Anchor Trench – Today PSG began installation of the drainage system. After patching, detailing and testing of HDPE was completed in the trench area, lining of the drainage/anchor trench with non-woven geotextile filter fabric was started; next placing four inch ADS perforated pipe in the bottom of the trench, covering and filling the trench with two inches minus one half inch plus rounded gravel to a minimum six inch thickness over the pipe and then folding the filter fabric over the rock, wrapping the drainage system in filter fabric. HDPE Installation – EDCI patched, detailed and vacuum box tested the northern end of the in-place HDPE represented by the first two destructive tests P-1 through P-6 placed from approximate station 7+70 to 6+75. The remainder of in-place liner was patched using double textured Polyflex 60 mil HDPE liner and extrusion welding through panel P-26. All seams have been air tested and destructive samples two through eight cut, and sent to HTS for testing, and patched.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 8 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.
5 Operator/laborer: 50 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

Majority of the patches on the liner due to destructive tests of air testing clamp off areas. MK – confirmed ADS pipe and drainage rock meets the subcontract specification requirements. MK – verified PSG was using manufacturer approved couplers to join 20 foot sections of ADS pipe. EDCI – performed air testing on the following 15 double shoe fushion welded seams. MK – observed all air testing performed today. Double shoe fusion welds are air tested by sealing the ends of the fusion weld, inserting a needle into the air channel formed between the two fusion welds, pressurizing the channel with 30 to 35 psi of air. The test passes if the air pressure in the channel does not vary more than three pounds in five minutes and is released when the channel is cut at the force end. EDCI – vacuum box tested all extrusion welds on patches, seams, and beads and all areas marked for testing and/or repair for HDPE panels P-1 through P-5. Vacuum box testing is performed by placing a vacuum box with a window over the area to be tested once the Area has been prepared with soapy water and pulling a five psi vacuum. Tests passes if no bubble line is noticed in the test area. The vacuum is then released and the box moved. EDCI had difficulty creating a seal due partly due to the heat expansion. EDCI – pulled destructive test

samples 3-8 from MK marked locations and PSG sent samples to HTS, Inc. of Houston, TX and independent testing lab. MK – verified that field results for destructive test samples passed and collected samples for archiving. MK – verified that pre-seam and End of the Day welds for extrusion welds passed test requirements and collected samples.

## Testing Equipment:

A Nelson Machine and Welding Tensometer s/n 261, capable of maintaining a constant rate of two inches per minute was used for all field peel and shear testing. The tensometer was calibrated January 8, 1998. Rescission EDCI #316 and #286 extrusion gun and Polyflex extrusion rod were used for extrusion welding.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Louis Bagley 12/1/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 138

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-22-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, partly cloudy | | | | |
| **Temperature:** | 70-90s | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

PSG and EDCI placed GCL Installation – One panel of GCL across the width of the cap at approximate station 3+00 to 2+80. Granular bentonite was applied to the overlap at an approximate rate of ¼ pound per linear foot. GCL was placed to the manufacturer's match lines and inspected for signs of hydration and/or damage prior to being covered by HDPE liner. A portion of Bentofix roll #051694 was deployed. HDPE Installation – Panel P-27 of the 60 mil double textured HDPE liner was deployed over the GCL and welded to panel P-26 using a Rescission R-88 double shoe fusion welder. EDCI also field constructed three boots from the 60 mil liner material for around the wells using an extrusion welder. Wells were extended and boots were placed over each of the three wells and extrusion welded to the HDPE liner.
Drainage/Anchor Trench – HDPE liner, GCL, and geotextile cushion materials were trimmed to approximately 24 inches beyond the outside edge of the drainage/anchor trench. Trench outlets are lined with HDPE liner, GCL, and geotextile cushion material to a point approximately 9'9" from the toe of the cap with material extending 12 inches beyond the outlet trench on each side. PSG installed approximately 440 linear feet of ADS perforated pipe along the southeast side of the cap area. The drainage system was constructed by lining the trench with Type 1 non-woven geotextile, filter fabric, placing four inch ADS perforated pipe in the bottom of the two foot wide trench, covered with a minimum of six inches of drainage rock (less than 2 inches to more than ½ inch rounded gravel), graded by hand and wrapped with the filter fabric per construction drawings.
Sand Drainage Layer – PSG began spreading #23/24 sand in a minimum six inch lift starting at the NE corner and working both west and NW using a JD 550 dozer to push material. Sand is always pushing in front of the dozer to prevent tracks from coming in contact with the underlying geosynthetics. A laborer works with the dozer to check depth and prevent expansion wrinkles from being trapped.

## Equipment and Personnel:

Wheel loader – 1 hr; backhoe – 3 hrs; trackloader – 0 hrs; compactor – 1 hr; dozer – 8 hrs.
4 Operator/laborer: 40 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

PSG – spot checked depth of the sand layer to ensure a minimum of six inches of #23/24 sand. MK – verified sand meets the subcontract specification requirements. All submittals on material have been received. MK – confirmed that previous layers of geosynthetic had been tested and met specifications prior to placement of the sand drainage layer. EDCI – completed vacuum box testing of all remaining extrusion welds and beads along with any questionable areas. From P-6 to P-26 of the HDPE liner. EDCI – air tested the seam between HDPE panel P-26 and P-27. MK – observed air testing and confirmed test was performed per subcontract specifications. MK – witnessed deployment and welding of HDPE P-27 roll #0250. EDCI – performed pre-seam and End of the Day field tests on both fusion and extrusion welds. MK – witnessed field testing of fusion and extrusion welds using a field tensometer and collected samples from the five foot seams for archiving. MK – observed extension of well using PVC piping and riveted couplers; placement of field fabricated boots around welds. MK – verified the collections system including, ads four inch perforated pipe placed per construction drawing. MK – received and reviewed destructive test results from HTS, Inc. #3 through 38. All tests exceeded peel and shear requirements for the HDPE liner welds. HDPE liner has been cleared for placement of the sand drainage layer up to P-26 or station 3+00.

## Testing Equipment:

MK – verified vacuum box was within calibration. Last calibration was June 6, 1998.

## Materials and Submittals:

Received 30 loads of #23/24 sand.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Louis Bigley 12/1/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 139

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-23-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Overcast with morning drizzle | | | | |
| **Temperature:** | 70s | **Cloud Cover:** | 0 | **Precipitation:** | 0.5" |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

GCL Installation – PSG and EDCI completed deployment and placement of Bentofix, GCL across the very southwest end of the DBG cap area from approximately station 2+80 to 1+190. The remainder of Bentofix roll #051694, roll #051698, 051716, and a portion of roll #051717 were deployed across the width of the cap. Applying granular bentonite to the seam sealed all overlaps. Prior to placement of GCL panels, the subgrade was inspected by EDCI and MK after the light morning drizzle and rain showers overnight. Placement of the GCL did not occur until early afternoon when the final roll of HDPE was delivered. HDPE Installation – HDPE liner installation was completed by EDCI and PSG, once the final, ninth roll of Polyflex 60 mil double textured HDPE, roll #0266, was received and inspected. During unloading, the first three feet of the roll was damaged and discarded. The last three panels of HDPE, P-28 through P-30 from roll #0266 were deployed, placed, and welded across the SW end of the cap. Due to the layout of the cap, an end piece had to be welded to maintain the two feet extension beyond the drainage/anchor trench. After the seam was welded and air tested, a location for the destructive test was chosen and DDS #9 was cut, field tested, and the area patched and vacuum box tested. The DDS #9 sample was cut into three pieces, one being sent to an independent lab for testing and two pieces stored for archiving. HDPE liner installation was completed with the air testing of fusion seam welds, and vacuum box testing of the extrusion weld for the destructive test patch. Drainage/Anchor Trench – Using ads four inch perforated pipe, PSG continued construction of the drainage collection system down to the south end of the cap. Split rolls of SI 1201 non-woven geotextile are used to wrap the drainage pipe, ADS four inch perforated pipe, and drainage rock (-2" + ½" rounded rocks), for construction of the drainage collection system including one outlet. Sand Drainage Layer – PSG continues pushing #23/24 sand covering the cap area using a JD 550 dozer on the 5% top slope, with the 3:1 side slopes being worked by hand. Sand has been placed on the north end of the 7+60 to 5+60 across the top slope and along the SE side. Only a portion of the 3:1 slope along the NW, north leg, of the DBG cap remains. Approximately 800 ton of sand was delivered and placed today.

## Equipment and Personnel:

Wheel loader – 8 hrs; backhoe – 0 hrs; trackloader – 4 hrs; compactor – 0 hrs; dozer – 11 hrs.
4 Operator/laborer: 44 hrs. 1 Superintendent: 11 hrs. 1 H.S: 11 hrs.

## Inspection and Observations:

EDCI – measures and record panel layout of GCL for as-built drawings.
MK – visually inspected panels of GCL for damage and signs of hydration; one small area was noted and repairs by overlapping the area. MK – observed and confirmed that GCL panels were deployed and placed to the manufacturer's match lines and granular bentonite was applied to all overlaps. EDCI – performed peel and shear field tests using a tensometer, on pre and EOD fusion and extrusion welds and on DDS #9 destructive test. MK – verified vacuum box was within calibration. Last calibration was June 6, 1998. MK – verified that Polyflex 60 mil double textured HDPE liner roll #0266 received today has required QC certificates and meets subcontract specifications. MK – chose location of ninth destructive test, observed field peel and shear testing, collected archive samples, and ensure one sample was prepared for shipment to HTS, Inc. of Houston, TX, the independent testing lab. Due to the hour sample will be shipped 7/24/98. MK – visually inspected the following HDPE liner panels for signs of damage and/or irregularities. None were noted. MK – observed air testing and field testing performed by EDCI. MK – verified by visual inspection that the drainage/anchor trench collection system was installed per construction drawings. MK – observed placement of sand over the HDPE as a sand drainage layer. PSG – continually spot checks thickness of sand drainage layer and that placement is not damaging underlying material. PSG – inspected site run-on/run-off controls.

## Testing Equipment:

None.

## Materials and Submittals:

Received 37 loads of #23/24 sand; 1 roll of HDPE liner; 2 loads of rock/gravel.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Lois Bigley 12/1/98

Certifying Engineer [illegible]

-Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 140

**Date:** 7-24-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm
**Temperature:** 60-80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Sand Drainage Layer – Using a JD 550 dozer, PSG continues to push sand across the 5% top slope for the six inch drainage layer. Working from the NE to the SW approximately 500 tons of #23/24 sand was placed today. Sand on the 3:1 side slope is placed by transporting sand around the cap with the wheel loader and grading the material by hand. PSG is still working on NW, north leg. Drainage/Anchor Trench – PSG lined the remainder of the drainage/anchor trench with non-woven geotextile fabric including the two southern outlets. A 20 foot section of pipe was placed and connected using manufacturer approved couplers. Only 120 linear feet of the 400 linear feet of pipe placed today was covered with the drainage rock (-2+1/2 rounded gravel) and wrapped with the non-woven geotextile, leaving 280 linear feet of the drainage collection system represented by the destructive test DDS #9 uncovered. Site Preparatory Work – General site clean-up of excess geosynthetics and trash was performed today by PSG; trash was placed in the subcontractors dumpster for disposal.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 2 hrs; trackloader – 2 hrs; compactor – 0 hrs; dozer – 10 hrs.
4 Operator/laborer: 35 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

PSG – continuously spot-checks the thickness of the sand drainage layer and that placement of the sand is not damaging underlying material. MK – visually observed placement of sand over the HDPE liner using LGP equipment, no damage or displacement of underlying material was noticed. MK – visually confirmed that the installation of the drainage collection system was per construction drawings.

## Testing Equipment:

None.

## Materials and Submittals:

Sand 485 tons.

## Approvals/Problems/Corrective Action:

EPA verbally approved FCRs DBG-020, -021, and 022.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 12/1/98
Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 141

**Date:** 7-25-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm
**Temperature:** 80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Sand Drainage Layer – PSG continues pushing #23/24 sand from the southeast edge of the cap across on the 5% top slope. Sand on the 3:1 side slopes is being transported around the cap using a track loader and graded by hand. Approximately 400 tons of sand was placed today down to station 2+75. PSG began final grading of the six inch sand layer.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 6 hrs; compactor – 0 hrs; dozer – 8 hrs.
3 Operator/laborer: 24 hrs. 1 H.S: 8 hrs.

## Inspection and Observations:

Expected final peel and shear test results from HTS, an independent lab, for the ninth destructive test. As of 1500, 7/25/98, test results were not in. Therefore, drainage rock and sand drainage layer were not placed on the south end, approximately 80' of the cap area and the final 230 lf of the trench. PSG – continually checks depth of sand drainage layer and placement to ensure a minimum lift thickness of six inches of sand, expansion wrinkles are not trapped, and that the underlying material is undamaged. MK – observed placement of the sand drainage layer using a dozer and hand tools, no damage to underlying material was noted.

## Testing Equipment:

None.

## Materials and Submittals:

Received 40 loads #23/24 sand.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Louis Bagley 12/1/98
Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 142

**Date:** 7-26-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, partly cloudy

**Temperature:** 80s **Cloud Cover:** Partly cloudy **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: [illegible] for Lois Bagley 11/30/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 143

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-27-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Cloudy, turning sunny | | | | |
| **Temperature:** | 60-80s | **Cloud Cover:** | Partly cloudy | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Sand Drainage Layer – PSG continues placing, spreading and grading #23/24 sand across the top and side slopes of the cap area. Sand on the 3:1 side slopes is being transported around the cap using a track loader and graded by hand. Sand has been placed and graded over the entire cap except for the southwest end. Drainage/Anchor Trench – Placement of the drainage collection system and backfilling of the drainage/anchor trench was completed by PSG.

## Equipment and Personnel:

Wheel loader – 5 hrs; backhoe – 2 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 13 hrs.
3 Operator/laborer: 39 hrs. 1 Superintendent: 13 hrs. 1 H.S: 13 hrs.

## Inspection and Observations:

EDCI remobilized to the site for geotextile installation over the sand drainage layer. Borrowed a bailer from EPD to confirm that the bailer would slide down the SW well. MSE/EDCI – were scheduled to perform survey, however site was not ready and neither party arrived. PSG – continually checks depth of sand drainage layer and placement. MK – observed placement of the sand drainage layer using a dozer and hand tools, no damage to underlying material was noted. MK – received and reviewed test results from HTS on Destructive Seam Sample DDS #9. Both shear and peel exceed specification requirements, releasing entire cap area for placement of sand drainage area. Mk – observed completion of the drainage collection systems using four inch ADS piping, geotextile filter fabric, and drainage rock (-2 + ½ round gravel).

## Testing Equipment:

None.

## Materials and Submittals:

Received ten loads (182 tons) of sand.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 12/1/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 144

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-28-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny to partly cloudy | | | | |
| **Temperature:** | 60-80s | **Cloud Cover:** | Partly cloudy | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

Preparatory meeting for the installation of the six inch biotic layer with geotextile cover over the –2 inch rounded gravel layer.

## Construction Activity:

Sand Drainage Layer – PSG completed placement, spreading, and grading of the six inch sand drainage layer. Using a JD 550 dozer, PSG tracked the entire length of the DBG cap to lightly compact the sand drainage layer once placement and grading were completed. An as-built survey on 25 foot centers was conducted by MSE, a subcontractor for PSG. All areas out of tolerance were corrected by PSG. Average depth of sand ranged from 0.5 to 0.7 feet. After the MSE survey and random spot check an area, PSG and EDCI began deployment, placement, and sewing of the non-woven geotextile over the sand layer. Starting at the NE end and working southwest, the panels were placed across the width of the cap per panel layout. EDCI is using TNS R70 six ounce non-woven geotextile and KemFast thread for the geotextile Type 1, filter fabric. Pursuant to the subcontractor's request, heat bonding of the geotextile was approved for use; however, EDCI elected to continue to sew the geotextile panels together.

## Equipment and Personnel:

3 Operator/laborer: 31 hrs  1 Superintendent: 10 hrs.  1 H.S: 10 hrs.

## Inspection and Observations:

Personnel working on the sand may slightly deform the lift, but this is a known effect and will not adversely affect the layer. Placement, grading, surveying of the sand, and placement and sewing of the geotextile was all on-going simultaneously. MK – performed ten random spot checks on the sand drainage layer thickness. 4 of 10 areas were photographed for documentation. MK – observed placement, spreading, grading and light compaction by tracking using a JD 550 dozer. MSE – performed a cross section of the cap area on 25 foot centers for an as built of the sand layer. MK – confirmed that TNS R-70 geotextile, the approved Type 1 geotextile has all required submittals and is being deployed over the sand for the sand drainage layer. MK – after the survey was performed, MK approved placement of next layer for the DBG cap construction. MK – observed deployment of the first panel, GT-01, of the geotextile over the sand drainage layer on the NE end of the cap and confirmed that the panel was reasonably straight and smooth. MK – visually inspected the following geotextile panels and seams for rips, tears, irregularities, and continuously interlocking stitching.

## Testing Equipment:

None.

## Materials and Submittals:

77.97 tons of sand.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Engineer's Daily Report; Daily Inspection Report; Contractor Quality Control Report; Daily Report

by: [illegible] for Lois Bigley 12/1/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 145

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-29-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny to partly cloudy, humid | | | | |
| **Temperature:** | 70-80s | **Cloud Cover:** | Partly cloudy | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Sand Drainage Layer – EDCI and PSG continued deployment, placement, and sewing of Type 1 Geotextile panels over the sand of the sand drainage layer. Using TNS R70 6 ounce geotextile and KemFast thread, Type 1 geotextile is placed across the width of the cap working from NE to SW. Biotic Layer – After the underlying layer is approved, PSG began placement of the biotic material from the NE corner. PSG set up the 60' conveyor on the NE end to transport –2" round rock (RH5) onto the cap area. Using a JD 550 dozer, the biotic material was placed, spread and graded. Site Preparatory Work – PSG continues general site clean-up.

## Equipment and Personnel:

Wheel loader – 8 hrs; backhoe – 8 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 8 hrs.

4 Operator/laborer: 40 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

PSG was reminded sand and biotic layer does not extend beyond the edge of the geotextile. Visitors to the site included: T. Sears, T. Brent, B. Robertson, and SoDiv. Safety Director W. Longshore. While no major violations were noted, there were a number of minor safety findings. One of the main issues discussed – wearing of hard hats. Placement of the Biotic material is going easier than anticipated. The rounded gravel is rolling off the interface as material is spread, no gripping or pulling of the underlying geotextile. MK – visually inspected the following geotextile panels and seams for rips, tears, irregularities, and continuously interlocking stitching. MK – observed, deployment, placement, and sewing of filter fabric over sand of the sand drainage layer. PSG – spot checked thickness of biotic rounded gravel continually during placement and grading. MK – confirmed that the required submittal for biotic material has been reviewed and approved. MK – observed biotic material, RH 5, placement and method to ensure underlying material was not displaced or damaged during placement. EDCI – measured and recorded panel layout for the as-built drawing. ROICC – performed an informal safety inspection; no major safety violations were noted, however, there were a number of minor safety findings identified.

## Testing Equipment:

None.

## Materials and Submittals:

None.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kilber Olivil for Louis Bagley 12/1/98

Certifying Engineer Kilber Olivil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 146

**Date:** 7-30-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Cloudy, rain
**Temperature:** 70s **Cloud Cover:** Cloudy **Precipitation:** 0.4"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Sand Drainage Layer – EDCI and PSG completed deployment, placement, and sewing of Type 1 Geotextile panels on the southwest end of the cap. Using TNS R70 6 ounce geotextile and KemFast thread, a geotextile cover is placed over the six inch sand layer completing the sand drainage layer. Biotic Layer – Using a JD 550 dozer and a 60' conveyor, -2" rounded gravel biotic material is placed on the DBG from approximately station 6+00 to 5+10 working southwest down the top slope by PSG. Spreading and grading of the rock is accomplished using the JD 550 dozer with hand laborer continuously checking the depth of the biotic material. Moved the conveyor and power plant from the center of the NE end of the east side slope to assist in transporting biotic material from the east side to the center and west end of the DBG cap. 792 tons of –2" round gravel was placed over the Type 1 geotextile of the sand drainage layer for a total of 1,463 tons of biotic material. Run-on/Run-off Controls – PSG inspected, removed, repaired, and installed silt fence around the DBG site.

## Equipment and Personnel:

Wheel loader – 10 hrs; backhoe – 5 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 10 hrs.
4 Operator/laborer: 48 hrs. 1 Superintendent: 8 hrs. 1 H.S: 12 hrs.

## Inspection and Observations:

Placement of biotic layer continued through rain showers. 0.4 inches recorded. EDCI – measured and recorded panel layouts for as-built drawing of the geotextile placement. MK – visually inspected the following geotextile panels and seams for rips, tears, irregularities, and continues interlocking stitches. MK –observed deployment, placement, and sewing of filter fabric over sand of the sand drainage layer. PSG – spot checked thickness of biotic rounded gravel continually during placement and grading by probing down to the sand drainage layer geotextile. MK – observed placement, spreading and grading of the –2" rounded gravel biotic layer using a JD 550 dozer. MK confirmed material being delivered is Rogers Group RH5 rock which is a rounded –2" sandstone gravel. PSG – inspected site for run on/run off control and repaired, replaced, or installed silt fence around the DBG site as needed.

## Testing Equipment:

None.

## Materials and Submittals:

Received 792 tons of 2 inch rounded gravel.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kirk Olivil for Lois Bigley 11/30/98

Certifying Engineer Kirk Olivil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 147

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 7-31-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Mild | | | | |
| **Temperature:** | 80s | **Cloud Cover:** | | **Precipitation:** | |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Biotic layer – PSG continues placing, spreading and grading RH5, 2-inch rounded sand stone/granite across the width of the DBG cap. Both a JD 550 dozer and a 60' conveyor fed by the Volvo wheel loader were used to place the biotic material onto the cap area. Only the dozer is utilized to spread and grade the biotic gravel from east to west working down the top slope to the southwest. Over the course of the day, the 60' conveyor was relocated east/southeast of the DBG cap. Biotic material was placed and spread from approximately station 5+10 to 3+60, 878 tons of rock were delivered and placed for a total of 2,341 tons of RH5. PSG spot checks the thickness of the gravel during spreading and grading by probing down through the gravel to the sand drainage geotextile. PSG performing other minor tasks (i.e., trimming branches away from firebox, etc.).

## Equipment and Personnel:

Wheel loader – 11 hrs; backhoe – 3 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 11 hrs; conveyor – 11 hrs; power plant

4 operator/laborer: 44 hrs. Superintendent: 11 hrs. H.S: 11 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

PSG – continually spot-checks the thickness of the biotic gravel material by probing down through the gravel to the sand drainage geotextile. MK – observed placement, spreading and grading of the six-inch biotic gravel layer. No damage or displacement was noticed in underlying materials during the placement or grading of the biotic material.

## Materials and Submittals:

840 tons of 2-inch rounded gravel and 40 tons of #53 gravel.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kirk Olin for Lois Bigley 11/18/98

Certifying Engineer Kirk Olin

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 148

**Date:** 8-1-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Mostly sunny

**Temperature:** 80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

Preparatory meeting for placement of 27-inch cover material scheduled for 8/3/98.

## Construction Activity:

Biotic Layer – PSG spread and graded RH-5,-2" rounded sand stone/granite with a JD 550 dozer and hand labor to check thickness. Biotic material was spread down to station 2+30. No material was delivered today. EDCI to remobilize and start geotextile on 8/3/98.

## Equipment and Personnel:

Wheel loader – 4 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 6 hrs; conveyor – 2 hrs; power plant – 0 hrs.

3 operator/laborer: 16 hrs Superintendent: 8 hrs. H.S.: 5 hrs.

## Inspection and Observations:

MSE scheduled to perform cross section for as built of the biotic layer. PSG – continually spot-checks the thickness of the biotic gravel material by probing down through the gravel to the sand drainage geotextile. MK – observed placement, spreading and grading of the six-inch biotic gravel layer. No damage or displacement was noticed in underlying materials during placement or grading of the biotic material. PSG – Inspected borrow area.

## Testing Equipment:

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Linda Olivi for Lois Bigley 11/18/98

Certifying Engineer Linda Olivi

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 149

**Date:** 8-2-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, partly cloudy

**Temperature:** 70-80s **Cloud Cover:** Partly cloudy **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; power plant – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: Kirk Olivi for Lois Bigley 11/12/98

Certifying Engineer Kirk Olivi

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 150

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-3-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, partly cloudy | | | | |
| **Temperature:** | 80s | **Cloud Cover:** | Partly cloudy | **Precipitation:** | |

## Meeting Held/Action Recommended or Taken:

Cover Layer – PSG/MK conducted a Preparatory Meeting discussing placement, compaction, and grading of the 27 inch cover layer.

## Construction Activity:

Biotic Layer – PSG placed, spread and graded RH-5, -2" rounded gravel over the SW end of the DBG cap, completing placement of the biotic material. MSE performed a cross-section survey of the cap area and MK/PSG ran random checks on thickness of the biotic gravel. PSG, using a JD 550 dozer, re-graded and corrected any area found to be out of tolerance.

## Equipment and Personnel:

Wheel loader – 3 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 9 hrs; conveyor – 0 hrs; power plant – 0 hrs.

4 operator/laborer: 36 hrs 1 Superintendent: 9 hrs. H.S: 9 hrs.

## Inspection and Observations:

MSE – cross-section surveyed the top of the biotic gravel for as-built conditions of the biotic layer.
PSG/MK – performed 16 random spot checks on the thickness of the biotic layer.

## Testing Equipment:

None.

## Materials and Submittals:

108 ton of RH5 rock.

## Approvals/Problems/Corrective Action:

MK – accepted biotic rock placement at the end of the shift for deployment and installation of geotextile.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report.

by: [signature] for Lois Bigby 8/18/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 151

**Date:** 8-4-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Cloudy, raining

**Temperature:** 70-80s **Cloud Cover:** Cloudy **Precipitation:** 0.6"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Biotic Layer – PSG and EDCI began installation of Type 1, geotextile, TNS R70 six ounce non-woven geotextile over six inch biotic gravel layer in preparation of the 27 inch cover layer. Starting at the NE end working SW down the top slope. 27" Cover Layer – PSG preparing 161/822 borrow area for removal of soil to start placement of 27 inches over material beginning 8/5/98. Morning rains created wet conditions, which impacted this activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 4 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; power plant – 0 hrs; blade dozer – 4 hrs; bucket dozer – 4 hrs.

4 operator/laborer: 36 hrs 1 Superintendent: 9 hrs. H.S: 9 hrs.

## Inspection and Observations:

EDCI – measured and documented geotextile panel layout for as-built drawings. MK – witnessed the installation of Type 1 geotextile fabric to ensure a three inch overlap and stitching per specifications.

Type 1 geotextile, TNS R70 six ounce non-woven fabric, 15 foot width; section number from NE to SW down the top slope. Panels placed across the width of the cap. MK inspected performed by D. Beall.

## Testing Equipment:

None

## Materials and Submittals:

1 load 3" limestone for the ditch at the borrow area.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Louis Bigley 11/18/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #152

**Date:** 8-5-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast, hot humid

**Temperature:** 88 **Cloud Cover:** Overcast **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Biotic Layer – PSG and EDCI completed installation of Type 1, geotextile, TNS R 70 six ounce non-woven geotextile on top of the six inch biotic layer. No activity on 27" clay soil layer due to wet conditions at the borrow area.

## Equipment and Personnel:

Wheel loader –0 hrs; backhoe – 5 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; power plant – 0 hrs; blade dozer – 1 hr; bucket dozer – 1 hr; front end loader – 2 hrs.

4 operator/laborer: 40 hrs 1 Superintendent: 10 hrs 1 H.S: 10 hrs.

## Inspection and Observations:

MK – observed the installation of Type 1 geotextile fabric to ensure a three inch overlap and stitching comply with specifications. PSG/EDCI/MK – inspected as-built fabric panels. MK – verified fabric installation to boundary shown on drawings; 2 feet beyond the drainage/anchor trench. P-1 through P-52 TNS R70 six ounce non-woven fabric 15' width. P-53 through P-58 SI 1201 non-woven fabric ½ roll 7.5 width. EPD – inspected seams over entire cap and identified five small <3 inch length, requiring repair due to inadequate salvage. MK inspection performed by D. Beall.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Eileen Olind for Louis Bagley 12/1/98

Certifying Engineer Eileen Olind

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #153

**Date:** 8-6-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Cloudy, rain

**Temperature:** 86 **Cloud Cover:** Cloudy **Precipitation:** 0.2"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – PSG began hauling, placing, spreading, and compacting first lift of the clay material over the biotic geotextile. Biotic Layer – 3'x 3' patches were placed on five areas identified by the EPA on 8/5/98.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 8 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 8 hrs; conveyor – 0 hrs; loader dozer – 8 hrs; vendor dumptrucks – (5)(8) hrs; vibratory roller – 8 hrs.
4 operator/laborer: 44 hrs. 1 Superintendent: 11 hrs. 1 H.S: 11 hrs.

## Inspection and Observations:

MK – observed hauling, placing, spreading, and compacting of the fist lift of clay material over the biotic geotextile. Mk – confirmed placement of the patches on the geotextile and verified like material was used as a patch. Mk – observations performed by D. Beall.

## Testing Equipment:

PSG – performed three nuclear density tests on the first lift of the 27 inch cover material:

- 1 test passed both density and moisture
  20.6% moisture (+2.1) 105% compaction - passed
- 2 Tests failed moisture while passing density
  22.3% moisture (+3.8) 96.7% compaction – failed
  23.1% moisture (+4.6) 95.5% compaction – failed
  Failing areas to be re-worked and re-tested

## Materials and Submittals:

On site borrow area clay.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Daily Inspection Report; Field Testing Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 11/30/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 154

**Date:** 8-7-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast, rain

**Temperature:** 82 71-73 **Cloud Cover:** Cloudy **Precipitation:** 0.6"

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Due to adverse (wet) weather conditions, no field activity was performed today.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; loader dozer – 8 hrs; vibratory roller – 0 hrs.

4 operator/laborer: 10 hrs 1 Superintendent: 4 hrs 1 H.S: 2 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Field Testing Report

by: [illegible] for Lois Bigley 11/18/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 155

**Date:** 8-8-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast, rain

**Temperature:** 72 **Cloud Cover:** Overcast **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; loader dozer – 0 hrs; vibratory roller – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: Kilen Ohl for Lois Bigley 11/18/98

Certifying Engineer Kilen Ohl

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 156

**Date:** 8-9-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast

**Temperature:** 74 **Cloud Cover:** Overcast **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; loader dozer – 0 hrs; vibratory roller – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: Linda Olivi for Lois Bigley 11/18/98

Certifying Engineer Linda Olivi

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 157

**Date:** 8-10-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Foggy, partly cloudy, sunny

**Temperature:** 80s **Cloud Cover:** Foggy, cloudy **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Due to adverse (wet) weather conditions, no field activity was performed today.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; loader dozer – 0 hrs; vibratory roller – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Daily Inspection Report; Field Testing Report; Contractor Production Report; Contractor Quality Control Report

by: [illegible] for Lois Bigley 11/18/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 158

**Date:** 8-11-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, partly cloudy

**Temperature:** 86 **Cloud Cover:** Cloudy **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – PSG resumed hauling, placing, spreading, and compaction of first lift of the clay material over the biotic geotextile. Using five end dump trucks from Hanna Trucking, material was hauled from the 161/822 borrow area and placed on the DBG cap. Material was spread and compacted on the NE 3:1 side slope and top slope from station 5+40 to 4+40 working SW.

## Equipment and Personnel:

Wheel loader – 10 hrs; backhoe – 5 hrs; trackloader – 10 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 0 hrs; roller/sheeps foot (3 hrs); end dump w/driver – 6 hrs.

3 operator/laborer: 31.5 hrs. 1 Tech.: 10.5 hrs. 1 Superintendent: 10.5 hrs. 1 H.S: 10.5 hrs.

## Inspection and Observations:

D. Beall informed me of deficiencies on geotextile with disposition. Correction was cleared with C. Waite, MK Boise. PSG – continues to check depth of fill material. PSG – continues to inspect fill for suitability and remove roots, rocks, etc. as encountered. MK – observed hauling, placing, spreading, and compaction of the first lift of the 27 inch cover layer. Placement, spreading and compaction method not damaging or displacing underlying material. Loose lift thickness is approximately 12 inches and compaction method and testing are performed per specification.

## Testing Equipment:

PSG – performed ten nuclear density tests on the cover material placed ( 6 tests passed, 3 re-tests passed, 1 failed, areas failing tests were re-worked and retested at the end of shift; all areas passed).

## Materials and Submittals:

Clay from borrow area.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Field Testing Report

by: [illegible] for Lois Bigley 11/30/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #159

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-12-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, clear | | | | |
| **Temperature:** | 60-80s | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – PSG continues hauling, placing, spreading, and compaction of first lift of the clay material over the biotic geotextile. Material placed on the NW 3:1 side slope and top slope from station 4+40 to the SE end at station 1+80 excluding a 25'x 25' section the SE corner of the cap. End dump trucks used to place fill material, the dozer to spread, and a pad foot roller to compact. Run on/Run off Controls – PSG provided dust control on gravel road by means of a tank and sprinkler system.

## Equipment and Personnel:

Wheel loader – 10 hrs; backhoe – 2 hrs; trackloader – 10 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 0 hrs; roller – 4 hrs; 1 ton truck w/water tank dust control – 6 hrs.
5 operator/laborer: 55 hrs. 1 Superintendent: 11 hrs. 1 H.S: 12 hrs.

## Inspection and Observations:

MK – observed hauling, placing, spreading and compaction of the first lift of the 27 inch cover layer. Placement, spreading and compaction method not damaging or displacing underlying material. MK/PSG – spot checked an area after a haul truck passed over an area; core is taken to ensure a full lift is in place before trucks are permitted to use the area. Also ramp and trail area were watched and graded to prevent rutting in this area. Material was spread in approximately 12" loose lifts and compacted using a pad foot roller.

## Testing Equipment:

PSG – performed eight nuclear density tests using a Troxler nuclear density gauge (6 test passed, 1 re-test passed, 1 failed). At the end of the shift all areas tested and approved for next lift. PSG – continues to check depth of fill material. PSG – continues to inspect fill for suitability and remove roots, rocks, etc. as encountered. Testing was performed per ASTM standards.

## Materials and Submittals:

86 loads of clay from 161/822 borrow area.

**Approvals/Problems/Corrective Action:**

An oily film and black roots were noticed just off the SE corner of the cap. (T. Brent (EPD) noticed some black soil earlier in the day in the same area). The EPD was notified of the film and while it is believed to be due to the natural decay process of indigenous trees, MK and EPD will investigate further 8/13/98.

**Supporting Documentation:**

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Report; Daily Report; Field Testing Report

by: Kilee Olivil for Lois Bigley 11/30/98

Certifying Engineer Kilee Olivil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #160

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-13-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, warm | | | | |
| **Temperature:** | 67-88 | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – PSG completed first lift of the cover and began second lift over cap. Material from the 161/822 borrow source was loaded, hauled, placed, spread and compacted over the cap area, beginning the second lift on the west side of the NE end of the DBG cap. The second lift was placed over the 3:1 side slope and the west side of the top slope from NE end to approximate station 5+20. An Ingersoll Rand 70L ProPac roller with pad footpad was used to compact the clay material for the bottom 24 inches of the 27 inch cover layer.

## Equipment and Personnel:

Wheel loader – 12 hrs; backhoe – 0 hrs; trackloader – 12 hrs; compactor – 0 hrs; dozer – 12 hrs; conveyor – 0 hrs; roller – 4 hrs; 1 ton truck w/water tank dust control – 5 hrs.
5 operator/laborer: 56 hrs 1 Superintendent: 12 hrs. 1 H.S: 12 hrs.

## Inspection and Observations:

MK – observed hauling, placing, spreading and compaction of the cover and clay fill. No damage or displacement of underlying material was noticed during placement of fill with end dump trucks. Material was spread in approximately 12 inch loose lifts and compacted to a minimum 90% of the maximum dry density at +3% of optimum moisture using a pad foot roller. PSG – continues to inspect fill for suitability and remove roots, rocks, etc. as encountered. MK/PSG – visited and inspected the off-site topsoil borrow source.

## Testing Equipment:

PSG – performed eight nuclear density tests using a Troxler nuclear density gauge (4 tests passed, 2 re-tested passed, 2 failed). At the end of shift all areas tested and passed both density and moisture requirements. PSG – continues to check depth of fill material MK – performed analytical sampling of the topsoil.

## Materials and Submittals:

On site borrow area (clay).

## Approvals/Problems/Corrective Action:

T. Brent, EPD visited the site today. Although he thinks the black oily sheen on standing water SE of the SE corner of the cap is due to the normal decay, he would like to investigate the area further by excavating the area down three to four feet.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Field Testing Report

by: Kiles O'Neil for Lois Bigley 11/30/98

Certifying Engineer Kiles O'Neil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 161

**Date:** 8-14-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm

**Temperature:** 65-85 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – PSG continues loading, hauling, placing, spreading and compacting of clay from the 161/822 borrow site to the DBG cap as the lower 24 inches of the 27 inch cover layer. The second lift of the soil cover layer was placed along the east side of the cap area. Using a JD 550 dozer, material placed on the cap by end dump truck is spread in approximately 12 inches loose lift and compacted to a minimum of 90% of the maximum dry density at a moisture between optimum and +3% of optimum using a pad-foot roller.

## Equipment and Personnel:

Wheel loader – 12 hrs; backhoe – 2 hrs; trackloader – 12 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 0 hrs; roller – 4 hrs; 1 ton truck w/water tank dust control – 5 hrs; 5 Hanna Trucks w/drivers – 8 hrs.

5 operator/laborer: 52 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

MK – observed hauling, placing, spreading, and compaction of the cover and clay fill. Scheduled to excavate oily film today however, T. Brent wanted to witness the excavation and he would not be present on Friday, excavation delayed until Monday.

## Testing Equipment:

PSG – performed six nuclear density tests using a Troxler nuclear density gauge. All six tests passed both the moisture and density requirements; all areas placed today were tested. PSG – continues to check depth of fill material using previously placed lath randomly placed throughout the cap area. PSG – continues to inspect fill for suitability and remove roots, rocks, etc. as material is being spread. At end of shift all material had passed density and moisture requirements.

## Materials and Submittals:

On site clay.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Field Testing Report

by: [illegible] for Lois Bigley 11/30/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 162

**Date:** 8-15-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm
**Temperature:** 69-88 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – PSG completed loading, hauling, placing, spreading and compacting of clay loom material from the 161/822 borrow site to the DBG cap. Completed the lower 24 inches of the 27 inch cover layer material by placing and compacting material on the southwest end of the cap area. PSG began rough grading of the cap area using lath randomly placed over the cap area by measuring up from the biotic geotextile. MSE is scheduled here on 8/17/98 to cross section the cap area to determine grade of lower 24 inches of the 27 inch cover soil.

## Equipment and Personnel:

Wheel loader – 11 hrs; backhoe – 2 hrs; trackloader – 11 hrs; compactor – 0 hrs; dozer – 12 hrs; conveyor – 0 hrs; roller – 4 hrs; 1 ton truck w/water tank dust control – 0 hrs; 5 Hanna Trucks w/drivers – 8 hrs.

5 operator/laborer: 53 hrs. 1 Superintendent: 11 hrs. 1 H.S: 5 hrs.

## Inspection and Observations:

MK – observed hauling, placing, spreading, and compaction of the cover material including nuclear density testing, depth check, and removal of roots, etc. from the fill.

## Testing Equipment:

PSG – performed six nuclear density tests on material placed today using a Troxler nuclear density gauge (4 tests passed, 1 test failed, 1 re-test passed). PSG – continues to spot check depth of cover material. PSG – continues to inspect fill for suitability and remove roots, rocks, etc. as material is being spread.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Field Testing Report

by: [signature] for Lois Bigley 11/30/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 163

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-16-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny | | | | |
| **Temperature:** | 87 | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

**Meeting Held/Action Recommended or Taken:**

None.

**Construction Activity:**

No activity.

**Equipment and Personnel:**

Wheel loader – 0 hrs; backhoe – 0 hrs; trackloader – 0 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; roller – 0 hrs; 1 ton truck w/water tank dust control – 0 hrs.

**Inspection and Observations:**

None.

**Testing Equipment:**

None.

**Materials and Submittals:**

None.

**Approvals/Problems/Corrective Action:**

None.

**Supporting Documentation:**

Contractor Production Report; Contractor Quality Control Report

by: Kirk Olivil for Lois Bigley 11/18/98

Certifying Engineer Kirk Olivil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 164

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-17-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, hot, humid | | | | |
| **Temperature:** | 91 | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

Woodland Representative, Bill Glass, is scheduled to visit the site and attend the preparatory meeting for Site Restoration, Seeding and Clean-up.

## Construction Activity:

27" Cover Layer – MSE, subcontractor to PSG, performed a preliminary cross-section survey to establish grade before placing the lower 24 inches of the 27 inch soil cover layer. Site Restoration – PSG loaded and hauled unsuitable fill from site grading and excavation of the drainage/anchor trench over to the 161/822 borrow area for disposal along with excess sand. Excess stone from the drainage layer was spread along the roadway. PSG graded out areas to provide drainage and to smooth roads. Miscellaneous cleanup items such as cutting and disposing of sand bags, relocation of conveyor for demobilization etc. was also performed by PSG.

## Equipment and Personnel:

Wheel loader – 6 hrs; backhoe – 6 hrs; trackloader – 6 hrs; compactor – 0 hrs; dozer – 0 hrs; conveyor – 0 hrs; roller – 3 hrs; 1 ton truck w/water tank dust control – 0 hrs.
4 operator/laborer: 40 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

T. Brent visited the site, no problems noted. MSE – cross-sectioned the DBG for grading of the cap area. MK – observed surveying, loading out of excess stockpile, and miscellaneous site clean up. MK/EPD – witnessed exploratory excavation of area on the SE corner of the SW end of the cap where a black oily film had been noticed. EPD determined that the film was the result of organic decaying in the area. Approximate location of the large tree near clearing point #11.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 11/30/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 165

**Date:** 8-18-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Hot, humid

**Temperature:** 91 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – using the JD 550 dozer, PSG began grading the DBG cap to the lath set by MSE. Approximately 14 truck loads of additional fill was hauled over from the 161/822 borrow area using a single Hanna Truck end dump truck. The NE portion of the cap was rough graded to +/-2 inches in preparation of topsoil placement. Site Restoration – PSG excavated around three of the four wells for placement of the well casing collars foundation and formed around the NE well in preparation of placing the well collar.

## Equipment and Personnel:

Wheel loader – 8 hrs; backhoe – 2 hrs; trackloader – 8 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 0 hrs; roller – 0 hrs; 1 ton truck w/water tank dust control – 0 hrs.

4 operator/laborer: 40 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

PSG – checked the grade of the top of the lower 24 inches of the 27 inch soil cover layer using grade stakes set by MSE. MK – observed grading of the top of the clay layer of the 27 inch soil cover layer of the DBG cap by PSG. MK – observed hand excavation around the well for placement of the 2x2x2 concrete collars. Verified dimensions of the NE well collar.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 11/30/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 166

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-19-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Partly cloudy, sunny | | | | |
| **Temperature:** | 80 | **Cloud Cover:** | Partly cloudy | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – continues rough grading the top of the 24 inch clay portion of the 27 inch soil layer. Completed grading of the top slope and began grading the 3:1 side slope, using a JD 550 dozer. Site Restoration – three of the four wells steel casings were set and the concrete collars framed and poured around the following wells: 02-01, 02-06, and 02-07 by PSG. Concrete mixed on site was used for each of the 2'x2'x2' concrete collars.

## Equipment and Personnel:

Wheel loader – 0 hrs; backhoe – 6 hrs; trackloader – 8 hrs; compactor – 0 hrs; dozer – 9 hrs; conveyor – 0 hrs; roller – 0 hrs; 1 ton truck w/water tank dust control – 0 hrs; dump truck w/driver – 8 hrs.

4 operator/laborer: 42 hrs. 1 Superintendent: 11 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

PSG – checked grade using grade stake and lath set by MSE. MK – observed grading of the top of the clay layer of the 27 inch soil using the dozer. MK – observed setting casings and mixing, pouring, and finishing the three well collars. MK confirmed dimensions of the collars and verified a bailer would ascend and descend in well 02-07.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: [signature] for Lois Bigley 11/30/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 167

**Date:** 8-20-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, mild

**Temperature:** 84 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Cover Layer – PSG completed of the 24 inch clay portion of the 27 inch soil layer in preparation for topsoil placement. The east side slopes were graded using a JD 550 dozer to grade and a front end loader to add material as needed. Site Restoration – after the 2'x2'x2' hole was excavated by hand, PSG formed and poured the well collar for well #02-08 and set the protective steel casing. Painted the well protective casing using safety yellow paint. Tracked JD 550 dozer over to the 161/822 borrow area and began site grading the area for site restoration. Pumped water from the weep collection system for storage into the construction water FRAC tank.

## Equipment and Personnel:

Wheel loader – 5 hrs; backhoe – 3 hrs; trackloader – 10 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 0 hrs; roller – 0 hrs; 1 ton truck w/water tank dust control – 0 hrs.

4 operator/laborer: 40 hrs 1 Tech: 8 hrs 1 Superintendent: 10 hrs 1 H.S: 10 hrs.

## Inspection and Observations:

MK – visually inspected the top of the clay portion of the 27 inch soil cover layer. Top slope at approximate grade and side slopes ranging from 3:1 to 4:1. MK – observed dressing of slopes and testing of fill material by PSG. PSG – performed five nuclear density tests on fill material placed for grading the 27 inch soil cover (3 passed test, 1 failed test, 1 passed re-test). Observed setting and painting of protective steel casing; confirmed use of safety yellow paint.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Field Testing Report

by: Filler Obrid for Lois Bagley 11/30/98

Certifying Engineer Filler Obrid

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #168

**Date:** 8-21-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm, mild

**Temperature:** 60-80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Site Restoration – PSG continued shaping and grading of the 161/822 borrow site for final seeding. Re-staged excess geosynthetic material from the DBG to the Biofacility. Miscellaneous site clean-up and housekeeping.

## Equipment and Personnel:

None.

## Inspection and Observations:

MK – observed grading of borrow site. MK – received and reviewed topsoil analytical results, from Southwest Labs. Under VOC: Methylene Chloride, at 16.63 ug/kg was the only VOC above detectable levels and it is lower than the required clean-up perimeters. Other metals: Arsenic – 5.3 mg/kg; Beryllium – 0.59 mg/kg; Chromium – 12 mg/kg. All were above clean-up parameters for the Crane site however, once natural background limits for the area were considered, all constituents were below clean-up parameters and therefore the topsoil source was approved.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report

by: Kilen O'Neil for Lois Bigley 11/30/98

Certifying Engineer Kilen O'Neil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 169

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-24-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny | | | | |
| **Temperature:** | 70-90s | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Soil Cover Layer – PSG received and spread approximately 250 tons of topsoil from Abram & Hawkins, the approved topsoil source. Material was spread in a nominal three inch lift over the cap area starting at the west side of the northeast end working west then southward. Site Restoration – PSG performed general site clean-up, grading, and equipment demobilization. Run on/Run off Controls – Using a one-ton flat bed truck equipped with a poly tank and sprinkling bar, PSG performed dust control for the gravel road leading to the DBG site.

## Equipment and Personnel:

Wheel loader – 2 hrs; backhoe – demob; trackloader – demob; compactor – 0 hrs; dozer – 9 hrs; conveyor – 0 hrs; roller –0 hrs; 1 ton truck w/water tank dust control – 0 hrs.
2 operator/laborer: 18 hrs. 1 Superintendent: 9 hrs; 1 H.S: 9 hrs; Truck Drive: 12 hrs.

## Inspection and Observations:

MK – confirmed topsoil from approved source delivered (Abram & Hawkins). PSG – marked lath with three inch grading line for topsoil. MK – observed placement and spreading of the topsoil; cap is not deflecting under the weight of the end dump trucks delivering the topsoil. MK – witnessed PSG performing general site clean-up, (i.e., removal of debris including a section of used CMP, etc.). Both the Cat 426 backhoe and the trackloader were demobilized today.

## Testing Equipment:

None.

## Materials and Submittals:

Received 250 topsoil.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Full Scale Daily Report; Windrow Process Data/Daily Log

by: Kirk Ohl for Lois Bigley 11/20/98

Certifying Engineer Kirk Ohl

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 170

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-25-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Hot, humid | | | | |
| **Temperature:** | 97 | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

Brief preparation meeting on site restoration with B. Tomasko.

## Construction Activity:

27" Soil Cover Layer – PSG continues receiving and spreading topsoil from Abram & Hawkins, over the west side of the DBG cap in a three inch lift. Using the JD 550 dozer, 377 tons of topsoil was spread today. Site Restoration – PSG performed general site clean-up, grading, and restoration; including trash pick-up, removal of silt fence, etc. The area on the SW side of the cap was graded out as was the area west of the east FRAC tank storage area. Run on/Run off Controls – using a one-ton flat bed truck equipped with a poly tank and sprinkling bar, PSG performed dust control for the gravel road leading to the DBG site. Sediment laden silt fence and fence in disrepair was removed, the area graded and new silt fence installed down gradient.

## Equipment and Personnel:

Wheel loader – 3 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 0 hrs; roller – 0 hrs; 1 ton truck w/water tank dust control – 5 hrs.

2 operators: 20 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

PSG – checks depth of topsoil and final grade using grade marks wet by MSE. MK – observed placement and spreading of the topsoil; no deflection of cap or cover was observed. MK – witnessed PSG performing dust control activities and miscellaneous site clean-up.

## Testing Equipment:

None.

## Materials and Submittals:

377 tons of topsoil was delivered.

## Approvals/Problems/Corrective Action:

PSG continues to work on incomplete items.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report

by: Kirk Olivi for Lois Bigley 11/30/98

Certifying Engineer Kirk Olivi

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #171

**Date:** 8-26-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, hazy
**Temperature:** 60-80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Soil Cover Layer – PSG continues receiving and spreading topsoil from Abram & Hawkins, in a three inch layer over the cap area. Material was placed and spread along the baseline the length of the cap, working from north to south. Site Restoration – between loads of topsoil, PSG continues to perform general site clean-up, grading around the cap area, and restoration. Received 64 rolls of erosion matting for placement on the side slopes. Run on/Run off Controls – Along the SW side of the cap, PSG placed silt fence down gradient of disturbed area. Using a one-ton bed truck equipped with a poly tank and sprinkling bar, PSG performed dust control for the gravel road leading to the DBG site.

## Equipment and Personnel:

Wheel loader – 0 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 0 hrs; front end loader – 10 hrs.
2 Operator: 20 hrs; 1 Superintendent: 10 hrs; 1 H.S: 10 hrs.

## Inspection and Observations:

PSG – check depth of topsoil and final grade using grade marks set by MSE. MK – confirmed erosion matting meets specification requirements and wooden pegs not metal staples were received for anchoring mat. MK – observed placement and spreading of the topsoil over the cap area. MK – witnessed minor site grading performed by PSG.

## Testing Equipment:

None.

## Materials and Submittals:

Received 293 tons topsoil; 64 rolls of erosion matting; 42 tons of RH5-drainage rock.

## Approvals/Problems/Corrective Action:

A steady stream of clear water is discharging from the SW outlet. Will attempt to locate source. MK – observed placement of silt fence; fence placed but not anchored or keyed.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Dye Burial Ground Preliminary Punch List

by: Kilen Olil for Lois Bigley 11/30/98
Certifying Engineer Kilen Olil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #172

**Date:** 8-27-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, hazy
**Temperature:** 84 **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Soil Cover Layer – Topsoil from Abram & Hawkins, the approved off-site source, continues to be spread in a three inch layer over the cap area. 379 tons of topsoil was received and spread over the east side of the baseline working the SW and NE end toward the center where a temporary ramp was constructed. Site Restoration – PSG continued to perform general site clean-up, grading around the cap area, and restoration, including excavation of damaged CMP, grading out low spot in 161/822 borrow area, and cutting part of the swale between the cap and the roadway.

## Equipment and Personnel:

Wheel loader – 0 hrs; compactor – 0 hrs; dozer – 10 hrs; conveyor – 0 hrs; front end loader – 9 hrs.
3 Operator: 20 hrs. 1 Superintendent: 10 hrs. 1 H.S: 10 hrs.

## Inspection and Observations:

PSG – continues checking grade using grade stakes. MK – observed placement and spreading of the topsoil over the cap area. MK/Navy – performed pre-final walk-down and established a punch list of items remaining to complete.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

Continuing to observe the discharge from the SW outlet.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; DBG Punch List

by: Kilen Olive for Lois Bigley 11/30/98
Certifying Engineer Kilen Olive

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #173

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-28-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Partly cloudy and mild | | | | |
| **Temperature:** | 80s | **Cloud Cover:** | Partly cloudy | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

27" Soil Cover Layer – A three inch topsoil lift covering the cap was completed by PSG, finishing the 27 inch soil layer. Using a JD 550 dozer, the last three loads of topsoil from Abram & Hawkins, the approved off-site source, was spread over the ramp area on the east side of the cap. MSE cross-section surveyed the cap area for as-built conditions. To level and smooth the area, PSG graded the cap area. Site Restoration – PSG continues site grading, clean-up and restoration. The area near N1311500 E304930 was cleared of trash, graded, and covered with topsoil. A stockpile of topsoil was placed on the east side of the site near the FRAC tank storage area for placement around the cap area for disturbed areas outside the cap footprint; eight loads of topsoil were used.

## Equipment and Personnel:

Dozer – 10 hrs; front end wheel loader – 5 hrs.

## Inspection and Observations:

PSG – graded topsoil to final grade using set grade stakes. MSE – cross-section surveyed the finish grade to verify proper elevation and contour of the cap. MK – observed placement and spreading of topsoil both on the cap area and outside the cap footprint. MK – verified depth of topsoil cover material over the cap area with 16 random spot checks.

## Testing Equipment:

None.

## Materials and Submittals:

Received 250 tons topsoil.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report;

by: [illegible] for Lois Bigley 11/30/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #143174

**Date:** 8-29-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, mild

**Temperature:** 60-80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Site Restoration – PSG continues site grading, clean-up and restoration. Complete repair of the CMP at north end of the entrance. Filled low areas around magazine entrance. Graded low spots at 161/822 borrow. Installed silt fence by outlet near magazine of 161/822 borrow. Blended area north of FRAC storage area. Began demobilizing office equipment.

## Equipment and Personnel:

## Inspection and Observations:

MK – witnessed restoration activities: Grading to blend to existing topography at DBG site, a ponding area still exists at 161/822 borrow, silt fence was installed backwards, slight ponding at area of CMP repair. Clear water still running from SW outlet, black coming from the SE corner of the SW end of the cap. (Same area that was previously investigated.)

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Site Condition Inspection Checklist

by: [signature] for Lois Bigley 11/23/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # ~~144~~ 175

**Date:** 8-30-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Overcast

**Temperature:** 80s **Cloud Cover:** Overcast **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No activity performed.

## Equipment and Personnel:

Dozer – 0 hrs; front end wheel loader – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: [illegible] for Lois Bagley 11/23/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #176

| | | | | | |
|---|---|---|---|---|---|
| **Date:** | 8-31-98 | **Location:** | NSWC Crane | **Unit:** | SWMU 02/11 |
| **For:** | U.S. Navy, SouthDiv | | | **By:** | Morrison Knudsen Corp. |
| **Weather:** | Sunny, warm, mild | | | | |
| **Temperature:** | 82 | **Cloud Cover:** | 0 | **Precipitation:** | 0 |

## Meeting Held/Action Recommended or Taken:

MK – conducted a preparatory meeting on Site Restoration and Seeding; specification requirements were discussed with the subcontractor.

## Construction Activity:

Site Restoration – PSG continues working on site restoration, clean-up, and grading of the DBG. Using a JD 550 dozer, PSG graded the west side of the site to blend with the existing topography and began placing and spreading topsoil over the area with a Volvo wheel loader. PSG completed grading the 161/822 borrow area to drain. Silt fence at the borrow area was repaired (installed correctly). At the DBG the south central outlet was repaired and completed extending the four inch ADS pipe out beyond the toe of the cap. Additional gravel was placed beyond the outlet to prevent erosion. Woodland Farm Nursery, landscaping subcontractor for PSG, disked both the 161/822 borrow area and cap of the DBG in preparation for seeding of the area, using a farm tractor with disc. Using small metal tags, wells were identified.

## Equipment and Personnel:

Dozer – 9 hrs; Volvo wheel loader – 5 hrs; tractor w/disc – 6 hrs.

1 Operator: 10 hrs. 1 Superintendent: 10 hrs. 1 H.S: 9.5 hrs.

## Inspection and Observations:

The EPD has asked that MK collect some of the discharge water from the SW outlet. MK – witnessed restoration activities. Grading west side of DBG site to blend with existing topography. Placement and spreading of topsoil. Repair of outlet. Disking of 161/822 borrow area.

## Testing Equipment:

None.

## Materials and Submittals:

Received 100 bales of straw for mulch.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Daily Report; Full Scale Daily Report;

by: [signature] for Lois Bigley 11/30/98

Certifying Engineer [signature]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 177

**Date:** 9-1-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm and mild w/overcast sky

**Temperature:** 60-70 **Cloud Cover:** Overcast **Precipitation:**

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Site Restoration – PSG continued site restoration around the cap area; continuing to work counter clockwise around the southwest end, grading, clean-up and placing topsoil over the swale area on the east site. The ditchline on the southeast side of the site was cleared, old silt fence removed, and a row of new silt fence installed. Woodland Farm Nursery, PSG landscaping subcontractor, began broadcasting seed on the west slope working from south to north up the slope. Seed and fertilizer are broadcast by a hand spreader pail; the area is hand raked to embed the seed ½ to ¼ inches, and erosion matting placed over the area secured by wooden pegs. The west side slope from approximate station 1+80 to station 6+00 was seeded, fertilized, and covered with erosion matting.

## Equipment and Personnel:

Dozer – 10 hrs; Volvo wheel loader – 10 hrs; tractor w/pulverizer/roller – 6 hrs.

## Inspection and Observations:

The SW outlet was completed and repaired today; no discharge was noticed at the end of the drain field today. MK – observed restoration activities by PSG. MK – observed seeding of side slopes by Woodland Farm Nursery. MK – confirmed seed mix and percent of PLS per specification. MK – confirmed that fertilizer 12-12-12 and erosion matting is North American Green SC 150 both in accordance with specification. MK – verified that erosion matting was delivered in protective wrap and stored from damage per specifications. MK – confirmed Woodland Farm Nursery used wooden pegs to secure the erosion matting at manufacturers recommend spacing. All material meeting specification requirements.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: [illegible] for Lois Bigley 11/30/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 178

**Date:** 9-2-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Morning fog, sunny

**Temperature:** 60-80s **Cloud Cover:** Foggy **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Site Restoration – PSG continued site restoration around the cap area; continuing to work along the east side, grading, clean-up and placing topsoil over the disturbed area using a JD LGP dozer and wheel loader. A thin layer of #53 stone and crush limestone was placed at the access and entrance roads of the DBG. Woodland Farm Nursery, PSG landscaping subcontractor, seeded, fertilized, and mulched the 161/822 borrow area. The fertilizing, seeding, and placement of the erosion matting counter clockwise around the 3:1 side slope from the NW and up around NE side and starting down the SE side was continued by Woodland Farm Nursery.

## Equipment and Personnel:

Dozer – 4 hrs; Volvo wheel loader – 4 hrs; tractor w/pulverizer/roller - 0 hrs; straw blower – 3 hrs.

## Inspection and Observations:

Collected water samples for EPD from SW outlet. Final walk-down with ROICC and EPD has been scheduled for 9/4/98 at 0830. NE spur of access road was placed slightly south of the designated area. MK – observed site restoration activities including: grading, topsoil placement, spreading of gravel, and seeding. MK – confirmed rate of mulch at approximately 2000 lb. Per acre. MK – verified straw for mulching is free from mold and other detrimental material, and from this year's cutting.

## Testing Equipment:

None.

## Materials and Submittals:

Received 80 bales of straw, three loads of #53 stone.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: Kiler Olivil for Lois Brigley 11/30/98

Certifying Engineer Kiler Olivil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 179

**Date:** 9-3-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm

**Temperature:** 50-80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Site Restoration – PSG continued miscellaneous site restoration including: packing trailer, touch-ups, and gathering trash. A thin layer of #53 stone and crushed limestone was placed at the access and entrance roads of the DBG. Woodland Farm Nursery, PSG landscaping subcontractor, seeded, fertilizer, mulched, and rolled the top slope of the DBG cap; completed seeding, fertilizing, and matting the majority of the remaining 3:1 side slope; seeded, mulched, and matted the entrance ditchline; and began preparing the area around the cap for seeding.

## Equipment and Personnel:

Dozer – 2 hrs; Volvo wheel loader – 0 hrs; tractor – 4 hrs; straw blower – 4 hrs.

## Inspection and Observations:

MK – observed the site restoration and seeding activities. No discrepancies to report. MK – confirmed mulch material is straw for mulching is from this years cutting and free from mold and other detrimental material.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: [illegible] for Lois Bigley 11/30/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report #180

**Date:** 9-4-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, warm and mild

**Temperature:** 60-80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Site Restoration. PSG continued miscellaneous clean-up and demobilization. Woodland Farm Nursery completed placing and tacking erosion matting on cap side slopes and along the ditchline. Using a 500 gallon Finn Hydro-seeded and an 8,000 gallon tanker truck with pump, hose, and nozzle, PSG and Woodland Nursery watered both the 161/822 borrow area and the cap area of the DBG. Office trailer was demobilized.

## Equipment and Personnel:

Dozer – 0 hrs; Volvo wheel loader – 0 hrs; tractor – 4 hrs; straw blower – 0 hrs; 8,000 gal tanker – 11 hrs; hydro seeder – 6 hrs.

1 Superintendent: 12 hrs. 1 H.S: 12 hrs.

## Inspection and Observations:

MK – observed site restoration and seeding activities. The disturbed area outside the cap area was seeded, fertilized, but not mulched. EPD/ROICC/MK – performed final walk-down of the DBG and 161/822 borrow area; other than the following completion items, no additional punch list items were denoted: 1. Complete seeding and mulching; 2. Demobilize equipment and office trailer; 3. Establish vegetation growth. MK – verified through random spot checks that water penetrated to a minimum of one-inch.

## Testing Equipment:

None.

## Materials and Submittals:

Woodland Nursery – received 85 bales of straw.

## Approvals/Problems/Corrective Action:

Issued deficiency DBG-DEF-006 per specification area to be seeded and mulched the same day. Corrective action shall consist of completion of mulching and use-as-is provided seed germinates and vegetation is established or else the subcontractor re-seeds area at no additional cost to the contractor.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report; Site Conditions Inspection Checklist; Daily Report

by: [illegible] for Lois Bagley 11/30/98

Certifying Engineer [illegible]

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 181

**Date:** 9-5-98 **Location:** NSWC Crane **Unit:** SWMU 02/11
**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.
**Weather:** Sunny, warm, mild
**Temperature:** 60-80s **Cloud Cover:** 0 **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

Site Restoration. Woodland Farm Nursery mulched and crimped straw over the disturbed area outside the cap area at the DBG using a straw blower and a disc pulled by a small farm tractor.

## Equipment and Personnel:

Dozer – 0 hrs; Volvo wheel loader – 0 hrs; tractor – 5 hrs; straw blower – 5 hrs; 8,000 gal. Tanker – 0 hrs; hydro seeder – 0 hrs.
1 Superintendent: 5 hrs. 1 H.S: 5 hrs.

## Inspection and Observations:

MK – confirmed mulch of disturbed area completed.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

DBG-DEF-006 – completed mulching and use-as-is provided vegetative growth is established or else the subcontractor re-seeds area at no additional cost to the contractor.

## Supporting Documentation:

Engineer's Daily Report; Daily Inspection Report; Contractor Production Report; Contractor Quality Control Report

by: Kilen O'Neil for Louis Bigley 11/30/98
Certifying Engineer Kilen O'Neil

Dye Burial Grounds Interim Measures Cap Construction

# Daily Summary Report

Report # 182

**Date:** 9-8-98 **Location:** NSWC Crane **Unit:** SWMU 02/11

**For:** U.S. Navy, SouthDiv **By:** Morrison Knudsen Corp.

**Weather:** Sunny, partly cloudy

**Temperature:** 70s **Cloud Cover:** Partly cloudy **Precipitation:** 0

## Meeting Held/Action Recommended or Taken:

None.

## Construction Activity:

No field activity today. Remaining items: Demobilize equipment. Water seed; established vegetation.

## Equipment and Personnel:

Dozer – 0 hrs; Volvo wheel loader – 0 hrs; tractor – 0 hrs; straw blower – 0 hrs.

## Inspection and Observations:

None.

## Testing Equipment:

None.

## Materials and Submittals:

None.

## Approvals/Problems/Corrective Action:

None.

## Supporting Documentation:

Contractor Production Report; Contractor Quality Control Report

by: [signature] for Lois Bigley 11/23/98

Certifying Engineer [signature]

Interim Measures Completion Report for
Construction of Cap System at
SWMU 02/11 – Dye Burial Ground

NSWC Crane
Crane, Indiana

Unit Identification Code: N00164
Contract No. N62467-93-D-1106

**VOLUME II OF II**
**APPENDIX E – APPENDIX N**

December 1999

Revision 0

**Southern Division**
**Naval Facilities Engineering Command**
**North Charleston, South Carolina**
**29419-9010**

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# LABORATORY SOIL TEST RESULTS

## APPENDIX E
## LABORATORY SOIL TEST RESULTS

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## Initial and Follow-up Construction, Final Cover Soil, and Topsoil Test Results

**PHILIP**
ENVIRONMENTAL

Industrial Services Group
Midwest Region

August 19, 1998
Project 18328

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Dear Mr. McCumbers

Lois J Bigley 08/21/98

Lois J. Bigley 08/21/98
Approved as noted

Approval pending acceptable analytical sample results - On 08-21-98 Both MK & the EPD accepted analytical due to the natural high arsnic levels in the area.

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Submittal No. 072**

**The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,**

| **Item No.** | **Description** | **Section No.** |
|---|---|---|
| 1-120 | Topsoil Source | 02200(2.1)(A) |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Donald Flowers

Donald L. Flowers,
Project Manager

cc: D. Beall

PHILIP ENVIRONMENTAL SERVICES CORPORATION
210 West Sand Bank Road • P.O. Box 230 • Columbia, IL 62236-0230
(618) 281-7173 • (800) 733-7173 • Fax (618) 281-5120

**PHILIP**
ENVIRONMENTAL

Industrial Services Group
Midwest Region

DBC – 55
August 19, 1998
Project 18328

Mr. W.D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

Pursuant to the Contract Specifications, Section 02200, Part 2.1, A, Philip is providing the following information for the source of topsoil to be used for this project. Abrams and Hawkins will supply the topsoil. They will be shipping the material from their facility near Graysville, Indiana. The topsoil meets the minimum 5% organics according to the Contract Specifications. A sample of the material has already been provided to the MK Engineer. If you have any questions regarding this matter, please call me at (800) 733-7173.

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Donald Flowers

Donald L. Flowers,
Project Manager

Abram and Hawkins
PO Box 390
Sullivan Indiana 47882
Phone# 812-847-7525

cc: D. Beall

The topsoil has been strip from an underlying limestone source. Abram and Hawkins is both owner and supplier of the Topsoil.

PHILIP ENVIRONMENTAL SERVICES CORPORATION
210 West Sand Bank Road • P.O. Box 230 • Columbia, IL 62236-0230
(618) 281-7173 • (800) 733-7173 • Fax (618) 281-5120

Morrison Knudsen Corporation
NSWC Crane
DO #4324-0009

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

August 28, 1998
REPORT #122

Activity:

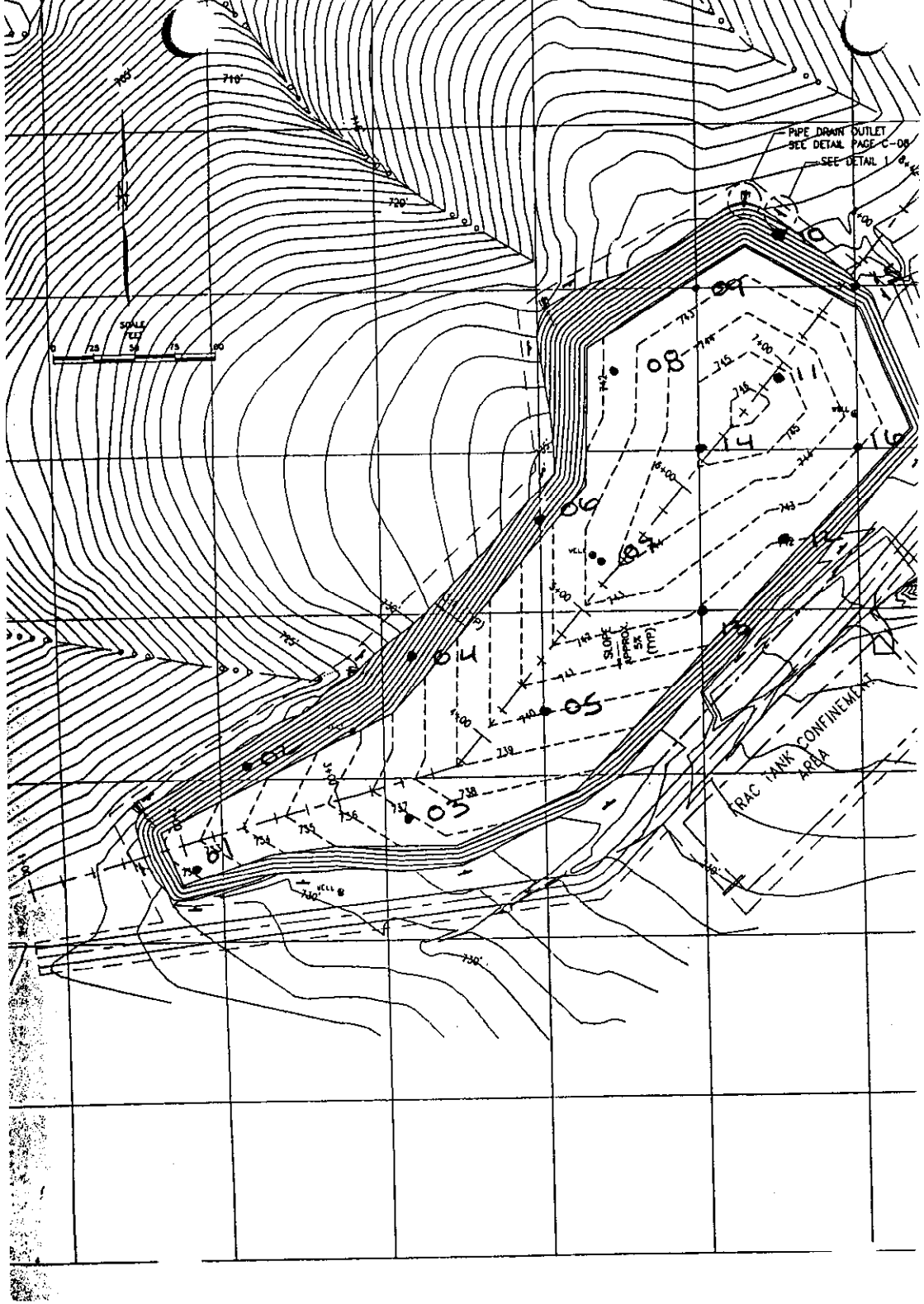
- 27" Soil Cover Layer - A three inch topsoil lift covering the cap was completed by PSG, finishing the 27 inch soil layer. Using a JD 550 dozer, the last three loads of topsoil from Abram & Hawkins, the approved off-site source, was spread over the ramp area on the east side of the cap. MSE cross-section surveyed the cap area for as-built conditions. To level and smooth the area, PSG graded the cap area.
- Site Restoration - PSG continues site grading, clean-up and restoration. The area near N1311500 E304930 was cleared of trash, graded, and covered with topsoil. A stockpile of topsoil was placed on the east side of the site near the FRAC tank storage area for placement around the cap area for disturbed areas outside the cap footprint; eight loads of topsoil were used.

Inspection:

- PSG - graded topsoil to final grade using set grade stakes.
- MSE - cross-section surveyed the finish grade to verify proper elevation and contour of the cap.
- MK - observed placement and spreading of topsoil both on the cap area and outside the cap footprint.
- MK - Verified depth of topsoil for topsoil cover material over the cap area with 16 random spot checks. (See attached sheet)

Attachments: 1

Signature/Date: Lois J. Bigley 08/28/98




Random Topsoil
Depth Check

01 - 3 1/8"
02 - 4 1/4"
03 - 3 1/8"
04 - 3 3/4"
05 - 4 1/4"
06 - 4 1/2"
07 - 3 1/4"
08 - 3 1/8"
09 - 3 3/4"
10 - 3 1/2"
11 - 4 "
12 - 3 1/2"
13 - 4 1/4"
14 - 3 1/4"
15 - 3 1/4"
16 - 3 1/2"

NSWC Crane
SWMU 02/11
Dye Burial Ground Interim Measures Cap

# Topsoil Analytical Sample Results

# Abram & Hawkins Borrow Source

Data File: /chem/i.i/i980817a.b/i28414.d
Report Date: 18-Aug-1998 10:35

SWOK/AATS

TARGET COMPOUNDS

Client Name:
Client Sample ID: NSWC-02/11-BP3
Sample Location:
Lab Sample ID: 35252.01
Sample Type: SOIL
Analysis Type: VOA
Data Type: MS DATA
Misc Info: MS326**INST:I*MKF-OH*35252.01*6.41G

Client SDG: i980817a.b
Sample Date:
Sample Point:
Date Received:
Quant Type: ISTD
Level: LOW

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/KG) ug/Kg | Q |
|---|---|---|---|
| 75-71-8 | DICHLORODIFLUOROMETHANE | 3.90 | U |
| 74-87-3 | CHLOROMETHANE | 3.90 | U |
| 75-01-4 | VINYL CHLORIDE | 3.90 | U |
| 74-83-9 | BROMOMETHANE | 3.90 | U |
| 75-00-3 | CHLOROETHANE | 3.90 | U |
| 75-69-4 | TRICHLOROFLUOROMETHANE | 3.90 | U |
| 75-35-4 | 1 1-DICHLOROETHENE | 3.90 | U |
| 75-09-2 | METHYLENE CHLORIDE | 16.63 | |
| 156-60-5 | trans-1 2-DICHLOROETHENE | 3.90 | U |
| 75-34-3 | 1 1-DICHLOROETHANE | 3.90 | U |
| 594-20-7 | 2 2-DICHLOROPROPANE | 3.90 | U |
| 156-59-2 | cis-1 2-DICHLOROETHENE | 3.90 | U |
| 74-97-5 | BROMOCHLOROMETHANE | 3.90 | U |
| 67-66-3 | CHLOROFORM | 3.90 | U |
| 71-55-6 | 1 1 1-TRICHLOROETHANE | 3.90 | U |
| 56-23-5 | CARBON TETRACHLORIDE | 3.90 | U |
| 563-58-6 | 1 1-DICHLOROPROPENE | 3.90 | U |
| 71-43-2 | BENZENE | 3.90 | U |
| 107-06-2 | 1 2-DICHLOROETHANE | 3.90 | U |
| 79-01-6 | TRICHLOROETHENE | 3.90 | U |
| 78-87-5 | 1 2-DICHLOROPROPANE | 3.90 | U |
| 74-95-3 | DIBROMOMETHANE | 3.90 | U |
| 75-27-4 | BROMODICHLOROMETHANE | 3.90 | U |
| 108-88-3 | TOLUENE | 3.90 | U |
| 79-00-5 | 1 1 2-TRICHLOROETHANE | 3.90 | U |
| 127-18-4 | TETRACHLOROETHENE | 3.90 | U |
| 142-28-9 | 1 3-DICHLOROPROPANE | 3.90 | U |
| 124-48-1 | DIBROMOCHLOROMETHANE | 3.90 | U |
| 106-93-4 | 1 2-DIBROMOETHANE | 3.90 | U |
| 108-90-7 | CHLOROBENZENE | 3.90 | U |
| 630-20-6 | 1 1 1 2-TETRACHLOROETHANE | 3.90 | U |
| 100-41-4 | ETHYL BENZENE | 3.90 | U |
| 13-302-07 | m,p-XYLENES | 3.90 | U |
| 95-47-6 | o-XYLENE | 3.90 | U |
| 100-42-5 | STYRENE | 3.90 | U |
| 75-25-2 | BROMOFORM | 3.90 | U |
| 98-82-8 | ISOPROPYLBENZENE | 3.90 | U |
| 108-86-1 | BROMOBENZENE | 3.90 | U |
| 96-18-4 | 1 2 3-TRICHLOROPROPANE | 3.90 | U |

Data File: /chem/i.i/i980817a.b/i28414.d
Report Date: 18-Aug-1998 10:35

SWOK/AATS

TARGET COMPOUNDS

Client Name:
Client Sample ID: NSWC-02/11-BP3
Sample Location:
Lab Sample ID: 35252.01
Sample Type: SOIL
Analysis Type: VOA
Data Type: MS DATA
Misc Info: MS326**INST:I*MKF-OH*35252.01*6.41G

Client SDG: i980817a.b
Sample Date:
Sample Point:
Date Received:
Quant Type: ISTD
Level: LOW

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/KG) ug/Kg | Q |
|---|---|---|---|
| 79-34-5 | 1 1 2 2-TETRACHLOROETHANE | 3.90 | U |
| 103-65-1 | n-PROPYLBENZENE | 3.90 | U |
| 95-49-8 | 2-CHLOROTOLUENE | 3.90 | U |
| 106-43-4 | 4-CHLOROTOLUENE | 3.90 | U |
| 108-67-8 | 1 3 5-TRIMETHYLBENZENE | 3.90 | U |
| 98-06-6 | tert-BUTYLBENZENE | 3.90 | U |
| 95-63-6 | 1 2 4-TRIMETHYLBENZENE | 3.90 | U |
| 135-98-8 | sec-BUTYLBENZENE | 3.90 | U |
| 541-73-1 | 1 3-DICHLOROBENZENE | 3.90 | U |
| 106-46-7 | 1 4-DICHLOROBENZENE | 3.90 | U |
| 99-87-6 | p-ISOPROPYLTOLUENE | 3.90 | U |
| 95-50-1 | 1 2-DICHLOROBENZENE | 3.90 | U |
| 104-51-8 | n-BUTYLBENZENE | 3.90 | U |
| 96-12-8 | 1 2-DIBROMO-3-CHLOROPROPANE | 3.90 | U |
| 120-82-1 | 1 2 4-TRICHLOROBENZENE | 3.90 | U |
| 91-20-3 | NAPHTHALENE | 3.90 | U |
| 87-68-3 | HEXACHLOROBUTADIENE | 3.90 | U |
| 87-61-6 | 1 2 3-TRICHLOROBENZENE | 3.90 | U |
| 540-59-0 | 1,2-DICHLOROETHENE(total) | 3.90 | U |
| 1330-20-7 | XYLENES(total) | 3.90 | U |
| 1868-53-7 | DIBROMOFLUOROMETHANE | 38.18 | |
| 2037-26-5 | TOLUENE-d8 | 38.05 | |
| 460-00-4 | 4-BROMOFLUOROBENZENE | 37.21 | |
| 17060-07-0 | 1,2-DICHLOROETHANE-d4 | 39.44 | |

Data File: /chem/u.i/u980817a.b/u15996.d
Report Date: 18-Aug-1998 10:39



SWOK/AATS

TARGET COMPOUNDS

Client Name:
Client Sample ID: NSWC-TB081398
Sample Location:
Lab Sample ID: 35252.02
Sample Type: WATER
Analysis Type: VOA
Data Type: MS DATA
Misc Info: MS326**INST:U*MKF-OH*35252.02*5ML

Client SDG: u980817a.b
Sample Date:
Sample Point:
Date Received: 08/12/98
Quant Type: ISTD
Level: LOW

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/KG) ug/L | Q |
|---|---|---|---|
| 75-71-8 | DICHLORODIFLUOROMETHANE | 5.00 | U |
| 74-87-3 | CHLOROMETHANE | 5.00 | U |
| 75-01-4 | VINYL CHLORIDE | 5.00 | U |
| 74-83-9 | BROMOMETHANE | 5.00 | U |
| 75-00-3 | CHLOROETHANE | 5.00 | U |
| 75-69-4 | TRICHLOROFLUOROMETHANE | 5.00 | U |
| 75-35-4 | 1 1-DICHLOROETHENE | 5.00 | U |
| 75-09-2 | METHYLENE CHLORIDE | 5.00 | U |
| 156-60-5 | trans-1 2-DICHLOROETHENE | 5.00 | U |
| 75-34-3 | 1 1-DICHLOROETHANE | 5.00 | U |
| 594-20-7 | 2 2-DICHLOROPROPANE | 5.00 | U |
| 156-59-2 | cis-1 2-DICHLOROETHENE | 5.00 | U |
| 74-97-5 | BROMOCHLOROMETHANE | 5.00 | U |
| 67-66-3 | CHLOROFORM | 5.00 | U |
| 71-55-6 | 1 1 1-TRICHLOROETHANE | 5.00 | U |
| 56-23-5 | CARBON TETRACHLORIDE | 5.00 | U |
| 563-58-6 | 1 1-DICHLOROPROPENE | 5.00 | U |
| 71-43-2 | BENZENE | 5.00 | U |
| 107-06-2 | 1 2-DICHLOROETHANE | 5.00 | U |
| 79-01-6 | TRICHLOROETHENE | 5.00 | U |
| 78-87-5 | 1 2-DICHLOROPROPANE | 5.00 | U |
| 74-95-3 | DIBROMOMETHANE | 5.00 | U |
| 75-27-4 | BROMODICHLOROMETHANE | 5.00 | U |
| 108-88-3 | TOLUENE | 5.00 | U |
| 79-00-5 | 1 1 2-TRICHLOROETHANE | 5.00 | U |
| 127-18-4 | TETRACHLOROETHENE | 5.00 | U |
| 142-28-9 | 1 3-DICHLOROPROPANE | 5.00 | U |
| 124-48-1 | DIBROMOCHLOROMETHANE | 5.00 | U |
| 106-93-4 | 1 2-DIBROMOETHANE | 5.00 | U |
| 108-90-7 | CHLOROBENZENE | 5.00 | U |
| 630-20-6 | 1 1 1 2-TETRACHLOROETHANE | 5.00 | U |
| 100-41-4 | ETHYL BENZENE | 5.00 | U |
| 13-302-07 | m,p-XYLENES | 5.00 | U |
| 95-47-6 | o-XYLENE | 5.00 | U |
| 100-42-5 | STYRENE | 5.00 | U |
| 75-25-2 | BROMOFORM | 5.00 | U |
| 98-82-8 | ISOPROPYLBENZENE | 5.00 | U |
| 108-86-1 | BROMOBENZENE | 5.00 | U |
| 96-18-4 | 1 2 3-TRICHLOROPROPANE | 5.00 | U |

ta File: /chem/u.i/u980817a.b/u15996.d
port Date: 18-Aug-1998 10:39

SWOK/AATS

TARGET COMPOUNDS

lient Name:
lient Sample ID: NSWC-TB081398
ample Location:
ab Sample ID: 35252.02
ample Type: WATER
nalysis Type: VOA
ata Type: MS DATA
isc Info: MS326**INST:U*MKF-OH*35252.02*5ML

Client SDG: u980817a.b
Sample Date:
Sample Point:
Date Received: 08/12/98
Quant Type: ISTD
Level: LOW

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/KG) ug/L | Q |
|---|---|---|---|
| 79-34-5 | 1 1 2 2-TETRACHLOROETHANE | 5.00 | U |
| 103-65-1 | n-PROPYLBENZENE | 5.00 | U |
| 95-49-8 | 2-CHLOROTOLUENE | 5.00 | U |
| 106-43-4 | 4-CHLOROTOLUENE | 5.00 | U |
| 108-67-8 | 1 3 5-TRIMETHYLBENZENE | 5.00 | U |
| 98-06-6 | tert-BUTYLBENZENE | 5.00 | U |
| 95-63-6 | 1 2 4-TRIMETHYLBENZENE | 5.00 | U |
| 135-98-8 | sec-BUTYLBENZENE | 5.00 | U |
| 541-73-1 | 1 3-DICHLOROBENZENE | 5.00 | U |
| 106-46-7 | 1 4-DICHLOROBENZENE | 5.00 | U |
| 99-87-6 | p-ISOPROPYLTOLUENE | 5.00 | U |
| 95-50-1 | 1 2-DICHLOROBENZENE | 5.00 | U |
| 104-51-8 | n-BUTYLBENZENE | 5.00 | U |
| 96-12-8 | 1 2-DIBROMO-3-CHLOROPROPANE | 5.00 | U |
| 120-82-1 | 1 2 4-TRICHLOROBENZENE | 5.00 | U |
| 91-20-3 | NAPHTHALENE | 5.00 | U |
| 87-68-3 | HEXACHLOROBUTADIENE | 5.00 | U |
| 87-61-6 | 1 2 3-TRICHLOROBENZENE | 5.00 | U |
| 1868-53-7 | DIBROMOFLUOROMETHANE | 50.98 | |
| 2037-26-5 | TOLUENE-d8 | 44.28 | |
| 460-00-4 | 4-BROMOFLUOROBENZENE | 47.87 | |
| 17060-07-0 | 1,2-DICHLOROETHANE-d4 | 53.82 | |

# SOUTHWEST LABORATORY OF OKLAHOMA
## GAS/LIQUID CHROMATOGRAPHY LABORATORY
## ACID HERBICIDES BY SW-846,METHOD 8150

| | |
|---|---|
| CLIENT | mkf-oh |
| CLIENT SAMPLE ID | NSWC-02/11-BP3 |
| SWOK SAMPLE ID | 35252.01 |
| FILENAME | 7_012088.D |
| SAMPLE MATRIX | SOIL |
| AMT. EXTRACTED | 50 G |
| FINAL EXT.VOL. | 10 mL |
| GPC CLEANUP | NO |
| % MOISTURE | 14 |
| DILUTION FACTOR | 1 |
| DATE RECEIVED | 08/14/98 |
| DATE EXTRACTED | 08/17/98 |
| DATE ANALYZED | 08/19/98 |
| REPORT DATE | 08/19/98 |

QUANTITATION REPORT

| HERBICIDE | QUANTITATION LIMIT (ug/Kg) | AMT.FOUND (ug/Kg) | FLAG |
|---|---|---|---|
| 2,4-D | 81 | 81 | U |
| 2,4,5-TP (SILVEX) | 12 | 12 | U |
| 2,4,5-T | 12 | 12 | U |
| Dinoseb | 23 | 23 | U |

SURROGATE - DCCA %RECOVERY= 102

SURROGATE SPIKED (ug/Kg): 174
DCAA SURROGATE RECOVERY LIMITS (18-94%)

FLAG DEFINITIONS
- U– NOT DETECTED ABOVE QUANTITATION LIMIT
- B– COMPOUND FOUND IN BLANK
- J– ESTIMATED VALUE(BELOW QUANTITAION LIMIT)
- D– SURROGATE DILUTED OUT SAMPLE RUN AT SECONDARY DILUTION
- I– NOT QUANTITATIBLE DUE TO MATRIX INTERFERENCE

**preliminary data**

SOUTHWEST LABORATORY OF OKLAHOMA
GAS CHROMATOGRAPHY LABORATORY

| | | |
|---|---|---|
| CLIENT | MKF-OH | |
| CLIENT SAMPLE ID | NSWC-02/11-BP3 | |
| SWOK SAMPLE ID | 35252.01 | |
| FILENAME | 5_004142.D | |
| METHOD | SW-846 8140 | |
| SAMPLE MATRIX | SOIL | |
| PERCENT MOISTURE | 14 | |
| SAMPLE AMOUNT | 30 | g |
| FINAL VOLUME | 10 | mL |
| DILUTION FACTOR | 1 | |
| DATE RECEIVED | 08/14/98 | |
| DATE EXTRACTED | 08/17/98 | |
| DATE ANALYZED | 08/18/98 | |
| DATE REPORTED | 08/19/98 | |

ORGANOPHOSPHORUS PESTICIDE QUANTITATION REPORT

| ORGANOPHOSPHOROS PESTICIDE | QUANTITATION LIMIT (ug/Kg) | AMT FOUND | FLAG |
|---|---|---|---|
| Dichlorvos | 99 | 99 | U |
| Mevinphos | 174 | 174 | U |
| Demeton S | 110 | 110 | U |
| Ethoprop | 198 | 198 | U |
| Naled | 349 | 349 | U |
| Phorate | 128 | 128 | U |
| Diazinon | 221 | 221 | U |
| Disulfoton | 140 | 140 | U |
| Parathion-methyl | 21 | 21 | U |
| Ronnel | 128 | 128 | U |
| Fenthion | 80 | 80 | U |
| Chlorpyrifos | 115 | 115 | U |
| Trichloroanate | 110 | 110 | U |
| Stirophos | 663 | 663 | U |
| Tokuthion | 186 | 186 | U |
| Merphos | 174 | 174 | U |
| Fensulfothion | 453 | 453 | U |
| Bolstar | 107 | 107 | U |
| Azinphos-methyl | 494 | 494 | U |
| Coumaphos | 581 | 581 | U |

SURROGATE RECOVERY: (ETHION) 63% ETHION SURR LIMITS (36 -134)
ETHION SPIKED (ug/Kg) : 155

FLAG DEF: U - NOT DETECTED ABOVE QUANTITATION LIMIT
B - COMPOUND FOUND IN BLANK
J - ESTIMATED VALUE (BELOW QUANT LIMIT OR ABOVE LINEAR RANGE)
D - SURROGATE OR MATRIX SPIKE DILUTED OUT SAMPLE RUN AT SECONDARY DILUTION
I - SURROGATE NOT QUANTITATIOBLE DUE TO MATRIX INTERFERENCE.

**PRELIMINARY DATA**

F:\QPW\OP\TAB\SOIL\860_S.WB2

Data File: /chem/m.i/m980818a.b/m11504.d
Report Date: 19-Aug-1998 11:29

SWOK/AATS

TARGET COMPOUNDS

Client Name: MKF-OH
Client Sample ID: NSWC-02/11-BP3
Sample Location:
Lab Sample ID: 35252.01
Sample Type: SOIL
Analysis Type: SV
Data Type: MS DATA
Misc Info: MS510**INSTM*MKF-OH*35252.01*30.2G/1ML/1UL*

Client SDG: m980818a.b
Sample Date:
Sample Point:
Date Received: 08/14/98
Quant Type: ISTD
Level: LOW

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/KG) ug/Kg | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 381.18 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 381.18 | U |
| 95-57-8 | 2-Chlorophenol | 381.18 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 381.18 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 381.18 | U |
| 100-51-6 | Benzyl alcohol | 381.18 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 381.18 | U |
| 95-48-7 | 2-Methylphenol | 381.18 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 381.18 | U |
| 106-44-5 | 4-Methylphenol | 381.18 | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 381.18 | U |
| 67-72-1 | Hexachloroethane | 381.18 | U |
| 98-95-3 | Nitrobenzene | 381.18 | U |
| 78-59-1 | Isophorone | 381.18 | U |
| 88-75-5 | 2-Nitrophenol | 381.18 | U |
| 105-67-9 | 2,4-Dimethylphenol | 381.18 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 381.18 | U |
| 65-85-0 | Benzoic Acid | 1848.14 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 381.18 | U |
| 91-20-3 | Naphthalene | 381.18 | U |
| 106-47-8 | 4-Chloroaniline | 381.18 | U |
| 87-68-3 | Hexachlorobutadiene | 381.18 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 381.18 | U |
| 91-57-6 | 2-Methylnaphthalene | 381.18 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 381.18 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 381.18 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1848.14 | U |
| 120-83-2 | 2,4-Dichlorophenol | 381.18 | U |
| 91-58-7 | 2-Chloronaphthalene | 381.18 | U |
| 88-74-4 | 2-Nitroaniline | 1848.14 | U |
| 131-11-3 | Dimethylphthalate | 381.18 | U |
| 208-96-8 | Acenaphthylene | 381.18 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 381.18 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 381.18 | U |
| 99-09-2 | 3-Nitroaniline | 1848.14 | U |
| 83-32-9 | Acenaphthene | 381.18 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1848.14 | U |
| 100-02-7 | 4-Nitrophenol | 1848.14 | U |
| 132-64-9 | Dibenzofuran | 381.18 | U |

ata File: /chem/m.i/m980818a.b/m11504.d
eport Date: 19-Aug-1998 11:29

SWOK/AATS

TARGET COMPOUNDS

Client Name: MKF-OH
Client Sample ID: NSWC-02/11-BP3
Sample Location:
Lab Sample ID: 35252.01
Sample Type: SOIL
Analysis Type: SV
Data Type: MS DATA
Misc Info: MS510**INSTM*MKF-OH*35252.01*30.2G/1ML/1UL*

Client SDG: m980818a.b
Sample Date:
Sample Point:
Date Received: 08/14/98
Quant Type: ISTD
Level: LOW

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/KG) ug/Kg | Q |
|---|---|---|---|
| 84-66-2 | Diethylphthalate | 381.18 | U |
| 86-73-7 | Fluorene | 381.18 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 381.18 | U |
| 100-01-6 | 4-Nitroaniline | 1848.14 | U |
| 86-30-6 | N-Nitrosodiphenylamine | 381.18 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1848.14 | U |
| 101-55-3 | 4-Bromophenylphenylether | 381.18 | U |
| 118-74-1 | Hexachlorobenzene | 381.18 | U |
| 87-86-5 | Pentachlorophenol | 1848.14 | U |
| 85-01-8 | Phenanthrene | 381.18 | U |
| 120-12-7 | Anthracene | 381.18 | U |
| 84-74-2 | Di-n-butylphthalate | 381.18 | U |
| 206-44-0 | Fluoranthene | 381.18 | U |
| 129-00-0 | Pyrene | 381.18 | U |
| 85-68-7 | Butylbenzylphthalate | 381.18 | U |
| 56-55-3 | Benzo(a)anthracene | 381.18 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 762.35 | U |
| 218-01-9 | Chrysene | 381.18 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 381.18 | U |
| 117-84-0 | Di-n-octylphthalate | 381.18 | U |
| 205-99-2 | Benzo(b)fluoranthene | 381.18 | U |
| 207-08-9 | Benzo(k)fluoranthene | 381.18 | U |
| 50-32-8 | Benzo(a)pyrene | 381.18 | U |
| 53-70-3 | Dibenz(a,h)anthracene | 381.18 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 381.18 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 381.18 | U |
| | | 3714.47 | |
| 367-12-4 | 2-Fluorophenol | 3858.29 | E |
| 4165-62-2 | Phenol-d5 | 1453.51 | |
| 4165-60-0 | Nitrobenzene-d5 | 1628.69 | |
| 321-60-8 | 2-Fluorobiphenyl | 2559.83 | |
| 118-79-6 | 2,4,6-Tribromophenol | 1787.58 | |
| 98904-43-9 | Terphenyl-d14 | | |

1D
# PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NSWC-02/11-BP3

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: MKF-O SDG No.: 35252

Matrix: (soil/water) SOIL Lab Sample ID: 35252.01

Sample wt/vol: 30.1 (g/mL) G Lab File ID:_____

% Moisture: 14 decanted: (Y/N) N Date Received: 08/14/98

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/17/98

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 08/18/98

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 1.5 | U |
| 319-85-7 | beta-BHC | 1.5 | U |
| 319-86-8 | delta-BHC | 1.5 | U |
| 58-89-9 | gamma-BHC (Lindane) | 1.5 | U |
| 76-44-8 | Heptachlor | 1.5 | U |
| 309-00-2 | Aldrin | 1.5 | U |
| 1024-57-3 | Heptachlor epoxide | 1.5 | U |
| 959-98-8 | Endosulfan I | 1.5 | U |
| 60-57-1 | Dieldrin | 2.9 | U |
| 72-55-9 | 4,4'-DDE | 2.9 | U |
| 72-20-8 | Endrin | 2.9 | U |
| 33213-65-9 | Endosulfan II | 2.9 | U |
| 72-54-8 | 4,4'-DDD | 2.9 | U |
| 1031-07-8 | Endosulfan sulfate | 2.9 | U |
| 50-29-3 | 4,4'-DDT | 2.9 | U |
| 72-43-5 | Methoxychlor | 15 | U |
| 53494-70-5 | Endrin ketone | 2.9 | U |
| 7421-93-4 | Endrin aldehyde | 2.9 | U |
| 5103-71-9 | alpha-Chlordane | 1.5 | U |
| 5103-74-2 | gamma-Chlordane | 1.5 | U |
| 8001-35-2 | Toxaphene | 96 | U |
| 12674-11-2 | Aroclor-1016 | 38 | U |
| 11104-28-2 | Aroclor-1221 | 38 | U |
| 11141-16-5 | Aroclor-1232 | 38 | U |
| 53469-21-9 | Aroclor-1242 | 38 | U |
| 12672-29-6 | Aroclor-1248 | 38 | U |
| 11097-69-1 | Aroclor-1254 | 78 | U |
| 11096-82-5 | Aroclor-1260 | 78 | U |
| Surrogate amount spiked | | 15.47 | |

FORM I PEST

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
NSWC-02/11-BP3

Lab Name: Southwest Lab. of Oklahoma
Episode No.: 35252

Client Name: MKF-OH
Lab Sample ID: 35252.01

Matrix (aqueous/solid/leachate): solid
Sample Wt/Vol: 10.06 g or mL: g

Sample Receipt Date: 08-14-98
Initial Calibration Date: 05-04-98

Ext. Date: 08-18-98
Instrument ID: HP5972_E GC

Analysis Date: 19-AUG-98 Time: 03:04:00
GC Column:DB-5

Ext. Vol(ul): 100
Sample Data Filename: E002281#1

Inj. Vol(ul): 2.0
Blank Data Filename: E002278#1

Dilution Factor: 1
Cal. Ver. Data Filename: E002277#1

Concentration Units (ng/L or ug/Kg dry weight): ug/Kg
% Moisture: 13.59

| ANALYTE | CONCENTRATION FOUND | DETECTION LIMIT | Qual. (1) | ION ABUND. RATIO (2) | RRT (2) | CCAL RRF |
|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | * | 0.068 | U | * | * | 0.82 |
| 1,2,3,7,8-PeCDD | * | 0.072 | U | * | * | 1.35 |
| 1,2,3,4,7,8-HxCDD | * | 0.107 | U | * | * | 0.76 |
| 1,2,3,6,7,8-HxCDD | * | 0.108 | U | * | * | 0.75 |
| 1,2,3,7,8,9-HxCDD | * | 0.100 | U | * | * | 0.81 |
| 1,2,3,4,6,7,8-HpCDD | * | 0.091 | U | * | * | 0.75 |
| OCDD | * | 0.103 | U | * | * | 0.72 |
| 2,3,7,8-TCDF | * | 0.060 | U | * | * | 0.89 |
| 1,2,3,7,8-PeCDF | * | 0.058 | U | * | * | 1.28 |
| 2,3,4,7,8-PeCDF | * | 0.050 | U | * | * | 1.48 |
| 1,2,3,4,7,8-HxCDF | * | 0.053 | U | * | * | 1.04 |
| 1,2,3,6,7,8-HxCDF | * | 0.049 | U | * | * | 1.12 |
| 1,2,3,7,8,9-HxCDF | * | 0.053 | U | * | * | 1.05 |
| 2,3,4,6,7,8-HxCDF | * | 0.053 | U | * | * | 1.05 |
| 1,2,3,4,6,7,8-HpCDF | * | 0.031 | U | * | * | 1.43 |
| 1,2,3,4,7,8,9-HpCDF | * | 0.036 | U | * | * | 1.23 |
| OCDF | * | 0.059 | U | * | * | 1.13 |
| Total Tetra-Dioxins | * | 0.068 | | | | |
| Total Penta-Dioxins | * | 0.072 | | | | |
| Total Hexa-Dioxins | * | 0.108 | | | | |
| Total Hepta-Dioxins | * | 0.091 | | | | |
| Total Tetra-Furans | * | 0.060 | | | | |
| Total Penta-Furans | * | 0.050 | | | | |
| Total Hexa-Furans | * | 0.049 | | | | |
| Total Hepta-Furans | * | 0.031 | | | | |

(1) Qualifier U indicates not detected; The X & I indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.

(2) Ion ratios and RRTs are specified in Tables 9 and 10, Method 8280.

8280F1

ORRISON KNUDSEN CORPORATION
K-FERGUSON PLAZA
500 WEST 3RD STREET
LEVELAND, OH 44113-140

REPORT : 35252.01

REPORTED : 08/20/98

ttn: RICK PURVIS

ROJECT : NSWC CRANE
AB# : 35252.01
AMPLE #: NSWC-02/11-BP3
OCATION:
ATRIX : Soil

SAMPLED : 08/13/98
SUBMITTED: 08/14/98

%MOISTURE: 13.6

MISCELLANEOUS

| PARAMETER | RESULTS** | | UNITS | DATE PREPARED | DATE ANALYZED | REFERENCE METHOD |
|---|---|---|---|---|---|---|
| TOTAL CYANIDE | 0.25 | U | mg/kg | 08/17/98 | 08/18/98 | SW 9012A |
| TOTAL SULFIDE | 20 | U | mg/kg | | 08/17/98 | EPA 376.1 |

**RESULTS REPORTED TO A MAXIMUM OF 3 SIGNIFICANT FIGURES

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany Broken Arrow, Oklahoma 74012 Office (918) 251-2858 Fax (918) 251-2599

MORRISON KNUDSEN CORPORATION
MK-FERGUSON PLAZA
1500 WEST 3RD STREET
CLEVELAND, OH 44113-140

REPORT : 35252.01

REPORTED : 08/21/98

Attn: RICK PURVIS

PROJECT : NSWC CRANE
LAB# : 35252.01
SAMPLE #: NSWC-02/11-BP3
LOCATION:
MATRIX : Soil

SAMPLED : 08/13/98
SUBMITTED: 08/14/98

%MOISTURE: 13.6

METAL PARAMETERS REPORTED ON A DRY WEIGHT BASIS

| PARAMETER | RESULTS** | | UNITS | DATE PREPARED | DATE ANALYZED | REFERENCE METHOD |
|---|---|---|---|---|---|---|
| MERCURY | 0.037 | U | mg/kg | 08/18/98 | 08/19/98 | SW 7470A/7471A |
| ALUMINUM | 9400 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| ARSENIC | 5.3 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| ANTIMONY | 1.6 | U | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| LEAD | 12 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| BARIUM | 150 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| SELENIUM | 0.55 | U | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| BERYLLIUM | 0.59 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| THALLIUM | 1.1 | U | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| CADMIUM | 0.33 | U | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| CALCIUM | 1400 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| CHROMIUM | 12 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| COBALT | 7.1 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| COPPER | 13 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| IRON | 13000 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| MAGNESIUM | 1300 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| MANGANESE | 940 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| NICKEL | 12 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| POTASSIUM | 1000 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| SILVER | 1.1 | U | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| SODIUM | 280 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| VANADIUM | 22 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |
| ZINC | 46 | | mg/kg | 08/17/98 | 08/20/98 | SW 6010A |

**RESULTS REPORTED TO A MAXIMUM OF 3 SIGNIFICANT FIGURES

# E-2

# Initial and Follow-up Sand Drainage Layer Test Results

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 28, 1998
REPORT #097

Activity:

- Sand Drainage Layer - PSG completed placement, spreading, and grading of the six inch sand drainage layer.

  Using a JD 550 dozer, PSG tracked the entire length of the DBG cap to lightly compact the sand drainage layer once placement and grading were completed.

  An as-built survey of 25 foot center was conducted by MSE, a subcontractor for PSG. All areas out of tolerance were corrected by PSG. Average depth of sand ranged from 0.5 to 0.7 feet.

  After the MSE survey and random spot check cleared an area, PSG and EDCI began deployment, placement, and sewing of the non-woven geotextile over the sand layer. Starting at the NE end and working southwest, the panels were placed across the width of the cap per panel layout. EDCI is using TNS R70 six ounce non-woven geotextile and KemFast thread for the geotextile Type 1, filter fabric. Pursuant to the subcontractors request, heat bonding of the geotextile was approved for use however, EDCI elected to continue to sew the geotextile panels together.
- Biotic Layer - held preparatory meeting for the installation of the six inch biotic layer with geotextile cover over the -2 inch rounded gravel layer.

Inspection:

- MK - performed ten random spot checks on the sand drainage layer thickness:

| | Approximate Location | | Sand Thickness | Photographed |
|---|---|---|---|---|
| 1 | N 1311650 | E 3049200 | 5.8 | yes |
| 2 | N 1311600 | E 3049250 | 6.0 | yes |
| 3 | N 1311550 | E 3049250 | 6.2 | yes |
| 4 | N 1311550 | E 3049150 | 8.0 | |
| 5 | N 1311450 | E 3049100 | 8.0 | |
| 6 | N 1311450 | E 3049150 | 6.2 | |
| 7 | N 1311400 | E 3049100 | 6.7 | |
| 8 | N 1311450 | E 3049050 | 6.2 | |
| 9 | N 1311400 | E 3049000 | 6.7 | |
| 10 | N 1311350 | E 3048900 | 6.0 | yes |

4 of 10 areas were photographed for documentation.

- MK - observed placement, spreading, grading, and light compaction by tracking using a JD 550 dozer.
- MSE - performed a cross section of the cap area on 25 foot centers for an as-built of the sand layer.
- MK - confirmed that TNS R-70 geotextile, the approved Type 1 geotextile has all required submittals and is being deployed over the sand for the sand drainage layer.
- MK - after the survey was performed, MK approved placement of preceding layer for the DBG cap construction.
- MK - observed deployment of the first panel, GT-01, of the geotextile over the sand drainage layer on the NE end of the cap and confirmed that the panel was reasonably straight and smooth.
- MK - visually inspected the following geotextile panels and seams for rips, tears, irregularities, and continuously interlocking stitching:

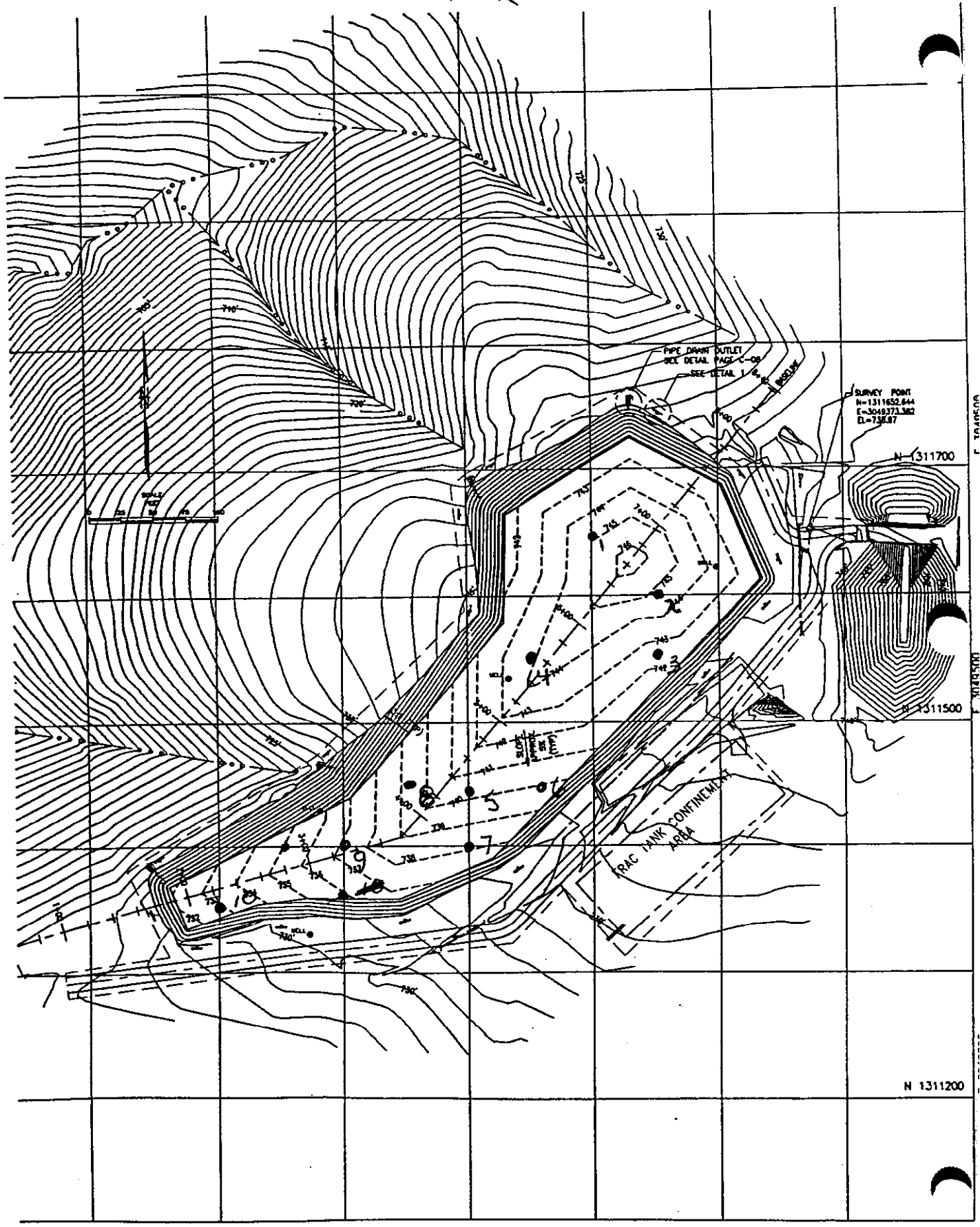
| PANEL # | ROLL # | STRIP STATION |
|---|---|---|
| GT-4 | 0992138 | 1 |
| GT-5 | 0992165 | 1 |
| GT-3 | 0992138 | 2 |
| GT-2 | 0992124 | 2 |
| GT-1 | 0992124 | 3 |
| GT-6 | 0992165 | 4 |
| GT-8 | 0992138 | 5 |
| GT-7 | 0992165 | 5 |
| GT-9 | 0991894 | 6 |
| GT-11 | 0991844 | 7 |
| GT-10 | 0991894 | 7 |
| GT-12 | 0991894 | 8 |
| GT-13 | 0991844 | 8 |
| GT-14 | 0992118 | 9 |
| GT-15 | 0991868 | 10 |
| GT-16 | 0992118 | 10 |
| GT-17 | 0991868 | 11 |

Attachments: 0

Signature/Date: Lois J. Bigley 07/28/98

60-C

Radom Sand drainage thickness check



**PHILIP**
**ENVIRONMENTAL**

Environmental Services Group
North Central Region

RECEIVED
SEP 08 1997
CRANE

September 04, 1997
Project 18328

Mr. Vernon D. Logan
Contract Administrator
Morrison Knudsen Corporation
300 Highway 361
NSWC - CTR 12
Crane, Indiana 47522

I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into Contract Number N62467-93-D-1108, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is APPROVED FOR USE.

Certified by Submittal Reviewer (signature when applicable) L. Bigley Date 9/18/97

Certified by QC Manager (signature) Lois J. Bigley Date 9/18/97

Dear Mr. Logan

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Re-Submittal No. 017A**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-47 | Drainage Layer Gradation, Permeability Sand Type - #23/24 | 02200 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Don Flowers

Donald L. Flowers,
Project Manager

TOTAL WEIGHT 519.2 GRAMS LBS. Report No. Contract No. RS 4-95

| SIEVE SIZE | ZONE CHART 3/8" 1/4" 1/2" | WEIGHT RETAINED | WEIGHT PASSING | PERCENT PASSING | ZONE WT. | SPECIFICATION SPEC. |
|---|---|---|---|---|---|---|
| 3" (75 mm) | | | | | | |
| 2 1/2" (63 mm) | | | | | | |
| 2" (50 mm) | | | | | | |
| 1 1/2" (37.5 mm) | | | | | | |
| 1" (25 mm) | | | | | | |
| 3/4" (19 mm) | | | | | | |
| 1/2" (12.5 mm) | P/F | | | | | |
| 3/8" (9.5 mm) | | | | | | |
| No. 4 (4.75 mm) | | 2.5 | 516.7 | 99.5 | | 95-100 |
| No. 8 (2.36 mm) | | 72.3 | 444.4 | 85.5 | | 80-100 |
| No. 12 (1.70 mm) | | | | | | |
| No. 16 (1.18 mm) | | 78.5 | 365.9 | 70.4 | | 50-85 |
| No. 20 (850 um) | | | | | | |
| No. 30 (600 um) | | 106.9 | 259 | 49.8 | | 25-60 |
| No. 50 (300 um) | | 202.7 | 56.3 | 10.8 | | 5-30 |
| No. 80 (180 um) | | | | | | |
| No. 100 (150 um) | | | | | | |
| No. 140 (106 um) | | 52.9 | 3.4 | .6 | | 0-10 |
| No. 200 (75 um) | | | | | | |
| No. 270 (53 um) | | 2.2 | 1.2 | .2 | | 0-3 |
| No. 325 (45 um) | | | | | | |
| PAN 1,2 | ORIGINAL | FINAL | GRAMS LOSS | % LOSS | | |
| DECANT | | | | | FM | 2.83 |

| NON-DURABLE | TOTAL WT. 3/8" UP | WT. OF NON-DUR. | % NON-DUR. |
|---|---|---|---|
| | | | |
| TOTAL CHERT | SAMPLE WT. 3/8" UP | WT. OF TOT. CHERT | % TOTAL CHERT |
| AGG. SIZE 3, 4, 57, 68, 78 | | | |
| MECH. CRUSHED | SAMPLE WT. No. 4 UP | WT. OF MECH. CRUSHED PT. | % MECH. CRUSHED |

| LONG GRADED MATERIAL | TOTAL WT. PASS. No. 4 | SAMPLE SIZE | PROPORT. FACTORS |
|---|---|---|---|
| | GM | GM | |
| TOTAL CHERT | SAMPLE WT. No. 4 UP | WT. OF TOT. CHERT | % TOTAL CHERT |
| AGG. SIZE 9, 11 | | | |
| TOTAL CRUSHED | SAMPLE WT. No. 4 UP | WT. TOTAL CRUSHED | % TOTAL CRUSHED |

ROGERS GROUP

SAMPLE FROM
TEST NO. 1901-401
LEDGES
SAMPLE DATE Mo. 8 Day 12 Yr. 97
MATERIAL Sand
SPECIFICATION
SAMPLED BY R. Campbell
MATERIAL STATUS 02 ACCEPTED 04 REJECTED 07 VISUAL 11 INFO

PLA 2613
LOCATION Greene Co
SHOT LOCATION #3
TIME SAMPLED 12:00
SP - SPEC. PROV.
SUPERINTENDENT R. Huffine
TONS REP. BY TEST 2000
PRODUCTION ✓
STOCKPILE
DELETERIOUS TESTS PERFORMED YES - 3 NO - 4
WEATHER cloudy 70°
REMARKS

QUALITY CHECKS AND CORRECTIVE ACTION

TOO FINE
TOO COARSE
CRUSHER SETTINGS
JAW SETTING
SCREEN CHANGES
SEGREGATION
CONTAMINATION
WASH SAMPLE
DRY SHAKE
RESAMPLE

#23/24
Sand

# BOWSER-MORNER, INC.

CORPORATE: 4518 Taylorsville Road • P. O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

## LABORATORY REPORT

**Report To:** Rogers Group, Inc.
Attn: Steve Roseberry
P.O. Box 849
Bloomington, IN 47402-0849

**Date** January 18, 1995
**Report No.** 000157
**W.O. No.** 105030

**Report On:** Laboratory Analyses of Two Granular Materials for the Daviess County Landfill Lateral Expansion Project

On January 16, 1995, two sand samples were submitted for laboratory analyses for the above referenced project.

Testing was performed in accordance with the following ASTM procedures as specified by the client:

ASTM D422, "Particle-Size Analysis of Soils".
ASTM D1140, "Amount of Material in Soils Finer Than the No. 200 (75-µm) Sieve".
ASTM D2434, "Permeability of Granular Soils (Constant Head)".
ASTM D4318, "Liquid Limit, Plastic Limit, and Plasticity Index of Soils".
ASTM D2487, "Classification of Soils for Engineering Purposes".

Results are summarized in Table I and detailed on the attached data sheets.

Should you have any questions, or if we may be of further service, please contact us at (513) 236-8805.

Respectfully submitted,

BOWSER-MORNER, INC.

James W. Fletcher

James W. Fletcher, Manager
Construction Materials and
Geotechnical Laboratories

JWF/cfw
000157
1-Client
1-File

*All Reports Remain The Confidential Property Of BOWSER-MORNER, And No Publication Or Distribution Of Reports May Be Made Without Our Express Written Consent, Except As Authorized By Contract. Results Contained In This Report Are Reflective Only of The Items Calibrated Or Tested. Unless Otherwise Agreed, Samples Or Specimens Will Be Discarded Or Returned At Bowser-Morner's Discretion.*

W.O. No. 105030
Report No. 000157
January 18, 1995
Page 2

## Rogers Group

### Table I

### Summary of Results

| Sample ID: | 950006 Stabilizer | 950005 23-24 Sand |
|---|---|---|
| Sieve Size | Percent Passing | |
| 1" | 100 | |
| 3/4" | 98 | |
| 1/2" | 93 | |
| 3/8" | 85 | |
| #4 | 71 | 100 |
| #10 | 55 | 80 |
| #20 | 45 | 53 |
| #40 | 31 | 22 |
| #60 | 17 | 4 |
| #100 | 12 | 0 |
| #200 | 11 | 0 |
| Gravel, %: | 30 | 0 |
| Sand, %: | 60 | 100 |
| Silt, %: | 5 | 0 |
| Clay, % (0.002mm): | 5 | 0 |
| Liquid Limit: | 26 | |
| Plastic Limit: | 18 | Non-Plastic |
| Plasticity Index: | 8 | |
| USCS Classification: | SW-SC | SP |
| Permeability, cm/sec.: | -- | 3.8 ~~$2.3 \times 10^{-1}$ cm/sec~~ |

# CONSTANT HEAD PERMEABILITY TEST

## ASTM 2434

**Date:** January 18, 1995

**Project No.:** 105030

**Client:** Rogers Group

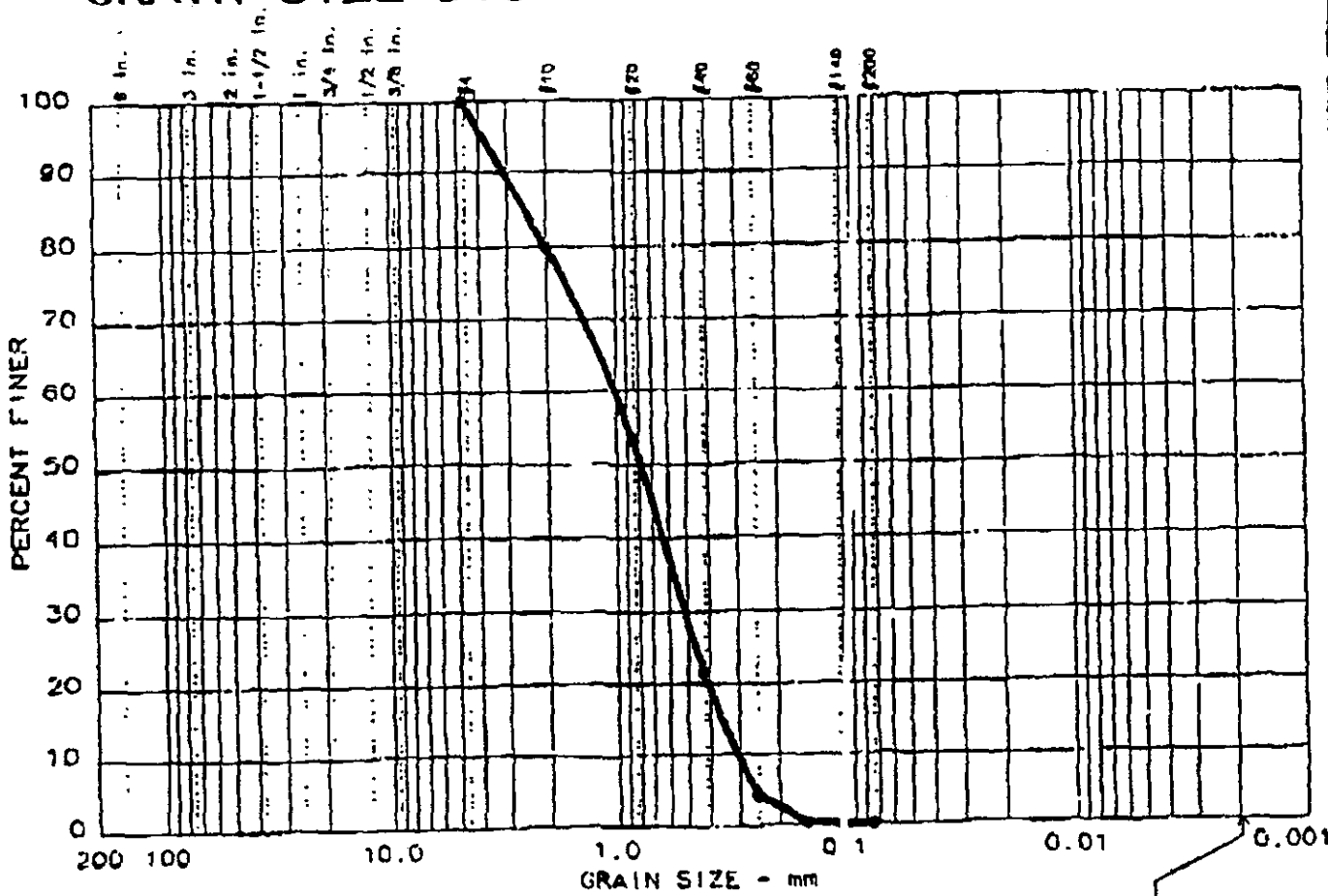
**Project:** Drainage Layer Material 950005

**Material Description:** 23-24 Sand

## SPECIMEN DATA

| | |
|---|---|
| Dimension, Inches. | |
| Height: | 6.2 |
| Diameter: | 6.0 |
| Weight, lbs.: | 11.15 |
| Dry Unit Weight, pcf: | 110.0 |
| Permeability, cm/sec., | |
| k: | 3.8 |

# GRAIN SIZE DISTRIBUTION TEST REPORT




| | Test | % +3" | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|---|---|
| • | 7 | 0.0 | 0.0 | 88.8 | 0.1 | |

| | LL | PI | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| • | | NP | 2.48 | 1.01 | 0.78 | 0.511 | 0.3560 | 0.3065 | 0.84 | 3.3 |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| • BROWN SAND | SP | |

Project No.: 105030 ROGERS GROUP
Project: DAVIESS CO. LANDFILL LATERAL EXPANSION
• Location: 950005 23-24 SAND

Date: 01-17-95

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
**BOWSER-MORNER, INC.**

Figure No. _____

## GRAIN SIZE DISTRIBUTION TEST DATA

Test No.: 7

:e: 01-17-95
›ject No.: 105030 ROGERS GROUP
›ject: DAVIESS CO. LANDFILL LATERAL EXPANSION

### Sample Data

›ation of Sample: 950005 23-24 SAND
ıple Description: BROWN SAND
:S Class: SP
SHTO Class:
Liquid limit:
Plasticity ind:x: NP

### Notes

marks:

g. No.:

### Mechanical Analysis Data

| | Initial |
|---|---|
| y sample and tare= | 741.00 |
| re = | 219.19 |
| y sample weight = | 521.81 |

re for cumulative weight retained= 0

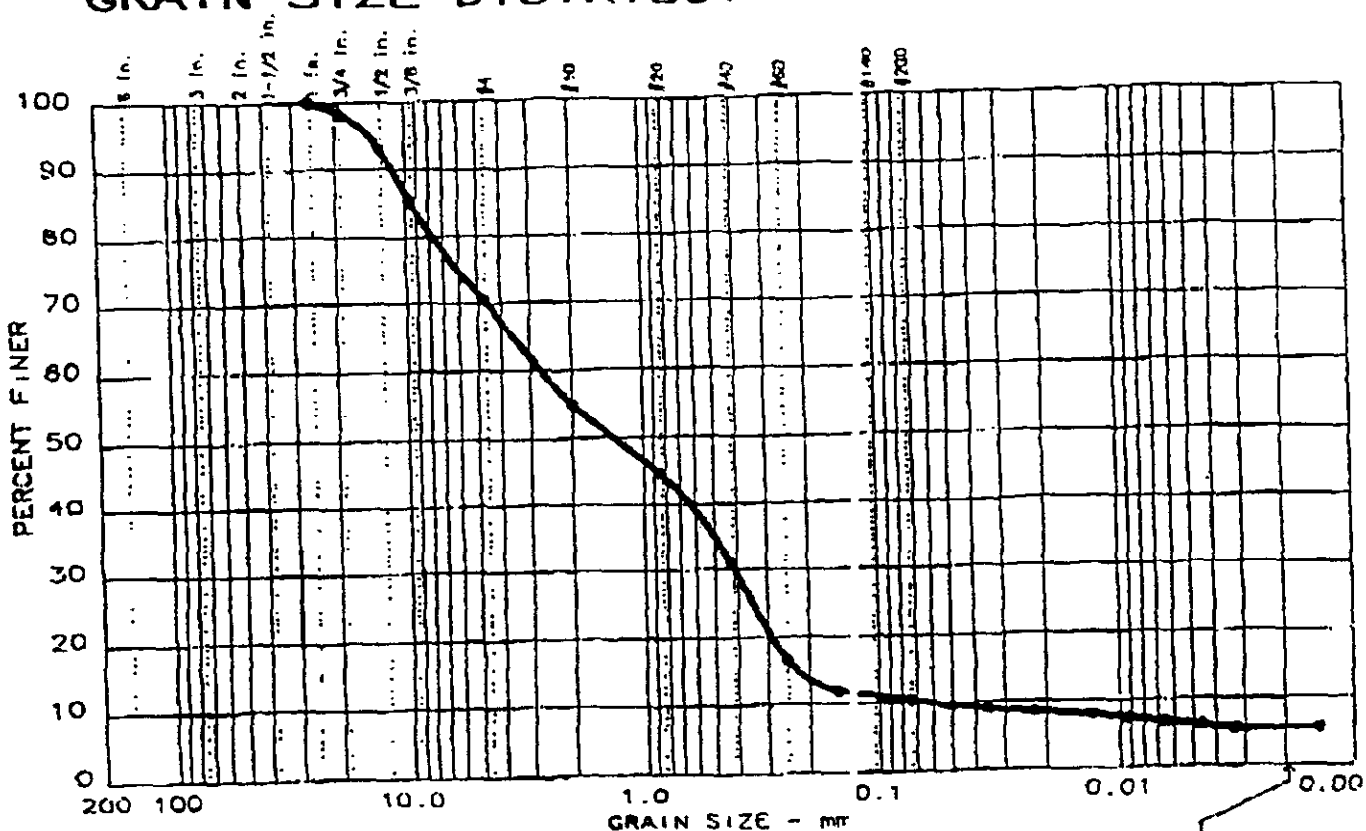
| Sieve | Cumul. Wt. retained | Percent finer |
|---|---|---|
| # 4 | 0.00 | 100.0 |
| # 10 | 105.54 | 79.8 |
| # 20 | 243.06 | 53.4 |
| # 40 | 409.78 | 21.5 |
| # 60 | 499.78 | 4.2 |
| # 100 | 519.96 | 0.4 |
| # 200 | 521.54 | 0.1 |

### Fractional Components

:avel/Sand based on #4 sieve
ınd/Fines based on #200 sieve
+ 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 99.9
FINES = 0.1

85= 2.48 D60= 1.007 D50= 0.782
30= 0.5105 D15= 0.35604 D10= 0.30655
= 0.8443 Cu = 3.2847

# GRAIN SIZE DISTRIBUTION TEST REPORT




| | Test | % +3" | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|---|---|
| ● | 8 | 0.0 | 29.5 | 60.0 | 5.1 | 5.4 |

| | LL | PI | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | 26 | 8 | 9.44 | 2.69 | 1.32 | 0.407 | 0.2213 | 0.0596 | 1.04 | 45.2 |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|---|---|---|
| ● BROWN WELL-GRADED SAND WITH CLAY AND GRAVEL | SW-SC | |

Project No.: 105030 ROGERS GROUP
Project: DAVIESS CO. LANDFILL LATERAL EXPANSION
● Location: 950008 STABILIZER

Date: 01-18-95

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

**BOWSER-MORNER, INC.**

Figure No. _____

## GRAIN SIZE DISTRIBUTION TEST DATA

Test No.: 8

e: 01-18-95
ject No.: 105030 ROGERS GROUP
ject: DAVIESS CO. LANDFILL LATERAL EXPANSION

### Sample Data

ation of Sample: 950006 STABILIZER
mple Description: BROWN WELL-GRADED SAND WITH CLAY AND GRAVEL
S Class: SW-SC Liquid limit: 26
HTO Class: Plasticity index: 8

### Notes

marks:

g. No.:

### Mechanical Analysis Data

| | Initial |
|---|---|
| y sample and tare= | 1869.80 |
| re = | 216.40 |
| mple weight = | 1653.40 |

mple split on number 10 sieve
lit sample data:
Sample and tare = 50.04 Tare = 0 Sample weight = 50.04
Cumulative weight retained tare= 0
re for cumulative weight retained= 0

| Sieve | Cumul. Wt. retained | Percent finer |
|---|---|---|
| 1 inches | 0.00 | 100.0 |
| 0.75 inches | 27.80 | 98.3 |
| 0.5 inches | 114.32 | 93.1 |
| 0.375 inches | 245.49 | 85.2 |
| # 4 | 487.40 | 70.5 |
| # 10 | 743.91 | 55.0 |
| # 20 | 9.38 | 44.7 |
| # 40 | 21.81 | 31.0 |
| # 60 | 34.76 | 16.8 |
| # 100 | 39.04 | 12.1 |
| # 200 | 40.47 | 10.5 |

### Hydrometer Analysis Data

eparation sieve is number 10
ercent -# 10 based on complete sample= 55.0
eight of hydrometer sample: 50.04
ygroscopic moisture correction:
t weight & tare = 52.78

ɔry weight & tare = 52.02
Tare = 29.94
Hygroscopic moisture= 3.4 %
Iculated biased weight= 87.94
tomatic temperature correction
Composite correction at 20 deg C =-5

niscus correction only= 0
ecific gravity of solids= 2.65
ecific gravity correction factor= 1.000
drometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

| Elapsed time, min | Temp, deg C | Actual reading | Corrected reading | K | Rm | Eff. depth | Diameter mm | Percent finer |
|---|---|---|---|---|---|---|---|---|
| 1.0 | 22.0 | 13.0 | 8.4 | 0.0133 | 13.0 | 14.2 | 0.0501 | 9.6 |
| 2.0 | 22.0 | 12.5 | 7.9 | 0.0133 | 12.5 | 14.2 | 0.0355 | 9.0 |
| 5.0 | 22.0 | 12.0 | 7.4 | 0.0133 | 12.0 | 14.3 | 0.0225 | 8.4 |
| 15.0 | 22.0 | 11.5 | 6.9 | 0.0133 | 11.5 | 14.4 | 0.0130 | 7.9 |
| 30.0 | 21.9 | 11.0 | 6.4 | 0.0133 | 11.0 | 14.5 | 0.0093 | 7.3 |
| 60.0 | 21.7 | 10.5 | 5.8 | 0.0134 | 10.5 | 14.6 | 0.0066 | 6.6 |
| 123.0 | 21.4 | 10.0 | 5.3 | 0.0134 | 10.0 | 14.7 | 0.0046 | 6.0 |
| 240.0 | 21.5 | 9.5 | 4.8 | 0.0134 | 9.5 | 14.7 | 0.0033 | 5.4 |
| 1331.0 | 21.5 | 9.5 | 4.8 | 0.0134 | 9.5 | 14.7 | 0.0014 | 5.4 |

Fractional Components

vel/Sand based on #4 sieve
nd/Fines based on #200 sieve
+ 3 in. = 0.0 % GRAVEL = 29.5 % SAND = 60.0
SILT = 5.1 % CLAY = 5.4

35= 9.44 D60= 2.692 D50= 1.318
30= 0.4074 D15= 0.22131 D10= 0.05957
c = 1.0351 Cu = 45.1856

# E-3

# Biotic Layer Test Results

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

August 3, 1998
REPORT #102

Activity:

- Biotic Layer - PSG placed, spread and graded RH-5,-2" rounded gravel over the SW end of the DBG cap, completing placement of the biotic material. MSE performed a cross-section survey of the cap area and MK/PSG ran random checks on thickness of the biotic gravel. PSG, using a JD 550 dozer, re-graded and corrected any area found to be out of tolerance.
- Cover Layer - PSG/MK conducted a Preparatory Meeting discussing placement, compaction, and grading of the 27 inch cover layer.

Inspection:

- MSE - cross-section surveyed the top of the biotic gravel for as-built conditions of the biotic layer.
- PSG/MK - performed 16 random spot checks on the thickness of the biotic layer.

| SAMPLE # | APPROXIMATE LOCATION | DEPTH | RECHECK | STATUS |
|---|---|---|---|---|
| 1 | N1311600 E3049300 | 4" | 5 1/2" | Pass |
| 2 | N1311660 E3049260 | 8" | 7" | Pass |
| 3 | N1311610 E3049220 | 4" | 5 1/2" | Pass |
| 4 | N1311680 E3049210 | 9" | 7" | Pass |
| 5 | N1311660 E3049125 | 10 1/2" | 7" | Pass |
| 6 | N1311580 E3049150 | 6 1/2" | 7" | Pass |
| 7 | N1311550 E3049200 | 10 1/2" | 7 1/4" | Pass |
| 8 | N1311500 E3049150 | 7" | 7" | Pass |

| SAMPLE # | APPROXIMATE LOCATION | DEPTH | RECHECK | STATUS |
|---|---|---|---|---|
| 9 | N1311500 E3049100 | 6 1/2" | 6 1/2" | Pass |
| 10 | N1311450 E3049150 | 6 3/4" | 6 3/4" | Pass |
| 11 | N1311450 E3049100 | 7" | 7" | Pass |
| 12 | N1311450 E3049050 | 8 1/2" | 7" | Pass |
| 13 | N1311400 E3049060 | 7" | 7" | Pass |
| 14 | N1311400 E3049060 | 8 1/2" | 7" | Pass |
| 15 | N1311410 E3048950 | 4" | 5 1/2" | Pass |
| 16 | N1311375 E3048900 | 9" | 6 1/2" | Pass |

- MK - recorded meeting minutes of 27 inch cover layer Preparatory Meeting.
- MK - accepted biotic rock placement at the end of the shift for deployment and installation of geotextile.

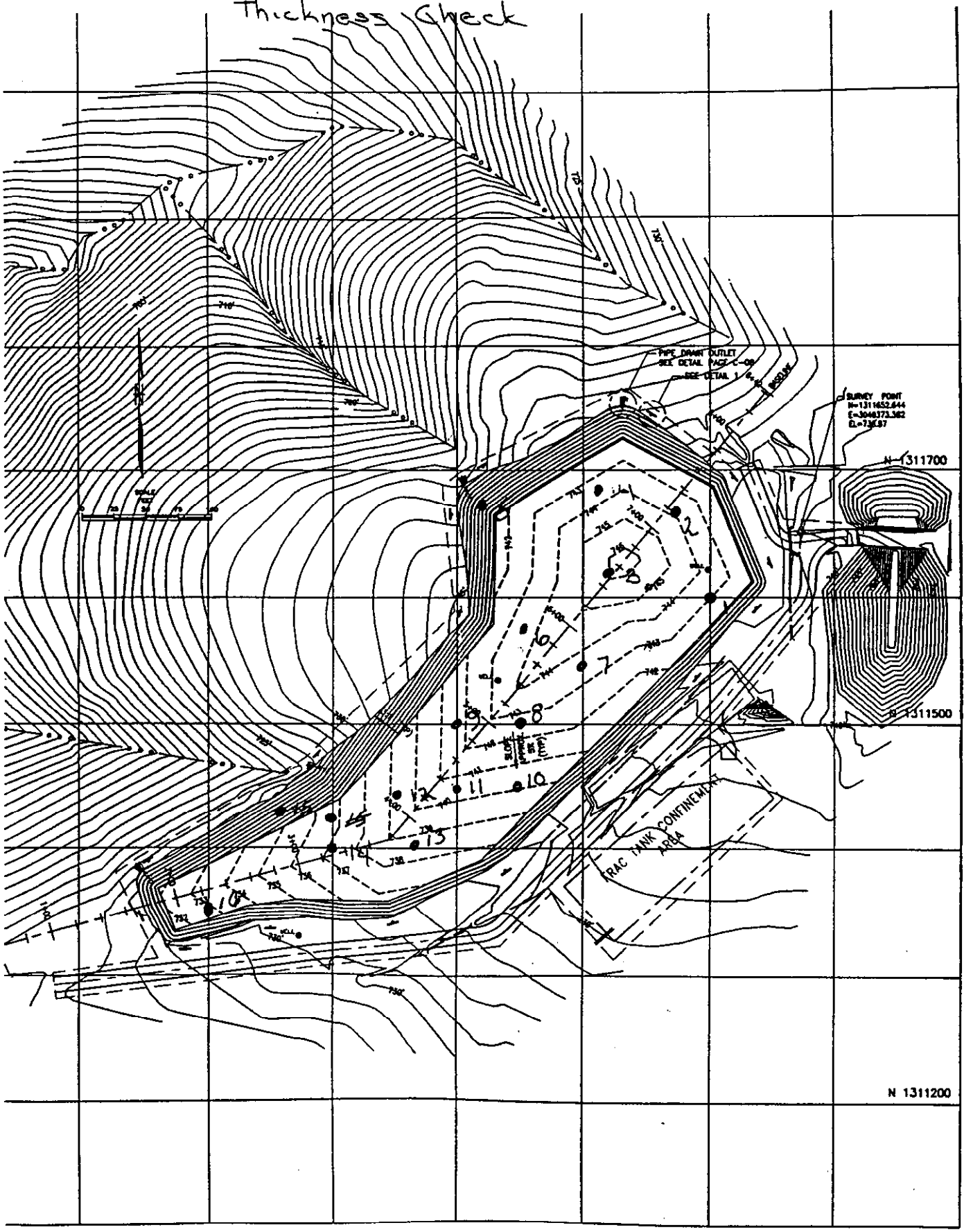
Lois J. Bigley 08/03/98

Attachments: 0

Signature/Date:

60-C

Radon Biotic Layer
Thickness Check



**PHILIP**
**ENVIRONMENTAL**

Environmental Services Group
North Central Region

August 15, 1997
Project 18328

Mr. Vernon D. Logan
Contract Administrator
Morrison Knudsen Corporation
300 Highway 361
NSWC - CTR 12
Crane, Indiana 47522

I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into Contract Number N62467-93-D-1106, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is APPROVED FOR USE

Certified by Submittal Reviewer _____, Date ____
(signature when applicable)

Certified by QC Manager _____, Date ____
(signature)

INCOMPLETE NEED PERMEABILITY
REVISE AN RESUBMITTE 1-48
8/19/97
SB

Dear Mr. Logan

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Submittal No. 017**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-45, | Gradation Permeability Drainage Rock<br>Stone Types - #53, #2, #8L | 01300 |
| 1-47 | Drainage Layer Gradation, Permeability<br>Sand Type - #23/24 | 02200 |
| 1-48 | Biotic Layer Gradation, Permeability<br>Stone Type - RH5 | 02200 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Donald L. Flowers,
Project Manager

RS 4-96

| TOTAL WEIGHT | 6552.7 | GRAMS | LBS. |
|---|---|---|---|

Report No. Contract No.

| SIEVE SIZE | CONS GRAD. WEIGHT RET. | WEIGHT RETAINED | WEIGHT PASSING | PERCENT PASSING | CONTROL LIMITS | CUSTOMER SPECS. |
|---|---|---|---|---|---|---|
| 3" (75 mm) | | | | | | |
| 2 1/2" (63 mm) | | | | | | |
| 2" (50 mm) | | | | | | |
| 1 1/2" (37.5 mm) | | | | | | |
| 1" (25 mm) | | | | 100 | | |
| 3/4" (19 mm) | | 2205.3 | 4347.4 | 66.3 | | |
| 1/2" (12.5 mm) | P/F | 3103.1 | 1244.3 | 19.0 | | |
| 3/8" (9.5 mm) | | 1188.5 | 55.8 | .9 | | |
| No. 4 (4.75 mm) | | | | | | |
| No. 6 (3.35 mm) | | | | | | |
| No. 8 (2.36 mm) | | | | | | |
| No. 12 (1.70 mm) | | | | | | |
| No. 16 (1.18 mm) | | | | | | |
| No. 20 (850 um) | | | | | | |
| No. 30 (600 um) | | | | | | |
| No. 50 (300 um) | | | | | | |
| No. 60 (250 um) | | | | | | |
| No. 80 (180 um) | | | | | | |
| No. 100 (150 um) | | | | | | |
| No. 140 (106 um) | | | | | | |
| No. 200 (75 um) | | | | | | |
| No. 270 (53 um) | | | | | | |
| No. 325 (45 um) | | | | | | |
| PAN 55.8 | ORIGINAL | FINAL | GRAMS LOSS | % LOSS | | |
| DECANT | | | | | | |

| NON-DURABLE | TOTAL WT. 3/8" UP | WT. OF NON-DUR. | % NON-DUR. |
|---|---|---|---|
| | | | |
| TOTAL CHERT | SAMPLE WT. 3/8" UP | WT. OF TOT CHERT | % TOTAL CHERT |
| | | | |
| MECH. CRUSHED | SAMPLE WT. NO. 4 UP | WT. OF MECH CRUSHED PT. | % MECH. CRUSHED |

| LONG GRADED MATERIAL | TOTAL WT. PASS No. 4 | SAMPLE SIZE | PROPORT. FACTORS |
|---|---|---|---|
| | GM | GM | |
| TOTAL CHERT | SAMPLE WT. No. 4 UP | WT. OF TOTAL CHERT | % TOTAL CHERT |
| AGG. SIZE 9, 11 | | | |
| TOTAL CRUSHED | SAMPLE WT. No. 4 UP | WT. TOTAL CRUSHED | % TOTAL CRUSHED |

ROGERS GROUP

SAMPLE FROM
TEST NO.
LEDGES
SAMPLE DATE Mo. 8 Day 15 1997 Moisture (CAS) (CAB) %
MATERIAL Stone
SPECIFICATION
SAMPLED BY Dan Roinegal
TIME SAMPLED
SP - SPEC. PROV.
SUPERINTENDENT
TONS REP. BY TEST
PLANT
LOCATION Martinsville
SHOT LOCATION #
FREQUENCY ☐ START-UP ☐ NORMAL
PURPOSE 72 - JOB CONTROL 73 - INFORMATION
PR. SP. DELETERIOUS TESTS PERFORMED YES - 3 NO - 4

MATERIAL STATUS 10 ACCEPTED 10 REJECTED 10 VISUAL 11 INFO

WEATHER

QUALITY CHECKS AND CORRECTIVE ACTION

TOO FINE
TOO COARSE
CRUSHER SETTINGS
JAW SETTING
SCREEN CHANGES
SEGREGATION
CONTAMINATION
WASH SAMPLE
DRY SHAKE
RESAMPLE

AUDIT SAMPLED BY

1. Stock/Stockpile
2. Bin or Tank
3. Processing Equipment
4. Truck, Barg, or Car
5. Ingleton, Jobsite
6. Ledge or Pit

RHS

RECEIVED
JUN 04 1998
MK-CRANE

PHILIP SERVICES CORP.
210 WEST SAND BANK ROAD
COLUMBIA, IL 62236
(618 281-7173)

## FACSIMILE TRANSMITTAL SHEET

TO: Lois Bigley
COMPANY: Morrison Knudsen
FAX NUMBER: 812-854-6944
PHONE NUMBER:
RE:

FROM: DON FLOWERS
DATE: 6-4-98
TOTAL NO. OF PAGES INCLUDING COVER: 3
SENDER'S REFERENCE NUMBER: 18328
YOUR REFERENCE NUMBER:

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

Permeability Test For Biotic Rock

| NSWC - CRANE 4324-0009 | | | |
|---|---|---|---|
| PROJECT MEMBER | ACT | INFO | INIT |
| PROJECT MANAGER | | X | |
| PROJECT ENGINEER | | | |
| EQUIPT | | | |
| SAFETY AND HEALTH | | | |
| QA/QC | | X | R |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| PMO-CHARLESTON | | | |
| | | | |
| | | | |
| FILE: | | | |
| FILE: | | | |
| FILE: 11-9-0009 | | | |

PHILIP ENVIRONMENTAL

Environmental Services Group
North Central Region

June 04, 1998
Project 18328

Mr. W.D. "John McCumbers
Contract Administrator
Morrison Knudsen Corporation
300 Highway 361
NSWC - CTR 12
Crane, Indiana 47522

Lois J. Bigley 06-04-98
Lois J. Bigley 06-04-98

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Re-Submittal No. 017C**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-48 | Biotic Layer Gradation, Permeability<br>Stone Type - RH5 | 02200 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Don Flowers

Donald L. Flowers,
Project Manager

PHILIP ENVIRONMENTAL SERVICES CORPORATION
210 West Sand Bank Road • P.O. Box 230 • Columbia, IL 62236-0230
(618) 281-7173 • (800) 733-7173 • Fax (618) 281-5120

# CONSTANT HEAD PERMEABILITY TEST
## ASTM D2434

**Date:** September 22, 1997

**Project No.:** 112239

**Client:** Rogers Group

**Project:** Rogers Group No. 970613

**Material Description:** Identified as SL Gravel in accordance to Aimei Parsay of Rogers Group SL is the same RHS @ the Mitchell quarry

**SPECIMEN DATA**

| | |
|---|---|
| Dimension, inches, | |
| Height: | 6.2 |
| Diameter: | 6.0 |
| Weight, lbs.: | 9.7 |
| Dry Unit Weight, pcf: | 96.1 |
| Permeability, cm/sec., | |
| k: | 45.2 |

Bowser Morner

# E-4

# Borrow Source Soil Report

MO[illegible]ON KNUDSEN CORPORATION

# CHAIN OF CU[illegible]DDY RECORD

COC #142

720 Park Blvd., P.O. [illegible]
Boise, Idaho 83729
(208) 386-5000

Project No.: 4324-0009-07

Project Name: NSWC Crane Dye Burial

Samplers: (Signature)

Sampler: (Print) Peter J. Chevalier

| Sample Type | Sampling Point Description | Sample Date | Time | Sample I.D. Number | Split Samples Yes | Split Samples No | 8240 | 8270 | 8080 | 8150 | 8140 | 9010 | 8330 | 6010A/7471 | 9036 | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil | borrow pit - E wall 4' | 10/1/97 | 1445 | NSWC 02/11BP1 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | |
| Soil | borrow pit - N wall 3' | 10/1/97 | 1445 | NSWC 02/11BP2 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | Compu-Chem |

| Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: | Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: |
|---|---|---|---|---|---|
| [signature] | 10/2/97 1730 | | | | |
| Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: | Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: |
| Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: | Received for Laboratory By: (Signature) / Company: | Date/Time | Total No. Samples This Shipping Container: / Company: |
| Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: | Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: |

Seal #s 5263, 5264

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

0211BP1

Lab Name: COMPUCHEM_ENV._CORP._____ Contract: SW-846____
Lab Code: COMPU_ Case No.: 31923 SAS No.: _____ SDG No.: 1366C_
Matrix (soil/water): SOIL_ Lab Sample ID: 871147
Level (low/med): LOW__ Date Received: 10/03/97
% Solids: _84.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-36-0 | Antimony_ | 0.48 | B | N | P |
| 7440-38-2 | Arsenic__ | 4.1 | | * | P |
| 7440-39-3 | Barium___ | 46.1 | | EN | P |
| 7440-41-7 | Beryllium | 0.86 | | E | P |
| 7440-43-9 | Cadmium__ | 0.09 | B | | P |
| 7440-47-3 | Chromium_ | 22.4 | | E* | P |
| 7440-50-8 | Copper___ | 14.2 | | * | P |
| 7439-92-1 | Lead____ | 11.5 | | E | P |
| 7439-97-6 | Mercury__ | 0.06 | U | N | CV |
| 7440-02-0 | Nickel___ | 13.1 | | E | P |
| 7782-49-2 | Selenium_ | 0.76 | | N | P |
| 7440-22-4 | Silver___ | 0.09 | U | | P |
| 7440-28-0 | Thallium_ | 0.59 | U | | P |
| 7440-62-2 | Vanadium_ | 24.7 | | E | P |
| 7440-66-6 | Zinc____ | 25.6 | | * | P |
| 7440-31-5 | Tin_____ | 1.3 | B | N | P |

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: _____ Artifacts: _____

Comments:
Undecanted_Dry_Weights____Container:1.27g__Wet:6.20g__Dry:5.44g_____
Duplicate_(0211BP1D)_____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

0211BP1

Lab Name: COMPUCHEM_ENV._CORP._____ Contract: SW-846____

Lab Code: COMPU_ Case No.: 31923_ SAS No.: _____ SDG No.: 1364C_

Matrix (soil/water): SOIL_ Lab Sample ID: 871163

Level (low/med): LOW__ Date Received: 10/03/97

% Solids: _84.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| | Cyanide | 0.59 | U | | AS |

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM

Color After: COLORLESS Clarity After: _____ Artifacts: _____

Comments:

Duplicate_(0211BP1D)

FORM I - IN ILM03.0

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

0211BP2

Lab Name: COMPUCHEM_ENV._CORP._____ Contract: SW-846____

Lab Code: COMPU_ Case No.: 31923 SAS No.: _____ SDG No.: 1366C_

Matrix (soil/water): SOIL_ Lab Sample ID: 871152

Level (low/med): LOW__ Date Received: 10/03/97

% Solids: _86.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-36-0 | Antimony_ | 0.33 | U | N | P |
| 7440-38-2 | Arsenic__ | 2.9 | | * | P |
| 7440-39-3 | Barium___ | 34.0 | | EN | P |
| 7440-41-7 | Beryllium | 0.30 | B | E | P |
| 7440-43-9 | Cadmium__ | 0.03 | U | | P |
| 7440-47-3 | Chromium_ | 12.9 | | E* | P |
| 7440-50-8 | Copper___ | 7.6 | | * | P |
| 7439-92-1 | Lead____ | 8.4 | | E | P |
| 7439-97-6 | Mercury__ | 0.06 | U | N | CV |
| 7440-02-0 | Nickel___ | 6.2 | | E | P |
| 7782-49-2 | Selenium_ | 0.53 | B | N | P |
| 7440-22-4 | Silver___ | 0.09 | U | | P |
| 7440-28-0 | Thallium_ | 0.57 | U | | P |
| 7440-62-2 | Vanadium_ | 17.0 | | E | P |
| 7440-66-6 | Zinc____ | 18.1 | | * | P |
| 7440-31-5 | Tin_____ | 1.5 | B | N | P |

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW___ Clarity After: _____ Artifacts: _____

Comments:

Undecanted_Dry_Weights____Container:1.26g__Wet:6.28g__Dry:5.61g_____

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

0211BP2

Lab Name: COMPUCHEM_ENV._CORP._____ Contract: SW-846____

Lab Code: COMPU_ Case No.: 31923_ SAS No.: _____ SDG No.: 1364C_

Matrix (soil/water): SOIL_ Lab Sample ID: 871172

Level (low/med): LOW__ Date Received: 10/03/97

% Solids: _86.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| | Cyanide | 0.58 | U | | AS |

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM

Color After: COLORLESS Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN ILM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

0211BP1

Lab Name: COMPUCHEM Contract: OLM03-REVS

Lab Code: COMPU Case No.: 31923 SAS No.: SDG No.: 1356C

Matrix: (soil/water) SOIL Lab Sample ID: 871142

Sample wt/vol: 5.0 (g/mL) G Lab File ID: GH071142B52.D

Level: (low/med) LOW Date Received: 10/03/97

% Moisture: not dec. 15 Date Analyzed: 10/14/97

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 12 | U |
| 74-83-9 | Bromomethane | 12 | U |
| 75-01-4 | Vinyl Chloride | 12 | U |
| 75-00-3 | Chloroethane | 12 | U |
| 75-09-2 | Methylene Chloride | 21 | B |
| 67-64-1 | Acetone | 20 | B |
| 75-15-0 | Carbon Disulfide | 12 | U |
| 75-35-4 | 1,1-Dichloroethene | 12 | U |
| 75-34-3 | 1,1-Dichloroethane | 12 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 12 | U |
| 67-66-3 | Chloroform | 12 | U |
| 107-06-2 | 1,2-Dichloroethane | 12 | U |
| 78-93-3 | 2-Butanone | 12 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 12 | U |
| 56-23-5 | Carbon Tetrachloride | 12 | U |
| 75-27-4 | Bromodichloromethane | 12 | U |
| 78-87-5 | 1,2-Dichloropropane | 12 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 12 | U |
| 79-01-6 | Trichloroethene | 12 | U |
| 124-48-1 | Dibromochloromethane | 12 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 12 | U |
| 71-43-2 | Benzene | 12 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 12 | U |
| 75-25-2 | Bromoform | 12 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 12 | U |
| 591-78-6 | 2-Hexanone | 12 | U |
| 127-18-4 | Tetrachloroethene | 12 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 12 | U |
| 108-88-3 | Toluene | 12 | U |
| 108-90-7 | Chlorobenzene | 12 | U |
| 100-41-4 | Ethylbenzene | 12 | U |
| 100-42-5 | Styrene | 12 | U |
| 1330-20-7 | Xylene (Total) | 12 | U |

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

0211BP1

Lab Name: COMPUCHEM Contract: OLM03-REVS

Lab Code: COMPU Case No.: 31923 SAS No.: SDG No.: 1356C

Matrix: (soil/water) SOIL Lab Sample ID: 871142

Sample wt/vol: 5.0 (g/mL) G Lab File ID: GH071142B52.D

Level: (low/med) LOW Date Received: 10/03/97

% Moisture: not dec. 15 Date Analyzed: 10/14/97

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 75-05-8 | acetonitrile | 12 | U |
| 107-02-8 | acrolein | 12 | U |
| 107-05-1 | 3-chloropropene | 12 | U |
| 106-93-4 | 1,2-dibromoethane | 12 | U |
| 74-95-3 | dibromomethane | 12 | U |
| 110-57-6 | trans-1,4-dichloro-2-butene | 12 | U |
| 75-71-8 | dichlorodifluoromethane | 12 | U |
| 123-91-1 | 1,4-dioxane | 12 | U |
| 107-12-0 | propionitrile(ethylcyanide) | 12 | U |
| 97-63-2 | ethyl methacrylate | 12 | U |
| 74-88-4 | iodomethane | 12 | U |
| 78-83-1 | isobutyl alcohol | 12 | U |
| 126-98-7 | methacrylonitrile | 12 | U |
| 80-62-6 | methyl methacrylate | 12 | U |
| 630-20-6 | 1,1,1,2-tetrachloroethane | 12 | U |
| 96-18-4 | 1,2,3-trichloropropane | 12 | U |
| 108-05-4 | vinyl acetate | 12 | U |
| 96-12-8 | 1,2-dibromo-3-chloropropane | 12 | U |
| 75-69-4 | trichlorofluoromethane | 12 | U |
| 107-13-1 | acrylonitrile | 12 | U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

0211BP1

Lab Name: COMPUCHEM Contract: OLM03-REVS

Lab Code: COMPU Case No.: 31923 SAS No.: SDG No.: 1356C

Matrix: (soil/water) SOIL Lab Sample ID: 871142

Sample wt/vol: 5.0 (g/mL) G Lab File ID: GH071142B52.D

Level: (low/med) LOW Date Received: 10/03/97

% Moisture: not dec. 15 Date Analyzed: 10/14/97

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | CO2 (NOT IN TIC TOTAL) | 0.99 | 240 | JB |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
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FORM I VOA-TIC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

0211BP2

Lab Name: COMPUCHEM Contract: OLM03-REVS

Lab Code: COMPU Case No.: 31923 SAS No.: SDG No.: 1356C

Matrix: (soil/water) SOIL Lab Sample ID: 871168

Sample wt/vol: 5.0 (g/mL) G Lab File ID: GH071168B52.D

Level: (low/med) LOW Date Received: 10/03/97

% Moisture: not dec. 13 Date Analyzed: 10/14/97

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 11 | U |
| 74-83-9 | Bromomethane | 11 | U |
| 75-01-4 | Vinyl Chloride | 11 | U |
| 75-00-3 | Chloroethane | 11 | U |
| 75-09-2 | Methylene Chloride | 12 | B |
| 67-64-1 | Acetone | 13 | B |
| 75-15-0 | Carbon Disulfide | 11 | U |
| 75-35-4 | 1,1-Dichloroethene | 11 | U |
| 75-34-3 | 1,1-Dichloroethane | 11 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 11 | U |
| 67-66-3 | Chloroform | 11 | U |
| 107-06-2 | 1,2-Dichloroethane | 11 | U |
| 78-93-3 | 2-Butanone | 11 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 11 | U |
| 56-23-5 | Carbon Tetrachloride | 11 | U |
| 75-27-4 | Bromodichloromethane | 11 | U |
| 78-87-5 | 1,2-Dichloropropane | 11 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 11 | U |
| 79-01-6 | Trichloroethene | 11 | U |
| 124-48-1 | Dibromochloromethane | 11 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 11 | U |
| 71-43-2 | Benzene | 11 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 11 | U |
| 75-25-2 | Bromoform | 11 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 11 | U |
| 591-78-6 | 2-Hexanone | 11 | U |
| 127-18-4 | Tetrachloroethene | 11 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 11 | U |
| 108-88-3 | Toluene | 11 | U |
| 108-90-7 | Chlorobenzene | 11 | U |
| 100-41-4 | Ethylbenzene | 11 | U |
| 100-42-5 | Styrene | 11 | U |
| 1330-20-7 | Xylene (Total) | 11 | U |

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

0211BP2

Lab Name: COMPUCHEM Contract: OLM03-REVS

Lab Code: COMPU Case No.: 31923 SAS No.: SDG No.: 1356C

Matrix: (soil/water) SOIL Lab Sample ID: 871168

Sample wt/vol: 5.0 (g/mL) G Lab File ID: GH071168B52.D

Level: (low/med) LOW Date Received: 10/03/97

% Moisture: not dec. 13 Date Analyzed: 10/14/97

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 75-05-8 | acetonitrile | 11 | U |
| 107-02-8 | acrolein | 11 | U |
| 107-05-1 | 3-chloropropene | 11 | U |
| 106-93-4 | 1,2-dibromoethane | 11 | U |
| 74-95-3 | dibromomethane | 11 | U |
| 110-57-6 | trans-1,4-dichloro-2-butene | 11 | U |
| 75-71-8 | dichlorodifluoromethane | 11 | U |
| 123-91-1 | 1,4-dioxane | 11 | U |
| 107-12-0 | propionitrile(ethylcyanide) | 11 | U |
| 97-63-2 | ethyl methacrylate | 11 | U |
| 74-88-4 | iodomethane | 11 | U |
| 78-83-1 | isobutyl alcohol | 11 | U |
| 126-98-7 | methacrylonitrile | 11 | U |
| 80-62-6 | methyl methacrylate | 11 | U |
| 630-20-6 | 1,1,1,2-tetrachloroethane | 11 | U |
| 96-18-4 | 1,2,3-trichloropropane | 11 | U |
| 108-05-4 | vinyl acetate | 11 | U |
| 96-12-8 | 1,2-dibromo-3-chloropropane | 11 | U |
| 75-69-4 | trichlorofluoromethane | 11 | U |
| 107-13-1 | acrylonitrile | 11 | U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

0211BP2

Lab Name: COMPUCHEM Contract: OLM03-REVS

Lab Code: COMPU Case No.: 31923 SAS No.: SDG No.: 1356C

Matrix: (soil/water) SOIL Lab Sample ID: 871168

Sample wt/vol: 5.0 (g/mL) G Lab File ID: GH071168B52.D

Level: (low/med) LOW Date Received: 10/03/97

% Moisture: not dec. 13 Date Analyzed: 10/14/97

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | CO2 (NOT IN TIC TOTAL) | 0.97 | 190 | JB |
| 2. | | | | |
| 3. | | | | |
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FORM I VOA-TIC

# QUANTERRA INCORPORATED

## PRELIMINARY DATA SUMMARY

The results shown below may still require additional laboratory review and are subject to change. Actions taken based on these results are the responsibility of the data user.

Compuchem Environmental
COMPUCHEM
Project Number: COMPUCHEM

Lot #: C7J070119 | Date Reported: 10/20/97 | PAGE

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| **Client Sample ID: 0211BP1** | | | | |
| **Sample #: 001 Date Sampled: 10/01/97 14:45 Date Received: 10/04/97 Matrix: SOLID** | | | | |
| Organophosphorous Compounds by GC | | | | Reviewed |
| Dimethoate | ND | 37 | ug/kg | SW846 8141 |
| Disulfoton | ND | 75 | ug/kg | SW846 8141 |
| Famphur | ND | 37 | ug/kg | SW846 8141 |
| Methyl parathion | ND | 37 | ug/kg | SW846 8141 |
| Parathion | ND | 37 | ug/kg | SW846 8141 |
| Phorate | ND | 37 | ug/kg | SW846 8141 |
| Tetraethyldithiopyro-phosphate | ND | 37 | ug/kg | SW846 8141 |
| Thionazin | ND | 37 | ug/kg | SW846 8141 |
| O,O,O-Triethylphosphoro-thioate | ND | 37 | ug/kg | SW846 8141 |
| Results and reporting limits have been adjusted for dry weight. | | | | |
| Inorganic Analysis | | | | In Review |
| Acid-insoluble Sulfide | ND | 56 | mg/kg | SW846 9030A |
| Total Residue as Percent Solids | 89.1 | | % | MCAWW 160.3 MOD |
| Results and reporting limits have been adjusted for dry weight. | | | | |
| **Client Sample ID: 0211BP2** | | | | |
| **Sample #: 002 Date Sampled: 10/01/97 14:45 Date Received: 10/04/97 Matrix: SOLID** | | | | |
| Organophosphorous Compounds by GC | | | | Reviewed |
| Dimethoate | ND | 38 | ug/kg | SW846 8141 |
| Disulfoton | ND | 77 | ug/kg | SW846 8141 |
| Famphur | ND | 38 | ug/kg | SW846 8141 |
| Methyl parathion | ND | 38 | ug/kg | SW846 8141 |
| Parathion | ND | 38 | ug/kg | SW846 8141 |
| Phorate | ND | 38 | ug/kg | SW846 8141 |
| Tetraethyldithiopyro-phosphate | ND | 38 | ug/kg | SW846 8141 |
| Thionazin | ND | 38 | ug/kg | SW846 8141 |
| O,O,O-Triethylphosphoro-thioate | ND | 38 | ug/kg | SW846 8141 |

(Continued on next page)

# QUANTERRA INCORPORATED

## PRELIMINARY DATA SUMMARY

The results shown below may still require additional laboratory review and are subject to change. Actions taken based on these results are the responsibility of the data user.

Compuchem Environmental
COMPUCHEM
Project Number: COMPUCHEM

Lot #: C7J070119 | Date Reported: 10/20/97 | PAGE :

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| **Client Sample ID: 0Z11BPZ** | | | | |
| **Sample #: 002 Date Sampled: 10/01/97 14:45 Date Received: 10/04/97 Matrix: SOLID** | | | | |
| Organophosphorous Compounds by GC | | | | Reviewed |
| Results and reporting limits have been adjusted for dry weight. | | | | |
| Inorganic Analysis | | | | In Review |
| Acid-insoluble Sulfide | ND | 57 | mg/kg | SW846 9030A |
| Total Residue as Percent Solids | 87.6 | | % | MCANW 160.3 MOD |

Results and reporting limits have been adjusted for dry weight.

MORRISON KNUDSEN CORPORATION

Client Sample ID: 0211BP2

Dioxins

Lot-Sample #...: H7J070130-002 Work Order #...: CU9VM102 Matrix.....: SOLID
Date Sampled...: 10/01/97 Date Received..: 10/04/97
Prep Date.....: 10/09/97 Analysis Date..: 10/16/97
Prep Batch #...: 7202177
Dilution Factor: 1
% Moisture.....: 14

| PARAMETER | RESULT | DETECTION LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | 0.023 | ng/g | SW846 8280 |
| Total TCDD | ND | 0.023 | ng/g | SW846 8280 |
| Total PeCDD | ND | 0.038 | ng/g | SW846 8280 |
| Total HxCDD | ND | 0.023 | ng/g | SW846 8280 |
| Total TCDF | ND | 0.015 | ng/g | SW846 8280 |
| Total PeCDF | ND | 0.020 | ng/g | SW846 8280 |
| Total HxCDF | ND | 0.010 | ng/g | SW846 8280 |

| INTERNAL STANDARDS | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 13C-2,3,7,8-TCDD | 109 | (25 - 160) |
| 13C-2,3,7,8-TCDF | 93 | (25 - 160) |
| 13C-1,2,3,7,8-PeCDD | 122 | (25 - 160) |
| 13C-1,2,3,6,7,8-HxCDD | 112 | (25 - 160) |

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MORRISON KNUDSEN CORPORATION

Client Sample ID: 0211BP1

Dioxins

Lot-Sample #...: H7J070130-001
Date Sampled...: 10/01/97
Prep Date.....: 10/09/97
Prep Batch #...: 7282177
Dilution Factor: 1
% Moisture.....: 14

Work Order #...: CD9VK102
Date Received..: 10/04/97
Analysis Date..: 10/16/97

Matrix.....: SOLID

| PARAMETER | RESULT | DETECTION LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | 0.018 | ng/g | SW846 8280 |
| Total TCDD | ND | 0.018 | ng/g | SW846 8280 |
| Total PeCDD | ND | 0.071 | ng/g | SW846 8280 |
| Total HxCDD | ND | 0.015 | ng/g | SW846 8280 |
| Total TCDF | ND | 0.018 | ng/g | SW846 8280 |
| Total PeCDF | ND | 0.012 | ng/g | SW846 8280 |
| Total HxCDF | ND | 0.010 | ng/g | SW846 8280 |

| INTERNAL STANDARDS | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 13C-2,3,7,8-TCDD | 100 | (25 - 160) |
| 13C-2,3,7,8-TCDF | 83 | (25 - 160) |
| 13C-1,2,3,7,8-PeCDD | 108 | (25 - 160) |
| 13C-1,2,3,6,7,8-HxCDD | 99 | (25 - 160) |

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

RECEIVED
AUG 29 1997
CRANE

August 26, 1997

EARTH EXPLORATION
7770 West New York Street
Indianapolis, IN 46214-2988
317-273-1690
317-273-2250 (FAX)

Ms. Lois Bigley
Morrison Knudsen Corporation
300 Hwy 361 CTR 12
P.O. Box 310
Crane Village, IN 47522

Re: Laboratory Testing
Dye Burial Cap (FY97)
NSWC - Crane
Crane Village, Indiana
EEI Project No. 3483

Dear Ms. Bigley:

On August 11, 1997, a representative of our company obtained nine bag samples of soil from three proposed borrow areas and transported them to our laboratory for testing. The requested testing included standard Proctors (ASTM D 698) on the nine individual bag samples and standard Proctors, sieve analyses (ASTM D 422), Atterberg limits (ASTM D 4318) and falling head permeabilities (ASTM D 5084) on composite samples from the Bio Facility stockpile and the DBG Borrow Area 2 161-B. In addition, a composite sample from the DBG Borrow Area 1A 58/161-1A has been retained for possible back-up testing if necessary. The results of the Proctors and sieve analyses are enclosed.

The composite samples for the permeability tests were molded to approximately 90 percent of the standard Proctor density at a moisture content of two percent above the optimum moisture content as requested. The results of the permeability tests are as follows:

| Sample | Soil Description | Dry Density, lbs/cu ft | Moisture Content, % | % Maximum Dry Density | Permeability, cm/sec |
|---|---|---|---|---|---|
| BS-14 | CL,Silty Clay | 102.6 | 15.6 | 90.1 | $2.7 \times 10^{-5}$ |
| BS-15 | CL, Silty Clay | 96.6 | 18.7 | 90.1 | $3.1 \times 10^{-5}$ |

We appreciate the opportunity to provide testing services to your firm. Should you have any questions regarding this information, please feel free to call.

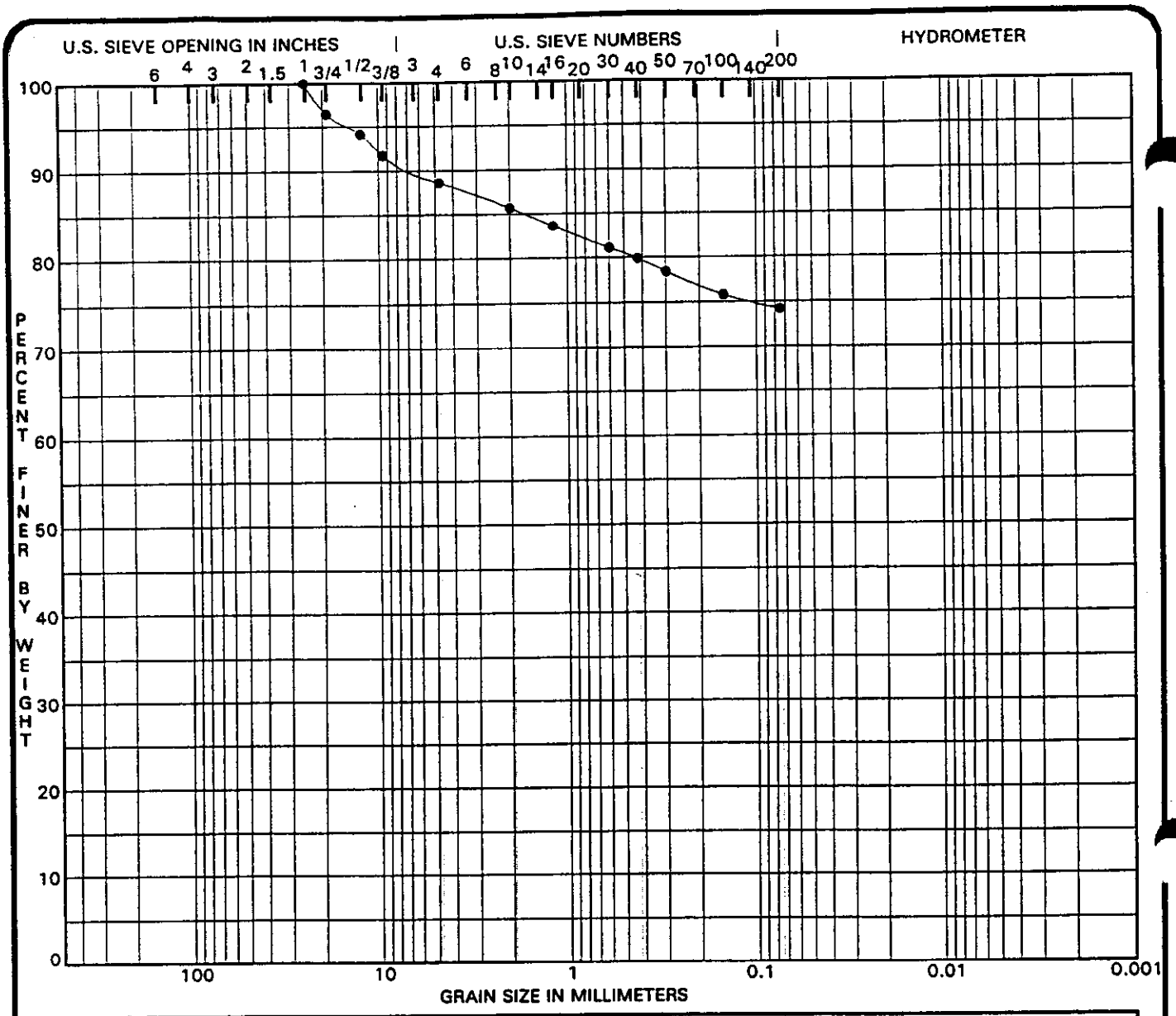
Sincerely,

**EARTH EXPLORATION, INC.**

Kirk J. Egold

Kirk J. Egold
Laboratory Services

Enclosures: Moisture-Density Relations (11)
Grain Size Distribution Curves (2)




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| Sample Identification | USCS Classification | MC% | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● BS-14 | CL, Silty Clay, little sand and gravel | -- | 31 | 19 | 12 | | |

| % Gravel ( >4.75mm ) | % Sand ( 4.75 to .075mm ) | % Silt ( .075 to .005 mm ) | % Clay ( <.005mm ) |
|---|---|---|---|
| 11.4 | 14.4 | | |

| Grain Size (mm) | % Passing | Grain Size (mm) | % Passing | Grain Size (mm) | % Passing |
|---|---|---|---|---|---|
| 64.0 | 100.0 | 0.5 | 80.5 | 0.016 | |
| 16.0 | 95.5 | 0.25 | 77.7 | 0.008 | |
| 4.0 | 88.0 | 0.125 | 75.4 | 0.005 | |
| 2.0 | 85.7 | 0.075 | 74.2 | 0.002 | |
| 1.0 | 83.0 | 0.050 | | | |

EARTH EXPLORATION

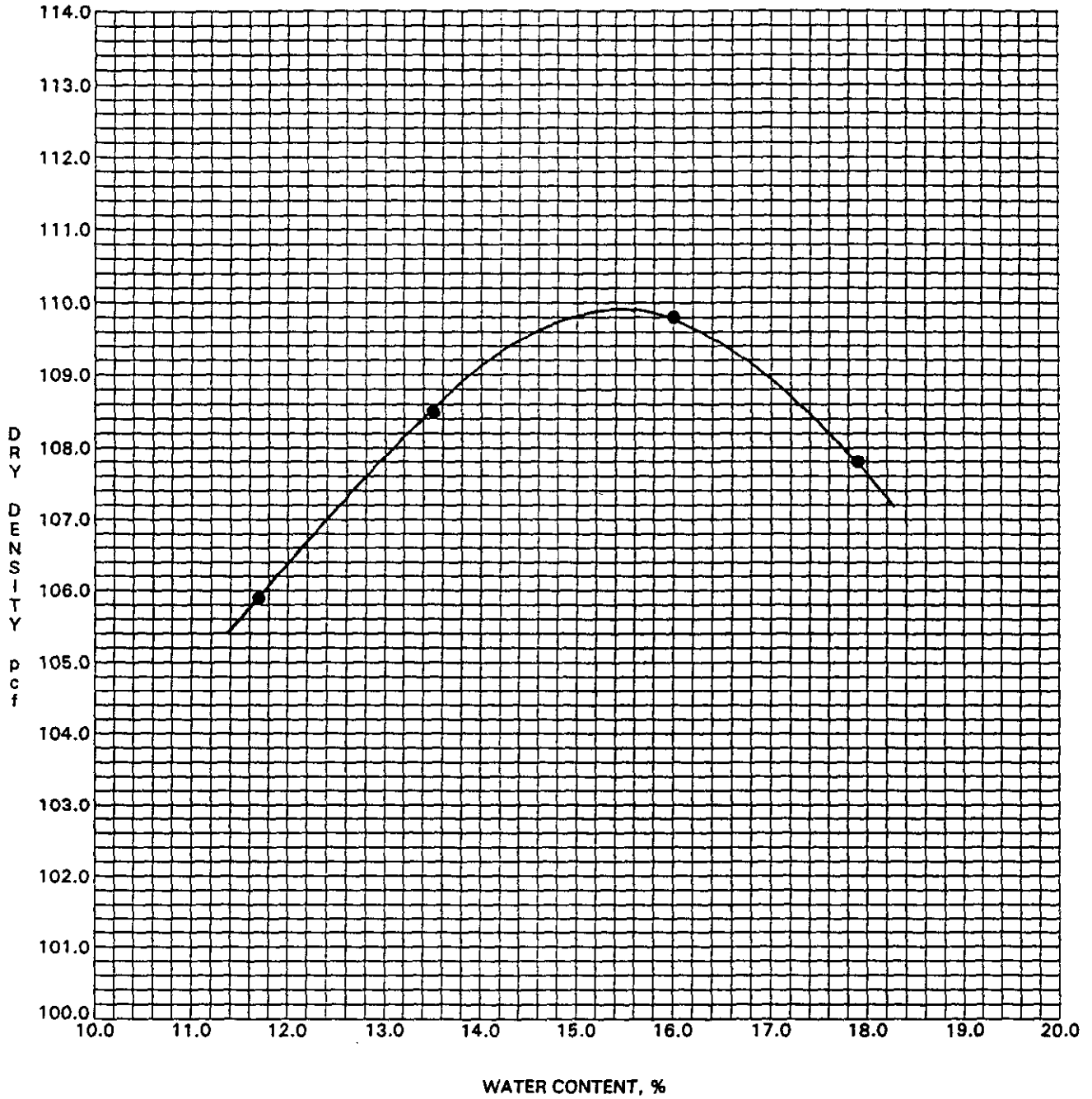
PROJECT Dye Burial Cap (FY97)
LOCATION NSWC Crane, Indiana
CLIENT Morrison Knudsen Corporation
EEI PROJECT NO. 3483

Bio - Stockpile

CLIENT ID NO. ---
DATE 8-15-97

# GRAIN SIZE DISTRIBUTION CURVE

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-5
**Classification** CL, Silty Clay, brown
**Source** on site *

**Optimum Moisture Content, %** 15.6
**Maximum Dry Density, pcf** 109.9
**Test Method** ASTM D 698 (A) Manual

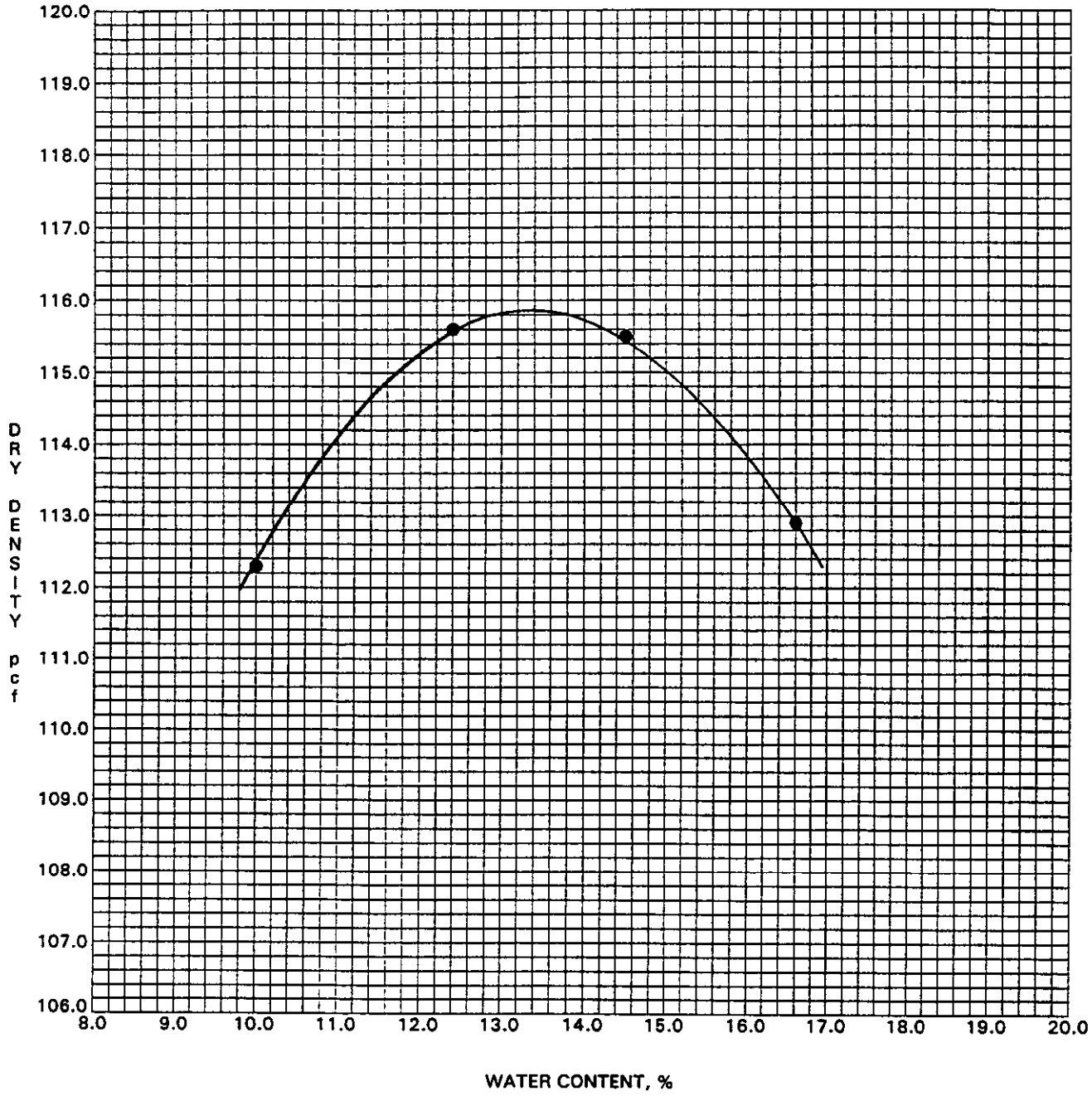
**Remarks:** * Sampled from Biofacility stockpile north end from 3-5'.
Relative Proportions: trace to little sand, trace gravel
---

EARTH EXPLORATION

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-14-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-6
**Classification** CL, Silty Clay, brown
**Source** on site *

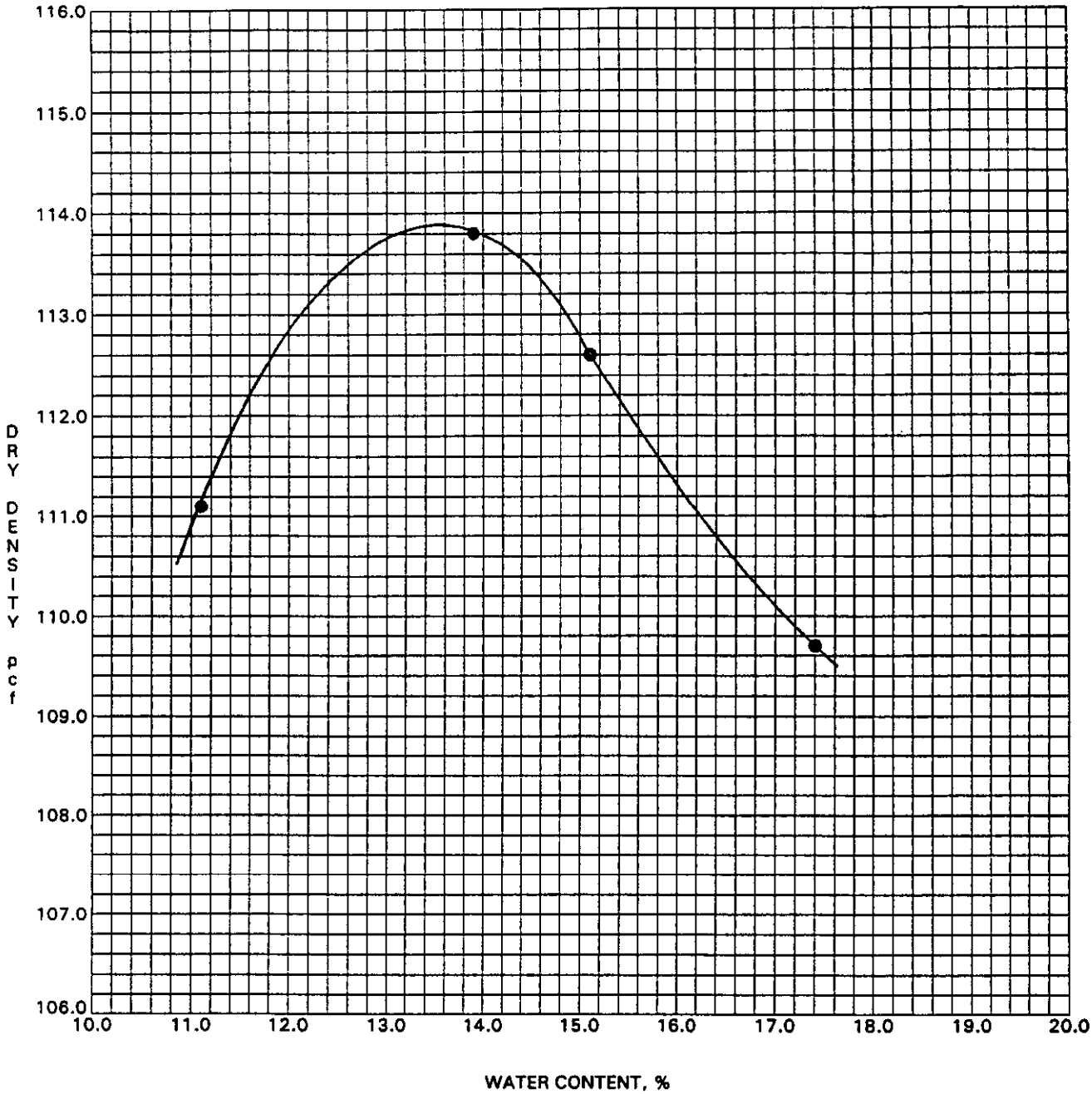
**Optimum Moisture Content, %** 13.4
**Maximum Dry Density, pcf** 115.9
**Test Method** ASTM D 698 (A) Manual

**Remarks:** * Sampled from Biofacility stockpile south end from 3-5'.
Relative Proportions: little to some sand, trace gravel
---

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-14-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-14
**Classification** CL, Silty Clay, brown
**Source** on site *

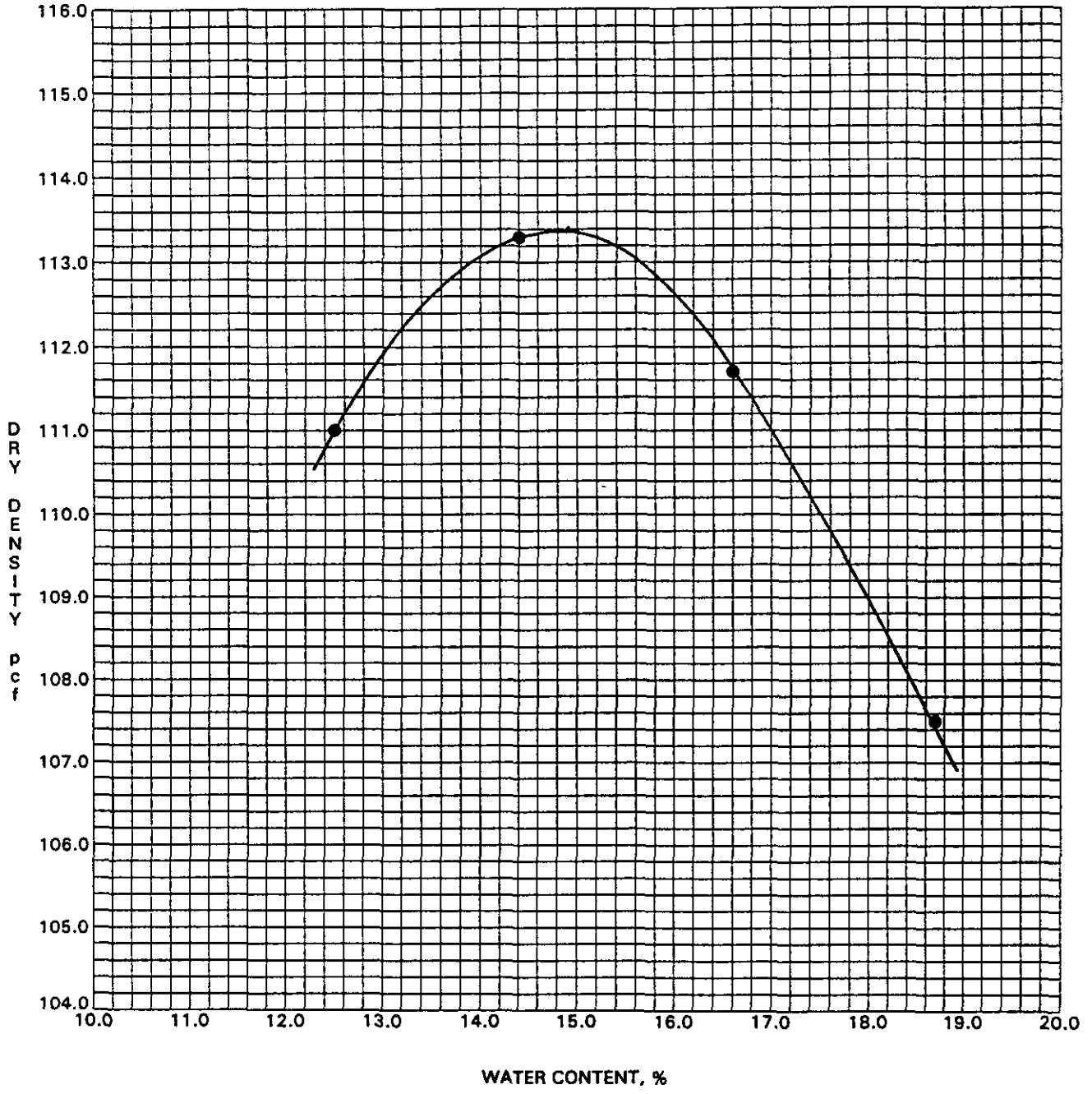
**Optimum Moisture Content, %** 13.6
**Maximum Dry Density, pcf** 113.9
**Test Method** ASTM D 698 (A) Manual

**Remarks:** * Composite sample of Biofacility stockpile (BS-5 & BS-6).
Relative Proportions: little sand and gravel
---

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-15-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-8
**Classification** CL, Silty Clay, brown
**Source** on site *

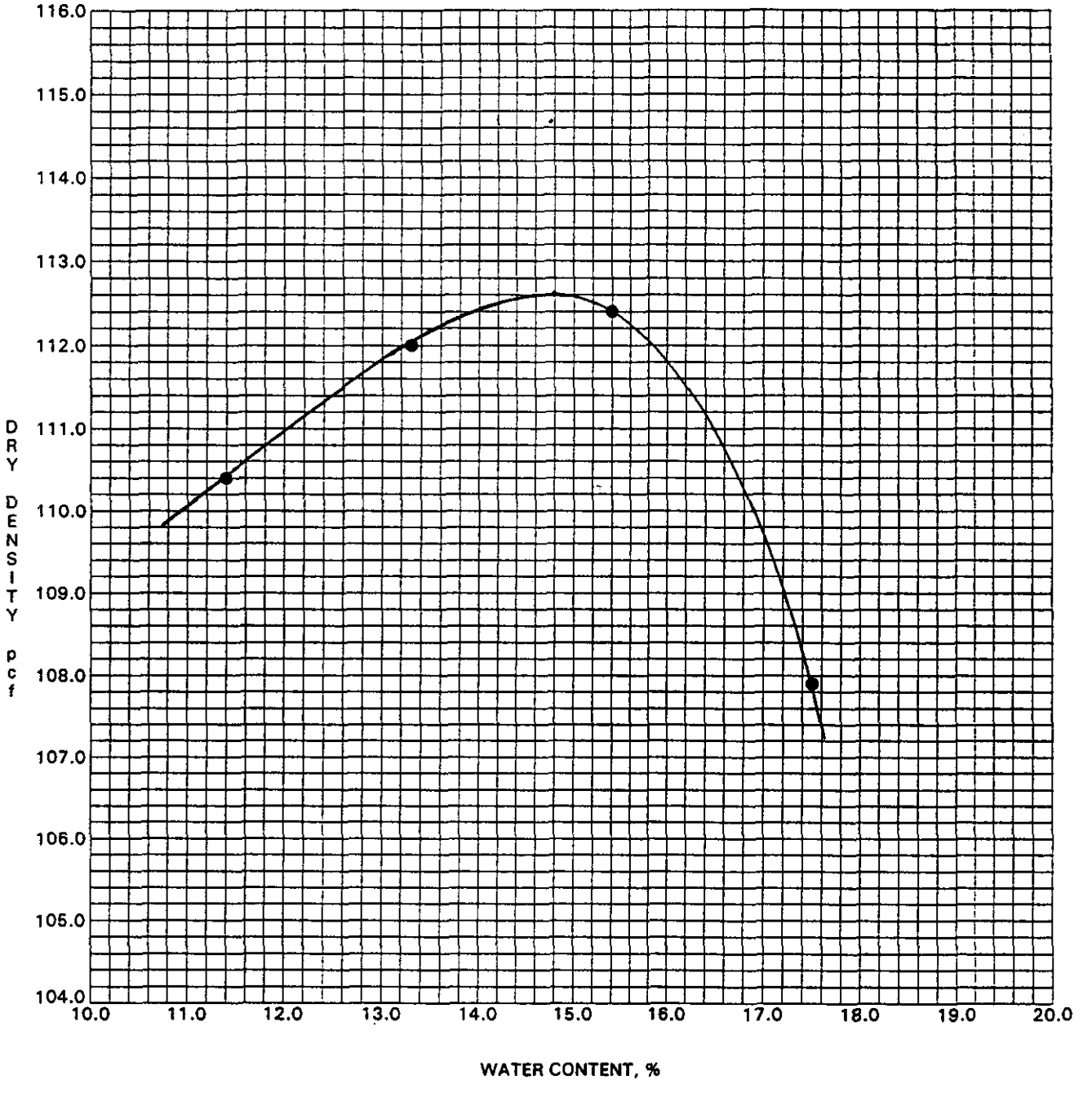
**Optimum Moisture Content, %** 14.9
**Maximum Dry Density, pcf** 113.4
**Test Method** ASTM D 698 (A) Manual

**Remarks:** * Sampled from DBG Borrow Area 1A 58/161-1A from 5-7'.
Relative Proportions: Little to some sand, trace gravel
---

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-15-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-7
**Classification** CL, Silty Clay, brown
**Source** on site *

**Optimum Moisture Content, %** 14.8
**Maximum Dry Density, pcf** 112.6
**Test Method** ASTM D 698 (A) Manual

**Remarks:** * Sampled from DBG Borrow Area 1A 58/161-1A from 3-5'.
Relative Proportions: little to some sand, trace gravel
---

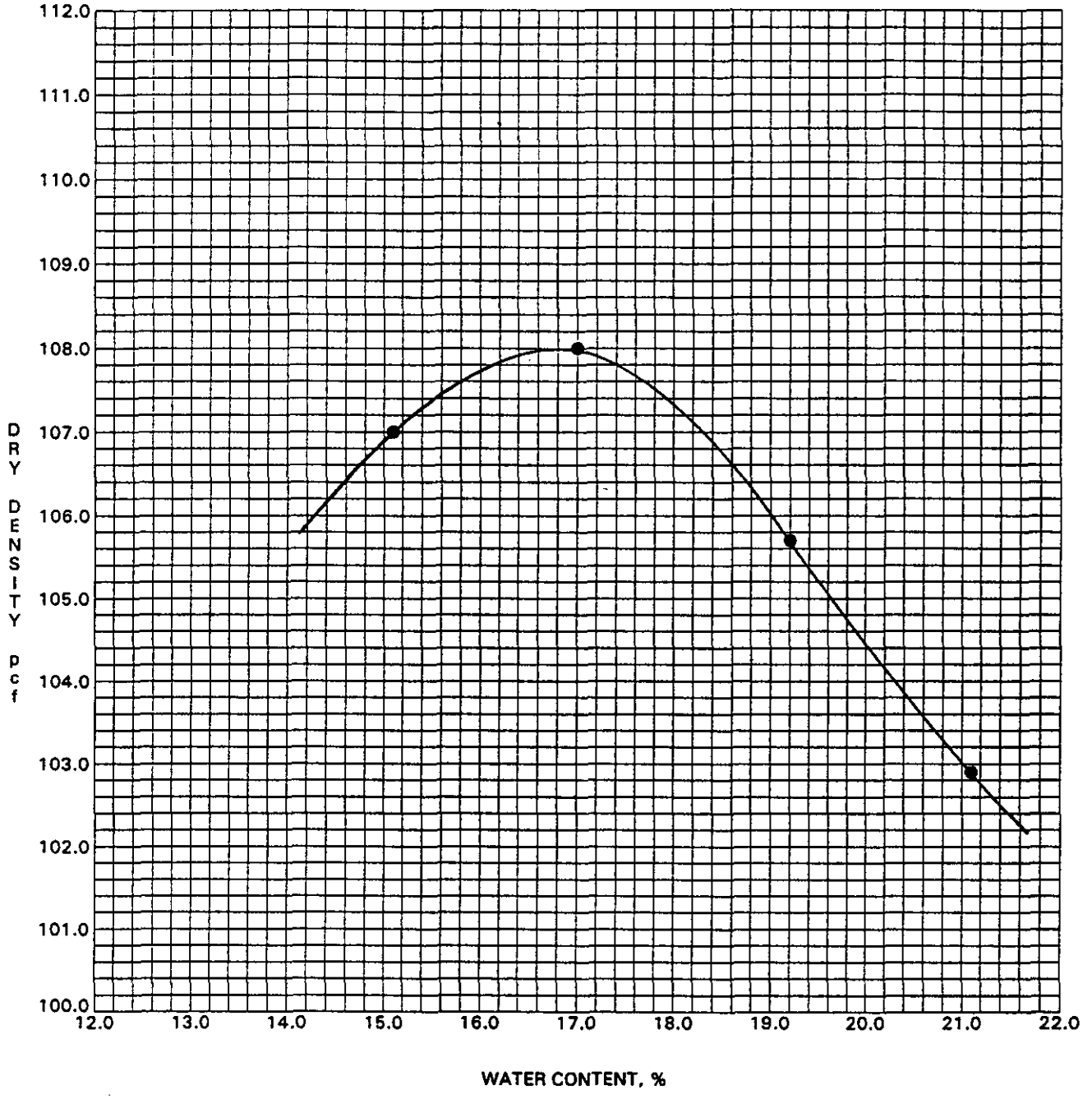
EARTH EXPLORATION

**Project** Dye Burial Cap (FY97)
**Client** Morrison Knudsen Corporation
**A/E** Morrison Knudsen Corporation

**Location** NSWC Crane, Indiana
**EEI Proj. No.** 3483
**Date** 8-15-97

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-9
**Classification** CL, Silty Clay, brown
**Source** DBG Borrow Area 2 *

**Optimum Moisture Content, %** 16.9
**Maximum Dry Density, pcf** 108.0
**Test Method** ASTM D 698 (A) Manual

**Remarks:** * Sampled from DBG Borrow Area 2 161-B, north end from 0.5-2.5'.
Relative Proportions: trace to little sand, trace gravel

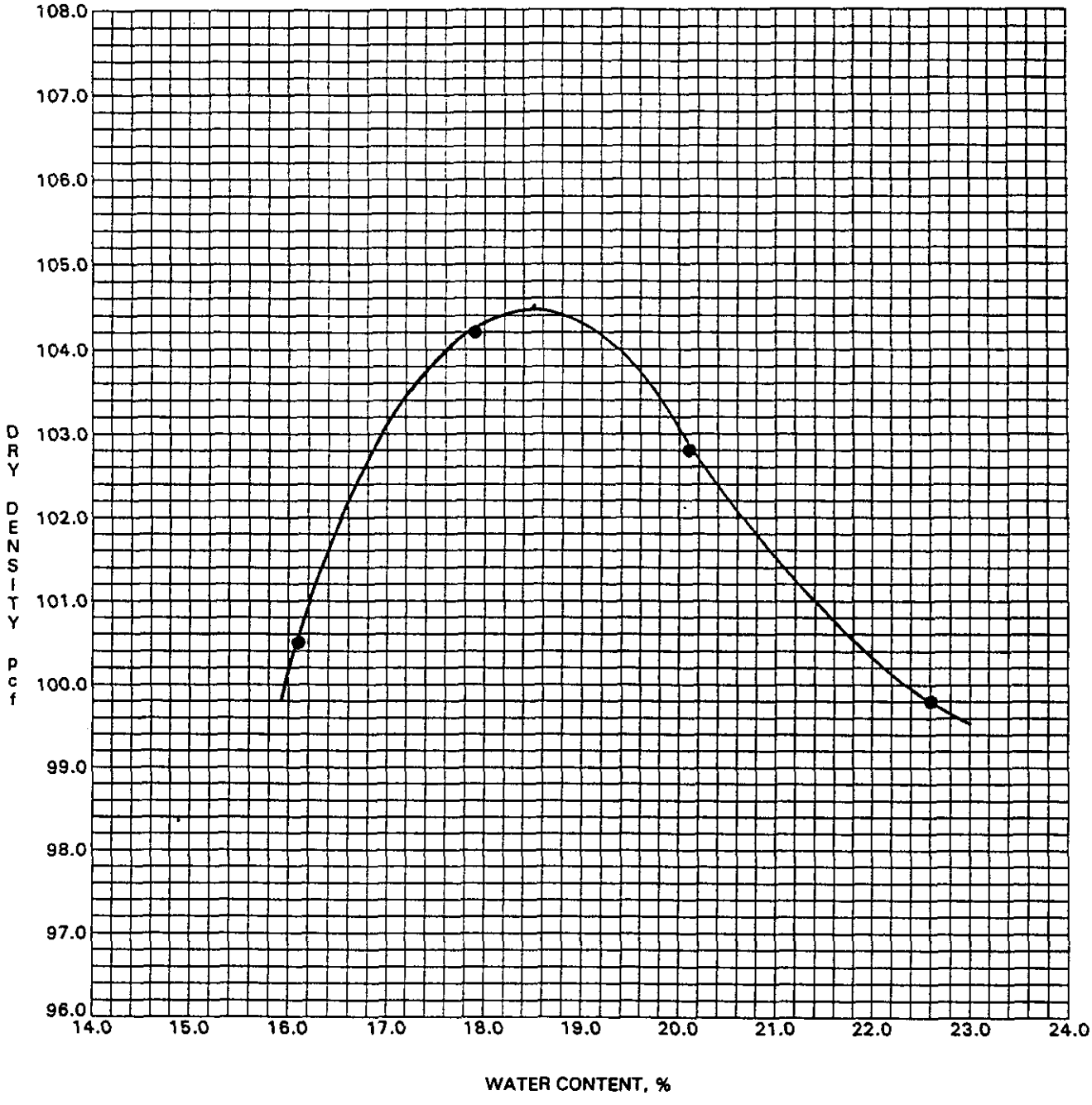
---

EARTH EXPLORATION

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-14-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-10
**Classification** CL, Silty Clay, brown
**Source** DBG Borrow Area 2 *

**Optimum Moisture Content, %** 18.5
**Maximum Dry Density, pcf** 104.5
**Test Method** ASTM D 698 (A) Manual

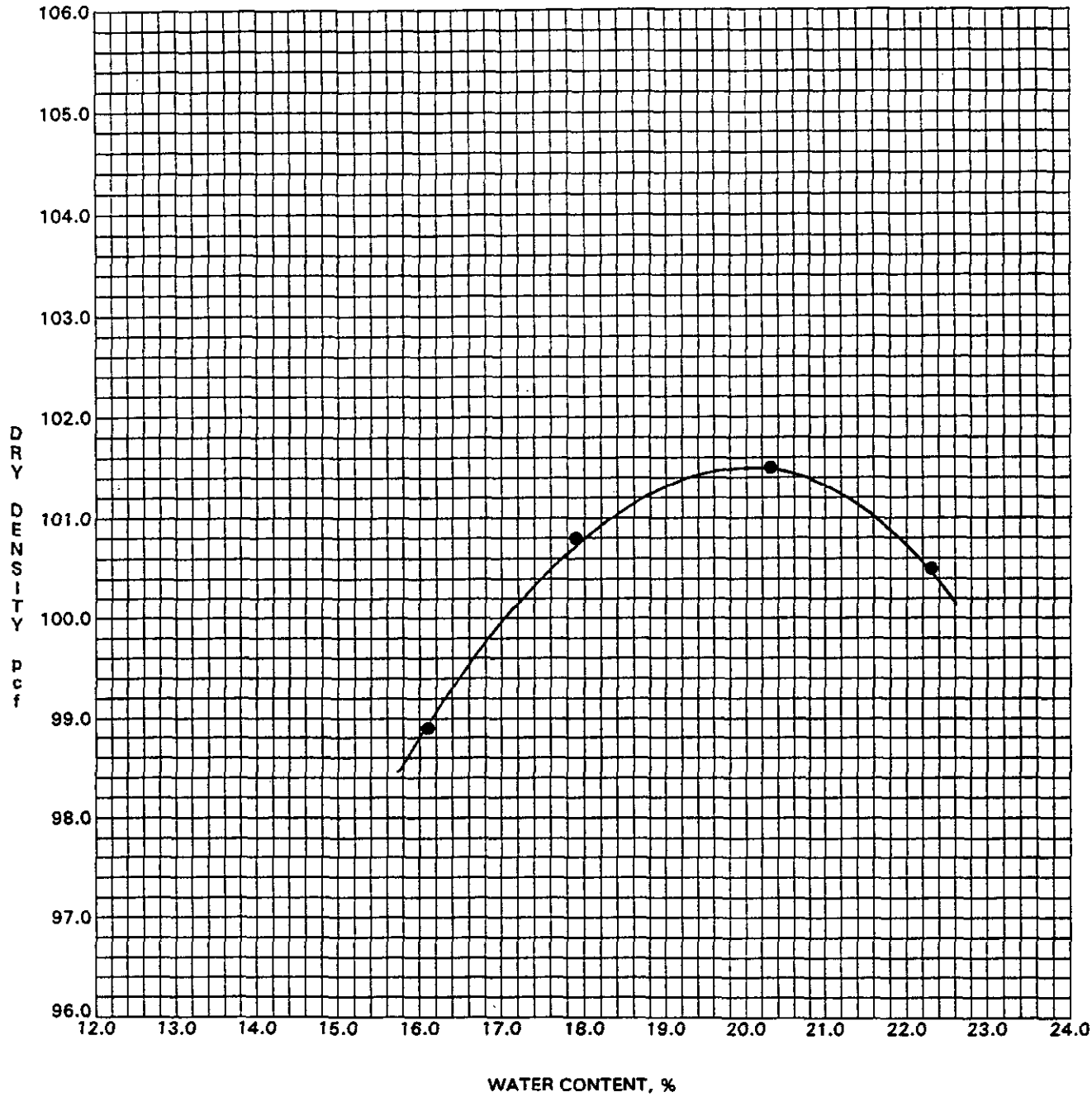
**Remarks:** * Sampled from DBG Borrow Area 2 161-B, north end from 2.5-4.5'.
Relative Proportions: trace to little sand, trace gravel
---

EARTH EXPLORATION

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-14-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-11
**Classification** CL, Silty Clay, brown
**Source** DBG Borrow Area 2 *

**Optimum Moisture Content, %** 20.0
**Maximum Dry Density, pcf** 101.5
**Test Method** ASTM D 698 (A) Manual

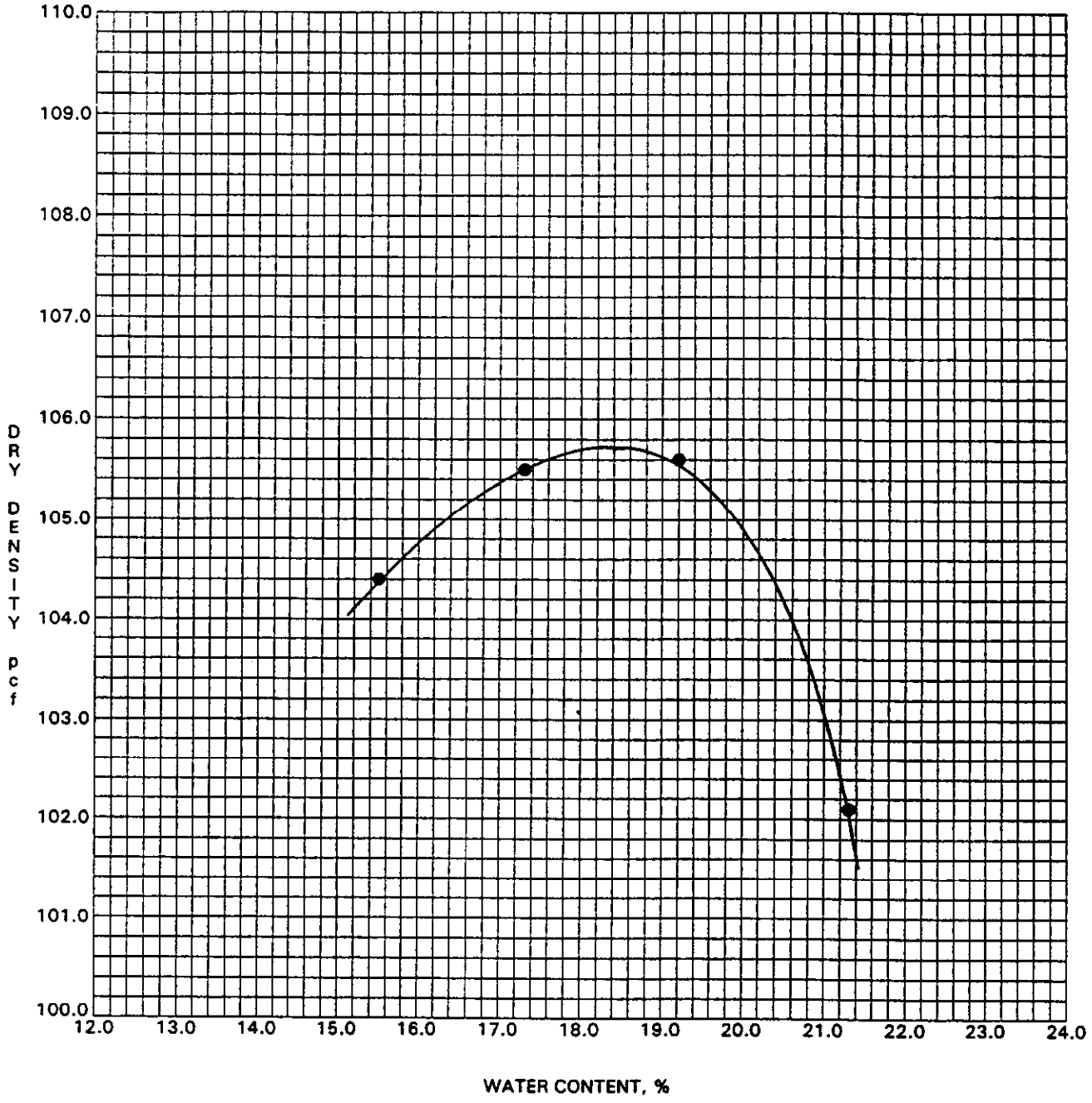
**Remarks:** * Sampled from DBG Borrow Area 2 161-B, south end from 1-3'.
Relative Proportions: trace sand and gravel
---

EARTH EXPLORATION

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-14-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-12
**Classification** CL, Silty Clay, brown
**Source** DBG Borrow Area 2 *

**Optimum Moisture Content, %** 18.4
**Maximum Dry Density, pcf** 105.7
**Test Method** ASTM D 698 (A) Manual

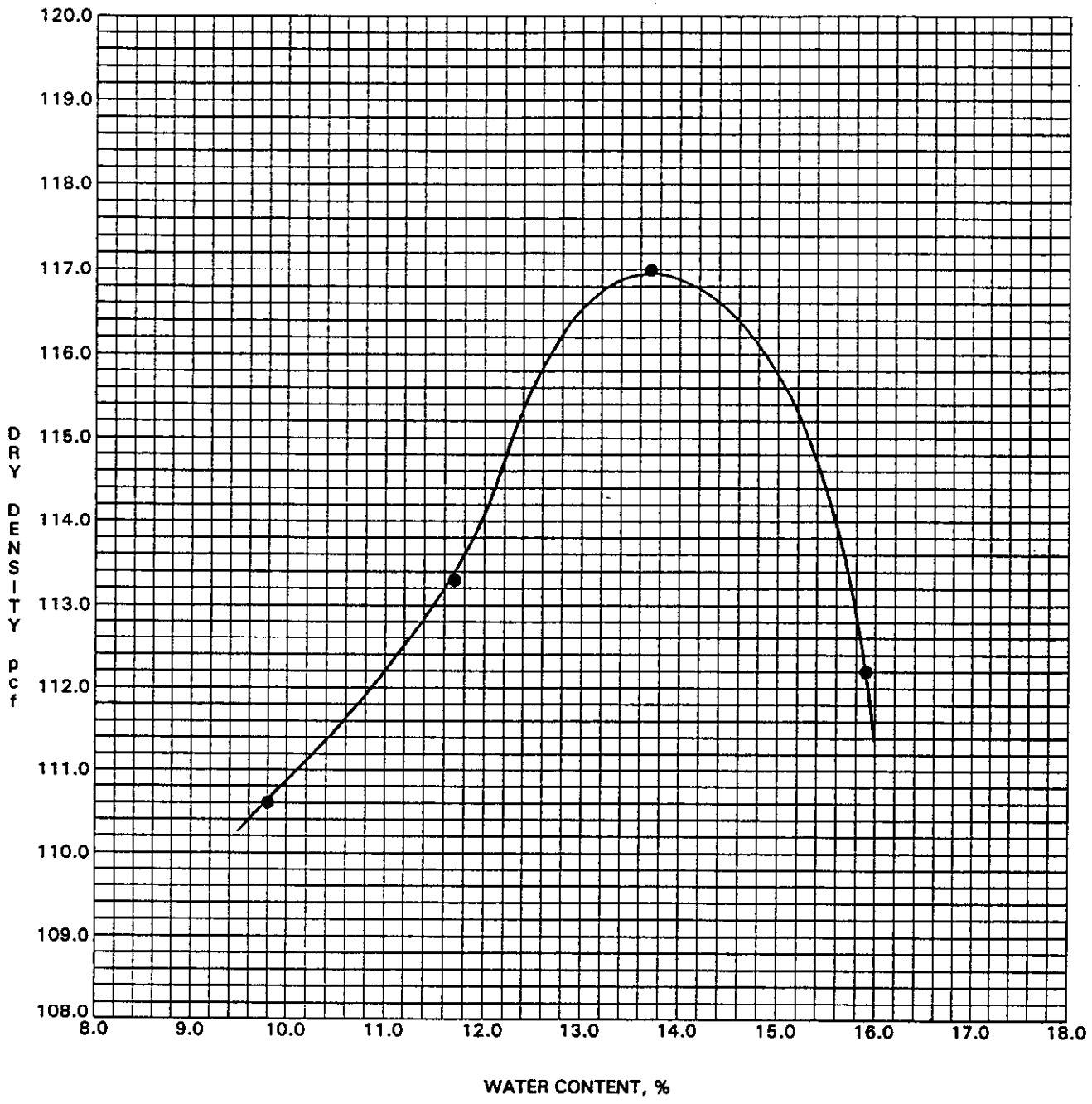
**Remarks:** * Sampled from DBG Borrow Area 2 161-B, south end from 3-5'.
Relative Proportions: trace to little sand, trace gravel
---

EARTH EXPLORATION

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-14-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-13
**Classification** CL, Silty Clay, brown
**Source** DBG Borrow Area 2 *

**Optimum Moisture Content, %** 13.7
**Maximum Dry Density, pcf** 117.0
**Test Method** ASTM D 698 (A) Manual

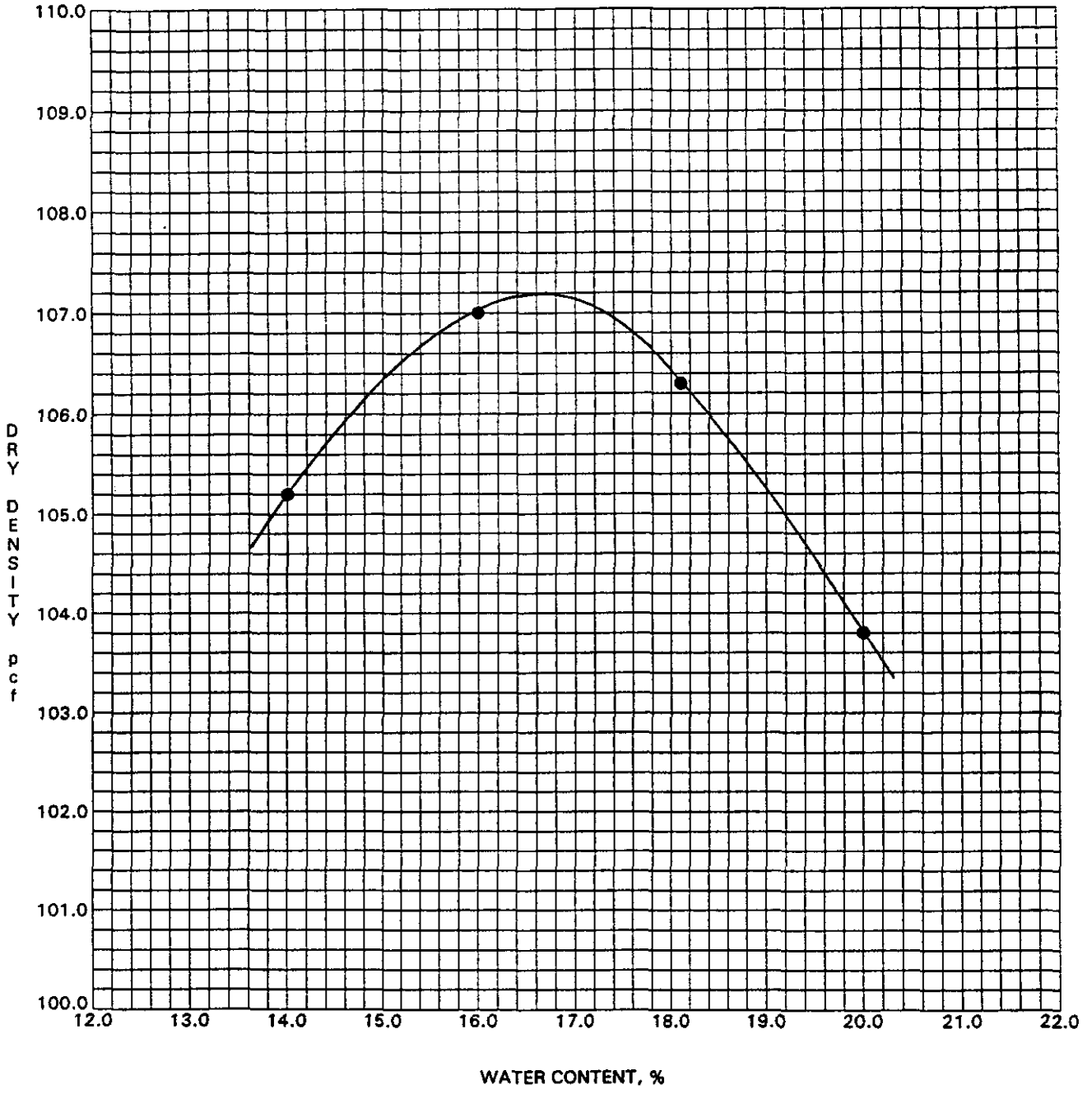
**Remarks:** * Sampled from DBG Borrow Area 2 161-B, south end from 5-7'.
Relative Proportions: little to some sand, trace gravel
---

EARTH EXPLORATION

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-14-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




**Sample No.** BS-15
**Classification** CL, Silty Clay, brown
**Source** on site *

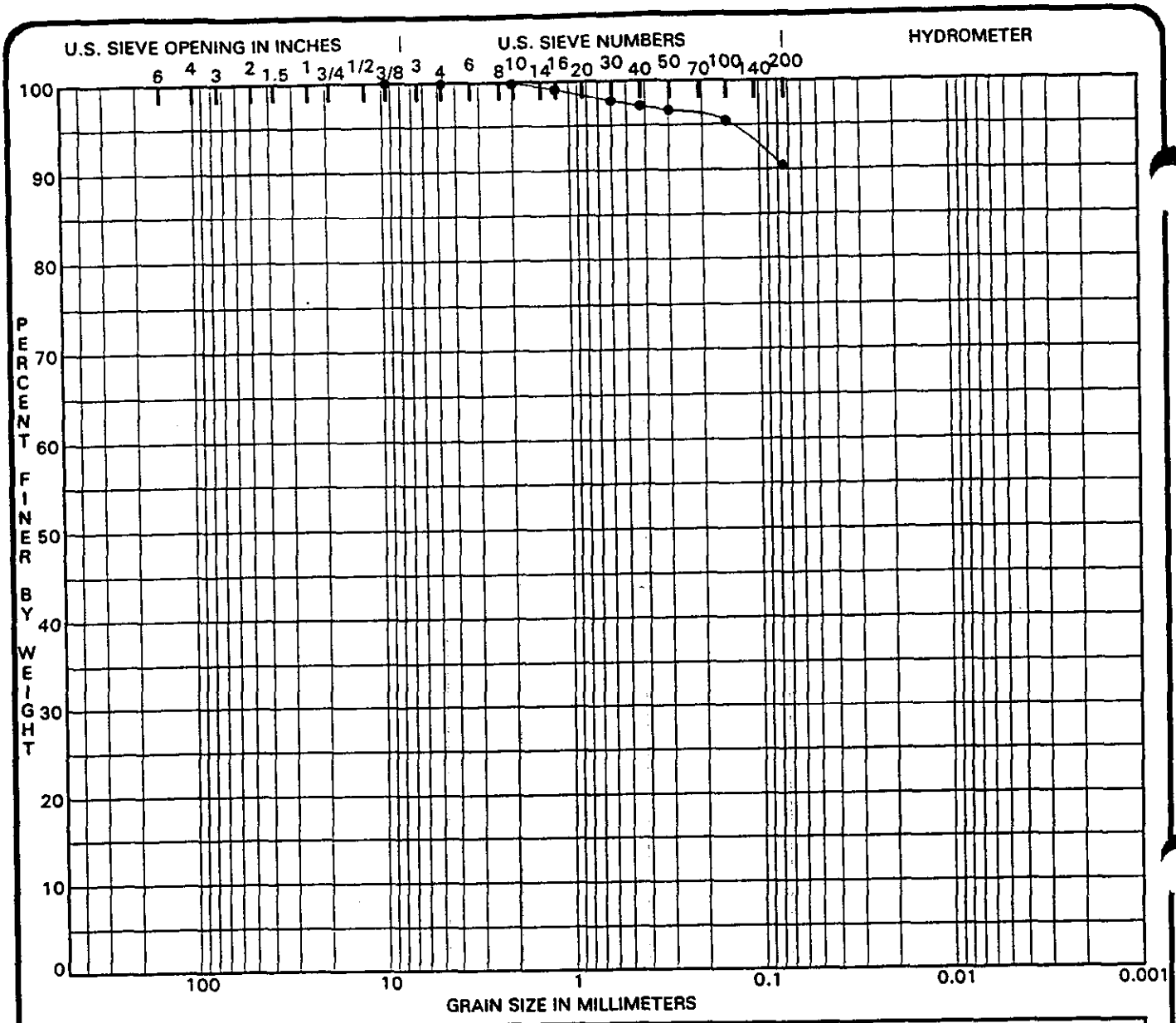
**Optimum Moisture Content, %** 16.7
**Maximum Dry Density, pcf** 107.2
**Test Method** ASTM D 698 (A) Manual

**Remarks:** * Composite sample of DBG Borrow Area 2 161-B (BS-9,10,11,12,&13).
*Relative Proportions: little sand, trace gravel*
---

| | | | |
|---|---|---|---|
| **Project** | Dye Burial Cap (FY97) | **Location** | NSWC Crane, Indiana |
| **Client** | Morrison Knudsen Corporation | **EEI Proj. No.** | 3483 |
| **A/E** | Morrison Knudsen Corporation | **Date** | 8-15-97 |

# MOISTURE - DENSITY RELATIONS

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| Sample Identification | USCS Classification | MC% | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● BS-15 | CL, Silty Clay, little sand, trace gravel | -- | 33 | 19 | 14 | | |

| % Gravel ( >4.75mm ) | % Sand ( 4.75 to .075mm ) | % Silt ( .075 to .005 mm ) | % Clay ( <.005mm ) |
|---|---|---|---|
| 0.1 | 9.6 | | |

| Grain Size (mm) | % Passing | Grain Size (mm) | % Passing | Grain Size (mm) | % Passing |
|---|---|---|---|---|---|
| 64.0 | 100.0 | 0.5 | 97.4 | 0.016 | |
| 16.0 | 100.0 | 0.25 | 96.3 | 0.008 | |
| 4.0 | 99.9 | 0.125 | 94.1 | 0.005 | |
| 2.0 | 99.8 | 0.075 | 90.3 | 0.002 | |
| 1.0 | 98.8 | 0.050 | | | |

EARTH EXPLORATION

PROJECT Dye Burial Cap (FY97)
LOCATION NSWC Crane, Indiana
CLIENT Morrison Knudsen Corporation
EEI PROJECT NO. 3483

DBG 161/822 Bore

CLIENT ID NO. ---
DATE 8-15-97

# GRAIN SIZE DISTRIBUTION CURVE

Earth Exploration, Inc.
7770 West New York Street Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)

# APPENDIX F

## TYPE 1 AND TYPE 2 GEOTEXTILE DATA

## APPENDIX F
## TYPE 1 AND TYPE 2 GEOTEXTILE DATA

### INDEX


F-1 Pre-construction Conformance Test Sample Log

F-2 Conformance Tests Results/Report

F-3 Manufacturer's QC Certificates

F-4 Panel Layout Plans

F-5 Panel Placement/Deployment Sheets

F-6 Seam Inspection/Test Sheets

# F-1

# Pre-construction Conformance Test Sample Log

# - DBG -
# SWMU 02/11
# SUBCONTRACT 4324/106
# PHILIP SERVICE GROUP

---

## TYPE 1 GEOTEXTILE - FILTER FABRIC
## R070 BY TNS

| ROLL # | DELIVERIED / STORED | DEPLOYED | REMARKS |
|---|---|---|---|
| 991833 * | 06-18-98 | 07-29-98<br>08-05-98 | GTS-48<br>GTB-4, 5, 6<br>Man QC Sample |
| * 991844 | 06-18-98 | 07-27-98 | GTS- 11, 13<br>Conformation Sample |
| 991845 | 06-18-98 | 07-27=98<br>07-29-98 | GTS 27, 28 |
| 991847 | 06-18-98 | 08-05-98 | GTB-29, 30, 31 |
| 991856 | 06-18-98 | 07-29-98 | GTS-41, 42, 43, 44 |
| 991865 | 06-18098 | 07-27-98 | GTS-25, 26 |
| 991860 | 06-18-98 | 08-05-98 | GTB-15, 16 |
| 991868 | 06-18-98 | 07-27-98 | GTS-15, 17 |
| 991873 | 06-18-98 | 08-05-98 | GTB-21, 22 |
| 991874 | 06-18-98 | 08-05-98 | GTB-2, 3 |
| 991894 * | 06-18-98 | 07-27-98 | GTS9, 10, 12<br>Man. QC Samplt |
| 991897 | 06-18-98 | 08-05-98 | GTB-32, 33, 34 |
| 991898 | 06-18-98 | 08-05-98 | GTB-35, 36, 37 |
| 991900 | 06-18-98 | 08-05-98 | GTB-38, 39, 40 |
| 991911 | 06-18-98 | 08-05-98 | GTB-44, 45, 46, 47 |
| 991913 | 06-18-98 | 08-05-98 | GTB-26, 27, 28 |
| 991944 | 06-18-98 | 08-05-98 | GTB-58, 49, 50, 51, 52 |
| 991948 | 06-18-98 | 08-05-98 | GTB-10, 11, 13 |
| 991968 | 06-18-98 | 08-05-98 | GTB-8, 9 |
| 991972 | 06-18-98 | 07-29-98 | GTS-35, 36, 40 |
| 991973 | 06-18-98 | 07-27-98 | GTS-18, 19, 20 |
| 991987 | 06-18-98 | 08-05-98 | GTB-17, 18b |
| 992118 * | 06-18-98 | 07-27-98 | GTS-14, 16<br>Man QC Sample |
| 992124 | 06-18-98 | 07-27-98 | GTS-1, 2 |
| 992127 | 06-18-98 | 07-27-98 | GTS-21, 22 |
| 992130 | 06-18-98 | 08-05-98 | GTB- 18a, 19 |
| 992132 | 06-18-98 | 07-29-98 | GTS-37, 38, 39, 45 |
| 992138 | 06-18-98 | 07-27-98 | GTS-3, 4, 8 |
| 992145 | 06-18-98 | 07-27-98 | GTS-29, 30 |
| 992160 | 06-18-98 | 08-05-98 | GTB-12, 14, 20 |
| 992161 | 06-18-98 | 07-29-98 | GTS-33, 34, 52 |
| 992165 | 06-18-98 | 07-27-98 | GTS-5, 6, 7 |
| * 992171 | 06-18-98 | 07-27-98<br>08-05-98 | GTS-23, 24<br>GTB-53<br>Conformation Sample |
| 992181 | 06-18-98 | 08-05-98 | GTB-23, 24, 25 |
| 992246 * | 06-18-98 | 07-29-98 | GTS-46, 47, 49, 50, 51<br>Man QC Sample |
| 993194 | 06-18-98 | 07-29-98 | GTS- 31, 32 |
| 993498 * | 06-18-98 | 08-05-98 | GTB-41, 42, 48<br>Man QC Sample |

# - DBG -
# SWMU 02/11
# SUBCONTRACT 4324/106
# PHILIP SERVICE GROUP

---

## TYPE 1 GEOTEXTILE - FILTER FABRIC
## 1202 BY SYNTHENTIC INDUSTRIES

| ROLL # | DELIVERIED / STORED | DEPLOYED | REMARKS |
|---|---|---|---|
| 4102070A | 06-18-98 | DITCHLINE | Roll cut in half and used to line the dranage trence GTB- 54, 55, 56, 57, 58, 59 |
| 4109148A | 06-18-98 | DITCHLINE 08-05-98 | Roll cut in half and used to line the dranage trence |
| 4109156A | 06-18-98 | | NOT USED |
| 4109171A | 06-18-98 | | NOT USED |
| 4109180A | 06-18-98 | | NOT USED |
| 4109191A | 06-18-98 | | NOT USED |
| 4109202A | 06-18-98 | DITCHLINE | Roll cut in half and used to line the dranage trence |
| | | | |

# - DBG -
# SWMU 02/11
# SUBCONTRACT 4324/106
# PHILIP SERVICE GROUP

## GEOTEXTILE TYPE 2 - CUSHION
## 1201 BY SYNTHETIC INDUSTRIES

| ROLL # | DELIVERIED / STORED | DEPLOYED | REMARKS |
|---|---|---|---|
| 4094557A * | 06-24-98 | 07-11-98 | GT-1, 2 |
| 4102007A | 06-18-98 | 07-12-98 | GT-30, 31, 32 |
| 4102010A | 06-24-98 | 07-11-98 | GT-10, 11 |
| 4102021A | 06-24-98 | 07-11-98 | GT-8, 9 |
| 4102034A | 06-18-98 | 07-12-98 | GT-19, 20 |
| 4102035A | 06-24-98 | 07-11-98 | GT-12, 13 |
| 4102037A | 06-18-98 | 07-12-98 | GT-21, 22, 23 |
| 4102070A | 06-18-98 | DITCH LINE | Cut in half and used as TYPE 1 to line Drainage trench Man. QC Sample |
| 4102099A | 06-24-98 | 07-11-98 | GT-3, 4 |
| 4102105A | 06-18-98 | 07-12-98 | GT-16, 17, 18 |
| 4102131A | 06-18-98 | 07-12-98 | GT-36, 37, 38 |
| 4102135A | 06-18-98 | 07-12-98 | GT-27, 28, 29 |
| 4102138A | 06-18-98 | 07-12-98 | GT-48, 49, 50, 54 |
| 4102143A | 06-18-98 | 07-12-98 | GT-33, 34, 35 |
| 4102155A | 06-18-98 | 07-12-98 | GT-24, 25, 26 |
| 4104606A | 06-24-98 | 07-11-98 | GT-5, 6, 7 |
| 4104674A | 06-18-98 | 07-12-98 | GT-45, 46, 47 |
| 4104683A | 06-18-98 | 07-12-98 | GT-14, 15 Conformation sample |
| 4104687A | 06-18-98 | 07-12-98 | GT-39, 40, 41 |
| 4104783A | 06-18-98 | 07-12-98 | GT-51, 52, 53 |
| 4116898A | 06-18-98 | 07-12-98 | GT-42, 43, 44 |
| | | | |
| | ---REJECTED--- | | |
| 4109148a | 06-18-98 | DITCH LINE | Cut in half and used as TYPE 1 to line Drainage trench |
| 4109156a | 06-18-98 | | |
| 4109171a | 06-18-98 | | |
| 4109180a | 06-18-98 | | |
| 4109191a | 06-18-98 | | |
| 4109202a | 06-18-98 | DITCHLINE | Cut in half and used as TYPE 1 to line Drainage trench |

# F-2

# Conformance Tests Results/Report

HTS, INC. Consultants
416 PICKERING STREET • HOUSTON, TEXAS 77091
713/692-8373 • 800/692-TEST • FAX 713/692-8502

July 10, 1998

| HTS Report #: | PEN1254.002.doc |
|---|---|

Mr. Don Flowers
Philip Environmental
510 DD Road
Columbia, IL 62236

| | |
|---|---|
| Customer Project Name: | NSWC Crane |
| Customer Project #: | 18328 |
| Lab Temperature: | 73 degrees F. |
| Lab Humidity: | 50% |

The following 3 samples were delivered to our laboratory on June 23, 1998.

| SAMPLES RECEIVED | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Sample I.D. | Mat'l Type | | Sample I.D. | Mat'l Type | | Sample I.D. | Mat'l Type |
| 1 | 991844 | GT | 6 | | | 11 | | |
| 2 | 992171 | GT | 7 | | | 12 | | |
| 3 | 4104683A | GT | 8 | | | 13 | | |
| 4 | | | 9 | | | 14 | | |
| 5 | | | 10 | | | 15 | | |

Conformance testing was performed in accordance with the following test methods. The test results are summarized on the subsequent pages. It should be noted that the test specimens and test sample used for this work were believed to be representative of the material produced under this designation. However, these results are indicative only of the specimens that were actually tested. HTS, Inc. neither accepts responsibility for nor makes claims to the final use and purpose of the material.

| TESTING PERFORMED | TESTING PERFORMED |
|---|---|
| ASTM D 5261 – Mass Per Unit Area | |
| ASTM D 4632 – Grab Tensile Properties | |
| ASTM D 4533 – Trapezoidal Tearing Strength | |
| ASTM D 3786 – Hydraulic Bursting Strength | |
| ASTM D 4833 – Puncture Resistance | |
| ASTM D 1777 – Thickness | |

Very truly yours,

Larry L. McMichael
Vice President



ENVIRONMENTAL • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING • ANALYTICAL SERVICES
SERVING THE CONSTRUCTION AND WASTE INDUSTRIES

# MASS PER UNIT AREA – ASTM D 5261

Sample Type: ASTM Specimen: 4" X 8"

| Sample | Spec. # | Mass Per Unit Area (oz/yd²) |
|---|---|---|
| 991844 | 1 | 6.3 |
| | 2 | 6.9 |
| | 3 | 6.6 |
| | 4 | 7.2 |
| | 5 | 7.4 |
| | Avg. | 6.9 |
| | S.D. | |

| Sample | Spec. # | Mass Per Unit Area (g/m²) |
|---|---|---|
| 992171 | 1 | 6.2 |
| | 2 | 6.5 |
| | 3 | 6.0 |
| | 4 | 5.9 |
| | 5 | 6.6 |
| | Avg. | 6.2 |
| | S.D. | |

| Sample | Spec. # | Mass Per Unit Area (g/m²) |
|---|---|---|
| 4104683A | 1 | 11.5 |
| | 2 | 15.6 |
| | 3 | 12.6 |
| | 4 | 12.8 |
| | 5 | 13.0 |
| | Avg. | 13.1 |
| | S.D. | |

# GRAB TENSILE PROPERTIES – ASTM D 4632

Instron Series IX Automated Materials Testing System

Sample Type: ASTM — Cross Head Speed (in/min): 12.0000

Width (in): 4.000 — Spec. Gauge Length (in): 3.000

Thickness (in): .1000 — Grip Distance (in): 3.000

| | | Maximum Load (lbs/in) | | Elongation (%) | |
|---|---|---|---|---|---|
| Sample | Spec. # | MD | XD | MD | XD |
| 991844 | 1 | 211.9 | 151.5 | 50.13 | 62.53 |
| | 2 | 222.7 | 163.9 | 54.47 | 59.40 |
| | 3 | 165.1 | 204.7 | 45.93 | 62.43 |
| | 4 | 185.2 | 216.4 | 48.13 | 76.70 |
| | 5 | 196.8 | 191.9 | 52.60 | 59.83 |
| | 6 | 187.8 | 198.0 | 50.80 | 58.17 |
| | 7 | 198.4 | 207.9 | 51.07 | 67.83 |
| | 8 | 243.4 | 207.9 | 51.83 | 61.47 |
| | 9 | 204.3 | 184.8 | 66.33 | 63.13 |
| | 10 | 188.9 | 150.4 | 50.07 | 53.60 |
| | Avg. | 200.5 | 187.7 | 52.1 | 62.5 |

| | | Maximum Load (lbs/in) | | Elongation (%) | |
|---|---|---|---|---|---|
| Sample | Spec. # | MD | XD | MD | XD |
| 992171 | 1 | 211.7 | 188.8 | 55.77 | 76.43 |
| | 2 | 158.2 | 187.4 | 62.57 | 72.60 |
| | 3 | 183.4 | 195.4 | 69.17 | 71.63 |
| | 4 | 180.3 | 188.9 | 69.20 | 79.43 |
| | 5 | 173.2 | 190.3 | 57.47 | 81.47 |
| | 6 | 197.9 | 214.8 | 51.80 | 74.83 |
| | 7 | 195.7 | 199.6 | 63.50 | 90.00 |
| | 8 | 187.9 | 228.1 | 61.83 | 74.27 |
| | 9 | 154.8 | 209.1 | 73.50 | 72.90 |
| | 10 | 175.4 | 191.7 | 71.53 | 87.30 |
| | Avg. | 181.9 | 199.4 | 63.6 | 78.1 |

| | | Maximum Load (lbs/in) | | Elongation (%) | |
|---|---|---|---|---|---|
| Sample | Spec. # | MD | XD | MD | XD |
| 4104683A | 1 | 283.5 | 361.1 | 69.93 | 81.07 |
| | 2 | 265.8 | 333.7 | 72.13 | 72.93 |
| | 3 | 287.4 | 383.5 | 75.30 | 75.90 |
| | 4 | 303.0 | 396.5 | 78.00 | 78.80 |
| | 5 | 264.8 | 364.0 | 69.43 | 76.93 |
| | 6 | 271.0 | 416.0 | 78.10 | 85.93 |
| | 7 | 324.3 | 374.6 | 84.80 | 78.60 |
| | 8 | 358.9 | 392.9 | 80.13 | 85.97 |
| | 9 | 346.6 | 382.8 | 75.77 | 85.00 |
| | 10 | 312.3 | 380.3 | 70.47 | 78.33 |
| | Avg. | 301.8 | 378.5 | 75.4 | 79.9 |

# TRAPEZOIDAL TEARING STRENGTH – ASTM D 4533

Instron Series IX Automated Materials Testing System

Sample Type: ASTM — Cross Head Speed (in/min): 12.0000

Width (in): 3 — Spec. Gauge Length (in): 1

Thickness (in): .1000 — Grip Distance (in): 1

| | | Maximum Load (lbs) | |
|---|---|---|---|
| Sample | Spec. # | MD | XD |
| 991844 | 1 | 62.01 | 74.28 |
| | 2 | 72.91 | 97.83 |
| | 3 | 88.83 | 123.30 |
| | 4 | 62.34 | 86.07 |
| | 5 | 76.67 | 84.62 |
| | 6 | 70.98 | 121.40 |
| | 7 | 70.47 | 72.27 |
| | 8 | 92.78 | 91.19 |
| | 9 | 80.05 | 129.60 |
| | 10 | 81.85 | 88.30 |
| | Avg. | 75.9 | 96.9 |

| | | Maximum Load (lbs) | |
|---|---|---|---|
| Sample | Spec. # | MD | XD |
| 992171 | 1 | 76.24 | 95.95 |
| | 2 | 91.38 | 117.40 |
| | 3 | 74.85 | 82.25 |
| | 4 | 71.81 | 97.34 |
| | 5 | 83.17 | 135.20 |
| | 6 | 76.62 | 86.71 |
| | 7 | 67.62 | 138.40 |
| | 8 | 71.84 | 112.10 |
| | 9 | 55.73 | 98.31 |
| | 10 | 74.15 | 91.62 |
| | Avg. | 74.3 | 105.5 |

| | | Maximum Load (lbs) | |
|---|---|---|---|
| Sample | Spec. # | MD | XD |
| 4104683A | 1 | 173.9 | 124.30 |
| | 2 | 167.8 | 114.30 |
| | 3 | 190.9 | 148.00 |
| | 4 | 230.6 | 104.20 |
| | 5 | 228.6 | 127.10 |
| | 6 | 185.3 | 129.40 |
| | 7 | 137.6 | 92.70 |
| | 8 | 160.0 | 114.50 |
| | 9 | 184.1 | 117.90 |
| | 10 | 189.5 | 123.70 |
| | Avg. | 184.8 | 119.6 |

# HYDRAULIC BURSTING STRENGTH – ASTM D 3786

Sample Type: ASTM

Hydraulic Diaphragm Bursting Tester: Model A

| Sample | Spec. # | Bursting Strength (psi) |
|---|---|---|
| 991844 | 1 | 430 |
| | 2 | 410 |
| | 3 | 380 |
| | 4 | 340 |
| | 5 | 390 |
| | 6 | 390 |
| | 7 | 415 |
| | 8 | 430 |
| | 9 | 410 |
| | 10 | 420 |
| | Avg. | 401.5 |

| Sample | Spec. # | Bursting Strength (psi) |
|---|---|---|
| 992171 | 1 | 430 |
| | 2 | 405 |
| | 3 | 370 |
| | 4 | 330 |
| | 5 | 370 |
| | 6 | 370 |
| | 7 | 330 |
| | 8 | 290 |
| | 9 | 290 |
| | 10 | 290 |
| | Avg. | 347.5 |

| Sample | Spec. # | Bursting Strength (psi) |
|---|---|---|
| 4104683A | 1 | 465 |
| | 2 | 445 |
| | 3 | 505 |
| | 4 | 525 |
| | 5 | 526 |
| | 6 | 415 |
| | 7 | 415 |
| | 8 | 395 |
| | 9 | 420 |
| | 10 | 395 |
| | Avg. | 450.6 |

# PUNCTURE RESISTANCE – ASTM D 4833

Instron Series IX Automated Materials Testing System

Sample Type: ASTM
Sample Size: 4" diameter
Area ($in^2$): 2.4660

Cross Head Speed (in/min): 12.0
Spec. Gauge Length (in): .0600
Platen Separation (in): .0600

| Sample | Spec. # | Maximum Load (lbs) |
|---|---|---|
| 991844 | 1 | 155 |
| | 2 | 155 |
| | 3 | 167 |
| | 4 | 113 |
| | 5 | 127 |
| | 6 | 128 |
| | 7 | 92 |
| | 8 | 97 |
| | 9 | 125 |
| | 10 | 93 |
| | 11 | 143 |
| | 12 | 95 |
| | 13 | 119 |
| | 14 | 112 |
| | 15 | 124 |
| | Avg. | 125.2 |
| | S.D. | |

| Sample | Spec. # | Maximum Load (lbs) |
|---|---|---|
| 992171 | 1 | 117 |
| | 2 | 101 |
| | 3 | 100 |
| | 4 | 84 |
| | 5 | 136 |
| | 6 | 99 |
| | 7 | 101 |
| | 8 | 120 |
| | 9 | 106 |
| | 10 | 98 |
| | 11 | 92 |
| | 12 | 121 |
| | 13 | 88 |
| | 14 | 94 |
| | 15 | 98 |
| | Avg. | 106.2 |

# PUNCTURE RESISTANCE – ASTM D 4833

Instron Series IX Automated Materials Testing System

Sample Type: ASTM
Sample Size: 4" diameter
Area ($in^2$): 2.4660

Cross Head Speed (in/min): 12.0
Spec. Gauge Length (in): .0600
Platen Separation (in): .0600

| Sample | Spec. # | Maximum Load (lbs) |
|---|---|---|
| 4104683A | 1 | 224 |
| | 2 | 177 |
| | 3 | 177 |
| | 4 | 232 |
| | 5 | 221 |
| | 6 | 204 |
| | 7 | 206 |
| | 8 | 218 |
| | 9 | 228 |
| | 10 | 195 |
| | 11 | 217 |
| | 12 | 220 |
| | 13 | 235 |
| | 14 | 233 |
| | 15 | 211 |
| | Avg. | 208.2 |

# THICKNESS – ASTM D 1777

Sample Type: ASTM
Dimension of Pressure Foot: 2.22 in
Loading Time Interval: 5 seconds
Type of Apparatus: Mitutoyo
Pressure Applied: .29 psi

| Sample | Spec. # | Thickness (mil) |
|---|---|---|
| 991844 | 1 | 57.5 |
| | 2 | 60.0 |
| | 3 | 61.5 |
| | 4 | 60.5 |
| | 5 | 69.0 |
| | 6 | 61.0 |
| | 7 | 66.0 |
| | 8 | 65.0 |
| | 9 | 63.0 |
| | 10 | 64.0 |
| | Avg. | 62.8 failed + retested 75 mil req. |

| Sample | Spec. # | Thickness (mil) |
|---|---|---|
| 992171 | 1 | 77.0 |
| | 2 | 77.5 |
| | 3 | 79.0 |
| | 4 | 79.0 |
| | 5 | 75.5 |
| | 6 | 78.0 |
| | 7 | 72.0 |
| | 8 | 77.0 |
| | 9 | 73.0 |
| | 10 | 76.0 |
| | Avg. | 76.4 |

| Sample | Spec. # | Thickness (mil) |
|---|---|---|
| 4104683A | 1 | 132.5 |
| | 2 | 145.5 |
| | 3 | 137.0 |
| | 4 | 134.0 |
| | 5 | 139.5 |
| | 6 | 137.8 |
| | 7 | 127.0 |
| | 8 | 123.5 |
| | 9 | 136.5 |
| | 10 | 138.0 |
| | Avg. | 135.1 |

Retest Thickness

HTS, INC. Consultants

416 PICKERING STREET • HOUSTON, TEXAS 77091
713/692-8373 • 800/692-TEST • FAX 713/692-8502

July 13, 1998

| HTS Report #: | PEN1254.004 |
|---|---|

Mr. Don Flowers
Philip Environmental
510 DD Road
Columbia, IL 62236

Customer Project Name: NSWC Crane
Customer Project #: 18328
Lab Temperature: 73 degrees F.
Lab Humidity: 50%

The following 1 samples were delivered to our laboratory on 7/13/98.

| SAMPLES RECEIVED | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Sample I.D. | Mat'l Type | | Sample I.D. | Mat'l Type | | Sample I.D. | Mat'l Type |
| 1 | 991844 | Geotextile | 6 | | | 11 | | |
| 2 | | | 7 | | | 12 | | |
| 3 | | | 8 | | | 13 | | |
| 4 | | | 9 | | | 14 | | |
| 5 | | | 10 | | | 15 | | |

Conformance testing was performed in accordance with the following test methods. The test results are summarized on the subsequent pages. It should be noted that the test specimens and test sample used for this work were believed to be representative of the material produced under this designation. However, these results are indicative only of the specimens that were actually tested. HTS, Inc. neither accepts responsibility for nor makes claims to the final use and purpose of the material.

| TESTING PERFORMED | TESTING PERFORMED |
|---|---|
| ASTM D 1777 - Thickness | |

Very truly yours,

Larry L. McMichael
Vice President



RONMENTAL • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING • ANALYTICAL SERVICES
SERVING THE CONSTRUCTION AND WASTE INDUSTRIES

# THICKNESS – ASTM D 1777

Sample Type: ASTM
Dimension of Pressure Foot: 2.22 in.
Loading Time Interval: 5 seconds
Type of Apparatus: Mitutoyo
Pressure Applied: .29 psi

| Sample | Spec. # | Thickness (mil) |
|---|---|---|
| 991844 | 1 | 73.0 |
| | 2 | 74.0 |
| | 3 | 78.5 |
| | 4 | 85.0 |
| | 5 | 86.0 |
| | 6 | 78.5 |
| | 7 | 79.5 |
| | 8 | 75.0 |
| | 9 | 82.0 |
| | 10 | 83.0 |
| | Avg. | 79.5 (mil) |

# F-3

# Manufacturer's QC Certificates

PHILIP ENVIRONMENTAL

Industrial Services Group
Midwest Region

June 10, 1998
Project 18328

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Lois J. Bigley 06-15-98
Lois J. Bigley 06.15.98

Dear Mr. McCumbers

APPROVED AS NOTED
Rolls 4109250A
4109160A FAIL
4109200A
Remaining rolls 1st pass

| | |
|---|---|
| **Project:** | **Dye Burial Grounds Cap** |
| | **NSWC Crane, Indiana** |
| **Project No.:** | **Subcontract 4324-106** |
| **Contractor:** | **Philip Services Corporation** |
| | **210 West Sand Bank Road** |
| | **Columbia, Illinois 62236-0230** |

**Re-Submittal No. 025F**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-62 | Test & Certification of Compliance | 02249 |

Type 2 Geotextile

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Don Flowers

Donald L. Flowers,
Project Manager

cc: D. Beall

PHILIP ENVIRONMENTAL SERVICES CORPORATION
210 West Sand Bank Road • P.O. Box 230 • Columbia, IL 62236-0230
(618) 281-7173 • (800) 733-7173 • Fax (618) 281-5120

SYNTHETIC INDUSTRIES

Geosynthetic Products Division
Fluid Systems Inc
Lisa Ambrose
1245 Corporate Blvd Suite 300
Aurora, IL 60504
NCWC Crane Dye Burial Cap

June 2, 1998

Michelle Lotz
205 551-0347

This is to certify that Product GEOTEX™ 1201, a nonwoven polypropylene geotextile produced by Synthetic Industries will meet the following certifiable minimum average roll values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level.

| PHYSICAL PROPERTY | TEST METHOD | U.S. UNITS | S.I. UNITS |
|---|---|---|---|
| Tensile Strength | ASTM D-4632 | 300 lbs | 1335 N |
| Elongation | ASTM D-4632 | 50 % | 50 % |
| Trapezoidal Tear | ASTM D-4533 | 115 lbs | 510 N |
| Mullen Burst | ASTM D-3786 | 580 psi | 3995 Kpa |
| Puncture Strength | ASTM D-4833 | 175 lbs | 775 N |
| AOS | ASTM D-4751 | 100 US Standard Sieve | 0.150 mm |
| Permittivity | ASTM D-4491 | 1.0 $sec^{-1}$ | 1.0 $sec^{-1}$ |
| Permeability | ASTM D-4491 | 0.29 cm/sec | 0.29 cm/sec |
| Flow Rate | ASTM D-4491 | 75 $gpm/ft^2$ | 3055 $lpm/m^2$ |
| U V Resistance | ASTM D-4355 | 70 % | 70 % |

Strength Retained after 500 hours exposure in Xenon arc Weatherometer

Sincerely,

Sid Weiser

Sid Weiser
Technical Manager
Performance Nonwovens Division

Seller makes no warranty, express or implied, concerning the product furnished hereunder other than at the time of delivery is free from defects in the quality and specifications stated herein. ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXPRESSLY EXCLUDED AND, TO THE EXTENT THAT IT IS CONTRARY TO THE FOREGOING SENTENCE, ANY IMPLIED WARRANTY OF MERCHANTABILITY IS EXPRESSLY EXCLUDED. Any recommendations made by the Seller concerning uses or applications of our product are based on reliable data. Seller makes no warranty of results to be obtained. If the product does not meet Synthetic Industries current published specifications, and the Customer gives notice to Synthetic Industries before handling the product, then Synthetic Industries will replace the product without charge or refund the purchase price. This Data Sheet supersedes all previous Data Sheets for this item and is subject to change without notice. The effective date for this product data is 02/1997

Synthetic Industries, Inc.
4019 Industry Drive • Chattanooga, Tennessee • 37416 • USA
Telephone • 423-899-0444 • Fax • 423-899-7619 • 1-800-621-0444

12/98 12:41 Page 1

Synthetic Industries
Individual Roll Data
Bill of Lading:C23710

| Roll Number | Style | Mass/ Unit Oay D6261 | Lab Thick mils D5199 | Tensile (MD) lbs D4632 | Tensile (XMD) lbs D4632 | Elongation (MD) % D4632 | Elongation (XMD) % D4632 | Trap Tear (MD) lbs D4533 | Trap Tear (XMD) lbs D4533 | Mullen Burst psi D3786 | Puncture Resist lbs D4833 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4102010A | 1201 | 11.3 | 136 | 323 | | 74 | | 141 | | 610 | 183 |
| 4103030A | 1201 | 11.6 | 145 | 348 | | 67 | | 145 | | 707 | 195 |
| 4102040A | 1201 | 11.0 | 142 | 318 | 418 | 67 | 66 | 170 | 232 | 613 | 203 |
| 4102070A | 1201 | 11.1 | 143 | 348 | 417 | 67 | 67 | 178 | 252 | 633 | 217 |
| 4102100A | 1201 | 11.5 | 141 | 366 | 665 | 65 | 68 | 175 | 213 | 687 | 228 |
| 4102130A | 1201 | 11.2 | 136 | 336 | 421 | 69 | 66 | 146 | 205 | 627 | 197 |
| 4102140A | 1201 | 11.3 | 142 | 351 | 422 | 70 | 69 | 167 | 226 | 627 | 212 |
| 4102140A | 1201 | 11.3 | 142 | 351 | 422 | 70 | 69 | 167 | 226 | 627 | 212 |
| 4103150A | 1201 | 11.6 | 143 | 363 | | 67 | | 145 | | 654 | 218 |
| 4106690A | 1201 | 11.1 | 132 | 324 | | 74 | | 163 | | 593 | 183 |
| 4106660A | 1201 | 11.1 | 132 | 324 | | 74 | | 162 | | 593 | 183 |
| 4104790A | 1201 | 11.7 | 133 | 360 | 436 | 72 | 73 | 161 | 221 | 613 | 192 |
| 4109150A | 1201 | 12.2 | 112 | 353 | 459 | 73 | 63 | 138 | 210 | 690 | 221 |
| 4109160A | 1201 | 12.0 | 111 | 323 | 440 | 69 | 61 | 144 | 215 | 601 | 226 |
| 4109200A | 1201 | 11.8 | 108 | 308 | 433 | 67 | 62 | 120 | 183 | 593 | 191 |
| 4116890A | 1201 | 11.6 | 128 | 323 | | 65 | | 143 | | 526 | 204 |

Fail Req thickness 120mil

Sid Wann

Synthetic Industries' current standard manufacturing quality control (MQC) testing frequency for GEOTEX nonwoven geotextiles is one (1) test per 90,000 sf (8,360 sm) for index properties (mass per unit area, thickness, grab tensile and elongation, trapezoidal tear, mullen burst and puncture resistance) for styles heavier than 601 and one (1) test per 162,000 sf (15,000 sm) for index properties for style 601 and lighter. Although we strive to test our nonwoven geotextiles for apparent opening size (AOS) and Permittivity/permeability/water flow rate approximately once every 540,000 sf (50,160 sm), the actual frequency of testing for performance properties will vary depending upon production schedules, product availability, customer requirements, job specifications or other agreements arranged with Synthetic Industries prior to the time of purchase. If additional testing is needed to meet higher frequencies required by the project specifications, it is the purchaser's responsibility to notify Synthetic Industries and ask for assistance in calculating the costs for the additional tests.

Once rolls of nonwoven geotextiles are produced, inspected and the test results from the frequency stated above indicates that materials produced during the production run meets our published minimum average roll values, approved rolls are shipped for storage until an order requires the material to be shipped. Since rolls are loaded at the warehouse independent of production sequence test results listed above may include data from rolls which were not shipped. However, the data provided is from the same production run as the rolls actually shipped on this bill of lading.

FLUID SYSTEMS

Type 2 (SI)

June 19, 1998

Michelle Lotz
104 Wholesale Ave.
Huntsville, AL 35811

RE: Dye Burial Cap
Crane, IN

Dear Michelle:

The table labeled "Individual Roll Data" supplied by Synthetic Industries for the GEOTEX 1201 nonwoven geotextiles is the actual test data for the lot of geotextiles from which the rolls were taken to supply this project. It was mistakenly labeled as being for a particular bill of lading. The rolls supplied to the jobsite are correctly listed on the bill of lading number 623825 which arrived with the delivery. Due to testing frequency, most of the rolls sent to the jobsite fall between the rolls actually tested. This means that roll data for each roll shipped to the jobsite is not available. You can reasonably project roll data by comparing the data from the roll data above and below the roll number delivered to the site. Alternately, samples can be taken from the rolls onsite and tested.

Sincerely,

John D. Pyle

Regional Sales Manager

NSWC CRANE
DYE BURIAL GROUND CAP

Submittal Item No. 1-60(A)
Specification Section 02249

:ificate of Compliance by Geotextile Manufacturer

Lois J. Bigly 12-29-97

Lois J. Bigly 12-29-97
(signature)

Phillip Environmental Services Corp.
210 West Sand Bank Road
Columbia, IL 62236

Geosynthetics Contractor
Environmental Design & Construction, Inc.
104 Wholesale Avenue
Huntsville, AL 35811

SYNTHETIC INDUSTRIES
Construction • Civil Engineering Products Group

September 12, 1997

John Pyle
Fluid Systems, Inc.
South Carolina
Fax: 864.949.2686

**RE: Dye Burial Cap, Crane, IN/Synthetic Industries' 1201**

Dear John:

Please find below my response to the engineer's comments regarding the 1201 submittal items for the above referenced project:

1-55 Synthetic Industries quality control resin analysis and Fina certification included in original submittal packet. This information is "sample" as a representation of 1201 production.
1-56 Revised letter of compliance will be sent referencing this project.
1-57 Synthetic Industries does not add reclaimed polymer to the 1201 nonwoven. Only 1st quality virgin resin is used to produce the 1201 nonwoven.
1-58 The 1201 is comprised of greater than 95% polypropylene by unit weight. The remaining percentage is made up of carbon black and other processing additives. I am not at liberty to divulge the exact make-up of our nonwoven geotextiles. This information is considered proprietary in nature.
1-59 Synthetic Industries does not publish the mass per unit area or thickness of the 1201 nonwoven. This product is generally used in the civil highway marketplace where mass and thickness is not an issue. However, these properties will appear on the revised letter of compliance.
1-60 These properties will appear on the revised letter of compliance.
1-62 This information can be supplied at time of shipment.

Any further questions, please feel free to contact me.

Respectfully,

E. Cooper

Eddie E. Cooper
Engineering Assistant, Construction • Civil Engineering Products Group

cc: Danny Campbell, Synthetic Industries

Synthetic Industries, Inc.
4019 Industry Drive • Chattanooga, Tennessee • 37416 • 37416 USA
Telephone • 423-899-0444 • Fax • 423-899-7619 • 1-800-621-0444

**SYNTHETIC INDUSTRIES**

**Geosynthetic Products Division**

September 12, 1997

Fluid Systems Inc
John Pyle
1245 Corporate Blvd Suite 300
Aurora, IL 60504
Project: Dye Burial Cap Crane IN

This letter of compliance indicates that product GEOTEX™ 1201, a nonwoven polypropylene geotextile, produced by Synthetic Industries will meet the following certifiable minimum average roll values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. Nominal value, n. - for geotextiles, a term used to identify the mass per unit area of a material that may deviate from the mean.

| PHYSICAL PROPERTY | TEST METHOD | U.S. UNITS | S.I. UNITS |
|---|---|---|---|
| Mass per unit area | ASTM D-5261 (Nominal) | 12 oz/yd$^2$ | 405 g/m$^2$ |
| Thickness | ASTM D-5199 | 105 mils | 2.6 mm |
| Tensile Strength | ASTM D-4632 | 300 lbs | 1335 N |
| Thickness | ASTM D-5199 | 105 mils | 2.6 mm |
| Elongation | ASTM D-4632 | 50 % | 50 % |
| Trapezoidal Tear | ASTM D-4533 | 115 lbs | 510 N |
| Mullen Burst | ASTM D-3786 | 580 psi | 3995 Kpa |
| Puncture Strength | ASTM D-4833 | 175 lbs | 775 N |
| AOS | ASTM D-4751 | 100 US Standard Sieve | 0.150 mm |
| Permittivity | ASTM D-4751 | 1.0 sec$^{-1}$ | 1.0 sec$^{-1}$ |
| Permeability | ASTM D-4491 | 0.29 cm/sec | 0.29 cm/sec |
| Flow Rate | ASTM D-4491 | 75 gpm/ft | 3055 lpm/m$^2$ |
| U V Resistance | ASTM D-4355 | 70 % | |

Strength Retained after 500 hours exposure in Xenon Arc Weatherometer

Sincerely,

Sid Weiser

Sid Weiser
Technical Manager
Performance Nonwovens Division

Seller makes no warranty, express or implied, concerning the product furnished hereunder other than at the time of delivery it shall be of the quality and specifications stated herein. ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXPRESSLY EXCLUDED AND, TO THE EXTENT THAT IT IS CONTRARY TO THE FOREGOING SENTENCE ANY IMPLIED WARRANTY OF MERCHANTABILITY IS EXPRESSLY EXCLUDED. Any recommendations made by the Seller concerning uses or applications of said product are believed reliable and Seller makes no warranty of results to be obtained. If the product does not meet Synthetic Industries current published specifications, and the Customer gives notice to Synthetic Industries before installing the product, then Synthetic Industries will replace the product without charge or refund the price. This Data Sheet supersedes all previous Data Sheets for this style and is subject to change without notice. The effective date for this product data is purchase 04/08/97

**Synthetic Industries, Inc.**
4019 Industry Drive • Chattanooga, Tennessee • 37416 • USA
Telephone • 423-899-0444 • Fax • 423-899-7819 • 1-800-821-0444

TNS
ADVANCED TECHNOLOGIES

681 DeYoung Road
Greer, South Carolina 29651
Tel: (864) 968-0592
Fax: (864) 879-4639
Toll Free: (800) 867-5181

December 2, 1997

REF: TNS R070
Dye Burial Ground Cap
Crane, IN
Environmental Design & Construction
Huntsville, AL

Dear Sir/Madam:

This is to certify that TNS R070 is a 100% polypropylene, nonwoven, needle-punched fabric. TNS R070 is resistant to degradation due to ultraviolet exposure and resists commonly encountered soil chemicals, insects, mildew, and is non-biodegradable. Polypropylene is stable within a pH range of 2 to 13. TNS R070 conforms to the physical properties listed in the following table.

| FABRIC PROPERTY | TEST METHOD | UNITS | M.A.R.V. Minimum Average Roll Value |
|---|---|---|---|
| Weight (Typical) | ASTM D3376 | oz/sy | 7.0 |
| Thickness | ASTM D5199 | mils | 90 |
| Grab Tensile | ASTM D4632 | lbs | 180 |
| Trap Tear | ASTM D4533 | lbs | 75 |
| Puncture | ASTM D4833 | lbs | 105 |
| Mullen Burst | ASTM D3786 | psi | 350 |
| Permittivity | ASTM D4491 | l/sec | 1.5 |
| Water Flow | ASTM D4491 | gpm/sft. | 100 |
| Permeability | ASTM D4491 | cm/sec | .30 |
| UV Resistance | ASTM D4355 | % | 70 |
| AOS | ASTM D4751 | US Sieve | 80 |

*At time of manufacturing, handling may change these properties

Sincerely,

Monte Thomas KC

Monte Thomas
Vice President
TNS Advanced Technologies

Type 1

TNS ADVANCED TECHNOLOGIES

681 DeYoung Road
Greer, South Carolina 29651
Tel: (864) 968-0592
Fax: (864) 879-4639
Toll Free: (800) 867-5181

1-60

May 14, 1998
REF: TNS R070
PO: 93707
Quantity: 36 rolls

EDCI
Huntsville AL

Dear Sir/Madam:

This is to certify that TNS R070 is a 100% polypropylene, nonwoven, needle-punched fabric. TNS R070 is resistant to degradation due to ultraviolet exposure and resists commonly encountered soil chemicals, insects, mildew, and is non-biodegradable. Polypropylene is stable within a pH range of 2 to 13. TNS R070 conforms to the physical properties listed in the following table:

| FABRIC PROPERTY | TEST METHOD | UNITS | M.A.R.V |
|---|---|---|---|
| **Weight(typical)** | **ASTM D 3776** | **oz/sy** | **7.0** |
| **Thickness** | **ASTM D 5199** | **mils** | **90** |
| **Grab Tensile** | **ASTM D 4632** | **lbs** | **180** |
| **Grab Elongation** | **ASTM D 4632** | **%** | **50** |
| **Trap Tear** | **ASTM D 4533** | **lbs** | **75** |
| **Puncture** | **ASTM D 4833** | **lbs** | **105** |
| **Mullen Burst** | **ASTM D 3786** | **psi** | **350** |
| **A.O.S.** | **ASTM D 4751** | **U.S. Sieve** | **80** |
| **Permeability** | **ASTM D 4491** | **cm/sec** | **0.30** |
| **Permitivity** | **ASTM D 4491** | **1/sec** | **1.5** |
| **Water Flow** | **ASTM D 4491** | **gpm/sq.ft.** | **100** |
| ***U.V. Resistance*** | ***ASTM D 4355*** | ***% retained*** | **70** |

Sincerely,

Paul M. Mosley
TNS Advanced Technologies

IN1358 INS Packing List - 14:22. 05/12/98 Page 1

| Roll # | Styl-Wtr-Yds | Gross | Yard | Net |
|---|---|---|---|---|
| Location "E0?170" Available Only | | | | |
| 991833 | R070 180 300 | 224 | 17 | 207 |
| 991844 | R070 180 300 | 223 | 17 | 206 |
| 991845 | R070 180 300 | 224 | 17 | 207 |
| 991847 | R070 180 300 | 222 | 17 | 205 |
| 991856 | R070 180 300 | 223 | 17 | 206 |
| 991860 | R070 180 300 | 223 | 17 | 206 |
| 991868 | R070 180 300 | 223 | 17 | 206 |
| 991873 | R070 180 300 | 220 | 17 | 203 |
| 991874 | R070 180 300 | 224 | 17 | 207 |
| 991894 | R070 180 300 | 225 | 17 | 208 |
| 991895 | R070 180 300 | 225 | 17 | 208 |
| 991897 | R070 180 300 | 227 | 17 | 210 |
| 991898 | R070 180 300 | 225 | 17 | 208 |
| 991900 | R070 180 300 | 225 | 17 | 208 |
| 991911 | R070 180 300 | 225 | 17 | 208 |
| 991913 | R070 180 300 | 223 | 17 | 206 |
| 991949 | R070 180 300 | 229 | 17 | 212 |
| 991953 | R070 180 300 | 226 | 17 | 209 |
| 991958 | R070 180 300 | 226 | 18 | 208 |
| 991972 | R070 180 300 | 226 | 18 | 208 |
| 991973 | R070 180 300 | 226 | 18 | 208 |
| 991987 | R070 180 300 | 226 | 18 | 208 |
| 992112 | R070 180 300 | 226 | 17 | 209 |
| 992124 | R070 180 300 | 226 | 18 | 208 |
| 992127 | R070 180 300 | 226 | 18 | 208 |
| 992130 | R070 180 300 | 225 | 18 | 207 |
| 992132 | R070 180 300 | 225 | 18 | 207 |
| 992138 | R070 180 300 | 224 | 18 | 206 |
| 992145 | R070 180 300 | 229 | 18 | 211 |
| 992150 | R070 180 300 | 226 | 18 | 208 |
| 992161 | R070 180 300 | 227 | 18 | 209 |
| 992165 | R070 180 300 | 226 | 18 | 208 |
| 992171 | R070 180 300 | 227 | 18 | 209 |
| 992181 | R070 180 300 | 228 | 18 | 210 |
| 992246 | R070 180 300 | 252 | 18 | 234 |
| 993498 | R070 180 300 | 252 | 18 | 234 |
| "E0?170" Totals: | | 8,156 | 529 | 7,535 |

36 Rolls----

TNS Mills, Inc.

Nonwoven Quality Data

05/12/98 Page 1

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 951833 | RG70 | 180 | 300 | 7.2 | 103 | 205 | 184 | 71 | 82 | 113 | 126 | 111 | 372 | 101 | .37 | 1.5 | 80 |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 992246 | RG70 | 180 | 300 | 7.0 | 99 | 211 | 235 | 69 | 71 | 75 | 75 | 136 | 423 | 102 | .30 | 1.6 | 80 |
| 993498 | RG70 | 180 | 300 | 7.3 | 101 | 191 | 188 | 58 | 80 | 85 | 88 | 130 | 400 | 102 | .30 | 1.6 | 80 |

# F-4

# Panel Layout Plans

MATERIAL SUMMARY

ROLL 1
P1-39'
P2-46'
P3-52'
P4-60'
P5-75'
P6-28'

ROLL 2
P7-57'
P8-94'
P-9-102'
P10-47'

ROLL 3
P11-63'
P12-116'
P13-119'

ROLL 4
P14-119'
P15-124'
P16-57'

ROLL 5
P17-77'
P18-137'
P19-86'

ROLL 6
P20-49'
P21-135'
P22-116'

ROLL 7
P23-21'
P24-138'
P25-136'

ROLL 8
P26-136'
P27-136'
P28-28'

ROLL 9
P29-107'
P30-136'
P31-57'

ROLL 10
P32-74'
P33-144'
P34-82'

ROLL 11
P35-74'
P36-168'
P37-58'

ROLL 12
P38-124'
P39-176'

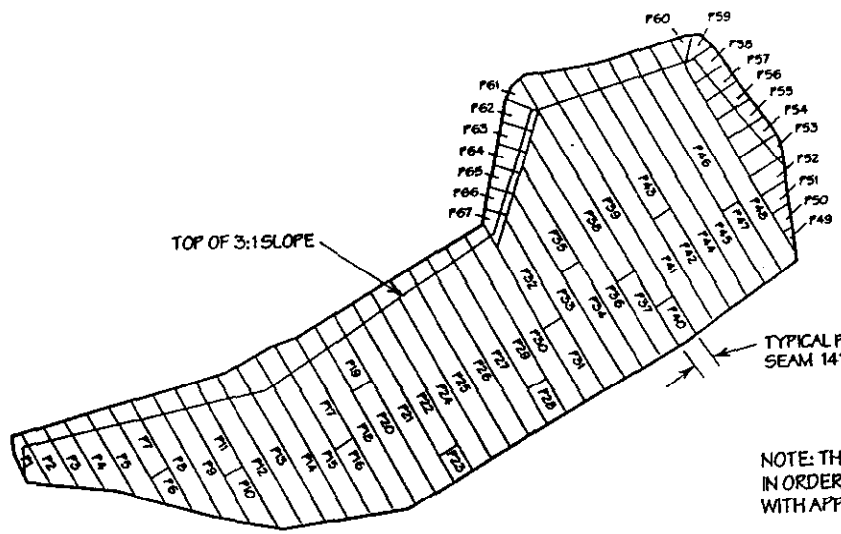
ROLL 13
P40-25'
P41-195'
P42-80'

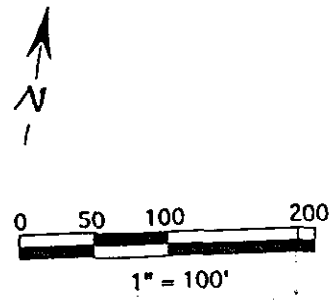
ROLL 14
P43-109'
P44-183'

ROLL 15
P45-179'
P46-121'
P47-51'
P48-165'
P49-7'
P50-13'
P51-20'
P52-25'

ROLL 16
P53-28'
P54-28'
P55-26'
P56-25'
P57-23'
P58-21'
P59-19'
P60-19'
P61-23'
P62-21'
P63-21'
P64-17'
P65-16'

ROLL 17
P66-15'
P67-21'




NOTE: THIS PANEL LAYOUT IS TENTATIVE AND MAY BE REVISED IN ORDER TO SUIT FIELD CONDITIONS BY EDCI SITE MANAGER WITH APPROVAL OF THE ENGINEER.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SCALE 1"= 100'<br>DRAWN TAL<br>DATE 8-8-97<br>DRAWING MAY BE REDUCED<br>LINE EQUALS ONE INCH ON ORIGINAL DRAWING | NO. | DATE | REVISION | INIT. | ENVIRONMENTAL DESIGN AND CONSTRUCTION, INC.<br>HUNTSVILLE, ALABAMA | DYE BURIAL GROUND<br>INTERIM MEASURES<br>CRANE, INDIANA | PROPOSED PANEL LAYOUT<br>12 oz SY<br>NONWOVEN GEOTEXTILE<br>SHEET 3 of 3 |

MATERIAL SUMMARY

ROLL 1
P1-39'
P2-46'
P3-52'
P4-60'
P5-75'
P6-83'
P7-94'
P8-51'

ROLL 2
P-9-51'
P10-110'
P11-116'
P12-119'
P13-104'

ROLL 3
P14-20'
P15-130'
P16-134'
P17-137'
P18-79'

ROLL 4
P19-56'
P20-135'
P21-137'
P22-138'
P23-34'

ROLL 5
P24-103'

ROLL 5
P25-136'
P26-136'
P27-125'

ROLL 6
P28-10'
P29-136'
P30-131'
P31-144'
P32-79'

ROLL 7
P33-77'
P34-168'
P35-205'
P36-50'

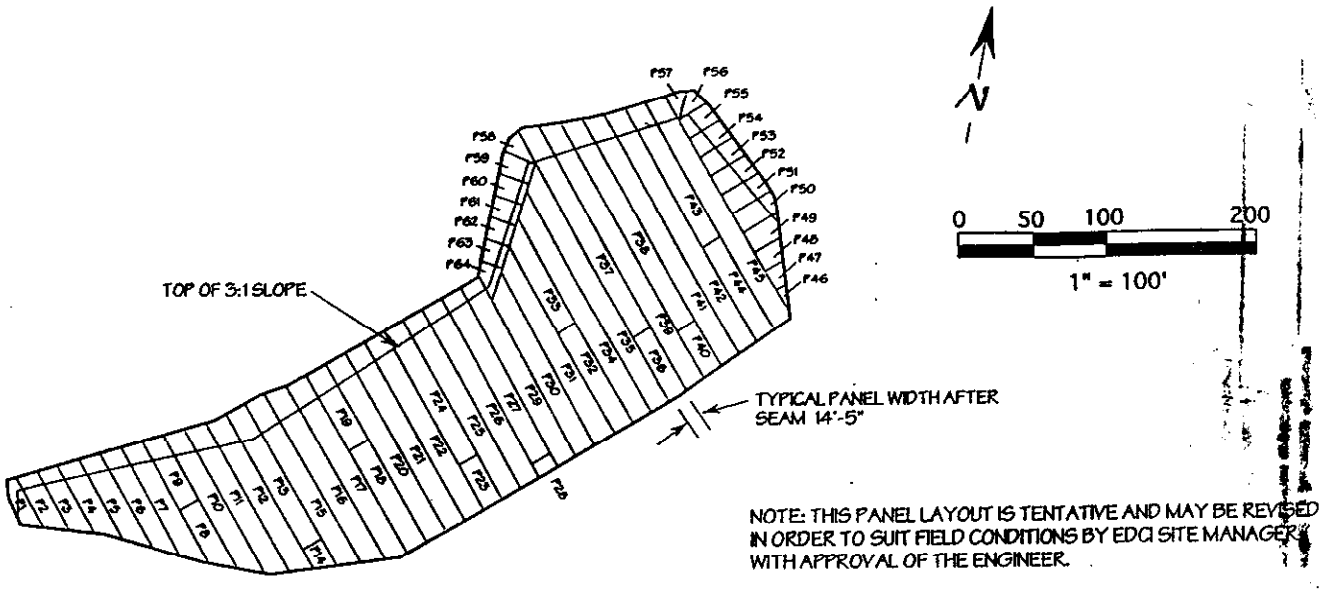
ROLL 8
P37-151'
P38-195'
P39-154'

ROLL 9
P40-35'
P41-183'
P42-179'
P43-103'

ROLL 10
P44-69'
P45-165'
P46-7'

ROLL 10
P47-13'
P48-20'
P49-25'
P50-28'
P51-28'
P52-26'
P53-25'
P54-23'
P55-21'
P56-19'
P57-19'

ROLL 11
P58-23'
P59-21'
P60-21'
P61-17'
P62-16'
P63-15'
P64-21'




NOTE: THIS PANEL LAYOUT IS TENTATIVE AND MAY BE REVISED IN ORDER TO SUIT FIELD CONDITIONS BY EDCI SITE MANAGER WITH APPROVAL OF THE ENGINEER.

| SCALE 1"= 100' DRAWN TAL DATE 8-8-97 | NO. | DATE | REVISION | INIT. | ENVIRONMENTAL DESIGN AND CONSTRUCTION, INC. HUNTSVILLE, ALABAMA | DYE BURIAL GROUND INTERIM MEASURES CRANE, INDIANA | PROPOSED PANEL LAYOUT 7 oz SY NONWOVEN GEOTEXTILE | SHEET 2 of 3 |
|---|---|---|---|---|---|---|---|---|
| DRAWING MAY BE REDUCED LINE EQUALS ONE INCH ON ORIGINAL DRAWING | | | | | | | | |

# F-5

# Panel Placement/Deployment Sheets

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

# DYE BURIAL GROUND CAP
# CRANE INDIANA

## Panel Placement Log

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

TYPE 2 GEOTEXTILE

PROJECT NAME: DYE BURIAL GROUND SHEET 1 OF 1

PROJECT #: 97006 IN

PROJECT LOCATION: CRANE IN DATE: 7-11-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-1 | 4094557 | 12 oz | 188 | 14.75 | 2,773 |
| GT-2 | 4094557 | 12 oz | 112 | 14.75 | 1,652 |
| GT-3 | 4020999 | 12 oz | 191 | 14.75 | 2,817 |
| GT-4 | 4020999 | 12 oz | 109 | 14.75 | 1,608 |
| GT-5 | 4104606 | 12 oz | 81 | 14.75 | 1,195 |
| GT-6 | 4104606 | 12 oz | 197 | 14.75 | 2,906 |
| GT-7 | 4104606 | 12 oz | 24 | 14.75 | 354 |
| GT-8 | 4102021 | 12 oz | 174 | 14.75 | 2,567 |
| GT-9 | 4102021 | 12 oz | 125 | 14.75 | 1,844 |
| GT-10 | 4102010 | 12 oz | 73 | 14.75 | 1,077 |
| GT-11 | 4102010 | 12 oz | 209 | 14.75 | 3,083 |
| GT-12 | 4102035 | 12 oz | 219 | 14.75 | 3,230 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | TOTAL INSTALLED THIS PAGE | | | | 25,006 |
| | TOTAL INSTALLED PREV. PAGE | | | | Ø |
| | TOTAL INSTALLED TO DATE | | | | 25,106 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

TYPE 2 GEOTEXTILE

PROJECT NAME: DYE BURIAL GROUND SHEET 1 OF 3

PROJECT #: 97006 (N)

PROJECT LOCATION: CRANE, IN DATE: 7-12-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-13 | 4102035 | 12 oz | 82 | 14.75 | 1,210 |
| GT-14 | 4104683 | 12 oz | 134 | 14.75 | 1,977 |
| GT-15 | 4104683 | 12 oz | 166 | 14.75 | 2,449 |
| GT-16 | 4102105 | 12 oz | 50 | 14.75 | 738 |
| GT-17 | 4102105 | 12 oz | 216 | 14.75 | 3,186 |
| GT-18 | 4102105 | 12 oz | 39 | 14.75 | 575 |
| GT-19 | 4102034 | 12 oz | 171 | 14.75 | 2,522 |
| GT-20 | 4102034 | 12 oz | 127 | 14.75 | 1,873 |
| GT-21 | 4102037 | 12 oz | 50 | 14.75 | 738 |
| GT-22 | 4102037 | 12 oz | 170 | 14.75 | 2,508 |
| GT-23 | 4102037 | 12 oz | 80 | 14.75 | 1,180 |
| GT-24 | 4102155 | 12 oz | 76 | 14.75 | 1,121 |
| GT-25 | 4102155 | 12 oz | 156 | 14.75 | 2,301 |
| GT-26 | 4102155 | 12 oz | 73 | 14.75 | 1,077 |
| GT-27 | 4102135 | 12 oz | 82 | 14.75 | 1,210 |
| GT-28 | 4102135 | 12 oz | 142 | 14.75 | 2,095 |
| GT-29 | 4102135 | 12 oz | 69 | 14.75 | 1,018 |
| GT-30 | 4102007 | 12 oz | 85 | 14.75 | 1,254 |
| GT-31 | 4102007 | 12 oz | 149 | 14.75 | 2,198 |
| GT-32 | 4102007 | 12 oz | 62 | 14.75 | 915 |
| | TOTAL INSTALLED THIS PAGE | | | | 29,275 |
| | TOTAL INSTALLED PREV. PAGE | | | | 25,106 |
| | TOTAL INSTALLED TO DATE | | | | 54,381 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

TYPE 2 GEOTEXTILE

PROJECT NAME: DYE BURIAL GROUND SHEET 2 OF 3

PROJECT #: 97006 IN

PROJECT LOCATION: CRANE, IN DATE: 1-12-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-33 | 4102143 | 12 oz | 90 | 14.75 | 1,328 |
| GT-34 | 4102143 | 12 oz | 147 | 14.75 | 2,168 |
| GT-35 | 4102143 | 12 oz | 59 | 14.75 | 870 |
| GT-36 | 4102131 | 12 oz | 83 | 14.75 | 1,224 |
| GT-37 | 4102131 | 12 oz | 145 | 14.75 | 2,139 |
| GT-38 | 4102131 | 12 oz | 65 | 14.75 | 959 |
| GT-39 | 4104687 | 12 oz | 79 | 14.75 | 1,165 |
| GT-40 | 4104687 | 12 oz | 132 | 14.75 | 1,947 |
| GT-41 | 4104687 | 12 oz | 89 | 14.75 | 1,313 |
| GT-42 | 4116898 | 12 oz | 40 | 14.75 | 590 |
| GT-43 | 4116898 | 12 oz | 134 | 14.75 | 1,977 |
| GT-44 | 4116898 | 12 oz | 129 | 14.75 | 1,903 |
| GT-45 | 4104674 | 12 oz | 122 | 14.75 | 1,800 |
| GT-46 | 4104674 | 12 oz | 97 | 14.75 | 1,431 |
| GT-47 | 4104674 | 12 oz | 71 | 14.75 | 1,047 |
| GT-48 | 4102138 | 12 oz | 37 | 14.75 | 546 |
| GT-49 | 4102138 | 12 oz | 87 | 14.75 | 1,283 |
| GT-50 | 4102138 | 12 oz | 78 | 14.75 | 1,151 |
| GT-51 | 4104783 | 12 oz | 72 | 14.75 | 1,062 |
| GT-52 | 4104783 | 12 oz | 70 | 14.75 | 1,033 |
| | TOTAL INSTALLED THIS PAGE | | | | 26,936 |
| | TOTAL INSTALLED PREV. PAGE | | | | 54,381 |
| | TOTAL INSTALLED TO DATE | | | | 81,317 |

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TYPE 2 GEOTEXTILE

PROJECT NAME: DYE BURIAL GROUND SHEET 3 OF 3

PROJECT #: 97006 IN

PROJECT LOCATION: CRANE, IN DATE: 7-12-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-53 | 4104783 | 12oz | 70 | 14.75 | 1,033 |
| GT-54 | 4102138 | 12oz | 70 | 14.75 | 1,033 |
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| | TOTAL INSTALLED THIS PAGE | | | | 2,066 |
| | TOTAL INSTALLED PREV. PAGE | | | | 81,317 |
| | TOTAL INSTALLED TO DATE | | | | 83,383 |

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PROJECT NAME: Dye Burial Grounds SHEET 1 OF

PROJECT #: Crane Weapons Naval Base Crane, Indiana

PROJECT LOCATION: Naval Crane Weapons Base Crane, Indiana DATE: 7-27-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-1 | 0992124 | 6oz | 144' | 15' | 2160 |
| GT-2 | 0992124 | 6oz | 103' | 15' | 1545 |
| GT-3 | 0992138 | 6oz | 45' | 15' | 675 |
| GT-4 | 0992138 | 6oz | 87' | 15' | 1305 |
| GT-5 | 0992165 | 6oz | 53' | 15' | 795 |
| GT-6 | 0992165 | 6oz | 191' | 15' | 2865 |
| GT-7 | 0992165 | 6oz | 52' | 15' | 780 |
| GT-8 | 0992138 | 6oz | 184' | 15' | 2760 |
| GT-9 | 0991894 | 6oz | 196' | 15' | 2940 |
| GT-10 | 0991844 | 6oz | 101' | 15' | 1515 |
| GT-11 | 0991844 | 6oz | 114' | 15' | 1710 |
| GT-12 | 0991894 | 6oz | 18' | 15' | 270 |
| GT-13 | 0991844 | 6oz | 192' | 15' | 2880 |
| GT-14 | 0992118 | 6oz | 212' | 15' | 3180 |
| GT-15 | 0991868 | 6oz | 117' | 15' | 1755 |
| GT-16 | 0992118 | 6oz | 105' | 15' | 1575 |
| GT-17 | 0991868 | 6oz | 185' | 15' | 2775 |
| GT-18 | 0991973 | 6oz | 36' | 15' | 540 |
| GT-19 | 0991973 | 6oz | 183' | 15' | 2745 |
| GT-20 | 0991973 | 6oz | 14' | 15' | 210 |
| GT-21 | 0992127 | 6oz | 203' | 15' | 3045 |
| GT-22 | 0992127 | 6oz | 100' | 15' | 1500 |
| GT-23 | 0992171 | 6oz | 82' | 15' | 1230 |
| GT-24 | 0992171 | 6oz | 168' | 15' | 2520 |
| GT-25 | 0991865 | 6oz | 139' | 15' | 1985 |
| GT-26 | 0991865 | 6oz | 133' | 15' | 1895 |
| GT-27 | 0991845 | 6oz | 154' | 15' | 2310 |
| GT-28 | 0991845 | 6oz | 153' | 15' | 2295 |
| GT-29 | 0992175 | 6oz | 151' | 15' | 2265 |
| | TOTAL INSTALLED THIS PAGE | | | | 54025 |
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| | TOTAL INSTALLED TO DATE | | | | 54025 |

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PROJECT NAME: Dye Burial Grounds SHEET 2 OF

PROJECT #:

PROJECT LOCATION: Crane Naval Base, Crane Ind. DATE: 7-29-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-30 | 0992145 | 6oz | 148' | 180 | 2280 |
| GT-31 | 0993194 | 6oz | 150' | 180 | 2250 |
| GT-32 | 0993194 | 6oz | 149' | 180 | 2205 |
| GT-33 | 0992161 | 6oz | 140' | 180 | 2100 |
| GT-34 | 0992161 | 6oz | 140' | 180 | 2100 |
| GT-35 | 0991972 | 6oz | 122' | 180 | 1830 |
| GT-36 | 0991972 | 6oz | 117' | 180 | 1755 |
| GT-37 | 0992132 | 6oz | 114' | 180 | 1710 |
| GT-38 | 0992132 | 6oz | 110' | 180 | 1650 |
| GT-39 | 0992132 | 6oz | 39' | 180 | 585 |
| GT-40 | 0991972 | 6oz | 28' | 180 | 420 |
| GT-41 | 0991856 | 6oz | 28' | 180 | 420 |
| GT-42 | 0991856 | 6oz | 98' | 180 | 1470 |
| GT-43 | 0991856 | 6oz | 86' | 180 | 1290 |
| GT-44 | 0991856 | 6oz | 70' | 180 | 1050 |
| GT-45 | 0992132 | 6oz | 21' | 180 | 315 |
| GT-46 | 0992246 | 6oz | 73' | 180 | 1095 |
| GT-47 | 0992246 | 6oz | 72' | 180 | 1080 |
| GT-48 | 0991833 | 6oz | 27' | 180 | 405 |
| GT-49 | 0992246 | 6oz | 64' | 180 | 960 |
| GT-50 | 0992246 | 6oz | 56' | 180 | 840 |
| GT-51 | 0992246 | 6oz | 19' | 180 | 285 |
| GT-52 | 0992161 | 6oz | 18' | 180 | 270 |
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| | TOTAL INSTALLED THIS PAGE | | | | 26205 |
| | TOTAL INSTALLED PREV. PAGE | | | | 54025 |
| | TOTAL INSTALLED TO DATE | | | | 81230 |

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PROJECT NAME: DYE BURIAL GROUNDS SHEET 1 OF 3

PROJECT #:

PROJECT LOCATION: CRANE NAVAL BASE, CRANE IND DATE: 8-5-98 (WED)

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-1 | 1833 | 60z | 144 | 15' | 2160 |
| GT-2 | 1874 | 60z | 178' | 15 | 2670 |
| GT-3 | 1874 | 60z | 130' | 15 | 1950 |
| GT-4 | 1833 | 60z | 31' | 15 | 465 |
| GT-5 | 1833 | 60z | 45 | 7.5 | 338 |
| GT-6 | 1833 | 60z | 45' | 7.5 | 338 |
| GT-7 | 1833 | 60z | 33' | 15 | 495 |
| GT-8 | 1868 | 60z | 148' | 15 | 2220 |
| GT-9 | 1868 | 60z | 136' | 15 | 2040 |
| GT-10 | 1948 | 60z | 64' | 15 | 960 |
| GT-11 | 1948 | 60z | 175' | 15 | 2625 |
| GT-12 | 2160 | 60z | 156' | 15 | 1565 |
| GT-13 | 1948 | 60z | 57' | 15 | 855 |
| GT-14 | 2160 | 60z | 144' | 15 | 2160 |
| GT-15 | 1860 | 60z | 79' | 15 | 1185 |
| GT-16 | 1860 | 60z | 220' | 15 | 3300 |
| GT-17 | 1987 | 60z | 197' | 15 | 2955 |
| GT-18A | 2130 | 60z | 110' | 15 | 1650 |
| GT-18B | 1987 | 60z | 105' | 15 | 1575 |
| GT-20 | 2160 | 60z | 27' | 15 | 405 |
| GT-21 | 1873 | 60z | 186' | 15 | 2790 |
| GT-22 | 1873 | 60z | 114' | 15 | 1710 |
| GT-23 | 2181 | 60z | 57' | 15 | 855 |
| GT-24 | 2181 | 60z | 173' | 15 | 2595 |
| GT-25 | 2181 | 60z | 124' | 15 | 1860 |
| GT-26 | 1913 | 60z | 57' | 15 | 855 |
| GT-27 | 1913 | 60 | 160' | 15 | 2400 |
| GT-28 | 1913 | 60z | 93' | 15 | 1395 |
| GT-29 | 1847 | 60z | 67' | 15 | 975 |
| | TOTAL INSTALLED THIS PAGE | | | | 47346 |
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| | TOTAL INSTALLED TO DATE | | | | 47346 |

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PROJECT NAME: _____ SHEET ____ OF _____

PROJECT #: _____

PROJECT LOCATION: _____ DATE: _____

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-30 | 1847 | 60z | 155 | 15 | 2325 |
| GT-31 | 1847 | 60z | 78 | 15 | 1170 |
| GT-32 | 1897 | 60z | 80 | 15 | 1200 |
| GT-33 | 1897 | 60z | 153 | 15 | 2295 |
| GT-19 | 2130 | 60z | 187 | 15 | 2805 |
| | TOTAL INSTALLED THIS PAGE | | | | 9795 |
| | TOTAL INSTALLED PREV. PAGE | | | | 47346 |
| | TOTAL INSTALLED TO DATE | | | | 57141 |

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PROJECT NAME: Dyl Burial Grounds SHEET 3 OF 3

PROJECT #:

PROJECT LOCATION: Crane Naval Base, Crane IND DATE: 8-5

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-34 | 1897 | 6oz | 89' | 15 | 1335 |
| GT-35 | 1898 | 6oz | 32' | 15 | 480 |
| GT-36 | 1898 | 6oz | 140' | 15 | 2100 |
| GT-37 | 1898 | 6oz | 130' | 15 | 1950 |
| GT-38 | 1900 | 6oz | 136' | 15 | 2040 |
| GT-39 | 1900 | 6oz | 133' | 15 | 1995 |
| GT-40 | 1900 | 6oz | 40' | 15 | 600 |
| GT-41 | 3498 | 6oz | 100' | 15 | 1500 |
| GT-42 | 3498 | 6oz | 130' | 15 | 1950 |
| GT-43 | 3498 | 6oz | 72' | 15 | 1080 |
| GT-44 | 1911 | 6oz | 50' | 15 | 750 |
| GT-45 | 1911 | 6oz | 130' | 15 | 1950 |
| GT-46 | 1911 | 6oz | 86' | 15 | 1290 |
| GT-47 | 1911 | 6oz | 40' | 15 | 600 |
| GT-48 | 1944 | 6oz | 63' | 15 | 945 |
| GT-49 | 1944 | 6oz | 83' | 15 | 1245 |
| GT-50 | 1944 | 6oz | 76' | 15 | 1140 |
| GT-51 | 1944 | 6oz | 70' | 15 | 1050 |
| GT-52 | 1944 | 6oz | 18' | 15 | 270 |
| GT-53 | 2171 | 6oz | 46' | 15 | 690 |
| GT-54 | 148A | 12oz | 44' | 7' | 308 |
| GT-55 | 148A | 12oz | 38' | 7' | 266 |
| GT-56 | 148A | 12oz | 70' | 7' | 490 |
| GT-57 | 148A | 12oz | 70' | 7' | 490 |
| GT-58 | 148A | 12oz | 40' | 7' | 280 |
| GT-59 | 148A | 12oz | 4' | 7' | 28 |
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| | TOTAL INSTALLED PREV. PAGE | | | 57141 | [illegible] |
| | TOTAL INSTALLED TO DATE | | | 83963 | [illegible] |

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PROJECT NAME: Dyt Burial Grounds SHEET 3 OF 3

PROJECT #:

PROJECT LOCATION: Crane Naval Base, Crane IND DATE: 8-5

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| GT-34 | 1897 | 6oz | 89' | 15 | 1335 |
| GT-35 | 1898 | 6oz | 32' | 15 | 480 |
| GT-36 | 1898 | 6oz | 140' | 15 | 2100 |
| GT-37 | 1898 | 6oz | 130' | 15 | 1950 |
| GT-38 | 1900 | 6oz | 136' | 15 | 2040 |
| GT-39 | 1900 | 6oz | 133' | 15 | 1995 |
| GT-40 | 1900 | 6oz | 40' | 15 | 600 |
| GT-41 | 3498 | 6oz | 100' | 15 | 1500 |
| GT-42 | 3498 | 6oz | 130' | 15 | 1950 |
| GT-43 | 3498 | 6oz | 72' | 15 | 1080 |
| GT-44 | 1911 | 6oz | 50' | 15 | 750 |
| GT-45 | 1911 | 6oz | 130' | 15 | 1950 |
| GT-46 | 1911 | 6oz | 86' | 15 | 1290 |
| GT-47 | 1911 | 6oz | 40' | 15 | 600 |
| GT-48 | 1944 | 6oz | 63' | 15 | 945 |
| GT-49 | 1944 | 6oz | 83' | 15 | 1245 |
| GT-50 | 1944 | 6oz | 76' | 15 | 1140 |
| GT-51 | 1944 | 6oz | 70' | 15 | 1050 |
| GT-52 | 1944 | 6oz | 18' | 15 | 270 |
| GT-53 | 2171 | 6oz | 46' | 15 | 690 |
| GT-54 | 148A | 12oz | 44' | 7' | 308 |
| GT-55 | 148A | 12oz | 38' | 7' | 266 |
| GT-56 | 148A | 12oz | 70' | 7' | 490 |
| GT-57 | 148A | 12oz | 70' | 7' | 490 |
| GT-58 | 148A | 12oz | 40' | 7' | 280 |
| GT-59 | 148A | 12oz | 4' | 7' | 28 |
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| | TOTAL INSTALLED THIS PAGE | | | 26822 | [redacted] |
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| | TOTAL INSTALLED TO DATE | | | 83963 | [redacted] |

# F-6

# Seam Inspection/Test Sheets

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
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## CERTIFICATE OF ACCEPTANCE

PROJECT NAME: Dry Burial Ground DATE: 7-23-98
PROJECT LOCATION: Crane, IN

Details of Work Completed and Measured.....

Supplied, Installed, And Tested 84,772 Square Feet Of Type 2 (12oz) Geotextile, GCL, And 60 Mil Textured HDPE.

I, the undersigned, duly authorized representative of Phillips Services do hereby take over and accept the work described above from the date hereof, subject to the exceptions detailed below, and confirm that the work has been completed in accordance with the specifications and the terms and conditions of the contract. There is no apparent damage to the plastic lining, nor is there any interference within or without the surrounding works.

I have evaluated and measured the work together with the EDCI representative, and agree that the measurements shown above are true and correct, and that the installation has met our approval.

Exceptions.....

General Contractor/Owner
Russell Tomasko
Signature
Russell Tomasko
Printed Name
Date: 7/23/98

Environmental Design & Construction, Inc.
Daniel R. Davis
Signature
Daniel R Davis
Printed Name
Date: 7-23-98

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

# CERTIFICATE OF ACCEPTANCE

PROJECT NAME: DYE BURIAL GROUND DATE: 7·30·98

PROJECT LOCATION: CRANE, INDIANA

Details of Work Completed and Measured....
82,330 sq.ft. of GEOTEXTILE 6oz. seamed by stitching
covering layer of 6" sand.

I, the undersigned, a duly authorized representative of PHILLIP SERVICES do hereby take over and accept the work described above from the date hereof, subject to the exceptions detailed below, and confirm that the work has been completed in accordance with the specifications and the terms and conditions of the contract. There is no apparent damage to the plastic lining, nor is there any interference within or without the surrounding works.

I have evaluated and measured the work together with the EDCI representative, and agree that the measurements shown above are true and correct, and that the installation has met our approval.

Exceptions.....

| General Contractor/Owner | Environmental Design & Construction, Inc. |
|---|---|
| Signature | Signature |
| RUSSELL TOMATSKO | RICHARD T. HASTIE |
| Printed Name | Printed Name |
| Date: 7/30/98 | Date: 7-30-98 |

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 11, 1998
REPORT #080

Activity:

- Drainage/anchor Trench: Using a Cat backhoe with a 24" bucket, PSG began excavation of the drainage/anchor trench, starting on the north end and working southward. The drainage/anchor trench is a 2 foot wide 1 foot trench with rounded corners located around the perimeter of the cap and four outlets. Approximately 900 liner foot was excavated today. Roots, organic matter, gravel, and a variety of geosynthetic material were found within the trench excavation and removed or layered in the bottom of the trench. Protruding roots were cut flush with the side wall using either a hatchet or a chain saw. PSG covered all exposed sections of the drainage/anchor trench with plastic sheeting at the end of the shift.
- Geotextile Cushion and GCL Installation - After a final inspection of the cap foundation surface, EDCI a sub to PSG, began deployment of the geotextile cushion, SI 1201 a 120 mil geotextile, starting at the northeast end and working southward. Using a Union Sewing Machine and KemFast, a polymer thread, panels of geotextile cushion are continuously sewn together with a locking stitch. The first 13 panels cover nearly 25,000 square feet, approximately 140 feet of the north end and were laid and three sections sewn.

Inspection:

- PSG - inspected the trench line rounding corners, cut protruding roots, and checked depth, width, and grade.

- MK - performed spot check on depth and condition of trench. Inspected entire trench line and spoils for dye contamination - no evidence of dye was found in any part of the trench.
- EDCI - prior to deployment of the geotextile cushion, inspected the cap foundation surface.
- MK - confirmed that the first panel was deployed straight. EDCI is deploying the geotextile by lifting the roll using the wheel loader and pulling the material across the cap.
- EDCI - inspected the geotextile panel for irregularities, rips, holes, tears and unspent raw material prior to seaming geotextile panels. GT-1, GT-2 roll #~~4094357~~ 4004357, GT 3, GT-4 roll #4020899; GT-5, GT-6, GT-7 roll #4104606; GT-8, GT-9 roll #4102021; GT-10, GT-11 roll #4102010; GT-12, GT-13 roll #4102035.
- MK - confirmed that SI 1201 meets the subcontract specifications (all required submittals in and approved). The six rejected rolls set aside - material did not meet thickness requirements per manufacturer's QC certificates.
- MK - verified that approved thread, KemFast Tex 210, meets or exceeds the UV resistance of the geotextile.
- MK - visually inspected the following seams by walking down the entire length of the seam and that the panels are free of irregularities, flaws, holes, rips, or tears. Seams: GT-3 - GT-1; GT-1 - GT 5 & 2; GT-5 & 2 - GT-6.

Attachments: 0

Signature/Date: Lou J Bailey 07-11-98
Report #080

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 12, 1998
REPORT #081

Activity:

Drainage/anchor Trench: PSG completed excavation of the drainage/anchor trench and four outlet trenches using a Cat 246 backhoe with a 2' wide bucket. Standing water was uncovered near the southeast corner of the cap. No evidence of dye contamination.

- Geotextile Cushion and GCL Installation - The remainder of the cap was covered with SI 1201 120 mil geotextile cushion by EDCI, a sub of PSG. Using Union Sewing Machines the panels were continually sewn.

Inspection:

- PSG - inspected the trench line rounding corners and cutting protruding roots.
- PSG - using a survey level, PSG checked grade of the trench line to ensure all areas flow at a minimum of 1% grade to the four outlets.
- MK - verified PSG's inspection and grade check and performed random confirmation of the trench depth 1' minimum, width 2' and rounding of corners.
- MK - visually inspected trench and spoil material. No evidence of dye contamination was found.
- EDCI - inspected the geotextile panels for irregularities, rips, holes, and unspent raw materials prior to seaming.

- MK - visually inspected the following seams and panels by walking the entire length of the seam. Any defects were identified and EDCI repaired the area:
  - Seams: GT-3 - GT-4; GT-7 & 8 - GT 6 ; GT-9 & 10 - GT- 7 & 8; GT-11 - GT-9 & 10; GT-12 - GT-11; GT-13 & 14 - GT-12; GT-15 & 16 - GT-13 & 14.
- EDCI - tracked and measured panel layout ~~of~~ to the as-built.

Attachments: 0

Signature/Date:
Lois J. Bixby 07-12-98
Report # 081

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 13, 1998
REPORT #082

Activity:

- Drainage/anchor Trench - PSG prepared lay down areas and received 10 loads of RH 5, 1 1/2" maximum rounded gravel for use as drainage rock in the drainage/anchor trench. Excess may be used in the biotic layer.
- Site Prep Work - PSG performed general site clean-up, constructed lay down areas, and removed and consolidated excess soil from the drainage/anchor trench.
- Geotextile Cushion and GCL Installation - Using KemFast thread, EDCI sub to PSG, completed sewing panels of geotextile cushion together.

Inspection:

- EDCI - inspected the geotextile panels for irregularities, rips, holes, and unspent raw materials prior to seaming the remaining panels. GT-16, GT-17, GT-18 roll #4102105; GT-19, GT-20 roll #4102034; GT-21, GT-22, GT-23 roll #4102037; GT-30, GT-31, GT-32 roll #4102007; GT-33, GT-34, GT-35 roll #4102143; GT-36, GT-37, GT-38 roll #4102131; GT-39, GT-40, GT-41 roll #4104687; GT-42, GT-43, GT-44 roll #4116898; GT-45, GT-46, GT-47 roll #4104674; GT-48, GT-49, GT-50, GT-54 roll #4102138; GT-51, GT-52, GT-53 roll #4104783.

- MK - visually inspected the following seams and panels by walking the entire length of the seam. Any defects were identified and EDCI repaired the area then checked by MK to confirm area had been repaired:

- Seams: GT-15, 16-17; GT-17, 18 & 19; GT - 18, 19, 20 - GT-20, 21; GT-20, 21 - 22; GT-22 - 23, 24; GT-23, 24 - 25; GT-25 - 26, 27; GT-26, 27 - 28; GT-28 - 29, 30; GT-29, 30 - 31; GT-31 - 32,33; GT-32, 33 - 34; GT-34 - 35, 36; GT-35,36 - 37; GT-37 - 38, 39; GT-38, 39 - 40; GT-40 - 41,42; GT-41, 42 - 43; GT-43 - 44; GT-44 - 45; GT-45 - 46; GT-46 - 47, 48; GT-47,48 - 49; GT-49 - 50; GT-50 - 51; GT-51 - 52; GT-52 - GT-53; GT-53 - 54.

- A hole at seams between panel GT-18 and GT-19 of geotextile cushion was inadequately patched using two 3" x 3" pieces to cover the hole. Deficiency identified as rework item DEF-DBG-002.
- Due to the angle of the panel layout in relation to the drainage/anchor trench, a corner of panel #49 of the geotextile cushion, does not extend the full two feet beyond the anchor trench. Identified as DEF-DBG-003 on rework list.
- MK - randomly spot checked drainage/anchor trench and found soil clods had fallen into the trench and would not permit proper drainage. This item is identified as DEF-DBG-004 on the rework list.
- MK - verified stone for drainage rock delivered today meets subcontract specification - 2" x 1/2" rounded stone.
- Short 8 hour day
- PSG - QC technician Scott Leftman on site.

Attachments: 0

Signature/Date:

Lois J. Bigley 07-13-98
Report #82

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 28, 1998
REPORT #097

Activity:

- Sand Drainage Layer - PSG completed placement, spreading, and grading of the six inch sand drainage layer.

  Using a JD 550 dozer, PSG tracked the entire length of the DBG cap to lightly compact the sand drainage layer once placement and grading were completed.

  An as-built survey of 25 foot center was conducted by MSE, a subcontractor for PSG. All areas out of tolerance were corrected by PSG. Average depth of sand ranged from 0.5 to 0.7 feet.

  After the MSE survey and random spot check cleared an area, PSG and EDCI began deployment, placement, and sewing of the non-woven geotextile over the sand layer. Starting at the NE end and working southwest, the panels were placed across the width of the cap per panel layout. EDCI is using TNS R70 six ounce non-woven geotextile and KemFast thread for the geotextile Type 1, filter fabric. Pursuant to the subcontractors request, heat bonding of the geotextile was approved for use however, EDCI elected to continue to sew the geotextile panels together.
- Biotic Layer - held preparatory meeting for the installation of the six inch biotic layer with geotextile cover over the -2 inch rounded gravel layer.

Inspection:

- MK - performed ten random spot checks on the sand drainage layer thickness:

| | Approximate Location | | Sand Thickness | Photographed |
|---|---|---|---|---|
| 1 | N 1311650 | E 3049200 | 5.8 | yes |
| 2 | N 1311600 | E 3049250 | 6.0 | yes |
| 3 | N 1311550 | E 3049250 | 6.2 | yes |
| 4 | N 1311550 | E 3049150 | 8.0 | |
| 5 | N 1311450 | E 3049100 | 8.0 | |
| 6 | N 1311450 | E 3049150 | 6.2 | |
| 7 | N 1311400 | E 3049100 | 6.7 | |
| 8 | N 1311450 | E 3049050 | 6.2 | |
| 9 | N 1311400 | E 3049000 | 6.7 | |
| 10 | N 1311350 | E 3048900 | 6.0 | yes |

4 of 10 areas were photographed for documentation.

- MK - observed placement, spreading, grading, and light compaction by tracking using a JD 550 dozer.
- MSE - performed a cross section of the cap area on 25 foot centers for an as-built of the sand layer.
- MK - confirmed that TNS R-70 geotextile, the approved Type 1 geotextile has all required submittals and is being deployed over the sand for the sand drainage layer.
- MK - after the survey was performed, MK approved placement of preceding layer for the DBG cap construction.
- MK - observed deployment of the first panel, GT-01, of the geotextile over the sand drainage layer on the NE end of the cap and confirmed that the panel was reasonably straight and smooth.
- MK - visually inspected the following geotextile panels and seams for rips, tears, irregularities, and continuously interlocking stitching:

| PANEL # | ROLL # | STRIP STATION |
|---|---|---|
| GT-4 | 0992138 | 1 |
| GT-5 | 0992165 | 1 |
| GT-3 | 0992138 | 2 |
| GT-2 | 0992124 | 2 |
| GT-1 | 0992124 | 3 |
| GT-6 | 0992165 | 4 |
| GT-8 | 0992138 | 5 |
| GT-7 | 0992165 | 5 |
| GT-9 | 0991894 | 6 |
| GT-11 | 0991844 | 7 |
| GT-10 | 0991894 | 7 |
| GT-12 | 0991894 | 8 |
| GT-13 | 0991844 | 8 |
| GT-14 | 0992118 | 9 |
| GT-15 | 0991868 | 10 |
| GT-16 | 0992118 | 10 |
| GT-17 | 0991868 | 11 |

Attachments: 0

Signature/Date: Lois J. Bigley 07/28/98

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 29, 1998
REPORT #098

Activity:

- Sand Drainage Layer - EDCI and PSG continued deployment, placement, and sewing of Type 1 Geotextile panels over the sand of the sand drainage layer. Using TNS R70 6 ounce geotextile and KemFast thread, Type 1 geotextile is placed across the width of the cap working from NE to SW.
- Biotic Layer - After the underlying layer is approved, PSG began placement of the biotic material from the NE corner. PSG set up the 60' conveyor on the NE end to transport -2" round rock (RH5) onto the cap area. Using a JD 550 dozer, the biotic material was placed, spread, and graded.
- Site Preparatory Work - PSG continues general site clean-up.

Inspection:

- MK - visually inspected the following geotextile panels and seams for rips, tears, irregularities, and continuously interlocking stitching:

| PANEL # | ROLL # | STRIP STATION |
|---|---|---|
| GT-18 | 0991973 | 11 |
| GT-20 | 0991973 | 12 |
| GT-19 | 0991973 | 12 |
| GT-21 | 0992127 | 13 |
| GT-23 | 0992171 | 14 |
| GT-22 | 0992127 | 14 |
| GT-24 | 0992171 | 15 |

| PANEL # | ROLL # | STRIP STATION |
|---|---|---|
| GT-25 | 0991865 | 16 |
| GT-26 | 0991865 | 17 |
| GT-27 | 0991845 | 18 |
| GT-28 | 0991865 | 19 |
| GT-29 | 0991845 | 20 |
| GT-30 | 0991845 | 21 |
| GT-31 | 0993194 | 22 |
| GT-32 | 0993194 | 23 |
| GT-33 | 0992161 | 24 |
| GT-34 | 0992161 | 25 |
| GT-35 | 0991972 | 26 |
| GT-36 | 0991972 | 27 |
| GT-37 | 0992132 | 28 |
| GT-38 | 0992132 | 29 |
| GT-39 | 0992132 | 30 |
| GT-40 | 0991856 | 30 |
| GT-41 | 0991972 | 30 |

All defects are identified and repaired

- MK - observed deployment, placement, and sewing of filter fabric over sand of the sand drainage layer.
- PSG - spot checked thickness of biotic rounded gravel continually during placement and grading.
- MK - confirmed that the required submittal for biotic material has been reviewed and approved.
- MK - observed biotic material, RH5, placement and method to ensure underlying material was not displaced or damaged during placement.
- EDCI - measured and recorded panel layout for the as-built drawing.
- ROICC - performed an informal safety inspection; no major safety violations were noted, however, there were a number of minor safety findings identified.

Attachments: 0

Signature/Date:

Lois J. Bigley 07/29/98

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 30, 1998
REPORT #099

Activity:

- Sand Drainage Layer - EDCI and PSG completed deployment, placement, and sewing of Type 1 Geotextile panels on the southwest end of the cap. Using TNS R70 6 ounce geotextile and KemFast thread, a geotextile cover is placed over the six inch sand layer completing the sand drainage layer.
- Biotic Layer - Using a JD 550 dozer and a 60' conveyor, -2" rounded gravel biotic material is placed on the DBG from approximately station 6+00 to 5+10 working southwest down the top slope by PSG. Spreading and grading of the rock is accomplished using the JD 550 dozer with hand laborer continuously checking the depth of the biotic material. Moved the conveyor and power plant from the center of the NE end to the east side slope to assist in transporting biotic material from the east side to the center and west end of the DBG cap. 792 top of -2" round gravel was placed over the Type 1 geotextile of he sand drainage layer for a total of 1,463 tons of biotic material.
- Run-on/Run-off Controls - PSG inspected, removed, repaired, and installed silt fence around the DBG site.

Inspection:

- EDCI - measured and recorded panel layouts for as-built drawing of the geotextile placement.
- MK - visually inspected the following geotextile panels and seams for rips, tears, irregularities, and continues interlocking stitches:

| PANEL # | ROLL # | STRIP STATION |
|---|---|---|
| GT-42 | 0991856 | 31 |
| GT-43 | 0991856 | 32 |
| GT-44 | 0991856 | 33 |
| GT-45 | 0992132 | 33 |
| GT-46 | 0992246 | 34 |
| GT-47 | 0992246 | 35 |
| GT-49 | 0992246 | 36 |
| GT-50 | 0992246 | 37 |
| GT-48 | 0991835 | 38 |
| GT-52 | 0991856 | 38 |
| GT-51 | 0992246 | 38 |

- MK - observed deployment, placement, and sewing of filter fabric over sand of the sand drainage layer.
- PSG - spot checked thickness of biotic rounded gravel continually during placement and grading by probing down to the sand drainage layer geotextile.
- MK - observed placement, spreading, and grading of the -2" rounded gravel biotic layer using a JD 550 dozer. MK confirmed material being delivered is Rogers Group RH5 rock which is a rounded -2" sandstone gravel.
- PSG - inspected site for run on/run off control and repaired, replaced, or installed silt fence around the DBG site as needed.

Attachments: 0

Signature/Date:

Lois J. Bigley 07/30/98

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

August 4, 1998
REPORT #103

Activity:

- Biotic Layer - PSG and EDCI began installation of Type 1, geotextile, TNS R70 six ounce non-woven geotextile over six inch biotic gravel layer in preparation of the 27 inch cover layer. Starting at the NE end working SW down the top slope.
- 27" Cover Layer - PSG preparing 161/822 borrow area for removal of soil to start placement of 27 inches cover material beginning 8/5/98. Morning rains created wet conditions which impacted this activity.

Inspection:

- EDCI - measured and documented geotextile panel layout for as-built drawings.
- MK - witnessed the installation of Type 1 geotextile fabric to ensure a three inch overlap and stitching per specifications.

The following panels and seams were inspected:

| PANEL # | ROLL # | PANEL LENGTH | SECTION |
|---|---|---|---|
| P-6 | 0991833 | 45 | 1 |
| P-5 | 0991833 | 45 | 1 |
| P-4 | 0991833 | 31 | 2 |
| P-3 | 0991874 | 130 | 2 |
| P-2 | 0991874 | 178 | 3 |
| P-1 | 0991833 | 184 | 4 |

| PANEL # | ROLL # | PANEL LENGTH | SECTION |
|---|---|---|---|
| P-7 | 0991833 | 33 | 5 |
| P-8 | 0991868 | 148 | 5 |
| P-10 | 0991948 | 64 | 6 |
| P-9 | 0991868 | 136 | 6 |
| P-11 | 0991948 | 175 | 7 |
| P-12 | 0992160 | 156 | 8 |
| P-13 | 0991868 | 57 | 8 |
| P-15 | 0991860 | 79 | 9 |
| P-14 | 0992160 | 144 | 9 |
| P-16 | 0991860 | 220 | 10 |
| P-17 | 0991987 | 197 | 11 |
| P-18(A) | 0992130 | 110 | 12 |
| P-18(B) | 0991987 | 105 | 12 |
| P-20 | 0992160 | 27 | 13 |
| P-19 | 0992130 | 187 | 13 |
| P-21 | 0991873 | 186 | 14 |
| P-23 | 0992181 | 57 | 15 |
| P-24 | 0992181 | 173 | 16 |
| P-26 | 0991913 | 57 | 17 |
| P-25 | 0992181 | 124 | 17 |
| P-27 | 0991913 | 160 | 18 |
| P-29 | 0991847 | 69 | 19 |
| P-28 | 0991913 | 93 | 19 |
| P-30 | 0991847 | 155 | 20 |
| P-32 | 0991897 | 80 | 21 |
| P-31 | 0991847 | 78 | 21 |
| P-33 | 0991897 | 153 | 22 |
| P-35 | 0991898 | 32 | 23 |
| P-34 | 0991897 | 89 | 23 |
| P-36 | 0991898 | 140 | 24 |
| P-37 | 0991898 | 130 | 25 |

- Type 1 geotextile, TNS R70 six ounce non-woven fabric, 15 foot width; section number from NE to SW down the top slope. Panels placed across the width of the cap.
- MK inspection performed by D. Beall.

Lois J. Bigley 08/11/98

Attachments: 0 Signature/Date:

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

August 5, 1998
REPORT #104

Activity:

- Biotic Layer - PSG and EDCI completed installation of Type 1, geotextile, TNS R70 six ounce non-woven geotextile on top of the six inch biotic layer.

Inspection:

- MK - observed the installation of Type 1 geotextile fabric to ensure a three inch overlap and stitching comply with specifications.
- PSG/EDCI/MK - inspected as-built fabric panels.
- MK - verified fabric installation to boundary shown on drawings; 2 feet beyond the drainage/anchor trench.

The following panels and seams were inspected:

| PANEL # | ROLL # | PANEL LENGTH | SECTION |
|---|---|---|---|
| P-38 | 0991900 | 136 | 26 |
| P-39 | 0991900 | 133 | 27 |
| P-40 | 0991900 | 40 | 28 |
| P-41 | 0993498 | 100 | 28 |
| P-42 | 0993498 | 130 | 29 |
| P-44 | 0991911 | 50 | 30 |
| P-43 | 0993498 | 130 | 29 |
| P-44 | 0991911 | 50 | 30 |
| P-43 | 0993498 | 72 | 30 |
| P-45 | 0991911 | 130 | 31 |
| P-46 | 0991911 | 86 | 32 |
| P-47 | 0991911 | 40 | 33 |
| P-48 | 0991944 | 63 | 33 |

| PANEL # | ROLL # | PANEL LENGTH | SECTION |
|---|---|---|---|
| P-49 | 0991944 | 83 | 34 |
| P-50 | 0991944 | 76 | 35 |
| P-51 | 0991944 | 70 | 36 |
| P-53 | 0992171 | 46 | 37 |
| P-52 | 0991944 | 18 | 37 |
| P-54 | 4109148A | 44 | 38 |
| P-55 | 4109148A | 38 | 38 |
| P-59 | 4109148A | 4 | 39 |
| P-56 | 4109148A | 70 | 39 |
| P-57 | 4109148A | 70 | 40 |
| P-58 | 4109148A | 40 | 41 |

P-1 through P-52 TNS R70 six ounce non-woven fabric 15' width.
P-53 through P-58 SI 1201 non-woven fabric 1/2 roll 7.5 width.

- EPD - inspected seams over entire cap and identified five small <3 inch length, requiring repair due to inadequate salvage.

| | |
|---|---|
| 1 | P-9/P-11 |
| 2 | P-11/P-12 |
| 3 | P-25 at well |
| 4 | P-27/P-28 |
| 5 | P-48/P-47/P-49 |

- MK inspection performed by D. Beall.

Attachments: 0

Signature/Date: Lois J. Bigley 02/11/98

# APPENDIX G

# GEOSYNTHETIC CLAY LINER DATA

## APPENDIX G
## GEOSYNTHETIC CLAY LINER DATA

### INDEX


| | |
|---|---|
| G-1 | Seam Inspection/Test Results |
| G-2 | Panel Deployment Sheets |
| G-3 | Conformance Test Results/Report |
| G-4 | Manufacturer's QC Certificates |
| G-5 | Installation Procedures |

# G-1

# Seam Inspection/Test Results

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

## CERTIFICATE OF ACCEPTANCE

PROJECT NAME: Dye Burial Ground DATE: 7-23-98
PROJECT LOCATION: Crane, IN

Details of Work Completed and Measured.....

Supplied, Installed, And Tested 84,772 Square Feet Of Type 2 (12oz) Geotextile, GCL, And 60 Mil Textured HDPE.

I, the undersigned, duly authorized representative of Phillips Services do hereby take over and accept the work described above from the date hereof, subject to the exceptions detailed below, and confirm that the work has been completed in accordance with the specifications and the terms and conditions of the contract. There is no apparent damage to the plastic lining, nor is there any interference within or without the surrounding works.

I have evaluated and measured the work together with the EDCI representative, and agree that the measurements shown above are true and correct, and that the installation has met our approval.

Exceptions.....

| General Contractor/Owner | Environmental Design & Construction, Inc. |
|---|---|
| Russell Tomasko | Daniel R. Davis |
| Signature | Signature |
| Russell Tomasko | Daniel R Davis |
| Printed Name | Printed Name |
| Date: 7/23/98 | Date: 7-23-98 |

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 14, 1998
REPORT #083

Activity:

- GCL Installation - Using Bentofix GCL, EDCI began installation of the GCL. Starting on the northeast (uphill) corner and working south. Seams overlapped to the manufacturer's match line vertically and a minimum 10 inch overlap on the horizontal seam.
- HDPE Installation - Using the Volvo L70 wheel loader with the lifting device/spreader bar and a Polaris six wheeler, the 60 mil double textured HDPE by Polyflex was deployed over the GCL.
- Drainage/anchor Trench - PSG removed soil clods from the drainage/anchor trench by hand. This corrected DEF-DBG-004.
- Geotextile Cushion Installation - The hole at seam #18-19 was patched by EDCI.

Inspection:

- EDCI - measured panel layouts for as-built drawings for both the GCL and the HDPE.
- MK - inspected each panel of the GCL deployed for irregularities, flaws, and proper overlap. Roll #051716; #051687; #051705; #051693; #051697; #051688; #051712.
- MK - verified that GCL material, Bentofix conforms to subcontract specification.
- EDCI - performed pre seam field tests on Rescission R-88 EDCI #313 and EDCI #315, double shoe fusion welder; two peels and a shear were taken for each test using a Nelson Tension meter. Both tests passed and archive samples were taken.
    - Field Test 1 on EDCI #313
    - Field Test 2 on EDCI #315

- MK - verified overlap of minimum to match line and 10 inch minimum horizontal. Bentonite granules were placed at a minimum rate of 1/4 pound per linear foot of overlap.
- MK/PSG - witnessed field test of pre-seam test.
- MK/PSG - Inspected deployed HDPE liner panels:
    - P2: Roll #0254
    - P1: Roll #0254
    - P3: Roll #0254
    - P4: Roll #0260
    - P5: Roll #0260
- MK/PSG - observed seaming of P2-P1; P1-P3 & P4; P3 & P4 - P5; P3-P4.
- MK - confirmed that HDPE liner material, Poly-flex, conforms to subcontract specifications.
- MK - verified that the first panel was deployed straight.
- EDCI - performed end of day field test on fusion seams using the Nelson Tension meter on EDCI #313 and #315 double shoe fusion welder.
- MK/PSG - confirmed field testing at end of day seam testing - two peel and one shear; both tests passed and confirmation sample taken.
    - Field Test 3 on EDCI #313
    - Field Test 4 on EDCI #315
- MK - verified all GCL deployed was covered by HDPE and open end secured with ballast.
- MK/PSG - identified location of irregularity in the surface of HDPE Roll #0260 for repair using an extrusion bead.
- PSG - inspected trench line by walking entire trench line; removing any obstructions and ensuring proper flow.

Attachments: 0

Signature/Date:

Lois J. Bigley 07-14-98
Report #083

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 16, 1998
REPORT #085

Activity:

- HDPE Installation - Due to the wet site conditions, GCL or HDPE liner was not deployed. EDCI completed air testing the remain double shoe fusion welds.
- Drainage/Anchor Trench - PSG dewatered the drainage/anchor trench covered by liner by removing sand bags, liner blocks, and graded outlet.
- Run off/Run on controls - Silt fence was installed down gradient from the northwest drainage/anchor trench by PSG.

Inspection:

- EDCI - performed air testing on the following double shoe fusion welds:
  - panel 1-3 passed
  - panel 1-4 passed ( 2 sections)
  - panel 3-4 passed
- MK /PSG - observed and confirmed air by EDCI.
- MK/EDCI/PSG - inspected the subgrade, it was determined the cap was too wet to proceed with GCL and HDPE liner placement.

Attachments: 0

Signature/Date:
Lois J. Bigley 07-16-98

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 15, 1998
REPORT #084

Activity: Due to intermediate rain showers, no GCL or HDPE liner was deployed. Air Testing was performed on the existing seams until 0900, the end of shift due to inclement weather. Crew returned to the motel.

Inspection:

- EDCI - performed air testing on the following panel seams:
  - 1-2 passed
  - 1-3 failed
  - 1-4 failed
  - 3-5 passed
  - 4-5 passed
  - 3-4 untested
- MK /PSG - observed and confirmed air testing of double shoe fusion welded seams by pressurizing the air channel between the weld to 30-35 psi and holding the pressure +/- 3 pounds for five minutes then slicing the opposite end of the channel to release the pressure.
- Bi-weekly QC meeting held.
- Preparatory Meeting on Sand Drainage Layer was conducted.

Attachments: 0

Signature/Date:
Lois J. Bigley 07-15-98

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 16, 1998
REPORT #085

Activity:

- HDPE Installation - Due to the wet site conditions, GCL or HDPE liner was not deployed. EDCI completed air testing the remain double shoe fusion welds.
- Drainage/Anchor Trench - PSG dewatered the drainage/anchor trench covered by liner by removing sand bags, liner blocks, and graded outlet.
- Run off/Run on controls - Silt fence was installed down gradient from the northwest drainage/anchor trench by PSG.

Inspection:

- EDCI - performed air testing on the following double shoe fusion welds:
  - panel 1-3 passed
  - panel 1-4 passed ( 2 sections)
  - panel 3-4 passed
- MK /PSG - observed and confirmed air by EDCI.
- MK/EDCI/PSG - inspected the subgrade, it was determined the cap was too wet to proceed with GCL and HDPE liner placement.

Attachments: 0

Signature/Date:
Lois J. Bigley 07-16-98

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 17, 1998
REPORT #086

Activity:

- GCL Installation - Deployment of GCL resumed today, working southwest down the cap area, panel layout across the width of the cap. EDCI and PSG deployed six widths of GCL across the cap, alternated with 3 widths of GCL followed by 2 widths of HDPE liner. Granular bentonite was applied at a minimum rate of 1/4 pound per linear foot to all overlaps of the GCL.
- HDPE Installation - Approximately 18,500 square feet of 60 mil Polyflex double textured HDPE liner was deployed by EDCI and PSG across the DBG cap area. HDPE liner panel was seamed together using a double shoe fusion welder. Panels P-6 through P-10 were placed today, equaling 4 widths.
- Drainage/Anchor Collection System - MSE, a sub to PSG, surveyed the drainage/anchor trench for confirmation of drainage and as-built drawing.

Inspection:

- MK - confirmed granular bentonite was applied to overlaps of GCL for panel from rolls #051701, 051689, 051707, 051708, 051696, 051720, and 051715.
- EDCI - performed six field tests consisting of a minimum of two peel and one shear each on two pre-seams, end of the day, and two midday. Problems in the morning pre-seam test was due to dirt and moisture in the seams. EDCI took extra precaution to ensure seams were clean and dry. A second pre-seam test passed before the double shoe fusion welder was used to seam panels of the liner

together. Mid and end of the day field tests passed. Passing results were recorded for all tests.

- MK/PSG - verified field test procedures and EDCI testing field test FT-5 through FT-10.
    - FT 5/6 Pre-seam test
    - FT 7/8 Midday seam test
    - FT 9/10 End of Day seam test

  3 samples were taken from each test panel: 1 PSG, 2 MK (1 MK archive/1 EPD archive)
- EDCI/PSG - Pulled two destructive tests from locations identified by MK. After passing field tests, one sample from each test was sent to an independent lab for testing, the remaining two samples for archiving by MK and EPD.
- MK - verified field test of destructive tests passed. Selected location of destructive tests.
    - Destructive Test #1: seam 1/3 Roll #0254 Machine #313
    - Destructive Test #2: seam 7/5 Roll #206/253 Machine #315
    - Confirmed sample was sent to the approved independent lab.
- MK - confirmed field test performed on a tensometer capable of a constant rate of 217 per minute. Nelson Machine and Welding Tensometer s/n 261 c.p. Jan 8, 1998.
- EDCI conducted an air test on seams 5-6 and 5-7, both seams passed.
- MK - observed air pressure tests of seams 5-6 and 5-7. Seams were pressurized to 30 psi. Pressure held for a minimum of five minutes with no loss in pressure (allow a variance of 3 psi in 5 minutes). The end opposite the gauge is cut and the pressure released.

Attachments: 0

Signature/Date:

Lois J. Bigley 07-17-98
Report # 086

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 18, 1998
REPORT #087

Activity:

- GCL Installation - EDCI and PSG continue placement of GCL over the cap area working down the slope with panel layout across the width of the cap and across the top slope running NW to SE. The following rolls of Bentofix were placed today from approximately 6+20 to 5+20: #051691, 051705, 051704, 051714, 051711, 051710, 051718, 051679, 051713, 051680, and a portion of roll #051681 then covered by Polyflex 60 mil HDPE.
- HDPE Installation - Approximately 21,000 square feet of 60 mil HDPE liner was deployed over the GCL liner placed today by EDCI and PSG. EDCI seamed the HDPE liner placed today using #313 and #315 Rescission R/88, double shoe fusion welder.

Inspection:

- MK - verified granular bentonite was placed at a minimum rate of 1/4 pound per linear foot to overlap Bentofix, GCL.
- MK - inspected panels of GCL for signs of hydration or damage and proper over lay. Placement of rolls # 051691, 051705, 051704, 051714, 051711, 051710, 051718, 051679, 051713, and 051680.
- EDCI - performed five field tests on fusion welds:
  - Field Test 11: Pre weld seam
    #315 $700^0$ at 25% Time 7:57 a.m. Passed
    Peel: 112/110, 112/110, 114/115 psi
    Shear: 140 psi
  - Field Test 12: Pre weld seam

#313 $700^0$ at 30% Time 9:30 a.m. Passed
Peel: 108/102, 110/100, 107/100 psi
Shear: 141 psi

- Field Test 13: Midday weld seam
  #315 $700^0$ at 30% Passed
- Field Test 14: End of Day weld seam
  #315 $700^0$ at 30% Time: 4:45 p.m. Passed
  Peel: 110/113, 113/110 psi
  Shear: 140 psi
- Field Test 15: End of Day weld seam
  Passed
  Peel: 120/125, 130/125 psi
  Shear: 132 psi

- EDCI - Air tested the following seams:

| SEAM | START TIME | FINISH TIME | PSI @ START | PSI @ FINISH | STATUS |
|---|---|---|---|---|---|
| 7-8 | 2:39 PM | 2:44 PM | 30 | 30 | P |
| 8-9 | 8:10 AM | 8:15 AM | 30 | 29 | P |
| 9-10 | 8:10 AM | 8:15 AM | 30 | 30 | P |
| 6-7 | 2:52 PM | 2:57 PM | 30 | 29 | P |
| 6-8 | 2:53 PM | 2:58 PM | 30 | 28 | P |
| 10-11 | 4:02 PM | 4:07 PM | 30 | 29 | P |
| 11-12 | 4:25 PM | 4:30 PM | 31 | 31 | P |
| 11-13 | 4:15 PM | 4:20 PM | 31 | 30 | P |
| 12-14 | 4:29 PM | 4:34 PM | 30 | 30 | P |
| 13-14 | 4:32 PM | 4:37 PM | 30 | 30 | P |
| 12-13 | 4:17 PM | 4:22 PM | 31 | 31 | P |
| 14-15 | 4:05 PM | 4:10 PM | 31 | 30 | P |

- MK - visually inspected panels of Polyflex HDPE for signs of damage, flaws, and unspent raw product. Unacceptable areas were marked for test and/or repair. The following panels were inspected:
  - P-11 Roll #0247
  - P-12 Roll #0247
  - P-13 Roll #0246
  - P-14 Roll #0246
  - P-15 Roll #0246
  - P-16 Roll #0304

 Report # 087

- P-17 Roll #0304

- MK - witnessed air and field test and collected samples from field seaming.
- MK - observed fusion welding of panels and confirmed that welder operator was checking that seams were clean and dry and there was a 6" - 4" overlap for welding. Double shoe fusion welder with continuous read out was used for all welding - EDCI #313 and #315.
- MK - observed deployment and placement of GCL and HDPE liner.

Attachments: 0

Signature/Date:

Lois J. Bigley 07-18-98

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 19, 1998
REPORT #088

Activity:

- GCL Installation - EDCI and PSG continue deployment of Bentofix-GCL over the width of the cap. Granular bentonite is applied to all overlaps at a minimum rate of 1/4 pound per linear foot. From approximately 5+20 to 4+00 the following rolls were placed: #051699, 051719, 051686, 051695, 051703, 051685 and then covered by Polyflex 60 mil HDPE.
- HDPE Installation - The deployment, placement, and fusion welding of the double textured 60 mil HDPE liner continues. Approximately 13,500 square feet of Polyflex 60 mil HDPE liner was placed and welded using a double shoe fusion welder by EDCI, the liner installation subcontractor, and PSG. A spreader bar and two box rollers attached to a Volvo L70 wheel loader and a 6 x 6 ATV are used along with hand labor to deploy and place the liner.

Inspection:

- MK - verified granular bentonite was applied all GCL overlaps.
- MK - inspected panels of GCL for signs of hydration or damage and proper overlap. No signs of damage or hydration were noticed in the rolls of GCL placed today. Placement of rolls #051699, 051719, 051686, 051695, 051703, and 051685. Vertical overlaps were to the manufacturers match lines exceed 12" and horizontal overlaps were over 24". GCL panels extend 2' beyond the anchor trench.

- EDCI - performed four field tests on fusion welds of the 60 mil HDPE liner:
  - Field Test 16: Pre weld seam
    #315 $700^0$ at 23% Time 8:00 a.m. Passed
    Peel: 115/105, 107/98, 105/100 psi
    Shear: 142 psi
  - Field Test 17: Pre weld seam
    #313 $700^0$ at 30% Time 8:00 a.m. Passed
    Peel: 117/125, 118/120, 114/115 psi
    Shear: 138 psi
  - Field Test 18: End of Day weld seam
    #313 $700^0$ at 30% Time: 1:25 p.m. Passed
    Peel: 110/107, 110/116 psi
    Shear: 151 psi
  - Field Test 19: End of Day weld seam
    #315 $700^0$ at 23% Time: 1:45 p.m. Passed
    Peel: 119/107, 110/116 psi
    Shear: 160 psi
- MK - visually inspected panels of Polyflex HDPE for signs of damage, flaws, and unspent raw product. Unacceptable areas were marked for test and/or repair. The following panels were inspected:
  - P-18 Roll #0304
  - P-19 Roll #0305
  - P-20 Roll #0305
  - P-21 Roll #0305
  - P-22 Roll #0305
- MK - observed field testing for pre-seam and end of the day welds and collected samples from test seams. A Nelson Machine and Welding Tensometer s/n #261 capable of maintaining a constant rate of 2 inches per minute was used for all field testing.
- MK - witnessed fusion welding of panels and confirmed that welder operator was checking that seams were clean, dry, and proper overlap. Machine #315 chain's came undone during seaming P-18 and P-22 and was reattached. The east end of the seam where a burn out occurred will require a patch.

- MK - received results form HTS, an independent lab, that destructive samples 1 and 2 passed all peel and shear requirements.
    - DS - 1 Welded 7/14/98 at 5:12 p.m.
      RM. #313 $700^0$ at 35% on seam 1/3 roll #0254
    - DS-2 Welded 7/17/98 at 11:50 a.m.
      RM. #315 $700^0$ at 25% on seam 7/5 roll #0260/0253
- Due to temperature extremes, no liner or GCL was deployed after 10:00 a.m.

Attachments: 0

Signature/Date:

Lois J. Bigley 07-19-98
Report # 88

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 20, 1998
REPORT #089

Activity:

- GCL Installation - EDCI and PSG continue deployment of Bentofix-GCL over the width of the cap until 11:00 when adverse conditions halted production for the day. Granular bentonite was applied to all overlaps. GCL was placed from approximately station 4+00 to 3+00 using the following rolls: remainder #051681, 051684, 051683, and 051692 and a portion of roll #051694.
- HDPE Installation - PSG and EDCI continued placement SW down the slope covering the GCL. Approximately 10,000 square feet of Polyflex 60 mil HDPE liner was placed and seamed today using a double shoe fusion welder at a temperature of $700^0$F with continuous temperature read out.

Inspection:

- MK - witnessed granular bentonite was applied all GCL overlaps.
- MK - inspected panels of GCL for signs of hydration or damage and proper overlap. No signs of damage or hydration were noticed in the rolls of GCL placed today. Verified by visual inspection that vertical overlaps were to the manufacturers match lines and horizontal overlaps were a minimum of 12".
- EDCI - performed four field tests on fusion welds of the 60 mil HDPE liner:
    - Field Test 20: Pre weld seam
      #315 $700^0$ at 25% Time 6:5 a.m.

Peel: 114/109, 106/120, 116/104 psi
Shear: 146 psi

- Field Test 21: Pre weld seam
  #313 $700^0$ at 30%
  Peel: 114/108, 107/93, 114/110 psi
  Shear: 140 psi
- Field Test 22: End of Day weld seam
  #313 $700^0$ at 30%
  Peel: 110/107, 110/116 psi
  Shear: 140 psi
- Field Test 19: End of Day weld seam
  #315 $700^0$ at 25%
  Peel: 100/110, 100/107 psi
  Shear: 135 psi

Rain showers at 11:00 halted production and prevented an End of the Day field test on the seams welded today until after the welding machine was turned off.

- MK - visually inspected panels of Polyflex HDPE for signs of damage, flaws, and unspent raw product. Unacceptable areas were marked for test and/or repair. The following panels were inspected:
  - P-23 Roll #0305
  - P-24 Roll #0205
  - P-25 Roll #0205
  - P-26 Roll #0205
- MK - witnessed seaming and field testing of pre-seam welds and collected samples.
- MK - observed fusion welding of panels and confirmed that the Master Seamer was present and that the welder operators were checking seams were clean, dry, and with proper overlap. Excess material cut from the top panel with a hook knife.
- MK - verified that GCL placed today was covered by HDPE liner and that the edge was covered by sand bags. Photographs were taken of the folding of the GCL under the HDPE liner.

Attachments: 0

Signature/Date:
Lois J. Bigley 07-22-98
Report # 009

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 21, 1998
REPORT #090

Activity:

- Sand Drainage Layer - PSG cleaned asphalt off the conveyor, in preparation for use in transporting sand to the cap for placement as the sand drainage layer. After bulk material was removed PSG power washed the conveyor.
- Drainage/Anchor Trench - Today PSG began installation of the drainage system after patching, detailing and testing of HDPE was completed in the trench area by lining the drainage/anchor trench with non-woven geotextile filter fabric; next placing four inch ADS perforated pipe in the bottom of the trench, covering and filling the trench with two inches minus one half inch plus rounded gravel to a minimum six inch thickness over the pipe and then folding the filter fabric over the rock, wrapping the drainage system in filter fabric.
- HDPE Installation - EDCI patched, detailed and tested the northern end of the in-place HDPE represented by the first two destructive tests P-1 through P-6 placed from approximate station 7+ 70 to 6+75. The remainder of in-place liner was patched using double textured Polyflex 60 mil HDPE liner and extrusion welding through panel P-26. All seams have been air tested and destructive samples two through eight cut, set to HTS for testing and patched.

Inspection:

- MK - confirmed ADS pipe and drainage rock meets the subcontract specification requirements.

- MK - verified PSG was using manufacturer approved couplers to join 20 foot sections of ADS pipe.
- EDCI - performed air testing on the following 15 double shoe fusion welded seams:

| SEAM | START TIME | END TIME | START PSI | END PSI | STATUS |
|---|---|---|---|---|---|
| 15-16 | 8:59 | 9:04 | 30 | 29 | P |
| 16-17 | 8:58 | 9:03 | 30 | 29 | P |
| 17-18 | 8:57 | 9:02 | 30 | 30 | P |
| 17-22 | 8:45 | 8:50 | 30 | 30 | P |
| 18-22 | 8:46 | 8:51 | 31 | 31 | P |
| 19-22 | 9:00 | 9:05 | 30 | 29 | P |
| 18-19 | 9:00 | 9:05 | 30 | 29 | P |
| 19-20 | 9:03 | 9:08 | 30 | 30 | P |
| 20-21 | 9:07 | 9:22 | 34 | 34 | P |
| 21-23 | 9:37 | 9:42 | 30 | 28 | P |
| 21-24 | 9:54 | 9:59 | 31 | 29 | P |
| 23-24 | 9:34 | 9:39 | 32 | 32 | P |
| 23-25 | 9:57 | 10:02 | 32 | 31 | P |
| 24-25 | 9:35 | 9:40 | 30 | 29 | P |
| 25-26 | 9:44 | 9:49 | 30 | 29 | P |

- MK - observed all air testing performed today. Double shoe fusion welds are air tested by sealing the ends of the fusion weld, inserting a needle into the air channel formed between the two fusion welds, pressurizing the channel with 30 to 35 psi of air. The test passes if the air pressure in the channel does not vary more than three pounds in five minutes and is released when the channel is cut at the fore end.
- EDCI - vacuum box tested all extrusion welds on patches, seams, and beads and all areas marked for testing and/or repair for HDPE panels P-1 through P-5. Vacuum box testing is performed by placing a vacuum box with a window over the area to be tested once the area has been prepared with soapy water and pulling a five psi vacuum. Tests passes if no bubble line is noticed in the test area. The vacuum is then released and the box moved. EDCI had difficulty creating a seal due partly due to the heat expansion.

- EDCI - pulled destructive test samples 3-8 from MK marked locations and PSG sent samples to HTS, Inc. of Houston, TX, and independent testing lab.

  Field Results on Destructive Test Samples:

  - Destructive Test Sample 3: Seam 8-9 welded 7/17/98
    #313 $700^0$ at 32% Time 4:45 p.m.
    Peel: 100/105, 100/103, 107/108 psi
    Shear: 140 psi
    Destructive Test Sample 4: Seam 10-11 welded 7/18/98
    #315 $700^0$ at 25% Time: 3:15 p.m.
    Peel: 98/90, 100/98, 98/95 psi
    Shear: 142 psi
  - Destructive Test Sample 5: Seam 15-16 welded 7/18/98
    #313 $700^0$ at 32% Time: 4:40 p.m.
    Peel: 111/105, 104/107 psi, 110/102 psi
    Shear: 146 psi
  - Destructive Test Sample 6: Seam 18-19 welded 7/19/98
    #315 $700^0$ at 25% Time: 11:50 a.m.
    Peel: 86/109, 100/124, 96/110 psi
    Shear: 146 psi
  - Destructive Test Sample 7: Seam 20-21 welded 7/19/98
    #313 $700^0$ at 30% Time: 12:55 p.m.
    Peel: 119/110, 105/118, 110/109 psi
    Shear: 150 psi
  - Destructive Test Sample 8: Seam 24-25 welded 7/20/98
    #315 $700^0$ at 25%
    Peel: 115/116, 107/100, 112/110 psi
    Shear: 130 psi
- MK - verified that field results for destructive test samples passed and collected samples for archiving.
- MK - verified that pre-seam and End of the Day welds for extrusion welds passed test requirements and collected samples.

Extrusion Weld Pre Seam and End of Day Results:

- Extrusion Weld 1: Pre-seam
  EDCI #316 at $550^0$F
  Peel: 100, 94, 92 psi
  Shear: 139 psi
- Extrusion Weld 2: Pre-seam
  EDCI #286 at $510^0$F
  Peel: 118, 110, 112 psi
  Shear: 122 psi
- Extrusion Weld 3: End of Day
  EDCI #316 at $550^0$F
  Peel: 104, 112 psi
  Shear: 138 psi
- Extrusion Weld 4: End of Day
  EDCI #286 at $510^0$F
  Peel: 123, 114 psi
  Shear: 150 psi

- A Nelson Machine and Welding Tensometer s/n 261, capable of maintaining a constant rate of two inches per minute was used for all field peel and shear testing. The tensometer was calibrated January 8, 1998.
- Rescission EDCI #316 and #286 extrusion gun and Polyflex extrusion rod were used for all extrusion welding.

Attachments: 0

Signature/Date:
Louis J. Bigley 07-21-98
Report # 090

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 22, 1998
REPORT #091

Activity:

- GCL Installation - One panel of GCL was placed across the width of the cap by PSG and EDCI at approximate station 3+00 to 2+80. Granular bentonite was applied to the overlap at an approximate rate of 1/4 pound per linear foot. GCL was placed to the manufacturer's match lines and inspected for signs of hydration and /or damage prior to being covered by HDPE liner. A portion of Bentofix roll #051694 was deployed.
- HDPE Installation - Panel P-27 of the 60 mil double textured HDPE liner was deployed over the GCL and welded to panel P-26 using a Rescission R/88 double shoe fusion welder. EDCI also field constructed three boots from the 60 mil liner material for around the well using an extrusion welder. Well was extended and boots were placed over each of the three wells and extrusion welded to the HDPE liner.
- Drainage/Anchor Trench - HDPE liner, GCL, and geotextile cushion materials were trimmed to approximately 24 inches beyond the outside edge of the drainage/anchor trench. Trench outlets are lined with HDPE liner, GCL, and geotextile cushion material to a point approximately 9' 9" from the toe of the cap with material extending 12 inches beyond the outlet trench on each side.

  PSG installed approximately 440 linear feet of ADS perforated pipe along the southeast side of the cap area. The drainage system was constructed by lining the trench with Type 1 non-woven geotextile, filter fabric, placing four inches of ADS perforated pipe in the bottom of the two foot wide trench, covered with a minimum of six inches of drainage rock less than 2 inches to more

than 1/2 inch rounded gravel, graded by hand and wrapped with the filter fabric per construction drawings.

- Sand Drainage Layer - PSG began spreading #23/24 sand in a minimum of six inch lifts starting at the NE corner and working both west and NW using a JD 550 dozer to push material. Sand is always pushed in front of the dozer to prevent tracks from coming in contact with the underlying geosynthetics. A laborer works with the dozer to check depth and prevent expansion wrinkles from being trapped.

Inspection:

- PSG - spot checked depth of the sand layer to ensure a minimum of six inches of #23/24 sand.
- MK - verified sand meets the subcontract specification requirements. All submittals on material have been received.
- MK - confirmed that previous layers of geosynthetic had been tested and met specifications prior to placement of the sand drainage layer.
- EDCI - completed vacuum box testing of all remaining extrusion welds and beads along with any questionable areas. From P-6 to P-26 of the HDPE liner.
- MK - verified vacuum box was within calibration. Last calibration was June 6, 1998.
- EDCI - air tested the seam between HDPE panel P-26 and P-27.
- MK - observed air testing and confirmed test was performed per subcontract specifications.

| SEAM | START TIME | END TIME | START PSI | END PSI | STATUS |
|---|---|---|---|---|---|
| 26-27 | 9:48 | 9:53 | 30 | 30 | P |

- MK - witnessed deployment and welding of HDPE P-27 roll #0250.
- EDCI - performed pre-seam and End of the Day field tests on both fusion and extrusion welds.

- Field Test 24: Pre-Seam Weld
  #313 $700^0$ at 28% Time 7:30 a.m.
  Peel: 114/107, 104/110, 105/111 psi
  Shear: 155 psi
- Field Test 25: End of Day Weld
  Peel: 105/105. 110/102 psi
  Shear: 138 psi
- Extrusion Pre-seam Test 5:
  #286 $510^0$ Time: 9:30 a.m.
  Peel: 87, 76, 130 psi
  Shear: 132 psi
- Extrusion End of Day Weld 6:
  #286 $510^0$
  Peel: 114, 107 psi
  Shear: 140 psi

- MK - witnessed field testing of fusion and extrusion welds using a field tensometer and collected samples from the five foot seams for archiving.
- MK - observed extension of well using PVC piping and riveted couplers; placement of field fabricated boots around welds.
- MK- verified the collections system including, ADS four inch perforated pipe placed per construction drawing.
- MK - received and reviewed destructive test results from HTS, Inc. #3 through #8. All tests exceeded peel and shear requirements for the HDPE liner welds.

Test Results:

| | AVERAGE PEEL | AVERAGE SHEAR |
|---|---|---|
| DDS #3 | 115 | 156 |
| DDS #4 | 110 | 162 |
| DDS #5 | 123 | 168 |
| DDS #6 | 130 | 170 |
| DDS #7 | 127 | 172 |
| DDS #8 | 117 | 156 |

HDPE liner has been cleared for placement of the sand drainage layer up to P-26 or station 3+00.

Attachments: 0

Signature/Date: Lois J. Bigley Report 91 07-22-98

# DYE BURIAL GROUND
# SWMU 02/11
# INTERIM MEASURES CAP CONSTRUCTION
# DAILY INSPECTION REPORT

JULY 23, 1998
REPORT #092

Activity:

- GCL Installation - PSG and EDCI completed deployment and placement of Bentofix, GCL across the very southwest end of the DBG cap area from approximately station 2+80 to 1+90. The remainder of Bentofix roll #051694, roll #051698, 051716, and a portion of roll #051717 were deployed across the width of the cap. All overlaps were sealed by applying granular bentonite to the seam. Prior to placement of GCL panels, the subgrade was inspected by EDCI and MK due to the light morning drizzle and rain showers overnight. Placement of the GCL did not occur until early afternoon when the final roll of HDPE was delivered.
- HDPE Installation - HDPE liner installation was completed by EDCI and PSG; once the final, ninth roll of Polyflex 60 mil double textured HDPE, roll #0266, was received and inspected. During unloading, the first three feet of the roll was damaged and discarded. The last three panels of HDPE, P-28 through P-30 from roll #0266 were deployed, placed, and welded across the SW end of the cap. Due to the layout of the cap, an end piece had to be welded to maintain the two feet extension beyond the drainage/anchor trench. After the seam was welded and air tested, a location for the destructive test was chosen and DDS #9 was cut, field tested, and the area patched and vacuum box tested. The DDS #9 sample was cut into three pieces, one being sent to an independent lab for testing and two pieces stored for archiving. HDPE liner installation was completed with the air testing of fusion seam welds, and vacuum box testing of the extrusion weld for the destructive test patch. An extension was added to one

panel to provide a full two foot overlap beyond the drainage/anchor trench.
Drainage/Anchor Trench - Using ADS four inch perforated pipe, PSG continued construction of the drainage collection system down to the south end of the cap. Split rolls of SI 1201 non-woven geotextile are used to wrap the drainage pipe, ADS four inch perforated pipe, and drainage rock (-2" + 1/2" rounded rocks), for construction of the drainage collection system including one outlet.

- Sand Drainage Layer - PSG continues pushing #23/24 sand covering the cap area using a JD 550 dozer on the 5% top slope, with the 3:1 side slopes being worked by hand. Sand has been placed on the north end from 7+60 to 5+60 across the top slope and along the SE side. Only a portion of the 3:1 slope along the NW, north leg, of the DBG cap remains. Approximately 800 ton of sand was delivered and placed today.

Inspection:

- EDCI - measures and records panel layout of GCL for as-built drawings.
- MK - visually inspected panels of GCL for damage and signs of hydration; one small area was noted and repaired by overlapping the area.
- MK - observed and confirmed that GCL panels were deployed and placed to the manufacturer's match lines and granular bentonite was applied to all overlaps.
- EDCI - performed peel and shear field tests using a tensometer, on pre and EOD fusion and extrusion welds and on DDS #9 destructive test.
- MK - verified vacuum box was within calibration. Last calibration was June 6, 1998.
- MK - verified that Polyflex 60 mil double textured HDPE liner roll #0266 received today has required QC certificates and meets subcontract specifications.
- MK - chose location of ninth destructive test, observed field peel and shear testing, collected archive samples, and ensure one sample was prepared for shipment to HTS, Inc. of Houston, TX,

the independent testing lab. Due to the hour sample will be shipped 7/24/98.

- MK - visually inspected the following HDPE liner panels for signs of damage and/or irregularities. None were noted:

| | | |
|---|---|---|
| P-28 | 83 feet | Roll #0266 |
| P-29 | 68 feet | Roll #0266 |
| P-30 | 68 feet | Roll #0266 |

- MK - observed air testing and field testing performed by EDCI:

Field Test Fusion Welding:

Pre-Seam Weld:
#313 $700^0$ at 25% Time: 2:30 p.m.
Peel: 119/114 110/105 115/109 psi
Shear: 135 psi

EOD Weld:
#313 $700^0$ at 25% Time: 4:00 p.m.
Peel: 119/115 117/115 psi
Shear: 145 psi

Field Test Extrusion Welding:

Pre-Seam Weld:
#286 510
Peel: 95 85 80 psi
Shear: 143 psi

EOD Weld:
#286 510
Peel: 107 111 psi
Shear: 120 psi

Air Testing Fusion Welds:

| SEAM | START TIME | END TIME | START PSI | END PSI | STATUS |
|---|---|---|---|---|---|
| 27-28 | 3:05 | 3:10 | 31 | 31 | P |
| 28-29 | 3:30 | 3:35 | 30 | 30 | P |
| 29-30 | 3:40 | 3:45 | 30 | 30 | P |
| 30-END | 3:51 | 3:56 | 30 | 30 | P |

- MK - verified by visual inspection that the drainage/anchor trench collection system was installed per construction drawings.
- MK - observed placement of sand over the HDPE as a sand drainage layer.
- PSG - continually spot checks thickness of sand drainage layer and that placement is not damaging underlying material.
- PSG - inspected site run-on/run-off controls.

Lois J. Bigley 07/23/98

Attachments: 0

Signature/Date:

# G-2

# Panel Deployment Sheets

# - DBG -
# SWMU 02/11
# SUBCONTRACT 4324/106
# PHILIP SERVICE GROUP

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## GEOSYNTHIC CLAY LINER
## BY BENTOFIX

| ROLL # | DELIVERIED / STORED | DEPLOYED | REMARKS |
|---|---|---|---|
| 51679 | 06-22-98 | 07-18-98 | C-37,39 |
| 51680 | 06-22-98 | 07-18-98 | C-41 |
| 51681 | 06-22-98 | 07-18-98 | C-42,49 |
| 51683 | 06-22-98 | 07-20-98 | C-52,53 |
| 51684 | 06-22-98 | 07-20-98 | C-50,51 |
| 51685 | 06-22-98 | 07-19-98 | C-48 |
| 51686 | 06-22-98 | 07-19-98 | C-45 |
| 51687 | 06-22-98 | 07-14-98 | C-2,3,6 |
| 51688 | 06-22-98 | 07-14-98 | C-11,12,13 |
| 51689 | 06-22-98 | 07-17-98 | C-15 |
| 51690 | 06-22-98 | 07-17-98 | C-20,21 |
| 51691 | 06-22-98 | 07-18-98 | C-27 |
| 51692 | 06-22-98 | 07-20-98 | C-54,55 |
| 51693 | 06-22-98 | 07-14-98 | C-8 |
| 51694 | 06-22-98 | 07-20-98 | C-56,57,58 |
| 51695 | 06-22-98 | 07-19-98 | C-46 |
| 51696 | 06-22-98 | 07-17-98 | C-22 |
| 51697 | 06-23-98 | 07-14-98 | C-9 |
| 51698 | 06-23-98 | 07-23-98 | C-59,C-60 |
| 51699 | 06-23-98 | 07-19-98 | C-43 |
| 51700 | 06-23-98 | 07-17-98 | C-24,26 |
| 51701 | 06-23-98 | 07-17-98 | C-14 |
| 51703 | 06-23-98 | 07-19-98 | C-47 |
| 51704 | 06-23-98 | 07-18-98 | C-29 |
| 51705 | 06-23-98 | 07-14-98 | C-4,5,7 |
| 51706 | 06-23-98 | 07-14-98 | C-1 |
| 51707 | 06-23-98 | 07-17-98 | C-16 |
| 51708 | 06-23-98 | 07-17-98 | C-17,18,19 |
| 51709 | 06-23-98 | 07-18-98 | C-28 |
| 51710 | 06-23-98 | 07-18-98 | C-34 |
| 51711 | 06-23-98 | 07-18-98 | C-33 |
| 51712 | 06-23-98 | 07-14-98 | C-10 |
| 51713 | 06-23-98 | 07-18-98 | C-40 |
| 51714 | 06-23-98 | 07-18-98 | C-30,31,32,36,38 |
| 51715 | 06-23-98 | 07-17-98 | C-25 |
| 51716 | 06-23-98 | 07-23-98 | C-61,62 |
| 51717 | 06-23-98 | 07-23-98 | PARTICIAL |
| 51718 | 06-23-98 | 07-18-98 | C-35 |
| 51719 | 06-23-98 | 07-19-98 | C-44 |
| 51720 | 06-23-98 | 07-17-98 | C-23 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

GCL

PROJECT NAME: Dyo Burial Ground SHEET 1 OF 1

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 1-14-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| C-1 | 051760 | GCL | 133 | 14.5 | 1,929 |
| C-2 | 1687 | GCL | 52 | 14.5 | 754 |
| C-3 | 1687 | GCL | 86 | 14.5 | 1,247 |
| C-4 | 1705 | GCL | 102 | 14.5 | 1,479 |
| C-5 | 1705 | GCL | 48 | 14.5 | 696 |
| C-6 | 1687 | GCL | Δ 20 | 14.5 | 145 |
| C-7 | 1705 | GCL | Δ 11 | 14.5 | 80 |
| C-8 | 1693 | GCL | 150 | 14.5 | 2,175 |
| C-9 | 1697 | GCL | 150 | 14.5 | 2,175 |
| C-10 | 1712 | GCL | 150 | 14.5 | 2,175 |
| C-11 | 1688 | GCL | 47 | 14.5 | 682 |
| C-12 | 1688 | GCL | 47 | 14.5 | 682 |
| C-13 | 1688 | GCL | 47 | 14.5 | 682 |
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| | TOTAL INSTALLED THIS PAGE | | | | 14,901 |
| | TOTAL INSTALLED PREV. PAGE | | | | ϕ |
| | TOTAL INSTALLED TO DATE | | | | 14,901 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 · Tel: (205) 551-0372 · Fax: (205) 551-0347

GCL

PROJECT NAME: Dye Burial Ground SHEET 1 OF

PROJECT #: 97006 IN

PROJECT LOCATION: Craig, IN DATE: 7-17-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| C-14 | 051701 | GCL | 150 | 14.5 | 2,175 |
| C-15 | 051689 | GCL | 150 | 14.5 | 2,175 |
| C-16 | 051707 | GCL | 150 | 14.5 | 2,175 |
| C-17 | 051708 | GCL | 50 | 14.5 | 725 |
| C-18 | 051708 | GCL | 57 | 14.5 | 1,283 |
| C-19 | 051708 | GCL | 18 | 14.5 | 261 |
| C-20 | 051690 | GCL | 53 | 14.5 | 769 |
| C-21 | 051690 | GCL | 97 | 14.5 | 1,407 |
| C-22 | 051696 | GCL | 121 | 14.5 | 1,755 |
| C-23 | 051720 | GCL | 148 | 14.5 | 2,146 |
| C-24 | 061202 | GCL | 60 | 14.5 | 870 |
| C-25 | 051715 | GCL | 150 | 14.5 | 2,175 |
| C-26 | 061202 | GCL | 71 | 14.5 | 1,030 |
| C-27 | | | | | |
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| | TOTAL INSTALLED THIS PAGE | | | | 18,946 |
| | TOTAL INSTALLED PREV. PAGE | | | | 14,901 |
| | TOTAL INSTALLED TO DATE | | | | 33,847 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

GCL

PROJECT NAME: Dye Burial Ground SHEET OF

PROJECT #: 27006LN

PROJECT LOCATION: Crane In DATE: 7-18-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| C-27 | 051691 | GCL | 150 | 14.5 | 2,175 |
| C-28 | 051709 | GCL | 150 | 14.5 | 2,175 |
| C-29 | 051704 | GCL | 150 | 14.5 | 2,175 |
| C-30 | 051714 | GCL | 50 | 14.5 | 725 |
| C-31 | 051714 | GCL | 36 | 14.5 | 522 |
| C-32 | 051714 | GCL | 21 | 14.5 | 305 |
| C-33 | 051711 | GCL | 132 | 14.5 | 1,914 |
| C-34 | 051710 | GCL | 134 | 14.5 | 1,943 |
| C-35 | 051718 | GCL | 136 | 14.5 | 1,972 |
| C-36 | 051714 | GCL | 20 | 14.5 | 290 |
| C-37 | 051679 | GCL | 22 | 14.5 | 319 |
| C-38 | 051714 | GCL | 18 | 14.5 | 261 |
| C-39 | 051679 | GCL | 128 | 14.5 | 1,856 |
| C-40 | 051713 | GCL | 150 | 14.5 | 2,175 |
| C-41 | 051680 | GCL | 150 | 14.5 | 2,175 |
| C-42 | 051681 | GCL | 27 | 14.5 | 392 |
| | | | | | |
| | | | | | |
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| | TOTAL INSTALLED THIS PAGE | | | | 21,374 |
| | TOTAL INSTALLED PREV. PAGE | | | | 33,847 |
| | TOTAL INSTALLED TO DATE | | | | 55,221 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

GCL

PROJECT NAME: Dyo Burial Ground SHEET ____ OF ____

PROJECT #: 97006 IN

PROJECT LOCATION: Crown, IN DATE: 7-19-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| C-43 | 051699 | GCL | 150 | 14.5 | 2,175 |
| C-44 | 051919 | GCL | 150 | 14.5 | 2,175 |
| C-45 | 051686 | GCL | 150 | 14.5 | 2,175 |
| C-46 | 051695 | GCL | 150 | 14.5 | 2,175 |
| C-47 | 051703 | GCL | 150 | 14.5 | 2,175 |
| C-48 | 051685 | GCL | 150 | 14.5 | 2,175 |
| | TOTAL INSTALLED THIS PAGE | | | | 13,050 |
| | TOTAL INSTALLED PREV. PAGE | | | | 55,221 |
| | TOTAL INSTALLED TO DATE | | | | 68,271 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

GCL

PROJECT NAME: Dye Burial Ground SHEET ___ OF ___

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 7-20-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| C-49 | 051621 | GCL | 100 | 14.5 | 1,450 |
| C-50 | 051684 | GCL | 126 | 14.5 | 1,827 |
| C-51 | 051684 | GCL | 24 | 14.5 | 348 |
| C-52 | 051683 | GCL | 117 | 14.5 | 1,697 |
| C-53 | 051683 | GCL | 33 | 14.5 | 479 |
| C-54 | 051692 | GCL | 83 | 14.5 | 1,204 |
| C-55 | 051692 | GCL | 87 | 14.5 | 1,262 |
| C-56 | 051694 | GCL | 35 | 14.5 | 508 |
| | TOTAL INSTALLED THIS PAGE | | | | 8,775 |
| | TOTAL INSTALLED PREV. PAGE | | | | 68,271 |
| | TOTAL INSTALLED TO DATE | | | | 77,046 |

**ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.**
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

GCL

PROJECT NAME: Dye Burial Ground SHEET 1 OF ____

PROJECT #: 95006 IN

PROJECT LOCATION: Crane, IN DATE: 7-27-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| C-57 | 051694 | GCL | 82 | 14.5 | 1,189 |
| | TOTAL INSTALLED THIS PAGE | | | | 1,189 |
| | TOTAL INSTALLED PREV. PAGE | | | | 77,046 |
| | TOTAL INSTALLED TO DATE | | | | 78,235 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

GCL

PROJECT NAME: Dyes Burial Ground SHEET ___ OF ___

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 7-23-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| C-58 | 051694 | GCL | 18 | 14.5 | 261 |
| C-59 | 051698 | GCL | 67 | 14.5 | 972 |
| C-60 | 051698 | GCL | 77 | 14.5 | 1,117 |
| C-61 | 051716 | GCL | 75 | 14.5 | 1,088 |
| C-62 | 051716 | GCL | 75 | 14.5 | 1,088 |
| C-63 | 051717 | GCL | 75 | 14.5 | 1,088 |
| | TOTAL INSTALLED THIS PAGE | | | | 5,614 |
| | TOTAL INSTALLED PREV. PAGE | | | | 78,235 |
| | TOTAL INSTALLED TO DATE | | | | 83,849 |

# G-3

# Conformance Test Results/Report

GCL

PHILIP ENVIRONMENTAL

Industrial Services Group
Midwest Region

July 10, 1998
Project 18328

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Lois J. Bigley 07/10/98
Lois J. Bigley 07/10/98

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Submittal No. 063**

**The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,**

| Item No. | Description | Section No. |
|---|---|---|
| 1-~~120~~ 121 | Test Lab Certificates - GCL Conformation | 02253 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Don Flowers

Donald L. Flowers,
Project Manager

cc: D. Beall

PHILIP ENVIRONMENTAL SERVICES CORPORATION
210 West Sand Bank Road • P.O. Box 230 • Columbia, IL 62236-0230
(618) 281-7173 • (800) 733-7173 • Fax (618) 281-5120

HTS, INC. Consultants

416 PICKERING STREET • HOUSTON, TEXAS 77091
713/692-8373 • 800/692-TEST • FAX 713/692-8502

July 10, 1998

| HTS Report #: | pen1254.003.doc |
|---|---|

Mr. Don Flowerd
Philip Environmental
510 DD Road
Columbia, IL 62236

| | |
|---|---|
| Customer Project Name: | NSWC Crane |
| Customer Project #: | 18328 |
| Lab Temperature: | 73 degrees F. |
| Lab Humidity: | 50% |

The following 1 sample was delivered to our laboratory on 6/24/98.

| SAMPLES RECEIVED | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Sample I.D. | Mat'l Type | | Sample I.D. | Mat'l Type | | Sample I.D. | Mat'l Type |
| 1 | Roll#051700, Lot#8061202 | GCL | 6 | | | 11 | | |
| 2 | | | 7 | | | 12 | | |
| 3 | | | 8 | | | 13 | | |
| 4 | | | 9 | | | 14 | | |
| 5 | | | 10 | | | 15 | | |

Conformance testing was performed in accordance with the following test methods. The test results are summarized on the subsequent pages. It should be noted that the test specimens and test sample used for this work were believed to be representative of the material produced under this designation. However, these results are indicative only of the specimens that were actually tested. HTS, Inc. neither accepts responsibility for nor makes claims to the final use and purpose of the material.

| TESTING PERFORMED | TESTING PERFORMED |
|---|---|
| ASTM D 4632 – Grab Tensile Properties<br>ASTM D 5084 – Permeability | |

Very truly yours,

Larry L. McMichael
Vice President



ENVIRONMENTAL • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING • ANALYTICAL SERVICES
*SERVING THE CONSTRUCTION AND WASTE INDUSTRIES*

# GRAB TENSILE PROPERTIES – ASTM D 4632

Instron Series IX Automated Materials Testing System

Sample Type: ASTM
Width (in): 4.0"
Thickness (in): 0.23"

Cross Head Speed (in/min): 12.0000
Spec. Gauge Length (in): 3.000
Grip Distance (in): 3.000

| Sample | Spec. # | Maximum Load (lbs/in) | | Elongation (%) | |
|---|---|---|---|---|---|
| | | MD | XD | MD | XD |
| Roll# 051700 | 1 | 124.0 | 129.4 | 141.2 | 136.8 |
| Lot# 8061202 | 2 | 103.4 | 98.6 | 136.7 | 117.6 |
| | 3 | 115.6 | 205.5 | 125.0 | 67.2 |
| | 4 | 130.1 | 253.6 | 142.6 | 69.9 |
| | 5 | 128.0 | 224.2 | 148.8 | 72.9 |
| | 6 | 105.3 | 255.2 | 80.1 | 66.3 |
| | 7 | 112.8 | 242.0 | 134.7 | 74.0 |
| | 8 | 109.5 | 251.3 | 116.1 | 66.2 |
| | 9 | 120.2 | 303.5 | 139.7 | 81.4 |
| | 10 | 282.5 | 287.0 | 81.5 | 75.8 |
| | Avg. | 133.1 | 225.0 | 124.6 | 82.8 |
| | S.D. | 53.3 | 65.2 | 24.9 | 24.3 |

# INDEX FLUX – ASTM D 5084

Sample Type: ASTM

Roll #051700 Lot #8061202

| | | | |
|---|---|---|---|
| Initial Sample Diameter: | 4" | Initial Sample Area ($in^2$): | 12.56 |
| Initial Sample Height: | .230" | Type of Permeant Used: | Tap Water |
| Cell Pressure (psi): | 50 | Final Sample Height: | .230" |
| Range of Hydraulic Gradient: | 28.55-31.57 | Final Sample Area ($in^2$): | 12.56 |
| Final Sample Diameter: | 4" | | |
| Permeability: | | | $3.7 \times 10^{-9}$ cm/s |

| No. | Date | Time In Hr:Mn:Sc | Elapsed Time In Hr:Mn:Sc | Pressure @ Sample Top (psi) | Pressure @ Sample Bottom (psi) | Pore Pressure Transducer Reading (1) (psi) | Pipet/ Accum. Reading In (cm) | δHin (cm) | Pipet/ Accum. Reading Out (cm) | δHout (cm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7/10/98 | 7:00:00 | 00:00:00 | 45 | 45.26 | — | 3.15 | 0.00 | 1.79 | 0.00 |
| | 7/10/98 | 7:06:05 | 00:06:05 | 45 | 45.02 | — | 3.05 | 0.10 | 1.82 | 0.03 |
| | | | | | | | | | | |
| 2 | 7/10/98 | 11:00:00 | 00:00:00 | 45 | 45.26 | — | 3.15 | 0.00 | 1.79 | 0.00 |
| | 7/10/98 | 11:06:10 | 00:06:10 | 45 | 45.02 | — | 3.05 | 0.10 | 1.82 | 0.03 |
| | | | | | | | | | | |
| 3 | 7/10/98 | 3:00:00 | 00:00:00 | 45 | 45.26 | — | 3.15 | 0.00 | 1.79 | 0.00 |
| | 7/10/98 | 3:06:10 | 00:06:10 | 45 | 45.02 | — | 3.05 | 0.10 | 1.82 | 0.03 |

# G-4

## Manufacturer's QC Certificates

PHILIP ENVIRONMENTAL

Industrial Services Group
Midwest Region

June 16, 1998
Project 18328

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Lois J. Bigly 06/17/
Lois J. Bigly 06/17/
* Approved as noted below

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Re-Submittal No. 025I**

**The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals.**

| Item No. | Description | Section No. | |
|---|---|---|---|
| 1-96 | Manufacturer Test Results-Ben | 02253 | - Approved |
| 1-97 | Manufacturer Test Results- ~~GCL~~ non-woven & woven Geotextile | 02253 | - Revise & Resubmit |
| ~~1-98~~ | ~~Manufactures Specification - GCL~~ | ~~02253~~ | - N/A |
| ~~1-99~~ | ~~Average Roll Value - GCL~~ | 02253 | - N/A |
| 1-100 | Needle Certification – GCL | 02253 | - Approved |
| 1-101 | Manufactures QC Tests- GCL | 02253 | - Revise & Resubmit ~~N/A~~ |
| 1-102 | Certificate of Compliance – GCL | 02253 | - Approved |
| 1-103 | % Cart. Montmoullonite content | 02253 | - Revise & Resubmit |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Donald L. Flowers,
Project Manager

cc: D. Beall

PHILIP ENVIRONMENTAL

Industrial Services Group
Midwest Region

June 19, 1998
Project 18328

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Lois J Bigley 06-19-98
Lois J. Bigley 06-19-98

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

* Approved as noted below

**Re-Submittal No. 025J**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. | |
|---|---|---|---|
| 1-97 | Manufacturer Test Results- GCL | 02253 | * Approved |
| 1-101 | Manufactures QC Tests- GCL | 02253 | * Approved |
| 1-103 | Certificate of Montmoullonite Content | 02253 | * Approved as noted - EPA Tech. Guidance Doc. EPA/600/R-93/182 list Methylene Blue Capacity Method as an acceptable method of determining the percent sodium montmorillonite clay in the GCL, cerifying engineer concured. |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Donald Flowers

Donald L. Flowers,
Project Manager

cc: D. Beall

1-102

1-100

# BENTOFIX TECHNOLOGIES, INC.

## BENTOFIX MANUFACTURING CERTIFICATION

**CUSTOMER:** FLUID SYSTEMS INC.

**DATE:** 06-12-1998

**PROJECT:** PHILLIP ENVIRONMENAL SERVICES
NCWC CRANE - DYE BURIAL CAP

**NO.ROLLS:** 40 ROLLS

**ORDER NUMBER:** BT31110

**PRODUCT TYPE:** BENTOFIX NS

Bentofix Technologies, Inc. hereby certifies that the Bentofix Geosynthetic Clay Liner purchased and shipped for the above referenced project meets or exceeds Bentofix Technologies, Inc.'s specifications for Bentofix.

The Bentofix product has been continuously inspected for the presence of needles and is certified to be needle free.

The tests listed for the bentonite component have been performed on each batch of bentonite. The tests listed for the finished geocomposite product have been performed on at least every 3,716 sq. mt. (40,000 sq. ft.) for the Mass Per Unit Area according to method ASTM D5261 and for the Grab Tensile according to method ASTM D4632. The tests listed for the finished geocomposite product have been performed on at least every 9,290 sq. mt. (100,000 sq. ft.) for the geotextile component and the finished geocomposite water permeability according to method GRI GCL-2.

The lot and roll numbers for this project are as follows:

LOT# B8061202

ROLL# 51679,51680,51681,51683,51684,51685,51686,51687,51688,51689,51690

51691,51692,51693,51694,51695,51696,51697,51698,51699,51700,51701

51703,51704,51705,51706,51707,51708,51709,51710,51711,51712,51713

51714,51715,51716,51717,51718,51719,51720

KEVIN NEWMAN
Quality Control Manager

06/12/1998
DATE

1-101

BENTOFIX TECHNOLOGIES, INC.

QUALITY CONTROL CERTIFICATE

| LOT# | ROLL # | DATE |
|---|---|---|
| 88061202 | 51679 | 06/12/98 |

PRODUCT: BENTOFIX NS

DIMENSIONS: 150.00 ft x 15.5 ft
45.7 m x 4.72 m

1. FINISHED PRODUCT TYPE : BENTOFIX NS

| MASS(lb/ft2) | TENSILE (lb) LENGTH | TENSILE (lb) CROSS | ELONGATION (%) LENGTH | ELONGATION (%) CROSS | PERMEABILITY, K (cm/s) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|
| 1.106 | 112 | 212 | 113 | 12 | <5E-9 | 8.2 |

2. TOP LAYER TYPE : NON-WOVEN

| LAYER # | MASS(lb/ft2) |
|---|---|
| 9806112056 | 0.054 |

3. BOTTOM LAYER TYPE : WOVEN

| LAYER # | MASS(lb/ft2) |
|---|---|
| 300 | 0.023 |

4. BENTONITE TYPE : 30 MESH

| SHIPMENT # | % MONTMORILLONITE | SWELL INDEX (ml) | MOISTURE CONTENT (%) | MOISTURE ABSORPTION (%) | MASS OF BENTONITE(lb/ft2) |
|---|---|---|---|---|---|
| 453808 | 90 | 25 | 8.2 | 634 | 1.030 |

THIS IS A GRAB SAMPLE FROM THE ROLLS SUPPLIED BY BENTOFIX TECHNOLOGIES. ALL ROLLS SUPPLIED ARE FROM THE SAME LOT NUMBER.

J.A.

1-97

ALBARRIE CANADA LIMITED
85 Morrow Road
Barrie, Ontario
L4N 5V7

Tel: 705-737-0551
Fax: 705-737-4044

Date: 06/11/98

# CERTIFICATE OF CONFORMANCE

This is to certify that Style 205B, non-woven polypropylene fabric, produced by Albarrie Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

| Physical Property | Test Method | U.S. Units | S.I. Units |
|---|---|---|---|
| Mass per Unit Area | ASTM D-5261 | 6.6 oz/yd^2 | 225 gsm |
| Tensile Strength | ASTM D-4632 | 22 lbs | 10 kg |
| Elongation | ASTM D-4632 | 100 % | 100 % |

## Actual Test Results

Lot #: 980611205B

Roll #: 072396

| | U.S. Units | S.I. Units |
|---|---|---|
| Mass per Unit Area | 7.8 oz/yd^2 | 264 gsm |
| Tensile Strength | 70 lbs | 32 kg |
| Elongation | 183 % | 183 % |

L. Kubbaran
QUALITY CONTROL

THIS IS A GRAB SAMPLE WHICH REPRESENTS ALL ROLLS FURNISHED BY BONTOFIX TECHNOLOGIES. IN ADDITION, REPRESENTS LOT # 980611205B. ALL ROLLS BY BONTOFIX ARE OF THE SAME LOT.

D.A.

1-97

# Bentofix

| Number | Ticket Number | Warp Tensile (Lbs) | Weft Tensile(Lbs) | Mullen Burst(PSI) | Weight (G/M2) | Elongation (%) | Date Shipped |
|---|---|---|---|---|---|---|---|
| 1 | 608140 | 150.6 | 127 | 0 | 112.5 | 39 X 26 | 6/10/98 |
| 2 | 608960 | 148.4 | 108 | 0 | 115.5 | 34 x 30 | 6/10/98 |
| 3 | 609520 | 146.9 | 134.9 | 0 | 134.2 | 36 x 30 | 6/10/98 |
| 4 | 619250 | 157 | 119.4 | 0 | 112.5 | 38 x 30 | 6/10/98 |
| 5 | 619100 | 171.1 | 126.6 | 0 | 122.7 | 40 x 27 | 6/10/98 |
| 6 | 619050 | 145.7 | 136.4 | 0 | 129.7 | 40 x 30 | 6/10/98 |
| 7 | 619090 | 160 | 146.9 | 0 | 123.8 | 41 x 30 | 6/10/98 |
| 8 | 620050 | 160.5 | 125.2 | 0 | 110 | 35 x 28 | 6/10/98 |
| 9 | 619920 | 160.8 | 145 | 0 | 119.3 | 37 x 34 | 6/10/98 |
| 10 | 619940 | 147 | 133 | 0 | 122.8 | 40 x 26 | 6/10/98 |
| 11 | 619930 | 159.3 | 133.2 | 0 | 106.3 | 36 x 24 | 6/10/98 |
| 12 | 619740 | 152.3 | 108 | 0 | 104.4 | 34 x 25 | 6/10/98 |
| 13 | 619420 | 140 | 115 | 0 | 107.2 | 35 x 24 | 6/10/98 |
| 14 | 619320 | 157.4 | 137.7 | 0 | 114.9 | 34 x 29 | 6/10/98 |
| 15 | 620320 | 146.2 | 135.5 | 0 | 122.5 | 36 x 29 | 6/10/98 |
| 16 | 620310 | 163.8 | 143.1 | 0 | 119.9 | 38 x 31 | 6/10/98 |
| 17 | 620260 | 148.9 | 141.2 | 0 | 119.3 | 39 x 30 | 6/10/98 |
| 18 | 621340 | 154.9 | 120.8 | 0 | 116.2 | 34 x 28 | 6/10/98 |
| 19 | 621330 | 151.8 | 129 | 0 | 114.3 | 39 x 30 | 6/10/98 |
| 20 | 621240 | 139.9 | 122 | 0 | 114.7 | 40 x 32 | 6/10/98 |
| 21 | 623060 | 157.5 | 136.6 | 0 | 114.1 | 49 x 33 | 6/10/98 |
| 22 | 623480 | [illegible] | [illegible] | 0 | 119.3 | 38 x 28 | 6/10/98 |
| 23 | 623300 | 167.5 | 128 | 0 | 113.1 | 38 x 31 | 6/10/98 |
| 24 | 622410 | 147.8 | 140.5 | 0 | 121.1 | 36 x 30 | 6/10/98 |
| 25 | 622360 | 157.3 | 130.1 | 0 | 117.1 | 39 x 32 | 6/10/98 |
| 26 | 621840 | 160.3 | 139.9 | 0 | 125.9 | 36 x 33 | 6/10/98 |
| 27 | 621550 | 147.7 | 123.7 | 0 | 120.3 | 36 x 32 | 6/10/98 |
| 28 | 623570 | 151.3 | 139 | 0 | 119.6 | 33 x 32 | 6/10/98 |
| 29 | 623560 | 138.3 | 122.5 | 0 | 117.2 | 36 x 30 | 6/10/98 |
| 30 | 618840 | 160.2 | 138.3 | 0 | 116.1 | 37 x 32 | 6/10/98 |

THIS IS A GRAB SAMPLE OF NUMBER 23 WHICH REPRESENTS ALL ROLLS FURNISHED BY BENTOFIX TECHNOLOGIES WHICH ARE OF ALL THE SAME LOT.

1-96
~~1-101~~ approved as noted
included mans.



MI DRILLING FLUIDS
P.O. Box 032, Greybull, Wyoming 82426
1-307-765-4496

# LABORATORY ANALYSIS

Date Tested 5/20/98

| SOLD TO: | SHIP TO: |
|---|---|
| BENTOFIX TECHNOLOGIES (BT1)<br>85 MORROW ROAD<br>BARRIE, ONTARIO, CANADA L4N3V7 | BENTOFIX TECHNOLOGI.... (BT1)<br>23 TRUMAN ROAD<br>BARRIE, ONTARIO, CANADA L4M6E7 |

| SHIP DATE | RAILCAR OR TRUCK NUMBER | PLANT OF ORIGIN | TYPE OF MATERIAL |
|---|---|---|---|
| 5/20/98 | BN 453808 | GREYBULL, WY | FEDERAL SEAL GRANULAR |

NOTE: Our data for the above shipment shows the following test results:

| | LABORATORY TEST RESULTS | | LABORATORY TEST RESULTS | | |
|---|---|---|---|---|---|
| 1 | MOISTURE: 8.6 % | 7 | spec 12% max | pass |
| 2 | SWELL: 26 ml | 8 | 24 ml/kg min | pass |
| 3 | WPA: 779 | 9 | | - |
| 4 | Fluid Loss: 11.8 ml | 10 | 18 ml max | pass |
| 5 | | 11 | | |
| 6 | | 12 | | |

Should you have any questions or require additional information please let us know (1-307-765-4496)

Chris Sewell 5/21/98
SIGNED DATE

Approved by: B.B.

1-96
~~1-101~~

# BENTOFIX TECHNOLOGIES, INC.
## BENTONITE TEST DATA

DATE: JUNE 8, 1998 SHIPMENT NO.: BN 453808

SUPPLIER: MI DRILLING FLUIDS INC. BENTONITE TYPE: FEDERAL SEAL GRAN.

SAMPLE #: 2

1. MOISTURE CONTENT ACCORDING TO ASTM D4643-87:

| | | | |
|---|---|---|---|
| WEIGHT "WET" | = | 100.00 | g |
| WEIGHT "DRY" | = | 92.85 | g |

MOISTURE CONTENT = 7.2 %

2. PLATE WATER ABSORPTION ACCORDING TO ASTM E 946-92:

START TIME: 2:45 P.M FINISH TIME: 8:45 A.M

| | | | | |
|---|---|---|---|---|
| INITIAL TEMP.: | 26.0 | DEGREES C | INITIAL WT. "DRY": | 2.00 g |
| FINAL TEMP.: | 24.0 | DEGREES C | FINAL WT. "WET": | 15.01 g |
| AVERAGE TEMP.: | 25.0 | DEGREES C | TEMP. COEFFICIENT: | 3.30 |

$$\text{ABSORPTION} = \frac{(Ww - Wd)}{Wd} \times 100 - [\,K(Ta - Tr)\,]$$

$$= 634\ \%$$

3. SWELL INDEX ACCORDING TO ASTM D5890:

START TIME: 9:00 AM FINISH TIME: 9:00 AM

SWELL INDEX = 25 ml

4. METHYLENE BLUE CAPACITY ACCORDING TO API - 13B:

$$\frac{\text{METHYLENE BLUE, (cm3)}}{\text{BENTONITE, (cm3)}} = 64\ \text{meq/100 g}$$

5. FLUID LOSS ACCORDING TO ASTM D5891:

FLUID LOSS = 12.8 ml

1-96
~~1-101~~

# BENTOFIX TECHNOLOGIES, INC.
## BENTONITE TEST DATA

DATE: JUNE 9, 1998 SHIPMENT NO.: BN 453608

SUPPLIER: MI DRILLING FLUIDS INC. BENTONITE TYPE: FEDERAL SEAL GRAN.

SAMPLE #: 1

1. MOISTURE CONTENT ACCORDING TO ASTM D4643-87:

| | | | |
|---|---|---|---|
| WEIGHT "WET" | = | 100.00 | g |
| WEIGHT "DRY" | = | 91.83 | g |

MOISTURE CONTENT = 8.2 %

2. PLATE WATER ABSORPTION ACCORDING TO ASTM E 946-92:

START TIME: 2:30 P.M FINISH TIME: 8:30 A.M

| | | | | |
|---|---|---|---|---|
| INITIAL TEMP.: | 26.0 | DEGREES C | INITIAL WT. "DRY": | 2.00 g |
| FINAL TEMP.: | 24.0 | DEGREES C | FINAL WT. "WET": | 15.59 g |
| AVERAGE TEMP.: | 25.0 | DEGREES C | TEMP. COEFFICIENT: | 3.30 |

$$\text{ABSORPTION} = \frac{(Ww-Wd)}{Wd} \times 100 - [\,K(Ta-Tr)\,]$$

$$= 663\ \%$$

3. SWELL INDEX ACCORDING TO ASTM D5890:

START TIME: 8:45 AM FINISH TIME: 8:45 AM

SWELL INDEX = 26 ml

4. METHYLENE BLUE CAPACITY ACCORDING TO API - 13B:

$$\frac{\text{METHYLENE BLUE, (cm3)}}{\text{BENTONITE, (cm3)}} = 57\ \text{meq/100 g}$$

5. FLUID LOSS ACCORDING TO ASTM D5891:

FLUID LOSS = 12.0 ml

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL/GOVERNMENT GROUP

INTER-OFFICE CORRESPONDENCE

DATE: June 19, 1998

TO: Lois Bigley

FROM: Clair Waite CAW

LOCATION: NSWC Crane

LOCATION: Boise

SUBJECT: SOUTHDIV - NSWC CRANE W.O. 4324-0009
DYE BURIAL GROUND INTERIM MEASURES CAP
TEST METHOD APPROVAL FOR GEOSYNTHETIC CLAY LINER

In response to your inquiry, the "methylene-blue absorption" method of determining the percent sodium montmorillonite clay in the geosynthetic clay liner is approved as an acceptable alternate to the X-ray diffraction method called for in the Technical Specifications. Section 4.2.1 of U.S. EPA Technical Guidance Document EPA/600/R-93/182, "Quality Assurance and Quality Control for Waste Containment Facilities," lists both methods as acceptable.

Please let me know if you should have any questions.

cc: D. Beall
K. Ohsiek
File

1-102
1-100

# BENTOFIX TECHNOLOGIES, INC.

## BENTOFIX MANUFACTURING CERTIFICATION

**CUSTOMER:** FLUID SYSTEMS INC. **DATE:** 06-12-1998

**PROJECT:** PHILLIP ENVIRONMENAL SERVICES NCWC CRANE - DYE BURIAL CAP **NO.ROLLS:** 40 ROLLS

**ORDER NUMBER:** BT31110 **PRODUCT TYPE:** BENTOFIX NS

Bentofix Technologies, Inc. hereby certifies that the Bentofix Geosynthetic Clay Liner purchased and shipped for the above referenced project meets or exceeds Bentofix Technologies, Inc.'s specifications for Bentofix.

The Bentofix product has been continuously inspected for the presence of needles and is certified to be needle free.

The tests listed for the bentonite component have been performed on each batch of bentonite. The tests listed for the finished geocomposite product have been performed on at least every 3,716 sq. mt. (40,000 sq. ft.) for the Mass Per Unit Area according to method ASTM D5261 and for the Grab Tensile according to method ASTM D4632. The tests listed for the finished geocomposite product have been performed on at least every 9,290 sq. mt. (100,000 sq. ft.) for the geotextile component and the finished geocomposite water permeability according to method GRI GCL-2.

The lot and roll numbers for this project are as follows:

LOT# 88061202

ROLL# 51679,51680,51681,51683,51684,51685,51686,51687,51688,51689,51690

51691,51692,51693,51694,51695,51696,51697,51698,51699,51700,51701

51703,51704,51705,51706,51707,51708,51709,51710,51711,51712,51713

51714,51715,51716,51717,51718,51719,51720

KEVIN NEWMAN
Quality Control Manager

06/12/1998
DATE

BENTOFIX TECHNOLOGIES, INC.

QUALITY CONTROL CERTIFICATE

~~1-101~~
1-103

| LOT# | ROLL # | DATE |
|---|---|---|
| 88061202 | 51679 | 06/12/98 |

PRODUCT: BENTOFIX NS

DIMENSIONS: 150.00 ft x 15.5 ft
45.7 m x 4.72 m

1. FINISHED PRODUCT TYPE : BENTOFIX NS

1-96

| MASS(lb/ft2) | TENSILE (lb) LENGTH | TENSILE (lb) CROSS | ELONGATION (%) LENGTH | ELONGATION (%) CROSS | PERMEABILITY, K (cm/s) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|
| 1.106 | 112 | 212 | 113 | 72 | <5E-9 | 8.2 |

1-97

2. TOP LAYER TYPE : NON-WOVEN

| LAYER # | MASS(lb/ft2) |
|---|---|
| 9806712058 | 0.054 |

3. BOTTOM LAYER TYPE : WOVEN

| LAYER # | MASS(lb/ft2) |
|---|---|
| 623300 | 0.023 |

4. BENTONITE TYPE : 30 MESH

| SHIPMENT # | % MONTMORILLONITE | SWELL INDEX (ml) | MOISTURE CONTENT (%) | MOISTURE ABSORPTION (%) | MASS OF BENTONITE(lb/ft2) |
|---|---|---|---|---|---|
| 453808 | 90 | 25 | 8.2 | 634 | 1.020 |

WHAT TEST METHOD
if you are going to
~~to~~ use this formate you will
need one cert. for each
roll.

1-103

BENTOFIX TECHNOLOGIES, INC.

QUALITY CONTROL CERTIFICATE

| LOT# | ROLL # | DATE |
|---|---|---|
| 88061202 | 51675 | 06/12/98 |

PRODUCT: BENTOFIX NS

DIMENSIONS: 150.00 ft x 15.5 ft
45.7 m x 4.72 m

1. FINISHED PRODUCT TYPE : BENTOFIX NS

| MASS(lb/ft2) | TENSILE (lb) LENGTH | TENSILE (lb) CROSS | ELONGATION (%) LENGTH | ELONGATION (%) CROSS | PERMEABILITY, K (cm/s) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|
| 1.106 | 112 | 212 | 113 | 72 | <5E-9 | 8.2 |

2. TOP LAYER TYPE : NON-WOVEN

| LAYER # | MASS(lb/ft2) |
|---|---|
| 9806112058 | 0.054 |

3. BOTTOM LAYER TYPE : WOVEN

| LAYER # | MASS(lb/ft2) |
|---|---|
| 623300 | 0.023 |

4. BENTONITE TYPE : 30 MESH

| SHIPMENT # | % MONTMORILLONITE | SWELL INDEX (ml) | MOISTURE CONTENT (%) | MOISTURE ABSORPTION (%) | MASS OF BENTONITE(lb/ft2) |
|---|---|---|---|---|---|
| 453808 | 90 | 25 | 8.2 | 634 | 1.030 |

THE MONTMORILLONITE PERCENTAGE WAS TESTED BY THE METHYLENE BLUE CAPACITY METHOD. THIS IS AN ACCEPTABLE TEST METHOD IN THE GCL INDUSTRY

DO

BENTOFIX TECHNOLOGIES, INC.

QUALITY CONTROL CERTIFICATE

1-101

For one roll what about the other 39 rolls?

| LOT# | ROLL # | DATE |
|---|---|---|
| 88061202 | 51679 | 06/12/98 |

PRODUCT: BENTOFIX NS

DIMENSIONS: 150.00 ft x 15.5 ft
45.7 m x 4.72 m

1. FINISHED PRODUCT TYPE : BENTOFIX NS

1-96

| MASS(lb/ft2) | TENSILE (lb) LENGTH | TENSILE (lb) CROSS | ELONGATION (%) LENGTH | ELONGATION (%) CROSS | PERMEABILITY, K (cm/s) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|
| 1.106 | 112 | 212 | 113 | 72 | <5E-8 | 8.2 |

1-97

2. TOP LAYER TYPE : NON-WOVEN

| LAYER # | MASS(lb/ft2) |
|---|---|
| 9806112058 | 0.054 |

3. BOTTOM LAYER TYPE : WOVEN

| LAYER # | MASS(lb/ft2) |
|---|---|
| 623300 | 0.023 |

1-112

4. BENTONITE TYPE : 30 MESH

| SHIPMENT # | % MONTMORILLONITE | SWELL INDEX (ml) | MOISTURE CONTENT (%) | MOISTURE ABSORPTION (%) | MASS OF BENTONITE(lb/ft2) |
|---|---|---|---|---|---|
| 453808 | 90 | 25 | 8.2 | 634 | 1.030 |

1-97

# Bentofix Woven Geotextile

| Number | Ticket Number | Warp Tensile (Lbs) | Weft Tensile(Lbs) | Mullen Burst(PSI) | Weight (G/M2) | Elongation (%) | Date Shipped |
|---|---|---|---|---|---|---|---|
| 1 | 608140 | 150.6 | 127 | 0 | 112.5 | 39 X 26 | 6/10/98 |
| 2 | 608960 | 148.4 | 108 | 0 | 115.5 | 34 x 30 | 6/10/98 |
| 3 | 609520 | 146.9 | 134.9 | 0 | 134.2 | 36 x 30 | 6/10/98 |
| 4 | 619250 | 157 | 119.4 | 0 | 112.5 | 38 x 30 | 6/10/98 |
| 5 | 619100 | 171.1 | 126.6 | 0 | 122.7 | 40 x 27 | 6/10/98 |
| 6 | 619050 | 145.7 | 136.4 | 0 | 129.7 | 40 x 30 | 6/10/98 |
| 7 | 619090 | 160 | 146.9 | 0 | 123.8 | 41 x 30 | 6/10/98 |
| 8 | 620050 | 160.5 | 125.2 | 0 | 110 | 35 x 28 | 6/10/98 |
| 8 | 619920 | 160.8 | 145 | 0 | 119.3 | 37 x 34 | 6/10/98 |
| 10 | 619940 | 147 | 133 | 0 | 122.8 | 40 x 26 | 6/10/98 |
| 11 | 619930 | 159.3 | 133.2 | 0 | 106.3 | 36 x 24 | 6/10/98 |
| 12 | 619740 | 152.3 | 108 | 0 | 104.4 | 34 x 25 | 6/10/98 |
| 13 | 619420 | 140 | 115 | 0 | 107.2 | 35 x 24 | 6/10/98 |
| 14 | 619320 | 157.4 | 137.7 | 0 | 114.9 | 34 x 29 | 6/10/98 |
| 15 | 620320 | 146.2 | 135.5 | 0 | 122.5 | 36 x 29 | 6/10/98 |
| 16 | 620310 | 163.8 | 143.1 | 0 | 119.9 | 38 x 31 | 6/10/98 |
| 17 | 620260 | 148.9 | 141.2 | 0 | 119.3 | 39 x 30 | 6/10/98 |
| 18 | 621340 | 154.9 | 120.8 | 0 | 116.2 | 34 x 28 | 6/10/98 |
| 19 | 621330 | 151.8 | 129 | 0 | 114.3 | 39 x 30 | 6/10/98 |
| 20 | 621240 | 139.9 | 122 | 0 | 114.7 | 40 x 32 | 6/10/98 |
| 21 | 623060 | 157.5 | 136.6 | 0 | 114.1 | 49 x 33 | 6/10/98 |
| 22 | 623480 | 159.8 | 128 | 0 | 119.3 | 38 x 28 | 6/10/98 |
| 23 | 623300 | 167.5 | 128 | 0 | 113.1 | 38 x 31 | 6/10/98 |
| 24 | 622410 | 147.6 | 140.5 | 0 | 121.1 | 38 x 36 | 6/10/98 |
| 25 | 622360 | 157.3 | 130.1 | 0 | 117.1 | 39 x 32 | 6/10/98 |
| 26 | 621840 | 160.3 | 139.9 | 0 | 125.9 | 36 x 33 | 6/10/98 |
| 27 | 621550 | 147.7 | 123.7 | 0 | 120.3 | 36 x 32 | 6/10/98 |
| 28 | 623570 | 151.3 | 139 | 0 | 119.6 | 33 x 32 | 6/10/98 |
| 29 | 623560 | 138.3 | 122.5 | 0 | 117.2 | 36 x 30 | 6/10/98 |
| 30 | 618840 | 160.2 | 138.3 | 0 | 116.1 | 37 x 32 | 6/10/98 |

does not meet MARV

1-97

~~1-101~~

ALBARRIE CANADA LIMITED
85 Morrow Road
Barrie, Ontario
L4N 3V7

Tel: 705-737-0551
Fax: 705-737-4044

1-97

Date: 06/11/98

# CERTIFICATE OF CONFORMANCE

*This is to certify that Style 205B, non-woven polypropylene fabric, produced by Albarrie* Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

| Physical Property | Test Method | U.S. Units | S.I. Units |
|---|---|---|---|
| Mass per Unit Area | ASTM D-5261 | 6.6 oz/yd^2 | 225 gsm |
| Tensile Strength | ASTM D-4632 | 22 lbs | 10 kg |
| Elongation | ASTM D-4632 | 100 % | 100 % |

**Actual Test Results** only one roll, what of the other rolls used?

Lot #: 980611205B

Roll #: 072396

| | U.S. Units | S.I. Units |
|---|---|---|
| Mass per Unit Area | 7.8 oz/yd^2 | 264 gsm |
| Tensile Strength | 70 lbs | 32 kg |
| Elongatio | 183 % | 183 % |

L. Hubbard
QUALITY CONTROL

# G-5

# Installation Procedures

NSWC CRANE
DYE BURIAL GROUND CAP

Submittal Item No. 1-105(A)
Specification Section 02253

Manufacturers Specifications

Phillip Environmental Services Corp.
210 West Sand Bank Road
Columbia, IL 62236

Geosynthetics Contractor
Environmental Design & Construction, Inc.
104 Wholesale Avenue
Huntsville, AL 35811

Lois J Bigley 12-29-97
Lois J. Bigley 12/29/97

FLUID SYSTEMS

Friday, September 12, 1997

Michelle Lotz
Environmental Design & Construction
104 Wholesale Avenue
Huntsville, AL 35611

RE: Dye Burial Cap
Crane, IN.

Dear Michelle,

I have reviewed the submittal comments for the GCL and offer the following for resubmittal:

1-95 Resin Origin Supplier for GCL
Synthetic Industries is the geotextile supplier for our GCL. The resin origin certificates supplied for 1-55 will be the same for 1-95.

1-96 Test Results from GCL Manufacturer on Bentonite
Bentonite test data is supplied in our Bentofix Manufacturing Certification. The actual test results can not be supplied until rolls are picked for shipment. Sodium bentonite clay is a raw material and as such does not have a product name. Our source for this material is listed in FIX-509. Certified bentonite properties are listed in FIX-501.

1-98 Manufacturers Specification for GCL
Bentofix certified properties are listed in FIX 501. The test method, frequency and value are listed for each component as well as the finished GCL. All finished GCL properties are tested once per 40,000 sf as required with the exception of permeability (hydraulic conductivity) which is tested once per shift or 100,000 sf. It has been our experience that by monitoring the mass per unit area 1/40,000 sf, it is not necessary to also check permeability at that same frequency since permeability is dependent on bentonite mass. In addition, puncture is tested periodically and is a TYPICAL value not MARV. It is listed in FIX 502 and is attached for reference.

1-99 Written Certification of Minimum Average Roll Values
FIX-501 is list of certified MARV values. Actual test results are supplied when rolls are picked for shipment. See notes above on test frequency.

1-100 Needle Free Certification
Job specific, signed copy provided when rolls shipped.

1-101 Manufacturers Quality Control Certificates and Test Results and Test Procedures
Certification and test results provided for actual rolls shipped. Please see notes under 1-98 relating to test procedures and frequency.

FLUID SYSTEMS

-102 Certificate of Compliance
Completed and signed when actual rolls are picked for shipment.

1-103 Certificate of Montmorillonite Content
Certification is included in manufacturing certification. Test method is X-ray diffraction. This is shown in FIX-502 TYPICAL property sheet.

1-105 Manufacturers Specifications
Unloading, storage and handling instructions attached.

I have contacted Synthetic Industries for additional information pertaining to the geotextile and will forward when I receive it. Please review the above information and let me know if you feel like any additional information will be needed.

Sincerely,

John Pyle

FLUID SYSTEMS

# BENTOFIX® GEOSYNTHETIC CLAY LINER INSTALLATION GUIDELINES

## 1.0 Unloading and Storage

1.1 Arrangements should be made by the contractor or installer to store the rolls of Bentofix® GCL in a suitable location. While in storage it is important to keep the material dry and in the same condition as it was shipped.

1.1.1 Methods of storing the material on site include: leaving the rolls in the covered van or on the flat bed trailer under appropriate tarps; storing the rolls under roof in a clean, dry area; storing the rolls on high ground, preferably on pallets, covered with protective waterproof tarps.

1.1.2 The rolls should remain in their original, unopened plastic wrapping until it is time to install the material.

1.1.3 Any rolls that come in contact with moisture while in storage should be set aside to await examination by the engineer, installer, and/or manufacturer's representative. Damaged rolls should also be set aside and examined to determine the suitability of the liner for use.

1.2 Lifting the rolls requires a minimum 3" outside diameter steel pipe, preferably soild, but with a wall thickness capable of supporting the weight of the roll. The pipe is inserted through the center cardboard roll core. Heavy duty slings are attached to each end of the pipe, which are fastened to a spreader bar. The assembly can then be lifted by crane, back hoe, end loader or any other suitable piece of equipment.

An all-terrain, extendible boom, fork lift, or Lull, can be fitted with a special, solid steel pole, 14 to 16 feet in length, having an outside diameter of no more than 3-$^{3}/_{8}$". The pole is inserted into the cardboard core of the roll. The roll should not be fully suspended until the pole extends through the full length of the core so that the core does not break. This device has a long reach and is particularly useful for unloading containers or covered vans.

As with any lifting or loading operations, appropriate safety equipment should be employed and proper safe handling methods practised.

## 2.0 Earthwork

2.1 The surface upon which the Bentofix® GCL is installed shall be smooth and free of debris, roots and sticks, and sharp rocks larger than two inches. Site specific compaction requirements should be followed in accordance with the project plans and specifications. At a minimum, the level of compaction should be such that no rutting is caused by installation equipment or other construction vehicles which traffic the area of deployment.

2.2 In applications where the Bentofix® GCL will be subjected to a hydraulic head that exceeds the confining stress (common in liquid surface impoundments), subgrade surfaces consisting of gravel or granular soils may not be acceptable due to their large void content. For these applications, the top six inches of the subgrade soil should possess a particle size distribution where at least 80 percent of the soil is finer than 0.2 mm (#60 sieve).

2.3 Directly prior to deployment of the Bentofix® GCL, the subgrade shall be final-graded to fill in any remaining voids or desiccation cracks and proof-rolled to ensure that no sharp irregularities or abrupt elevation changes exist. The surfaces to be lined shall be maintained in this condition, free of standing water.

2.4 The subgrade surface and preparation shall be approved and certified by the CQA inspector prior to Bentofix® GCL placement.

2.5 Upon approval by the CQA inspector, it shall be the installer's responsibility to indicate to the engineer any change in the condition of the subgrade that could cause it to be out of compliance with any of the requirements of this section or the project specific specification.

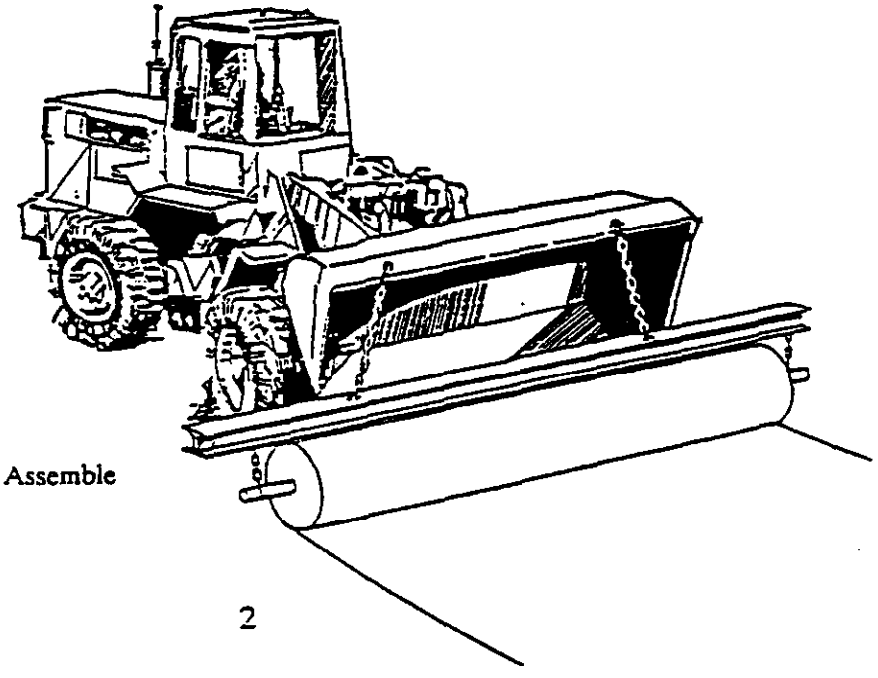


Figure 1 - Typical Lifting Assemble

## 3.0 Liner Deployment

3.1 As rolls are selected for deployment, the labels are removed and recorded in the file, along with any other pertinent information.

3.2 The rolls are transported from the storage area and carried into position using the lifting equipment described in Section 1.2.

3.3 The roll of Bentofix® GCL is supported so that the fabric designated as the upper surface in the contract drawings faces out, away from the installation vehicle. The free end is them pulled across the area to be lined by the installation crew.

Alternately, the free end of the roll can be secured and the vehicle supporting the roll slowly backs away, deploying the GCL as it goes.

3.4 Successive sheets are overlapped according to the match lines stenciled on the upper surface of the Bentofix® GCL, as described in Section 5.0.

3.5 Whenever possible, Bentofix® GCL installation should begin at high elevation and proceed to low elevation. This allows precipitation accumulation to drain quickly without adversely affecting the GCL.

3.6 The edges of exposed sheets should be weighted down with adequate ballast to prevent uplift.

3.7 Only deploy as much Bentofix® GCL as can be covered at the end of the day, or that can be covered in a reasonably short time in the event of precipitation.

3.7.1 When Bentofix® GCL is being installed under a polymeric geomembrane, the leading edge of the GCL should be folded back under the membrane at the end of the construction day. The leading edge of the membrane should be secured by sandbags or suitable ballast to prevent uplift and the infiltration of runoff water.

3.7.2 When Bentofix® GCL is being installed alone, as the primary hydraulic barrier, the GCL should be covered by the full thickness of gravel, sand, or soil called for in the drawings. The leading edge should be left uncovered, but protected by plastic sheeting and weighted with suitable ballast.

3.8 Bentofix® GCL should be installed in a relaxed condition, and be free of wrinkles and folds.

3.9 When fitting Bentofix® GCL into small areas or around construction details, use a sharp knife to cut the liner to the appropriate dimensions. Adjacent panels should overlap at the edges as described in Section 5.0.

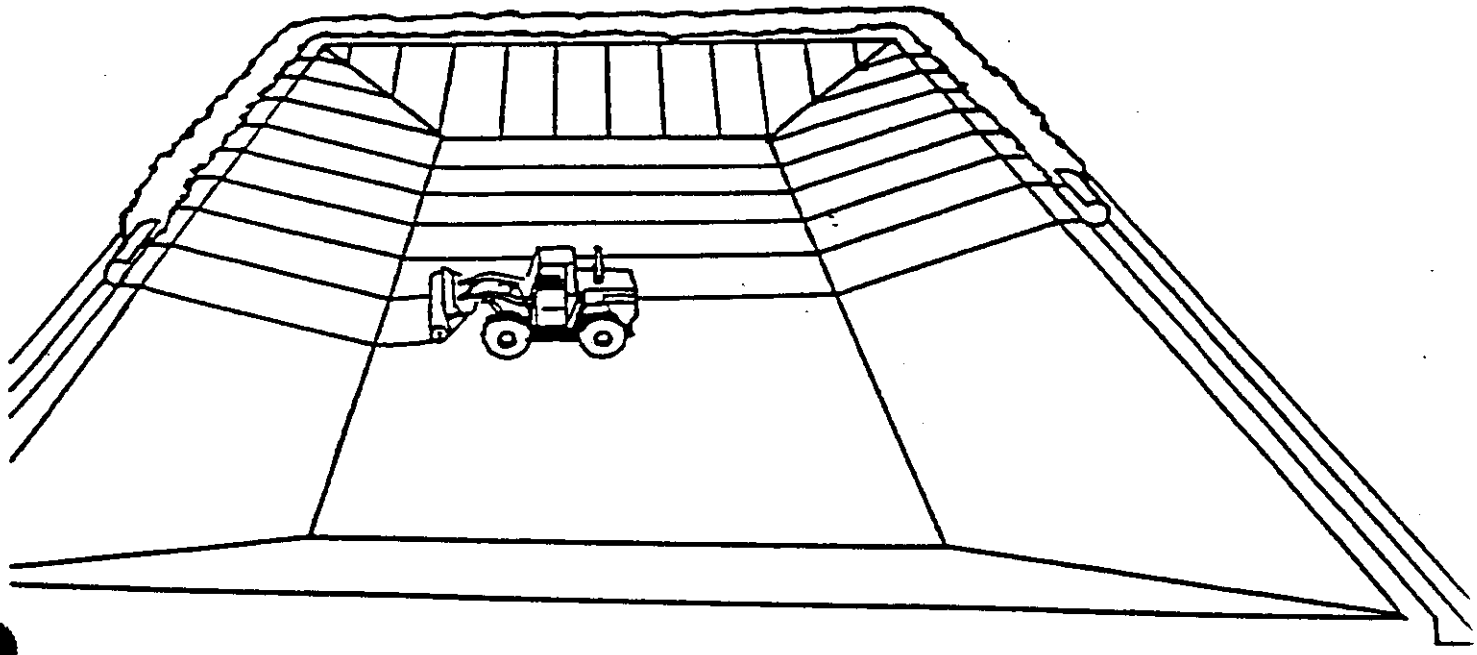


Figure 2 - Anchoring and Deployment

## 4.0 Anchoring

4.1 Bentofix® GCL is anchored in a trench around the perimeter of the containment basin to provide the required pull-out resistance. In most cases Bentofix® GCL can be anchored in the same trench as any adjacent geosynthetic liner components. Dimensions and location of the trench should be provided in the contract drawings.

4.2 Steps should be taken to ensure that precipitation will not accumulate in the trench, prior to backfilling, allowing the premature hydration of the GCL.

4.3 The trench should be backfilled and properly compacted prior to placing cover soil on the slopes. When Bentofix® GCL is used alone, sufficient overlap should be provided on the base, beyond the toe of the slope, to allow for movement of the liner up the slope as the trench is back filled and compacted.

## 5.0 Overlapping, Seaming and Sealing

5.1 Adjacent sheets of Bentofix® GCL should overlap each other according to the match line on the bottom sheet. This match line is typically located 10 inches from the edge of the 15'2" wide sheet. Bentofix® GCL is manufactured with a 1½" protective edge that contains the bentonite and prevents edge loss. An all inclusive 10 inch overlap provides a minimum of six inch overlap of bentonite.

5.2 When Bentofix® GCL is used alone, it is necessary to place additional granular bentonite or bentonite paste between the sheets at the overlap to ensure the seal. Bentonite is applied at the rate of approximately 1/4 pound per lineal foot of seam and is the same bentonite as is used in the manufacture of the GCL itself.

5.3 Transverse overlaps at the ends of rolls should be a minimum of twelve inches in length. There are no match lines or protective edges at the ends of the rolls.

5.4 When the liner is cut to fit in small areas, in corners, or around details, adjacent panels should overlap a minimum of six inches, adding bentonite when specified in the project specifications.

5.5 Seams should be shingled in a down slope direction so that water flows across the seam from top sheet to bottom sheet.

## 6.0 Sealing Around Appurtenances

6.1 Bentofix® GCL should be installed around penetrations, structures, pipes, supports and other appurtenances according to the contract drawing.

6.2 Additional granular bentonite, and in some cases a bentonite paste, will be necessary to ensure a watertight seal.

6.3 Bentofix® GCL may be secured to the appurtenance by use of a stainless steel batten or clamp, mechanical fasteners, or other appropriate device.

## 7.0 Repairing Damaged Areas

7.1 In the event an area of Bentofix® GCL becomes damaged, torn, or punctured during installation, the affected area should be repaired in accordance with these guidelines.

7.2 On relatively level surfaces, the damaged area is covered with a larger piece of Bentofix® GCL extending at least 12 inches beyond the affected area in every direction. Granular bentonite can again be used to augment the seal as specified by the engineer.

7.3 Patches on side slopes should be minimized. GCL panels that require patching should be moved and used on the base whenever possible.

7.4 Areas that are inadvertently exposed to standing water or excess precipitation and allowed to hydrate prior to being covered by a confining soil layer should be examined. If the engineer and installer determine that the GCL has hydrated and that the bentonite would displace under the expected load, the GCL must be removed and replaced.

7.5 Any GCL material exposed to hydrocarbon fuels, chemicals, pesticides, leachates, or other liquids during installation, should be cut out, removed, disposed of away from any components of the liner presently under construction and replaced.

## 8.0 Cover Material

8.1 Bentofix® GCL must be covered with a geomembrane as soon after placement as possible to protect it from the climatic elements. In cases where Bentofix® GCL is used alone, the GCL should be covered with the specified thickness of cover soil immediately following deployment. Only install the amount of Bentofix® GCL that can be anchored, inspected, and covered the same day.

8.2 When construction and installation is halted at the end of the day, the GCL must be protected from inclement weather overnight.

8.2.1 When a geomembrane is being installed over the GCL, the leading edge of Bentofix® GCL should be folded back under the membrane so that the membrane extends beyond the GCL two top three feet. The leading edge of the membrane is then weighted with sand bags or suitable ballast to safeguard against wind uplift and the flow to runoff water under the liner.

8.2.2 When Bentofix® GCL is used alone, the solid cover should be placed within 30 inches of the leading edge of the GCL. The leading edge should then be covered with plastic sheeting that is folded under the exposed edge approximately 12 inches.

Sand bags or suitable ballast should be placed on the protected liner to hold the plastic in place and to partially confine the GCL. The next morning the ballast and the plastic are removed an the subsequent rolls of GCL placed as described in Section 5.0.

8.3 Cover soil placed directly on the GCL should have an appropriate gradation so as not to damage or puncture the GCL. It is recommended that particle sizes not exceed 2 inches when the material is angular, 3 inches when it is rounded. Appropriate placement methods should be used at all times to protect the GCL.

8.4 Compatibility of Bentofix® GCL with soils with a high salt content should be verified by the engineer.

8.5 Backfill should be pushed across the seams from top sheet to bottom sheet to prevent the cover material from lodging between the overlapped sheets.

8.6 Only after the cover material has been placed should the Bentofix® GCL be allowed to hydrate. Once hydration has occurred no vehicles should be allowed to traffic the area directly above the GCL unless sufficient separation exists between the GCL and the vehicle to adequately distribute the vehicle load.

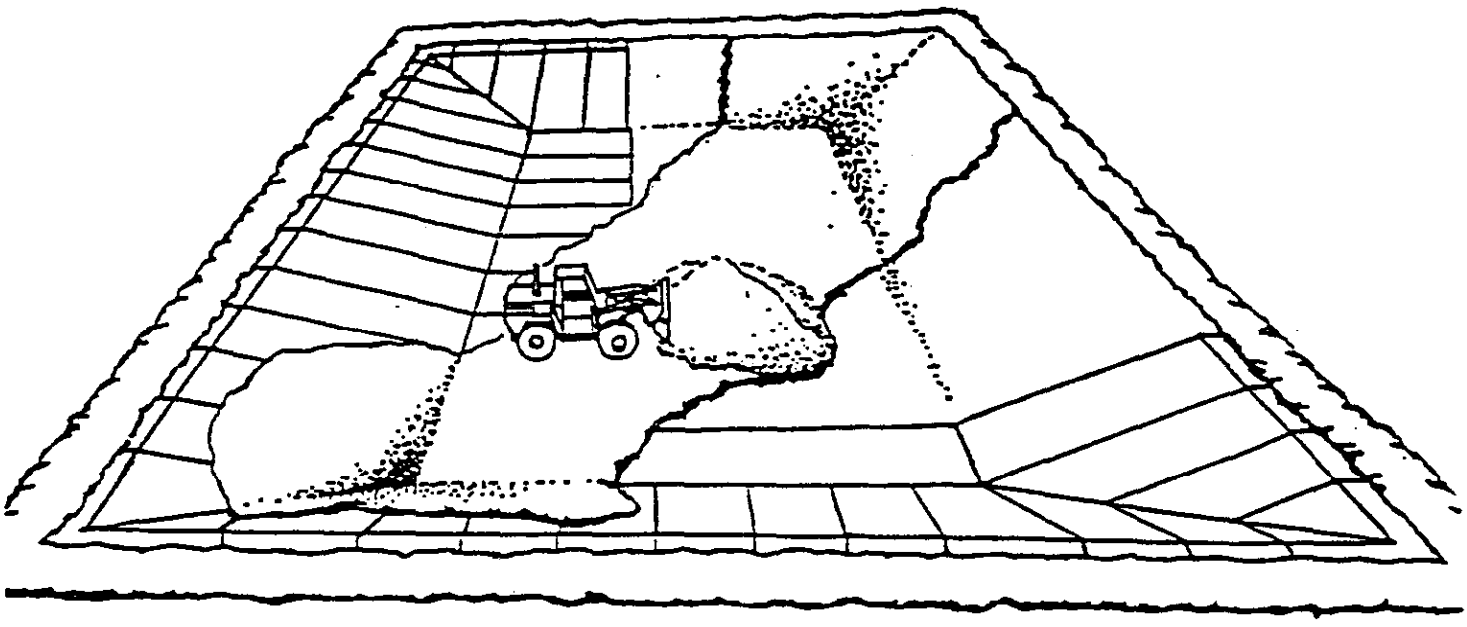


Figure 3 - Backfilling

## 9.0 Bentonite Hydration in Tank Farm Applications

9.1 In applications where Bentofix® GCL is used alone to line the secondary containment basins, around above ground storage tanks, the GCL must first be hydrated with fresh water. Non-aqueous chemicals will not activate the bentonite. Therefore, activation by rain water or sprinkler/irrigation is necessary. Once hydrated, Bentofix® GCL is an excellent barrier to hydrocarbon fuels, fertilizers, and other such chemicals. Contact Fluid Systems for further details regarding chemical compatibility.

9.2 Periodic inspection of the liner to ensure proper coverage and adequate moisture content is recommended when Bentofix® GCL is used alone under a minimum depth of cover soil. In arid regions it may be necessary to irrigate the containment area at some predetermined frequency.

The information contained herein has been compiled by Fluid Systems and is, to the best of our knowledge, true and accurate. All suggestions and recommendations are offered without guarantee. Final determination of suitability for use based on any information provided, is the sole responsibility of the user. There is no implied or expressed warranty of merchantability of fitness of the product for the contemplated use.

# APPENDIX H

# HDPE GEOMEMBRANE LINER DATA

## APPENDIX H
## HDPE GEOMEMBRANE LINER DATA

### INDEX


| | |
|---|---|
| H-1 | Panel Layout Plan |
| H-2 | Seam Inspection/Test Results |
| H-3 | Panel Deployment Sheets |
| H-4 | Manufacturer's QC Certificates |
| H-5 | Warranties |
| H-6 | Installation Procedures |

# H-1

# Panel Layout Plan

MATERIAL SUMMARY

ROLL 1
P1-41'
P2-53'
P3-68'
P4-85'
P5-100'
P6-111'
P7-15'

ROLL 2
P8-100'
P-9-125'
P10-134'
P11-116'

ROLL 3
P12-20'
P13-137'
P14-137
P15-137'
P16-44'

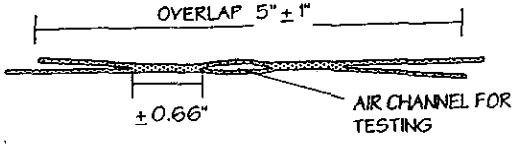
ROLL 4
P17-93'
P18-135
P19-143'
P20-104'

ROLL 5
P21-33'
P22-158'
P23-177'
P24-107'

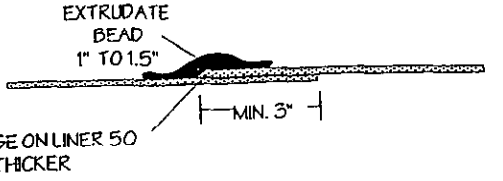
ROLL 6
P25-94'
P26-185'
P27-176'
P28-20'

ROLL 7
P29-155'
P30-17'
P31-30'
P32-35'
P33-33'
P34-31'
P35-30'
P36-22'
P37-20'
P38-27'
P39-27'
P40-24'
P41-20'

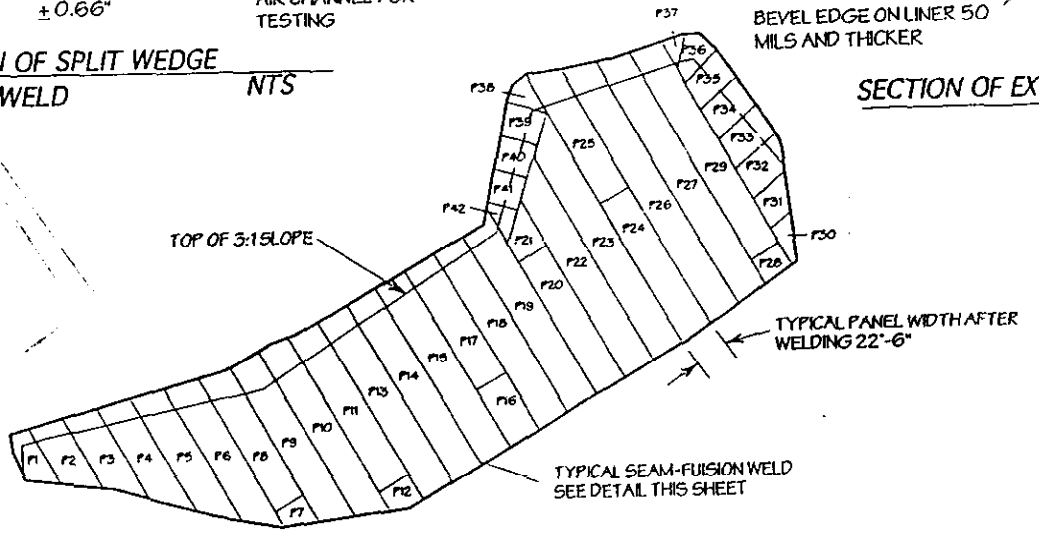
ROLL 8
P42-20'

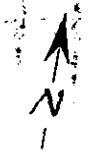


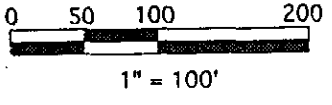

SECTION OF SPLIT WEDGE FUSION WELD NTS




SECTION OF EXTRUSION WELD NTS




NOTE: THIS PANEL LAYOUT IS TENTATIVE AND MAY BE REVISED IN ORDER TO SUIT FIELD CONDITIONS BY EDCI SITE MANAGER WITH APPROVAL OF THE ENGINEER

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SCALE 1"= 100'<br>DRAWN TAL<br>DATE 8-8-97<br>DRAWING MAY BE REDUCED<br>LINE EQUALS ONE INCH ON ORIGINAL DRAWING | NO. | DATE | REVISION | INIT. | ENVIRONMENTAL DESIGN AND CONSTRUCTION, INC.<br>HUNTSVILLE, ALABAMA | DYE BURIAL GROUND<br>INTERIM MEASURES<br>CRANE, INDIANA | PROPOSED PANEL LAYOUT<br>60 MIL HDPE TEXTURED CAP | SHEET 1 of 3 |

# H-2

# Seam Inspection/Test Results

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

# CERTIFICATE OF ACCEPTANCE

PROJECT NAME: Dye Burial Ground DATE: 7-23-98
PROJECT LOCATION: Crane, IN

Details of Work Completed and Measured.....

Supplied, Installed, And Tested 84,772 Square Feet Of Type 2 (12oz) Geotextile, GCL, And 60-Mil Textured HDPE.

I, the undersigned, duly authorized representative of Phillips Services do hereby take over and accept the work described above from the date hereof, subject to the exceptions detailed below, and confirm that the work has been completed in accordance with the specifications and the terms and conditions of the contract. There is no apparent damage to the plastic lining, nor is there any interference within or without the surrounding works.

I have evaluated and measured the work together with the EDCI representative, and agree that the measurements shown above are true and correct, and that the installation has met our approval.

Exceptions.....

General Contractor/Owner
Russell Tomasko
Signature
Russell Tomasko
Printed Name
Date: 7/23/98

Environmental Design & Construction, Inc.
Daniel R. Davis
Signature
Daniel R Davis
Printed Name
Date: 7-23-98

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

# TRIAL WELD TEST LOG

JOB NAME: Dyo Burial Ground

JOB NUMBER: 990061N

LOCATION: Grant, IN

Q.A. TECHNICIAN: D. Davis

Ambient Temp. ___ a.m. ___ p.m.

PAGE: 1 OF

MIN. PEEL: 90 ppi

MIN. SHEAR: 120 ppi

SHEET THICKNESS: mil 60

| Trial Weld Sample # | Date of Weld | Time of Weld | Location | Welding Technician | Machine Type & # | Machine Temp/Speed | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Pass/ Fail | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Pass/ Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7-14 | 12:30P | SITE | RM | 313 | 700/35 | 110<br>102 | 101<br>106 | 108<br>105 | | | P | 140 | | | | | P |
| 2 | " | 1:30P | " | RL | 315 | 700/27.5 | 100<br>101 | 95<br>98 | 109<br>100 | | | P | 150 | | | | | P |
| 3 | " | 5:53P | " | RM | 313 | 700/35 | 100<br>101 | 95<br>90 | 109<br>100 | | | P | 144 | | | | | P |
| 4 | " | 5:54P | " | RL | 315 | 700/27.5 | 95<br>103 | 98<br>106 | | | | P | 140 | | | | | P |
| 5 | 7-17 | 8:15A | " | RM | 313 | 700/32 | 115<br>106 | 107<br>110 | 107<br>107 | | | P | 156 | | | | | P |
| 6 | " | 8:05A | " | RM | 315 | 700/25 | 120<br>105 | 115<br>107 | 120<br>104 | | | P | 150 | | | | | P |
| 7 | " | 4:30P | " | RM | 315 | 700/30 | 95<br>110 | 97<br>95 | 106<br>95 | | | P | 131 | | | | | P |
| 8 | " | 4:31P | " | RM | 313 | 700/32 | 98<br>105 | 103<br>106 | 102<br>104 | | | P | 131 | | | | | P |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

# TRIAL WELD TEST LOG

JOB NAME: Dye Burial Ground

PAGE: 2 OF

JOB NUMBER: 970612

Ambient Temp. ___ a.m.

MIN. PEEL: 90 ppi

LOCATION: Crane, IN

___ p.m.

MIN. SHEAR: 120 ppi

Q.A. TECHNICIAN: D. Davis

SHEET THICKNESS: mil 60

| Trial Weld Sample # | Date of Weld | Time of Weld | Location | Welding Technician | Machine Type & # | Machine Temp/Speed | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Pass/ Fail | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Pass/ Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 7-17 | 400 5:30P | Site | RM | 313 | 700/32 | 115<br>111 | 119<br>113 | | | | P | 125 | | | | | P |
| 10 | 7-17 | 6:00P | " | RM | 315 | 700/30 | 103<br>/ | 110<br>103 | 103<br>99 | 110<br>110 | | P | 120 | | | | | P |
| 11 | 7-18 | 930A | " | RM | 313 | 700/30 | 108<br>102 | 110<br>100 | 107<br>100 | | | P | 141 | | | | | P |
| 12 | " | 800A | " | RM | 315 | 700/25 | 112<br>110 | 112<br>110 | 114<br>115 | | | P | 146 | | | | | P |
| 13 | " | 400P | " | RM | 313 | 700/32 | 115<br>102 | 100<br>112 | 104<br>116 | | | P | 138 | | | | | P |
| 14 | " | 400 445P | " | RM | 315 | 700/25 | 110<br>113 | 113<br>110 | | | | P | 140 | | | | | P |
| 15 | " | 400 530P | " | RM | 313 | 700/32 | 120<br>125 | 130<br>125 | | | | P | 132 | | | | | P |
| 16 | 7-19 | 800A | " | RM | 315 | 700/23 | 115<br>105 | 107<br>98 | 105<br>100 | | | P | 142 | | | | | P |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

# TRIAL WELD TEST LOG

JOB NAME: D'ye Burial Ground

PAGE: 3 OF

JOB NUMBER: 97006IN

Ambient Temp. ___ a.m.

MIN. PEEL: 90 ppi
EXT 78 PPI

LOCATION: Crano, IN

___ p.m.

MIN. SHEAR: 120 ppi

Q.A. TECHNICIAN: D. Davis

SHEET THICKNESS: mil 60

| Trial Weld Sample # | Date of Weld | Time of Weld | Location | Welding Technician | Machine Type & # | Machine Temp/Speed | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Pass/ Fail | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Pass/ Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 7-19 | 800A | SITE | RM | 313 | 700/23 | 117<br>125 | 118<br>120 | 114<br>115 | | | P | 138 | | | | | P |
| 18 | " | 600<br>130P | " | RH | 315 | 700/23 | 119<br>130 | 115<br>122 | | | | P | 160 | | | | | P |
| 19 | " | 600<br>130P | " | RM | 313 | 700/30 | 110<br>107 | 110<br>116 | | | | P | 151 | | | | | P |
| 20 | 7-20 | 645A | " | RH | 315 | 700/25 | 114<br>109 | 106<br>120 | 116<br>104 | | | P | 146 | | | | | P |
| 21 | 7-20 | 645A | " | RM | 313 | 700/30 | 114<br>106 | 107<br>93 | 114<br>110 | | | P | 140 | | | | | P |
| 22 | " | 600<br>1145A | " | RM | 313 | 700/30 | 95<br>101 | 108<br>116 | | | | P | 140 | | | | | P |
| 23 | " | 600<br>1130A | " | RH | 315 | 700/25 | 100<br>110 | 100<br>107 | | | | P | 135 | | | | | P |
| 24 | 7-21 | 900A | " | RM | 316 EXT | 550 | 100 | 92 | 94 | | | P | 139 | | | | | P |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

# TRIAL WELD TEST LOG

JOB NAME: Dye Burial Ground

JOB NUMBER: 97006 IN

LOCATION: Craven, IN

Q.A. TECHNICIAN: D. Davis

Ambient Temp. ___ a.m.

___ p.m.

PAGE: 4J OF

MIN. PEEL: 90 ppi
EXT 78 PPI

MIN. SHEAR: 120 ppi

SHEET THICKNESS: mil 60

| Trial Weld Sample # | Date of Weld | Time of Weld | Location | Welding Technician | Machine Type & # | Machine Temp/Speed | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Pass/Fail | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 7-21 | 11:13A | Site | RH | EXT 286 | 510 | 118 | 110 | 112 | | | P | 122 | | | | | P |
| 26 | " | EOD 2:00P | " | RM | EXT 316 | 550 | 104 | 112 | | | | P | 138 | | | | | P |
| 27 | " | EOD 2:45P | " | RH | EXT 286 | 510 | 123 | 114 | | | | P | 150 | | | | | P |
| 28 | 7-22 | 7:30A | " | RM | 313 | 700/28 | 114<br>107 | 104<br>110 | 105<br>111 | | | P | 155 | | | | | P |
| 29 | " | EOD 8:45A | " | RM | 313 | 700/28 | 105<br>105 | 110<br>102 | | | | P | 138 | | | | | P |
| 30 | " | 9:30A | " | RH | EXT 286 | 510 | 87 | 76 | 130 | | | P | 132 | | | | | P |
| 31 | 7-23 | 10:00A | " | RH | EXT 286 | 510 | 105 | 119 | 115 | | | P | 145 | | | | | P |
| 32 | " | 2:30P | " | RM | 313 | 700/28 | 119<br>111 | 110<br>105 | 115<br>109 | | | P | 135 | | | | | P |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

# TRIAL WELD TEST LOG

JOB NAME: Dys Burial Ground

PAGE: OF

JOB NUMBER: 970061N

Ambient Temp. ___ a.m.

MIN. PEEL: 90 ppi
EXT 78

LOCATION: Crane, IN

___ p.m.

MIN. SHEAR: 120 ppi

Q.A. TECHNICIAN: D. Davis

SHEET THICKNESS: mil 60

| Trial Weld Sample # | Date of Weld | Time of Weld | Location | Welding Technician | Machine Type & # | Machine Temp/Speed | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Pass/ Fail | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Pass/ Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 7-23 | 1500<br>466P | Site | RM | 313 | 700/28 | 120<br>115 | 117<br>115 | | | | P | 145 | | | | | P |
| 34 | " | 1500<br>415P | " | RH | EXT<br>286 | 510 | 95 | 85 | 80 | | | P | 143 | | | | | P |
| 35 | " | 1500<br>5115P | " | RH | EXT<br>286 | 510 | 109 | 111 | | | | P | 140 | | | | | P |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

# DYE BURIAL GROUND CAP
# CRANE INDIANA

## Geomembrane Seaming & Test Record

# ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.

104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

JOB NAME Dye Burial Ground

PROJECT # 97006.IN

LOCATION Crane, IN

WEATHER Cloudy

QA/QC D. Davis

DATE 7-14-98

## GEOMEMBRANE SEAMING AND TEST RECORD

| SEAM NUMBER | SEAMING RECORD | | | | FUSION | EXTRUSION | PRESSURE TEST | | | | | | DATE TESTED | VACUUM TEST | | QA/QC MONITOR PRESENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LENGTH WELD | TIME | WELD ID. OPER. | MACH. # | TEMP/ SPEED | TEMP/ PRE-HEAT | TIME START | END | PRESSURE START | END | TEST ID | PASS FAIL | | TESTER ID | PASS FAIL | |
| 1/2 | 186 | 12:50P | RM | 313 | 700/35 | - | 810A | 815A | 30 | 30 | RH | P | 7-16-98 | | | Yes |
| 1/3 | 97 | 3:12P | RM | 313 | 700/35 | - | 133A | 138A | 31 | 31 | RH | P | 7-16-98 | | | Yes |
| 1/4 | 100 | 5:40P | RM | 313 | 700/35 | - | 142A | 147A | 32 | 32 | RH | P | 7-16-98 | | | Yes |
| 3/4 | 23 | 5:05P | RM | 313 | 700/35 | - | 153A | 158A | 32 | 32 | RH | P | 7-16-98 | | | Yes |
| 3/5 | 97 | 5:20P | RL | 315 | 700/27.5 | - | 156A | 801A | 30 | 29 | RH | P | 7-16-98 | | | Yes |
| 4/5 | 100 | 5:30P | RL | 315 | 700/27.5 | - | 156A | 801A | 30 | 29 | RH | P | 7-16-98 | | | Yes |

# ENVIRONMENTAL L GN & CONSTRUCTION, INC.

104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811

256-551-0372

JOB NAME Dye Burial Ground

PROJECT # 97006 IN

LOCATION Grant, IN

WEATHER Clear

QA/QC D. Davis

DATE 7-17-98

## GEOMEMBRANE SEAMING AND TEST RECORD

| SEAM NUMBER | SEAMING RECORD | | | | FUSION | EXTRUSION | PRESSURE TEST | | | | | | DATE TESTED | VACUUM TEST | | QA/QC MONITOR PRESENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LENGTH WELD | TIME | WELD ID. OPER. | MACH. # | TEMP/ SPEED | TEMP/ PRE-HEAT | TIME START | END | PRESSURE START | END | TEST ID | PASS FAIL | | TESTER ID | PASS FAIL | |
| 5/6 | 165 | 11:50A | RH | 313 | 700/25 | | 109P | 114P | 30 | 29 | RH | P | 7-17 | | | Yes |
| 5/7 | 38 | 12:30P | RH | 313 | 700/25 | | 109P | 114P | 30 | 29 | RH | P | 7-17 | | | Yes |
| 6/7 | 23 | 11:40A | RH | 313 | 700/30 | | 252P | 257P | 30 | 29 | RH | P | 7-18 | | | Yes |
| 6/8 | 165 | 11:50A | RM | 313 | 700/30 | | 247P | 252P | 30 | 28 | RH | P | 7-18 | | | Yes |
| 7/8 | 38 | 12:30P | RM | 313 | 700/32 | | 239P | 244P | 30 | 30 | RH | P | 7-18 | | | Yes |
| 8/9 | 207 | 4:45P | RM | 313 | 700/32 | | 810A | 815A | 30 | 29 | RH | P | 7-18 | | | Yes |
| 9/10 | 210 | 5:12P | RH | 313 | 700/30 | | 812A | 815A | 30 | 30 | RH | P | 7-18 | | | Yes |

# ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.

104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811

256-551-0372

JOB NAME Dyr Burial Ground

PROJECT # 97006 IN

LOCATION Grant, IN

WEATHER Cloudy

QA/QC D. Davis

DATE 7-18-98

## GEOMEMBRANE SEAMING AND TEST RECORD

| SEAM NUMBER | SEAMING RECORD | | | | FUSION | EXTRUSION | PRESSURE TEST | | | | | | DATE TESTED | VACUUM TEST | | QA/QC MONITOR PRESENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LENGTH WELD | TIME | WELD ID. OPER. | MACH. # | TEMP/ SPEED | TEMP/ PRE-HEAT | TIME START | END | PRESSURE START | END | TEST ID | PASS FAIL | | TESTER ID | PASS FAIL | |
| 10/11 | 196 | 11:40A | RH | 315 | 700/25 | | 402P | 407P | 30 | 29 | RH | P | 7-18 | | | Yes |
| 11/12 | 55 | 12:30P | RB | 313 | 700/30 | | 425P | 430P | 31 | 31 | RH | P | 7-18 | | | Yes |
| 11/13 | 106 | 12:05P | RB | 313 | 700/30 | | 415P | 420P | 31 | 31 | RH | P | 7-18 | | | Yes |
| 12/13 | 23 | 11:55A | RB | 313 | 700/30 | | 417P | 422P | 31 | 31 | RH | P | 7-18 | | | Yes |
| 12/14 | 55 | 12:30P | RH | 315 | 700/25 | | 427P | 434P | 30 | 30 | RH | P | 7-18 | | | Yes |
| 13/14 | 106 | 12:23P | RH | 315 | 700/25 | | 432P | 43P | 30 | 30 | RH | P | 7-18 | | | Yes |
| 14/15 | 156 | 1:20P | RB | 313 | 700/30 | | 405P | 410P | 31 | 30 | RH | P | 7-18 | | | Yes |
| 15/16 | 155 | 4:10P | RB | 313 | 700/32 | | 859A | 904A | 30 | 30 | RH | P | 7-21 | | | Yes |
| 16/17 | 155 | 4:45P | RB | 313 | 700/32 | | 855A | 905A | 30 | 29 | RH | P | 7-21 | | | Yes |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

JOB NAME Dye Burial Ground

LOCATION Crane, IN

QA/QC D. Davis

PROJECT # 97006 IN

WEATHER Clear / Hot

DATE 7-19-98

# GEOMEMBRANE SEAMING AND TEST RECORD

| SEAM NUMBER | SEAMING RECORD | | | | FUSION | EXTRUSION | PRESSURE TEST | | | | | | DATE TESTED | VACUUM TEST | | QA/QC MONITOR PRESENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LENGTH WELD | TIME | WELD ID. OPER. | MACH. # | TEMP/ SPEED | TEMP/ PRE-HEAT | TIME START | END | PRESSURE START | END | TEST ID | PASS FAIL | | TESTER ID | PASS FAIL | |
| 17/18 | 137 | 11:55A | RB | 313 | 700/25 | | 857A | 902A | 30 | 30 | RH | P | 7-21 | | | YES |
| 17/22 | 11 | 11:50A | RB | 313 | 700/25 | | 845A | 850A | 30 | 30 | RH | P | 7-21 | | | YES |
| 18/19 | 136 | 11:50A | RH | 315 | 700/25 | | 900A | 906A | 30 | 29 | RH | P | 7-21 | | | YES |
| 18/22 | 23 | 11:40A | RH | 315 | 700/25 | | 846A | 851A | 31 | 31 | RH | P | 7-21 | | | YES |
| 19/20 | 135 | 1:20P | RH | 313 | 700/25 | | 863A | 868A | 30 | 30 | RH | P | 7-21 | | | YES |
| 19/22 | 11 | 11:45A | RH | 315 | 700/25 | | 900A | 906A | 30 | 29 | RH | P | 7-21 | | | YES |
| 20/21 | 137 | 12:55P | RM | 313 | 700/25 | | 922A | 927A | 31 | 30 | RH | P | 7-21 | | | YES |

# ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.

104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

JOB NAME D45 Burial Ground

PROJECT # 97006 IN

LOCATION Grant, IN

WEATHER Cloudy

QA/QC D. Davis

DATE 7-20-97

## GEOMEMBRANE SEAMING AND TEST RECORD

| SEAM NUMBER | SEAMING RECORD | | | | FUSION | EXTRUSION | PRESSURE TEST | | | | | | DATE TESTED | VACUUM TEST | | QA/QC MONITOR PRESENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LENGTH WELD | TIME | WELD ID. OPER. | MACH. # | TEMP/ SPEED | TEMP/ PRE-HEAT | TIME START | END | PRESSURE START | END | TEST ID | PASS FAIL | | TESTER ID | PASS FAIL | |
| 21/23 | 39 | 9:40A | RH | 315 | 700/25 | | 931A | 948A | 30 | 28 | RH | P | 7-21 | | | YES |
| 21/24 | 108 | 9:50A | RH | 315 | 700/25 | | 934A | 954A | 31 | 29 | RH | P | 7-21 | | | YES |
| 23/24 | 23 | 9:24A | RH | 315 | 700/25 | | 934A | 939A | 30 | 30 | RH | P | 7-21 | | | YES |
| 23/25 | 39 | 10:20A | RH | 315 | 700/25 | | 951A | 1002A | 32 | 31 | RH | P | 7-21 | | | YES |
| 24/25 | 108 | 10:30A | RH | 315 | 700/25 | | 935A | 940A | 30 | 29 | RH | P | 7-21 | | | YES |
| 25/26 | 109 | 10:20A | RH | 313 | 700/30 | | 944A | 949A | 30 | 29 | RH | P | 7-21 | | | YES |

# ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.

104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

JOB NAME Dyo Burial Ground

PROJECT # 97006.IN

LOCATION Crane, IN

WEATHER Cloudy

QA/QC D. Davis

DATE 1-22-98

## GEOMEMBRANE SEAMING AND TEST RECORD

| SEAM NUMBER | SEAMING RECORD | | | | FUSION | EXTRUSION | PRESSURE TEST | | | | | | DATE TESTED | VACUUM TEST | | QA/QC MONITOR PRESENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LENGTH WELD | TIME | WELD ID. OPER. | MACH. # | TEMP/ SPEED | TEMP/ PRE-HEAT | TIME START | END | PRESSURE START | END | TEST ID | PASS FAIL | | TESTER ID | PASS FAIL | |
| 26/27 | 95 | 8:20A | RH | 313 | 700/28 | | 8:43A | 8:48A | 30 | 30 | RH | P | 1-22-98 | | | yes |

# ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.

104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
256-551-0372

JOB NAME D40 Burial Ground

PROJECT # 97006 IN

LOCATION Grand, IN

WEATHER Cloudy

QA/QC D. Davis

DATE 7-23-98

## GEOMEMBRANE SEAMING AND TEST RECORD

| SEAM NUMBER | SEAMING RECORD | | | | FUSION | EXTRUSION | PRESSURE TEST | | | | | | DATE TESTED | VACUUM TEST | | QA/QC MONITOR PRESENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LENGTH WELD | TIME | WELD ID. OPER. | MACH. # | TEMP/ SPEED | TEMP/ PRE-HEAT | TIME START | END | PRESSURE START | END | TEST ID | PASS FAIL | | TESTER ID | PASS FAIL | |
| 27/28 | 83 | 2:45P | RM | 313 | 700/28 | | 3:05P | 3:10P | 31 | 31 | RH | P | 7-23 | | | Yes |
| 28/29 | 68 | 3:05P | RM | 313 | 700/28 | | 320P | 335P | 31 | 30 | RH | P | 7-23 | | | Yes |
| 29/30 | 68 | 3:20P | RM. | 313 | 700/28 | | 340 P | 345P | 30 | 30 | RH | P | 7-23 | | | Yes |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

# DYE BURIAL GROUND CAP
# CRANE INDIANA

## Destructive Test Log

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811

# DESTRUCTIVE TEST LOG

JOB NAME: Dyé Burial Ground
JOB NUMBER: 97006 W
LOCATION: Grand, IN
Q.A. TECHNICIAN: D. Davis

Ambient Temp. ____ a.m. ____ p.m.

PAGE: 1 OF ____
MIN. PEEL: 90 ppi
MIN. SHEAR: 120 ppi
SHEET THICKNESS: 60 ~~ppi~~ MIL

| Trial Weld Sample # | Date of Weld | Time of Weld | Location | Welding Technician | Machine Type & # | Machine Temp/Speed | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Pass/Fail | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DS-1 | 7-14-98 | 5:12P | 5 1/3 41' N/T | RM | 313 | 700/35 | 98<br>93 | 103<br>96 | 102<br>104 | | | P | 131 | | | | | P |
| DS-2 | 7-17-98 | 11:50A | 22' S/T | RH | 315 | 700/25 | 101<br>120 | 112<br>103 | 112<br>100 | | | P | 130 | | | | | P |
| DS-3 | 7-17-98 | 4:45P | 8/9 86' S/T | RM | 313 | 700/32 | 100<br>105 | 100<br>103 | 107<br>108 | | | P | 140 | | | | | P |
| DS-4 | 7-18-98 | 11:40A | 10/11 66' S/T | RH | 315 | 700/25 | 98<br>90 | 100<br>98 | 96<br>95 | | | P | 142 | | | | | P |
| DS-5 | 7-18-98 | 4:40P | 15/16 62' S/T | RM | 313 | 700/32 | 111<br>105 | 104<br>107 | 110<br>102 | | | P | 146 | | | | | P |
| DS-6 | 7-19-98 | 11:50A | 18/19 66' N/T | RH | 315 | 700/25 | 96<br>109 | 100<br>124 | 96<br>110 | | | P | 146 | | | | | P |
| DS-7 | 7-19-98 | 12:55P | 20/21 22' S/T | RM | 313 | 700/30 | 119<br>100 | 105<br>118 | 110<br>109 | | | P | 150 | | | | | P |
| DS-8 | 7-20-98 | 10:30A | 24/25 45' S/T | RH | 315 | 700/25 | 115<br>114 | 107<br>100 | 112<br>110 | | | P | 130 | | | | | P |
| DS-9 | 7-23-98 | 3:30P | 28/29 25' S/T | RM | 313 | 700/28 | 119<br>114 | 110<br>108 | 110<br>109 | | | P | 150 | | | | | P |
| | | | | | | | | | | | | | | | | | | |

HTS, INC. Consultants

416 PICKERING STREET • HOUSTON, TEXAS 77091
713/692-8373 • 800/692-TEST • FAX 713/692-8502

July 18, 1998

Philip Environmental
510 DD Road
Columbia, IL 62236

Attn: Mr. Don Flowers

Re: NSWC Crane
Peel and Shear Tests of Seams
60 mil textured HDPE
HTS Report No. PEN1254.005.doc

| TEST PARAMETERS AND LABORATORY CONDITIONS | | | |
|---|---|---|---|
| Sample Type | ASTM | Sample Width (in) | 1 |
| Humidity (%) | 50 | Spec Gauge Length (in) | 1 |
| Temperature (deg. F) | 73 | Grip Distance (in) | 1 |
| Operator Name: | K. Phouangsavanh | Crosshead Speed (in/min) | 2 |

Please find attached peel and shear reports of 60 samples delivered to our laboratory on 7/18/98. Peel and shear tests were performed in accordance with Test Method ASTM D 4437. The test results are summarized on the following pages:

| SAMPLE I.D. | NOMINAL THICKNESS | SAMPLE I.D. | NOMINAL THICKNESS |
|---|---|---|---|
| DS-1 | 60 | | |
| DS-2 | 60 | | |

Very truly yours,

Larry L. McMichael

Larry L. McMichael KP
Vice President



ENVIRONMENTAL • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING • ANALYTICAL SERVICES
*SERVING THE CONSTRUCTION AND WASTE INDUSTRIES*

HTS, INC. Consultants

416 PICKERING STREET • HOUSTON, TEXAS 77091
713/692-8373 • 800/692-TEST • FAX 713/692-8502

July 10, 1998

| HTS Report #: | PEN1254.001.doc |
|---|---|

| | | |
|---|---|---|
| Mr. Don Flowers | Customer Project Name: | NSWC Crane |
| Phillip Environmental | Customer Project #: | 18328 |
| 510 DD Road | Lab Temperature: | 73 degrees F. |
| Columbia, IL 62236 | Lab Humidity: | 50% |

The following 3 samples were delivered to our laboratory on June 23, 1998.

| SAMPLES RECEIVED | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Sample I.D. | Mat'l Type | | Sample I.D. | Mat'l Type | | Sample I.D. | Mat'l Type |
| 1 | 290260-47 | GMT | 6 | | | 11 | | |
| 2 | 260-47 | GMT | 7 | | | 12 | | |
| 3 | 304-47 | GMT | 8 | | | 13 | | |
| 4 | | | 9 | | | 14 | | |
| 5 | | | 10 | | | 15 | | |

Conformance testing was performed in accordance with the following test methods. The test results are summarized on the subsequent pages. It should be noted that the test specimens and test sample used for this work were believed to be representative of the material produced under this designation. However, these results are indicative only of the specimens that were actually tested. HTS, Inc. neither accepts responsibility for nor makes claims to the final use and purpose of the material.

| TESTING PERFORMED | TESTING PERFORMED |
|---|---|
| ASTM D 638 – Tensile Properties<br>ASTM D 1505 – Density<br>ASTM D 5199 – Thickness | |

Very truly yours,

Larry L. McMichael
Vice President



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*SERVING THE CONSTRUCTION AND WASTE INDUSTRIES*

| | | PEEL | | | SHEAR | | |
|---|---|---|---|---|---|---|---|
| Sample | Spec. No. | lb / in. | % Peel | Break Code | lb / in. | % Peel | Break Code |
| DDS-9 | 1 | 123 | | FTB/SE1 | 165 | | FTB/BRK |
| | 2 | 123 | | FTB/SE1 | 166 | | FTB/BRK |
| | 3 | 121 | | FTB/SE1 | 163 | | FTB/BRK |
| | 4 | 126 | | FTB/SE1 | 163 | | FTB/BRK |
| | 5 | 118 | | FTB/SE1 | 162 | | FTB/BRK |
| | AVG. | 122 | | | 164 | | |

HTS, INC. Consultants

416 PICKERING STREET • HOUSTON, TEXAS 77091
713/692-8373 • 800/692-TEST • FAX 713/692-8502

July 27, 1998

Philip Environmental
510 DD Road
Columbia, IL 62236

Attn: Mr. Don Flowers

Re: NSWC Crane
Peel and Shear Tests of Seams
60 mil textured HDPE
HTS Report No. PEN1254.007.doc

| TEST PARAMETERS AND LABORATORY CONDITIONS | | | |
|---|---|---|---|
| Sample Type | ASTM | Sample Width (in) | 1 |
| Humidity (%) | 50 | Spec Gauge Length (in) | 1 |
| Temperature (deg. F) | 73 | Grip Distance (in) | 1 |
| Operator Name: | K. Phouangsavanh | Crosshead Speed (in/min) | 2 |

Please find attached peel and shear reports of 1 sample delivered to our laboratory on 7/27/98. Peel and shear tests were performed in accordance with Test Method ASTM D 4437. The test results are summarized on the following pages:

| SAMPLE I.D. | NOMINAL THICKNESS | SAMPLE I.D. | NOMINAL THICKNESS |
|---|---|---|---|
| DDS-9 | 60 | | |

Very truly yours,

Larry L. McMichael
Vice President



ENVIRONMENTAL • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING • ANALYTICAL SERVICES
*SERVING THE CONSTRUCTION AND WASTE INDUSTRIES*

| | | PEEL | | | SHEAR | | |
|---|---|---|---|---|---|---|---|
| Sample | Spec. No. | lb / in. | % Peel | Break Code | lb / in. | % Peel | Break Code |
| DDS-8 | 1 | 109 | | FTB/SE1 | 157 | | FTB/BRK |
| | 2 | 121 | | FTB/SE1 | 157 | | FTB/BRK |
| | 3 | 123 | | FTB/SE1 | 156 | | FTB/BRK |
| | 4 | 113 | | FTB/SE1 | 156 | | FTB/BRK |
| | 5 | 119 | | FTB/SE1 | 156 | | FTB/BRK |
| | AVG. | 117 | | | 156 | | |

| | | PEEL | | | SHEAR | | |
|---|---|---|---|---|---|---|---|
| Sample | Spec. No. | lb / in. | % Peel | Break Code | lb / in. | % Peel | Break Code |
| DDS-3 | 1 | 123 | | FTB/SE1 | 156 | | FTB/BRK |
| | 2 | 109 | | FTB/SE1 | 157 | | FTB/BRK |
| | 3 | 114 | | FTB/SE1 | 157 | | FTB/BRK |
| | 4 | 116 | | FTB/SE1 | 155 | | FTB/BRK |
| | 5 | 112 | | FTB/SE1 | 154 | | FTB/BRK |
| | AVG. | 115 | | | 156 | | |
| DDS-4 | 1 | 111 | | FTB/SE1 | 162 | | FTB/BRK |
| | 2 | 111 | | FTB/SE1 | 162 | | FTB/BRK |
| | 3 | 107 | | FTB/SE1 | 161 | | FTB/BRK |
| | 4 | 116 | | FTB/SE1 | 161 | | FTB/BRK |
| | 5 | 105 | | FTB/SE1 | 162 | | FTB/BRK |
| | AVG. | 110 | | | 162 | | |
| DDS-5 | 1 | 128 | | FTB/SE1 | 167 | | FTB/BRK |
| | 2 | 123 | | FTB/SE1 | 169 | | FTB/BRK |
| | 3 | 117 | | FTB/SE1 | 169 | | FTB/BRK |
| | 4 | 124 | | FTB/SE1 | 169 | | FTB/BRK |
| | 5 | 121 | | FTB/SE1 | 168 | | FTB/BRK |
| | AVG. | 123 | | | 168 | | |
| DDS-6 | 1 | 119 | | FTB/SE1 | 170 | | FTB/BRK |
| | 2 | 120 | | FTB/SE1 | 171 | | FTB/BRK |
| | 3 | 119 | | FTB/SE1 | 171 | | FTB/BRK |
| | 4 | 151 | | FTB/SE1 | 169 | | FTB/BRK |
| | 5 | 143 | | FTB/SE1 | 171 | | FTB/BRK |
| | AVG. | 130 | | | 170 | | |
| DDS-7 | 1 | 129 | | FTB/SE1 | 174 | | FTB/BRK |
| | 2 | 131 | | FTB/SE1 | 171 | | FTB/BRK |
| | 3 | 130 | | FTB/SE1 | 173 | | FTB/BRK |
| | 4 | 120 | | FTB/SE1 | 173 | | FTB/BRK |
| | 5 | 126 | | FTB/SE1 | 172 | | FTB/BRK |
| | AVG. | 127 | | | 173 | | |

HTS, INC. Consultants

416 PICKERING STREET • HOUSTON, TEXAS 77091
713/692-8373 • 800/692-TEST • FAX 713/692-8502

July 22, 1998

Philip Environmental
510 DD Road
Columbia, IL 62236

Attn: Mr. Don Flowers

Re: NSWC Crane
Peel and Shear Tests of Seams
60 mil textured HDPE
HTS Report No. PEN1254.006.doc

| TEST PARAMETERS AND LABORATORY CONDITIONS | | | |
|---|---|---|---|
| Sample Type | ASTM | Sample Width (in) | 1 |
| Humidity (%) | 50 | Spec Gauge Length (in) | 1 |
| Temperature (deg. F) | 73 | Grip Distance (in) | 1 |
| Operator Name: | K. Phouangsavanh | Crosshead Speed (in/min) | 2 |

Please find attached peel and shear reports of 6 samples delivered to our laboratory on 7/22/98. Peel and shear tests were performed in accordance with Test Method ASTM D 4437. The test results are summarized on the following pages:

| SAMPLE I.D. | NOMINAL THICKNESS | SAMPLE I.D. | NOMINAL THICKNESS |
|---|---|---|---|
| DDS-3 | 60 | | |
| DDS-4 | 60 | | |
| DDS-5 | 60 | | |
| DDS-6 | 60 | | |
| DDS-7 | 60 | | |
| DDS-8 | 60 | | |

Very truly yours,

Larry L. McMichael
Vice President



ENVIRONMENTAL • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING • ANALYTICAL SERVICES
*SERVING THE CONSTRUCTION AND WASTE INDUSTRIES*

| | | PEEL | | | SHEAR | | |
|---|---|---|---|---|---|---|---|
| Sample | Spec. No. | lb / in. | % Peel | Break Code | lb / in. | % Peel | Break Code |
| DS-1 | 1 | 107 | | FTB/SE1 | 154 | | FTB/BRK |
| | 2 | 103 | | FTB/SE1 | 152 | | FTB/BRK |
| | 3 | 105 | | FTB/SE1 | 153 | | FTB/BRK |
| | 4 | 107 | | FTB/SE1 | 155 | | FTB/BRK |
| | 5 | 110 | | FTB/SE1 | 157 | | FTB/BRK |
| | AVG. | 106 | | | 154 | | |
| DS-2 | 1 | 114 | | FTB/SE1 | 159 | | FTB/BRK |
| | 2 | 110 | | FTB/SE1 | 158 | | FTB/BRK |
| | 3 | 108 | | FTB/SE1 | 157 | | FTB/BRK |
| | 4 | 110 | | FTB/SE1 | 157 | | FTB/BRK |
| | 5 | 115 | | FTB/SE1 | 155 | | FTB/BRK |
| | AVG. | 111 | | | 157 | | |



HTS. INC.

# TENSILE PROPERTIES—ASTM D 638

Instron Series IX Automated Materials Testing System

Sample Type: Dumbell — Cross Head Speed (in/min): 2.0
Width (in): .25 — Spec. Gauge Length (in): 2.0
Thickness (in): .06000 — Grip Distance (in): 2.50

| | Spec. | Strength @ Break (lbs/in) | | Strength @ Yield (lbs/in) | | Elong. @ Break (%) | | Elong. @ Yield (%) | |
|---|---|---|---|---|---|---|---|---|---|
| Sample | # | MD | XD | MD | XD | MD | XD | MD | XD |
| 250-47 | 1 | 52.60 | 115.30 | 150.3 | 156.0 | 249.4 | 360.2 | 15.98 | 19.05 |
| | 2 | 173.20 | 148.70 | 151.3 | 162.0 | 404.4 | 393.2 | 14.68 | 20.56 |
| | 3 | 75.28 | 177.70 | 147. | 145.2 | 190.1 | 440.0 | 17.26 | 18.52 |
| | 4 | 184.00 | 119.0 | 155.2 | 157.5 | 442.4 | 193.0 | 15.18 | 18.01 |
| | 5 | 201.90 | 105.40 | 163.5 | 161.3 | 462.4 | 278.2 | 15.70 | 17.56 |
| | Avg. | 137.4 | 133.2 | 153.5 | 156.4 | 349.7 | 332.9 | 15.8 | 18.7 |
| 260-47 | 1 | 126.4 | 166.0 | 177.9 | 174.1 | 267.6 | 395.3 | 19.32 | 19.79 |
| | 2 | 117.7 | 162.70 | 150.9 | 165.6 | 314.4 | 399.3 | 19.82 | 20.54 |
| | 3 | 164.2 | 158.80 | 167.4 | 157.4 | 406.0 | 402.8 | 19.32 | 19.32 |
| | 4 | 129.9 | 72.68 | 151.1 | 159.4 | 325.3 | 372.4 | 18.48 | 19.50 |
| | 5 | 139.0 | 152.90 | 157.7 | 156.8 | 357.0 | 386.4 | 22.29 | 20.05 |
| | Avg. | 135.4 | 142.6 | 161.0 | 162.7 | 334.1 | 391.2 | 19.8 | 19.8 |
| 304-47 | 1 | 146.2 | 116.10 | 148.0 | 127.7 | 410.4 | 233.8 | 14.69 | 15.96 |
| | 2 | 118.2 | 121.20 | 150.3 | 135.3 | 200.0 | 473.2 | 14.95 | 15.69 |
| | 3 | 168.0 | 138.10 | 163.1 | 132.7 | 385.6 | 377.1 | 15.14 | 18.21 |
| | 4 | 149.8 | 151.20 | 159.1 | 158.5 | 392.0 | 390.6 | 16.96 | 13.38 |
| | 5 | 144.8 | 144.0 | 135.3 | 159.6 | 412.0 | 357.2 | 16.40 | 14.43 |
| | Avg. | 145.4 | 134.1 | 151.2 | 142.8 | 360.0 | 366.4 | 15.6 | 15.5 |

# DENSITY – ASTM D 1505

Sample Type: ASTM

| Sample | Spec. # | Density (g/cc) |
|---|---|---|
| 250-47 | 1 | .943 |
| | 2 | .943 |
| | 3 | .943 |
| | Avg. | 0.943 |

| Sample | Spec. # | Density (g/cc) |
|---|---|---|
| 260-47 | 1 | .946 |
| | 2 | .946 |
| | 3 | .946 |
| | Avg. | 0.946 |

| Sample | Spec. # | Density (g/cc) |
|---|---|---|
| 304-47 | 1 | .948 |
| | 2 | .948 |
| | 3 | .948 |
| | Avg. | 0.948 |

# THICKNESS – ASTM D 5199

Sample Type: ASTM
Dimension of Pressure Foot:
Loading Time Interval: 5 seconds

Type of Apparatus: Mitutoyo
Pressure Applied: Dead-weight
5 sec.

| Sample | Spec. # | Thickness (mil) |
|---|---|---|
| 250-47 | 1 | 61.0 |
| | 2 | 62.5 |
| | 3 | 63.5 |
| | 4 | 63.5 |
| | 5 | 64.0 |
| | 6 | 62.0 |
| | 7 | 61.5 |
| | 8 | 61.5 |
| | 9 | 64.0 |
| | 10 | 61.5 |
| | Avg. | 62.5 |

| Sample | Spec. # | Thickness (mil) |
|---|---|---|
| 260-47 | 1 | 61.0 |
| | 2 | 63.0 |
| | 3 | 61.0 |
| | 4 | 64.5 |
| | 5 | 62.5 |
| | 6 | 62.5 |
| | 7 | 60.5 |
| | 8 | 61.0 |
| | 9 | 61.5 |
| | 10 | 62.5 |
| | Avg. | 62.0 |

| Sample | Spec. # | Thickness (mil) |
|---|---|---|
| 304-47 | 1 | 62.5 |
| | 2 | 62.5 |
| | 3 | 63.5 |
| | 4 | 62.5 |
| | 5 | 62.5 |
| | 6 | 62.5 |
| | 7 | 60.0 |
| | 8 | 63.0 |
| | 9 | 62.0 |
| | 10 | 62.5 |
| | Avg. | 62.4 |

PHILIP ENVIRONMENTAL

Industrial Services Group
Midwest Region

June 12, 1998
Project 18328

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Lois J. Bigley 06-15-
Lois J. Bigley 06-15-

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Re-Submittal No. 025H**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-72 | Manufacturer Test Results | 02250 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Don Flowers

Donald L. Flowers,
Project Manager

cc: D. Beall

PHILIP ENVIRONMENTAL SERVICES CORPORATION
210 West Sand Bank Road • P.O. Box 230 • Columbia, IL 62236-0230
(618) 281-7173 • (800) 733-7173 • Fax (618) 281-5120

**POLY-FLEX, INC.**
2000 W. Marshall Drive Grand Prairie, Texas 75051 USA
888-765-9359 972-337-7113 FAX 972-337-7233

June 12, 1998

Michelle Lotz
Environmental Design & Construction, Inc.
104 Wholesale Ave.
Huntsville, AL 35811

Re: 970658 Dye Burial Cap
Resin Verification

Dear Mrs. Lotz,

Poly-Flex, Inc. test data verifies the manufacturers test data.

| | | Melt Index |
|---|---|---|
| Blend # | 7180098 | .12 |
| | 7180099 | .12 |
| | 7180248 | .12 |

Sincerely,

Lou Jacobsen

Lou Jacobsen

# H-3

# Panel Deployment Sheets

# - DBG -
# SWMU 02/11
# SUBCONTRACT 4324/106
# PHILIP SERVICE GROUP

---

## 60MIL HDPE LINE
## BY POLY-FLEX INC

| ROLL # | DELIVERIED / STORED | DEPLOYED | REMARKS |
|---|---|---|---|
| GR-6-98 246-47 | 06-18-98 | 07-18-98 | P-13,14,15 |
| GR-6-98 247-47 | 06-18-98 | 07-17-98<br>07-18-98 | P-10<br>P-11,12 |
| GR-6-98 250-47 * | 06-18-98 | 07-20-98 | P-24,25,26<br>Conformation Sample |
| GR-6-98 253-47 | 06-18-98 | 07-17-98 | P-7,8,9 |
| GR-6-98 254-47 | 06-18-98 | 07-14-98 | P-1,2,3 |
| GR-6-98 260-47 * | 06-18-98 | 07-14-98<br>07-17-98 | P-4,5,6<br>Conformation Sample |
| GR-6-98 304-47 * | 06-18-98 | 07-18-98<br>07-19-98 | P-16,17,18<br>Conformation sample |
| GR-6-98 305-47 | 06-18-98 | 07-19-98<br>07-20-98 | P-19,20,21,22,23 |
| GR-6-98 266-47 | 07-23-98 | 07-23-98 | P-28,29,30 |
| | | | |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

60 MIL HDPE

PROJECT NAME: Dye Burial Ground SHEET 1 OF 1

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 7-14-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| P-1 | 0254 | 60 MIL | 189 | 22.5 | 4,253 |
| P-2 | 0254 | 60 MIL | 186 | 22.5 | 4,185 |
| P-3 | 0254 | 60 MIL | 97 | 22.5 | 2,183 |
| P-4 | 0260 | 60 MIL | 100 | 22.5 | 2,250 |
| P-5 | 0260 | 60 MIL | 193 | 22.5 | 4,343 |
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| | TOTAL INSTALLED THIS PAGE | | | | ∅ |
| | TOTAL INSTALLED PREV. PAGE | | | | 17,214 |
| | TOTAL INSTALLED TO DATE | | | | 17,214 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

60 MIL HDPE

PROJECT NAME: Dye Burial Ground SHEET 2 OF

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 7-17-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| P-6 | 0260 | 60 MIL | 165 | 22.5 | 3,713 |
| P-7 | 0253 | 60 MIL | 38 | 22.5 | 855 |
| P-8 | 0253 | 60 MIL | 207 | 22.5 | 4,658 |
| P-9 | 0253 | 60 MIL | 210 | 22.5 | 4,725 |
| P-10 | 0247 | 60 MIL | 214 | 22.5 | 4,815 |
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| | TOTAL INSTALLED PREV. PAGE | | | | 17,214 |
| | TOTAL INSTALLED TO DATE | | | | 35,980 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

60 MIL HDPE

PROJECT NAME: Dye Burial Ground SHEET OF

PROJECT #: 97006/N

PROJECT LOCATION: Crane, IN DATE: 7-18-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| P-11 | 0247 | 60 MIL | 196 | 22.5 | 4,410 |
| P-12 | 0247 | 60 MIL | 55 | 22.5 | 1,238 |
| P-13 | 0246 | 60 MIL | 106 | 22.5 | 2,385 |
| P-14 | 0246 | 60 MIL | 157 | 22.5 | 3,533 |
| P-15 | 0246 | 60 MIL | 156 | 22.5 | 3,510 |
| P-16 | 0304 | 60 MIL | 155 | 22.5 | 3,488 |
| P-17 | 0304 | 60 MIL | 159 | 22.5 | 3,578 |
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| | TOTAL INSTALLED THIS PAGE | | | | 22,142 |
| | TOTAL INSTALLED PREV. PAGE | | | | 35,980 |
| | TOTAL INSTALLED TO DATE | | | | 58,122 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

60 MIL HDPE

PROJECT NAME: Dyo Burial Ground SHEET ___ OF ___

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 7-19-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| P-18 | 0304 | 60 MIL | 148 | 22.5 | 3,330 |
| P-19 | 0305 | 60 MIL | 147 | 22.5 | 3,308 |
| P-20 | 0305 | 60 MIL | 146 | 22.5 | 3,285 |
| P-21 | 0305 | 60 MIL | 137 | 22.5 | 3,083 |
| P-22 | 0305 | 60 MIL | 11 | 22.5 | 248 |
| | TOTAL INSTALLED THIS PAGE | | | | 13,254 |
| | TOTAL INSTALLED PREV. PAGE | | | | 58,122 |
| | TOTAL INSTALLED TO DATE | | | | 71,376 |

# ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.

104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347


60 HDPE

PROJECT NAME: Day Burial Ground SHEET ___ OF ___

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 7-20-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| P-23 | 0305 | 60 MIL | 39 | 22.5 | 878 |
| P-24 | 0250 | 60 MIL | 108 | 22.5 | 2,430 |
| P-25 | 0250 | 60 MIL | 128 | 22.5 | 2,880 |
| P-26 | 0250 | 60 MIL | 109 | 22.5 | 2,453 |
| | TOTAL INSTALLED THIS PAGE | | | | 8,641 |
| | TOTAL INSTALLED PREV. PAGE | | | | 71,376 |
| | TOTAL INSTALLED TO DATE | | | | 80,017 |

**ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.**
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

60 MIL HDPE

PROJECT NAME: Dow Building Ground SHEET ___ OF ___

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 7-22-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| P-27 | 0250 | 60 MIL | 95 | 22.5 | 2,138 |
| | TOTAL INSTALLED THIS PAGE | | | | 2,138 |
| | TOTAL INSTALLED PREV. PAGE | | | | 80,017 |
| | TOTAL INSTALLED TO DATE | | | | 82,155 |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347

60 MIL HDPE

PROJECT NAME: Dye Burial Ground SHEET ___ OF ___

PROJECT #: 97006 IN

PROJECT LOCATION: Crane, IN DATE: 7-23-98

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
|---|---|---|---|---|---|
| P-28 | 0266 | 60 MIL | 83 | 22.5 | 1,868 |
| P-29 | 0266 | 60 MIL | 68 | 22.5 | 1,530 |
| P-30 | 0266 | 60 MIL | 68 | 22.5 | 1,530 |
| | | | | | 4,928 |
| | TOTAL INSTALLED THIS PAGE | | | | ~~4,928~~ |
| | TOTAL INSTALLED PREV. PAGE | | | | 82,155 |
| | TOTAL INSTALLED TO DATE | | | | 87,083 |

# H-4

# Manufacturer's QC Certificates

**PHILIP**
**ENVIRONMENTAL**

...rial Services Group
Midwest Region

RECEIVED
MAY 27 1998
MK-CRANE

May 22, 1998
Project 18328

Mr. Vernon D. Logan
Contract Administrator
Morrison Knudsen Corporation
300 Highway 361
NSWC - CTR 12
Crane, Indiana 47522

Lois J. Bigby 05/31/98
Lois J. Bigby 05-31-98

Dear Mr. Logan

DATA PROVIDED ALSO MEETS THE REQ FOR THE FOLLOWING DATA SUBMITTALS
1-71 Resin QC certs
1-60 Cert of Compliance for Typal Geotextile

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Re-Submittal No. 025D**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-62 | Quality Control Certificates | 02249 |
| 1-76 | Manufacturer Quality Control Certificates | 02250 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Don Flowers

Donald L. Flowers,
Project Manager

# Poly-Flex

Geomembrane Shipment Inspection

Date: 13-May-98 Trip # Pre-Cert

Drop # 1
Poly-Flex # 970658
Customer: EDCI
Destination:
Carrier:

| | Blend | Roll Number | Weight | Roll Description |
|---|---|---|---|---|
| 1 | 7180098 | GR-6-98- 0246- 47 | 3,350 | 23' x 475' x .060HDR |
| 2 | 7180098 | GR-6-98- 0247- 47 | 3,342 | 23' x 475' x .060HDR |
| 3 | 7180099 | GR-6-98- 0250- 47 | 3,348 | 23' x 475' x .060HDR |
| 4 | 7180099 | GR-6-98- 0253- 47 | 3,350 | 23' x 475' x .060HDR |
| 5 | 7180099 | GR-6-98- 0254- 47 | 3,336 | 23' x 475' x .060HDR |
| 6 | 7180099 | GR-6-98- 0260- 47 | 3,338 | 23' x 475' x .060HDR |
| 7 | 7180248 | GR-6-98- 0304- 47 | 3,330 | 23' x 475' x .060HDR |
| 8 | 7180248 | GR-6-98- 0305- 47 | 3,340 | 23' x 475' x .060HDR |
| 9 | | | | |
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| 20 | Pieces shipped | | **26,734** | |
| 21 | | | | |
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| 30 | | | | |

I certify that all loading requirements and roll conditions were inspected and approved.

GENE RODRIGUEZ
Truck Loader

-16

# CERTIFICATION SHEET


**POLY-FLEX, INC.**
2000 W. Marshall Drive
Grand Prairie, Texas 75051


PROJECT NO: 970658 DATE: 5/13/98

TRIP NO: Pre-Certified CERTIFIED BY: [signature]

| TEST DESCRIPTION | | | THICKNESS | CARBON BLACK | TEAR | PUNCTURE | TENSILE @ YIELD | ELONG @ YIELD | TENSILE @ BREAK | ELONG @ BREAK | CAR. BLK. DISPERSION | DENSITY | ESCR (cond. B) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM METHOD | | | D1593 | D1603 | D1004 | FTMS 101 | D638 | D638 | D638 | D638 | D3015 | D1505 | D1693 |
| (modifications) | | | min/avg | | | 2065 | | | | | | | 1500 hrs |
| UNITS | | | mils | % | lb | lb | ppi | % | ppi | % | | gm/cc | PASS |
| 60HDR SPECIFICATION | | | 54/60 | 2 - 3 | 40 | ~~78~~ 80 | 132 | 12 | 132 | 240 | A1/A2/B1 | 0.940 | 1500 |
| ROLL NUMBER | | BLEND | | | | | | | | | | | (Start) |
| GR-6-98 | 246-47 | 7180098 | 54/ 62 | 2.8 | 52 | 90 | 145 | 22 | 159 | 453 | A-1 | 0.947 | 4/04/98 |
| GR-6-98 | 247-47 | 7180098 | 54/ 62 | 2.8 | 52 | 90 | 145 | 22 | 159 | 453 | A-1 | 0.947 | 4/04/98 |
| GR-6-98 | 250-47 | 7180098 | 54/ 62 | 2.6 | 48 | 92 | 144 | 22 | 162 | 487 | A-1 | 0.947 | 4/04/98 |
| GR-6-98 | 253-47 | 7180098 | 54/ 62 | 2.8 | 49 | 85 | 142 | 13 | 157 | 453 | A-1 | 0.947 | 4/04/98 |
| GR-6-98 | 254-47 | 7180098 | 54/ 62 | 2.8 | 49 | 85 | 142 | 13 | 157 | 453 | A-1 | 0.947 | 4/04/98 |
| GR-6-98 | 260-47 | 7180099 | 56/ 62 | 2.7 | 48 | 97 | 138 | 17 | 167 | 512 | A-1 | 0.947 | 4/04/98 |
| GR-6-98 | 304-47 | 7180248 | 54/ 62 | 2.7 | 50 | 96 | 150 | 15 | 150 | 402 | A-1 | 0.947 | 4/11/98 |
| GR-6-98 | 305-47 | 7180248 | 54/ 62 | 2.7 | 50 | 96 | 150 | 15 | 150 | 402 | A-1 | 0.947 | 4/11/98 |

**PHILLIPS CHEMICAL COMPANY**
A DIVISION OF PHILLIPS PETROLEUM COMPANY
BOX 792 • PHONE: 713 475-3666
PASADENA, TEXAS 77501-0792

PHILLIPS PLASTICS RESINS
Houston Chemical Complex

February 05, 1998

JHV# 2626-98

FAX: 972-337-7407

Poly America, Inc.
2000 West Marshall Drive
Grand Prairie, TX 75051

Dee Averitte

This letter will certify that the Marlex* resin shown below, as supplied by Phillips Chemical Company, conforms to our manufacturing specification.

NCTL, ASTM D5397-95 Appendix (modified), Avg: >500 hours
(not tested on each lot)

| | |
|---|---|
| Type: | HHM TR-400G |
| Lot Number: | 7180098 |
| P.O. Number: | 17798 |
| Date Shipped: | 02/04/98 |
| Package: | PSPX 9147 |
| Quantity: | 183050 LBS. |
| HLMI Flow Rate,ASTM D1238: | 12.0 G/10 MIN |
| Melt Index, ASTM D1238: | .120 G/10 MIN |
| Density, ASTM D1505: | .937 G/CC |

J. H. Vaden
Quality Assurance Manager

For COA questions call Sharon Robinette, 713-475-3625

* Reg. U.S. Pat. Off.

cc: QA-File-RC

Mr. Jim Nobert
Poly America, Inc.
2000 West Marschall Drive
Grand Prairie, TX 75051

1-71

PHILLIPS CHEMICAL COMPANY
A DIVISION OF PHILLIPS PETROLEUM COMPANY
BOX 792 • PHONE: 713 475-3666
PASADENA, TEXAS 77501-0792

PHILLIPS PLASTICS RESINS
Houston Chemical Complex

February 09, 1998

JHV# 2811-98

FAX: 972-337-7407

Poly America, Inc.
2000 West Marshall Drive
Grand Prairie, TX 75051

Dee Averitte

This letter will certify that the Marlex* resin shown below, as supplied by Phillips Chemical Company, conforms to our manufacturing specification.

NCTL, ASTM D5397-95 Appendix (modified), Avg: >500 hours (not tested on each lot)

| | |
|---|---|
| Type: | HHM TR-400G |
| Lot Number: | 7180099 |
| P.O. Number: | 17798 |
| Date Shipped: | 02/06/98 |
| Package: | PSPX 6202 |
| Quantity: | 182450 LBS. |
| HLMI Flow Rate, ASTM D1238: | 12.7 G/10 MIN |
| Melt Index, ASTM D1238: | .090 G/10 MIN |
| Density, ASTM D1505: | .937 G/CC |

J. H. Vaden
Quality Assurance Manager

For COA questions call Sharon Robinette, 713-475-3625

* Reg. U.S. Pat. Off.

cc: QA-File-RC

Mr. Jim Nobert
Poly America, Inc.
2000 West Marschall Drive
Grand Prairie, TX 75051

**PHILLIPS CHEMICAL COMPANY**
A DIVISION OF PHILLIPS PETROLEUM COMPANY
BOX 792 • PHONE: 713 475-3666
PASADENA, TEXAS 77501-0792

PHILLIPS PLASTICS RESINS
Houston Chemical Complex

March 05, 1998

JHV# 4915-98

FAX: 972-337-7407

Poly America, Inc.
2000 West Marshall Drive
Grand Prairie, TX 75051

Des Averitte

This letter will certify that the Marlex* resin shown below, as supplied by Phillips Chemical Company, conforms to our manufacturing specification.

NCTL, ASTM D5397-95 Appendix (modified), Avg: >500 hours (not tested on each lot)

| | |
|---|---|
| Type: | HHM TR-400G |
| Lot Number: | 7180248 |
| P.O. Number: | 18419 |
| Date Shipped: | 03/04/98 |
| Package: | PSPX 2327 |
| Quantity: | 186300 LBS. |
| HLMI Flow Rate,ASTM D1238: | 12.1 G/10 MIN |
| Melt Index, ASTM D1238: | .090 G/10 MIN |
| Density, ASTM D1505: | .938 G/CC |

J. H. Vaden
Quality Assurance Manager

For COA questions call Sharon Robinette, 713-475-3625

* Reg. U.S. Pat. Off.

cc: QA-File-RC

Mr. Jim Nobert
Poly America, Inc.
2000 West Marschall Drive
Grand Prairie, TX 75051

Type 1

TNS
ADVANCED TECHNOLOGIES

681 DeYoung Road
Greer, South Carolina 29651
Tel: (864) 968-0592
Fax: (864) 879-4639
Toll Free: (800) 867-5181

1-60

May 14, 1998
REF: TNS R070
PO: 93707
Quantity: 36 rolls

EDCI
Huntsville AL

Dear Sir/Madam:

This is to certify that TNS R070 is a 100% polypropylene, nonwoven, needle-punched fabric. TNS R070 is resistant to degradation due to ultraviolet exposure and resists commonly encountered soil chemicals, insects, mildew, and is non-biodegradable. Polypropylene is stable within a pH range of 2 to 13. TNS R070 conforms to the physical properties listed in the following table:

| FABRIC PROPERTY | TEST METHOD | UNITS | M.A.R.V |
|---|---|---|---|
| Weight(typical) | ASTM D 3776 | oz/sy | 7.0 |
| Thickness | ASTM D 5199 | mils | 90 |
| Grab Tensile | ASTM D 4632 | lbs | 180 |
| Grab Elongation | ASTM D 4632 | % | 50 |
| Trap Tear | ASTM D 4533 | lbs | 75 |
| Puncture | ASTM D 4833 | lbs | 105 |
| Mullen Burst | ASTM D 3786 | psi | 350 |
| A.O.S. | ASTM D 4751 | U.S. Sieve | 80 |
| Permeability | ASTM D 4491 | cm/sec | 0.30 |
| Permitivity | ASTM D 4491 | 1/sec | 1.5 |
| Water Flow | ASTM D 4491 | gpm/sq.ft. | 100 |
| U.V. Resistance | ASTM D 4355 | % retained | 70 |

Sincerely,

Paul M. Mosley
TNS Advanced Technologies

INI35R TNS Packing List - 14:22. 05/12/98 Page 1

| Roll # | Styl-Wgt-Yds | Gross | Yard | Net |
|---|---|---|---|---|
| Location "EDC170" Available Only | | | | |
| 991833 | R070 180 300 | 224 | 17 | 207 |
| 991844 | R070 180 300 | 223 | 17 | 206 |
| 991845 | R070 180 300 | 224 | 17 | 207 |
| 991847 | R070 180 300 | 222 | 17 | 205 |
| 991856 | R070 180 300 | 223 | 17 | 206 |
| 991860 | R070 180 300 | 223 | 17 | 205 |
| 991868 | R070 180 300 | 223 | 17 | 206 |
| 991873 | R070 180 300 | 226 | 17 | 209 |
| 991874 | R070 180 300 | 224 | 17 | 207 |
| 991894 | R070 180 300 | 225 | 17 | 208 |
| 991895 | R070 180 300 | 225 | 17 | 208 |
| 991897 | R070 180 300 | 227 | 17 | 210 |
| 991898 | R070 180 300 | 225 | 17 | 208 |
| 991900 | R070 180 300 | 225 | 17 | 208 |
| 991911 | R070 180 300 | 226 | 17 | 209 |
| 991913 | R070 180 300 | 223 | 17 | 206 |
| 991949 | R070 180 300 | 225 | 17 | 212 |
| 991953 | R070 180 300 | 226 | 17 | 209 |
| 991958 | R070 180 300 | 226 | 18 | 208 |
| 991972 | R070 180 300 | 226 | 18 | 208 |
| 991973 | R070 180 300 | 226 | 18 | 208 |
| 991987 | R070 180 300 | 226 | 18 | 208 |
| 992118 | R070 180 300 | 226 | 17 | 209 |
| 992124 | R070 180 300 | 226 | 18 | 208 |
| 992127 | R070 180 300 | 226 | 18 | 208 |
| 992130 | R070 180 300 | 225 | 18 | 207 |
| 992132 | R070 180 300 | 225 | 18 | 207 |
| 992138 | R070 180 300 | 224 | 18 | 206 |
| 992145 | R070 180 300 | 229 | 18 | 211 |
| 992160 | R070 180 300 | 226 | 18 | 208 |
| 992161 | R070 180 300 | 227 | 18 | 209 |
| 992165 | R070 180 300 | 226 | 18 | 208 |
| 992171 | R070 180 300 | 227 | 18 | 209 |
| 992181 | R070 180 300 | 228 | 18 | 210 |
| 992246 | R070 180 300 | 252 | 18 | 234 |
| 993498 | R070 180 300 | 252 | 18 | 234 |
| "EDC170" Totals: | | 8,155 | 529 | 7,535 |

36 Rolls----

TNS Mills, Inc.

Nonwoven Quality Data

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 951833 | R070 | 180 | 300 | 7.2 | 103 | 205 | 184 | 71 | 82 | 113 | 126 | 111 | 372 | 101 | .37 | 1.5 | 80 |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 992246 | R070 | 180 | 300 | 7.0 | 99 | 211 | 235 | 59 | 71 | 75 | 75 | 136 | 423 | 102 | .30 | 1.6 | 80 |
| 993498 | R070 | 180 | 300 | 7.3 | 101 | 191 | 188 | 58 | 60 | 85 | 85 | 130 | 400 | 102 | .30 | 1.6 | 80 |

# CERTIFICATION SHEET

**POLY-FLEX, INC.**
2000 W. Marshall Drive
Grand Prairie, Texas 75051

PROJECT NO: 970658 DATE: 7/22/98

TRIP NO: CPU CERTIFIED BY:

| TEST DESCRIPTION | | THICKNESS | CARBON BLACK | TEAR | PUNCTURE | TENSILE @ YIELD | ELONG @ YIELD | TENSILE @ BREAK | ELONG @ BREAK | CAR. BLK. DISPERSION | DENSITY | ESCR (cond. B) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM METHOD | | D1593 | D1603 | D1004 | FTMS 101 | D638 | D638 | D638 | D638 | D3015 | D1505 | D1693 |
| (modifications) | | min/avg | | | 2065 | | | | | | | 2000 hrs |
| UNITS | | mils | % | lb | lb | ppi | % | ppi | % | | gm/cc | PASS |
| 60HDR SPECIFICATION | | 54/60 | 2 - 3 | 40 | 78 | 132 | 12 | 132 | 240 | A1/A2/B1 | 0.940 | 1500 |
| ROLL NUMBER | BLEND | | | | | | | | | | | (Start) |
| GR-6-98 266-X | 7180099 | 54/ 61 | 2.6 | 53 | 95 | 151 | 15 | 171 | 450 | A-1 | 0.947 | 4/04/98 |

1-76

# Poly-Flex

## Geomembrane Shipment Inspection

Tractor # CPU  Trailer # CPU  Date: 21-Jul-98  Trip # 276198

Drop # 1
Poly-Flex # 970658(276198)
Customer: EDIC
Destination: CRANE IN
Carrier: CPU

07-23-98

07-23

| | Blend | Roll Number | Weight | Roll Description |
|---|---|---|---|---|
| 1 | 7180099 | GR-6-98- 0266- X | 3,178 | 28' X 455' X .060HDR |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | Pieces shipped | | 3,178 | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |

I certify that all loading requirements and roll conditions were inspected and approved.

GENE RODRIGUEZ
Truck Loader

NSWC CRANE
DYE BURIAL GROUND CAP

Submittal Item No. 1-75(A)
Specification Section 02250

Written Certificate of Compliance

Phillip Environmental Services Corp.
210 West Sand Bank Road
Columbia, IL 62236

Geosynthetics Contractor
Environmental Design & Construction, Inc.
104 Wholesale Avenue
Huntsville, AL 35811

I hereby [illegible]

Lois J. Bigley, Date 12-28-97

Certified by GC Manager Lois J. Bigley, Date 12/28/97
(signature)

**POLY-FLEX, INC.**

2800 W. Marshall Drive Grand Prairie, Texas 75051 USA

888-765-9359 972-337-7113 FAX 972-337-7233

Ms. Michelle Lotz
Environmental design and Construction, Inc.
104 Wholesale Avenue
Huntsville, AL 35811

September 12, 1997

**Subject:** **Dye Burial Project, Crane, Indiana**

Dear Michelle,

Here is the information you requested regarding the above referenced project.

**1-65** Poly-Flex has been manufacturing textured geomembranes since 1989. Poly-Flex has successfully manufactured nearly 1 billion square feet of polyethylene geomembranes since 1986, a large percentage has been textured sheet.

**1-70** Poly-Flex primarily uses Phillips resin, HHM TR-400G. A typical resin certificate from Phillips is included with this transmittal.

**1-72** Poly-Flex tests all incoming resins to verify the resins meet the Poly-Flex specifications. At a minimum, these tests include density (ASTM D 1505), melt index (ASTM D 1238), and carbon black content (ASTM D 1603), if applicable. A copy of this test report will be supplied upon request.

**1-73** Poly-Flex geomembrane consists of approximately 97% polyethylene resin, 2.5% carbon black, and 0.5% anti-oxidants. No plasticizers or fillers are used.

**1-74 & 1-75** Poly-Flex has taken no exceptions to the project's liner specification under Table 1, page 02250-9. Poly-Flex, Inc. certifies that all rolls for the above referenced project will meet the Poly-Flex standard specification and the property values listed under Table 1 of the project specification.

**1-76** A blank Poly-Flex standard certification sheet is included with this transmittal. Poly-Flex uses ASTM D 1593, weight/density correlation, to measure and report the material thickness. Poly-Flex, Inc. certifies that its 60 mil textured HDPE meets the project's thickness requirement based on the ASTM D 5199 (i.e. 0.25" diameter dial head micrometer) and the required puncture resistance per ASTM D 4833 test method.

Sincerely,

George Yazdani, MSc., P.E.
Regional Manager

# H-5
# Warranties

MORRISON KNUDSEN CORPORATION
300 Highway 361, CTR-12
P.O. Box 310
Crane, IN 47522
(812) 854-6941
Fax: (812) 854-6944

October 19, 1998 FMK-0009-073

Mr. Donald Flowers
Project Manager, Philip Environmental Services
210 West Sand Bank Road
Columbia, IL 62236

Reference: Subcontract 4324-106, Submittals

Subject: Submittal No. 085

Dear Mr. Flowers:

The attached subject submittal is accepted. Please retain the attached for your records.

If you have any questions or concerns, please contact me at (812) 854-6941.

Sincerely,
**MORRISON KNUDSEN CORPORATION**

D. Beall

Dave Beall
Project Manager

Attachments

cc: J. McCumbers w/o attachments D. Beall w/o attachments K. Ohsiek

file: 13-1.2-0009 17-26-0009

**PHILIP**
**ENVIRONMENTAL**

Industrial Services Group
Midwest Region

September 14, 1998
Project 18328

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Lois J. Bigley 09-1
Lois J. Bigley 09

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Submittal No. 079**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-90 | Installers Written Warranty | 02250 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Donald L. Flowers

Donald L. Flowers,
Project Manager

cc: D. Beall

# ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.

104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (256) 551-0372 • Fax: (256) 551-0347


WORKMANSHIP WARRANTY....

Warranty No: 97006IN
Effective Date: 8/5/98

Environmental Design & Construction Inc., hereinafter referred to as EDCI, warrants each Liner System installed by EDCI to be free from defects in workmanship. This "Workmanship Warranty" shall be in effect from the date the installation of the Liner is completed and accepted by the Owner for a period of Twenty (20) years of normal use in approved applications. This Limited Warranty does not include damage or defects in Liner resulting from Acts of God, or casualty or catastrophe including, but not limited to: earthquakes, floods, piercing hail, tornadoes, hurricanes, high winds, lightening, fire, or force majeure. The term "normal use" as used herein does not include, among other things, the exposure of Liner to harmful chemicals or sharp objects; abuse of Liner by machinery, equipment, animals or people; excessive pressures or stresses from any source; subsurface or overburdened soil conditions; total or differential soil settlements and the effect these may have on the liner system; improper site preparation or design and engineering by parties other than EDCI; and any other event beyond the reasonable control of EDCI. In addition, and unless otherwise confirmed in writing by EDCI, the act of installing material shall not constitute an acceptance by EDCI that site preparation, design & engineering by others were proper at such time.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail, to the president of EDCI within thirty (30) days after the alleged defect is first noticed. Should the required notice not be given, the defect and all warranties shall be deemed to have been waived by the Purchaser and Purchaser shall have no right of recovery against EDCI.

After receipt of the foregoing notice, EDCI shall notify the Purchaser that EDCI representatives will inspect the material, that additional information is required from the Purchaser, or that the alleged claim is not covered by this warranty. If, after conducting an inspection, EDCI determines the claim is not covered by this warranty, then the Purchaser shall pay EDCI all reasonable travel expenses, published per diem rates and appropriate fees, and related expenses for EDCI personnel examining the site.

Under no circumstances shall the Purchaser repair, replace, remove, alter or disturb the liner material or permit any other party to do so prior to EDCI inspection of the same or receipt that the claim is excluded from this warranty; otherwise, this warranty shall be void in its entirety.

In the event repairs or replacements are to be effected, said repairs and/or replacements shall not become due until the area subject to replacement of Liner is available to EDCI in a clean, dry, unencumbered condition. This includes, but is not limited to, the area made available for repair or replacement of liner to be free from all water, dirt, sludge, residuals, and liquids of any kind.

Should defects or premature loss of use within the scope of the above Limited Warranty occur, EDCI will, at its option, repair or replace the liner on a pro-rata basis at the then current price in such manner as to charge the Purchaser/User only for that portion of the warranted life which has elapsed since purchase of the material. Any installation repair or replacement will be covered by the unexpired term of this warranty.

EDCI's liability under this warranty shall in no event exceed the replacement cost of the material sold to the Purchaser for the particular installation in which it failed. Further, under no circumstances shall EDCI be liable for any special, direct, indirect or consequential damages arising from loss of production or any other losses, including losses due to personal injuries and product liability owing to the failure of the material or installation.

EDCI neither assumes nor authorizes any person, other than an Officer of EDCI, to assume for it any other or additional liability in connection with the liner than what has been made the basis of this Limited Warranty. The Limited Warranty herein is given in lieu of all other possible warranties, either express or implied, and by accepting delivery of material, purchaser waives all other such possible warranties, except those specifically given. In the event any term or provision of this warranty is inconsistent or conflicts with any writing, purchase order or contract executed by EDCI and the Purchaser of the installation services, then to the extent such inconsistency or conflict exists, the terms and provisions of this warranty shall control in all respects.

EDCI MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN ABOVE AND HEREBY DISCLAIMS ALL WARRANTIES, BOTH EXPRESS AND IMPLIED OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Purchaser acknowledges by acceptance that the Limited Warranty given herein is accepted in preference to any and all other possible warranties.

The parties expressly agree that the sale hereunder is for commercial or industrial use only.

**WARRANTY BECOMES EFFECTIVE UPON RECEIPT OF PAYMENT IN FULL.**

I hereby state I have read and understand the above and foregoing Limited Warranty and agree to such by signing hereunder.

| | |
|---|---|
| Purchaser/User | Naval Facilities Engineering Command, Southern Div. |
| Location of Installation | NSWC Crane - Dye Burial Grounds |
| Description of Intended Use | Cap Installation |
| Purchaser/User Signature | _____ |
| Environmental Design & Construction, Inc. | Diane P. Harris<br>Diane P. Harris - President |

Sworn before me this 9th day of September, 1998.

Marcia Allen Bayl

Notary Public - My Commission Expires on July 10, 2000.

PHILIP ENVIRONMENTAL

Industrial Services Group
Midwest Region

RECEIVED
OCT 14 1998
MK-CRANE

October 8, 1998
Project 18328

| NSWC - CRANE | | | |
|---|---|---|---|
| 4324-0009 | | | |
| PROJECT MEMBER | ACT | INFO | INIT |
| PROJECT MANAGER | | X | |
| PROJECT ENGINEER | | | |
| GNL SUPT | | | |
| SAFETY AND HEALTH | | | |
| CA/QC | | | |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| PMO-CHARLESTON | | | |
| | | | |
| | | | |
| FILE: | | | |
| FILE: | | | |
| FILE: | | | |

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

**Submittal No. 085**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-89 | Manufactures Warrenty | 02250 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Donald L. Flowers,
Project Manager

cc: D. Beall

# POLY-FLEX LINER
# LIMITED WARRANTY

Warranty No: 98-44-053
Project No: 970658
Effective Date: 09/25/98

OWNER NAME: Commander, Crane Division, NSWC
ADDRESS: Code 095, Building No. 3260
300 Highway 361
CITY, STATE, ZIP: Crane, IN 47522

PROJECT NAME: Dye Burial Ground
DESCRIPTION: Cap
ADDRESS: 300 Hwy. 361 NSWC Center 12
CITY, STATE, ZIP: Crane, IN 47522

POLY-FLEX, INC. warrants each POLY-FLEX LINER to be free from defects in materials and to be able to withstand normal weathering from date of installation or sale, whichever occurs first, for a period of 20 years for normal use in approved applications.

This Limited Warranty does not include damages or defects in Poly-Flex Liner resulting from acts of God, casualty or catastrophe including but not limited to: earthquakes, floods, piercing hail, tornadoes or force majeure. The term "normal use" as used herein does not include, among other things, the exposure of Poly-Flex Liner to harmful chemicals, abuse of Poly-Flex Liner by machinery, equipment or people, excessive pressures or stress from any source. Poly-Flex material warranty is intended for commercial use only and is not in effect for the consumer as defined in the Magnuson-Moss Warranty Act or any similar federal, state, or local statutes.

Should defects or premature loss of use within the scope of the above Limited Warranty occur, Poly-Flex, Inc. will, at its option, repair or replace the Poly-Flex Liner on a pro-rata basis at the then current price in such manner as to charge the Purchaser/User only for that portion of the warranted life which has elapsed since purchase of the material. Poly-Flex, Inc. will have the right to inspect and determine the cause of any alleged defect in the Poly-Flex Liner and to take appropriate steps to repair or replace the Poly-Flex Liner if a defect exists and is within the term of this Limited Warranty.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail, to the General Manager of Poly-Flex, Inc. within thirty (30) days after the alleged defect is first noticed. Should the required notice not be given, the defect and all warranties shall be deemed to have been waived by the Purchaser, and Purchaser shall have no right of recovery against Poly-Flex, Inc. In the event repairs and/or replacements are to be effected, said repairs and/or replacements shall not become due until the area subject to repair and/or replacement of Poly-Flex Liner is available to Poly-Flex, Inc. in a reasonably clean, dry, unencumbered condition. This includes, but is not limited to, the area made available for repair and/or replacement of Poly-Flex Liner to be free from all water, dirt, sludge, residuals, and liquids of any kind.

Poly-Flex, Inc.'s liability under this warranty shall in no event exceed the replacement cost of the material sold to the Purchaser for the particular installation in which it failed. Further, under no circumstances shall Poly-Flex, Inc. be liable for any special, direct, indirect, or consequential damages arising from loss of production or any other losses including losses due to personal injuries and product liability owing to the failure of the material or installation and no allowance will be made for repairs, replacements, or alterations made by the Purchaser without the express written consent of Poly-Flex, Inc.

Poly-Flex, Inc. neither assumes nor authorizes any person other than an officer of Poly-Flex, Inc. to assume for it any other or additional liability in connection with the Poly-Flex Liner made the basis of the Limited Warranty. The Limited Warranty on the Poly-Flex Liner herein is given in lieu of all other possible material warranties, either express or implied, and by accepting delivery of the material. Purchaser waives all other possible warranties, except those specifically given.

The parties expressly agree that the sale hereunder is for commercial or industrial use only.

Poly-Flex Limited Warranty is extended to the purchaser/owner and is non-transferable and non-assignable, without Poly-Flex, Inc. consent.

Purchaser acknowledges by acceptance that the Limited Warranty given herein is accepted in preference to any and all other possible materials warranties.

POLY-FLEX, INC. MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN ABOVE AND HEREBY DISCLAIMS ALL WARRANTIES, BOTH EXPRESS OR IMPLIED, OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

**WARRANTY BECOMES EFFECTIVE UPON RECEIPT OF FINAL PAYMENT**

I hereby state I have read and understood the above and foregoing Limited Warranty and agree to such by signing hereunder.

PURCHASER NAME: _____

SIGNATURE: _____

TITLE: _____

DATE: _____

POLY-FLEX, INC. _____
General Manager

Sworn before me this 28 day of September, 1998.

Lisa McCormick

Submittal 1-89
"Accepted"
D Bauel 10/15/98

LISA MCCORMICK
NOTARY PUBLIC
STATE OF TEXAS
MY COMM. EXP. 09-17-2002

# H-6

# Installation Procedures

# NSWC CRANE
# DYE BURIAL GROUND CAP

[illegible] (equipment) (material) [illegible]
[illegible] not proposed to be incorporated into the
[illegible] is in compliance with the contract [illegible]
[illegible] installed in the allocated spaces [illegible]
[illegible] OVAL.

Contractor Quality Control Representative Lois J. Bigley 12-23-97
(signature when applicable)

Certified by QC Manager Lois J. Bigley Date 12-23-97
(signature)

## Submittal Item No. 1-80
## Specification Section 02250

## Installation and Repair Procedure

Philip Environmental Services Corp.
210 West Sand Bank Road
Columbia, IL 62236

Geosynthetics Contractor
Environmental Design & Construction, Inc.
104 Wholesale Avenue
Huntsville, AL 35811

*· · · We Make A World Of Difference*

# LINER INSTALLATION AND QUALITY CONTROL/ QUALITY ASSURANCE MANUAL

**ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.**

Corporate Office: 104 Wholesale Avenue, Huntsville AL 35811

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*Dr. Henry Haxo, Matrecon, Inc., Alameda, CA.

## INTRODUCTION

**EDCI** has developed this Liner Installation and Quality Control/Quality Assurance Manual based on its experience in the field. If projects have specifications not addressed in this Manual, such specifications shall become an appendix to this Manual. EDCI warrantees its workmanship and the manufacturers warrantee the materials.

Although the most commonly used geosynthetic used for liners is the geomembrane systems, other lining systems are discussed such as geotextiles, geonets and geocomposites.

**EDCI**'s duties as the Installer are:

- Develop and implement staffing, equipment and operational plans prior to job start.
- Determines if surface conditions are satisfactory for deployment according to project specifications.
- Performs/supervises the deployment, seaming, testing, repair and detailing of the geosynthetic components installation.
- Performs/supervises the welding technicians and support help to perform the these tasks.
- Performs/supervises repair and maintenance of all equipment and vehicles used on the jobsite.
- Interfaces with the owner/agent on all matters of scheduling involving the scope of the installation process.
- Develop time and scope estimates for any applicable change orders.
- Supervises the completion of all lining installation work including clean up of the jobsite.
- Perform as the primary on-site interfacer with owner/agent or third party CQA personnel.
- Review safety plans and procedures.
- Review panel layout and numbering systems for panels, seams and test samples.
- Review methods of measuring production.
- Review procedures for incremental acceptance.
- Review procedures for initiating and documentation requirements.

* Visit jobsite for review of surface preparation, physical location of site and site access.

## 1.0 DEFINITIONS

EDCI has planned a system of routine QA/QC inspections to monitor and control the quality of a construction project. The system includes inspections, verifications, audits and evaluations of materials and workmanship necessary to determine and document the quality of the constructed project.

## 2.0 PARTIES INVOLVED

A successful liner installation depends on the responsible and timely interaction of all involved parties and coordination of all installation, inspection, testing and documentation.

| | |
|---|---|
| Owner | Owner of the property and/or facility; responsible for the final acceptance of the work performed. |
| Designer | Architectural and/or engineering entity responsible for project planning, design, specifications, and drawings. The Designer may also be the Project Manager. The Designer is responsible for the selection and specification of geotextiles,geonets, geogrids and geocomposites. |
| Project Manager | Authorized representative of the owner in charge of project scheduling and coordination of construction activities. |
| General Contractor | Prime Contractor for the project may delegate specific tasks in a contractual agreement to one or more subcontractor. The General Contractor is System Installer and/or Earth Work Contractor. |
| Liner System | Subcontractor for the complete installation of the installer synthetic liner system must perform according to its contract with the Owner or the General Contractor. EDCI will follow the manufacturer's specifications and recommendations for handling the materials. |
| Liner Manufacturer | Manufacturer of the geomembrane from raw (resin) material. The manufacturer shall provide the installer or project manager with a list of "minimum average roll value" properties for the type of material delivered. The manufacturer shall also provide the installer or project manager a Quality Assurance document for each load of material stating that those specific rolls of material meet or exceed the minimum average roll values as published. The manufacturer shall identify all rolls of geotextile with *manufacturer name, product identification, lot number, roll number, roll dimensions.* |
| Soil CQA Consultant | Party independent of the General Contractor and the Liner Installer in charge of monitoring, testing, inspecting and documenting all earth work. Also referred to as a Soil Inspector. |
| Geosynthetic CQA Consultant | Party independent of the General Contractor and the Liner Installer who monitors tests, inspects and documents the installation of all geosynthetic materials such as geomembranes, geotextiles, geonets and geogrids. Also referred to as Third Party CQA or Liner Inspector. |
| Independent Laboratory | Testing laboratory, CQA for the installer or the general contractor for a project. |

## 3.0 PERSONNEL QUALIFICATIONS

The CQA plans should identify the required qualifications of the CQA officer and the CQA inspection personnel and describe their expected duties.

### 3.1 CONSTRUCTION QUALITY ASSURANCE OFFICER

CQA officer is assigned singular responsibility for all aspects of the CQA plan implementation. The CQA officer is responsible to the facility Owner/Operator and should function independently of the Owner/Operator, Design Engineer and the Construction Contractor. The CQA officer's position within the project's overall organizational structure (which includes the facility Engineer, Construction Contractor and permitting agencies) should be clearly described within the CQA plan.

The CQA officer should possess adequate formal academic training in engineering, engineering geology or other closely related disciplines. He must also posses sufficient practical, technical and administrative experience to successfully over-see and implement CQA activities for land disposal facilities. The responsibilities of a CQA officer may require his or her formal registration as a Professional Engineer or equivalent. Because a CQA officer must communicate at all project personnel levels, communication skills of a high order are essential. The CQA officer must impress upon all affected personnel the importance and implications of all CQA-related matters and mobilize them to action.

### 3.2 CQA INSPECTION PERSONNEL

CQA Inspection personnel should posses adequate formal training and sufficient practical, technical and execute and document inspection activities. Such personnel must demonstrate knowledge of specific field practices relating to techniques used in the construction of waste land disposal facilities, and of all codes/regulations concerning material and equipment installation, observation and testing procedures, equipment documentation procedures and site safety.

### 3.3 CONSULTANTS

Authorities in Geology, Geotechnical Engineering, Civil or Environmental Engineering, or other technical disciplines may be called in from external organizations in the event of unusual site conditions or inspection results. The CQA plan should stipulate in detail the qualifications of such consultants, in the event that it becomes necessary to obtain and use an outside opinion as the basis for a decision implicating construction quality assurance. Consultants should not be used to collect and interpret data when suitable objective observations and test procedures are readily available.

## 4.0 MEETINGS

A pre-construction meeting shall be held at the work site prior to commencing the liner installation to discuss work activities, quality control and quality assurance procedure.

A daily meeting shall be held at the work site just prior to commencing the work day. The meeting must include the installed the liner inspector and will include discussion of both recently completed and imminent activities.

## 4.1 PRE-CONSTRUCTION MEETINGS

A meeting should be held after the award of the contract and prior to starting the construction of the facility to resolve any uncertainties and review construction objectives. The owner, designer, CQA personnel, general contractor and the subcontractors should attend this meeting to discuss the following topics:

- The provision of all organizations with all relevant CQA documents and supporting information.
- The familiarization of all organizations with the site specific CQA plan and its role relative to the design criteria, plans and specifications.
- What, if any, modifications to the CQA plan are necessary to ensure the facility will satisfy or exceed the specified construction design.
- The current responsibilities of each organization.
- The chain of command and communication protocols within each organization.
- The merits of established procedures/protocols for observations and tests (including sampling strategies).
- The merits of established procedures/protocols regarding construction deficiencies, repairs and retesting.
- Methods for documenting and reporting inspection data.
- Security and safety protocols for the work area.
- The protection of construction materials from changes in climate and vandalism.

This meeting should conclude with a walk around the site to review construction material and inspecting equipment storage locations. A designated person should document the meeting and minutes should be distributed to all parties.

4.2 DAILY PROGRESS MEETINGS

A daily meeting shall be held at the work site just prior to commencing the work day. The meeting must include the installer and the liner inspector. The purpose of the meeting is to:

- Review the previous day's activity.
- Agree on measurements and specific areas of the previous day's approved work.
- Review the work schedule.
- Review work activity and location for the day.
- Discuss the Installer's personnel assignments for the day.
- Discuss possible problem areas and situations.

## 5.0 MATERIAL LOGISTICS

5.1 TRANSPORTATION

Geomembrane rolls or panels are packaged and shipped in a manner that will protect them from damage. Transportation is the responsibility of the manufacturer.

5.2 DELIVERY

Off-loading and storage of the geomembrane is the responsibility of the General Contractor. The manufacturer is responsible for replacing any damaged or unacceptable material at no cost to the Owner. No off-loading shall be done unless the liner inspector is present. Damage during off-loading shall be documented by the inspector and General Contractor. All damaged rolls must be separated from the undamaged rolls until the proper disposition of that material has been determined by the Owner's representative. The Owner's representative will be the final authority on determination of damage.

5.3 ON-SITE STORAGE

Stored geomembrane shall be safely protected against puncture, dirt, grease, water, moisture, mud, mechanical abrasions, excessive heat and other potentially damaging conditions.

Geomembrane rolls shall be stored on a prepared surface (not wooden pallets), and shall not be stacked more than two high on soil subgrades. This requirement does not necessarily apply where a concrete pad or warehouse is available for storage purposes.

## 6.0 EARTHWORK

The owner or his representative (soil quality assurance contractor) shall supervise the subgrade-preparation. Prior to liner installation the exposed subgrade shall be scored to a depth of at least six (6) inches and compacted to 95% of standard proctor (ASTM D 698), maximum laboratory dry density. Weak or compressible areas which cannot be satisfactorily compacted should be removed and replaced with properly compacted fill. All surfaces to be lined shall be smooth, free of all foreign and organic material, sharp objects, or debris of any kind. These surfaces shall provide a firm, unyielding foundation with no sharp changes or abrupt breaks in grade. Standing water or excessive moisture shall not be allowed. Stones or rocks over 3/8" in diameter are not allowed in the top six (6) inches of soil.

### 6.1 ANCHOR TRENCH

The anchor trench shall be excavated to the line, grade, width and depth shown on the construction drawings, prior to liner system placement. The soil inspector shall verify that the anchor trench has been constructed according to construction drawings.

If the anchor trench is located in a clay susceptible to desiccation, no more than the amount of trench required for the base geomembrane to be anchored in one day shall be excavated to minimize desiccation of the anchor trench soils.

Slightly rounded corners shall be provided in the trench where the geomembrane adjoins the trench so as to avoid sharp bends in the geomembrane.

## 7.0 LINER DEPLOYMENT

*Liner Installer is responsible for the following:*

- No equipment or tools shall damage the geomembrane by handling, trafficking, or other means.
- No personnel working on the geomembrane shall smoke, wear damaging shoes, or engage in other activities that could damage the geomembrane.
- The method used to unroll the panels shall neither score, scratch or crimp the geomembrane nor, damage the supporting soil or underlying geotextiles.
- The method used to place the panels shall minimize wrinkles (especially differential wrinkles between adjacent panels. Wrinkles shall be identified as to proper location and compensation shall be identified on the Contractor's and Inspector's drawings. Ballast shall be used to prevent the relocation of such compensating wrinkles by wind.

- Adequate loading (e.g., sand bags or similar items that will not damage the geomembrane) shall be placed to prevent uplift by wind. In cases of high wind, continuous loading is recommended along edges of panels to minimize risk of wind flow under the panels.

- Direct contact with the geomembrane shall be minimized, i.e., the geomembrane in traffic areas shall be protected by geotextiles, extra geomembrane or other suitable materials.

7.1 BASIC SEAMING STRATEGIES

Seams shall be oriented parallel to the line of maximum slope, i.e., oriented down, not across the slope. Seams shall not be located where subgrade slopes interact (corners). Where geomembrane must be placed in geometrically unusual areas, the number of field seams shall be minimized.

7.2 SEAM OVERLAP

Panels of geomembrane must have a finished overlap of a minimum of four inches for hot shoe fusion welding and three inches for extrusion welding, but in any event, sufficient overlap shall be provided to allow peel tests to be performed on the seam.

No solvent or adhesive may be used unless the product is approved by the Owner's representative. (Samples shall be submitted to the Design Engineer for testing and evaluation.)

The procedure used to temporarily bond adjacent panels together shall not damage the geomembrane; in particular, the temperature of hot air at the nozzle of any spot welding apparatus shall be controlled such that the geomembrane is not damaged.

7.3 FIELD SEAM TESTING

Field tests shall be conducted on geomembrane liner seams to verify that seaming conditions are satisfactory. Test seams shall be conducted at the beginning of each seaming period, at the inspector's discretion, and at least once every four hours, for each seaming apparatus used that day.

All test seams shall be made at a location by the Inspector in the area of the seaming and in contact five feet long for hot shoe welding and three feet long for extrusion welding with the seam centered lengthwise. Specimens one inch wide shall be cut from each opposite end of the test seam by the Inspector. The Inspector shall use a tensiometer to test these specimens for shear and peel. If a test seam fails to meet field seam specifications, the seaming apparatus and/or seamer shall not be accepted and shall not be used for seaming until the deficiencies are corrected.

## 8.0 WEATHER CONDITIONS

Liner deployment will proceed below ambient temperatures of 32° F. only after the Inspector verifies that the material can be seamed in accordance with the specifications and with the approval of the Owner's representative. Geomembrane will not be placed in the midst of precipitation or moisture of any type (e.g., fog, rain, dew) or in the presence of excessive winds, as determined by the installation supervisor. Observation of temperature, humidity, precipitation and wind should be noted to ensure that weather conditions are acceptable prior to membrane placement.

## 9.0 SEAMING EQUIPMENT AND ACCESSORIES

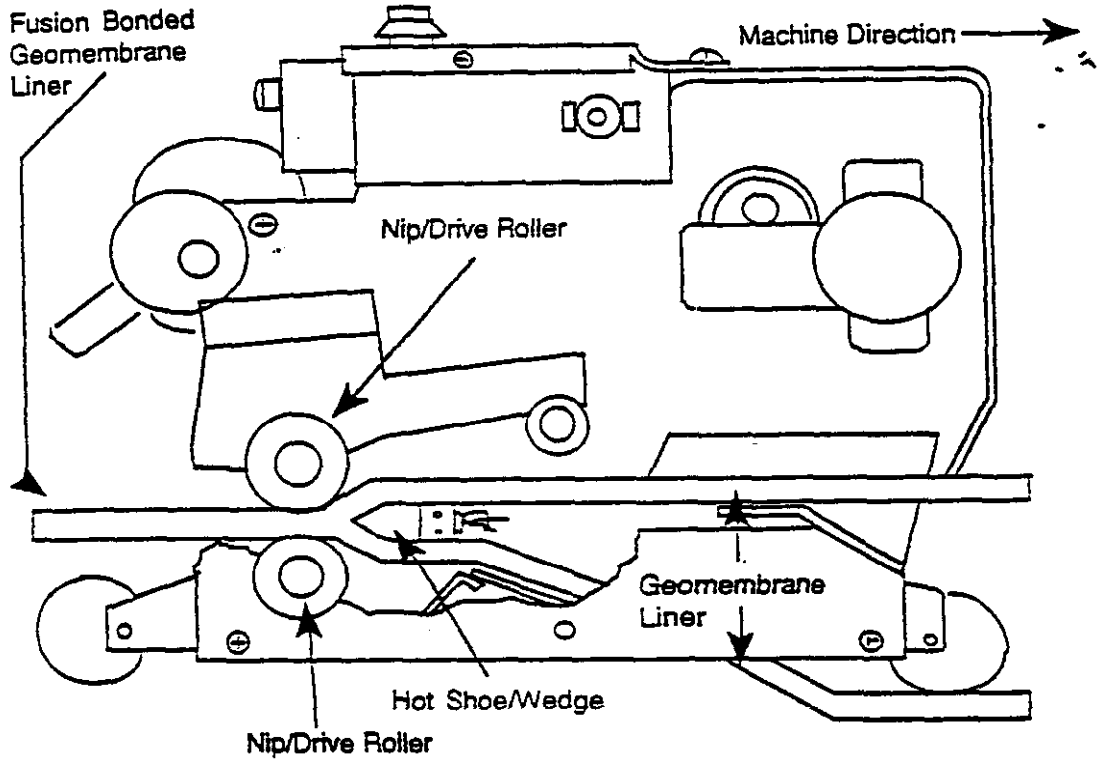
The approved field seaming tools are the hot shoe fusion welders and extrusion welders.

## 10.0 HOT SHOE WELDING

### 10.1 HOT SHOE WELDING SYSTEM

The hot shoe seaming device is a completely self-contained system. The hot shoe system produces a bonded seam by running a hot metal wedge (hot shoe) between the overlapped area of the geomembranes. Its role is similar to that of the moving portion of a zipper except that it fixes two material planes together by overlapping them not by joining them at the edge. The hot wedge melts the facing surfaces of the two contiguous liners and creates a permanent bond between them using precisely controlled heat. The wedge is blocky at the leading end and tapered at the trailing end. The heated geomembrane overlaps come together at the tapered end of the hot shoe, under pressure from two nip/drive rollers, and are permanently fused together. Hot air tacking (as employed in extrusion weld seaming) is not necessary.

Figure 1 - Hot Shoe Welder




A single hot wedge is shaped like an anvil and is smooth over its entire surface. A dual hot wedge has a central, canal-like recession along its length. This type of wedge creates a channel in the liner seam between two parallel bonds. Figure 2 illustrates both wedge types.

Knurled rollers are used to apply pressure to the sheets where they have just passed over the taper of the hot shoe and been bonded. These should have smooth surfaces and beveled edges.

As the edges of the overlapping liners pass through the welder, they must contact the full length and width of the hot wedge, or the facing surfaces will not be equally hot. Idler rollers or similar pressure devices, which press the liners against both sides of the hot wedge, must be adjusted so that material of any thickness strictly conforms to the wedge's taper while passing through the welder. Such adjustments should be made while the wedge is cold.

***This proprietary seaming method is designed to:***

1) Monitor operating temperatures via digital readout.

2) Form uniform bonds by applying uniform and consistent pressure to the membrane.

3) Reduce surface tension and remove surface contamination without grinding, which improves bond strength.

4) Ensure high reliability, which results in consistent seam integrity.

5) Minimize operator error, as the machine is semi-automatic.

## 10.2 LINER PREPARATION FOR HOT SHOE WELDING

Hot shoe welding represents the primary seaming method for geomembrane liners. It is assumed the appropriate liner has been delivered to the site, has been unrolled and is situated in its approximate plan position where it awaits final installation and seaming. No more material than can be seamed within the current day should be deployed. All deployed material must be ballasted immediately to prevent wind uplift.

- The two liners to be joined must be positioned to create an overlap of 3-5 inches.

- If the overlap is not substantially wide to contain the wedge, "float" the liner into better position by lifting it high enough to draw air beneath it, guiding it upon this air to an improved position. Avoid dragging the liner, particularly across rough soil subgrades.

- If the overlap between the placed liners is excessive, the excess must be trimmed away. This should be done by trimming the lower sheet. If this is not possible and the upper sheet must be trimmed, use a knife with a shielded or hook blade. An unshielded, downward-facing blade cutting from above can easily scratch the liner in a vulnerable location.

- All cutting and preparation of odd-shaped sections or small fitted pieces must be completed at least fifty (50) feet ahead of the seaming operation, so that seaming may be conducted with the fewest interruptions.

- Before joining the two contiguous liners, make sure they are not excessively scratched, blemished or flawed and are general visually acceptable.

- If the Plans require overlaps to be shingled in a particular direction, make sure this is being done.

- Excessive undulations (waves) along the seams during the seaming operation should be avoided. These occur when the upper and lower sheets have unequal slack between them. This condition can lead to the undesirable formation of "fish mouths" which must be trimmed, laid flat and reseamed with a patch.

- HDPE needs approximately 2% slack to account for expansion and contraction caused by weather, facility, and procedural conditions. This is a design consideration and the Plans and Specifications must be project-specific on the amount and orientation of slack.

- Sheets which are overlapped and ready for seaming must be clean. If dirty, they must be wiped clean with dry rags.

- The seam area must be completely free of moisture before the overlapping sheets can be properly seamed. Dry rags can be used to wipe any such moisture up from the seam surface. If sufficient quantity of dry rags is unavailable for this purpose, air blowers can be used.

- Seaming is not to be performed during rain or snow unless measures are taken to allow the seam to be made on dry liner materials, e.g., within an enclosure or shelter.

- Seaming is not to be performed when the soil surface beneath the liners is saturated, because the hot seaming apparatus will draw moisture into the ongoing seam. Seaming activity on frozen soil is unacceptable for the same reason. Puddled water on the soil's surface beneath the liner is unacceptable.

- Seaming should only be conducted when ambient temperatures (measured two feet above the liner) are between 32 -105° F (0-40° C), unless it can be proven via test strips that good seams can be fabricated at such temperatures. The general effect of low ambient temperature upon the integrity of liner seams is less important than that of moisture, but it is not to be discounted. Above 105° F, the liner is extremely hot, and working conditions become very dangerous.

- When seaming in cold weather, make extra test welds, which can be used to suggest adjustments to the seaming activity (such as equipment temperatures and seaming rate).

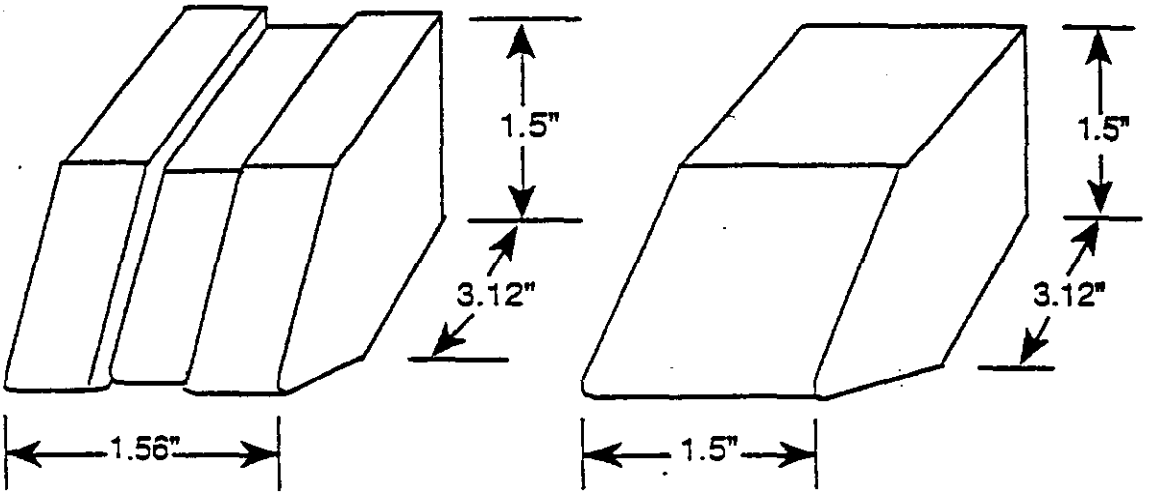
## 10.3 HOT SHOE EQUIPMENT PREPARATION

1) A functional, small electric generator must be kept in the proximity of the seaming area, and must have enough extension cord to range the length of the seam. It must either be fitted with rubber tires, or be placed on a stable and smooth moveable base, such as a scrap of liner, so that no damage will be inflicted upon the liner or subgrade by its movement. The generator's fuel (gasoline or diesel) must be stored off the liner.

2) Surface grinding before application of the hot wedge is neither necessary nor allowed.

3) The hot wedge, or "anvil", should be inspected to see that it is symmetrically balanced and gradually tapered. A variety of wedge types are available. Some have a smooth surface; some are ridged where they follow the direction of the seam. The taper of a hot wedge varies according to the type of welding machine it is designed for. It is imperative that a wedge have no sharp edges on any surface that contacts the liner during the welding process.

**Figure 2 - Single and Dual (Split) Hot Wedge Elements**




4) The chain drive powering any portion of the welder should be synchronized, properly lubricated and physically sound.

Idler roller heights are adjustable to allow for varying liner thicknesses. Normal adjustments are made while the welder is at ambient temperature. The procedure for most wedge-type welders is as follows:

1) Take two material samples and insert them above and below the wedge into the nip drive rollers.

2) Lock the wedge into its operating position. This is done by shifting the wedge forward, into the clutch of the upper and lower nip rollers.

3) Adjust the idler rollers until they are snug against the membrane liners, which sandwich the wedge. A correctly adjusted set of idler rollers ensures that the membrane liners pass along the surface of the hot wedge with optimum contact, before they meet after the wedge taper and bond.

4) Set the maximum distance that the wedge can move into the nip rollers. Unsecured, the wedge might make direct contact with the nip rollers when the machine has no liner material running through it and damage the machine.

5) The wedge and surrounding rollers are now configured for seaming the liner. Remember to discharge the hot wedge from its forward position in the roller apparatus as the machine reaches the end of a seam. This will keep the wedge from advancing into the nip rollers and damaging them.

6) The forward face of the welding machine should be inspected for sharp corners and irregular details which may damage the liner as it advances during the process of seaming.

7) Temperature controllers on the wedge device should be set according to liner thickness, ambient temperature, and seaming rate. The "test strip" mentioned earlier helps determine these settings. Temperature gauges should be checked for accuracy and repeatability.

## 10.4 HOT WEDGE SEAMING PROCESS

The objective of hot wedge seaming is to heat two facing liner surfaces to their melting point before forcing them together and creating a permanent bond. The wedge is situated between the overlap of the two liners and moves along somewhat like a zipper. The hot wedge reduces the surface tension of the viscous polymer sheets and acts as a scraper and mixer, so that the nip rollers can pressure the two liners together. The result is that the two facing surfaces are bonded into one continuous molecular structure.

All types of thermoplastic liners can be seamed by the hot wedge method, but temperature settings will vary according to their specific polymer components:

Typical Wedge Temperature Ranges for Hot Wedge Seaming of Thermoplastic Liner

| LINER TYPE | MINIMUM[1] | MAXIMUM[2] |
|---|---|---|
| | °F (°C) | °F (°C) |
| HDPE | 600 (320) | 750 (400) |

[1]For dry, warm weather seaming conditions
[2]For damp, cold weather seaming conditions

1) The hot wedge system should be properly positioned for making the desired single or dual (split) seam.

2) Ambient variables such as temperature, cloud cover, and wind speed may make it necessary to vary the temperature or speed of the wedge. It may be useful to document wedge temperatures used successfully in a variety of ambient conditions, so that the hot wedge

can be more accurately adjusted if new conditions are met, or if personnel changes occur.

3) The drive motor should be off when positioning the welding to seam. Place the machine where the sheets overlap. Guide the overlapped material between the idlers and the wedge, and into the drive/nip rollers. When continuing a weld that has been abandoned mid-seam, the liners must be spread where the seam leaves off and loaded into the respective sides of the machine. Raise the machine a few inches, load the bottom sheet first and then load the top sheet. When the nip rollers engage and the wedge is in position, turn on the drive motor. Immediately engage the sheets when they are between the nip rollers to prevent an imminent melt-through. Move the hot wedge into position and lock it.

4) The operator must constantly monitor the temperature controls, as well as the completed seam passing out of the machine. Occasional adjustments in temperature or speed will be necessary to maintain a consistent weld. Visual inspection and constant hand testing by the peel method (or other) is also recommended.

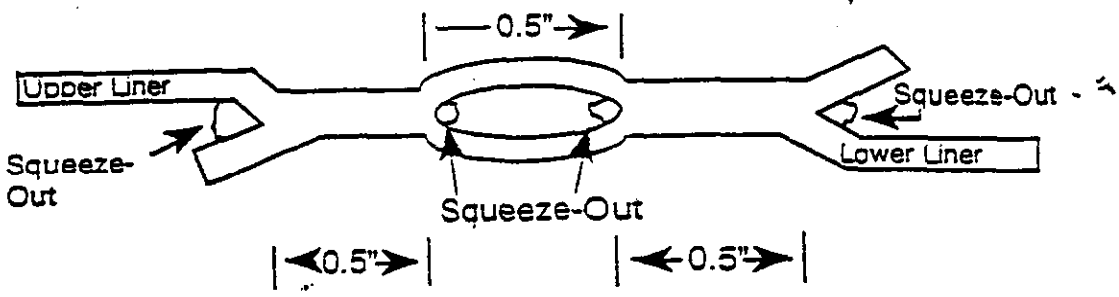
5) On some soils, the device tends to "bulldoze" into the ground as it travels, causing soil to enter the weld. A seam with soil trapped in its weld is unacceptable. To keep this from happening, the operator should lift the front of the machine slightly, if bulldozing occurs or seems likely. Alternatively, a moveable base for the machine to travel on can be used. Scrap strips of geotextile or geomembrane have proven to be effective materials upon which the welder can maintain traction. In adverse conditions, it is recommended that at least two people work together in making hot wedge seams: one as operator and one as helper.

10.5 AFTER HOT WEDGE SEAMING

1) A smooth insulating plate or heat insulating fabric is to be placed beneath the hot welding apparatus after usage.

2) A small amount of "squeeze-out" or "flashing" is a reliable indication that proper seaming temperatures have been achieved. The melted polymer will laterally extrude out of the same zone in properly welded seams, but not to excess. An excessive amount of extruded hot melt indicates that excessive heat or pressure, or both, was applied. Reduce the temperature and/or pressure to correct the situation.

**Figure 3 - Cross Section of Dual (Split) Hot Wedge Seam**




3) For liners of 40 mil thickness and less, a long, low, sinusoidal wavelength pattern in the direction of the seam along its top surface indicates a proper weld. If the wave peaks are too close together, machine speed should be increased until a satisfactory pattern shows. The absence of this wavelength pattern indicates that machine speed should be decreased. No wavy pattern will occur on liners thicker than 40 mil due to the inherent stiffness of these liners.

4) Nip/drive roller marks will always show on the surface when using knurled rollers. They should be noticeable to the eye, but just barely to the touch.

5) The hot wedge device has just a few adjustable parts, but it is critical that they be checked after a day of seaming. The machine should also be cleaned.

## 10.6 UNUSUAL CONDITIONS

It is assumed ambient air temperature is between 32° - 105°F (0 - 40°C). This range represents the lowest and highest temperatures at which it is considered feasible to seam liner. At temperatures below freezing, special precautions must be taken. Shielding, preheating, increasing extrudate temperature, and/or decreasing the rate of seaming may be necessary strategies. Thawed subgrade moisture in the seam area must not be tolerated. Frozen irregularities in the subgrade larger than one inch are also not tolerable. Temperatures outside the given range generally necessitate more frequent stripping and more diligent nondestructive testing.

1) High winds and wind gusts are always a problem for liners. Once unrolled, the liner panels must be securely ballasted with sandbags. The seaming process, however, will necessitate the removal of some sandbags, which leaves any windward edge vulnerable to uplift. Properly orient the overlap, if possible. Additional labor may be needed simply to remove the sandbags

immediately ahead of the seaming operation as it moves along, and replace them as the welder passes. Dirt and/or moisture left behind during the movement of sandbags must be cleaned away.

2) Patches must be made at locations where destructive test samples are removed, or where seams fail nondestructive testing. Such patches must extend at least six (6) inches beyond the outer perimeter of the area to be repaired. For HDPE liners the only method available is the hand-held extrusion weld procedure described in Extrusion Weld Seaming. Be extra careful not to apply too much heat to the point where the weld was initiated, once the machine travels around the patch and reaches that point again. Polymer should not be excessively heated twice. The spare extrudate at this point of overlap should not be excessive.

3) Details around sumps, pipes and other HDPE liner accessories are necessarily made by hand-held extrusion weld procedures. These are probably the most skill-intensive seams in a project. The extrudate bead should be of consistent width and thickness around the detail, even though it may encounter uneven material edges, corners, and areas of liner overlap. The overlapping point where the weld run begins and ends should not be distinguished by a large mass of extrudate.

## 11.0 EXTRUSION WELDING

### 11.1 EXTRUSION WELDING SYSTEM

An extrusion weld is produced by using a 4 mm or 5 mm diameter welding rod manufactured from the same resin used to produce geomembrane. The welding rod is applied as a "welded bead" at the edge of two overlapped geomembrane sheets, resulting in a welded seam.

***PATCHING PROCEDURES USING EXTRUSION WELDER REQUIRE THAT:***

- Surfaces shall be clean and dry.
- Test welds shall be performed prior to field seaming every day.
- The area which is to receive the extrusion bead shall be ground to remove surface contamination.
- The welding rod shall be free from dirt, dust, moisture and tangles at all times.
- The machine shall be purged for approximately thirty (30) seconds prior to actual extrudate welding.

- The bottom portion of the welding die shall stay in intimate contact with the sheet surface and conform to various seam angles and configurations.

- The welder die shall be kept "on center" at all times, ensuring that an equal amount of extrudate bead is applied to both portions of sheet overlap (top and bottom).

## 11.2 LINER PREPARATION FOR EXTRUSION WELD SEAMING

Extrusion weld seaming represents one of the primary ways to seam HDPE sheet. In fact, around details such as pipes and sumps it is always necessary to use a certain amount of extrusion weld seaming. It is also assumed that the appropriate liner has been delivered to the site, has been unrolled, and is situated in its approximate plan position, where it awaits final installation and seaming. No more material than can be seamed within the current day should be deployed. All deployed material must be ballasted immediately to prevent wind uplift.

1) The two liners to be joined must be positioned to create an overlap of at least three (3) inches.

2) If the overlap is not substantially wide, "float" the liner into better position by lifting it high enough to draw air beneath it, guiding it upon this air to an improved position. Avoid dragging the liner, particularly across the soil subgrade.

3) Check that the two contiguous liners to be joined are not excessively scratched, blemished, or flawed, and are in general visually acceptable.

4) If the construction plan requires overlaps to be shingled in a particular direction, make sure this is being done.

5) A properly planned seam run should terminate at a panel end, at a specific detail, or on a long, straight run where it can be easily resumed.

6) Excessive undulations (waves) along the seams during the seaming operation should be avoided. These occur when the upper and lower sheets have unequal slack between them. This condition can lead to the undesirable formation of "fishmouths" which must be trimmed, laid flat and reseamed with a patch.

7) HDPE needs approximately 2% slack to account for expansion and contraction caused by weather, facility, and procedural conditions. This is a design consideration and the Plans and Specifications must be project-specific on the amount and orientation of slack.

8) Sheets which are overlapped and ready for seaming must be clean. If dirty, they must be wiped clean with dry rags.

9) The seam area must be completely free of moisture before the overlapping sheets can be properly seamed. Dry rags can be used to wipe any such moisture up from the seam surface. If a sufficient quantity of dry rags is unavailable for this purpose, air blowers can be used.

10) Seaming is not to be performed during rain or snow unless measures are taken to allow the seam to be made on dry liner materials, e.g., within an enclosure or shelter.

11) Seaming is not to be performed when the soil surface beneath the liners is saturated, because the hot seaming apparatus will draw moisture into the ongoing seam. Seaming activity on frozen soil is unacceptable for the same reason. Puddled water on the soil's surface beneath the liner is unacceptable.

12) When seaming in cold weather, it is advisable to preheat the sheets with a hot air blower, to conduct seaming activity within a portable tent, to help prevent heat loss; and to make extra test welds, which can be used to suggest adjustments to the seaming activity (such as equipment temperature and seaming rate.)

11.3 EXTRUSION EQUIPMENT PREPARATION

1) A functional, small electric generator must be kept in the proximity of the seaming area, and must have enough extension cord to range the length of the seam. It must either be fitted with rubber tires, or be placed on a stable and smooth moveable base, such as a scrap of liner, so that no damage will be inflicted upon the liner or subgrade by its movement. The generator's fuel (gasoline or diesel) must be stored off the liner.

2) A hand-held electric rotary grinder having a circular disk grinding plate approximately 4.0 inches in diameter and adequate #80 grit paper must be available. #100 grit paper, which is finer than #80, is preferable. Sandpaper coarser than #80, e.g., #60, is not acceptable.

3) A hot air welder capable of 480°F (250°C) must be available to periodically tack weld the liner sheets after they are properly positioned. Patches are continuously tacked.

4) All extrusion weld seaming devices must be equipped with a properly functioning temperature controller which displays the extrusion barrel temperature.

5) All types of extrusion weld seaming devices have Teflon or metal dies, varied in shape and size, through which the extrudate passes onto the liner. These dies must be inspected for wear, sharp notches and creases, and for their appropriateness to the application at hand.

6) An adequate supply of dry, clean extrudate welding rods or pellets, of the same material constitution as the liner, must be available, and ready to feed through the extruder.

## 11.4 EXTRUSION WELD SEAMING PROCESS

1) For liners 50 mils and thicker, the upper sheet's leading edge must be ground to a 45° bevel. It is imperative that the sheet be lifted up and away from the lower sheet during the beveling so that no deep gouges are cut in the lower sheet. Beveling should therefore be done before tack welding.

2) After beveling, the upper sheet is lowered and laid flat against the lower sheet. The horizontal surface grinding across the interface of both sheets is completed. All surface sheen in the area to be seamed must be removed. Sand paper coarser than #80 is unacceptable because it can leave deep grooves in the weld area which represent potential stress points or leak channels. All material dust generated by grinding the liner must be wiped or blown away from the seaming zone.

**Figure 4 - Beveling Upper Liner**

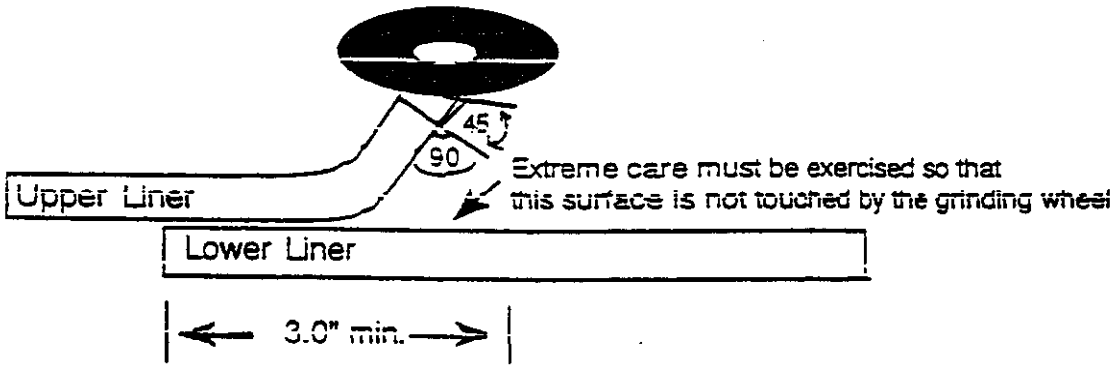
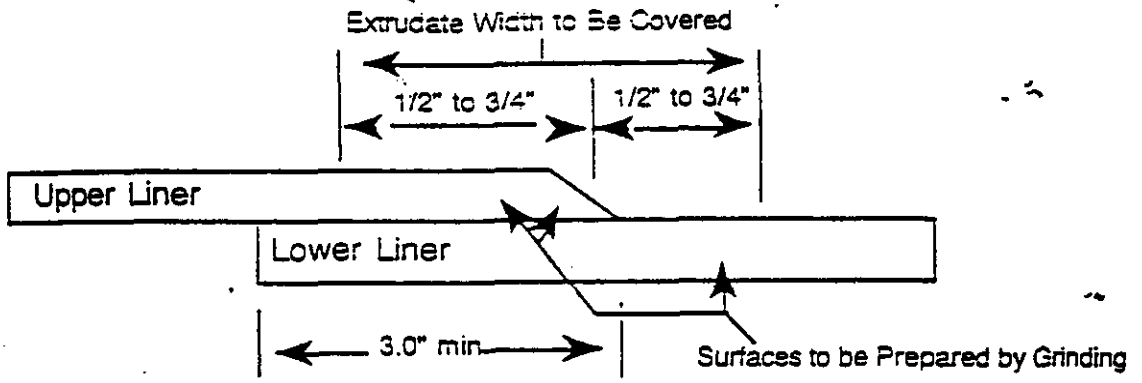


**Figure 5 - Grinding Seam Area Prior to Extrusion Welding**




3) Grinding marks should run perpendicular to the seam. Though this process is slower than grinding parallel to the seam, it does not create the deep, parallel grooves that significantly decrease the thickness of the parent material that can lead to seam failure. Although film tear bond criteria are generally satisfied, the integrity of the results is questionable since any reduced stress is due to inappropriately thin material. Parallel grinding marks can also initiate stress cracking. The illustrated grinding patterns exceed the area where extrudate should be applied, and should not be considered instructional.

4) Grind marks should never be deeper than 10% of the sheet thickness. Optionally, they should be about 5% of the sheet thickness. The only purpose of grinding is the removal of oxide layers and dirt from the liner surfaces, and the roughening of their interface for the extrudate.

5) If the final extrudate bead width is 1 1/2 inches, the width of the grinding trail should not exceed 2 inches.

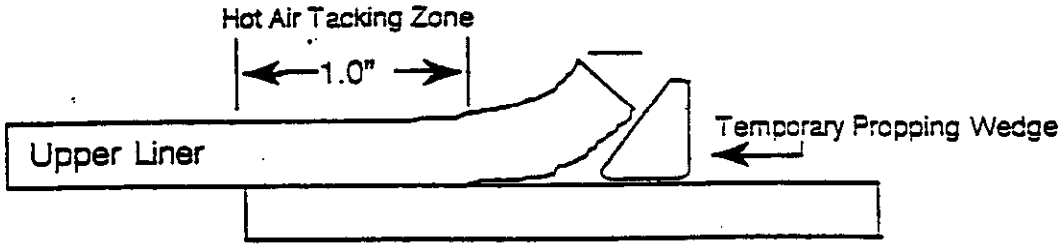
6) Seaming must take place no more than ten (10) minutes after grinding so that surface oxide layers do not reappear where the extrudate must be placed.

7) Never leave the hand held grinder running when it is not in use. If it makes contact with the liner while running it will cause serious damage.

8) A hot air device (often called a "gun") may be used to "tack" the two sheets together, ahead of the extrusion welder. The hot air gun prepares the seam for the extrusion weld by heating the ground surface and be creating a light bond between the two sheets, securing their position. The hot air gun is not meant to create a primary seam. No heat distortion should be evident on

the surface of the upper sheet. Double sided tape should not be used in lieu of the hot air gun, as it includes trace levels of hydrocarbon solvents that, if released, may affect environmental monitoring. Such tape can also melt into the weld and affect seam strength.

**Figure 6 - Remedial Seam Wedge Prop**




9) The extrusion welder's barrel shall be purged of all head-degraded extrudate before starting a seam. This must be done every time the extruder is restarted after two or more minutes of inactivity. The purged extrudate shall not be discharged onto the surface of previously placed liner, or onto prepared upgrade, where it would eventually form a lump under the liner and cause stress concentrations and possibly premature failure.

10) Molten, highly viscous extrudate is deposited along the overlapped seam. The center of the extrudate pass directly along the edge of the upper liner, at sufficient width to completely cover the edge and most of the outlying grind marks, at least to within 1/4 inch of their extremity.

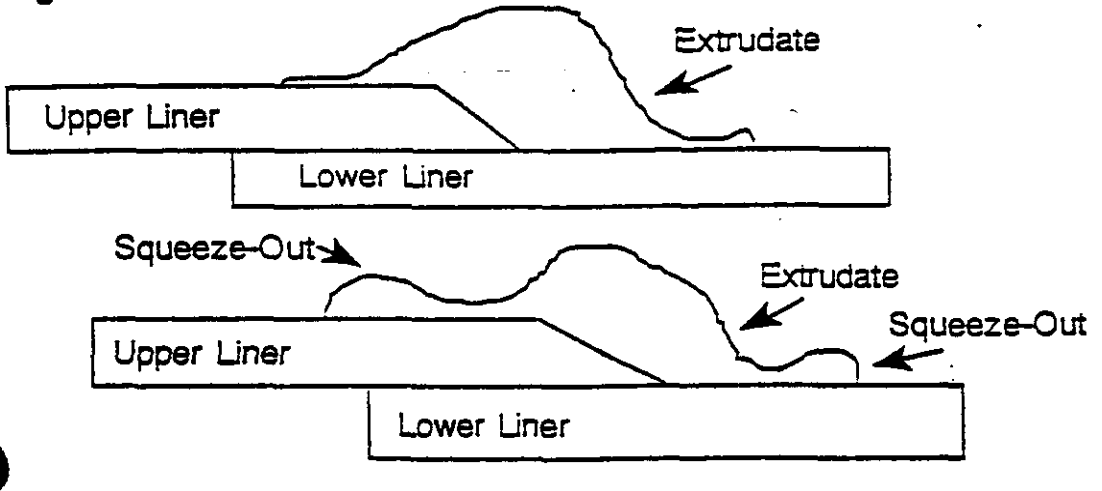
11) The extrudate should be approximately twice the specified sheet thickness, measured from the top of the bottom sheet to the top or "crown" of the extrudate. Excessive squeeze-out (or "flashing"), is acceptable, if it is equal on both sides and will not interfere with subsequent vacuum box testing, if, however, the extrudate can be pulled by its squeeze-out off the seam, the extrudate is unacceptable. The presence of squeeze-out may indicate that the extrusion die was not riding directly against the liner, that the extrudate temperature was improper for adequate flow, or that the seaming rate was too slow.

12) Where possible, inspect the underside of the lower liner for heat distortion. This can be done at the end of seams, and wherever samples are cut out of the seam. A slight amount of thermal "puckering" on relatively thin liners (less than 50 mil) is acceptable. It indicates that heat penetrated entirely through the sheet. However, if the underside is greatly distorted, either

lower the temperature or increase the rate of seaming. For liners 80 mil and greater, no thermal "puckering" should ever take place.

13) If the seaming process must be interrupted at mid-seam, the extrudate should trail off gradually, not terminate in a large mass of solidified extrudate. Where such welds are abandoned long enough to cool, they must be ground prior to continuing with new extrudate over the remainder of the seam. Grind where the extrudate trail-off begins. This restart procedure must be followed for patches, pipes, fittings, appurtenances and "T" and "Y" shaped seams.

**Figure 7 - Extrusion Weld Seam Cross Sections**




14) For practical purposes, one might document the variables whose combination yielded well-seamed liner. These include: the temperatures of the extrudating apparatus' melt zone, which generally varies from 435°F (225°C) to 525°F (275°C); the extrudate temperature at the nozzle; the liner surface temperature and the ambient temperature.

## 11.5 AFTER EXTRUSION WELD SEAMING

1) A smooth insulating plate or heat insulating fabric is to be placed beneath the hot welding apparatus after usage. The tip die and barrel must not be placed on any liner or other geosynthetic surface, as it is extremely hot and can cause severe damage.

2) The extrudate bead should be visually inspected. Look to see that its alignment is straight, its height is appropriate, and its surface texture is uniform. No bubbles or pock marks should appear in the extrudate, which indicate the undesirable presence of air, water or debris within the extrudate rod or pelletized polymer.

3) Grind marks should not be visible more than 1/4 inch beyond the extrudate. These should be very light and not contain heavy gouges. As stated previously, grinding is considered excessive when it is deeper than 10% of the liner thickness. It is unacceptable to apply additional extrudate over the original extrusion weld seam in an area of excessive grinding. A cap strip shall be placed over the entire portion of the seam where excessive grinding is seen.

## 11.6 UNUSUAL CONDITIONS

It is assumed ambient air temperature is between 32 - 105°F -- (0 - 40°C). This range represents the lowest and highest temperatures at which it is considered feasible to taken. Shielding, preheating, increasing extrudate temperature, and/or decreasing the rate of seaming rate may be necessary strategies. Thawed subgrade moisture in the same area shall not be tolerated. Frozen irregularities in the subgrade one inch or greater in size shall not be tolerated. Temperatures outside the given range generally necessitate more frequent test stripping and more diligent nondestructive testing.

1) High winds, or gusts of wind, always pose problems for liners. After unrolling the liner, the panels must be securely ballasted with sandbags. The seaming process, however, will necessitate the removal of some of the sandbags, which will leave any windward edges vulnerable to wind uplift. Property orient the overlap, if possible. Additional labor may be needed for the sole purpose of removing the sandbags immediately ahead of the seaming operation as it moves along, and immediately replacing them as the welder passes. Any dirt and moisture left behind during the movement of sandbags must be cleaned away.

2) Patches must be made at locations where destructive test samples are removed, or where seams fail nondestructive testing. Such patches must extend at least six (6) inches beyond the outer perimeter of the area to be repaired. For HDPE liners the only method available is the hand-held extrusion weld procedure described in Extrusion Weld Seaming. Be extra careful not to apply too much heat to the point where the weld begins, having gone completely around the patch to remeet it. Particular care must be exercised when the end of the extrudate meets the beginning of the circumferential patching run. Polymer should not be excessively heated twice. The spare extrudate at this point of overlap should not be excessive.

3) Details around sumps, pipes and other HDPE liner accessories are necessarily made by hand-held extrusion procedures as described for Extrusion Seaming. These are

probably the most skill-intensive seams in a project. The extrudate should be symmetrical on each of the liners to be joined. It is difficult to maintain this symmetry around internal and external edges, and particularly at corners. The overlapping point where the weld run begins and ends should not be distinguished by a large mass of extrudate.

## 12.0 SEAM PROPERTIES AND FIELD TEST PROCEDURES

### 12.1 SEAM PROPERTIES

***Field Seams Should Meet The Following Specifications:***

| SEAM PROPERTY | TEST METHOD | REQUIREMENTS |
|---|---|---|
| Shear Strength | ASTM D 3083 (as modified in App.A of NSF 54*) | >90% of liner yield strength Film Tear Bond** |
| Peel Strength | ASTM D 413 (as modified in App. A of NSF 54*) | >70% of liner yield strength Film Tear Bond** |

1. Seam specimens are one inch wide, grip separation rate is two ipm.
2. Both shear seam strength and peel tests shall be run on five replicate specimens. A break through the weld or at the weld sheet interface shall be considered a Non-FTB (failure) in both seam strength (shear) and peel strength tests. Four of the five specimens shall pass.
3. Approved field seaming processes are hot shoe fusion welding and extrusion welding.
4. Welding rods or beads used for extrusion welding shall be HDPE and the physical properties shall be the same as those of the resin used in the manufacture of the HDPE geomembrane.

### 12.2 MINIMUM SEAM VALUES

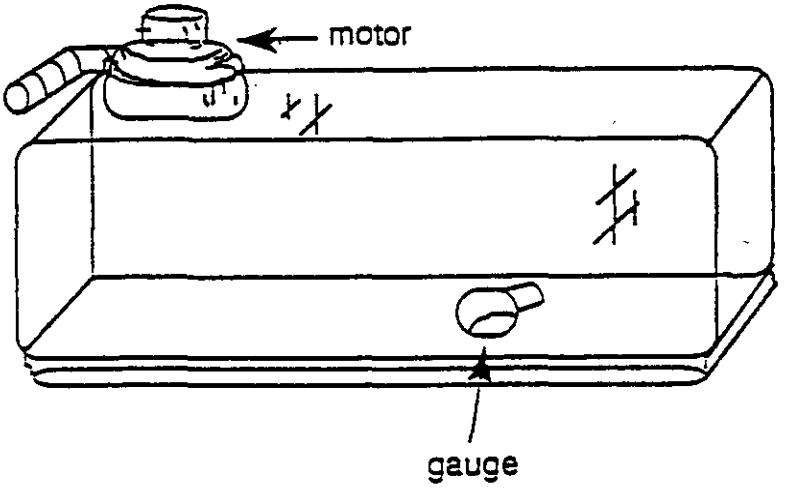
| Seam Property (mil thickness) | 20 | 30 | 40 | 60 | 80 | 100 |
|---|---|---|---|---|---|---|
| Shear Strength (lbs/in) ASTM D 3803(as modified in Appendix A of NSF 54) | 40 | 58 | 81 | 121 | 161 | 202 |
| ***Peel Strength*** ASTM D 413 (as modified in Appendix A of NSF 54) | 31 | 45 | 63 | 94 | 129 | 157 |

All test seams shall break by Film Tear Bond (FTB). Film Tear Bond is a condition where one of the welded sheets fails by tearing, but the weld between the two sheets remain in tact. In other words, the sheet tears before the weld separates fails.

12.3 NON-DESTRUCTIVE SEAM TESTING

Every field seam shall be non-destructively tested over its full length. All test equipment, including but not limited to that described below, shall be furnished by the installer. The vacuum box test apparatus is pictured.

**Figure 8 - Vacuum Box** (Transparent)




12.4 VACUUM BOX TESTING

The complete apparatus for testing single wedge fusion seams and extrusion seams shall be comprised of the following components.

1) A vacuum box assembly consisting of rigid housing transparent viewing window, a soft rubber gasket attached to the bottom, port hole or valve assembly, and a vacuum gauge.

2) A steel vacuum tank and pump assembly equipped with a pressure controller and pipe connections.

3) A rubber pressure/vacuum hose with fittings and connections.

4) A plastic bucket and wide paint brush.

5) A soapy solution.

***The following procedure shall be followed:***

1) Excess sheet overlap shall be trimmed away.

2) Clean the window, gasket, surfaces and check for leaks.

3) Energize the vacuum pump and reduce the tank pressure to approximately five psi.

4) Apply soapy solution to the seam so that an area approximately twelve (12) inches wide and forty-eight inches long is wetted.

5) Place the box over the wetted area and compress.

6) Close the bleed valve and open the vacuum valve.

7) Ensure that the resulting seal is air-tight.

8) For a period of approximately fifteen (15) seconds, examine the geomembrane through the viewing window for the presence of soap bubbles.

9) If no bubbles appear after fifteen (15) seconds, close the vacuum valve and open the bleed valve, move the box over the next adjoining area with a minimum three inches overlap and repeat the process.

10) All areas where soap bubbles appear shall be marked, repaired and then retested.

***The following procedure shall apply to locations where seams cannot be non-destructively tested, determined by the Inspector.***

1) If the seam is accessible to testing equipment prior to final installation, the seam shall be non-destructively tested prior to final installation.

2) If the seam cannot be tested prior to final installation, the seaming operation shall be observed by the inspector for uniformity and completeness.

12.5 AIR PRESSURE TESTING (FOR DOUBLE SEAM ONLY)

The following procedures are applicable to those processes which produce a double seam with an enclosed air space.

***Equipment for testing double fusion seams shall be comprised of the following.***

1) An air pump equipped with pressure gauge capable of generating and sustaining between 25-30 psi mounted on a cushion to protect the geomembrane.

2) A manometer equipped with a sharp hollow needle, or other approved pressure feed device.

*The following procedure shall be followed by the installer:*

1) Seal both ends of a seam to be tested.

2) Insert needle or other approved pressure feed device into the tunnel created by the double wedge fusion weld.

3) Energize the air pump to between 25-30 psi, close its valve and sustain this pressure for approximately five minutes.

4) If more than four psi is lost, or pressure never stabilizes, locate faulty area, repair and retest.

5) Remove needle or other approved pressure feed device and seal.

## 13.0 DESTRUCTIVE SEAM TESTING

If destructive testing is required by the specifications, the installer will provide the liner inspector with a minimum of one destructive test sample per 500 feet of seam length from a location specified by the inspector. The installer shall not be informed in advance of the sample location. Figure 8 classifies destructive break types for thermal welded seams; Figure 9 classifies destructive break types for weld extrusion welded seams. These charts are located at the end of this section.

### 13.1 SAMPLING PROCEDURE

In order to obtain test results prior to completion of liner installation, samples shall be cut by the installer as the seaming progresses. Sampling times and locations shall be determined by the liner inspector. The inspector must witness the collection of all field test samples and the installer shall mark all samples with their location, roll, and seam number. The installer shall also record in writing the date, time, location, roll, seam number, ambient temperatures, and pass or fail status. A copy of this information must be attached to each sample portion. All holes in geomembrane created by collecting seam samples shall be immediately repaired. All patches shall be vacuum tested.

### 13.2 SIZE AND DISPOSITION OF SAMPLES

The samples shall be twelve (12) inches wide by twenty-four (24) inches long with the Seam centered lengthwise. The sample shall be cut into two pieces of equal length. One shall be given to the inspector, the other to the owner's representative. If the installer desires a sample, the sample length shall be increased to thirty-six (36) inches.

### 13.3 FIELD LABORATORY TESTING

The liner inspector shall cut the seam sample into ten one inch wide specimens. These shall be tested by the inspector. A grip separation rate of two imp shall be used. Five shall be tested for seam strength and

five for peel strength. Four of each five specimens must pass the test. A specimen which fails through the weld or by adhesion at the weld sheet interface in a Non-FTB break shall be considered a failure.

13.4 INDEPENDENT LABORATORY TESTING

The liner inspector will pack and ship to a laboratory at least two seam samples received from the installer. The lab will determine the shear and peel strengths of the samples using the same test methods and procedures followed in Field Laboratory Testing. Again, four or five specimens per sample must pass.

13.5 PROCEDURES FOR DESTRUCTIVE TEST FAILURE

The following procedures shall apply whenever a sample fails the field destructive test:

1) The installer shall reconstruct the seam between the failed location and any passed location.

2) The installer can retrace the welding path to an intermediate location (at least ten (10) feet from the failed location) at the liner inspector's discretion, and take a small sample for an additional field test. If this sample passes, the seam shall be reconstructed between that location and the original failed location. If the sample fails, the process is repeated from a farther intermediate location.

3) Over the length of a seam failure, the installer shall either cut out the old seam, reposition the panel and reseam, or add a cap strip, as required by the liner inspector.

4) At the liner inspector's request, additional destructive field test(s) shall be taken within the reseamed area after reseaming or placement of the cap strip. The reseamed sample shall be found acceptable if test results are approved by the inspector. If test results are not acceptable, this process shall be repeated until the reseamed length is judged satisfactory by the inspector.

In the event that a sample fails a laboratory destructive test, the above procedures shall be followed, considering laboratory tests exclusively.

## 14.0 DEFECTS AND REPAIRS

All seams and non-seam areas of the geomembrane shall be examined by the liner inspector for defects, holes, blisters, undispersed raw materials, and contamination by foreign matter. Because geomembrane is uniformly smooth, defects are easily detectable in normal daylight. Consequently, the surface of the geomembrane shall be clean during critical inspections.

14.1 EVALUATION

Each suspect seam and non-seam location shall be non-destructively tested as appropriate in the presence of the liner inspector. Each location that fails the nondestructive testing shall be marked by the inspector, and repaired accordingly.

14.2 REPAIR PROCEDURES

1) Defective seams shall be restarted/reseamed as described in these specifications.

2) Small holes shall be repaired by extrusion cap welding. If the hole is larger than 1/4 inch, it shall be patched with a piece of material extending six inches out from the seam.

3) Tears shall be repaired by patching. The sharp end of a tear on a slope, or in an area of particular stress, must be rounded prior to patching.

4) Blisters, large holes, undispersed raw materials, and contamination by foreign matter shall be repaired by patches.

5) HDPE surfaces to be patched shall be abraded and cleaned no more than fifteen (15) minutes prior to the repair. No more than 10% of the thickness shall be removed.

6) Patches shall be round or oval in shape, made of the same geomembrane, and extend a minimum of six inches beyond the edge of defects. All patches shall be of the same compound and thickness as the geomembrane specified. All patches shall have their top edge beveled with an angle grinder prior to placement on the geomembrane. Patches shall be applied using approved methods only.

14.3 RESTART/RESEAMING PROCEDURES

The welding process shall restart by grinding the existing seam and rewelding a new seam. Welding shall commence where the grinding started and must overlap the previous seam by at least two inches. Reseaming over an existing seam without regrinding shall not be permitted.

14.4 VERIFICATION OF REPAIRS

Each repair shall be non-destructively tested, except when the inspector requires a destructive seam sample obtained from a repaired seam. A repair which passes the non-destructive test shall be considered adequate. Failed tests prompt the repetition and retesting of the repair until passing test results are achieved.

RECORDING OF RESULTS: Daily documentation shall identify all seams that initially failed the test and include evidence that these seams were repaired and successfully retested.

14.5 COVER SOIL REPLACEMENT

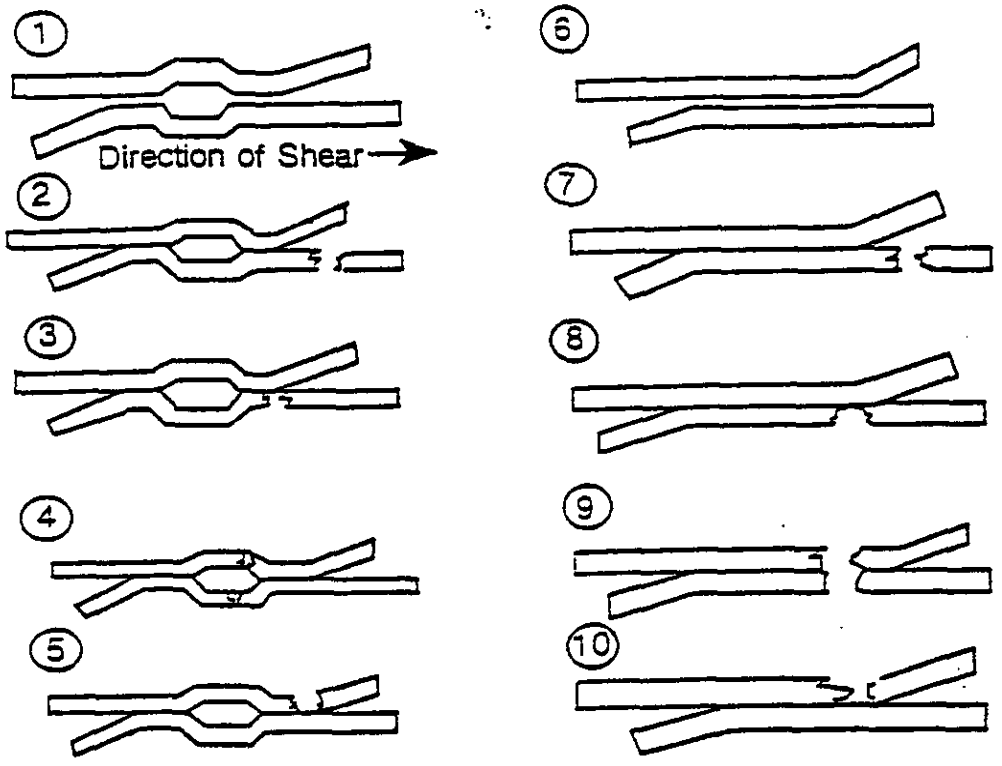
Unless otherwise specified in writing by the installer, the general contractor shall place the upper bedding layer, often referred to as a "protective cover", over the liner system on a daily basis as soon as any lined area of the facility has been completed and accepted by the owner. Extreme care shall be taken by the earthwork contractor not to damage the liner system during the cover soil placement. A minimum of twelve (12) inches of cover soil is needed prior to placing any earth-moving machinery over the liner system. The soil and rock particles within the lower six inches of the cover material shall be of such size and shape as to be harmless to the liner system. The upper particles' size limit is usually 3/8 inch. Angular or sharp rock fragments are not allowed. The general contractor may conduct a test on the job site simulating field subgrade, liner system and cover soil placement using the proposed method of cover soil placement to verify the integrity of the liner.

Cover soil shall be placed on side slopes from the bottom to the top of the slope. During the cover soil placement, the driver shall not make sharp turns, or sudden starts and stops. The machinery speed shall be slow, usually not to exceed five mph. Frozen soils are not to be used as cover material unless screened prior to placement.

14.6 ANCHORS AND PIPE PENETRATIONS

When a landfill or impoundment unit calls for penetrations in the flexible membrane liner, CQA personnel must insure that the seals around the penetrations have integrity and are compatible with the particular waste that will be impounded. Penetrations and seals should be isolated from the seasonal effects of liner expansion and contraction. Such penetrations should allow for reasonable access by extrusion welding equipment.

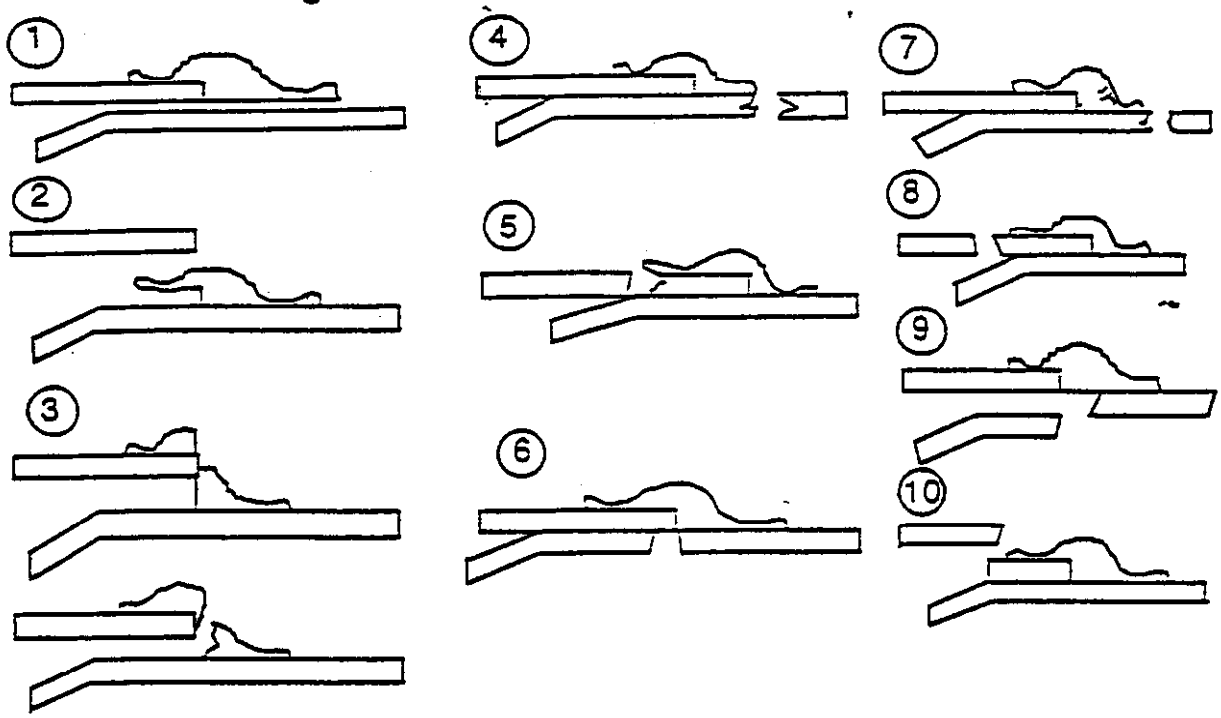
## Figure 9 - Locus of Break Codes and Break Descriptions for Dual Thermal-Weld Seams Tested in Shear and Peel Modes




| No. | Code | Classification | Break Description |
|---|---|---|---|
| 1 | AD | Non-FTB | Adhesion Failure. |
| 2 | BRK | FTB | Break in Sheeting. |
| 3 | SE-1 | FTB | Break at outer edge of seam. Break can be either top or bottom sheet. |
| 4 | SE-2 | FTB | Break at inner edge of seam. |
| 5 | AD-BRK | FTB | Break in first seam after some adhesion failure. Break can be either top or bottom sheet. |
| 6 | AD | Non-FTB | Adhesion Failure. |
| 7 | BRK | FTB | Break in Sheeting. |
| 8 | SE-1 | FTB | Break at outer edge of seam. Break can be either top or bottom sheet. |
| 9 | SE-2 | FTB | Break at inner edge of seam. |
| 10 | AD-BRK | FTB | Break in first seam after some adhesion failure. Break can be either top or bottom sheet. |

*After Dr. Henry Haxo, Matrecon Inc., Alameda, CA.

## Figure 10 - Locus of Break Codes and Break Descriptions for Hot Tacked Wedge Weld Seams*




| No. | Code | Classification | Break Description |
|---|---|---|---|
| 1 | AD-1 | Non-FTB | Adhesion Failure. Specimens may also delaminate under bead and break through the thin extruded material in the outer area. |
| 2 | AD-2 | Non-FTB | Adhesion Failure. |
| 3 | AD-WLD | FTB | Break through weld. Such breaks range from those that start at the edge of the top sheet to those that run through the weld after some adhesion failure between the weld and the bottom sheet. |
| 4 | SE-1 | FTB | Break at seam edge. Specimens may break anywhere from bead/outer area edge to the outer area/buffed area edge. (Shear only.) |
| 5 | SE-2 | FTB | Break at seam edge. Specimens may break anywhere from bead/outer area edge to the outer area/buffed area edge. |
| 6 | SE-3 | FTB | Break at seam edge. (Peel only.) |
| 7 | BRK-1 | FTB | Break in sheeting. A "B" in parenthesis after the code means the specimen broke in the buffed area. (Shear only.) |
| 8 | BRK-2 | FTB | Break in sheeting. A "B" in parenthesis after the code means the specimen broke in the buffed area. |
| 9 | AD-BRK | FTB | Break in sheeting after some adhesion failure between the weld and the bottom sheet. (Peel only.) |

| | | | |
|---|---|---|---|
| 10 | HT | FTB | Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack. (Shear only.) |

*After Dr. Henry Haxo, Matrecon Inc., Alameda, CA.

## 15.0 BACKFILLING OF ANCHOR TRENCH

Unless otherwise specified in writing by the installer, the anchor trench shall be backfilled and compacted by the general contractor as approved by the soil inspector. Trench backfill material shall be placed in 8 inch thick loose lifts and compacted by rolling with a light rubber-tired wheel or other light compaction equipment.

## 16.0 GEOMEMBRANE ACCEPTANCE

The installer shall retain all ownership and responsibility for the geomembrane until acceptance and payment by the owner.

The geomembrane liner shall be accepted by the owner when all of the following conditions are met:

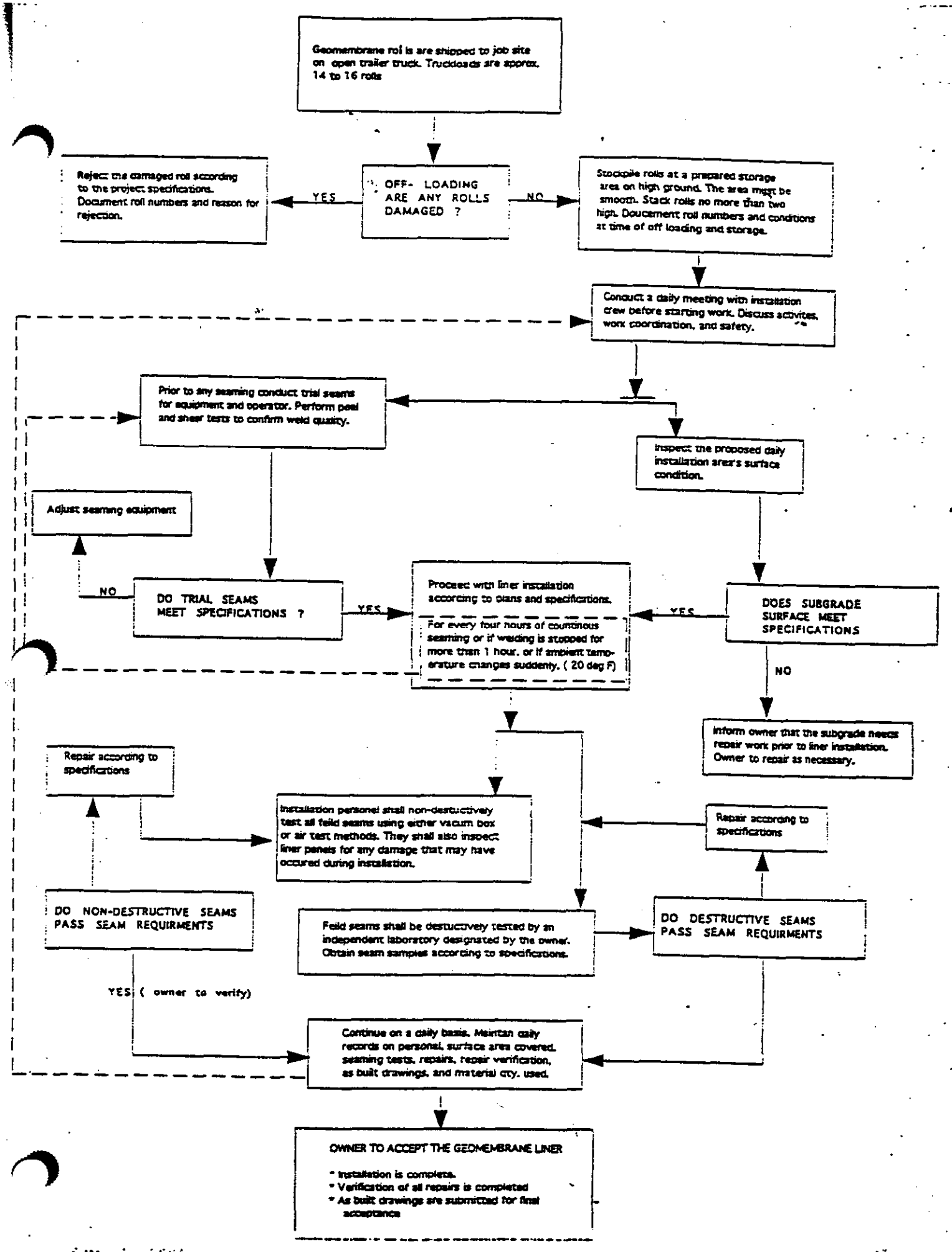
1) Installation is finished.

2) Verification of the adequacy of all field seams and repairs, including associated testing, is complete.

3) Certification, including "as built" drawing(s), is provided by the installer to the owner's representative.

## 17.0 STORAGE OF RECORDS

The manufacturer stores records of the CQA reports for the life of the project. All projects are recorded by project number in a computer file which allows us to trace and retrieve the product certificates issued at the time of shipping.


Geomembrane roll is are shipped to job site on open trailer truck. Truckloads are approx. 14 to 16 rolls
OFF- LOADING ARE ANY ROLLS DAMAGED ?
YES
Reject the damaged roll according to the project specifications. Document roll numbers and reason for rejection.
NO
Stockpile rolls at a prepared storage area on high ground. The area must be smooth. Stack rolls no more than two high. Doucement roll numbers and conditions at time of off loading and storage.
Conduct a daily meeting with installation crew before starting work. Discuss activites, work coordination, and safety.
Prior to any seaming conduct trial seams for equipment and operator. Perform peel and shear tests to confirm weld quality.
Inspect the proposed daily installation area's surface condition.
Adjust seaming equipment
NO
DO TRIAL SEAMS MEET SPECIFICATIONS ?
YES
Proceed with liner installation according to plans and specifications.
For every four hours of countinous seaming or if welding is stopped for more than 1 hour, or if ambient temperature changes suddenly, ( 20 deg F)
YES
DOES SUBGRADE SURFACE MEET SPECIFICATIONS
NO
Inform owner that the subgrade needs repair work prior to liner installation. Owner to repair as necessary.
Repair according to specifications
Installation personel shall non-destructively test all feild seams using either vacum box or air test methods. They shall also inspect liner panels for any damage that may have occured during installation.
Repair according to specifications
DO NON-DESTRUCTIVE SEAMS PASS SEAM REQUIRMENTS
Feild seams shall be destuctively tested by an independent laboratory designated by the owner. Obtain seam samples according to specifications.
DO DESTRUCTIVE SEAMS PASS SEAM REQUIRMENTS
YES ( owner to verify)
Continue on a daily basis. Maintain daily records on personal, surface area covered, seaming tests, repairs, repair verification, as built drawings, and material qty. used.
OWNER TO ACCEPT THE GEOMEMBRANE LINER
* Installation is complete.
* Verification of all repairs is completed
* As built drawings are submitted for final acceptance

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

# CERTIFICATE OF ACCEPTANCE

PROJECT NAME: _____ DATE: _____

EDCI JOB NO.: _____ PROJECT LOCATION: _____

Details of Work Completed and Measured...

_____

_____

_____

_____

_____

I, the undersigned, duly authorized representative of _____ do hereby take over and accept the work described above from the date hereof, subject to the exceptions detailed below, and confirm that the work has been completed in accordance with the specifications and the terms and conditions of the contract. There is no apparent damage to the plastic lining, nor is there any interference within or without the surrounding works.

I have evaluated and measured the work together with the EDCI representative, and agree that the measurements shown above are true and correct, and that the installation has met our approval.

Exceptions: _____

_____

General Contractor/Owner Date: _____

Name _____ Signature _____

Environmental Design & Construction, Inc. Date: _____

Name _____ Signature _____

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

# CERTIFICATE OF ACCEPTANCE OF SOIL SUBGRADE

Project Name _____

Project No. _____

Location _____

Installer _____

Area to be Accepted _____

_____

_____

_____

I, the undersigned, duly authorized representative of the installer, do hereby accept the soil subgrade surface conditions for installation of geosynthetic products. EDCI does not accept responsibility for compaction and earthwork in accordance with the contract documents, nor to maintain the condition of the surface. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

| _____ | _____ | _____ |
|---|---|---|
| Signature | Title | Date |

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

# DAILY FIELD REPORT - CONSTRUCTION MANAGEMENT

JOB NAME: _____ DATE: _____

PROJECT #: _____

PROJECT LOCATION: _____ WEATHER: _____

**OBSERVATIONS:**

_____

CONTRACTOR COMMENTS _____

CONTRACTOR REPRESENTATIVE
(PLEASE PRINT)

EDCI REPRESENTATIVE
(PLEASE PRINT)

Signature Date

Signature Date

| MATERIAL | PREVIOUS MHR | MHR TODAY | TOTAL MHR | PREV. SF | TODAY SF | TOTAL SF | SF/MHR |
|---|---|---|---|---|---|---|---|
| MIL | | | | | | | |
| MIL | | | | | | | |
| NET | | | | | | | |
| GTX | | | | | | | |
| GTX | | | | | | | |
| GCL | | | | | | | |
| SET UP | | | | | | | |
| OTHER | | | | | | | |

May 15. 1995

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811
205-551-0372

JOB NAME _____ JOB NUMBER _____

LOCATION _____ WEATHER _____

QA/QC _____ CONTRACTOR _____

# DEFECT LOG

| | | | LOCATION | | | | | EXTRUSION | | VACUUM TEST | | QA/QC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEFECT NUMBER | PATCH BEAD | DATE | SEAM NUMBER | PANEL NUMBER | DATE OF REPAIR | WELD ID. OPER. | MACH. # | TEMP/ PRE-HEAT | DATE TESTED | TESTER ID | PASS FAIL | MONITOR PRESENT |
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104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811

# DESTRUCTIVE TEST LOG

JOB NAME: _____ PAGE: _____ OF _____

JOB NUMBER: _____ Ambient Temp. ____ a.m. MIN. PEEL: _____ ppi

LOCATION: _____ ____ p.m. MIN. SHEAR: _____ ppi

Q.A. TECHNICIAN: _____ SHEET THICKNESS: _____ ppi

| Destr.Test Sample # | Date of Weld | Time of Weld | Location | Welding Technician | Machine Type & # | Machine Temp/Speed | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Pass/ Fail | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Pass/ Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
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205-551-0372

JOB NAME _____ PROJECT # _____

LOCATION _____ WEATHER _____

QA/QC _____ DATE _____

# GEOMEMBRANE SEAMING AND TEST RECORD

| SEAM NUMBER | SEAMING RECORD | | | | FUSION | EXTRUSION | PRESSURE TEST | | | | | | DATE TESTED | VACUUM TEST | | QA/Q MONI PRESI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LENGTH WELD | TIME | WELD ID. OPER. | MACH. # | TEMP/ SPEED | TEMP/ PRE-HEAT | TIME START | TIME END | PRESSURE START | PRESSURE END | TEST ID | PASS FAIL | | TESTER ID | PASS FAIL | |
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JOB NAME _____ OWNER _____

LOCATION _____ CONTRACTOR _____

INVENTORIED BY _____ DATE _____

PAGE NUMBER _____

# GEOSYNTHETIC INVENTORY CONTROL RECORD

| ROLL NUMBER | ROLL DIMENSIONS | | | BLEND NUMBER | COMMENTS |
|---|---|---|---|---|---|
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104 Wholesale Avenue, Huntsville, AL 35811 • Tel: (205) 551-0372 • Fax: (205) 551-0347

PROJECT NAME: _____ SHEET ____ OF ____

PROJECT #: _____

PROJECT LOCATION: _____ DATE: _____

# PANEL PLACEMENT LOG

| PANEL # | ROLL # | THICKNESS | LENGTH | WIDTH | SF |
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May 15, 1995

ENVIRONMENTAL DESIGN & CONSTRUCTION, INC.
104 WHOLESALE AVENUE, HUNTSVILLE, ALABAMA 35811

# TRIAL WELD TEST LOG

JOB NAME: _____ PAGE: _____ OF _____

JOB NUMBER: _____ Ambient Temp. ___ a.m. MIN. PEEL: _____ ppi

LOCATION: _____ ___ p.m. MIN. SHEAR: _____ ppi

Q.A. TECHNICIAN: _____ SHEET THICKNESS: _____ ppi

| Trial Weld Sample # | Date of Weld | Time of Weld | Location | Welding Technician | Machine Type & # | Machine Temp/Speed | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Peel ppi | Pass/ Fail | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Shear ppi | Pass Fai |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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EDCI User Installation and O&M Manual

# APPENDIX I

# FIELD TESTS

# APPENDIX I
# FIELD TESTS

## INDEX


I-1 Testing Plan and Log

I-2 Field Compaction/Moisture Tests

# I-1

# Testing Plan and Log

**TESTING PLAN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Site Preparation | Throughout tesk | EM 385-1-1, Section 21.1 and 25 (Safety and Health Requirements Manual, USACE 10/92) | MK | N/A | N/A | N/A | Refer to Work Plan |
| Backfill / Compaction of excavated areas | Every 500sf of material placed | ASTM Standards | SUB | 07-09/19/97<br>08-09/19/97<br>18-09/26/97<br>19-09/26/97<br>20-09/26/97 | Density per site specific requirements or design dpecs and drawings<br>(95% compaction @ +or - 3% opt moisture) | 102.3%@+0.5 pass<br>101.7%@+1.1 pass<br>102.5%@+0.6 pass<br>98.5%@+1.0 pass<br>97.5%@+2.4 pass | Document on Field Inspection Checklist (FIC) So-01 Refer to Work Plan, for other requirements |
| Characterization for off-site desposal | Per SWMU specific Work Plan sections | 40 CFR, part 261 TCLP (volatiles, and metals) and 40 CFR Part 264.341 (paint filter test)<br>(Additional tests may be required, refer to individual SWMUs) | LAB | N/A | Less than TCLP criterion. Paint filter test results as specified in 40 CFR Part 264.314. | N/A<br>No off site disposal (only construstion of office debrie disposed of off site) | Refer to SWMU specific section of Work Plan |

**TESTING PLAN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Construct Decontamination Pad | One Per SWMU | | SUB | N/A | | Temp. Decon Pad constructed for econtamination of equipment and tools using plastic sheeting, material disposed of under cap | |
| Photographs | Daily | | MK | N/A | N/A | Photographs taken through construction activities | |
| Environmental Report | One Per SWMU | | MK | N/A | N/A | N/A | |
| Site Restoration | Throughout Activity | | MK | N/A | Ensure that topsoil and vegetative cover are placed per Work Plan and technical specifications | Daily visual inspection of work process | Refer to Work Plan |

**TESTIN( AN AND LOG**
**CONTRAC NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Cap foundation material specifications and placement | :Moisture and density tests: per lifts per 5000sf of material placed | Material specifications per specs and drawings<br><br>Installation per speds and drawings | SUB | 01-09/18/97 | Per design drawing and technical specifications | 100.7%@+1.7 pass | Refer to Work Plan, Document of FIC CAP-01 |
| | | | | 02-09/18/97 | | 99.6%@+2.3 pass | |
| | | | | 03-09/18/97 | | 92.3%@+3.8 fail | |
| | | | | 04-09/18/97 | | 94.4%@+3.1 fail | |
| | | | | 05-09/19/97 | | 95.0%@-5.3 fail | |
| | | | | 05rt-09/19/97 | | 97.6%@-2.9 pass | |
| | | | | 06-09/19/97 | 95% compaction @ + to - 3% opt. moisture | 96.5%@+1.9 pass | documented on Subcontractor Field Testing reports |
| | | | | 06rt-09/19/97 | | 97.4%@+0.8 pass | |
| | | | | 01rt-09/19/97 | | 102.0%@+2.2 pass | |
| | | | | 05rt-09/24/97 | | 99.4%@+2.4 pass | |
| | | | | 09-09-24/97 | | 92.7%@-4.7 fail | |
| | | | | 10-09/24/97 | | 97.7%@+3.4 fail | |
| | | | | 11-09/24/97 | | 96.0%@+2.3 pass | |
| | | | | 03rt-09/24/97 | | 94.8%@+2.5 pass | |
| | | | | 04rt-09/24/97 | | 102.6%@+2.0 pass | |
| | | | | 12-09/24/97 | | 97.3%@+3.0 pass | |
| | | | | 13-09/24/97 | | 86.2%@+4.6 fail | |
| | | | | 14-09/24/97 | | 94.7%@-1.2 pass | |
| | | | | 15-09/25/97 | | 96.4%@-2.2 pass | |
| | | | | 16-09/25/97 | | 97.8%@-2.1 pass | |
| | | | | 11rt-09/26/97 | | 96.3%@-3.0 pass | |
| | | | | 10rt-09/26/97 | | 98.4%@-0.6 pass | |
| | | | | 09rt-09/26/97 | | 96.9%@+2.8 pass | |
| | | | | 21-09/26/97 | | 95.8%@+1.8 pass | |
| | | | | 22-09/26/97 | | 100.7%@+1.4 pass | |
| | | | | 13rt-09/26/97 | | 101.5%@+0.1 pass | |
| | | | | 23-09/26/97 | | 98.4%@+1.8 pass | |
| | | | | 24-09/27/97 | | 96.3%@+1.0 pass | |
| | | | | 25-09/27/97 | | 97.0%@+0.2 pass | |
| | | | | 26-09/27/97 | | 96.9%@-0.3 pass | |
| | | | | 27-09/27/97 | | 100.0%@-0.8 pass | |
| | | | | 28-09/27/97 | | 96.6%@-0.9 pass | |
| | | | | 29-09/29/97 | | 97.4%@-0.9 pass | |
| | | | | 30-09/29/97 | | 97.3%@-2.2 pass | |

**TESTING PLAN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Cap foundation material specifications and placement | :Moisture and density tests: per lifts per 5000sf of material placed | Material specifications per specs and drawings<br><br>Installation per speds and drawings | SUB | 31-09/29/97 | Per design drawing and technical specifications | 92.4%@-1.8 fail | Refer to Work Plan, Document of FIC CAP-01 |
| | | | | 31rt-09/29/97 | | 95.3%@-0.2 pass | |
| | | | | 32-09/29/97 | | 91.0%@+0.4 fail | |
| | | | | 32rt-09/29/97 | | 97.9%@-1.2 pass | |
| | | | | 33-09/29/97 | | 96.8%@-2.9 pass | |
| | | | | 34-09/30/97 | | 89.6%@-1.6 fail | |
| | | | | 35-09/30/97 | 95% compaction @ + to - 3% opt. moisture | 94.9%@-0.3 pass | documented on Subcontractor Field Testing reports |
| | | | | 34rt-09/30/97 | | 97.4%@+0.3 pass | |
| | | | | 36-09/30/97 | | 94.1%@-1.1 fail | |
| | | | | 36rt-09/30/97 | | 94.7%@-0.5 pass | |
| | | | | 37-09/30/97 | | 95.6%@-1.7 pass | |
| | | | | 38-09/30/97 | | 101.0%@-0.5 pass | |
| | | | | 39-09/30/97 | | 95.6%@+0.5 pass | |
| | | | | 40-09/30/97 | | 94.7%@+1.6 pass | |
| | | | | 41-09/30/97 | | 98.9%@-1.8 pass | |
| | | | | 42-09/30/97 | | 100.2%@-1.0 pass | |
| | | | | 43-09/30/97 | | 101.4%@+0.3 pass | |
| | | | | 44-10/01/97 | | 100.3%@-0.2 pass | |
| | | | | 45-10/01/97 | | 102.3%@+0.3 pass | |
| | | | | 46-10/01/97 | | 95.6%@+2.6 pass | |
| | | | | 47-10/01/97 | | 96.5%@+0.4 pass | |
| | | | | 48-10/01/97 | | 98.9%@+1.7 pass | |
| | | | | 49-10/01/97 | | 99.7%@-0.2 pass | |
| | | | | 50-10/03/97 | | 98.3%@+0.6 pass | |
| | | | | 51-10/03/97 | | 99.3%@-1.0 pass | |
| | | | | 52-10/03/97 | | 91.5%@-0.8 fail | |
| | | | | 52rt-10/03/97 | | 95.0%@+0.3 pass | |
| | | | | 53-10/03/97 | | 96.5%@-0.9 pass | |
| | | | | 54-10/07/97 | | 90.1%@-1.6 fail | |
| | | | | 55-10/07/97 | | 95.2%@-5.7 fail | |
| | | | | 56-10/07/97 | | 97.1%@-2.6 pass | |
| | | | | 54rt-10/07/97 | | 95.1%@-2.6 pass | |
| | | | | 55rt-10/07/97 | | 99.4%@-2.1 pass | |
| | | | | 01-07/07/98 | | 102.2%@-3.0 pass | |
| | | | | 02-07/07/98 | | 100.6%@-2.5 pass | |
| | | | | 03-07/07/98 | | 100.2%@-3.0 pass | |

**TESTING PLAN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Synthetic Clay Liner | As per requirements | Requirements for Hazardous Waste Landfill Design, Construction, and Closure. | MK | N/A<br><br>Documented on Daily Inspection Reports | Per specification | Daily visual inspection of all seams | Document on FIC CAP-01<br><br>Document on Daily Inspection Report |
| Installation of geomembrane | AS per requirements | Construction Quality Management for RA and RD Waste Containment Systems EPA/540/R-92/073) | SUB | Trial welds<br>07/14/98<br>01-313-pre-weld<br>02-315-pre-weld<br>03-313-end-day<br>04-315-end-day<br><br>07/17/98<br>05-313-pre-weld<br>06-315-preweld<br>07-315-mid-day<br>08-313-mid-day<br>09-313-end-day<br>10-315-end-day<br><br>07/18/98<br>11-313-pre-weld<br>12-315-pre-weld<br>13-313-mid-day<br>14-315 end-day<br>15-313-end-day<br><br>07/19/98<br>16-315-pre-weld<br>17-313-pre-weld<br>18-315-end-day<br>19-313-end-day<br><br>07/20/98<br>20-315-pre-weld<br>21-313-pre-weld<br>22-313-end-day<br>23-315-end-day | Per specifications<br><br>peel 70 psi<br>shear 120 psi | All trial welds passing Documented on Trail Weld Test Log | Document on FIC CAP-01<br><br>Documented on Daily Inspect Report |

**TESTING PLAN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Installation of geomembrane | AS per requirements | Construction Quality Management for RA and RD Waste Containment Systems EPA/540/R-92/073) | SUB | Trial welds<br>07/21/98<br>24-316-pre-weld<br>25-286-pre-weld<br>26-316-end-day<br>27-286-end-day<br><br>07/22/98<br>28-313-pre-weld<br>29-313-end-day<br>30-286-pre-weld<br>31-286-end-day<br><br>07/23/98<br>32-313-pre-weld<br>33-313-end-day<br>34-286-pre-weld<br>35-286-end-day | Per specifications<br><br>Trial Welds peel 70 psi shear 120 psi | All trial welds passing Documented on Trail Weld Test Log | Document on FIC CAP-01<br><br>Documented on Daily Inspect Report |
| | | | | Air testing seams<br>07/14/98<br>1/2<br>1/3<br>1/4<br>3/4<br>3/5<br>4/5<br><br>07/17/78<br>5/6<br>5/7<br>6/7<br>6/8<br>7/8<br>8/9<br>9/10 | Air testing seams to be pressurized to between 30 and 35psi held for 5 minutes with less then a 3 psi change in pressure | All air tested seaming passing Documented on Geomembrane seamaing and Test record | |

**TESTING PLAN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Installation of geomembrane | AS per requirements | Construction Quality anagement for RA and RD Waste Containment Systems EPA/540?R-92?073) | SUB | Air testing of seams<br>07/18/98<br>10/11<br>11/12<br>12/13<br>12/14<br>13/14<br>14/15<br>15/16<br>16/17<br><br>07/19/98<br>17/18<br>17/22<br>18/19<br>18/22<br>19/20<br>19/22<br>20/21<br><br>07/20/98<br>21/23<br>21/24<br>23/24<br>23/25<br>24/25<br>25/26<br><br>07/22/98<br>26/27<br><br>07/23/98<br>27/28<br>28/29<br>29/30 | Per specifications<br><br>Air testing seams to be pressurized to between 30 and 35psi held for 5 minutes with less then a 3 psi change in pressure | All air tested seaming passing Documented on Geomembrane seamaing and Test record | Document on FIC CAP-01<br><br>Documented on Daily Inspect Report |

**TESTIN( )AN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Installation of geomembrane | AS per requirements | Construction Quality anagement for RA and RD Waste Containment Systems EPA/540/R-92/073) | SUB | Air testing of seams<br>07/18/98<br>10/11<br>11/12<br>12/13<br>12/14<br>13/14<br>14/15<br>15/16<br>16/17<br><br>07/19/98<br>17/18<br>17/22<br>18/19<br>18/22<br>19/20<br>19/22<br>20/21<br><br>07/20/98<br>21/23<br>21/24<br>23/24<br>23/25<br>24/25<br>25/26<br><br>07/22/98<br>26/27<br><br>07/23/98<br>27/28<br>28/29<br>29/30 | Per specifications<br><br>Air testing seams to be pressurized to between 30 and 35psi held for 5 minutes with less then a 3 psi change in pressure | All air tested seaming passing Documented on Geomembrane seamaing and Test record | Document on FIC CAP-01<br><br>Documented on Daily Inspect Report |

**TESTIN[illegible]N AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Installation of geomembrane | AS per requirements | Construction Quality Management for RA and RD Waste Containment Systems EPA/540/R-92/073 ) | SUB | Destructive test ds-1 07/14/98 ds-2 07/17/98 ds-3 07/17/98 ds-4 07/18/98 ds-5 07/18/98 ds-6 07/19/98 ds-7 07/19/98 ds-08 07/20/98 ds-09 07/23/98 | Per Specifications<br><br>Field Sample Destructive test peel 70 psi shear 120 psi | Both Field and Lab. Destructive test Passed | Documented on FIC CAP-01<br><br>Documented on Daily Inspection Report<br><br>Samples archived for all Trial welds and Destructive seam test |
| Installation of drainage layer and biotic barrier layer | Thickness verifications one per 5000sf placed | Technical Specifications | SUB/MK | Sand drainage layer 10 random samples locations & As-Built Survey 07/28/98<br><br>Biotic Barrier Layer 16 random sample location & As-Built Survey 08/03/98 | Per Specifications Nonminal 6 inches | Sand Drainage Layer 1-5.8"-pass 2-6.0"-pass 3-6.2"-pass 4-8.0"-pass 5-8.0"-pass 6-6.2"-pass 7-6.7"-pass 8-6.2"-pass 9-6.7"-pass 10-6.0"-pass Survey +/- 0.1' | Documented on FIC CAP-01<br><br>Documented on Daily Inspection Report |

**TESTING PLAN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Installation of drainage layer and biotic barrier layer | Thickness verifications one per 5000sf placed | Technical Specifications | SUB/MK | Sand drainage layer<br>10 random samples locations<br>&<br>As-Built Survey<br>07/28/98<br><br>Biotic Barrier Layer<br>16 random sample location & As-Built Survey<br>08/03/98 | Per Specifications<br>Nonminal 6 inches | Biotic Barrier Layer<br>1-4" -fail<br>1rt-5.5"-pass<br>2-8" -fail<br>2rt-7.0"-pass<br>3-4" fail<br>3rt-5.5"-pass<br>4-9" fail<br>4rt-7.0"-pass<br>5-10.5"-fail<br>5rt-7.0"-pass<br>6-6.5-pass<br>7-10.5-fail<br>7rt-7.25-pass<br>8-7.0"-pass<br>9-6.5"-pass<br>10-6.75"-pass<br>11-7.0"-pass<br>12-8.5"-fail<br>12rt-7.0"-pass<br>13-7.0"-pass<br>14-8.5"-fail<br>14rt-7.0"-pass<br>15-4.0"-fail<br>15rt-5.5"-pass<br>16-9.0"-fail<br>16rt-6.5"-pass<br><br>survey +/- 0.1' | Documented on FIC CAP-01<br><br>Documented on Daily Inspection Report |

**TESTIN ) AN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Testing of perimeter drain backfill | Thickness verification per lift every 5000sf of material placed | As per design drawings and specification or ASTM Standards | SUB | N/A | Design drawings | N/A | Perimeter drain nonexisting Drainage collection system installed in drainage/anchor trench depth min.1' |
| Placement of geotextile filter fabric | | Manufacturers recommendations | MK | N/A | Per specifications provided by WES and Manufacture | Visual inspection | Document on FIC CAP-01<br><br>Daily Inspection Report |

**TESTIN( AN AND LOG**
**CONTRACT NO./TITLE:** MK SOUTHDIV ERAC
**DELIVERY ORDER NO.:** 0009 (SOW #0007) NSWC Crane

| Activity | Frequency | Governing Standard | Performed or Sampled by | Sample of Test Number/Date | Acceptance Criteria | Results and/or Remarks | Comments |
|---|---|---|---|---|---|---|---|
| Placement of cover soil | Per lift, moisture nd density every 5000sf of material placed | Material specifications as per design drawing and specifications | SUB | 08/13/98 | Design drawing nd specifications | | Documented on FIC CAP-01 |
| | | | | 18 | | 93.3%@+3.2-F | |
| | | | | 19 | | 91.8%@+1.7-P | |
| | | | | 20 | | 92.4%@+3.0-P | Documented on Subcontractor Field Testing Report |
| | | | | 18R | 90% compaction @ 0 to +3% of opt moisture | 95.6%@+2.3-P | |
| | | | | 21 | | 94.5%@+3.0-P | |
| | | | | 22 | | 91.3%@+5.0-F | |
| | | | | 23 | | 90.8%@+0.6-P | |
| | | | | 22R | | 99.6%@+0.7-P | |
| | | | | 08/14/98 | | | |
| | | | | 24 | | 101.2%@ 0 -P | |
| | | | | 25 | | 96.2%@+0.7-P | |
| | | | | 26 | | 97.6%@+1.4-P | |
| | | | | 27 | | 98.1%@+1.1-P | |
| | | | | 28 | | 96.8%@+1.1-P | |
| | | | | 29 | | 96.0%@+0.6-P | |
| | | | | 08/15/98 | | | |
| | | | | 30 | | 93.5%@+1.7-P | |
| | | | | 31 | | 86.7%@+2.2-F | |
| | | | | 32 | | 96.7%@+0.2-P | |
| | | | | 33 | | 99.3%@+0.6-P | |
| | | | | 34 | | 102.6%@ 0 -P | |
| | | | | 31R | | 97.1%@+0.6-P | |
| | | | | 08/20/98 | | | |
| | | | | 35 | | 100.2%@+0.5-P | |
| | | | | 36 | | 88.0%@+2.0-F | |
| | | | | 37 | | 90.8%@+2.0-P | |
| | | | | 38 | | 92.0%@+1.3-P | |
| | | | | 36R | | 97.4%@ 0 -P | |

# I-2

# Field Compaction/Moisture Tests

PHILIP ENVIRONMENTAL

Industrial Services Group
Midwest Region

RECEIVED
NOV 17 1998
MK-CRANE

November 11, 1998
Project 18328

Mr. W. D. "John" McCumbers
Contract Administrator
Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square One, Suite 211
North Charleston, South Carolina 29406

Dear Mr. McCumbers

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
***Columbia, Illinois 62236-0230***

**Submittal No. 086**

The following submittal is being presented in accordance with the Bid Documents, dated; July 3, 1997, Section 01300 - Submittals,

| Item No. | Description | Section No. |
|---|---|---|
| 1-46 | Density & Moisture Test Results | 02200 |

These submittals have been reviewed and approved by Philip Services Corporation. If there is any questions concerning this submittal, please contact : Donald Flowers, Project Manager, Philip Environmental Services, 210 West Sand Bank Road, Columbia, Illinois 62236, (800) 733-7173, Ext. 7382, Fax (618) 281-6477

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Donald L. Flowers,
Project Manager

cc: D. Beall

| MK-CRANE | | | |
|---|---|---|---|
| 4324-0009 | | | |
| PROJECT MEMBER | ACT | INFO | INIT |
| PROJECT MANAGER | | X | dl |
| PROJECT ENGINEER | | | |
| GNL SUPT | | | |
| SAFETY AND HEALTH | | | |
| QA/QC | | | |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| PMO-CHARLESTON | | | |
| K. Ohrick | | X | |
| | | | |
| FILE: | | | |
| FILE: | | | |
| FILE: 17-26-106 | | | |

# Philip Environmental Services Corporation

# Summary of Field Geotechnical Testing



Project: NSWC Crane
Location: Crane, IN
Specification: 90% of the maximum dry density as determined by a Standard Proctor (ASTM D698)

**Comments/Notes:** Retest Perfomed in Test Areas 61, 67, 69 and 73.
Initial tests indicate moisture content of soil not within specified range.

**Laboratory Test Type:**
A. Standard Proctor (ASTM D 698).
B. Modified Proctor (ASTM D 1557).
C. Maximum and Minimum Density (ASTM D 4253 and D 4254).

**Definitions:**
pcf Pounds per cubic foot.
ASTM American Society for Testing and Materials.

**Test Numbering (Typical Format):**
1.0 Initial field test.
RTI Retest after reworking of the general area of the initial test.

| | | | Laboratory Data | | | | | Field Data | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Test Number | Location | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content (%) | Moisture Content (%) | Dry Density (pcf) | Measured Compaction (%) | Specified Compaction (%) | Pass or Fail | See Note Above (Moistures) |
| 9/18/97 | 1 | See Test Location Sketch | Lift No. 1 | BS-6 | A | 115.9 | 13.4 | 19.5 | 107.6 | 92.8 | 95 | Fail | |
| 9/18/97 | 2 | See Test Location Sketch | Lift No. 1 | BS-6 | A | 115.9 | 13.4 | 20.1 | 106.5 | 91.9 | 95 | Fail | |
| 9/18/97 | 3 | See Test Location Sketch | Lift No. 1 | BS-6 | A | 115.9 | 13.4 | 21.7 | 98.7 | 85.2 | 95 | Fail | |
| 9/18/97 | 4 | See Test Location Sketch | Lift No. 1 | BS-6 | A | 115.9 | 13.4 | 20.9 | 100.9 | 87.1 | 95 | Fail | |
| 9/19/97 | 5 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 12.5 | 101.6 | 95.0 | 95 | Fail | |
| 9/19/97 | RT5 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 14.9 | 104.3 | 97.6 | 95 | Pass | |
| 9/19/97 | 6 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 19.7 | 103.2 | 96.5 | 95 | Pass | |
| 9/19/97 | RT6 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 18.6 | 104.1 | 97.4 | 95 | Pass | |
| 9/19/97 | RT1 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 20.0 | 109.0 | 102.0 | 95 | Pass | |
| 9/19/97 | 7 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 18.3 | 109.4 | 102.3 | 95 | Pass | |
| 9/19/97 | 8 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 18.9 | 108.7 | 101.7 | 95 | Pass | |
| 9/24/97 | RT2 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 20.2 | 106.3 | 99.4 | 95 | Pass | |
| 9/24/97 | 9 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 13.1 | 99.2 | 92.7 | 95 | Fail | |
| 9/24/97 | 10 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 21.6 | 104.3 | 97.6 | 95 | Fail | |
| 9/24/97 | 11 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 20.1 | 102.7 | 96.0 | 95 | Pass | |
| 9/24/97 | RT3 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 20.3 | 101.4 | 94.8 | 95 | Accept | |
| 9/24/97 | RT4 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 19.8 | 109.7 | 102.6 | 95 | Pass | |
| 9/24/97 | 12 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 20.8 | 104.1 | 97.3 | 95 | Pass | |
| 9/24/97 | 13 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 22.4 | 92.1 | 86.2 | 95 | Fail | |
| 9/24/97 | 14 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 16.6 | 101.3 | 94.7 | 95 | Pass | |
| 9/25/97 | 15 | See Test Location Sketch | Lift No. 1 | BS-11 | A | 101.5 | 20.0 | 17.8 | 97.8 | 96.4 | 95 | Pass | |
| 9/25/97 | 16 | See Test Location Sketch | Lift No. 1 | BS-11 | A | 101.5 | 20.0 | 17.9 | 99.3 | 97.8 | 95 | Pass | |
| 9/25/97 | 17 | See Test Location Sketch | Lift No. 1 | BS-11 | A | 101.5 | 20.0 | 17.0 | 96.3 | 94.9 | 95 | Accept | |
| 9/26/97 | 18 | New Road Subbase | Subbase | BS-10 | A | 104.5 | 18.5 | 19.1 | 107.1 | 102.5 | 95 | Pass | |
| 9/26/97 | 19 | New Road Subbase | Subbase | BS-10 | A | 104.5 | 18.5 | 19.5 | 103.0 | 98.5 | 95 | Pass | |
| 9/26/97 | 20 | New Road Subbase | Subbase | BS-10 | A | 104.5 | 18.5 | 20.9 | 101.9 | 97.5 | 95 | Pass | |

# Philip Environmental Services Corporation

# Summary of Field Geotechnical Testing



Project: NSWC Crane
Location: Crane, IN
Specification: 90% of the maximum dry density as determined by a Standard Proctor (ASTM D698)

Comments/Notes: Retest Perfomed in Test Areas 61, 67, 69 and 73.
Initial tests indicate moisture content of soil not within specified range.

**Laboratory Test Type:**
A. Standard Proctor (ASTM D 698).
B. Modified Proctor (ASTM D 1557).
C. Maximum and Minimum Density (ASTM D 4253 and D 4254).

**Definitions:**
pcf Pounds per cubic foot.
ASTM American Society for Testing and Materials.

**Test Numbering (Typical Format):**
1.0 Initial field test.
RT1 Retest after reworking of the general area of the initial test.

| | | | Laboratory Data | | | | | Field Data | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Test Number | Location | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content (%) | Moisture Content (%) | Dry Density (pcf) | Measured Compaction (%) | Specified Compaction (%) | Pass or Fail | See Note Above (Moistures) |
| 9/26/97 | RT10 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 20.6 | 103.6 | 96.9 | 95 | Pass | |
| 9/26/97 | RT9 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 19.6 | 102.5 | 95.8 | 95 | Pass | |
| 9/26/97 | 21 | See Test Location Sketch | Lif t No. 2 | PBS-2 | A | 106.9 | 17.8 | 19.2 | 107.6 | 100.7 | 95 | Pass | |
| 9/26/97 | 22 | See Test Location Sketch | Lif t No. 2 | PBS-2 | A | 106.9 | 17.8 | 17.9 | 108.5 | 101.5 | 95 | Pass | |
| 9/26/97 | RT13 | See Test Location Sketch | Lift No. 1 | PBS-2 | A | 106.9 | 17.8 | 19.6 | 105.2 | 98.4 | 95 | Pass | |
| 9/26/97 | 23 | See Test Location Sketch | Lif t No. 2 | PBS-2 | A | 106.9 | 17.8 | 19.2 | 106.2 | 99.3 | 95 | Pass | |
| 9/27/97 | 24 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 19.4 | 101.9 | 96.4 | 95 | Pass | |
| 9/27/97 | 25 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 18.6 | 102.5 | 97.0 | 95 | Pass | |
| 9/27/97 | 26 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 18.1 | 102.5 | 97.0 | 95 | Pass | |
| 9/27/97 | 27 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 17.6 | 105.7 | 100.0 | 95 | Pass | |
| 9/27/97 | 28 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 17.5 | 102.2 | 96.6 | 95 | Pass | |
| 9/30/97 | 29 | See Test Location Sketch | Lift No. 1 | BS-12 | A | 105.7 | 18.4 | 16.8 | 94.8 | 89.6 | 95.0 | Fail | |
| 9/30/97 | 30 | See Test Location Sketch | Lift No. 1 | BS-12 | A | 105.7 | 18.4 | 18.1 | 100.4 | 95.0 | 95.0 | Pass | |
| 9/30/97 | RT29 | See Test Location Sketch | Lift No. 1 | BS-12 | A | 105.7 | 18.4 | 18.7 | 103.0 | 97.4 | 95.0 | Pass | |
| 9/30/97 | 31 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 17.3 | 99.5 | 94.1 | 95.0 | Fail | |
| 9/30/97 | RT31 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 17.9 | 100.1 | 94.7 | 95.0 | Accept | |
| 9/30/97 | 32 | See Test Location Sketch | Lift No.2 | BS-12 | A | 105.7 | 18.4 | 16.7 | 101.1 | 95.6 | 95.0 | Pass | |
| 9/30/97 | 33 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 17.9 | 106.8 | 101.0 | 95.0 | Pass | |
| 9/30/97 | 34 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 18.9 | 101.4 | 95.9 | 95.0 | Pass | |
| 9/30/97 | 35 | See Test Location Sketch | Lift No. 4 | BS-12 | A | 105.7 | 18.4 | 20.0 | 100.1 | 94.7 | 95.0 | Accept | |
| 9/30/97 | 36 | See Test Location Sketch | Lift No. 4 | BS-12 | A | 105.7 | 18.4 | 16.6 | 104.4 | 98.8 | 95.0 | Pass | |
| 9/30/97 | 37 | See Test Location Sketch | Lift No. 4 | BS-12 | A | 105.7 | 18.4 | 17.4 | 105.9 | 100.2 | 95.0 | Pass | |
| 9/30/97 | 38 | See Test Location Sketch | Lift No. 5 | BS-12 | A | 105.7 | 18.4 | 18.7 | 107.2 | 101.4 | 95.0 | Pass | |
| 10/1/97 | 39 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 18.2 | 106.1 | 100.3 | 95.0 | Pass | |
| 10/1/97 | 40 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 18.7 | 108.2 | 102.3 | 95.0 | Pass | |
| 10/1/97 | 41 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 21.0 | 101.1 | 95.6 | 95.0 | Pass | |

# Philip Environmental Services Corporation

# Summary of Field Geotechnical Testing



Project: NSWC Crane
Location: Crane, IN
Specification: 90% of the maximum dry density as determined by a Standard Proctor (ASTM D698)

**Comments/Notes:** Retest Perfomed in Test Areas 61, 67, 69 and 73.
Initial tests indicate moisture content of soil not within specified range.

**Laboratory Test Type:**
A. Standard Proctor (ASTM D 698).
B. Modified Proctor (ASTM D 1557).
C. Maximum and Minimum Density (ASTM D 4253 and D 4254).

**Definitions:**
pcf Pounds per cubic foot.
ASTM American Society for Testing and Materials.

**Test Numbering (Typical Format):**
1.0 Initial field test.
RT1 Retest after reworking of the general area of the initial test.

| | | | Laboratory Data | | | | | Field Data | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Test Number | Location | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content (%) | Moisture Content (%) | Dry Density (pcf) | Measured Compaction (%) | Specified Compaction (%) | Pass or Fail | See Note Above (Moistures) |
| 10/1/97 | 42 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 18.8 | 102.1 | 96.5 | 95.0 | Pass | |
| 10/1/97 | 43 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 20.1 | 104.5 | 98.8 | 95.0 | Pass | |
| 10/1/97 | 44 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 18.2 | 105.4 | 99.7 | 95.0 | Pass | |
| 10/3/97 | 45 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 19.0 | 104.0 | 98.3 | 95.0 | Pass | |
| 10/3/97 | 46 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 17.4 | 105.0 | 99.3 | 95.0 | Pass | |
| 10/3/97 | 47 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 17.6 | 96.8 | 91.5 | 95.0 | Fail | |
| 10/3/97 | RT47 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 18.7 | 100.5 | 95.0 | 95.0 | Pass | |
| 10/3/97 | 48 | See Test Location Sketch | Lift No. 2 | BS-12 | A | 105.7 | 18.4 | 17.5 | 102.1 | 96.5 | 95.0 | Pass | |
| 10/7/97 | 49 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 16.8 | 95.3 | 90.1 | 95.0 | Fail | |
| 10/7/97 | 50 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 12.7 | 100.7 | 95.2 | 95.0 | Fail | |
| 10/7/97 | 51 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 16.3 | 102.7 | 97.1 | 95.0 | Pass | |
| 10/7/97 | RT-49 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 15.8 | 100.5 | 95.1 | 95.0 | Pass | |
| 10/7/97 | RT-50 | See Test Location Sketch | Lift No. 3 | BS-12 | A | 105.7 | 18.4 | 16.3 | 105.2 | 99.5 | 95.0 | Pass | |
| 8/7/98 | 52 | SeeTest Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 20.6 | 111.7 | 106.8 | 90.0 | Pass | |
| 8/7/98 | 53 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 22.3 | 101.1 | 96.7 | 90.0 | Fail | |
| 8/7/98 | 54 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 23.1 | 100.8 | 96.5 | 90.0 | Fail | |
| 8/11/98 | 55 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 20.6 | 101.1 | 96.7 | 90.0 | Pass | |
| 8/11/98 | 56 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 19.9 | 100.5 | 96.2 | 90.0 | Pass | |
| 8/11/98 | 57 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 19.6 | 105.6 | 101.1 | 90.0 | Pass | |
| 8/11/98 | RT53 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 20.0 | 104.7 | 100.1 | 90.0 | Pass | |
| 8/11/98 | 58 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 18.5 | 102.9 | 98.5 | 90.0 | Pass | |
| 8/11/98 | 59 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 20.7 | 104.5 | 100.0 | 90.0 | Pass | |
| 8/11/98 | 60 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 18.6 | 105.4 | 100.8 | 90.0 | Pass | |
| 8/11/98 | 61 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 22.9 | 87.5 | 83.7 | 90.0 | Fail | |
| 8/11/98 | RT61 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 20.7 | 99.4 | 95.1 | 90.0 | Pass | |
| 8/11/98 | RT54 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 21.4 | 101.6 | 97.2 | 90.0 | Pass | |

# Philip Environmental Services Corporation

# Summary of Field Geotechnical Testing



Project: NSWC Crane
Location: Crane, IN
Specification: 90% of the maximum dry density as determined by a Standard Proctor (ASTM D698)

Comments/Notes: Retest Perfomed in Test Areas 61, 67, 69 and 73.
Initial tests indicate moisture content of soil not within specified range.

Laboratory Test Type:
A. Standard Proctor (ASTM D 698).
B. Modified Proctor (ASTM D 1557).
C. Maximum and Minimum Density (ASTM D 4253 and D 4254).

Definitions:
pcf Pounds per cubic foot.
ASTM American Society for Testing and Materials.

Test Numbering (Typical Format):
1.0 Initial field test.
RT1 Retest after reworking of the general area of the initial test.

| | | | Laboratory Data | | | | | Field Data | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Test Number | Location | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content (%) | Moisture Content (%) | Dry Density (pcf) | Measured Compaction (%) | Specified Compaction (%) | Pass or Fail | See Note Above (Moistures) |
| 8/12/98 | 62 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 18.5 | 104.7 | 100.1 | 90.0 | Pass | |
| 8/12/98 | 63 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 19.5 | 102.7 | 98.2 | 90.0 | Pass | |
| 8/12/98 | 64 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 21.1 | 101.6 | 97.2 | 90.0 | Pass | |
| 8/12/98 | 65 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 20.0 | 99.2 | 94.9 | 90.0 | Pass | |
| 8/12/98 | 66 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 19.9 | 102.5 | 98.1 | 90.0 | Pass | |
| 8/12/98 | 67 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 22.5 | 98.7 | 94.5 | 90.0 | Fail | |
| 8/12/98 | 68 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 18.8 | 102.1 | 97.7 | 90.0 | Pass | |
| 8/12/98 | RT67 | See Test Location Sketch | Lift No. 1 | BS-10 | A | 104.5 | 18.5 | 19.4 | 103.7 | 99.2 | 90.0 | Pass | |
| 8/13/98 | 69 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 21.7 | 97.5 | 93.3 | 90.0 | Fail | |
| 8/13/98 | 70 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 20.2 | 96.0 | 91.8 | 90.0 | Pass | |
| 8/13/98 | 71 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 21.5 | 96.6 | 92.4 | 90.0 | Pass | |
| 8/13/98 | RT69 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 20.8 | 99.9 | 95.6 | 90.0 | Pass | |
| 8/13/98 | 72 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 21.5 | 98.8 | 94.5 | 90.0 | Pass | |
| 8/13/98 | 73 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 23.5 | 95.5 | 91.3 | 90.0 | Fail | |
| 8/13/98 | 74 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.1 | 94.9 | 90.8 | 90.0 | Pass | |
| 8/13/98 | RT73 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.2 | 104.2 | 99.6 | 90.0 | Pass | |
| 8/14/98 | 75 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 18.5 | 105.8 | 101.2 | 90.0 | Pass | |
| 8/14/98 | 76 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.2 | 100.6 | 96.2 | 90.0 | Pass | |
| 8/14/98 | 77 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.9 | 102.1 | 97.6 | 90.0 | Pass | |
| 8/14/98 | 78 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.6 | 102.6 | 98.1 | 90.0 | Pass | |
| 8/14/98 | 79 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.6 | 101.2 | 96.8 | 90.0 | Pass | |
| 8/14/98 | 80 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.1 | 100.4 | 96.0 | 90.0 | Pass | |
| 8/15/98 | 81 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 20.2 | 97.8 | 93.5 | 90.0 | Pass | |
| 8/15/98 | 82 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 20.7 | 90.7 | 86.7 | 90.0 | Fail | |
| 8/15/98 | 83 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 18.7 | 100.8 | 96.4 | 90.0 | Pass | |
| 8/15/98 | 84 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.1 | 103.8 | 99.3 | 90.0 | Pass | |

# Philip Environmental Services Corporation

# Summary of Field Geotechnical Testing



Project: NSWC Crane
Location: Crane, IN
Specification: 90% of the maximum dry density as determined by a Standard Proctor (ASTM D698)

**Comments/Notes:** Retest Perfomed in Test Areas 61, 67, 69 and 73.
Initial tests indicate moisture content of soil not within specified range.

**Laboratory Test Type:**
A. Standard Proctor (ASTM D 698).
B. Modified Proctor (ASTM D 1557).
C. Maximum and Minimum Density (ASTM D 4253 and D 4254).

**Definitions:**
pcf Pounds per cubic foot.
ASTM American Society for Testing and Materials.

**Test Numbering (Typical Format):**
1.0 Initial field test.
RT1 Retest after reworking of the general area of the initial test.

| | | | Laboratory Data | | | | | Field Data | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Test Number | Location | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content (%) | Moisture Content (%) | Dry Density (pcf) | Measured Compaction (%) | Specified Compaction (%) | Pass or Fail | See Note Above (Moistures) |
| 8/15/98 | 85 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 18.5 | 107.2 | 102.6 | 90.0 | Pass | |
| 8/15/98 | RT82 | See Test Location Sketch | Lift No. 2 | BS-10 | A | 104.5 | 18.5 | 19.1 | 101.5 | 97.1 | 90.0 | Pass | |
| 8/20/98 | 86 | See Test Location Sketch | Final Lift | BS-10 | A | 104.5 | 18.5 | 19.0 | 104.7 | 100.2 | 90.0 | Pass | |
| 8/20/98 | 87 | See Test Location Sketch | Final Lift | BS-10 | A | 104.5 | 18.5 | 20.5 | 92.0 | 88.0 | 90.0 | Fail | |
| 8/20/98 | 88 | See Test Location Sketch | Final Lift | BS-10 | A | 104.5 | 18.5 | 20.5 | 94.9 | 90.8 | 90.0 | Pass | |
| 8/20/98 | 89 | See Test Location Sketch | Final Lift | BS-10 | A | 104.5 | 18.5 | 19.8 | 99.4 | 95.1 | 90.0 | Pass | |
| 8/20/98 | RT84 | See Test Location Sketch | Final Lift | BS-10 | A | 104.5 | 18.5 | 18.5 | 100.4 | 96.0 | 90.0 | Pass | |

MORRISON KNUDSEN CORPORATION
300 Highway 361, CTR-12
P.O. Box 310
Crane, IN 47522
(812) 854-6941
Fax: (812) 854-6944

September 8, 1997 4324-106-601

Philip Environmental Services
210 West Sand Bank Road
Columbia, IL 62236

Attn: Mr. Donald Flowers

Reference: Subcontract 4324-106, Philip letter DBC-14 dated August 21, 1997

Subject: Clarification on Compaction of First Lift of the Cap Foundation

The specification requires that the initial lift of cap foundation fill be placed and compacted to 90% of the soil maximum dry density within +/- 3% of the optimum moisture or as approved by MK. MK is aware of the problems which may arise in compacting soil over PPE, plastic sheeting, and unknown soil condition. MK expects Philip Environmental Services to conduct their field operation an a professional manner which would include spreading unsuitable material (e.g. PPE, etc.) in thin layers, assuring areas do not trap water, pumping water off an area prior to placement of fill, and using adequate equipment to achieve proper compaction and moisture. MK expects no action beyond that of a prudent contractor in achieving the required compaction.

Should there be an area within the cap footprint that compaction can not be achieved using ordinary construction practices and Philip Environmental Service has made normal efforts to achieve proper compaction, MK will then direct Philip Environmental Service.

Should you have any questions, please advise.

Sincerely,
MORRISON KNUDSEN CORPORATION

D Beall

Dave Beall
Project Manager

cc: D. Beall D. Albrethsen L. Bigley V. Logan
file: 13.050.22

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# FIELD TESTING REPORT

PROJECT: NSWC CRANE LOCATION: _____
JOB NO.: 18328.2000.77 DATE: 8/7/98 CONTRACTOR: PHILIP/MK WEATHER: Cloudy/Showers TEMP: 70-80 °F
SPECIFICATION: 90% ASTM D698

Work Performed: COMPACTION TESTING 6"

| Test Number | Location | Laboratory Data: Depth or Elevation | Laboratory Data: Soil I.D. Number | Laboratory Data: Test Type | Laboratory Data: Maximum Dry Density (pcf) | Laboratory Data: Optimum Moisture Content % | Field Data: Moisture Content % | Field Data: Dry Density (pcf) | Field Data: % Compaction | Specified % Comp. | Pass/Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SEE LOCATION MAP | LIFT#1 | BS-10 | A | 104.5 | 18.5 | 20.6 | 111.7 | 105.9 | 90 | PASS | |
| 2 | | ↓ | ↓ | ↓ | ↓ | ↓ | 22.3 | 101.1 | 96.7 | ↓ | FAIL | TOO WET |
| 3 | | ↓ | ↓ | ↓ | ↓ | ↓ | 23.1 | 100.8 | 95.5 | ↓ | FAIL | TOO WET |
| | | | | | | | | | | | | RETEST ON |
| | | | | | | | | | | | | ~~AND~~ TUESDAY |
| | | | | | | | | | | | | 8/11/98 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

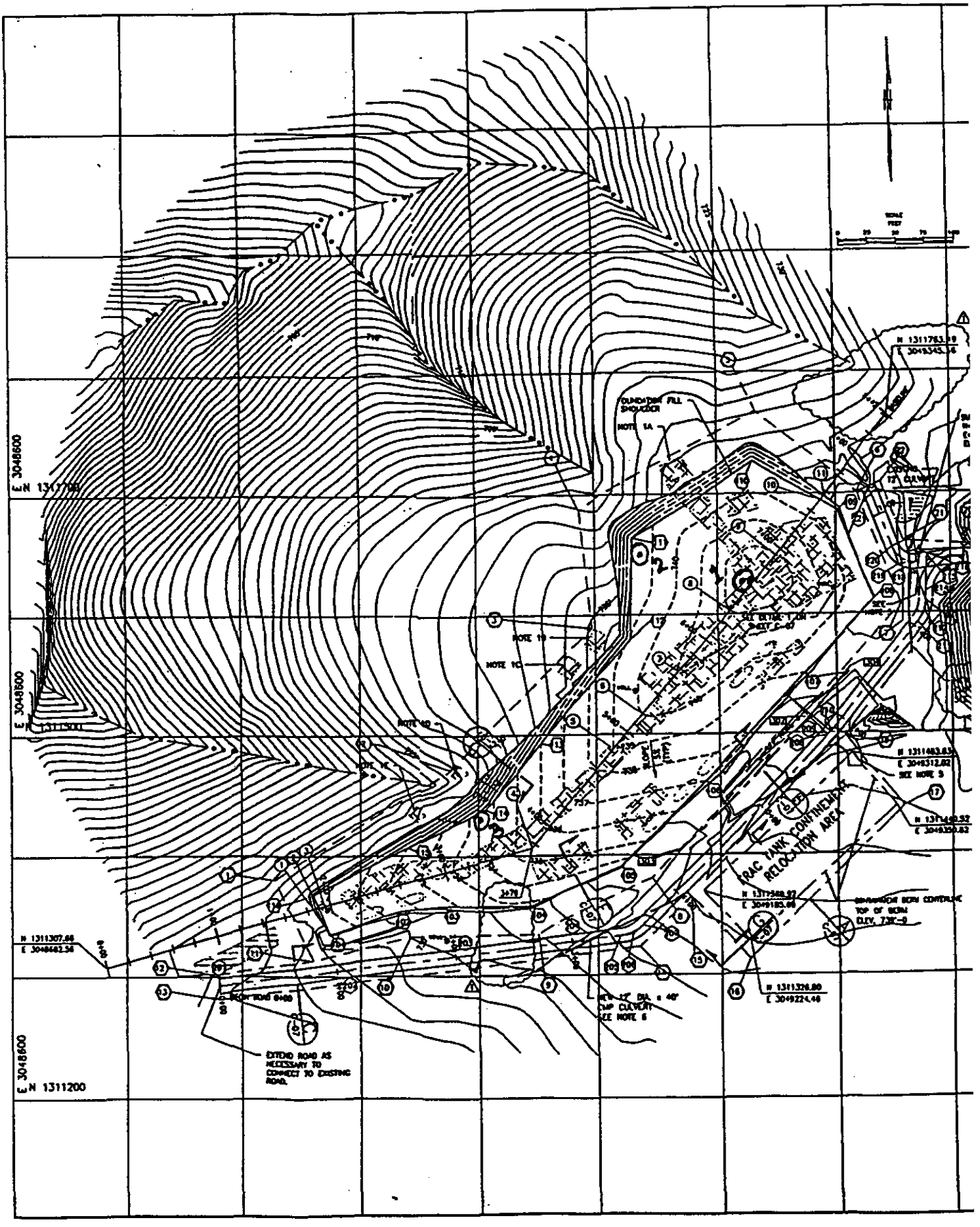
Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: _____

C-03


E 3048600
N 1311700
E 3048800
N 1311500
E 3048600
N 1311200
FOUNDATION FILL SHOULDER
NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
RAC TANK CONTINENTAL RELOCATION AREA
N 1311763.18
E 3049345.14
N 1311483.83
E 3049312.82
SEE NOTE 5
N 1311460.52
E 3049350.82
N 1311368.97
E 3049185.66
N 1311326.80
E 3049224.46
N 1311307.66
E 3048662.56
EXTEND ROAD AS NECESSARY TO CONNECT TO EXISTING ROAD
NEW 12" DIA. x 40' CMP CULVERT SEE NOTE 6
TOP OF BERM
ELEV. 730'-0

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# FIELD TESTING REPORT

PROJECT NSWC CRANE LOCATION _____

JOB NO. 18328.2000.77 DATE 8/7/98 CONTRACTOR PHILIP/MK WEATHER Cloudy/Showers TEMP 70-80 °F

SPECIFICATION 90% ASTM D698

Work Performed COMPACTION TESTING 6"

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 1 | SEE LOCATION MAP | LIFT#1 | B510 | A | 104.5 | 18.5 | 20.6 | 111.7 | 105.9 | 90 | PASS | |
| 2 | | ↓ | ↓ | ↓ | ↓ | ↓ | 22.3 | 101.1 | 96.7 | ↓ | FAIL | TOO WET |
| 3 | | ↓ | ↓ | ↓ | ↓ | ↓ | 23.1 | 100.8 | 95.5 | ↓ | FAIL | TOO WET |
| | | | | | | | | | | | | RETEST ON |
| | | | | | | | | | | | | ~~Mon~~ TUESDAY |
| | | | | | | | | | | | | 8/11/98 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Comments/Notes:

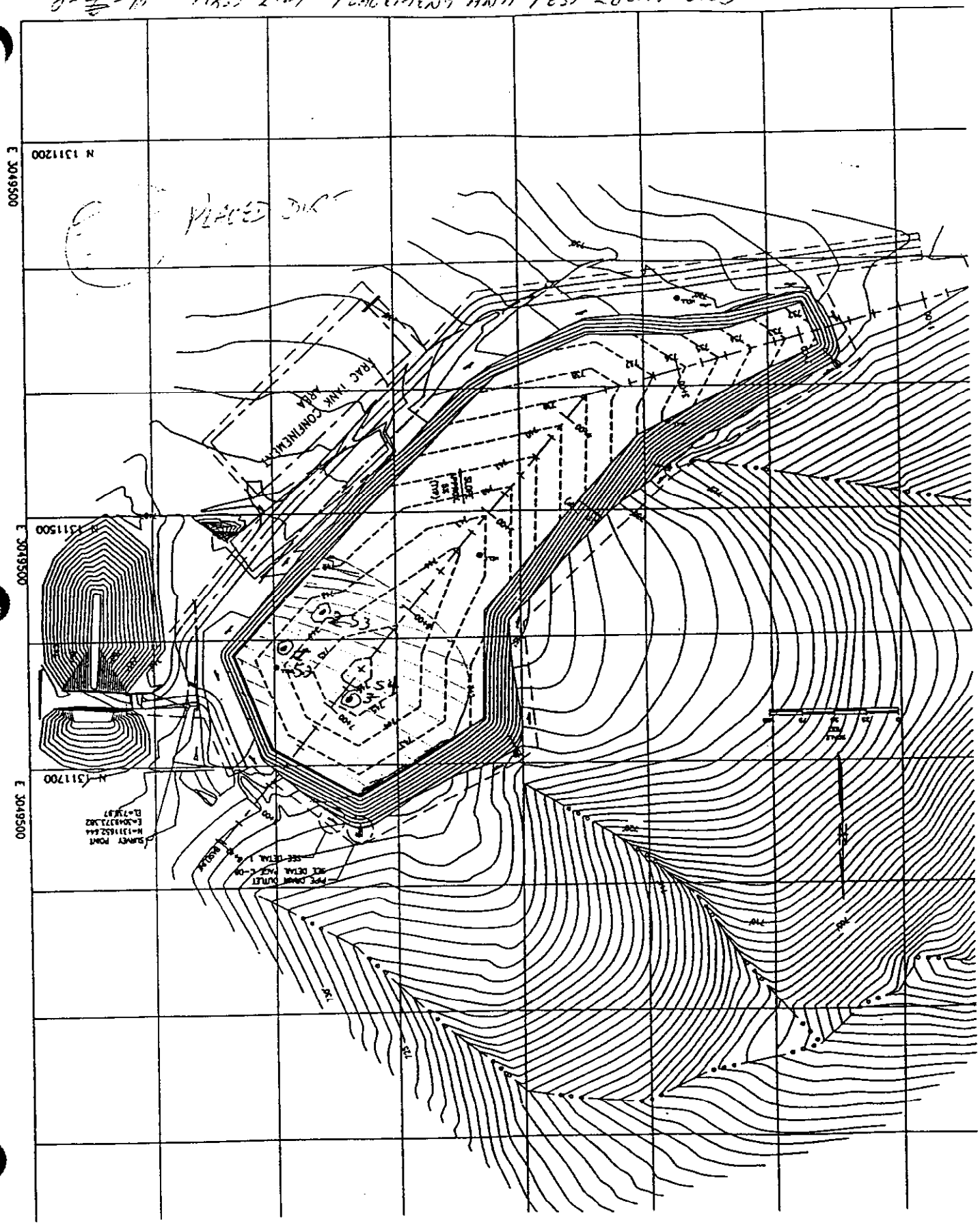
Laboratory Test Type
- A. Standard Proctor ASTM D-698
- B. Modified Proctor ASTM D-1557
- C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
- 1: Initial Field Test
- RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: _____

PE-88 (4/95)

8-7-98 FIRST LIFT PLACEMENT AND TEST LOCATIONS



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# FIELD TESTING REPORT

PROJECT NSWC CRANE – DYE BURIAL GROUND CAP LOCATION CRANE, INDIANA
JOB NO. 18323-2000-77 DATE 8/11/98 CONTRACTOR PHILIP/MK WEATHER SUNNY/WARM TEMP 72-86
SPECIFICATION ASTM D698 90%

Work Performed Compaction testing on soil placed on top of landfill cap drainage layer

| Test Number | Location | Laboratory Data: Depth or Elevation | Laboratory Data: Soil I.D. Number | Laboratory Data: Test Type | Laboratory Data: Maximum Dry Density (pcf) | Laboratory Data: Optimum Moisture Content % | Field Data: Moisture Content % | Field Data: Dry Density (pcf) | Field Data: % Compaction | Specified % Comp. | Pass/Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 55 | SEE LOCATION MAP | LIFT #1 | BS10 | A | 104.5 | 18.5 | 20.6 | 101.1 | 96.7 | 90% | P | |
| 5 56 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.9 | 100.5 | 96.2 | ↓ | P | |
| 6 57 | | | | | | | 19.6 | 105.6 | 101.1 | | P | |
| 2R 57 | | | | | | | 20.0 | 104.7 | 100.1 | | P | RETEST |
| 7 58 | | | | | | | 18.5 | 102.9 | 98.5 | | P | |
| 8 59 | | | | | | | 20.7 | 104.5 | 100.0 | | P | |
| 9 60 | | | | | | | 18.6 | 105.4 | 100.8 | | P | |
| 10 61 | | | | | | | 22.9 | 87.5 | 83.7 | | F | |
| 10R 61 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 20.7 | 99.4 | 95.1 | ↓ | P | RETEST |

Comments/Notes: R = RETEST

| LOC | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 A54 | SEE LOCATION MAP | LIFT #1 | BS10 | A | 104.5 | 18.5 | 21.4 | 101.6 | 97.2 | 90% | PASS |

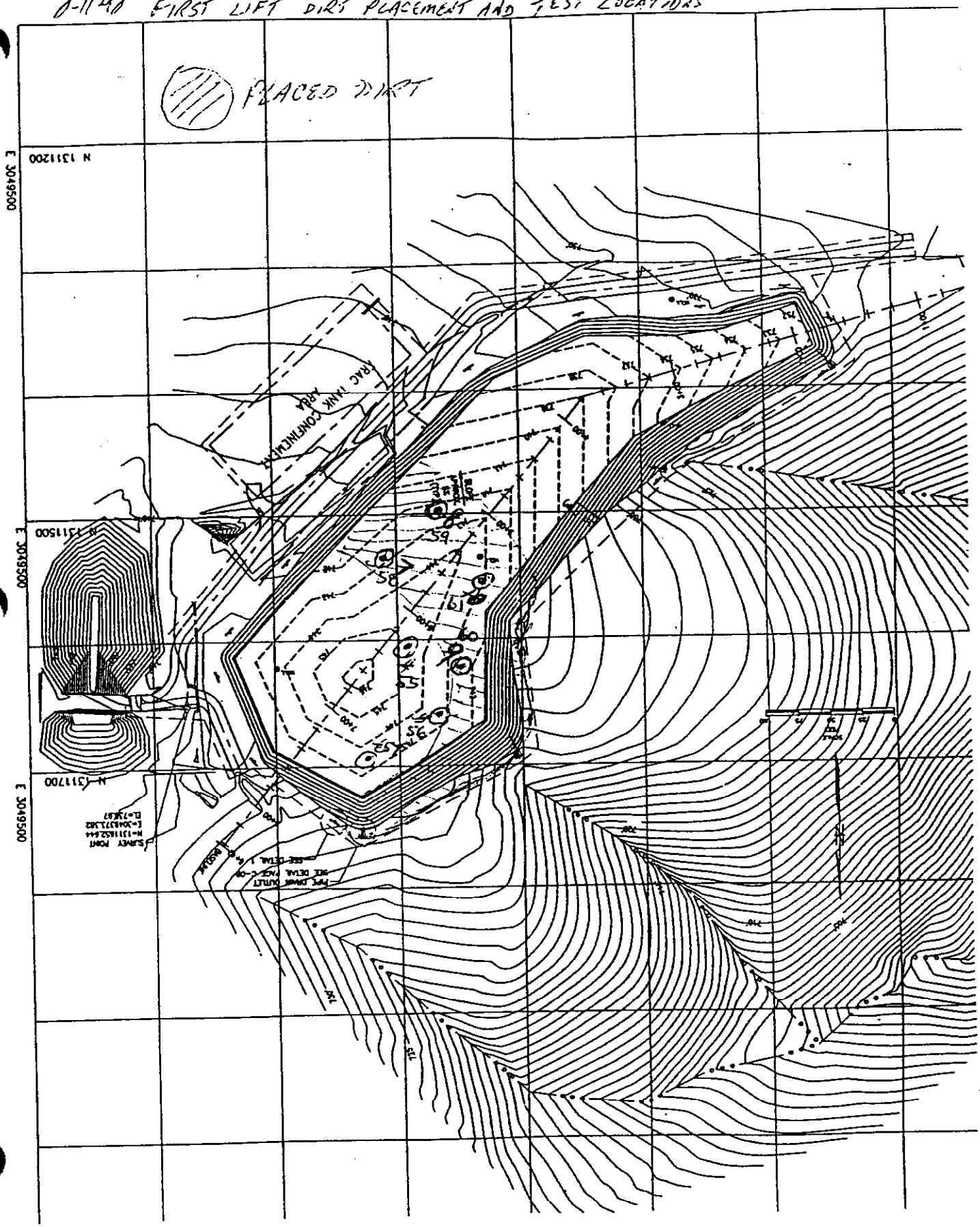
Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
I: Initial Field Test
RT I: Retest After Reworking General Area Of Initial Field

Signature: David B Martin

PE-8

8-11-98 FIRST LIFT DIRT PLACEMENT AND TEST LOCATIONS



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# FIELD TESTING REPORT

PROJECT NSWC CRANE : DYE BURIAL GROUNDS CAP LOCATION CRANE, INDIANA
JOB NO. 18328.2000.77 DATE 8/12/98 CONTRACTOR PHILIP/MK WEATHER SUNNY/WARM TEMP 70-84 °F
SPECIFICATION ASTM D698 90%

Work Performed COMPACTION TESTING ON FIRST LIFT

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 11 62 | SEE LOCATION MAP | LIFT #1 | BS10 | A | 104.5 | 18.5 | 18.5 | 104.7 | 100.1 | 90% | PASS | |
| 12 63 | | | | | | | 19.5 | 102.7 | 98.2 | | PASS | |
| 13 64 | | | | | | | 21.1 | 101.6 | 97.2 | | PASS | |
| 14 65 | | | | | | | 20.0 | 99.2 | 94.9 | | PASS | |
| 15 66 | | | | | | | 19.9 | 102.5 | 98.1 | | PASS | |
| 16 67 | | | | | | | 22.5 | 98.7 | 94.5 | | FAIL | HIGH MOISTURE |
| 17 68 | | | | | | | 18.8 | 102.1 | 97.7 | | PASS | |
| 67 16R | | | | | | | 19.4 | 103.7 | 99.2 | | PASS | |
| | | | | | | | | | | | | |

Comments/Notes: R = RETEST
HAD OPERATOR ROLL AN ADDITIONAL 3 PASSES ON LOCATION 16 AREA (APPROXIMATELY 4000 FT²) THEN RETESTED

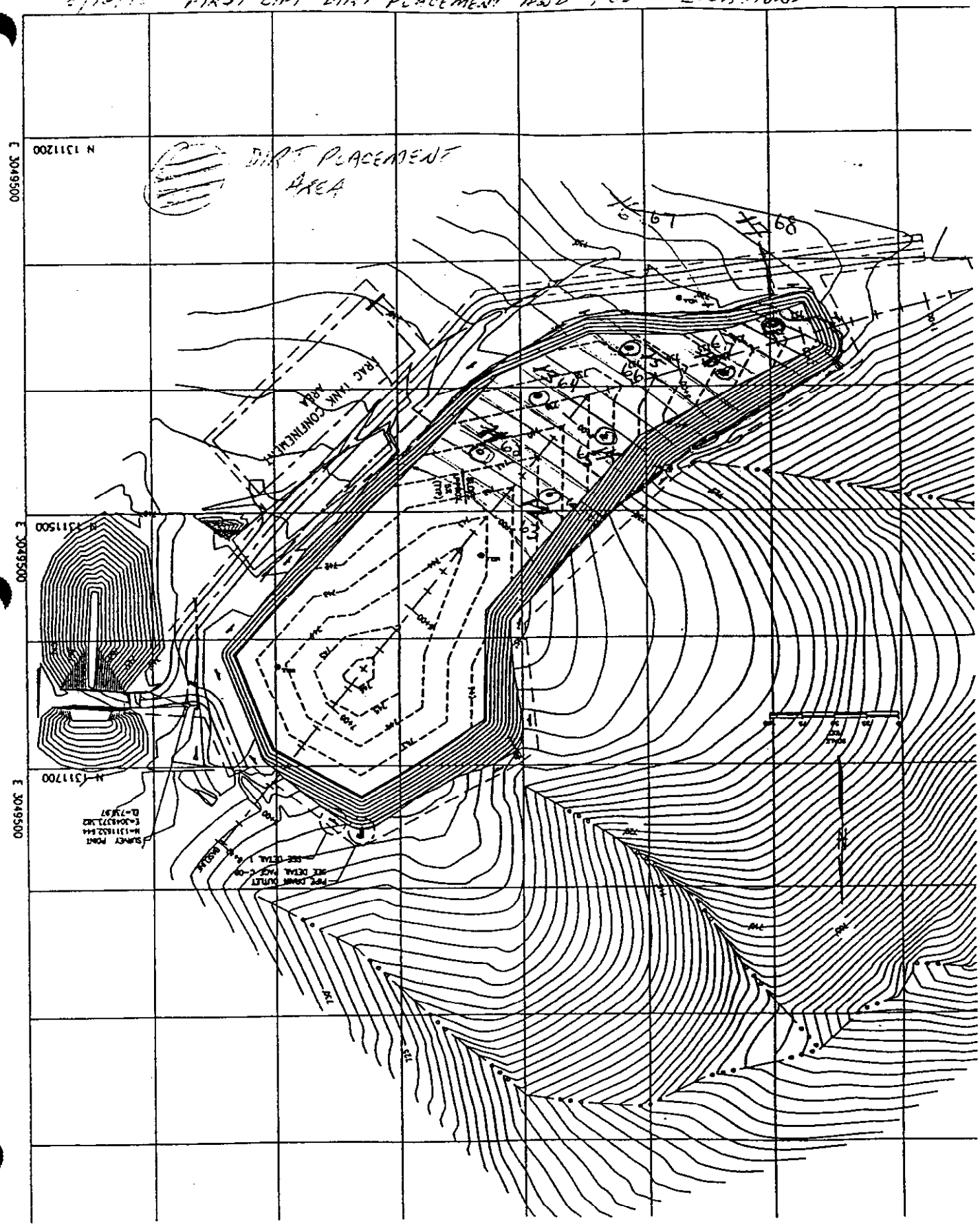
**Laboratory Test Type**
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

**Test Number (Typical Format)**
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: David B. Martin

PE-88 (4/95)

8/12/92 FIRST LIFT DIRT PLACEMENT AND TEST LOCATIONS



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# FIELD TESTING REPORT

PROJECT NSWC CRANE DYE BURIAL GROUND CAP LOCATION CRANE, INDIANA

JOB NO. 18328-2000-77 DATE 8/13/98 CONTRACTOR PHILIP/MX WEATHER SUNNY/WARM TEMP 65-85 °F

SPECIFICATION ASTM D698

Work Performed COMPACTION TESTING ON START OF SECOND LIFT

| | Test Number | Location | Laboratory Data: Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Field Data: Moisture Content % | Dry Density (pcf) | % Compaction | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 69 | 18 | SEE TEST LOCATION MAP | LIFT 2 | B510 | A | 104.5 | 18.5 | 21.7 | 97.5 | 93.3 | 90% | FAIL | REROLL |
| 70 | 19 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 20.2 | 96.0 | 91.8 | ↓ | PASS | |
| 71 | 20 | | | | | | | 21.5 | 96.6 | 92.4 | | PASS | |
| AT69 | 18R | | | | | | | 20.8 | 99.9 | 95.6 | | PASS | |
| 72 | 21 | | | | | | | 21.5 | 98.8 | 94.5 | | PASS | |
| 73 | 22 | | | | | | | 23.5 | 95.5 | 91.3 | | FAIL | REROLL |
| 74 | 23 | | | | | | | 19.1 | 99.9 | 90.8 | | PASS | |
| RT73 | 22R | | | | | | | 19.2 | 104.2 | 99.6 | | PASS | |

Comments/Notes: R = RETEST

18 & 22: TESTING SHOWED MOISTURE TOO HIGH WHILE COMPACTION WAS IN THE MID 90% RANGE, I THEN HAD THE AREAS ROLLED AN ADDITIONAL 2-3 PASSES AND THE COMPACTION AND MOISTURE PASSED DBM

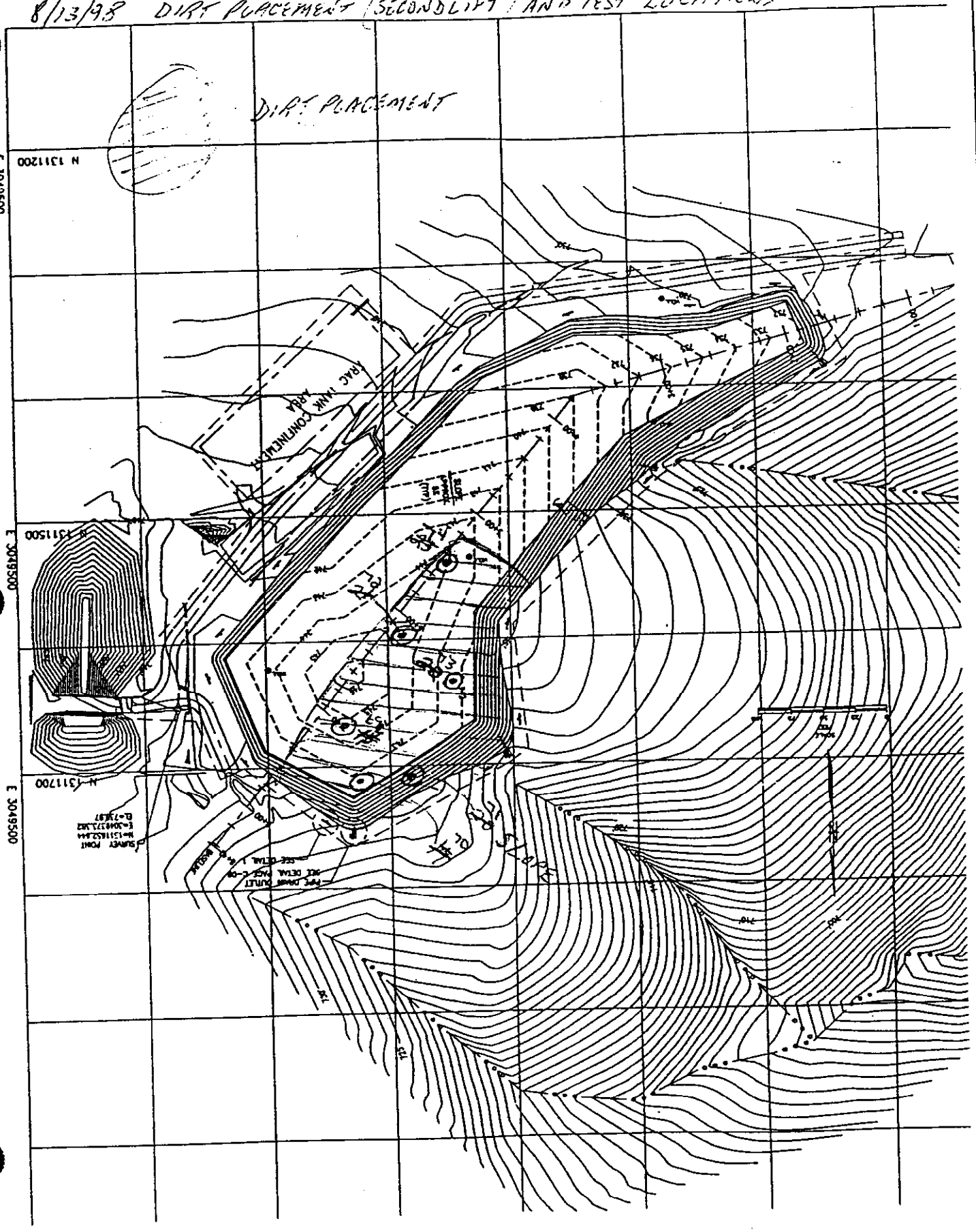
Laboratory Test Type
- A. Standard Proctor ASTM D-698
- B. Modified Proctor ASTM D-1557
- C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
- 1: Initial Field Test
- RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: David B. Martin

PE-88 (4/95)

8/13/98 DIRT PLACEMENT (SECOND LIFT) AND TEST LOCATIONS



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# FIELD TESTING REPORT

PROJECT NSWC CRANE LOCATION CRANE INDIANA

JOB NO. 18328-2000-77 DATE 8/4/99 CONTRACTOR PHILIP/MK WEATHER SUNNY HOT TEMP 66-85 °F

SPECIFICATION ASTM D698 90%

Work Performed COMPACTION TESTING ON SECOND LIFT

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 24 75 | SEE TEST LOCATION MAP | LIFT 2 | B510 | A | 104.5 | 18.5 | 18.5 | 105.8 | 101.2 | 90% | PASS | |
| 25 76 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.2 | 100.6 | 96.2 | ↓ | PASS | |
| 26 77 | | | | | | | 19.9 | 102.1 | 97.6 | | PASS | |
| 27 78 | | | | | | | 19.6 | 102.6 | 98.1 | | PASS | |
| 28 79 | | | | | | | 19.6 | 101.2 | 96.8 | | PASS | |
| 29 80 | | | | | | | 19.1 | 100.4 | 96.0 | | PASS | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Comments/Notes:

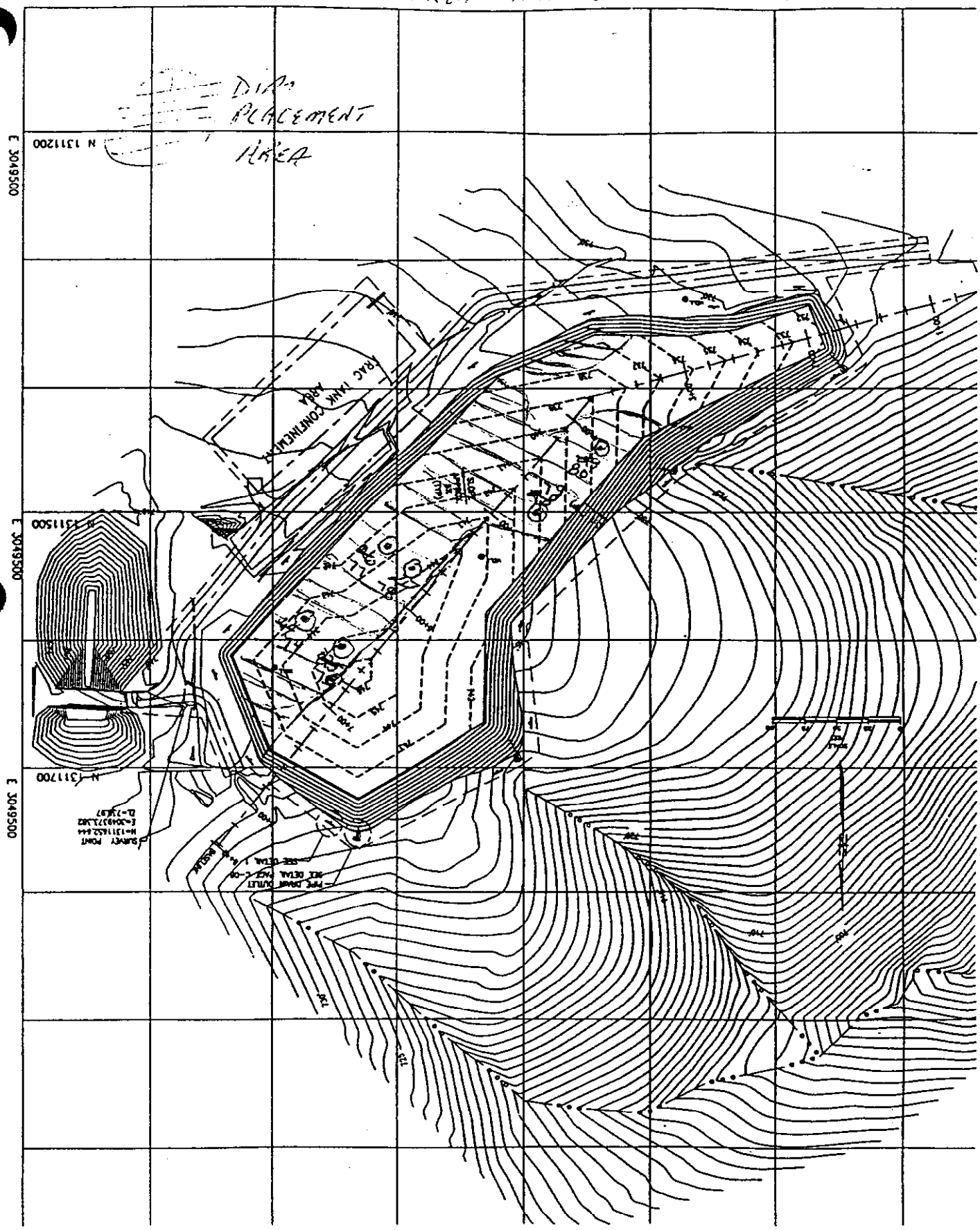
**Laboratory Test Type**
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relat[illegible]ensity ASTM D-4253 and 4254.

**Test Number (Typical Format)**
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: David G. [illegible]

8/12/98

LIFT #2 PLACEMENT AREA AND TEST LOCATIONS



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# FIELD TESTING REPORT

PROJECT NSWC CRANE DYE BURIAL GROUNDS CAP LOCATION CRANE, INDIANA
JOB NO. 18328-200-77 DATE 8/15/98 CONTRACTOR PHILIP/MK WEATHER SUNNY/WARM TEMP 68-86 °F
SPECIFICATION ASTM D-698 90%

Work Performed COMPACTION TESTING ON SECOND LIFT OF CLAY CAP

| | Test Number | Location | Laboratory Data: Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Field Data: Moisture Content % | Dry Density (pcf) | % Compaction | Specified % Comp. | Pass/Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B1 | 30 | SEE TEST LOCATION MAP | LIFT #2 | BS10 | A | 104.5 | 18.5 | 20.2 | 97.8 | 93.5 | 90% | PASS | |
| B2 | 31 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 20.7 | 90.7 | 86.7 | ↓ | FAIL | REROLL/RETEST |
| B3 | 32 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.7 | 100.8 | 96.4 | ↓ | PASS | |
| B4 | 33 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.1 | 103.8 | 99.3 | ↓ | PASS | |
| B5 | 34 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.5 | 107.2 | 102.6 | ↓ | PASS | |
| ATB2 | 31R | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.1 | 101.5 | 97.1 | ↓ | PASS | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Comments/Notes: R = RETEST

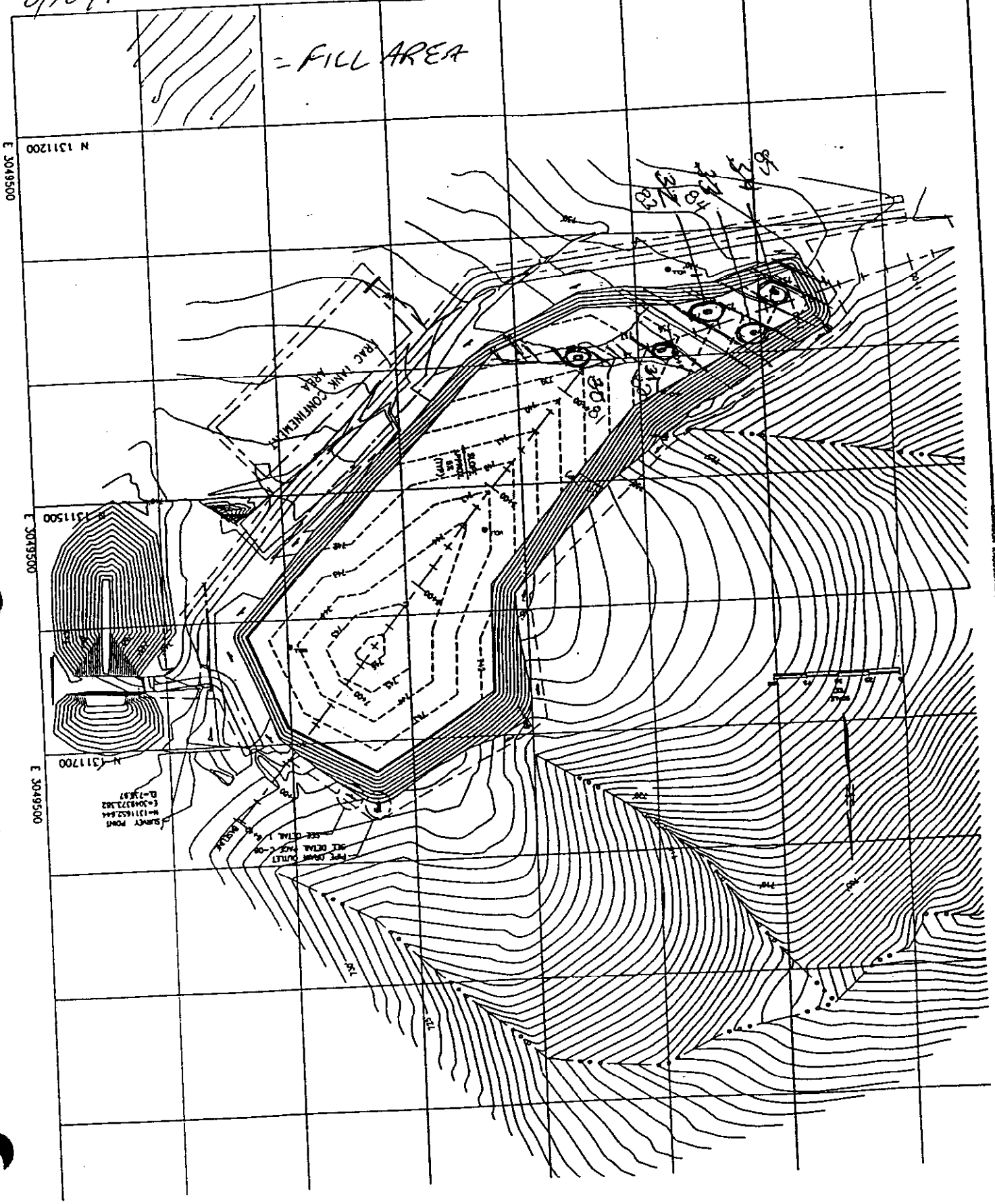
**Laboratory Test Type**
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

**Test Number (Typical Format)**
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: David B. Martin

PF-88 (4/95)

8/15/98 DIRT PLACEMENT AND TEST LOCATION MAP



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# FIELD TESTING REPORT

PROJECT NSWC CRANE LOCATION _____
JOB NO. 78328-2000-77 DATE 8/20/98 CONTRACTOR _____ WEATHER _____ TEMP _____
SPECIFICATION ASTM D698 90%

Work Performed COMPACTION TESTING ON FINISH GRADE AREAS THAT REQUIRED > 6" LIFT TO REACH GRADE

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 35 | SEE TEST LOCATION MAP | FINAL LIFT | BS10 | A | 104.5 | 18.5 | 19.0 | 104.7 | 100.2 | 90% | PASS | |
| 36 | | ↓ | ↓ | ↓ | ↓ | ↓ | 20.5 | 92.0 | 88.0 | ↓ | FAIL | |
| 37 | | ↓ | ↓ | ↓ | ↓ | ↓ | 20.5 | 94.9 | 90.8 | ↓ | PASS | |
| 38 | | ↓ | ↓ | ↓ | ↓ | ↓ | 19.8 | 99.4 | 92.0 | ↓ | PASS | |
| 36R | | ↓ | ↓ | ↓ | ↓ | ↓ | 18.5 | 100.4 | 97.4 | ↓ | PASS | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

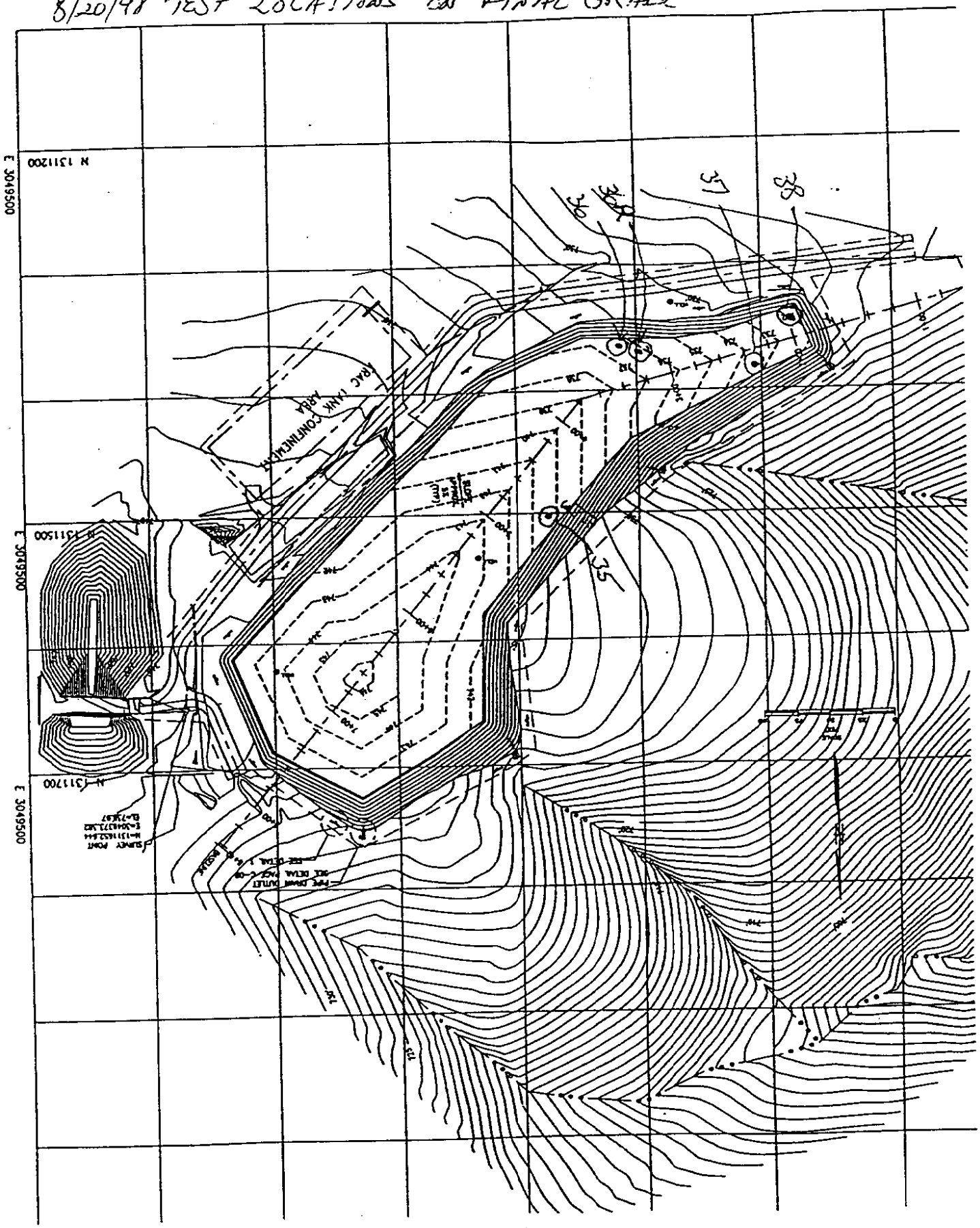
Comments/Notes: R = RETEST AFTER ADDITIONAL COMPACTION

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
[illegible]tive Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field T[illegible]

Signature: David B Martin

8/20/98 TEST LOCATIONS ON FINAL GRADE



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Columbia, IL 62236-0230
618/281-7173
800-733-7173
314-241-1785
618/281-5120 FAX

TO Don Flowers

| DATE | JOB NO. |
|---|---|
| 9-18-97 | 18328 |
| PROJECT: ~~Die~~ Dye Burial Grounds | |
| LOCATION: Crane, In. | |
| CONTRACTOR: Philip | OWNER: |
| WEATHER: Clear | TEMP. °at AM °at PM |
| PRESENT AT SITE: Dave M. - Super | |

THE FOLLOWING WAS NOTED:

@ 7:00 Philip on site. I went to the main gate to get a photo I.D. made. The people at the gate did not have my name sent in by the contractor so they could not make me a I.D. but gave me a one day pass.

@ 8:30 I met with Lois and went over the work plan as to what she needed to see in my paper work. She told me that a total of 47 density test should be taken to complete the cap that Philip is installing. Lois allso said that the density test could only be + or - 3% on the moisture

@ 9:00 I started to head out to the fill area when the MKC safty man stopped me and asked for the paper work on the density gauge and Me. I gave him all the paper work that I had. He then asked for the owners manule for the safty procedure in case their was a accident. I then gave him the papers we keep in the trucks when transporting them. He was satisfied with the safty procedures but then asked if we notified the State of Indiana that we would be using this gauge in their state. Dave Martin & I could not give him that answer so Dave Martin called the office to see if Don Flowers or Mark Conder had sent a letter to the State.

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618/281-5120 FAX

TO Don Flowers

| DATE | JOB NO. |
|---|---|
| 9-18-97 | 18328 |
| PROJECT: ~~D.E~~ DE Burial Grounds | |
| LOCATION: Crane, IL | |
| CONTRACTOR: Philip | OWNER: |
| WEATHER: Clear | TEMP. °at AM °at PM |
| PRESENT AT SITE | |

THE FOLLOWING WAS NOTED:

@ 1:00 Dave Martin informed me that it is ok to use the density guage on site. I then ran 4 test on the first lift. All of the test had a moisture content above the allowed limits. I checked some of the soil from the trucks and noticed the fill material had alot of moisture in it. I checked the copies of the procture that Lois gave me and no where on the copies did it ~~give~~ say what the natural moisture contents was. I then asked Lois if she knew if they can any test to find out what the nature moisture contents on the stack pile. She said that the testing lab did not run any natural moisture content on any of the soil. I then informed Don Flowers that if the stack pile has to much moisture in soil, we are then wasting our time trying to compact the soil because the moisture content is to high. Dave Martin suggested to take samples of the stack piles back with us tomorrow and find out what the natural moisture is on soil. The workers continued to install the fill over the site but did not use the roller to compact the fill in place.

@ 7:00 Philip departed the site

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# FIELD TESTING REPORT

PROJECT ~~Crane NW Dye~~ Burial Grounds LOCATION Crane, In

JOB NO. 18328 DATE 9-18-97 CONTRACTOR Philip WEATHER Clear TEMP ____ °F

SPECIFICATION 1st Lift 90% of the maximum dry density as determined by a STANDARD Proctor compaction test D698

Work Performed

| Test Number | Location | Laboratory Data: Depth or Elevation | Laboratory Data: Soil I.D. Number | Laboratory Data: Test Type | Laboratory Data: Maximum Dry Density (pcf) | Laboratory Data: Optimum Moisture Content % | Field Data: Moisture Content % | Field Data: Dry Density (pcf) | Field Data: % Compaction | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | See test Location Map | 1st Lift | BS-6 | A | 115.9 | 13.4 | 19.5 | 107.6 | 92.8 | 95% | Fail | |
| 02 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 20.1 | 106.5 | 91.9 | ↓ | Fail | |
| 03 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 21.7 | 98.7 | 85.2 | ↓ | Fail | |
| 04 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 20.9 | 100.9 | 87.0 | ↓ | Fail | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

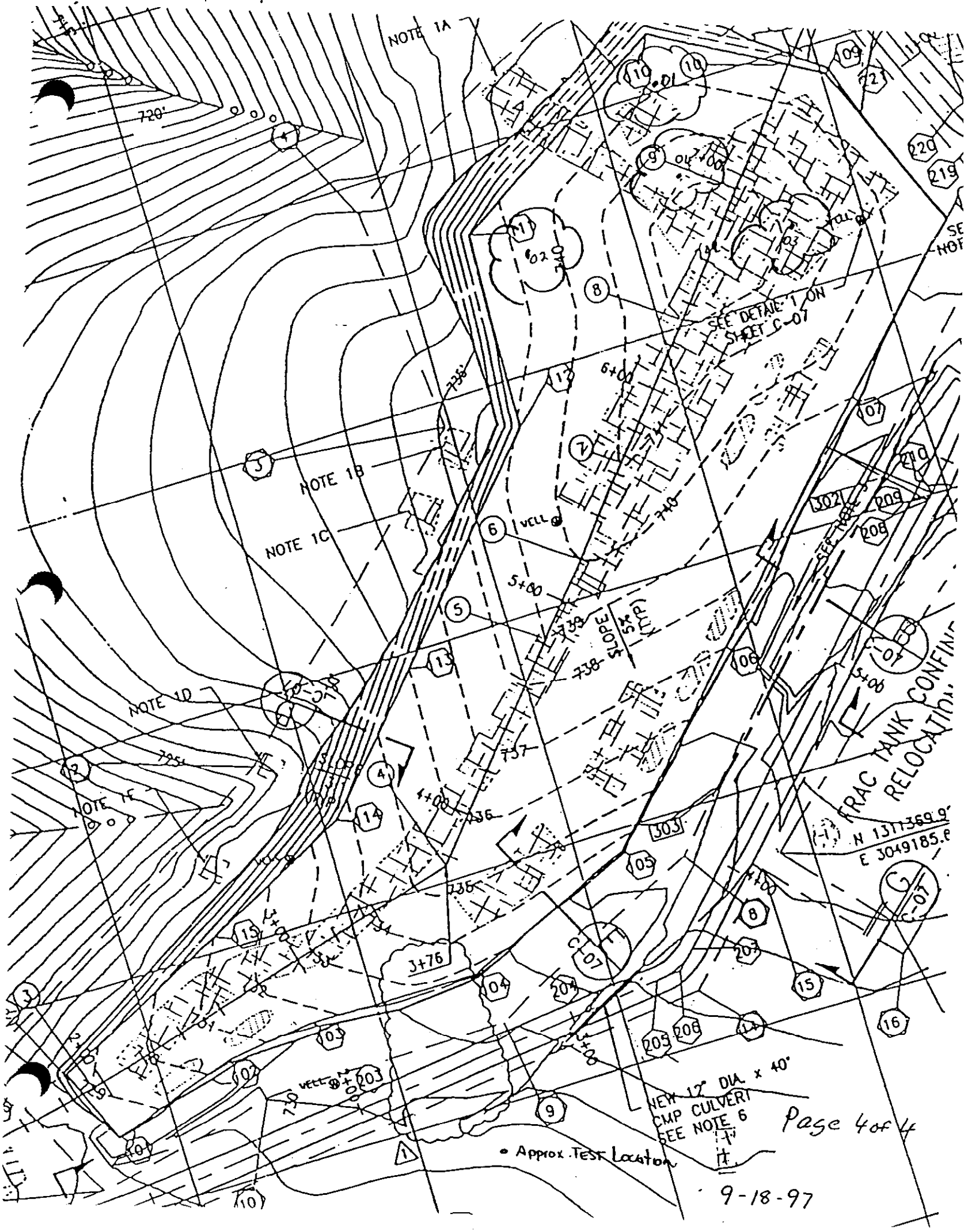
Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: Tim M. May

PE-80 (4/95)


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
720'
SEE DETAIL 1 ON SHEET C-07
SLOPE 5:1 (R)
FRAC TANK CONFIN
RELOCATION
N 1311369.9
E 3049185.
NEW 12" DIA x 40' CMP CULVERT SEE NOTE 6
• Approx. Test Location
3+76
6+00
5+00
4+00
3+00
2+00
1+00
0+00
VELL
Page 4 of 4
9-18-97

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# FIELD TESTING REPORT

PROJECT Die Burial Grounds LOCATION Cone, In
JOB NO. 18328 DATE 9-19-97 CONTRACTOR Philip WEATHER Clear TEMP ____ °F
SPECIFICATION _____

Work Performed _____

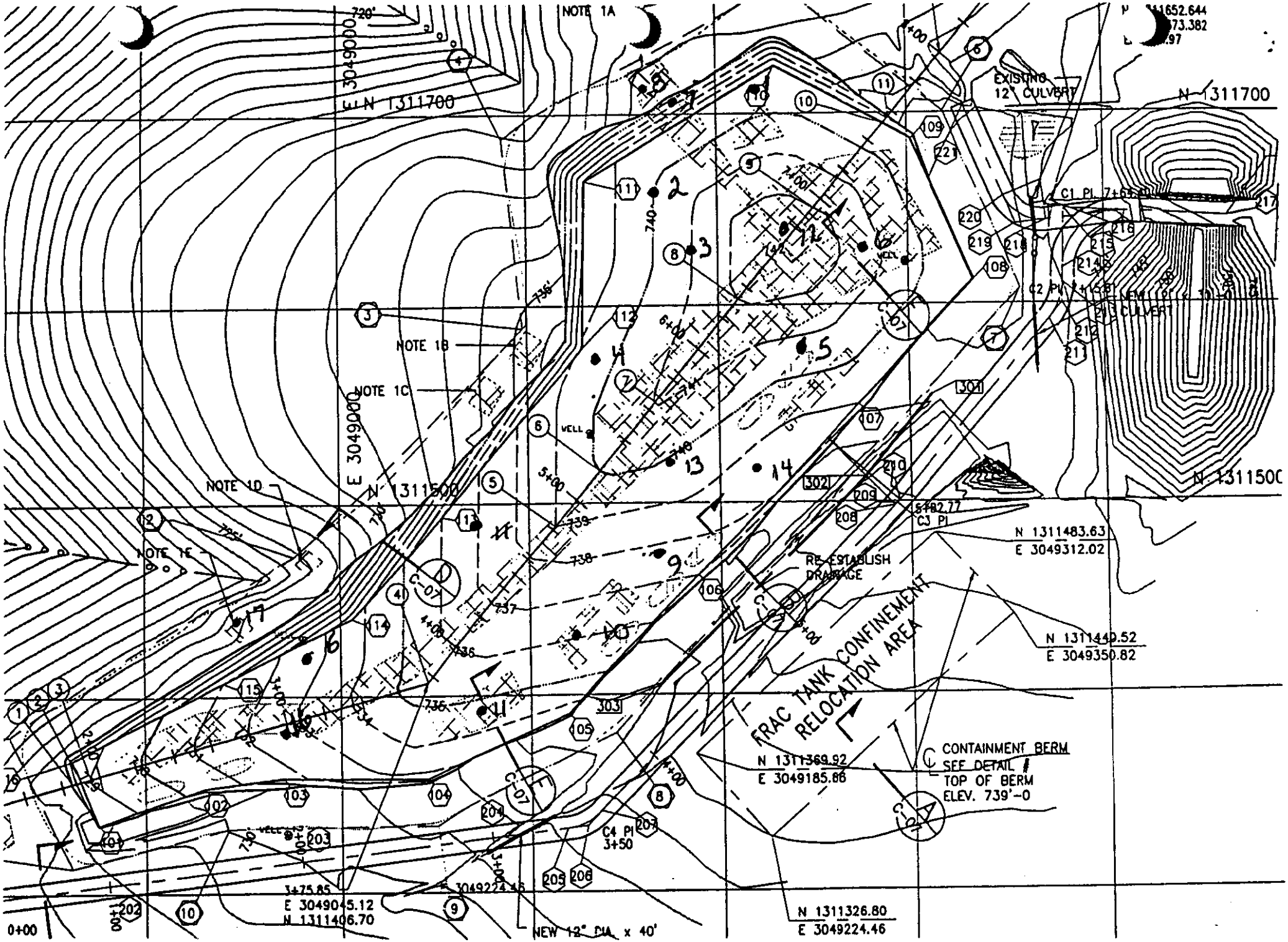
| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 05 | See Test Location Map | 1st Lift | PBS-2 | A | 106.9 | 17.8 | 12.5 | 101.6 | 95.0 | 95 | Fail | |
| 05RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 14.9 | 104.3 | 97.6 | ↓ | Pass | cap foundation |
| 06 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.7 | 103.2 | 96.5 | ↓ | Pass | cap foundation |
| 06 RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.6 | 104.1 | 97.4 | ↓ | Pass | cap foundation |
| 01 RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 20.0 | 109.0 | 102.0 | ↓ | Pass | cap foundation |
| 07 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.3 | 109.4 | 102.3 | ↓ | Pass | area 1a |
| 08 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.9 | 108.7 | 101.7 | ↓ | Pass | area 1a |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Comments/Notes:

Laboratory Test Type
A. Star roctor ASTM D-698
B. Mod roctor ASTM D-1557

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking Gene
Area Of Initial Field Test

Signature:


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
N 1311700
N 1311500
E 3049000
EXISTING 12" CULVERT
C1 PI 7+65
C2 PI 4+15
C3 PI
C4 PI 3+50
WELL
RE-ESTABLISH DRAINAGE
FRAC TANK CONFINEMENT RELOCATION AREA
CONTAINMENT BERM SEE DETAIL TOP OF BERM ELEV. 739'-0
N 1311483.63
E 3049312.02
N 1311449.52
E 3049350.82
N 1311369.92
E 3049185.66
N 1311326.80
E 3049224.46
3+75.85
E 3049045.12
N 1311406.70
NEW 12" DIA. x 40'
0+00

**PHILIP**

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TO Mark Conder

| DATE | JOB NO. |
|---|---|
| 9-24-97 | 18328 |
| PROJECT: Dic Burial Grounds | |
| LOCATION: Crane, In | |
| CONTRACTOR: Philip | OWNER: Navy |
| WEATHER: Overcast | TEMP. °at AM / °at PM |
| PRESENT AT SITE: Dave Martin - Supv. | |

THE FOLLOWING WAS NOTED:

@7:00 philip on site. I rained all day yesterday and some lastnight. Workers were able to get all of the first lift installed over the plastic. The soil is very wet from the rain. Dave said that they will not place any soil on the Cap today. Workers are going to cut down some trees and remove the stumps. Dave hopes the sun will come out today and dry out the soil. @9:00 I called Philip Lab to get the resu of the procture test. The first sample was 106.0 on the dry density with a moisture of 17.5. And the second one was 106.9 on the dry density with a moisture of 17.8. I then tested four area on the first lift. I had two test pass and two that failed. The two that failed were because the moisture was to high or to low. I was using the procture of 106.9/17.8. Dave had me retest and check some more area to get a section of the first lift to pass. After retesting and some new test I was able to get 1/3 of the cap's first lift to pass. This section is next to the Bunker.

@4:30 Philip departed the site

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# FIELD TESTING REPORT

PROJECT Die Burial Grounds LOCATION Crane, In

JOB NO. 18328 DATE 9-24-97 CONTRACTOR Philip WEATHER Overcast TEMP °F

SPECIFICATION

Work Performed

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| ~~02~~ 05 RT | See Test Location Map | 1st Lift | PBS-2 | A | 106.9 | 17.8 | 20.2 | 106.3 | 99.4 | 95 | Pass | |
| 09 | | | | | | | 13.1 | 99.2 | 92.7 | | Fail | |
| 10 | | | | | | | 21.6 | 104.3 | 97.7 | | Fail | |
| 11 | | | | | | | 20.1 | 102.7 | 96.0 | | Pass | |
| 03 RT | | | | | | | 20.3 | 101.4 | 94.8 | | Pass | |
| 04 RT | | | | | | | 19.8 | 109.7 | 102.6 | | Pass | |
| 12 | | | | | | | 20.8 | 104.1 | 97.3 | | Pass | |
| 13 | | | | | | | 22.4 | 92.1 | 86.2 | | Fail | |
| 14 | | | | | | | 16.6 | 101.3 | 94.7 | | Pass | |

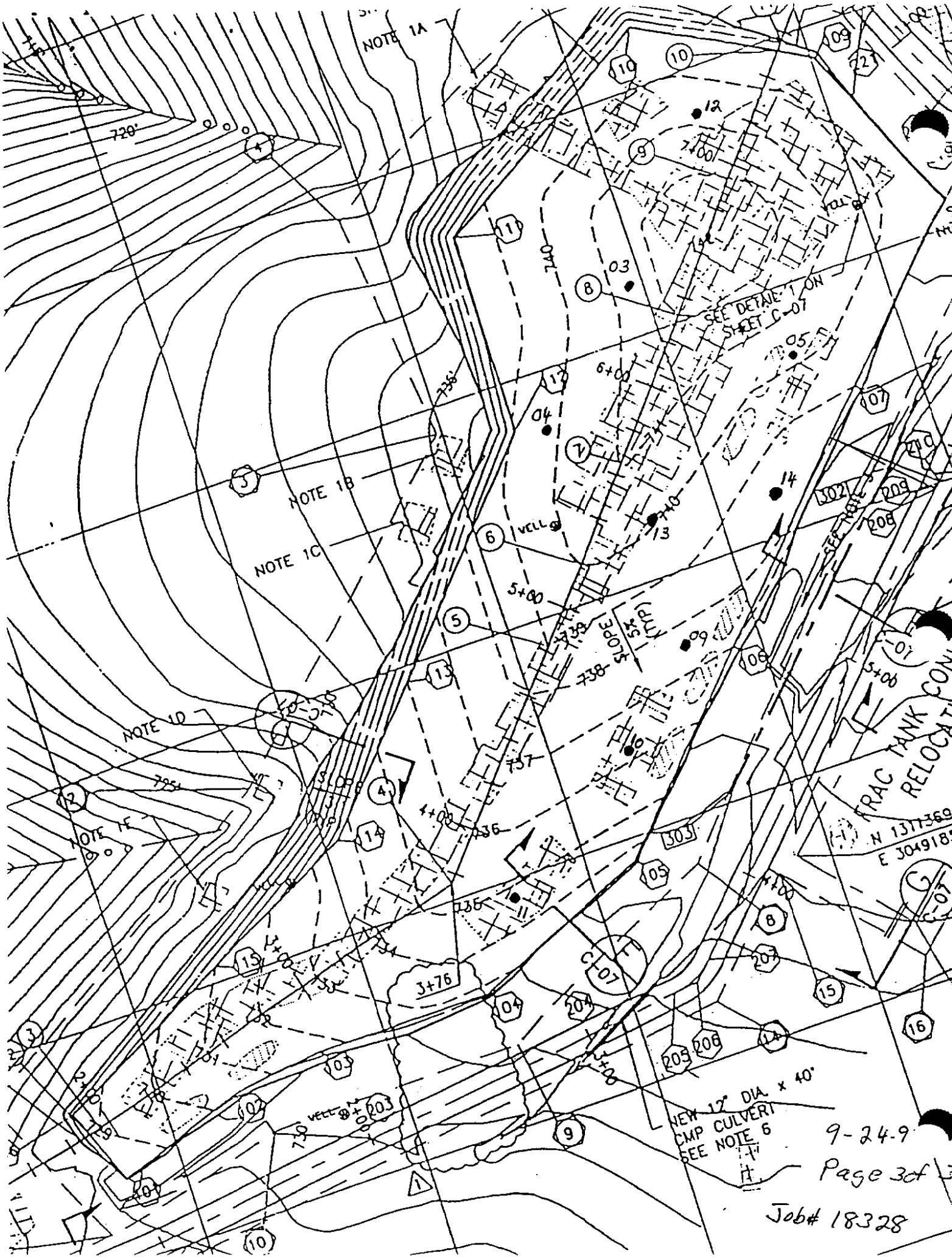
Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
I: Initial Field Test
RT I: Retest After Reworking General Area Of Initial Field Test

Signature Terri M. May

PE-88 (4/95)


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
SEE NOTE 6
SLOPE
FRAC TANK CONT
RELOCATE
N 1317369
E 304918
3+76
NEW 12" DIA. x 40'
CMP CULVERT
SEE NOTE 6
9-24-9
Page 3 of
Job# 18328

PHILIP

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umbia, IL 62236-0230
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618/281-5120 FAX

TO Mark Conder

| DATE | JOB NO. |
|---|---|
| 9-25-97 | 18328 |
| PROJECT: Dye Burial Grounds | |
| LOCATION: Crane, In | |
| CONTRACTOR: Philip | OWNER: Navy |
| WEATHER: Clear | TEMP. ° at AM / ° at PM |
| PRESENT AT SITE: Dave Martin - Supv. | |

THE FOLLOWING WAS NOTED:

@ 9:30 Philip on site. The surveyors did not show up today to survey the cap to tell Philip if they needed to add or take out some of the first lift to bring it to finnal grade. @ 11:00 Truck started to haul in fill material to complet the last part of the first lift. After the fill material was installed and then rolled, I tested the compaction. All three test passed and I informed Dave M. of the test results. @ 5:30 Philip departed the site

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# FIELD TESTING REPORT

PROJECT Dye Burial Grounds LOCATION Crane, In

JOB NO. 18328 DATE 9-25-97 CONTRACTOR Philip WEATHER Clear TEMP ____ °F

SPECIFICATION _____

Work Performed _____

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 15 | See Test Location Map | 1st Lift | 85-11 | A | 101.5 | 20.0 | 17.8 | 97.8 | 96.4 | 95 | Pass | |
| 16 | ↓ ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 17.9 | 99.3 | 97.8 | ↓ | Pass | |
| 17 | | | | | | | 17.0 | 96.3 | 94.9 | | Pass | |

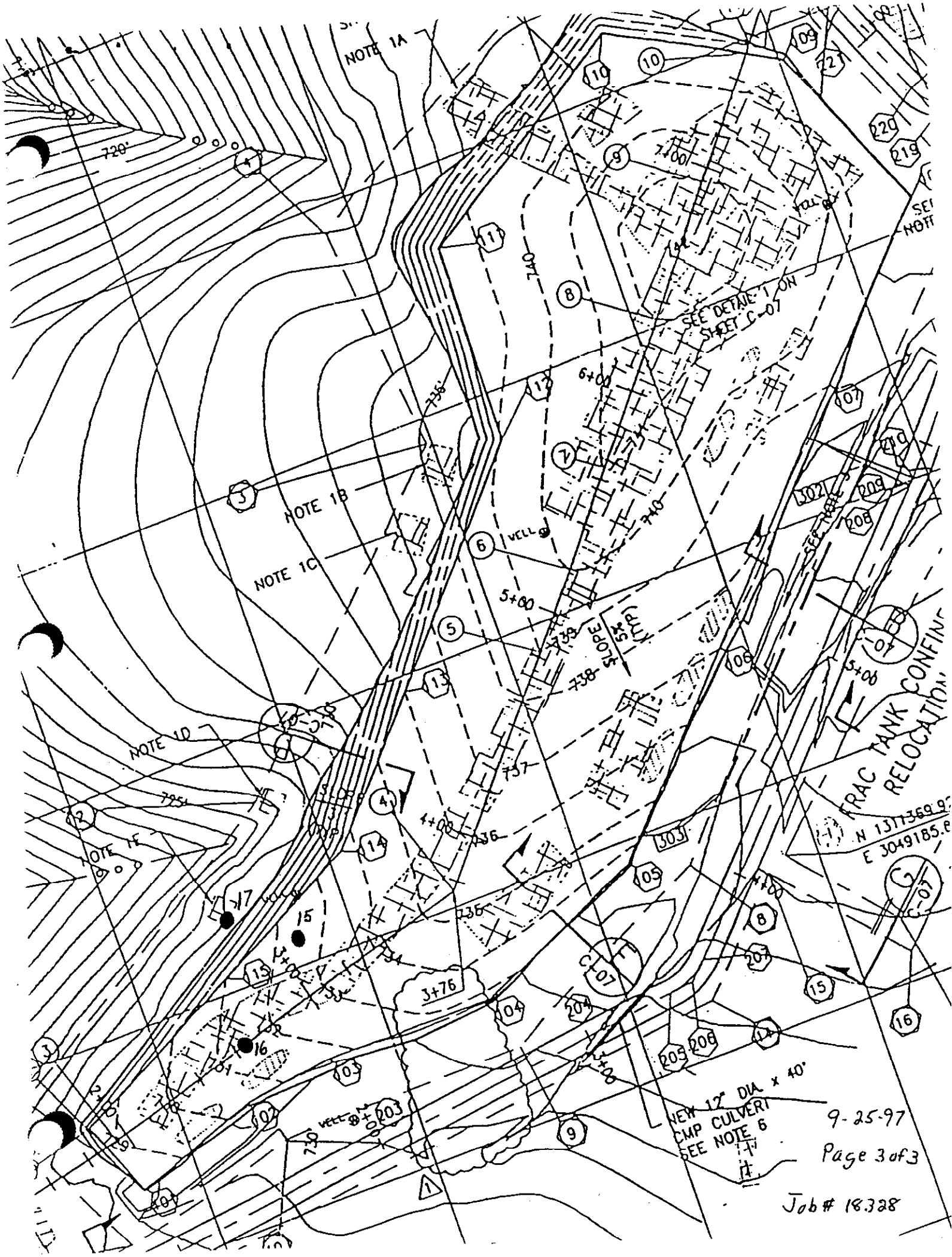
Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: Tim M. May

PE-88 (4/95)


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
SLOPE 5:1
FRAC TANK CONFIN
RELOCATION
N 1317369.9
E 3049185.6
NEW 12" DIA. x 40'
CMP CULVERT
SEE NOTE 6
3+76
6+00
5+00
4+00
3+00
2+00
1+00
0+00
VELL
C-07
9-25-97
Page 3 of 3
Job # 18328

OCT-06-1998 13:51 MK CORP 9918128546944 P.07

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# FIELD TESTING REPORT

PROJECT Dye Burial Grounds LOCATION Crane, In

JOB NO. 18328 DATE 9-26-97 CONTRACTOR Philip WEATHER Clear TEMP ____ °F

SPECIFICATION _____

Work Performed _____

| Test Number | Location | Laboratory Data: Depth or Elevation | Laboratory Data: Soil I.D. Number | Laboratory Data: Test Type | Laboratory Data: Maximum Dry Density (pcf) | Laboratory Data: Optimum Moisture Content % | Field Data: Moisture Content % | Field Data: Dry Density (pcf) | Field Data: % Compaction | Specified % Comp. | Pass/Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | See Sketch on Report | Sub Base | BS-10 | A | 104.5 | 18.5 | 19.1 | 107.1 | 102.5 | 95 | Pass | |
| 19 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.5 | 103.0 | 98.5 | ↓ | Pass | |
| 20 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 20.9 | 101.9 | 97.5 | ↓ | Pass | |
| 11RT | See Test Location Map | 1st Lift | PBS-2 | ↓ | 106.9 | 17.8 | 17.2 | 105.2 | 98.4 | ↓ | Pass | 1311390, 3049065 |
| 10RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 20.6 | 103.6 | 96.9 | ↓ | Pass | 1311440, 3049125 |
| 09 RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.6 | 102.5 | 95.8 | ↓ | Pass | 1311470, 3049165 |
| 21 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.2 | 107.6 | 100.7 | ↓ | Pass | 1311455, 3049095 |
| 22 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 17.9 | 108.5 | 101.5 | ↓ | Pass | 1311450, 3049145 |
| 13RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 19.6 | 105.2 | 98.4 | ↓ | Pass | 131135, 3049170 |

Comments/Notes: ~~2nd Lift~~

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative D[illegible]y ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: Terri M. May

PE-88 (4/95)

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# FIELD TESTING REPORT

PROJECT Dye Bucial Grounds LOCATION Crane, In

JOB NO. 18328 DATE 9-26-97 CONTRACTOR Philip WEATHER Clear TEMP ____ °F

SPECIFICATION _____

Work Performed _____

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 23 | See Test Location Map | 2nd Lift | BS-12 | A | 105.7 | 18.4 | 19.2 | 106.2 | 100.5 | 95 | Pass | 1311640, 30049275 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: [illegible]

PE-88 (4/95)

**PHILIP**

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# FIELD TESTING REPORT

PROJECT: NSWC CRANE LOCATION: CRANE, IN
JOB NO. 18328-2000-77 DATE: 9/26/98 CONTRACTOR: PHILIP/MK WEATHER: _____ TEMP: _____ °F
SPECIFICATION: ASTM D698 95%

Work Performed: _____

| Test Number | Location | Laboratory Data: Depth or Elevation | Laboratory Data: Soil I.D. Number | Laboratory Data: Test Type | Laboratory Data: Maximum Dry Density (pcf) | Laboratory Data: Optimum Moisture Content % | Field Data: Moisture Content % | Field Data: Dry Density (pcf) | Field Data: % Compaction | Specified % Comp. | Pass/Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | NEW ROAD SUBBASE | | BS-10 | A | 104.5 | 18.5 | 19.1 | 107.1 | 102.5 | 95% | PASS | |
| 19 | ↓ | | ↓ | ↓ | ↓ | ↓ | 19.5 | 103.0 | 98.5 | ↓ | PASS | |
| 20 | ↓ | | ↓ | ↓ | ↓ | ↓ | 20.9 | 101.9 | 97.5 | ↓ | PASS | |
| 11RT | SEE LOCATION MAP | | PBS-2 | A | 106.9 | 17.8 | 17.2 | 105.2 | 98.4 | ↓ | PASS | |
| 10RT | ↓ | | ↓ | ↓ | ↓ | ↓ | 20.6 | 103.6 | 96.9 | ↓ | PASS | |
| 9RT | ↓ | | ↓ | ↓ | ↓ | ↓ | 19.6 | 102.5 | 95.8 | ↓ | PASS | |
| 21 | ↓ | | ↓ | ↓ | ↓ | ↓ | 19.2 | 107.6 | 100.7 | ↓ | PASS | |
| 22 | ↓ | | ↓ | ↓ | ↓ | ↓ | 17.9 | 108.5 | 101.5 | ↓ | PASS | |
| 13RT | ↓ | | ↓ | ↓ | ↓ | ↓ | 19.6 | 105.2 | 98.4 | ↓ | PASS | |
| 23 | SEE LOCATION MAP | | PBS-2 | A | 106.9 | 17.8 | 19.2 | 106.2 | 99.3% | 95% | PASS | |

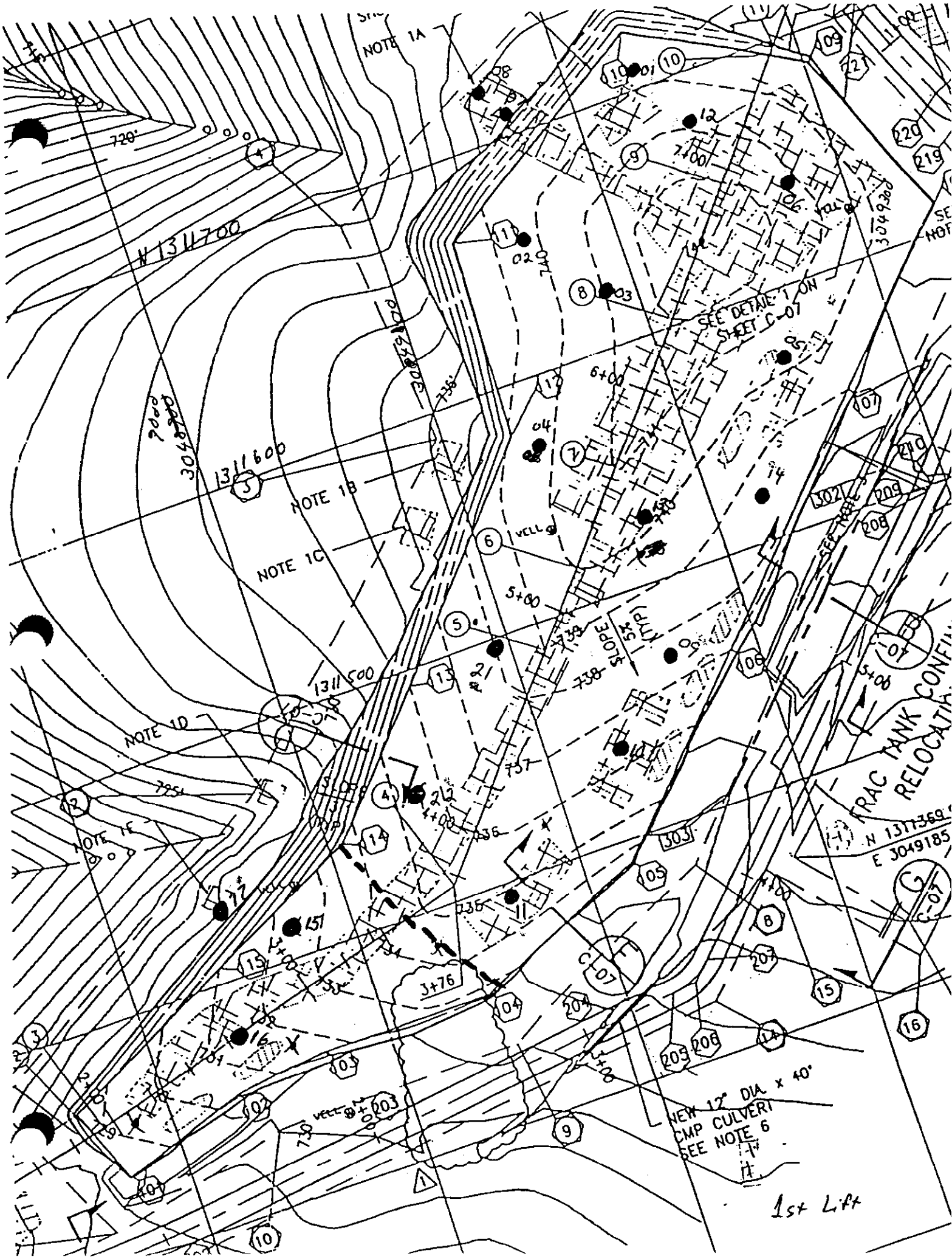
Comments/Notes:

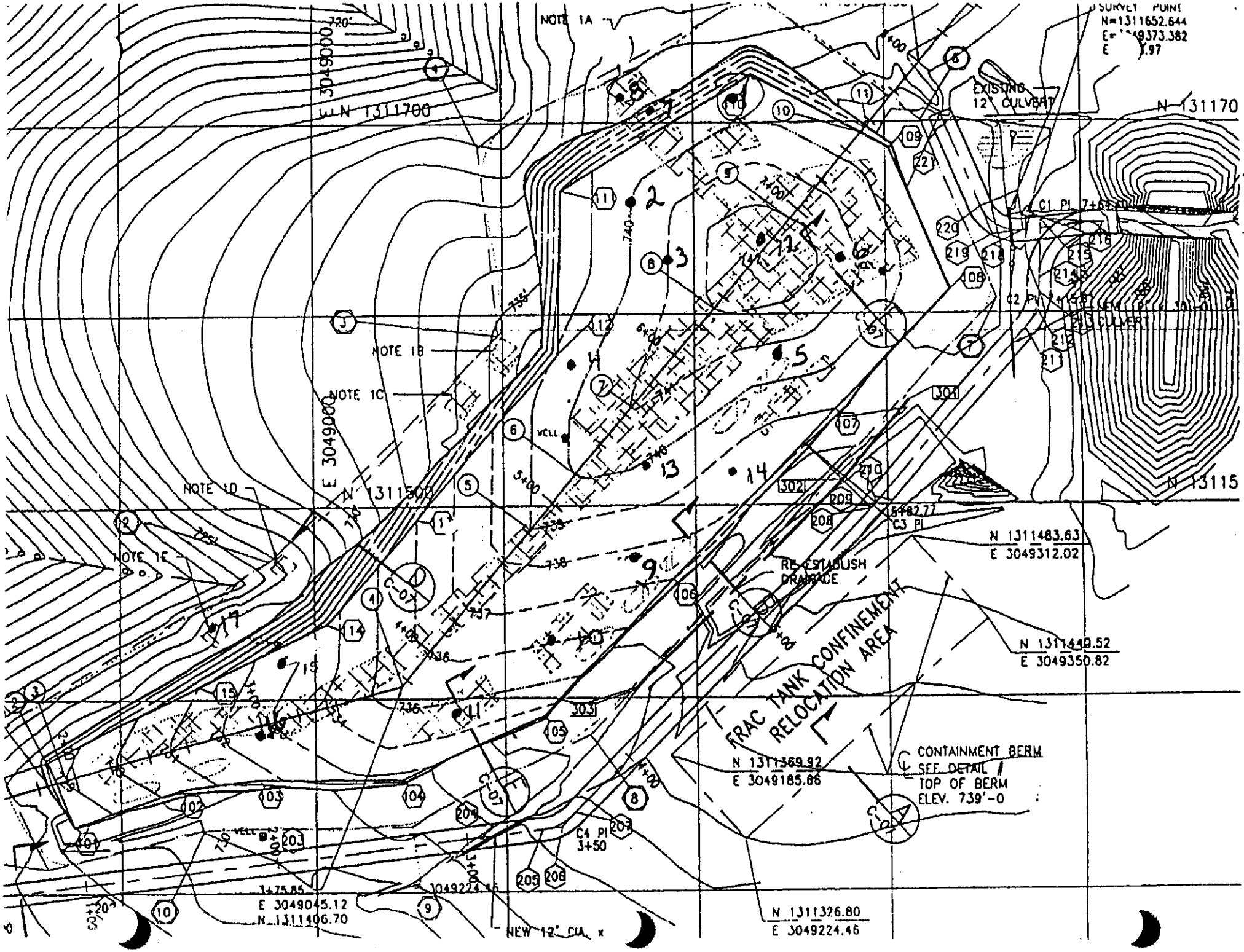
**Laboratory Test Type**
- A. Standard Proctor ASTM D-698
- B. Modified Proctor ASTM D-1557
- C. Relative Density ASTM D-4253 and 4254

**Test Number (Typical Format)**
- I: Initial Field Test
- RT I: Retest After Reworking General Area Of Initial Field Test

Signature: _____

PE-88 (4/95)


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
N 1311700
1311600
1311500
720'
SEE DETAIL 1 ON SHEET C-07
SLOPE 3:1
FRAC TANK CONFIG RELOCATION
N 1317369
E 3049185
NEW 12" DIA x 40' CMP CULVERT SEE NOTE 6
1st Lift


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
E 3049000
N 1311500
N 1311700
N 131170
N 13115
EXISTING 12" CULVERT
C1 PI 7+61.40
C2 PI 2+15.80
C3 PI
C4 PI 3+50
RE-ESTABLISH DRAINAGE
FRAC TANK CONFINEMENT RELOCATION AREA
CONTAINMENT BERM
SEE DETAIL
TOP OF BERM
ELEV. 739'-0
N 1311483.63
E 3049312.02
N 1311449.52
E 3049350.82
N 1311369.92
E 3049185.86
N 1311326.80
E 3049224.46
3+75.85
E 3049045.12
N 1311406.70
NEW 12" DIA.
WELL

**PHILIP**

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230
618/281-7173
800-733-7173
314-241-1785
618/281-5120 FAX

| | |
|---|---|
| DATE: 9-27-97 | JOB NO.: 18328 |
| PROJECT: Dye Burial Grounds | |
| LOCATION: Crane, In | |
| CONTRACTOR: Philip | OWNER: Navy |
| WEATHER: Clear | TEMP. °at AM °at PM |
| PRESENT AT SITE: Dave Martin | |

TO: Mark Conder

THE FOLLOWING WAS NOTED:

@ 10:00 Philip on site. Workers are installing the second lift to the cap of the landfill. As workers would get a area installed and then roll it, I would then check the compaction. Workers were installing about 8 inch thick lift. I tested ~~area~~ five different areas of the second lift and all five were above the required 95% compac

@ 3:30 Workers stop for today and I was able to test all of the area of the fill installed today and pass them for compaction. Philip depar the site

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SIGNED: Tim M. May

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# FIELD TESTING REPORT

PROJECT Dyc Burial Grounds LOCATION Crane, In

JOB NO. 18328 DATE 9-27-97 CONTRACTOR Philip WEATHER _____ TEMP _____ °F

SPECIFICATION _____

Work Performed _____

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 24 | See Test Location Map | 2nd Lift | 85-12 | A | 105.7 | 18.4 | 19.4 | 101.9 | 96.3 | 95 | Pass | 1311585, 3049280 |
| 25 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.6 | 102.5 | 97.0 | ↓ | Pass | 1311605, 3049240 |
| 26 | | | | | | | 18.1 | 102.5 | 96.9 | | Pass | 1311580, 3049165 |
| 27 | | | | | | | 17.6 | 105.7 | 100.0 | | Pass | 1311615, 3049190 |
| 28 | | | | | | | 17.5 | 102.2 | 96.6 | | Pass | 1311680, 3049255 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

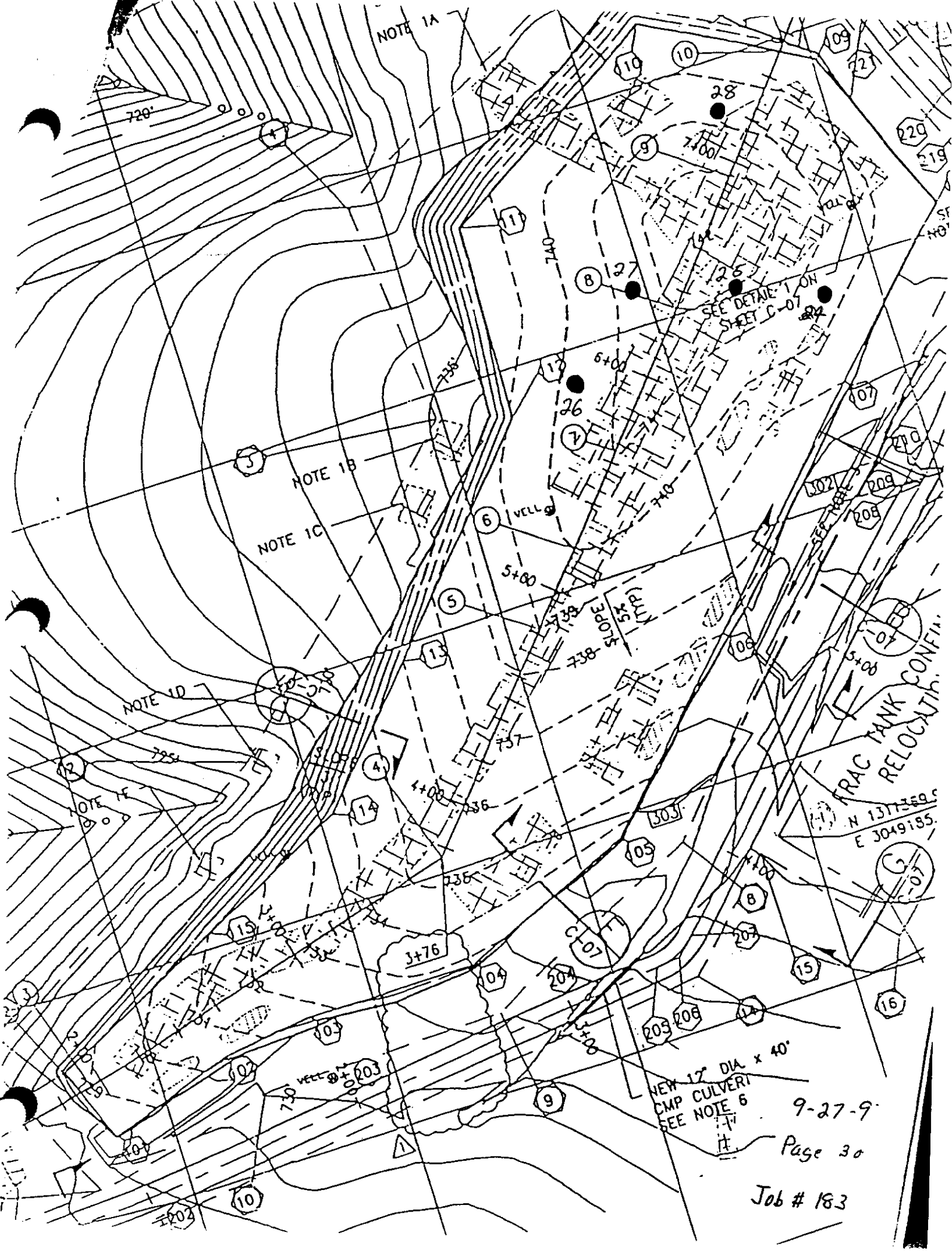
Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: Lisa M. May

PE-88 (4/95)


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
SLOPE 5% MAX
FRAC TANK CONFIG. RELOCATION
N 1377359.9
E 3049185.
NEW 12" DIA x 40' CMP CULVERT SEE NOTE 6
3+76
9-27-9
Page 30
Job # 183

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# FIELD TESTING REPORT

PROJECT Dyo Burial Grounds LOCATION Crane, Tx
JOB NO. 18328 DATE 9-29-97 CONTRACTOR Philip WEATHER Clear TEMP ____ °F
SPECIFICATION _____

Work Performed _____

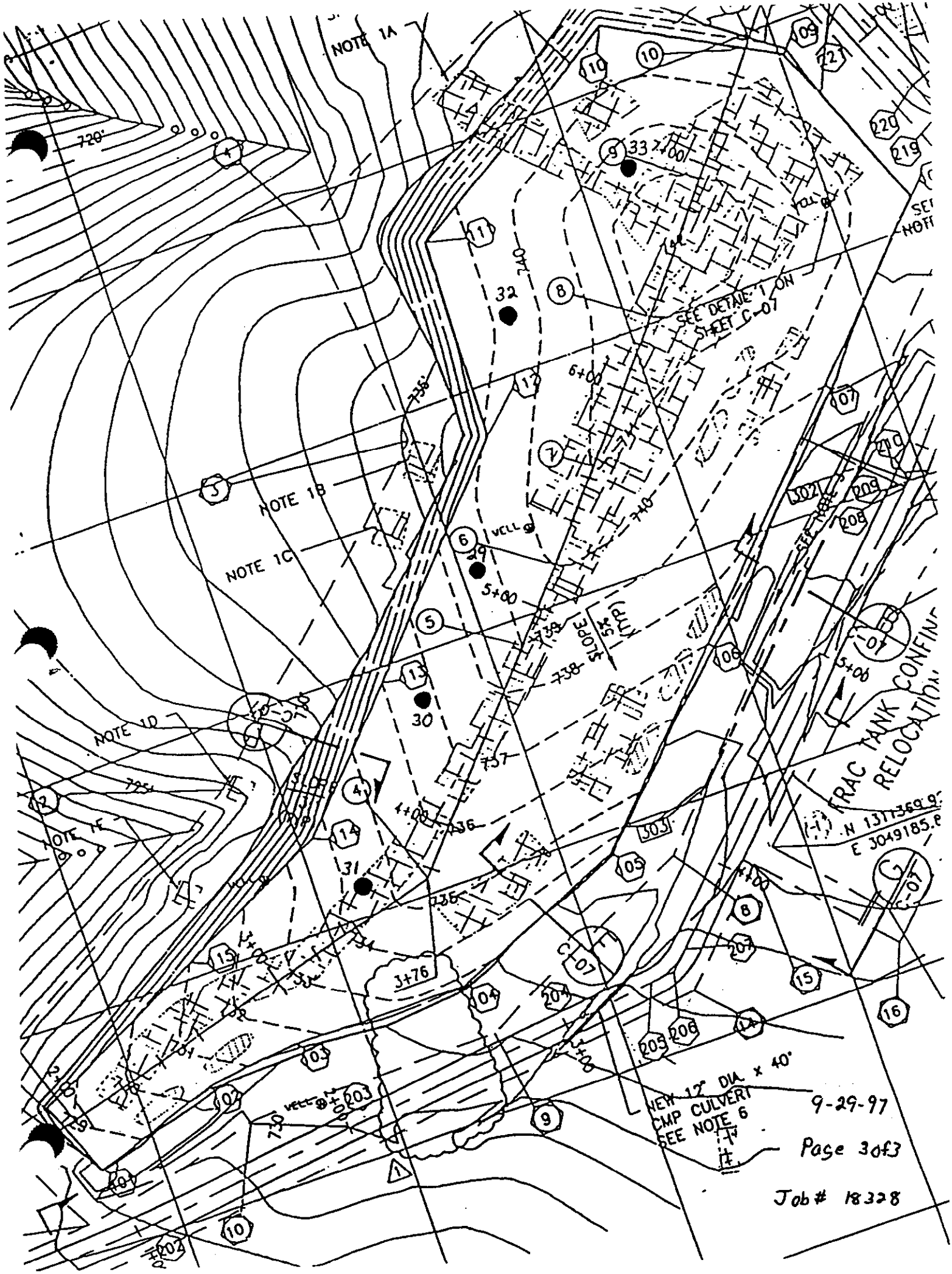
| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 29 | See Test Location Map | 2nd Lift | BS-12 | A | 105.7 | 18.4 | 17.5 | 103.0 | 97.4 | 95 | Pass | 1311525, 3049110 |
| 30 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 16.2 | 102.9 | 97.3 | ↓ | Pass | 1311480, 3049065 |
| 31 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 16.6 | 97.7 | 92.4 | ↓ | Fail | 1311415, 3049015 |
| 31 RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.2 | 100.8 | 95.3 | ↓ | Pass | " " |
| 32 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.8 | 96.2 | 91.0 | ↓ | Fail | 1311625, 3049150 |
| 32 RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 17.2 | 103.5 | 97.9 | ↓ | Pass | " " |
| 33 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 15.5 | 102.4 | 96.8 | ↓ | Pass | 1311675, 3049220 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative [illegible]y ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: [illegible]


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
FRAC TANK CONFIN
RELOCATION
N 1311369.9
E 3049185.
NEW 12" DIA. x 40' CMP CULVERT SEE NOTE 6
9-29-97
Page 3 of 3
Job # 18328

**PHILIP**

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230
618/281-7173
800-733-7173
314-241-1785
618/281-5120 FAX

TO Mark Conder

| DATE | JOB NO. |
|---|---|
| 9-30-97 | 18328 |
| PROJECT: Dye Burial Grounds | |
| LOCATION: Crane, In | |
| CONTRACTOR: Philip | OWNER: Navy |
| WEATHER: Clear | TEMP. °at AM °at PM |
| PRESENT AT SITE: Dave Martin - Supv. | |

THE FOLLOWING WAS NOTED:

@ 8:00 Philip on site. Workers continue to build up the land fill cap to bring it to the required height. I check each lift that is installed for compaction. Some test have been below the required 95% compaction. So I have had the workers reroll the failed area and then retest the area. ~~the~~ All retested area have then pass the 95%. Workers are ~~continuing~~ a working on the north east section of the landfill cap.

@ 4:30 All area of fill placement pass the required 95% compaction Philip departed the site

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SIGNED Tim M. May

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# FIELD TESTING REPORT



PROJECT Dye Burial Grounds LOCATION Crane, In

JOB NO. 18328 DATE 9-30-97 CONTRACTOR Philip WEATHER Clear TEMP ____ °F

SPECIFICATION _____

Work Performed _____

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 34 29 | See Test Location Map | 1st Lift | BS-12 | A | 105.7 | 18.4 | 16.8 | 94.8 | 89.6 | 95 | Fail | 1311650, 3049130 |
| 35 20 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.1 | 100.4 | 94.9 | ↓ | Pass | 1311565, 3049080 |
| 34 RT | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | 18.7 | 103.0 | 97.4 | ↓ | Pass | 1311650, 3049120 |
| 36 31 | ↓ | 3rd Lift | ↓ | ↓ | ↓ | ↓ | 17.3 | 99.5 | 94.1 | ↓ | Fail | 1311710, 3049250 |
| 36 RT | ↓ | " | ↓ | ↓ | ↓ | ↓ | 17.9 | 100.1 | 94.7 | ↓ | Pass | " " |
| 37 30 | ↓ | 2nd | ↓ | ↓ | ↓ | ↓ | 16.7 | 101.1 | 95.6 | ↓ | Pass | 1311625, 3049135 |
| 38 33 | ↓ | 3rd | ↓ | ↓ | ↓ | ↓ | 17.9 | 106.8 | 101.0 | ↓ | Pass | 1311650, 3049180 |
| 39 30 | ↓ | " | ↓ | ↓ | ↓ | ↓ | 18.9 | 101.4 | 95.6 | ↓ | Pass | 1311660, 3049150 |
| 40 35 | ↓ | 4th | ↓ | ↓ | ↓ | ↓ | 20.0 | 100.1 | 94.7 | ↓ | Pass | 1311585, 3049205 |

Comments/Notes:

Laboratory Test Type
- A. Standard Proctor ASTM D-698
- B. Modified Proctor ASTM D-1557
- C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
- I: Initial Field Test
- RT I: Retest After Reworking General Area Of Initial Field Test

Signature: Tim M. May

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# FIELD TESTING REPORT



PROJECT Dye Burial Grounds LOCATION Crane, In
JOB NO. 18328 DATE 9-30-97 CONTRACTOR Philip WEATHER Clear TEMP ____ °F
SPECIFICATION _____

Work Performed _____

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 4231 | See Test Location Map | 4th Lift | BS-12 | A | 105.7 | 18.4 | 16.6 | 104.4 | 98.8 | 95 | Pass | 1311645, 3049250 |
| 4237 | ↓ ↓ | " ↓ | ↓ | ↓ | ↓ | ↓ | 17.4 | 105.9 | 100.2 | ↓ | Pass | 1311650, 3049140 |
| 4333 | | 5th ↓ | ↓ | ↓ | ↓ | ↓ | 18.7 | 107.2 | 101.4 | | Pass | 1311660, 3049130 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

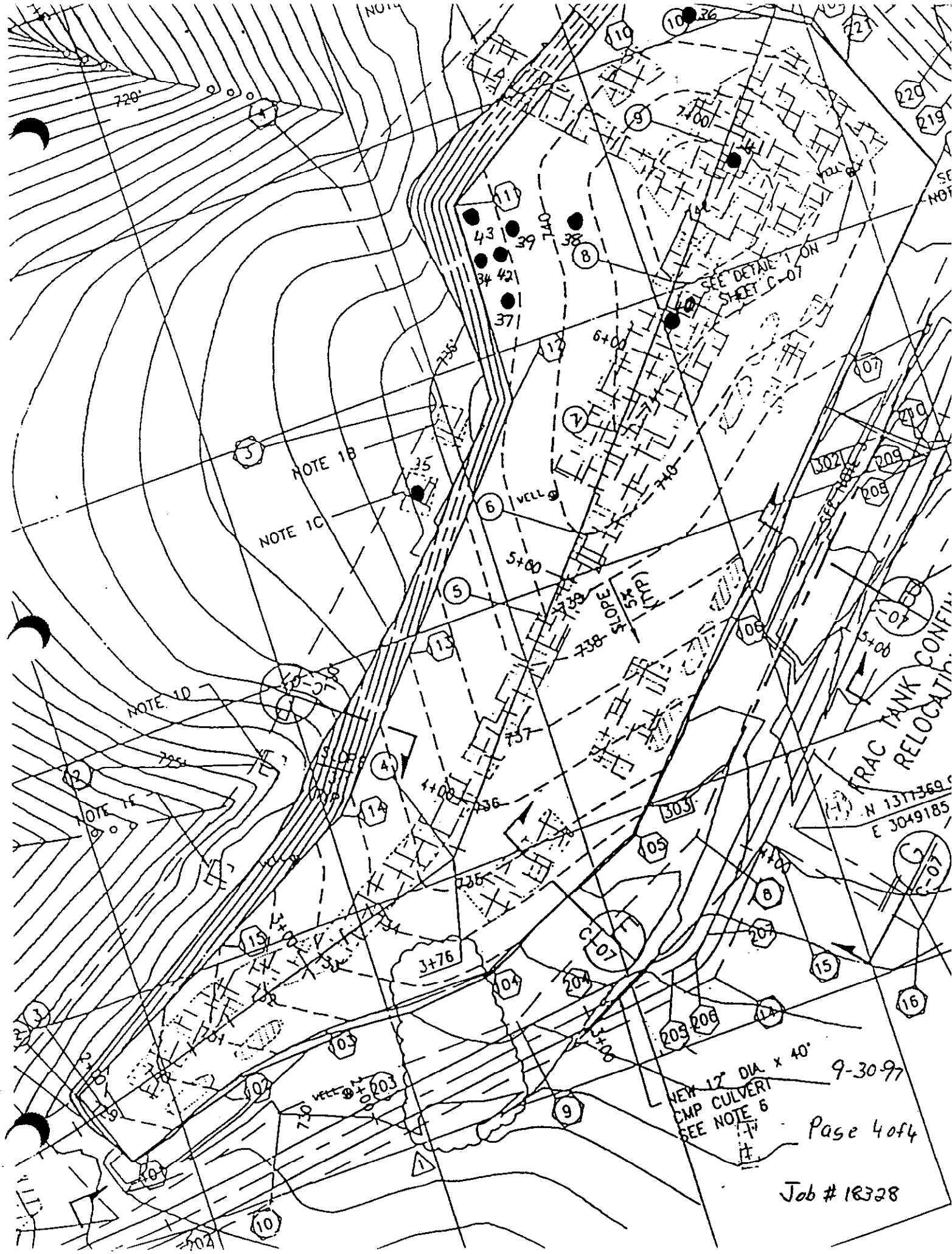
Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: Wm. M. May

PE-88 (4/95)


NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
SLOPE 3:1 (TYP)
FRAC TANK CONFIG RELOCATION
N 1317369
E 3049185
NEW 12" DIA. x 40' CMP CULVERT SEE NOTE 6
9-30-97
Page 4 of 4
Job # 18328

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# FIELD TESTING REPORT

PROJECT DYE BURIAL GROUNDS LOCATION CRANE IN

JOB NO. 18328 DATE 10-1-97 CONTRACTOR PHILIP WEATHER CLEAR/COOL TEMP 50-70 °F

SPECIFICATION ASTM D698

Work Performed

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 4439 | SEE TEST LOCATION MAP | 5TH LIFT | BS-12 | A | 105.7 | 18.4 | 18.2 | 106.1 | 100.3 | 95% | PASS | |
| 4540 | ↓ | 5TH LIFT | ↓ | ↓ | ↓ | ↓ | 18.7 | 108.2 | 102.3 | ↓ | PASS | |
| 4611 | ↓ | 3RD LIFT | ↓ | ↓ | ↓ | ↓ | 21.0 | 101.1 | 95.6 | ↓ | PASS | |
| 4742 | ↓ | 3RD LIFT | ↓ | ↓ | ↓ | ↓ | 18.8 | 102.1 | 96.5 | ↓ | PASS | |
| 4843 | ↓ | 2ND LIFT | ↓ | ↓ | ↓ | ↓ | 20.1 | 104.5 | 98.9 | ↓ | PASS | |
| 4844 | ↓ | 2ND LIFT | ↓ | ↓ | ↓ | ↓ | 18.2 | 105.4 | 99.7 | ↓ | PASS | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

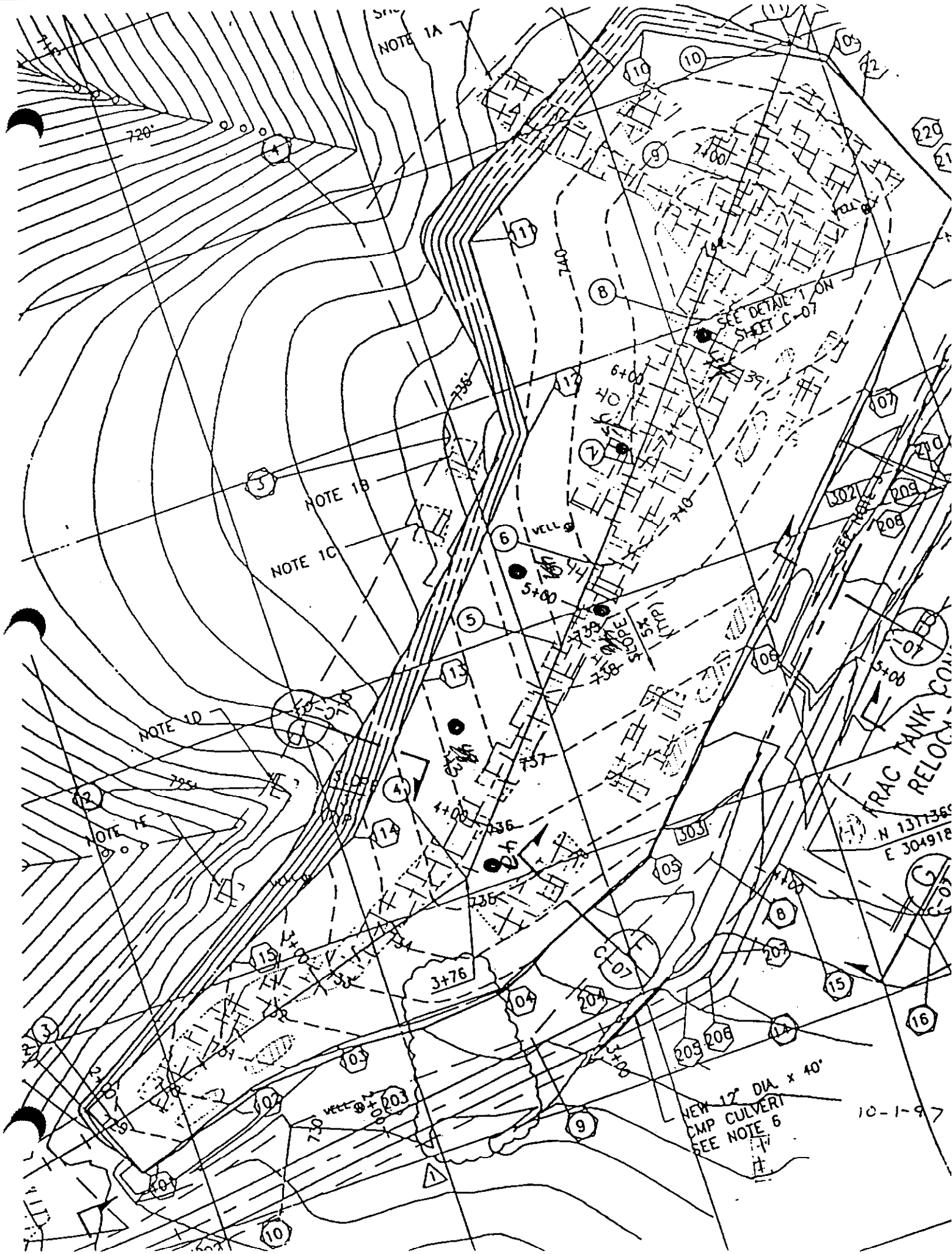
Comments/Notes:

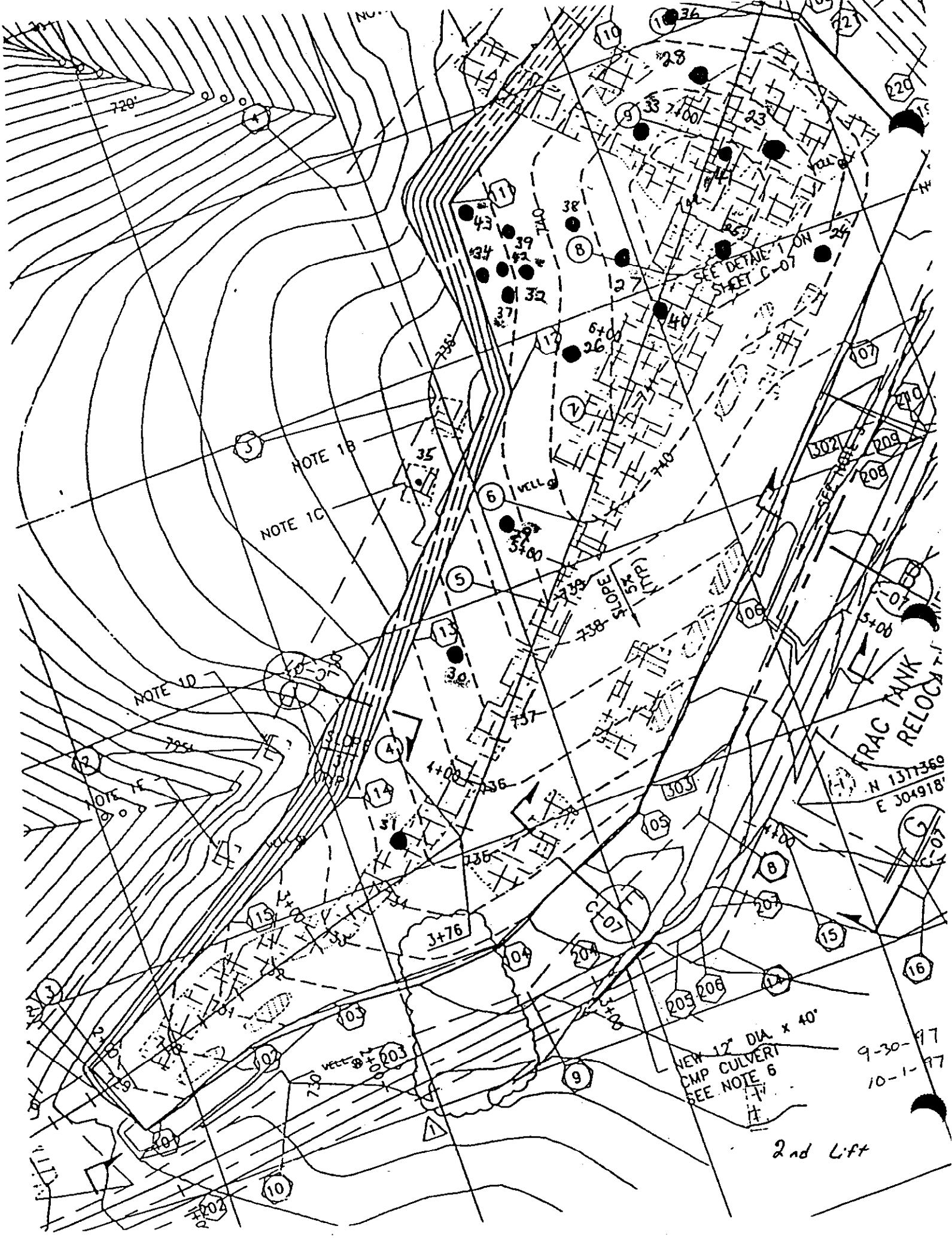
Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: David B. Martin

PE-88 (4/95)


NOTE 1A
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
WELL
3+76
NEW 12" DIA. x 40' CMP CULVERT SEE NOTE 6
10-1-97
FRAC TANK CONT RELOCATION
N 1317369
E 304918


NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL ON SHEET C-07
SLOPE
FRAC TANK RELOCATION
N 1317369
E 304918
NEW 12" DIA x 40' CMP CULVERT SEE NOTE 6
9-30-97
10-1-97
2nd Lift
3+76
4+00
5+00
6+00
7+00
WELL

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# FIELD TESTING REPORT

PROJECT: CRANE DYE BURIAL GROUND CAP LOCATION: CRANE NAVAL BASE
JOB NO. 18328 DATE 10-3-97 CONTRACTOR PHILIP WEATHER SUNNY TEMP 55-84 °F
SPECIFICATION _____

Work Performed: COMPACTION TESTING OF FILL DIRT FOR FOUNDATION CAP

| Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 5045 | SEE TEST LOCATION MAP | LIFT #3 | DS 12 | A | 105.7 | 18.4 | 19.0 | 104.0 | 98.3 | 95% | PASS | |
| 5946 | ↓ | LIFT #2 | ↓ | ↓ | ↓ | ↓ | 17.4 | 105.0 | 99.3 | ↓ | PASS | |
| 5847 | ↓ | LIFT #2 | ↓ | ↓ | ↓ | ↓ | 17.6 | 96.8 | 91.5 | ↓ | FAIL | |
| 5248 | ↓ | LIFT #2 | ↓ | ↓ | ↓ | ↓ | 18.7 | 100.5 | 95.0 | ↓ | PASS | |
| 5848 | ↓ | LIFT #2 | ↓ | ↓ | ↓ | ↓ | 17.5 | 102.1 | 96.5 | ↓ | PASS | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

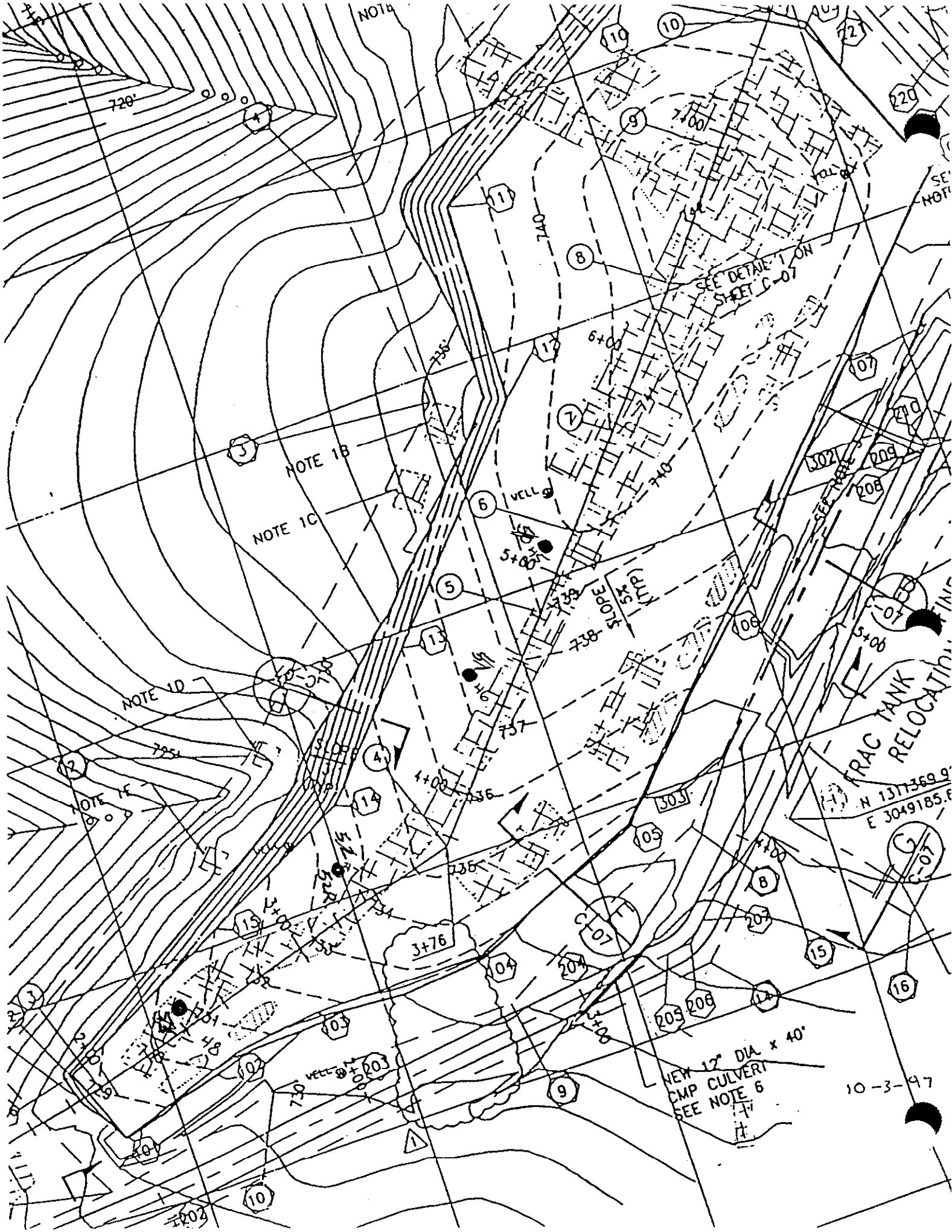
Comments/Notes:

Laboratory Test Type
A. Standard Proctor ASTM D-698
B. Modified Proctor ASTM D-1557
C. Relative Density ASTM D-4253 and 4254.

Test Number (Typical Format)
1: Initial Field Test
RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: David B. Martin

PE-88 (4/95)


NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
FRAC TANK RELOCATION
NEW 12" DIA x 40' CMP CULVERT SEE NOTE 6
10-3-97
N 1317369.9
E 3049185.6
3+76
5+00
6+00
4+00
VELL
720'
735'
740'
739
738
737
736
735
795

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# FIELD TESTING REPORT

PROJECT CRANE DYE BURIAL GROUND CAP LOCATION CRANE, INDIANA

JOB NO. 18328 DATE 10/7/97 CONTRACTOR PHILIP WEATHER SUNNY TEMP 60-80 °F

SPECIFICATION ASTM D 698

Work Performed placement and compaction of fill dirt

| | Test Number | Location | Laboratory Data | | | | | Field Data | | | Specified % Comp. | Pass/ Fail | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Depth or Elevation | Soil I.D. Number | Test Type | Maximum Dry Density (pcf) | Optimum Moisture Content % | Moisture Content % | Dry Density (pcf) | % Compaction | | | |
| 49 | 54 | SEE TEST LOCATION MAP | | BS 12 | A | 105.7 | 18.4 | 16.8 | 95.3 | 90.1 | 95% | FAIL | |
| 50 | 55 | ↓ | | ↓ | ↓ | ↓ | ↓ | 12.7 | 100.7 | 95.2 | ↓ | FAIL | |
| 51 | 56 | | | | | | | 16.3 | 102.7 | 97.1 | | PASS | |
| 49 | 54R | | | | | | | 15.8 | 100.5 | 95.1 | | PASS | |
| 50 | 55R | | | | | | | 16.3 | 105.2 | 99.4 | | PASS | |

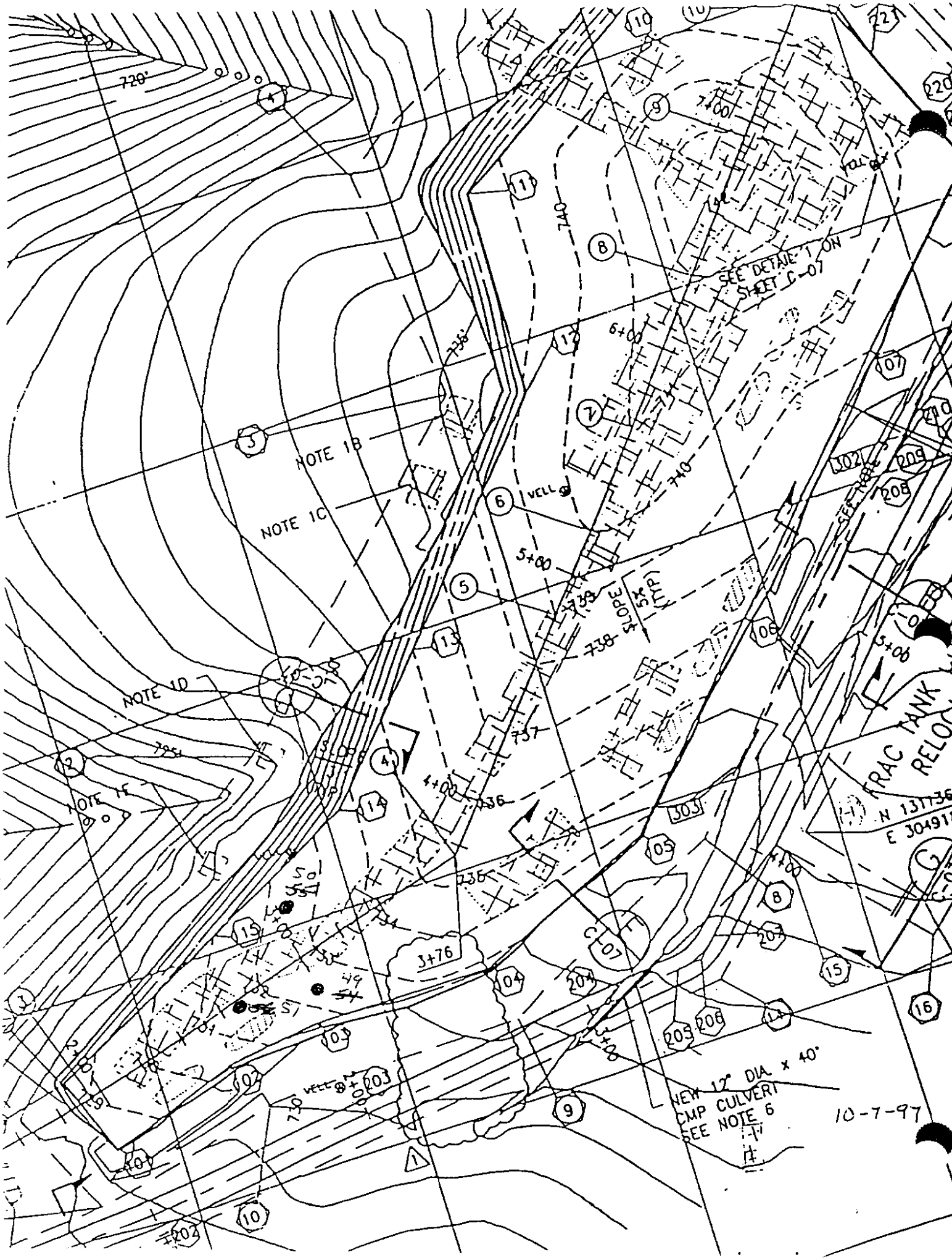
Comments/Notes:

**Laboratory Test Type**
- A. Standard Proctor ASTM D-698
- B. Modified Proctor ASTM D-1557
- C. Relative Density ASTM D-4253 and 4254.

**Test Number (Typical Format)**
- 1: Initial Field Test
- RT 1: Retest After Reworking General Area Of Initial Field Test

Signature: David S. Martin

PE-88 (4/95)


720'
NOTE 1B
NOTE 1C
NOTE 1D
NOTE 1E
SEE DETAIL 1 ON SHEET C-07
6+00
5+00
4+00
3+76
WELL
SLOPE
FRAC TANK RELOC
N 131736
E 304911
NEW 12" DIA x 40' CMP CULVERT SEE NOTE 6
10-7-97

# APPENDIX J

# FIELD INSPECTIONS

# APPENDIX J
# FIELD INSPECTIONS

## INDEX


J-1 Field Inspections

J-2 Field Inspection Checklists

J-3 Site Conditions Inspection Checklists

# J-1

# Field Inspections

# CONTRACTOR APPROVAL FORM
# NSWC CRANE
# DYE BURIAL GROUND
# INTERIM MEASURES CAP

## SUBCONTRACTOR NOTICE OF PREPARATION

Area/Item
(ready to be inspected/approved): CAP - foundation - subgrade
Date: 7/10/98 incomplete
Comments: Surface prep - density compaction testing completed.

Subcontractor's Signature

Site Superintendent
Title

## CONTRACTOR APPROVAL/DISAPPROVAL

☒ Approved ☐ Disapproved

Date: 07-10-98

Comments: Cap Foundation complete excluding surface prep.

Additional Work Items:

Contractor Signature/Date 07/10/98

Acknowledged OICC Signature 7/14/98 Date

Acknowledged EPD Signature 7/9/98 Date

# J-2

# Field Inspection Checklists

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| SITE PREPARATORY WORK<br>Dye Burial Ground | DBP-01 | NOV 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | **PREPARATORY INSPECTION** | | | |
| 1 | Conduct preparatory phase meeting prior to initiating work items for site clearing, stripping, and cutting. | Accept | | L. Bigley 08/28/97 |
| 2 | Verify submittals required by Vendor Data Schedule have been approved and signed. | Reject<br>Accept | Sub. For Application of herbcide has not been submitted | (1) L. Bigley 09/12/97 |
| 3 | Conduct on-ground examination of areas to be cleared and identify items or existing features, including plant life, to be undisturbed and protected. Resolve discrepancies prior to commencement of work. | Accept | FRAC Confinement Area has been relocated to avoid Indiana Bat potential Roosting trees | L. Bigley 08/28/97 |
| 4 | Ensure that a Decontamination Plan has been developed and approved. | N/A | PART of WORK PLAN | — |
| 5 | Verify that a review of Safety requirements is performed as a part of the preparatory inspection. | Accept | PART OF PREP. PHASE MEETING | L. Bigley 08/28/97 |
| | **INITIAL PHASE CONTROL** | | | |
| 1 | Protection of items not to be removed or disturbed has been provided, as necessary. | Accept | | L. Bigley 08/29/97 |
| 2 | Verify that dust control measures are available and effective. | Accept | NO VISIBLE DUST DURING TREE FALLING OPERATION AT DBG | L. Bigley 08/29/97 |
| 3 | Verify run-on/run-off controls are ready to implement. | Accept | Silt Fence in place at DBG FROM PREVIOUS CONSTRUCTION ACTIVITIES AT DBG | L. Bigley 08/29/97 |
| 4 | Confirm work areas have been located with the limits of work clearly established (stakes, lines, monuments). | Accept | | L. Bigley 08/29/97 |

ADDITIONAL NOTES OR COMMENTS

(1) Application of herbcide to stumps is not to proceed until submittals for herbcide and applicators lin. have been approved (Scheduled Sep 9, 1997)

Specific Item Identification or Location, as applicable:

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - Crane, Indiana | 0009, Statement of Work #007 | SITE PREPARATORY WORK, Dye Burial Ground DBP-01 | PAGE 1 OF 1 |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

# FIELD INSPECTION CHECKLIST

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| SITE PREPARATORY WORK<br>Dye Burial Ground | DBP-02 | NOV 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | FOLLOW-UP PHASE CONTROL | | | |
| 1 | Verify ground surface vegetation indicated for removal, has been close cut to the ground, and clippings removed from construction limits. | Accept | 09/08 EAST CONFINE.<br>09/24 South of CAP | LJB<br>11-04-~~98~~ 97 |
| 2 | Verify ~~grubbing to remove stumps~~ STUMPS CUT FLUSH LJB, roots, debris, or other deleterious materials not suitable for reuse, HAVE BE REMOVED | Accept | 09/08 EAST CONFINE<br>09/10 WEST CONFINE<br>09/24 SOUTH CAP ① | LJB<br>09-26-97 |
| 3 | Verify final removal and disposal of cleared and grubbed wastes in an approved manner. | | BORROW AREA ONLY | |
| 4 | Verify stripping of topsoil and stockpiled for final restoration of the ~~site around the Dye Burial Cap~~ LJB. BORROW AREA | Accept | REUSE OF STRIPPED MATERIAL – LITTLE TO NO TOPSOIL AT BORROW | LJB<br>09-26-97 |
| 5 | Verify removal of excessive grass and other vegetation from topsoil. | Accept | BORROW AREA<br>CAP area | LJB<br>09-23-97 |
| 6 | Verify topsoil around the trenches are stockpiled and protected from erosion hazards. | Accept | BORROW AREA | LJB<br>09-23-97 |
| 7 | Verify standing (ponded) water within the construction area has been properly removed prior to work activities. | Accept | ~~09/22~~<br>on GOING PROCESS | LJB<br>07-08-98 |
| 8 | Verify the required grades and dimensions of the completed site preparation by survey. | Accept | Survey by MSE | LJB<br>06-30-98 |
| 9 | Note exposed contaminated materials during grading activities for the possibilities of equipment/personnel contamination. | Accept | MATERIAL covered WITH SOIL OF PLASTIC daily | LJB<br>10-02-97 |
| 10 | Verify completion of the site clearing activities is complete and in accordance with the approved work plan. | Accept | | LJB<br>11-04-~~98~~ 97 |
| 11 | See that corrective measures have been performed, verified, and documented if applicable. | Accept | Completion with grass graze | LJB<br>09-15-98 |

ADDITIONAL NOTES OR COMMENTS
① 09/27 NE area CAP (EXCEPT STUMPS)
09/30 N edge of CAP

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | PAGE 1 OF 1 |
|---|---|---|---|
| NSWC - Crane, Indiana | 0009, Statement of Work #007 | SITE PREPARATORY WORK, Dye Burial Ground DBP-02 | |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| RUN ON/RUN OFF CONTROL<br>Dye Burial Ground | DBRR-01 | Nov. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Preparatory Inspection | | | |
| 1 | Schedule preparatory phase meeting to ensure run on/run off control measures are understood and effective. | Accept | | L Bigley 09-09-97 |
| 2 | Ensure that a Run on/Run off Control Plan has been developed and approved by the Project Manager. | Accept | | L Bigley 09-09-97 |
| 3 | Review work areas requiring either permanent or temporary protection from water run on and erosion control. | Accept | | L Bigley 09-09-97 |
| 4 | Verify that adequate control products such as bales, silt fences, and 6 mil. plastic, are available and in adequate quantities to provide effective protection.. | Accept | 10 mil plastic | L Bigley 09-09-97 |
| | Initial Inspections | | | |
| 1 | Upon commencement of site activities, ensure that adequate physical protection is provided to prevent uncontrolled run on/run off. | Accept | | L Bigley 09-09-97 |
| 2 | Monitor open excavations to ensure that physical protection is provided to prevent storm water entry to the excavation. | Accept | Rear of Area a1 | L Bigley 09-15-97 |
| 3 | Ensure initial compliance with the provisions of the plans discussed in the preparatory phase. | Accept | | L Bigley 09-15-97 |

ADDITIONAL NOTES OR COMMENTS:

Specific Item Identification or Location, as applicable:

| MK Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - Crane, Indiana | 0009, Statement of Work #007 | Run On/Run Off Control DBRR -01 | Page 1 of 1 |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| RUN ON/RUN OFF CONTROL<br>Dye Burial Ground | DBRR-02 | Nov. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Follow-up Inspection | | | |
| 1 | Verify that all excavated materials planned for re-use are properly stockpiled and protected from erosion. | Accept | | LJB 07-20-98 |
| 2 | Ensure on-going compliance with stormwater prevention plan for Run-on Run-off controls as discussed in the Preparatory and Initial Phases. | | 1-Def-rework - Def-DBG-001 Corrected when weather permitted | |
| 3 | Verify the readiness and effectiveness of temporary erosion measures, by adequate use of berms and perimeter ditches. | Accept | | LJB 07-20-98 |
| 4 | Verify 6 mil. plastic is on hand to be used as covering to prevent erosion of cap layers during construction. | Accept | 10mil. and 6mil. | LJBigley 07-20-98 |
| 5 | Ensure that water removed from excavated areas is properly characterized prior to disposal. | N/A | ALL Exc water placed in FRAC tank - disposal by Others | — |

ADDITIONAL NOTES OR COMMENTS:

Specific Item Identification or Location, as applicable:

| MK Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - Crane, Indiana | 0009, Statement of Work #007 | Run On/Run Off Control DBRR -02 | Page 1 of 1 |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist: Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| Soils Layering Backfill and Compaction Dye Burial Ground | DBF-01 | NOV 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Preparatory Inspection | | | |
| 1 | Confirm an appropriate proctor (i.e., ASTM D698) of the soil around the Dye Burial Trench to be used as fill/backfill has been performed and approved. | Accept | 3 proctors for Bio Facility Spoils Pile<br>4 proctors for 141/822 PART OF BORROW INVESTIGATION | LJB/ 09-16-97 |
| 2 | Confirm an appropriate proctor of any necessary designated borrow source has been performed and approved. | Accept | Borrow site investigation completed by MK | LJB/ 08-29-97 |
| 3 | Confirm work areas have been located with the limits of work clearly established (stakes, lines, monuments) and that the lines and grades called for on the drawings are understood. | Accept | MSE set cap Foundation shoulder limits – Survey ongoing as need to SET LIMITS | LJB/ 09-16-97 |
| 4 | Verify that proper equipment is on hand and appropriate for placement, grading, and wetting and compacting soils. | Accept | Compactor Ingersoll Rand SD-40D SHEEPFOOT COMPACTOR | LJB/ 09-16-97 |
| 5 | Verify precautions are taken to prevent/contain the spillage of gas, oil, slurry, etc. to assure compliance with the base spill plan. | Accept | S | LJB/ 09-16-97 |
| 6 | Verify preconstruction elevation survey to be used for measurement of earthwork, if applicable, is available for and prior to conducting earthwork in a given area. | Accept | Pre Const Topo performed by MK using MSE | LJB/ 09-16-97 |
| 7 | Verify that earthwork is performed in accordance with the drawings and within established bounds. | Accept | | LJB/ 09-16-97 |

ADDITIONAL NOTES OR COMMENTS

Excavation of area 1a deeper than anticipated – lower lift are to be verified using compactive effort upper lifts are to be density and moisture tested to ensure adiquate compaction.

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Soils and Layering Backfill and Compaction Dye Burial and Compaction DBF-01 | PAGE 1 OF 1 |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| SOILS LAYERING BACKFILL AND COMPACTION<br>Dye Burial Ground | DBF-02 | NOV 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Initial Phase Control | | | |
| 1 | Verify that the equipment selected is unlikely to rut or disturb the graded area, especially over the trenches. | LJB Accept | Soil to be spread ① with LGP Dozer. | 09/16/97 LJB |
| 2 | Verify the likelihood of exposure to contaminated materials during the cover construction. | Accept | Clean Fill being spread ① with dozer of contaminate fill MIN 6" Thickness @ all times | 09/17/96 LJB |
| 3 | If no contaminated materials have been noted, modify decontamination procedures appropriately. | Accept | Contaminate Excavation ① with Mud box sluge removal | — |
| 4 | Verify the prepared surface for cover placement has been inspected for debris, roots, sharp objects, and large particles. | Accept ~~N/A~~ | Inspected by PSG EDCI MK acceptance of subgrade by EDCI | 07-10-98 LJB |
| 5 | Verify that the cover materials delivered to the site have appropriate certifications (i.e. geosynthetics). | Accept | | 06-30-98 LJB |
| 6 | Verify cover materials (sand, biotic barrier, and topsoil) have been approved and meet the requirements. | Accept | | 06-30-98 LJB |
| 7 | Verify the delivered cover materials are documented to be in conformance with the drawings and specifications. | Accept | | 06-30-98 LJB |
| 8 | Ensure protection from the elements of cover materials at the temporary site storage area. | Accept | | 06-30-98 LJB |

ADDITIONAL NOTES OR COMMENTS

① Cap Foundation Fill

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Soils and Layering Backfill and Compaction Dye Burial and Compaction DBF-02 | PAGE 1 OF 1 |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

# FIELD INSPECTION CHECKLIST

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| SOILS LAYERING BACKFILL AND COMPACTION<br>Dye Burial Ground | DBF-003 | NOV 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | ACCEPT/ REJECT | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Follow-up Inspection | | | |
| 1 | Verify grades are in accordance with the drawings and specifications. | Accept | MSE- | LJB 06/30/98 |
| 2 | Verify adequate proofrolling and compaction of existing subgrade, including thorough and uniform coverage by compactor, compactor performance, and desired results in conformance with specifications Section 02200. | Accept | Proofrolled 6 Wheel Pneu ATV on 12' centers | LJB 07/10/98 |
| 3 | Verify that offsite borrow source materials are acceptable in conformance with specification Section 02200. | Accept | Borrowed Spoil 161/822 Bring | LJB 08/29/97 |
| 4 | Verify adequate compaction of new general fill and regraded subgrade, including thorough and uniform coverage by compactor, compactor performance, and desired results in conformance with specifications Section 02200. | Accept | Spoil Pile Cap Round 161/822 Screen | LJB 08/29/97 |
| 5 | Verify as-built grade of regraded subgrade and new general fill forming the base of landfill cover by instrument survey on approved survey point system. | Accept | MSE | LJB 06/30/98 |
| 6 | Verify material for granular drainage is 23-24 sand from Rogers Groups, Greene County. | Accept | | LJB 07-23-98 |
| 7 | Confirm that placement of granular layer does not cause excessive shifting of or damage to the underlying geosynthetics. | Accept | | LJB 07-24-98 |
| 8 | Verify densification of granular drainage layer by light compaction. Confirm that layer deflection is minimal during compaction. | Accept | WITH DOZER | LJB 07-24-98 |
| 9 | Verify nominal thickness by random gauging or probing, taking into account anticipated densification and volume reduction after ~~rolling~~. compaction | Accept | 10 RANDOM checks | LJB 07-28-98 |
| 10 | Verify final thickness of granular drainage layer is at least the minimum design thickness specified on the drawings. | Accept | MSE Survey 07-98 | As-built by Instrument Survey |
| 11 | Verify materials for topsoil cover layer appear to comply with materials specified. | Accept | | LJB 08-18-98 |
| 12 | Confirm that placement of topsoil cover layer does not cause excessive shifting of or damage to the geotextile. | Accept | | LJB 08-11-98 |
| 13 | Verify nominal thickness by random gauging or probing, taking into account anticipated densification and volume reduction after rolling. | Accept | 16 Random Spot Checks | LJB 08-28-98 |
| 14 | Verify densification of topsoil cover layer. Confirm that layer deflection is acceptable during compaction. | Accept | 1" | LJB 08-28-98 |
| 15 | See that corrective action measures have been performed where required, verified, and documented. | Accept | | LJB 08-31-98 |

ADDITIONAL NOTES OR COMMENTS

| Morrison Knudsen Project | Delivery Order Number | Checklist Title Soils and Layering Backfill and Compaction Dye Burial and Compaction DBF-03 | |
|---|---|---|---|
| NSWC - Crane | 0009, Statement of Work #007 | | Page 1 of 1 |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| GEOSYNTHETIC CLAY LINER INSTALLATION<br>Dye Burial Ground | GCL-01 | NOV. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Initial Phase Control | | | |
| 1 | Verify that outer layer of GCL rolls are in acceptable condition with no excess hydration of deformation of clay. | Accept | Wrapper rolls | LJB 06-23-98 |
| 2 | Verify GCL rolls are labeled or tagged with Manufacturers Name and Production ID. | Accept | 40 rolls | LJB 06-23-98 |
| 3 | Verify each roll is marked with continuous 'match line' at each edge to ensure proper lap. | Accept | | LJ Bigley 07-14-98 |
| 4 | Verify that panels are not damaged as they are deployed, nor show excessive damage in the rolls or along edges. | Accept | Panel cut into small pieces for handling | LJBigley 07/14/98 |
| 5 | Verify that initial panel placement is reasonably straight and free of irregularities. | Accept | | LJB 07/14/98 |
| 6 | Verify that minimum observed overlay is according to specifications or manufacturers design. | Accept | each roll is marked with a continuous 'match line' | LJB 07/14/98 |
| 7 | Verify that damaged portions of the rolls are removed and patched with like material. | Accept | | LJB 07/14/98 |

ADDITIONAL NOTES OR COMMENTS

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Geosynthetic Clay Liner Installation GCL-01 | PAGE 1 OF 1 |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| GEOSYNTHETIC CLAY LINER INSTALLATION<br>Dye Burial Ground | GCL-02 | NOV. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Follow-up Control | | | |
| 1 | Verify continued minimum overlapping of panels in conformance with the specifications Section 02253. | Accept | 10" vert<br>~~8"~~ 45<br>12" Horz | LJBigley<br>07/19/98 |
| 2 | Verify seaming method (overlap only, heat tack, bentonite seal, or other) is performed 100 percent of seam lengths. | Accept | 1/4 lb grandular bentonite per 1ft of seam Through 07-23 | LJBigley<br>07/19/98 |
| 3 | Verify deficient overlaps and seams are repaired by placing additional capping strip, as required by the specifications. | N/A | Material was placed To spec. or excess overlap | LJB<br>07/23/98 |
| 4 | Verify repairs to tears, rips, or other damage are made with appropriate coverage and overlap of patches in conformance with specifications. | Accept | 12" overlap - beyon repair | LJB<br>07/23/98 |
| 5 | Verify that GCL does not exhibit hydration as evidenced by excess thickness, softness, deformation or extrusion of clay at edges. | Accept | No sign of hydration were noticed - GCL was kept under water proof tarp untill placed | LJB<br>07/23/98 |
| 6 | Verify hydrated GCL as removed and replaced or overlain with new GCL, as appropriate. | N/A | edge beyond anchor trench became hydrated but this is anticipated | LJB<br>07/23/98 |
| 7 | Verify GCL extends into anchor trench. | Accept | Min of 2' beyon anchortrench | LJB 07/23/98 |
| 8 | See that corrective action measures have been performed where required, verified, and documented. | Accept | Non - noted | LJB<br>07/23/98 |

ADDITIONAL NOTES OR COMMENTS

GCL was inspected daily for overlap - damage - signs of hydration. Lois J. Bigley

Placement of GCL, Rentofix, July 14, 1998 Through July ~~29~~ 23, 1998 LJB

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Geosynthetic Clay Liner Installation GCL-02 | PAGE 1 OF 1 |

CUSHION.

| MORRISON KNUDSEN CORPORATION<br>Engineering, Construction, & Environmental | FIELD INSPECTION CHECKLIST |
|---|---|

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| GEOTEXTILE FILTER FABRIC AND CUSHION INSTALLATION<br>Dye Burial Ground | GEOTEX-01 | NOV. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Preparatory Phase Control | | | |
| 1 | Conduct preparatory phase meeting prior to initiating work items for geotextile installation. Verify preconstruction submittals have been submitted and approved. | Accept | | LJB 06-18-98 |
| 2 | Confirm that installer has approved subgrade conditions prior to placement of geotextiles. | Accept | Subgrade Acceptance by EDCI documented of Acceptance form | LJB 07/11/98 |
| 3 | Confirm work areas and patterns of panel installation have been established and are in conformance to the approved panel layout drawing. Verify any noted changes or discrepancies. Resolve discrepancies prior to commencement of work. | Accept | Panel Layout Approve 1997 | LJB 07-08-98 |
| 4 | Confirm installer has proper equipment and trained personnel for handling and installing materials without damage to the materials or previously completed construction items. | Accept | | LJB 07-11-98 |
| 5 | Verify storage methods are adequate to protect geotextile rolls from damage due to moisture, UV degradation or contamination. | Accept | material stored on site | LJB 07-08-98 |
| | Initial Phase Control | | | |
| 5 | Verify geotextile rolls are in acceptable condition without excessive damage. Verify that damaged portions of rolls are removed as necessary. | Accept | | LJB 07-11-98 |
| 6 | Verify that panels are not damaged as they are deployed, nor show excessive damage on the rolls or along edges. | Accept | | LJB 07-11-98 07-12-98 |
| 7 | Verify that initial panel placement is reasonably straight, adequately overlapped for seaming and free of irregularities. Verify that minimum observed overlap is according to specifications. | Accept | 3" overlap | LJB 07-11-98 |

ADDITIONAL NOTES OR COMMENTS

Type 2 Cushion

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Geosynthetic Clay Liner Installation GEOTEX-01 | PAGE 1 OF 1 |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| GEOTEXTILE FABRIC INSTALLATION Dye Burial Ground | GEOTEX-02 | NOV. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Follow-up Phase Control | | | |
| 1 | Verify continued minimum overlapping of panels in conformance with the Specifications Section 02249. | Accept | | LJB 07-12-98 |
| 2 | Verify approved seaming method (*overlap only, heat tack, stitching,* or other) is performed 100 percent of seam lengths. | Accept | | LJB 07-12-98 |
| 3 | Verify deficient overlaps (if sole method of adjoining panels) are repaired by placing additional capping strips or stitched together, as required by the specifications. | Accept | | LJB 07-12-98 |
| 4 | Verify repairs to tears, rips or other damage are made with appropriate coverage and overlap of patches in *conformance with specifications.* | Accept | | LJB 07-12-98 |
| 5 | See that corrective action measures have been performed where required, verified, and documented. | Accept | 2-Def - One corrected DeP-DBG-02 One Uncorrected DeP-DBG-003 | LJBigley 07-14-98 |
| 6 | Verify subcontractors QC documentation prior to subsequent layering. | Accept | QC and Conformation Result in | LJBigley 07-14-98 |

ADDITIONAL NOTES OR COMMENTS

Type 2 cushion

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | PAGE 1 OF 1 |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Geosynthetic Clay Liner Installation GEOTEX-02 | |

Sand

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| GEOTEXTILE FILTER FABRIC AND CUSHION INSTALLATION<br>Dye Burial Ground | GEOTEX-01 | NOV. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Preparatory Phase Control | | | |
| 1 | Conduct preparatory phase meeting prior to initiating work items for geotextile installation. Verify preconstruction submittals have been submitted and approved. | Accept | ~~[illegible]~~ | GB 06-18-98 |
| 2 | Confirm that installer has approved subgrade conditions prior to placement of geotextiles. | Accept | Sand layer | GB 07-28-98 |
| 3 | Confirm work areas and patterns of panel installation have been established and are in conformance to the approved panel layout drawing. Verify any noted changes or discrepancies. Resolve discrepancies prior to commencement of work. | Accept | SUBMITTAL | GB 07-28-98 |
| 4 | Confirm installer has proper equipment and trained personnel for handling and installing materials without damage to the materials or previously completed construction items. | Accept | | GB 07-28-98 |
| 5 | Verify storage methods are adequate to protect geotextile rolls from damage due to moisture, UV degradation or contamination. | Accept | | GB 07-08-98 |
| | Initial Phase Control | | | |
| 5 | Verify geotextile rolls are in acceptable condition without excessive damage. Verify that damaged portions of rolls are removed as necessary. | Accept | 37 rolls stored on site | GB 07-28-98 |
| 6 | Verify that panels are not damaged as they are deployed, nor show excessive damage on the rolls or along edges. | Accept | PLACEMENT 07-28-98<br>THROUGH 07-30-98 | GB 07-28-98 |
| 7 | Verify that initial panel placement is reasonably straight, adequately overlapped for seaming and free of irregularities. Verify that minimum observed overlap is according to specifications. | Accept | OVERLAP/SEWN | GB 07-28-98 |

ADDITIONAL NOTES OR COMMENTS

Type 1 Sand

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | PAGE 1 OF 1 |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Geosynthetic Clay Liner Installation GEOTEX-01 | |

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

**FIELD INSPECTION CHECKLIST**

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| GEOTEXTILE FABRIC INSTALLATION Dye Burial Ground | GEOTEX-02 | NOV. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Follow-up Phase Control | | | |
| 1 | Verify continued minimum overlapping of panels in conformance with the Specifications Section 02249. | Accept | SEWN | LJB 07-30-98 |
| 2 | Verify approved seaming method (overlap only, heat tack, stitching, or other) is performed 100 percent of seam lengths. | Accept | Heat ~~tack~~ Bonding was also approved however Sewing was used | LJB 07-30-98 |
| 3 | Verify deficient overlaps (if sole method of adjoining panels) are repaired by placing additional capping strips or stitched together, as required by the specifications. | Accept | all panels sewn together | LJB 07-30-98 |
| 4 | Verify repairs to tears, rips or other damage are made with appropriate coverage and overlap of patches in conformance with specifications. | Accept | | LJB 07-30-98 |
| 5 | See that corrective action measures have been performed where required, verified, and documented. | N/A | ALL REPAIRS MADE THE SAME DAY | — |
| 6 | Verify subcontractors QC documentation prior to subsequent layering. | Accept | * Awaiting As-Built Drawing. ALL OTHER DOC IN. | LJB 07-30-98 |

ADDITIONAL NOTES OR COMMENTS

Type 1 Sand

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Geosynthetic Clay Liner Installation GEOTEX-02 | PAGE 1 OF 1 |

Biotic

**MORRISON KNUDSEN CORPORATION**
Engineering, Construction, & Environmental

# FIELD INSPECTION CHECKLIST

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| GEOTEXTILE FILTER FABRIC AND CUSHION INSTALLATION<br>Dye Burial Ground | GEOTEX-01 | NOV. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Preparatory Phase Control | | | |
| 1 | Conduct preparatory phase meeting prior to initiating work items for geotextile installation. Verify preconstruction submittals have been submitted and approved. | Accept | | LJB 06-18-98 |
| 2 | Confirm that installer has approved subgrade conditions prior to placement of geotextiles. | Accept | Biotic stone layer | Bell 8/4/98 |
| 3 | Confirm work areas and patterns of panel installation have been established and are in conformance to the approved panel layout drawing. Verify any noted changes or discrepancies. Resolve discrepancies prior to commencement of work. | Accept | | LJB 08-03-98 |
| 4 | Confirm installer has proper equipment and trained personnel for handling and installing materials without damage to the materials or previously completed construction items. | Accept | | LJB 08-03-98 |
| 5 | Verify storage methods are adequate to protect geotextile rolls from damage due to moisture, UV degradation or contamination. | Accept | | LJB 07-08-98 |
| | Initial Phase Control | | | |
| 5 | Verify geotextile rolls are in acceptable condition without excessive damage. Verify that damaged portions of rolls are removed as necessary. | Accept | | Bell 8/4/98 |
| 6 | Verify that panels are not damaged as they are deployed, nor show excessive damage on the rolls or along edges. | Accept | | Bell 8/4/98 |
| 7 | Verify that initial panel placement is reasonably straight, adequately overlapped for seaming and free of irregularities. Verify that minimum observed overlap is according to specifications. | Accept | | Bell 8/4/98 |

ADDITIONAL NOTES OR COMMENTS

Type 1 Biotic

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | PAGE 1 OF 1 |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Geosynthetic Clay Liner Installation GEOTEX-01 | |

| MORRISON KNUDSEN CORPORATION<br>Engineering, Construction, & Environmental | FIELD INSPECTION CHECKLIST |
|---|---|

| Checklist Title | Checklist Number | Revision Date | Checklist |
|---|---|---|---|
| GEOTEXTILE FABRIC INSTALLATION<br>Dye Burial Ground | GEOTEX-02 | NOV. 95 | Page 1 of 1 |

| ITEM NO. | ITEM CHECKED | Accept/ Reject | REMARKS | VERIFIED BY/ DATE |
|---|---|---|---|---|
| | Follow-up Phase Control | | | |
| 1 | Verify continued minimum overlapping of panels in conformance with the Specifications Section 02249. | Accept | | Beall 8/5/98 |
| 2 | Verify approved seaming method (overlap only, heat tack, stitching, or other) is performed 100 percent of seam lengths. | Accept | | Beall 8/5/98 |
| 3 | Verify deficient overlaps (if sole method of adjoining panels) are repaired by placing additional capping strips or stitched together, as required by the specifications. | NA | | Beall 8/5/98 |
| 4 | Verify repairs to tears, rips or other damage are made with appropriate coverage and overlap of patches in conformance with specifications. | Accept | See deficiency report DBG-DEF-005 | Beall 8/5/98 |
| 5 | See that corrective action measures have been performed where required, verified, and documented. | Accept | See deficiency repot DBG-DEF-005 | Beall 8/5/98 |
| 6 | Verify subcontractors QC documentation prior to subsequent layering. | Accept | | Beall 8/5/98 |

ADDITIONAL NOTES OR COMMENTS

Type 1 Biotic

| Morrison Knudsen Project | Delivery Order Number | Checklist Title | PAGE 1 OF 1 |
|---|---|---|---|
| NSWC - CRANE | 0009, Statement of Work #007 | Geosynthetic Clay Liner Installation GEOTEX-02 | |

# J-3

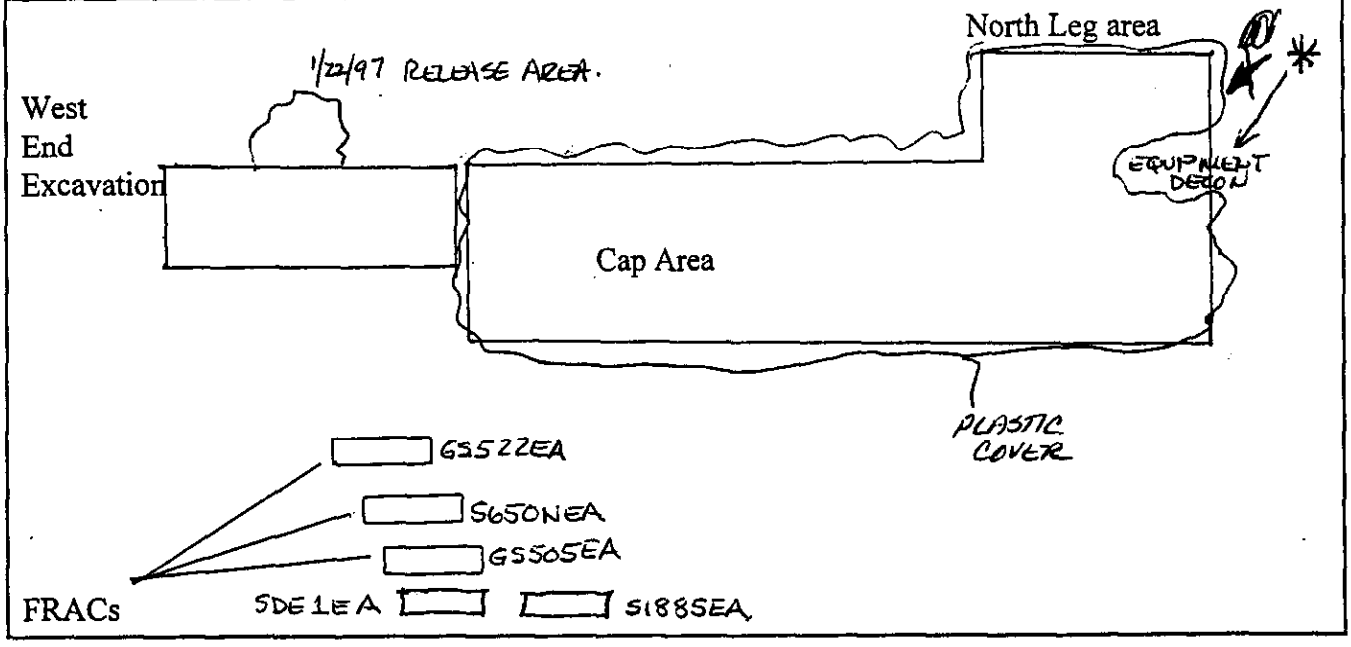
# Site Conditions Inspection Checklists

**SITE CONDITIONS INSPECTION CHECKLIST**
**SWMU 02/11 Dye Burial Ground**

Morrison Knudsen Corporation NSWC-Crane, IN 4324-0009

| ATTRIBUTE | DATE/TIME | VERIFIED BY |
|---|---|---|
| 1. FRACs valves/ports free of visible leakage | 1/24/97 21:25 | [illegible] |
| 2. West excavation water level below top of berm | 1/24/97 21:20 | [illegible] |
| 3. West excavation berms free of visible breaches | 1/24/97 21:20 | [illegible] |
| 4. No visible colored waters outside containment areas | 1/24/97 21:15 | [illegible] |
| 5. Cap area water level below top of berms | 1/24/97 21:25 | [illegible] |
| 6. Cap area berms free of visible breaches | 1/24/97 21:45 | [illegible] |
| 7. No visible colored water outside cap area berm | 1/24/97 21:45 | [illegible] |
| 8. Water level in North leg area below top of berm | 1/24/97 20:55 | [illegible] |
| 9. North leg berm free of visible breaches | 1/24/97 21:00 | [illegible] |
| 10. No visible colored waters outside north leg berm area | 1/24/97 20:55 | SEE COMMENTS |
| 11. Record weather conditions: Temperature 31°F<br>Snow Rain Fog Clear (Overcast)<br>(circle which applies) | 1/24/97 21:50 [illegible] | [illegible] |
| | — | — |

COMMENTS: * 3 small puddles of green water found @ 20:55. S/C PUSHED "CLEAN" SOILS INTO/OVER AREA, developed bermed AREA WITH PLASTIC COVER w/ RUN-OFF TROUGH @ NORTH. END. BRIEFED T. BRENT (ON-SITE) ON SITUATION. [illegible]

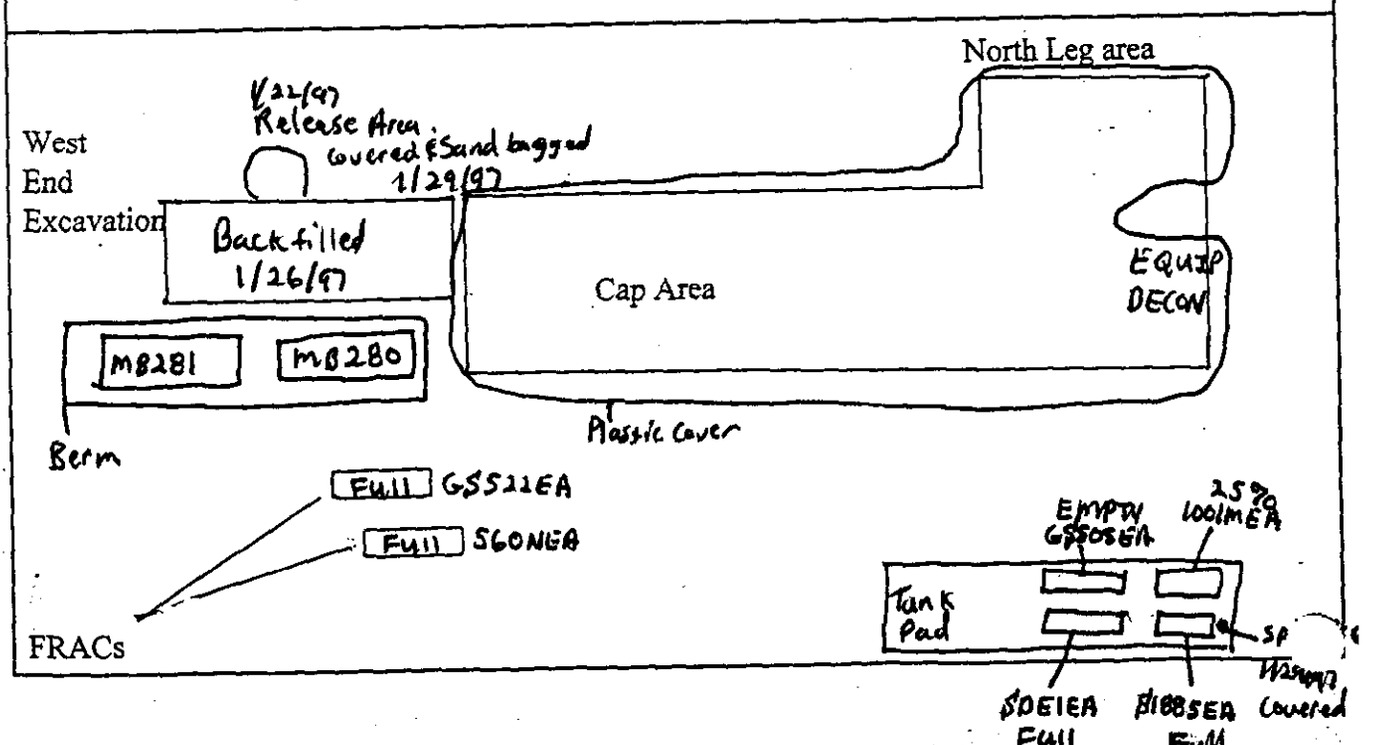


# SITE CONDITIONS INSPECTION CHECKLIST
## SWMU 02/11 Dye Burial Ground

Morrison Knudsen Corporation NSWC-Crane, IN 4324-0009

| ATTRIBUTE | DATE/TIME | | VERIFIED BY |
|---|---|---|---|
| 1. FRACs valves/ports free of visible leakage | 1/30/97 | 1810 | JCL |
| 2. West excavation water level below top of berm | N/A | | N/A |
| 3. West excavation berms free of visible breaches | N/A | | N/A |
| 4. No visible colored waters outside containment areas | 1/30/97 | 1850 | JA |
| 5. Cap area water level below top of berms | 1/30/97 | 1850 | JA |
| 6. Cap area berms free of visible breaches | 1/30/97 | 1850 | JA |
| 7. No visible colored water outside cap area berm | 1/30/97 | 1850 | JA |
| 8. Water level in North leg area below top of berm | 1/30/97 | 1840 | JA |
| 9. North leg berm free of visible breaches | 1/30/97 | 1840 | JA |
| 10. No visible colored waters outside north leg berm area | 1/30/97 | 1840 | JA |
| 11. Record weather conditions: Temperature 29°F<br>Snow Rain Fog Clear (Overcast)<br>(circle which applies) | 1/30/97 | 1855 | JA |

COMMENTS:



**SITE CONDITIONS INSPECTION CHECKLIST**
**SWMU 02/11: Dye Burial Ground**

DATE/TIME: 2/5/97 07:35/15:00

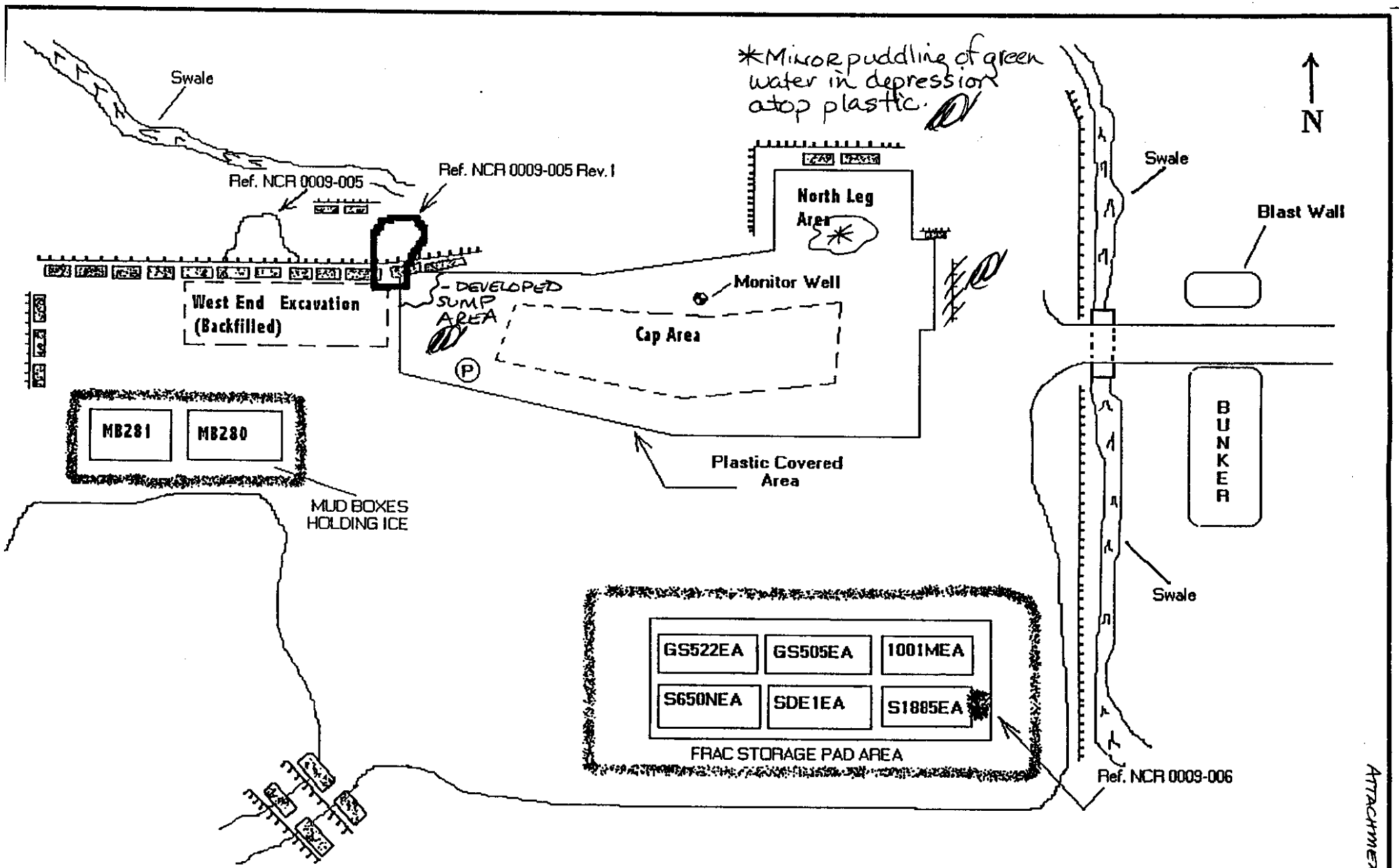
| ATTRIBUTE | RESULTS | VERIFIED BY |
|---|---|---|
| 1. FRACs/Mud boxes valves/ports free of leakage. 0745/1500 | ACC/REJ | |
| 2. FRACs/Mud boxes free of visible cracks or punctures 1505 | ACC/REJ | |
| 3. Record FRAC freeboard (inches/feet): FRAC 1001MEA: 8'-4" FRAC S1885EA: 15" FRAC SDE1EA: 19" FRAC GS505EA: 19" FRAC S650NEA: 12" FRAC GS522EA: 9'-7" 07:40 | ACC/REJ | |
| 4. FRACs/mud boxes free of noticeable bulging 07:40/15:00 | ACC/REJ | |
| 5. Uncoated portions of welds free of obvious visual defects 15:00 | ACC/REJ | |
| 6. FRACs free of noticeable tilt/excess settling 15:00 | ACC/REJ | |
| 7. No visible colored water outside north leg plastic covered areas 15:10 | ACC/REJ | |
| 8. No visible breaches in north leg berms 15:10 | ACC/REJ | |
| 9. No visible colored water outside plastic covered cap areas 15:05 | ACC/REJ | |
| 10. No visible breaches in cap area berms 15:05 | ACC/REJ | |
| 11. No visible colored water outside 1/22/97 impact area, incl. stream 15:07 | ACC/REJ | |
| 12. No visible dye observed outside controlled areas 15:14 | ACC/REJ | |
| 13. No visible tears or openings in plastic covers 15:14 | ACC/REJ | |
| 14. Site barricades and signage intact * 0750/15:15 | ACC/REJ | |
| 15. Record Weather Conditions: Temperature 32 F 15:15 Snow Rain Fog Clear Overcast (circle which applies) | N/A | |

COMMENTS (incl. corrective actions taken): **Reference site map on reverse side**

*Additional signage being placed under direction.
VERIFIED FRAC LABELS & ACCUMULATION LOGS IN PLACE @1500.
PER S/C, office trailer to remain @ site.
NO VISIBLE DISCOLORED WATER IN SWALE NORTH OF SITE.

Morrison Knudsen Corporation
NSWC-Crane, IN 4324-0009

a:\054insp.wpd
04FEB97




EARTHEN BERM

P POLYTANK

HAY BALE

SILT FENCING

DRAWING IS NOT TO SCALE

# SWMU 02/11
# DYE BURIAL GROUND
# NSWC-Crane, IN

04FEB97

ATTACHMENT TO 2/5/97

## SITE CONDITIONS INSPECTION CHECKLIST
## SWMU 02/11: Dye Burial Ground

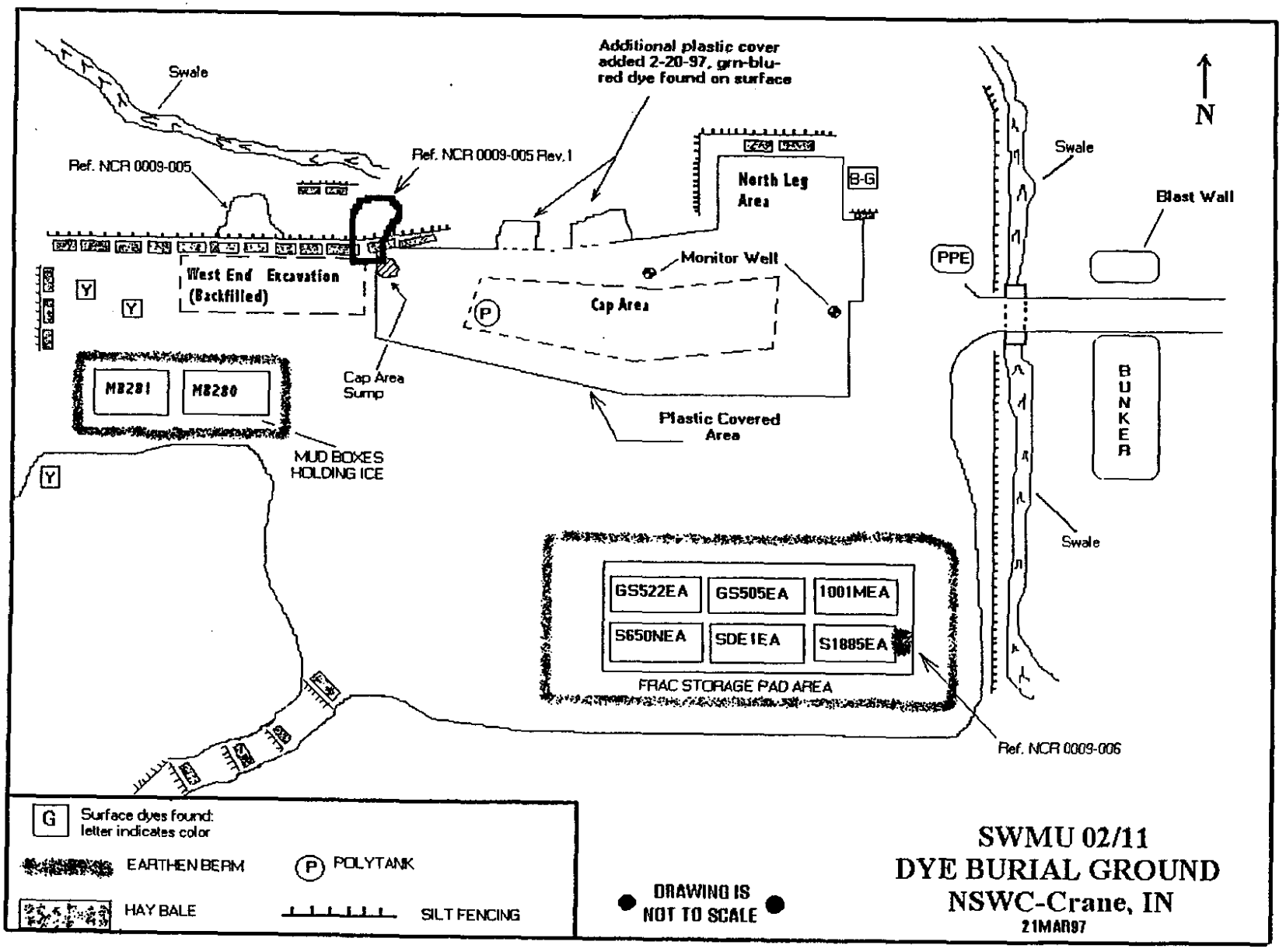
DATE/TIME: **22MAR97 at 08:05**

| ATTRIBUTE | RESULTS | VERIFIED BY |
|---|---|---|
| 1. FRACs/Mud boxes valves/ports free of leakage. | ACC/REJ | |
| 2. FRACs/Mud boxes free of visible cracks or punctures | ACC/REJ | |
| 3. Record FRAC freeboard (inches/feet):<br>FRAC 1001MEA: 14" FRAC S1885EA: 11"<br>FRAC SDE1EA: 15" FRAC GS505EA: 11"<br>FRAC S650NEA: *** FRAC GS522EA: 3'-4" | ACC/REJ | |
| 4. FRACs/mud boxes free of noticeable bulging SEE COMMENT. | ACC/REJ | |
| 5. Uncoated portions of welds free of obvious visual defects | ACC/REJ | |
| 6. FRACs free of noticeable tilt/excess settling | ACC/REJ | |
| 7. No visible colored water outside north leg plastic covered areas | ACC/REJ | |
| 8. No visible breaches in north leg berms | ACC/REJ | |
| 9. No visible colored water outside plastic covered cap areas | ACC/REJ | |
| 10. No visible breaches in cap area berms | ACC/REJ | |
| 11. No visible colored water outside 1/22/97 impact area, incl. stream | ACC/REJ | |
| 12. No visible dye observed outside controlled areas | ACC/REJ | |
| 13. No visible tears or openings in plastic covers SEE COMMENT. | ACC/REJ | |
| 14. Site barricades and signage intact | ACC/REJ | |
| 15. Record Weather Conditions: Temperature: **44 F**<br>Snow Rain Fog Clear Overcast (circle which applies) | N/A | |

COMMENTS (incl. corrective actions taken): **Reference site map on reverse side**

***FRAC level not measured due to broken ladder; no leakage observed.

* No animal tracks observed on plastic covered areas.
* No visible dye materials tracked from site area to office trailer.
* Plastic cover over used PPE storage area blown off; replaced during inspection.
* No increase in MB280 sidewall deflection.




ATTACHMENT 10
3/22/97

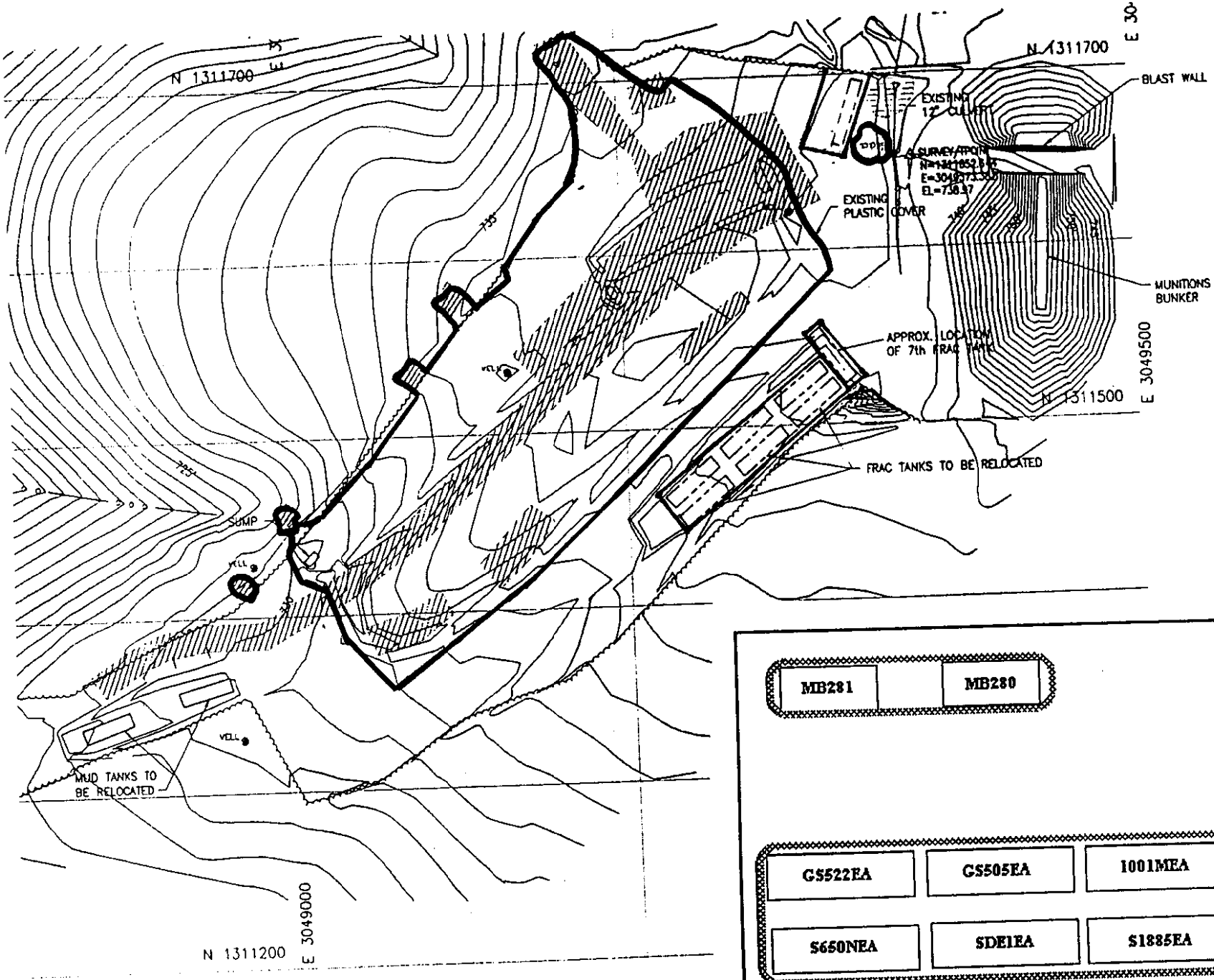
**SITE CONDITIONS INSPECTION CHECKLIST**
**SWMU 02/11: Dye Burial Ground**

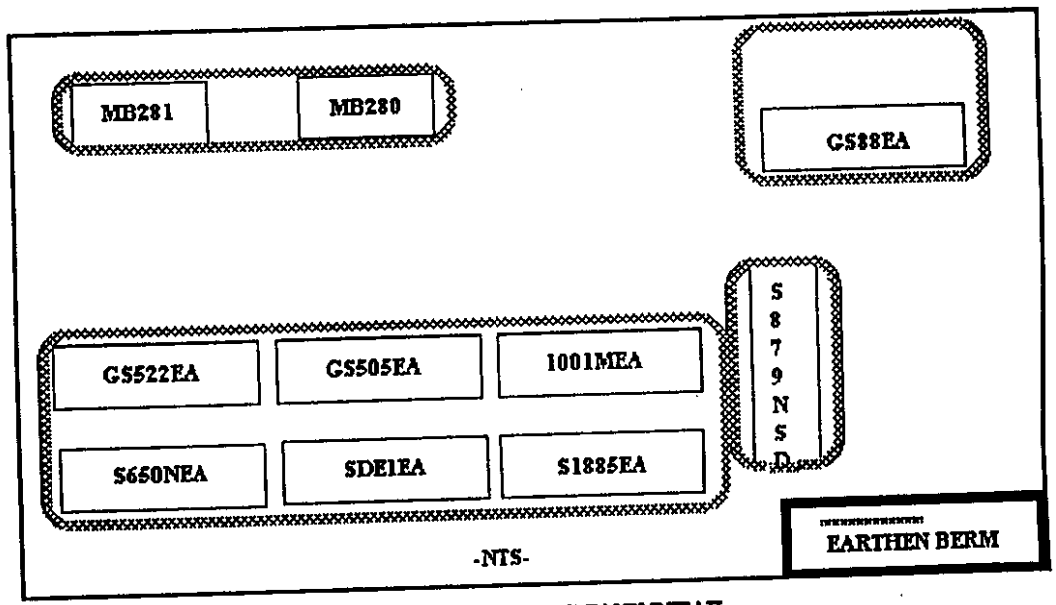
DATE/TIME: 3 Jul 97 at 0915

| ATTRIBUTE | RESULTS | VERIFIED BY |
|---|---|---|
| 1. FRACs/Mud boxes valves/ports free of leakage. | ACC/REJ | JCM |
| 2. FRACs/Mud boxes free of visible cracks or punctures | ACC/REJ | JCM |
| 3. Record FRAC freeboard (inches/feet):<br>FRAC 1001MEA:____ FRAC S1885EA:_____<br>FRAC SDE1EA: ____ FRAC GS505EA:_____<br>FRAC S650NEA:____ FRAC GS 522EA:_____<br>FRAC S879NSD:____ FRAC GS 88EA :_____<br>MB280: ____ MB281: _____ | ACC/REJ | |
| 4. FRACs/mud boxes free of noticeable bulging. **See comments.** | ACC/REJ | JCM |
| 5. Uncoated portions of welds free of obvious visual defects | ACC/REJ | JCM |
| 6. FRACs free of noticeable tilt/excess settling | ACC/REJ | JCM |
| 7. No visible colored water outside north leg plastic covered areas | ACC/REJ | JCM |
| 8. No visible breaches in north leg berms | ACC/REJ | JCM |
| 9. No visible colored water outside plastic covered cap areas | ACC/REJ | JCM |
| 10. No visible breaches in cap area berms | ACC/REJ | JCM |
| 11. No visible colored water outside 1/22/97 impact area, incl. stream | ACC/REJ | JCM |
| 12. No visible dye observed outside controlled areas | ACC/REJ | JCM |
| 13. No visible tears or openings in plastic covers. | ACC/REJ | JCM |
| 14. Site barricades and signage intact | ACC/REJ | JCM |
| 15. Record Weather Conditions: Temperature 72 F<br>Snow Rain Fog Clear Overcast (circle which applies) | N/A | |

COMMENTS (incl. corrective actions taken): Morrison, Jerry L

No increases in mudwall sidewall bulges previously reported.
No noticeable animal tracks on plastic covered areas.
No visible dyes on work surface from work zones to site trailer.




MUD BOX AND FRAC TANK DETAIL

ATTACHMENT TO 7/3/97

# APPENDIX K

# REWORK ITEMS LIST AND FINAL PROJECT PUNCH LIST

# APPENDIX K
# REWORK ITEMS LIST AND FINAL PROJECT PUNCH LIST

## INDEX


K-1 Rework Items List

K-2 Final Project Punch List

# K-1

# Rework Items List

REWORK ITEMS LIST/DEFICIENCY TRACKING SYSTEM

CONTRACT NO./TITLE: MK SOUTHDIV ERAC- Dye Burial Ground SWMU 02/11

DELIVERY ORDER NO: NSWC Crane - Delivery Order 0009

Crane, Indiana

| Number | Date Identified | Description | Contract Requirement (Spec. Section and Para. No.; Drwg. No., etc.) | Action Taken | Resolution | Date Completed | Remarks |
|---|---|---|---|---|---|---|---|
| DBG DEF 001 | 06/16/98 | Silt fence on West side of cap improperly installed | Section 02200 -3.1(B) | Informed Sub (PSG) of Condition issued Deficiency | Repair/ Replace Silt fence | 06-26-98 | Closed |
| DBG DEF 003 | 07/13/98 | Geotextile Panel GT-49 does not extend 2' beyond drainage trench | Drawing C-07 | Reviewed condition with design engineer - Concured Use-as-is | Use-as-is | 07/14/98 | closed |

| Number | Date Identified | Description | Contract Requirement (Spec. Section and Para. No.; Drwg. No., etc.) | Action Taken | Resolution | Date Completed | Remarks |
|---|---|---|---|---|---|---|---|
| DBG DEF 002 | 07/~~14~~ 13/98 | Patch @ seam GT 18/19 inadiquate | 02249 -3.2(D) | Informed sub (PSG/EDCI) of Condition Issued Deficiency | Repair | 07/14/98 | Closed |
| DBG DEF 004 | 07/13/98 | Soil Clods Under fabric in ditch line | Drawing C-07 | Informed Sub (PSG) of Condition Issued Deficiency | Removed Clods and check entire trench | 07/14/98 | Closed |
| DBG DEF 005 | 08/06/98 | 5 areas of inadiquate seaming | 02249 -3.2(D) 3 | Review Condition with the design engineer Issued deficiency | Repair by Patching areas | 08/06/98 | Closed |
| DBG DEF 006 | 09/04/98 | Area outside of cap was seed but not mulched the same day | 02936 3.3(C) | ~~Completed~~ Issued deficiency | Complete Mulching Use-as-is | 09/05/98 | Closed |

| Morrison Knudsen Corporation<br>NSWC-Crane, IN 4324- | DEFICIENCY REPORT | |
|---|---|---|
| S/C: 4324-0106 / Philip Service Group | Area No.: SWMU 02/11 | DR No. DBG-DEF-001 |

ITEM AFFECTED: DBG Erosion Control - Silt Fence

REQUIREMENT: Section 02200-3.1(B) ... Provide straw bales and/or silt fences as necessary to control erosion and sediment transport off site

DEFICIENCY:

Silt fence on west side of the north end of the cap is improperly installed. Fabric is backwards and bottom is not buried.

Reported By: Lois J. Bigley Date: 06/16/98

DISPOSITION

☐ USE-AS-IS ☒ REWORK ☐ Scrap

Install a new section of silt fence on west side of cap.

Disposition By: Lois J. Bigley Date: 06/16/98 Reviewed By: Lois J. Bigley Date: 06-16-98

Disposition Verified By: Lois J. Bigley Date: 06/26/98

Comments: PSG replaced silt fence - work was delayed due to wet site conditions

| Morrison Knudsen Corporation<br>NSWC-Crane, IN 4324- | DEFICIENCY REPORT | |
|---|---|---|
| S/C: 4324-0106 / Philip Service Group | Area No.: SWMU 02/11 | DR No. DBG-DEF 002 |

ITEM AFFECTED: Geotextile Cushion

REQUIREMENT: 02249-3.2 (D)

DEFICIENCY: A patch a seam GT 18/19 of the geotextile cushion, were the sewing machine was cut ~~of~~ out was improperly patched using two 3" pieces to cover the hole.

Reported By: Lois J. Bigley Date: 07/13/98

**DISPOSITION**

☐ USE-AS-IS ☒ REWORK/repair ☐ Scrap

Patch hole @ GT 18/19 of the geotextile cushion using a single piece of like geotextile material with proper overlap.

| Disposition By: Lois J. Bigley Date: 07/14/98 | Reviewed By: Lois J. Bigley Date: 07/14/98 |
|---|---|

Disposition Verified By: Lois J. Bigley Date: 07/14/98

Comments: FPC1 repair hole @ GT 18/19

| Morrison Knudsen Corporation<br>NSWC-Crane, IN 4324- | DEFICIENCY REPORT | |
|---|---|---|
| S/C: 4324-0106 / PSG | Area No.: 02/11 | DR No. 0B6-DEF-003 |

ITEM AFFECTED: Geotextile Cushion

REQUIREMENT: Drawing C-07
Cushion to extend 2' beyond outside drainage / anchor trench

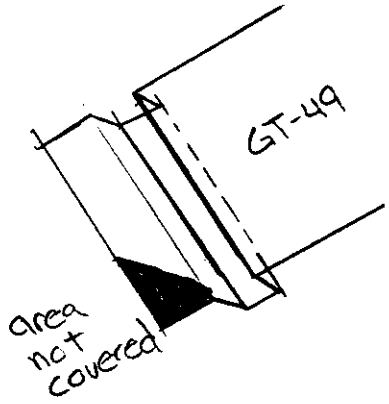
DEFICIENCY:

A portion of panel GT-49 of the geotextile cushion, on the east end, does not extend 2 feet beyond the drainage/anchor trench.

Reported By: Lois J. Bigley Date: 07/13/98

**DISPOSITION**

☒ USE-AS-IS ☐ REWORK ☐ Scrap




Aprox 2' wide section of the area beyond the trench not covered - purpose for extend section to provide adquate area to anchor geotextile - section missing will have no adverse effect on the cap or geotextile installation - Use-as-is.

Disposition By: Lois J. Bigley Date: 07/14/98 Reviewed By: Lois J Bigley Date: 07/14/98

Disposition Verified By: Lois J. Bigley Date: 07/14/98

Comments: Project design engineer C. Waite concure - with Use-as-is disposition - C. Waite visiting the site.

| Morrison Knudsen Corporation<br>NSWC-Crane, IN 4324- | DEFICIENCY REPORT | |
|---|---|---|
| S/C: 4324-0106 1 PSG | Area No.: SWMU 02/11 | DR No. DBG-DEF-004 |

ITEM AFFECTED: Drainage Collection System.

REQUIREMENT: C-07 Trench cross-section

DEFICIENCY:
Soil Clods from the side wall of the trench have fallen into the trench line

Reported By: Lois J. Bigley Date: 07/13/98

**DISPOSITION**

☐ USE-AS-IS ☒ REWORK ☐ Scrap

Remove clods from trench-line to ensure proper drainage and grade of drainage trench.

Disposition By: Lois J. Bigley Date: 07/13/98 | Reviewed By: Lois J. Bigley Date: 07/13/98

Disposition Verified By: Lois J. Bigley Date: 07/14/98

Comments: PSG pulled back geotextile cushion from ditch line and removed soil clods from the ditch. Walked trench to ensure proper grade retained.

| Morrison Knudsen Corporation<br>NSWC-Crane, IN 4324- | DEFICIENCY REPORT | |
|---|---|---|
| S/C: 4324-0106 / | Area No.: DBG | DR No. DBG-DEF-005 |

ITEM AFFECTED: Type I Geotextile - Biotic Layer

REQUIREMENT: Stitching is complete 100% of seam length.

02249-3.2(D).3

DEFICIENCY: There were minor deficiencies in seam stitching in 5 places in the geotextile fabric covering the biotic layer.

1. Stitching very close to end of fabric between P-9 & P-11 at one spot for about 3 inches
2. Stitching very close to end of fabric between P-11 & P-12 for about 3 inches near seam with P-13.
3. Hole in fabric around well extension in P-25 slightly oversized.
4. Stitching fails to seal both panels for a 2" length between P-27 & P-28 near the well extension @ P-25
5. Incomplete seaming at junction of P-47, P-48, & P49

Reported By: D Beall Date: 8/6/98

**DISPOSITION**

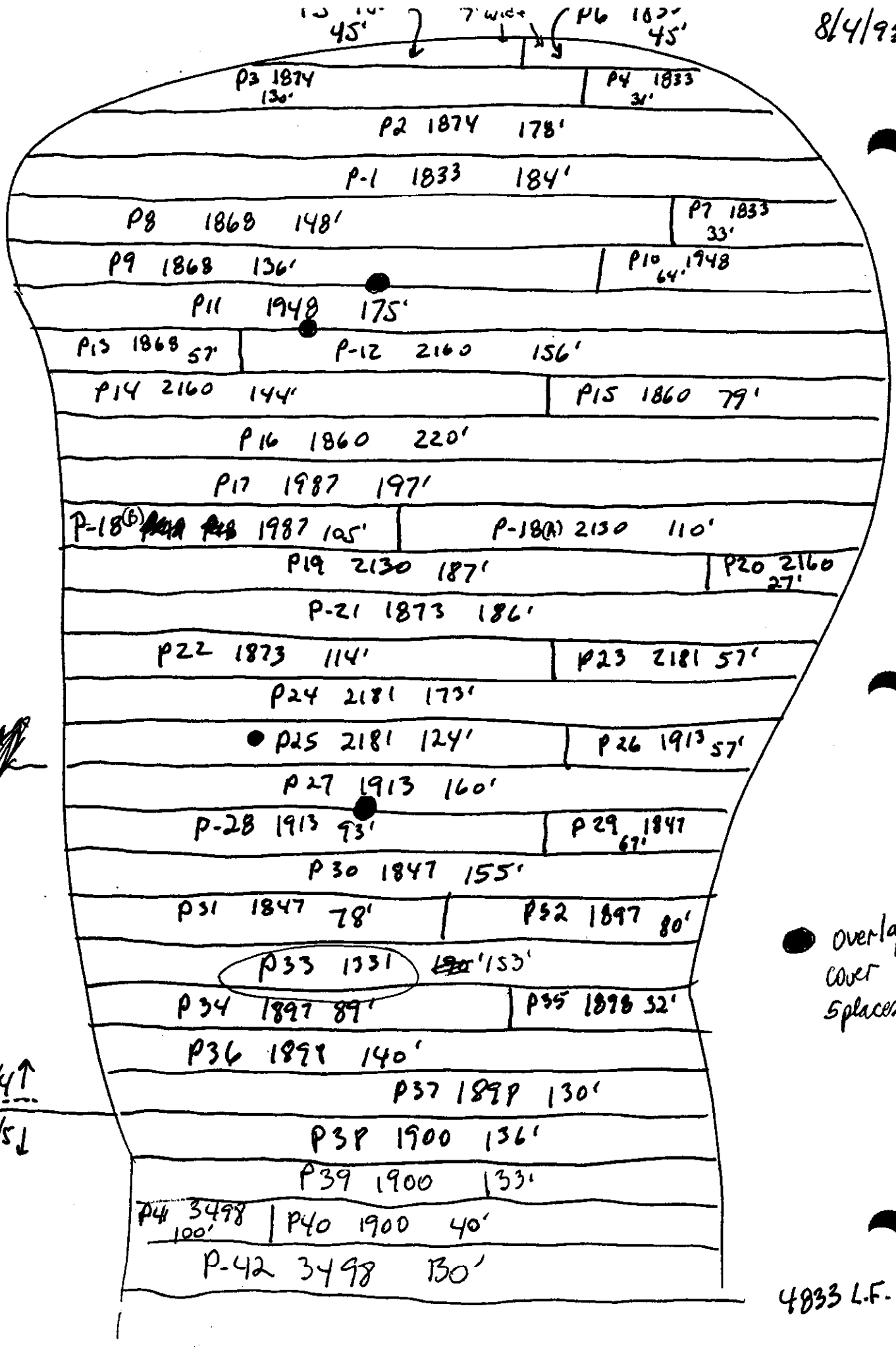
☒ USE-AS-IS ☒ REWORK ☐ Scrap

Per discussion with Clair Waite (Boise design) place an Overlay 3'x3' section of Geotextile fabric over the defect. Secure with clay till to hold in place. Over lay section will Keep clay till from leaking into biotic layer at the defects.

| Disposition By: D Beall | Date: 8/6/98 | Reviewed By: Lois J. Bigley | Date: 08/11/98 |
|---|---|---|---|
| Disposition Verified By: D Beall | | Date: 8/6/98 | |

Comments:

8/4/98


45'
7' wide
P6 1833 45'
P3 1874 130'
P4 1833 31'
P2 1874 178'
P-1 1833 184'
P8 1868 148'
P7 1833 33'
P9 1868 136'
P10 1948 64'
P11 1948 175'
P13 1868 57'
P-12 2160 156'
P14 2160 144'
P15 1860 79'
P16 1860 220'
P17 1987 197'
P-18(B) 1987 105'
P-18(A) 2130 110'
P19 2130 187'
P20 2160 27'
P-21 1873 186'
P22 1873 114'
P23 2181 57'
P24 2181 173'
P25 2181 124'
P26 1913 57'
P27 1913 160'
P-28 1913 93'
P29 1847 67'
P30 1847 155'
P31 1847 78'
P32 1897 80'
P33 1931 153'
P34 1897 89'
P35 1898 32'
P36 1898 140'
P37 1898 130'
P38 1900 136'
P39 1900 133'
P41 3498 100'
P40 1900 40'
P-42 3498 130'
8/4
8/5
overlay cover 5 places
4833 L.F.

~~84150~~

83,963 s.f.

15'

heavy fabric →

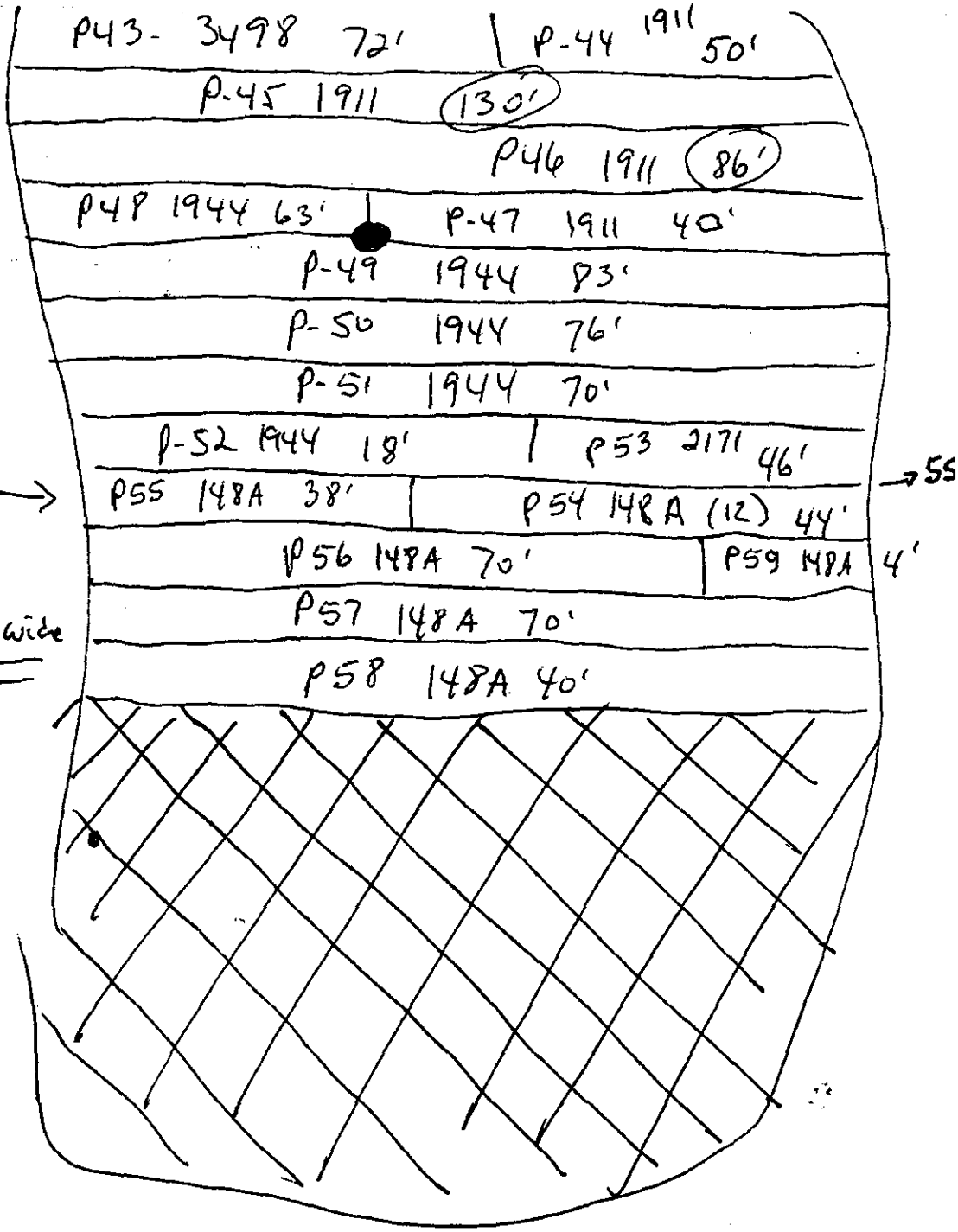
7½' wide

266 L.F.

266 x 7.5 = 1995

5567 x 15 = 83,505

85,500 s.f.



| Morrison Knudsen Corporation<br>NSWC-Crane, IN 4324- | DEFICIENCY REPORT | |
|---|---|---|
| S/C: 4324- 0/06 1 | Area No.: SWMU 02/11 | DR No. DBG-DEF-0 |

ITEM AFFECTED: Seeding

REQUIREMENT: Section 02936 3.3(C) Subcontractor shall not seed areas more than that which can be mulched on the same day.

DEFICIENCY:
The disturbed area outside the cap area was seeded and fertilized, but not mulched.

Reported By: Lois J. Bigley Date: 09/04/98

**DISPOSITION**

☒ USE-AS-IS ☐ REWORK ☐ Scrap

Complete mulching and use-as-is, provided seed germinates and vegetation is established or else the subcontractor to re-seed area at no additional cost to the contractor

| Disposition By: Lois J. Bigley | Date: 09/04/98 | Reviewed By: Lois J Bigley | Date: 09/04/98 |
|---|---|---|---|

Disposition Verified By: Lois J Bigley Date: 09/05/98

Comments: Mulch completed - Woodland Farms Nursery 09/05/98

# K-2

# Final Project Punch List

DBG
PUNCH LIST
DEVELOPED 8/27/98

| AREA | ITEM | DESCRIPTION | DATE COMPLETED | DATE VERIFIED |
|---|---|---|---|---|
| | | | | |
| A | | NORTHEAST ENTRANCE | | |
| K.G. | 1. | Repair CMP to drain at extension | 8/29/98 | 8/31/98 LJB |
| K.G. | 2. | Grade ditch to provide drainage of area | 8/28/98 | 8/29/98 LJB |
| K.G. | 3. | Remove silt fence and debris | 8/28/98 | 8/29/98 LJB |
| K.G. | 4. | Blend grade to existing topography; remove gravel from tree trunks | 9-2-98 | LJB 09-2-98 |
| K.G. | 5. | Install silt fence down gradient from disturbed area | 9-2-98 | LJB 09-03-98 |
| K.G. | 6. | Grade to eliminate ponding and match surrounding grade<br>a) Bench mark area<br>b) North/side of entrance to magazine<br>c) South/side of entrance to magazine | 8/29/98 | 09-02-98 LJB |
| | | | | |
| B. | | BETWEEN MAGAZINE AND ROAD SOUTH OF AREA A | | |
| K.G. | 7. | Un-block CMP/grade to drain | 8/28/98 | 8/28/98 LJB |
| K.G. | 8. | Grade area to drain/blend with existing topography | 8/28/98 | 8/28/98 LJB |
| K.G. | 9. | Remove silt fence | 8/28/98 | 8/28/98 LJB |
| K.G. | 10. | Remove trash and debris | 8/28/98 | LJB 8/29/98 |
| K.G. | 11. | Remove trash and soil from stack of logs, and root balls | 8/28/98 | LJB 8/28/98 |
| K.G. | 12. | Remove soil from tree trunks | 8/28/98 | LJB 8/28/98 |
| | | | | |
| C. | | BETWEEN ROAD AND TREE SOUTH OF AREA B TO THE FRAC TANK STORAGE AREA | | |
| K.G. | 13. | Blend side slope of demolished FRAC tank storage area in to existing topography | 8/28/98 | 8/29/98 LJB |
| K.G. | 14. | Remove soil from tree trucks at old stockpile area | 9-1-98 | LJB 09-01-98 |
| K.G. | 15. | Grade old stockpile area to drain | 9-1-98 | LJB 09-01-98 |
| K.G. | 16. | Remove trash | 9-2-98 | LJB 09-02-98 |
| K.G. | 17. | Remove clay or add topsoil | 9-2-98 | LJB 09-02-98 |

| AREA | ITEM | DESCRIPTION | DATE COMPLETED | DATE VERIFIED |
|---|---|---|---|---|
| D. | | AREA BETWEEN ROAD AND EAST FRAC TANK STORAGE AREA | | |
| K.Gr. | 18. | Repair NW corner of east FRAC tank storage area berm | 9-2-98 | LJB 09-02-98 |
| K.Gr. | 19. | Grade area to drain and blend with existing topography | 9-2-98 | LJB 09-02-98 |
| K.Gr. | 20. | Grade bank area <4:1 or prepare to mat | 9-1-98 | LJB 09-02-98 |
| K.Gr. | 21. | Remove loose soil from tree trunks | 8/28/98 | 8/28/98 LJB |
| K.Gr. | 22. | Remove trash | 9-1-98 | LJB 09-02-98 |
| | 23. | Demobilize equipment and tools | | LJB 09-09-98 |
| K.Gr. | 24. | Remove stockpile of topsoil | 9-2-98 | LJB 09-03-98 |
| | | | | |
| E | | DRAINAGE DITCH AND AREA BETWEEN ROAD AND THE CAP ALONG THE LENGTH OF AREA A, B, C, AND D | | |
| K.Gr. | 25. | Un-block CMP | 9-1-98 | LJB 09-01-98 |
| K.Gr. | 26. | Remove deteriorated hay bales from ditchline | 9-1-98 | LJB 09-01-98 |
| K.Gr. | 27. | Remove improperly installed and sediment laden silt fence | 9-1-98 | LJB 09-01-98 |
| K.Gr. | 28. | Install a single row of silt fence down gradient from disturbed area | 9-2-98 | LJB 09-04-98 |
| K.Gr. | 29. | Un-plug ditchline | 9-1-98 | LJB 09-04-98 |
| K.Gr. | 30. | Cut and grade in swale between cap and road | 8/28/98 | 8/29/98 LJB |
| | | | | |
| F. | | AREA AROUND WEST FRAC TANK STORAGE AREA | | |
| K.Gr | 31. | Repair tire ruts; grade to drain | 9-1-98 | 09-01-98 |
| K.Gr | 32. | Repair berm | 8/28/98 | 8/29/98 |
| K.Gr. | 33. | Till in low area by turn around; grade to drain | 8-31-98 | 09-01-98 |
| K.Gr. | 34. | Blend excess soil in tree line | 9-1-98 | 09-03-98 |
| K.Gr. | 35. | Remove trash | 9-1-98 | 09-03-98 |
| K.Gr. | 36. | Add topsoil near road in non-gravel area | 9-1-98 | 09-03-98 |

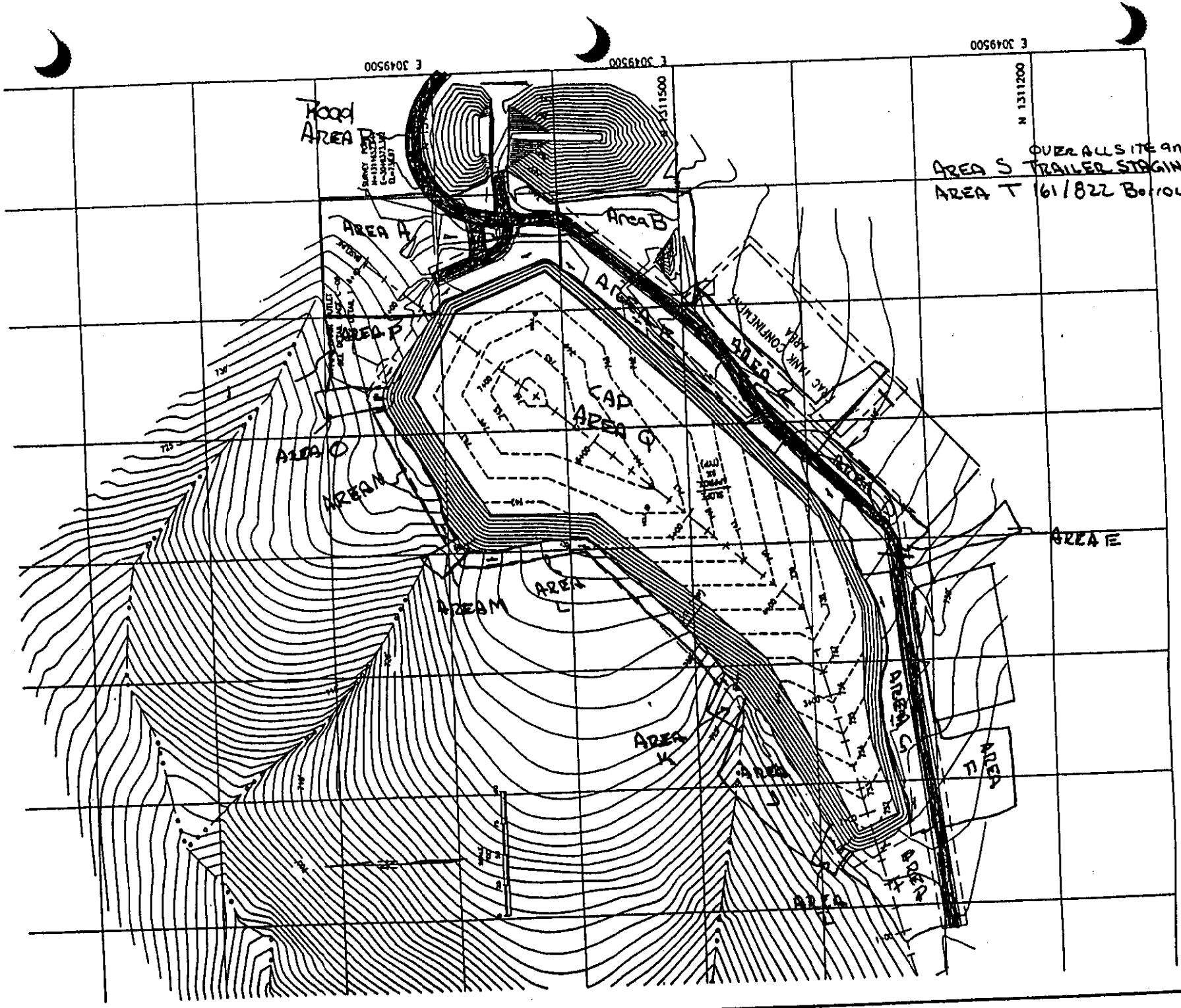
| AREA | ITEM | DESCRIPTION | DATE COMPLETED | DATE VERIFIED |
|---|---|---|---|---|
| G | | AREA BETWEEN CAP AND ROAD SOUTH OF CMP | | |
| K.G. | 37. | Remove construction debris from around the well | 8/31/98 | 9/1/98 LJB |
| K.G. | 38. | Grade area to drain | 8/31/98 | 9/1/98 LJB |
| K.G. | 39. | Add topsoil | 9/1/98 | ~~09-02-98~~ LJB |
| | | | | |
| H | | AREA AT SW END OF CAP | | |
| K.G. | 40. | Remove clay stockpile | 9-1-98 | LJB 09-01-98 |
| K.G. | 41. | Grade to blend to existing topography and to drain | 9-1-98 | LJB 09-01-98 |
| K.G. | 42. | Add topsoil | 9-1-98 | LJB 09-01-98 |
| | | | | |
| I | | AREA OF SW OUTLET | | |
| K.G. | 43. | Repair cut | 9/1/98 | 9/1/98 LJB |
| K.G. | 44. | Grade area to drain | 8/28/98 | 8/28/98 LJB |
| K.G. | 45. | Install silt fence down gradient | 8/29/98 | 8/31/98 LJB |
| K.G. | 46. | Install screen | 9-3-98 | LJB 09-03-98 |
| | | | | |
| J | | AREA FROM THE TOE OF THE CAP TO THE TREE LINE BETWEEN THE SW OUTLET AND CENTRAL SW OUTLET | | |
| K.G. | 47. | Grade area to drain and blend to existing topography | 8/31/98 | 9/1/98 LJB |
| K.G. | 48. | Add topsoil | 9/1/98 | 9/1/98 LJB |
| K.G. | 49. | Install silt fence down gradient | 8/29/98 | 8/31/98 LJB |
| K.G. | 50. | Fill in low (pending) spot | 9/1/98 | 9/1/98 LJB |
| | | | | |
| K | | AREA OF CENTRAL SW OUTLET | | |
| K.G. | 51. | Repair outlet | 8/31/98 | 8/31/98 LJB |
| K.G. | 52. | Install screen | 9-3-98 | 09-03-98 |

| AREA | ITEM | DESCRIPTION | DATE COMPLETED | DATE VERIFIED |
|---|---|---|---|---|
| | | | | |
| L | | AREA BETWEEN CENTRAL SW OUTLET AND CENTRAL NW OUTLET | | |
| K.G. | 53. | Grade area to blend with existing topography | 8/31/98 | 8/31/98 LJB |
| K.G. | 54. | Add topsoil | 9/1/98 | 9/1/98 LJB |
| | | | | |
| M | | AREA OF CENTRAL NW OUTLET | | |
| K.G. | 55. | Repair outlet | 9/1/98 | 9/1/98 LJB |
| K.G. | 56. | Grade area to blend with existing topography | 8/31/98 | 8/31/98 LJB |
| K.G. | 57. | Install screen | 9-3-98 | LJB 09-03-98 |
| | | | | |
| N | | AREA BETWEEN CENTRAL NW AND NW OUTLET | | |
| K.G. | 58. | Remove trash | 8/31/98 | 8/31/98 LJB |
| K.G. | 59. | Grade to blend with existing topography | 8/31/98 | 8/31/98 LJB |
| K.G. | 60. | Add topsoil | 9/1/98 | 9/1/98 LJB |
| | | | | |
| O | | AREA OF NW OUTLET | | |
| K.G. | 61. | Repair outlet | 9/1/98 | 9/1/98 LJB |
| K.G. | 62. | Install screen | 9-3-98 | LJB 09-03-98 |
| | | | | |
| P | | NW SIDE OF NE END | | |
| K.G. | 63. | Grade loose material | 9-2-98 | LJB 09-03-98 |
| K.G. | 64. | Blend to existing topography | 9-2-98 | LJB 09-03-98 |
| K.G. | 65. | Add topsoil | 9-2-98 | LJB 09-03-98 |
| K.G. | 66. | Spread gravel stockpiles | 9-2-98 | LJB 09-03-98 |
| | | | | |
| Q | | CAP AREA | | |
| K.G. | 67. | Remove access ramp | 8/28/98 | 8/28/98 LJB |
| K.G. | 68. | Complete topsoil | 8/28/98 | 8/28/98 LJB |

| AREA | ITEM | DESCRIPTION | DATE COMPLETED | DATE VERIFIED |
|---|---|---|---|---|
| K.G. | 69. | As-built top of cover material | 8/28/98 LJB | 8/28/98 LJB |
| | 70. | Install warning signs | | 09-03-98 LJB |
| | 71. | Prepare cap for seeding | | 09-03-98 LJB |
| | 72. | Seed, mulch, fertilize cap | | 09-03-98 LJB |
| | 73. | Erosion mat all areas greater than 4:1 slope | | 09-04-98 LJB |
| | 74. | Touch up paint on well casings | | 09-04-98 LJB |
| | | | | |
| R | | ROAD WAY | | |
| K.G. | 75. | Re-grade and repair access road | 9-2-98 | 09-02-98 LJB |
| K.G. | 76. | Re-grade entrance road | 9-2-98 | 09-02-98 LJB |
| K.G. | 77. | Re-gravel roads | 9-2-98 | 09-02-98 LJB |
| | | | | |
| S | | OVERALL SITE AND TRAILER STAGING AREA | | |
| K.G. | 78. | Repair ruts in ditchline outside magazine | 9-2-98 | 09-02-98 LJB |
| K.G. | 79. | Spread sand pile | 9-2-98 | 09-02-98 LJB |
| K.G. | 80. | Remove fencing/flagging from magazine | 9-1-98 | 09-02-98 LJB |
| | 81. | Demobilize equipment | | 09-09-98 LJB |
| | 82. | Demobilize trailer, etc. | | 09-04-98 LJB |
| | 83. | Site as-built site | | 11-06-98 KLO FOR DB |
| | 84. | Seed, mulch, and fertilize | | 09-05-98 LJB |
| | 85. | Establish vegetation | | 11-06-98 KLO FOR DB |
| | | | | |
| T | | 161/822 BORROW AREA | | |
| K.G. | 86. | Add silt fence to out fall midway | 8/31/98 | 8/31/98 LJB |
| K.G. | 87. | Remove hay bales and silt fence from culvert | ~~8/31/98~~ 09-02-98 | ~~8/31/98~~ 09-02-98 |
| K.G. | 88. | Re-grade area to drain and blend to existing topography | 8/31/98 | 8/31/98 LJB |
| K.G. | 89. | Prepare area to seed | 8/31/98 | 8/31/98 LJB |

| AREA | ITEM | DESCRIPTION | DATE COMPLETED | DATE VERIFIED |
|---|---|---|---|---|
| | 90. | Seed, mulch and fertilize | | LB 09-02-98 |
| | 91. | Establish vegetation growth | | 11-06-98 FLO FOR DB |

COMPLETE REQ SUBMITTALS


E 3049500
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Road
AREA D
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CAP
AREA S
AREA T
OVER ALL SITE and
AREA S TRAILER STAGING
AREA T 161/822 Borrow Area.

# APPENDIX L

## ROICC AND EPD
## SIGN-OFF/ACCEPTANCE LETTER

MORRISON KNUDSEN CORPORATION
300 Highway 361, CTR-12
P.O. Box 310
Crane, IN 47522
(812) 854-6941
Fax: (812) 854-6944

# MEMO

**To:** File

**From:** Dave Beall

**Subject:** Final Inspection and Acceptance of SWMU 02/11

**Date:** 6 November 1998

**Correspondence No.:** 0009-028

This memo documents the final inspection for the Solid Waste Management Unit Interim Measures Cleanup for the physical work completed at SWMU 02/11 Dye Burial Ground Interim Measures Cap.

MORRISON KNUDSEN CORPORATION

Signature D Beall Date 11/6/98
Dave Beall

ROICC

Signature Brent Robertson Date 11/12/98
Brent Robertson

EPD

Signature Thomas J. Beck Date 11/12/98
Chris Freeman

The completion and acceptance of the Interim Measures Report will complete this closure at a later date.

cc: PMO ROICC EPD
File: 11-1.2-0009 17-10-0009

PHILIP ENVIRONMENTAL

Industrial Services Group
Midwest Region

RECEIVED
NOV 12 1998
MK-CRANE

DBC – 62
November 12 1998
Project 18328

| MSAC - CRANE | | | |
|---|---|---|---|
| 4324-0009 | | | |
| PROJECT MEMBER | ACT | INFO | INIT |
| PROJECT MANAGER | | X | |
| PROJECT ENGINEER | | | |
| GNL SUPT | | | |
| SAFETY AND HEALTH | | | |
| CAVOC | | | |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| FMO-CHARLESTON | | | |
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Mr. David Beall
Project Manager
Morrison Knudsen Corporation
300 Highway 361
NSWC – CTR 12
Crane, Indiana 47522

Dear Mr. Beall

**Project:** **Dye Burial Grounds Cap**
**NSWC Crane, Indiana**
**Project No.:** **Subcontract 4324-106**
**Contractor:** **Philip Services Corporation**
**210 West Sand Bank Road**
**Columbia, Illinois 62236-0230**

Philip is requesting that Morrison Knudsen accept the site restoration portion of this project. During a site visit on October 21, 1998, the vegetation was inspected and found to be established and meets the requirements of the Contract Specifications. Please notify the Contract Administrator, John McCumbers, confirming the site restoration has been completed. If you have any questions regarding this matter, please call me at (800) 733-7173.

Sincerely,

PHILIP ENVIRONMENTAL SERVICES CORPORATION

Don Flowers

Donald L. Flowers,
Project Manager

cc: W.D. "John" McCumbers

PHILIP ENVIRONMENTAL SERVICES CORPORATION
210 West Sand Bank Road • P.O. Box 230 • Columbia, IL 62236-0230
(618) 281-7173 • (800) 733-7173 • Fax (618) 281-5120

# APPENDIX M

# PROPOSAL FOR DISPOSAL OF DYE-IMPACTED WATER

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
*We make Indiana a cleaner, healthier place to live*

Frank O'Bannon
Governor

John M. Hamilton
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.ai.org/idem

September 15, 1998

Mr. James M. Hunsicker, Director
Environmental Protection Department
Crane Division, Naval Surface Warfare Center
300 Highway 361
Crane, Indiana 47522-5000

Dear Mr. Hunsicker:

Re: NPDES Permit IN0021539
Dye Burial Grounds (DBG)

This is written in response to your letter dated July 17, 1998, concerning the disposal of 150,000 gallons of stormwater collected from the DBG. The proposal for disposal is to pump the stormwater from the holding tanks to the wastewater collection system.

Upon review of the lab analysis taken from the holding tanks, and toxicological information on the dyes, it has been determined the water is nontoxic. Based on these results the permit does not need to be modified to include additional monitoring. As you are aware, the discharge has the potential to violate the minimum surface water quality standard (327 IAC 2-1-6(a)(C)) that prohibits any discharge that produces color or conditions that create a nuisance. The permittee needs to monitor the discharge from Outfall 001 to ensure that the discharge does not violate any water quality standards.

If you have any questions please contact Gary Pavich, of my staff at 317/232-8479.

Sincerely,

Steven K. Roush

Steven K. Roush
Section Chief
Industrial NPDES Permit Section
Office of Water Management

GMP/gmp
cc: Tom Brant, Crane Division, Naval Surface Warfare Center

DEPARTMENT OF THE NAVY
CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE INDIANA 47522-5000

RECEIVED
DEC 0 8 1998
MK-CRANP

5090 IN REPLY REFER TO
Ser 095/8137
17 JUL 1998

Indiana Department of Environmental Management
Office of Water Management
Industrial Permit Section
Attn: Mr. Steve Roush
PO Box 6015
Indianapolis, IN 46206-6015

Dear Mr. Roush:

Crane Division, Naval Surface Warfare Center (NAVSURFWARCENDIV Crane) is managing a Resources Conservation Recovery Act (RCRA) solid waste management unit consisting of a site (approx. 1.0 acre) where military specification dyes were buried starting in the 1940's and ending in the 1960's. The site is known as Dye Burial Grounds (DBG). As an interim measure to prevent transport of the dye into the ground water a clay cap was applied over the area. During the process of capping the site, dyes in the soil were exposed to rainfall. Runoff from the DBG turned green. The runoff water was contained and pumped into holding tanks brought to the site. A total of 150,000 gallons of water was pumped into the tanks in January and September of 1997.

In December 1997 the tanks were sampled and the samples were taken to our own Navy lab for analysis. Enclosure (1) is a summary of the results. As can be seen from the results, the green color of the water is due to a combination of a green dye and a blue dye. Toxicological information about the dyes is included in enclosure (2).

Now that the analyses have been completed and the dyes have been identified we need to decide how to dispose of the 150,000 gallons of water. We need to accomplish disposal as quickly as possible to avoid additional tank rental charges. To date, the Navy has accrued $164,000 in tank rental charges. The U.S. Environmental Protection Agency (EPA) has requested a disposal plan from the Navy and has expressed their desire that disposal be accomplished prior to the onset of cold weather conditions.

095
Ser 095/8137

Our proposal for disposing of the water is provided in enclosure (3). We would like to have your recommendation on disposal of this water.

NAVSURFWARCENDIV Crane point of contact is Mr. Phil Keith, Code 0957, telephone 812-854-6157.

Sincerely,

JAMES M. HUNSICKER
Director, Environmental Protection Department
By direction of
the Commander

Encl:
(1) Results of Dye Water Analysis
(2) Toxicological Information
(3) Dye Water Disposal Proposal

Copy to:
U.S. EPA Region V (C. Witt-Smith)
CICC (B. Robertson) (w/o encls)

DEPARTMENT OF THE NAVY
CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE, INDIANA 47522-5001

IN REPLY REFER TO

8000/5
Ser 4052/8088
16 JUL 1998

MEMORANDUM

From: 4052
To: 095 (T. Brent)

Subj: **FINAL ANALYSIS REPORT OF DYES FROM THE CRANE DYE BURIAL GROUNDS, OED/C-98-045**

Ref: (a) QUALITY ASSURANCE PROJECT PLANT (QAPP)
(b) Equipment Operating Procedures of Explosive Sciences Branch

Encl: (1) Results of Dye Water Analysis OED/C-98-045

1. Code 4052 was requested by Code 095 to perform the analysis on nine tanks containing dye water from the Dye Burial Grounds (DGB) at Crane. The samples were assigned the Explosive Sciences Branch Sample Numbers N98-2001 to N98-2075.

2. The samples from the tanks were subjected to the analytical tests described in reference (a). The procedures defined in reference (b) were used as guidelines. A full detailed analysis complete with data sheets is attached as enclosure (1).

3. Code 40 points of contact are Mr. Maroof Qurashi and Mr. Steve Weddle, Code 4052, extensions 4230 and 6049 respectively.

Nancey J. Maegerlein
NANCEY J. MAEGERLEIN

Copy to:
40211

# RESULTS OF DYE WATER ANALYSIS
# FOR
# CODE 095

14 July 1998

by

Maroof H. Qurashi
Steven C. Weddle

CED/C 98-045

Approved by:

Nancey J. Maegerlein
Nancey J. Maegerlein
Explosive Sciences Branch
Test and Evaluation Department
Ordnance Engineering Directorate
Naval Surface Warfare Center
Crane Division
Crane, Indiana 47522-5001

Enclosure (1)

b. Explosives analysis for Octogen (HMX), Cyclonite (RDX), 2,4,6-Trinitrotoluene (TNT), Nitroglycerin (NG), Nitroguanidine (NQ), 2-Amino-4,6-dinitro toluene (2-Am-DNT), 1,3-Dinitrobenzene (1,3-DNB), 2,4-Dinitrotoluene (2,4-DNT), Nitrobenzene (NB), 1,3,5-Trinitrobenzene (1,3,5-TNB), 4-Amino-2,6-Dinitrotoluene (4-Am-DNT), 2,6-Dinitrotoluene (2,6-DNT), 2-Nitrotoluene (2-NT), 3-Nitrotoluene (3-NT), 4-Nitrotoluene (4-NT), and Tetryl using High Pressure Liquid Chromatography (HPLC) EPA Method 8330.

c. Analysis for Disodium Fluorescein(Uranine) using HPLC.

d. Total Suspended Solids (TSS) using EPA Method 160.2.

e. Anions analysis using Ion Exchange Chromatography (IEC).

f. Ammonia-Nitrogen analysis determined. potentiometrically using an Ion Selective Electrode per EPA Method 350.3.

g. Total Organic Carbon (TOC) analyzed using Dohrmann DC-80 TOC system using EPA Method 415.2.

h. Volatile Organic Compounds (VOC) using EPA Method 8240.

i. Evaporite analysis using Fourier Transform/Infrared Spectroscopy (FTIR).

j. Blue dye analysis using UltraViolet/Visible (UV/Vis) Spectrophotometer.

k. Thin Layer Chromatography (TLC).

l. Scanning Electron Microscopy (SEM) Energy Dispersive X-Ray Analysis of the evaporite.

See references (a) and (b) for further details on each of the methods. This report contains information on the types of analyses performed, results of the work done on the dyes, and interpretation of the results.

## 3. ANALYTICAL TEST PROCEDURES

The following paragraphs contain the types of analytical evaluations performed and a summary of the procedure performed on each sample:

a. <u>Toxicity/Microtox:</u> This test is performed using the Microbics-M-500 Analyzer per ASTM D-5660-95. This procedure assesses the Microbial Detoxification of chemically contaminated Water and Soil. In this procedure living organisms are exposed to a chemical, substance or sample under controlled conditions to determine if exposure causes any effect to the organisms. Toxic responses are the consequences of interference with biochemical reactions. The light produced by the organism is tied to the metabolism of the cell. Some toxicants can enter the cell membrane faster than others. This toxicity test uses Luminescent Marine Bacterium. Toxicity is measured as toxic inhibition of bacterial light output. The results are reported in terms of inhibitory concentration (IC) or effective concentration (EC). It is the calculated concentration of sample required to produce a specific quantitative and qualitative inhibition. EC50 is where gamma=1 or light loss/light remaining 50/50=1.

b. <u>Explosives in Dye Water</u>: High Pressure Liquid Chromatography (HPLC) Method 8330 of EPA manual SW-846 is used to

analysis:

Mobile phase: 0.038 Molar Borate-Gluconate mixture with 50 milliliters Acetonitrile and 20 milliliters of Butyl Alcohol per liter.

Sample/standard filtration: 0.45um particulate filters and then prewashed with a Sep Pack C18.

Pump: Waters 590

Detector: Waters 430 Conductivity

Injection unit: Shimadzu SIL 9 Auto Injector

Test Data: Maxima Software.

f. **AMMONIA-NITROGEN:** Ammonia-nitrogen was analyzed using EPA Method 350.3, Nitrogen, Ammonia (Potentiometric, Ion Selective Electrode). This method of analysis is applicable to the measurement of ammonia-nitrogen in drinking, surface and saline waters in addition to domestic and industrial wastes. The procedure covers the range from 0.03 to 1400 mg $NH_3$-N/L. Color and turbidity have no effect on the measurements, thus, distillation may not be necessary. Ammonia is determined potentiometrically using an ion selective ammonia electrode anode and a pH meter having an expanded millivolt scale or a specific ion meter. The ammonia electrode uses a hydrophobic gas-permeable membrane to separate the sample solution from an ammonium chloride internal solution. Ammonia in the sample diffuses through the membrane and alters the pH of the internal solution, which is sensed by a pH electrode. There was no special sample preparation involved. One hundred milliliters of sample was used to get readings from the electrometer.

g. **TOTAL ORGANIC CARBON (TOC):** TOC analysis of the dye water samples was performed using EPA Method 415.2 Organic Carbon, Total (low level) (UV promoted, persulfate oxidation). This method covers the determination of total organic carbon in drinking water and other water containing carbonaceous matter which is either soluble or has a particle size of 0.2 mm or less or a non-homogenized sample. The Dohrmann DC-80 TOC System was used to analyze for TOCs in the Dye water samples. The samples were filtered, adjusted to pH 2-3 and then analyzed. Homogenizing the sample can cause loss of purgeable organic carbon, thus yielding low results. The total organic carbon measured by this procedure is the sum of the purgeable organic carbon and the nonpurgeable organic carbon.

h. **VOLATILE ORGANIC Compounds (VOC):** The method used was EPA method 8240. An inert gas is bubbled through a 5 milliliter water sample contained in a specially designed purging chamber at ambient temperature. The purgeables are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a solvent trap where the purgeables are trapped. After purging is completed, the trap is heated and backflushed with the inert gas to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are them detected with a mass

a. **Microtox/Toxicity:** All samples were tested as received and were found to be Non-Toxic. EC50 was used as an expression of toxicity. A 100 ppm Phenol standard shows 17.4924 ppm EC50 value at a 95% confidence level. A standard containing 3.5 ppm of blue dye showed no toxicity. Another standard containing 7.5 ppm of Disodium Fluorescein (Uranine) showed no toxicity. The EC50 value was higher than the concentration value of the standards. Also, the EC50 value was higher than the highest concentration of the samples. The sample was concentrated until some toxicity was determined. Nine hundred milliliters of sample concentrated to 10 milliliters (factor of 90:1) gave an EC50 value to be 0.22 ppm, a concentration factor of 450:1 gave a 3.4 ppm EC50 value.

b. **Explosives in Dye Water:** Appendix A contains the details of explosives analyzed. All samples showed explosives below detection limit, 0.001 ppm.

c. **Disodium Fluorescein in Dye Water:** Disodium Fluorescein (Uranine) Dye was found to be below the detection limits of 10 ppb for the HPLC. A spiked sample showed 1 ppm and a composite spike detected 1.5 ppm. Appendix A shows the results of Disodium Fluorescein found in the Dye Water samples.

d. **Total Suspended Solids:** Appendix A contains the results of all tanks. This method followed EPA Method number 160.2. The analysis showed all samples to be less than 4 ppm with the exception of sample DBGFT 8 121797 (Tank # S1685 Composite). This sample contained 8.50 ppm suspended solids.

| | |
|---|---|
| Spiked sample | 87.8 percent recovery |
| NPDES permit | 10.0 ppm monthly ave. (For TSS) |

e. **Ion Exchange Chromatography:** Ion Exchange Chromatography was used to test for seven anions. IEC analysis showed chloride in the range 0.9 to 6.9 ppm and sulfate in the range 24 to 178 ppm present in the water samples. Spiked recoveries for each anion were calculated for each spiked sample. Unfortunately, the Fluoride spike peak was obscured by the injection peak. But, at a concentration of Fluoride above 1.5 ppm, interference is insignificant (ref. CR4052 EOP 0010). Here is a list of the spike recoveries.

| Anion | Ave. Spike Recovery (percent) |
|---|---|
| Chloride | 82.5 |
| Nitrite | 89.8 |
| Bromide | 91.9 |
| Nitrate | 95.6 |
| Phosphate | 77.3 |
| Sulfate | 89.6 |

f. **Ammonia-Nitrogen:** The results of the Ammonia-Nitrogen

5. RESULTS AND DISCUSSION PER TANK
Appendices B and C are attached for reference.

Tank # 1001MEA: In summary, analysis for heavy metals and toxicity determined the water to be non-toxic. Based on EPA regulations and chemical analyses( HPLC Explosives, HPLC Uranine Dye, TSS, IEC, Ammonia-Nitrogen, TOC, FT/IR, UV/VIS Blue Dye, and SEM), the tank could be processed through waste treatment (i.e. carbon tower).

Tank # GS505EA: In summary, analysis for heavy metals and toxicity determined the water to be non-toxic. Based on EPA regulations and chemical analyses( HPLC Explosives, HPLC Uranine Dye, TSS, IEC, Ammonia-Nitrogen, TOC, FT/IR, UV/VIS Blue Dye, and SEM), the tank could be processed through waste treatment (i.e. carbon tower).

Tank # GS522EA: In summary, analysis for heavy metals and toxicity determined the water to be non-toxic. Based on EPA regulations and chemical analyses( HPLC Explosives, HPLC Uranine Dye, TSS, IEC, Ammonia-Nitrogen, TOC, FT/IR, UV/VIS Blue Dye, and SEM), the tank could be processed through waste treatment (i.e. carbon tower).

Tank # GS650NEA: In summary, analysis for heavy metals and toxicity determined the water to be non-toxic. Based on EPA regulations and chemical analyses( HPLC Explosives, HPLC Uranine Dye, TSS, IEC, Ammonia-Nitrogen, TOC, FT/IR, UV/VIS Blue Dye, and SEM), the tank could be processed through waste treatment (i.e. carbon tower).

Tank # GS88EA: In summary, analysis for heavy metals and toxicity determined the water to be non-toxic. Based on EPA regulations and chemical analyses( HPLC Explosives, HPLC Uranine Dye, TSS, IEC, Ammonia-Nitrogen, TOC, FT/IR, UV/VIS Blue Dye, and SEM), the tank could be processed through waste treatment (i.e. carbon tower).

Tank # S1647SD: In summary, analysis for heavy metals and toxicity determined the water to be non-toxic. Based on EPA regulations and chemical analyses( HPLC Explosives, HPLC Uranine Dye, TSS, IEC, Ammonia-Nitrogen, TOC, FT/IR, UV/VIS Blue Dye, and SEM), the tank could be processed through waste treatment (i.e. carbon tower).

Tank # 1885EA: In summary, analysis for heavy metals and toxicity determined the water to be non-toxic. Based on EPA regulations and chemical analyses( HPLC Explosives, HPLC Uranine Dye, TSS, IEC, Ammonia-Nitrogen, TOC, FT/IR, UV/VIS Blue Dye, and SEM), the tank could be processed through waste treatment (i.e. carbon tower).

Tank # S47ST: In summary, analysis for heavy metals and toxicity determined the water to be non-toxic. Based on EPA regulations

# DATA GRAPHS

## Spike and Spike Recovery Data for Blue Dye

| Tank number | Spiked sample PPM in Solution | Percent recovery |
|---|---|---|
| GS88EA(TOP) | 0.16 | 74.37 |
| GS505EA(TOP) | 0.19 | |
| GS505EA(BOT) | 0.17 | |
| GS650NEA(COMP) | 0.23 | 124.2 |

## Spike Sample Recovery Data for Total Suspended Solids (TSS)

| Spike Sample | recovery |
|---|---|
| composite | 87.8% |

## Toxicity values in concentrated sample

| | |
|---|---|
| Concentrated sample | 0.22 EC Value |
| concentrated composite sample | 3.4 EC Value |

## Spike Sample Recovery Data for Explosives in Dye water

composite spike sample recovery 90.0%

## Spike Sample Recovery Data for Disodium fuorescein in Dye water

| | | |
|---|---|---|
| spike sample, Composite sample spike | 1 PPM | 86 % recovery |
| | 1.5 PPM | 75 % recovery |

## Total Organic Carbon Background Analysis (5-28-98)

Total Organic Carbon (TOC) Analysis of Dye Burial Ground Background sample (N98-2075, collected 5-22-98, NSWC02/11-09, Turkey Creek Tributary on H-58)

Calibration Adjusted Average 9.990

Standard #1 TOC 9.743

Calibration Adjusted Average 9.996

Standard #2 TOC 10.10

| Sample | TOC (ppm) |
|---|---|
| N98-2075 #1 | 1.846 |
| N98-2075 #2 | 1.961 |
| N98-2075 spiked at (5 ppm) | 5.540 |
| Blank | 0.535 |

Average of two N98-2075 samples = 1.904 ppm for TOC

TANK # GS522EA

All units measured in parts per million (ppm)

| TESTS | TOP | BOTTOM | COMP |
|---|---|---|---|
| TOC | 2.4 | 2.7 | |
| VOC | N/A | N/A | |
| AMMONIA | 0.034 | 0.032 | |
| IEC - FLUORIDE | BDL | BDL | |
| IEC - CHLORIDE | 3.3 | 3.3 | |
| IEC - NITRITE | BDL | BDL | |
| IEC - BROMIDE | BDL | BDL | |
| IEC - NITRATE | BDL | BDL | |
| IEC - PHOSPHATE | BDL | BDL | |
| IEC - SULPHATE | 103 | 104 | |
| HPLC - HMX | BDL | BDL | |
| HPLC - RDX | BDL | BDL | |
| HPLC -TNT | BDL | BDL | |
| HPLC - FLUORESCEIN | BDL | BDL | |
| TSS | <4.0 | <4.0 | |
| FT/IR | CALCIUM SULFATE | CALCIUM SULFATE | |
| SEM | Na, Mg, Al, Si, Cl, Ca, S, O | Na, Mg, Al, Si, Cl, Fe, Ca, S, O | |
| TLC | N/A | N/A | |
| UV MIL-D-16627 (BLUE DYE) | 0.24 | 0.22 | 0.23 (AVE) |
| VISUAL | GREEN | GREEN | |
| TOXICITY | NON-TOXIC | NON-TOXIC | |

TANK # GS650NEA

All units measured in parts per million (ppm)

| TESTS | TOP | BOTTOM | COMP |
|---|---|---|---|
| TOC | | | 2.497 |
| VOC | | | N/A |
| AMMONIA | | | 0.031 |
| IEC - FLUORIDE | | | BDL |
| IEC - CHLORIDE | | | 3.5 |
| IEC - NITRITE | | | BDL |
| IEC - BROMIDE | | | BDL |
| IEC - NITRATE | | | BDL |
| IEC - PHOSPHATE | | | BDL |
| IEC - SULPHATE | | | 162 |
| HPLC - HMX | | | BDL |
| HPLC - RDX | | | BDL |
| HPLC -TNT | | | BDL |
| HPLC - FLUORESCEIN | | | BDL |
| TSS | | | <4.0 |
| FT/IR | | | CALCIUM SULFATE |
| SEM | | | Mg, Al, Si, Cl, Ca, S, O |
| TLC | | | N/A |
| UV MIL-D-16627 (BLUE DYE) | | | 0.19 |
| VISUAL | | | GREEN |
| TOXICITY | | | NON-TOXIC |

TANK # S1885EA

All units measured in parts per million (ppm)

| TESTS | TOP | BOTTOM | COMP |
|---|---|---|---|
| TOC | | | 3.096 |
| VOC | | | N/A |
| AMMONIA | | | 0.037 |
| IEC - FLUORIDE | | | BDL |
| IEC - CHLORIDE | | | 3.3 |
| IEC - NITRITE | | | BDL |
| IEC - BROMIDE | | | BDL |
| IEC - NITRATE | | | BDL |
| IEC - PHOSPHATE | | | BDL |
| IEC - SULPHATE | | | 119 |
| HPLC - HMX | | | BDL |
| HPLC - RDX | | | BDL |
| HPLC -TNT | | | BDL |
| HPLC - FLUORESCEIN | | | BDL |
| TSS | | | 8.5 |
| FT/IR | | | CALCIUM SULFATE |
| SEM | | | Na, Mg, Al, Si, Cl, Fe, Ca, S, O |
| TLC | | | N/A |
| UV MIL-D-16627 (BLUE DYE) | | | 0.15 |
| VISUAL | | | GREEN |
| TOXICITY | | | NON-TOXIC |

TANK # S47ST

All units measured in parts per million (ppm)

| TESTS | TOP | BOTTOM | COMP |
|---|---|---|---|
| TOC | 3.7 | 4.1 | |
| VOC | N/A | N/A | |
| AMMONIA | 0.034 | 0.036 | |
| IEC - FLUORIDE | BDL | BDL | |
| IEC - CHLORIDE | 5.7 | 5.7 | |
| IEC - NITRITE | BDL | BDL | |
| IEC - BROMIDE | BDL | BDL | |
| IEC - NITRATE | BDL | BDL | |
| IEC - PHOSPHATE | BDL | BDL | |
| IEC - SULPHATE | 168 | 172 | |
| HPLC - HMX | BDL | BDL | |
| HPLC - RDX | BDL | BDL | |
| HPLC -TNT | BDL | BDL | |
| HPLC - FLUORESCEIN | BDL | BDL | |
| TSS | <4.0 | <4.0 | |
| FT/IR | CALCIUM SULFATE | CALCIUM SULFATE | |
| SEM | Na, Mg, Si, Cl, Al, Ca, S, O | Na, Mg, Al, Si, Cl, Ca, S, O | |
| TLC | N/A | N/A | |
| UV MIL-D-16627 (BLUE DYE) | 0.24 | 0.21 | 0.23 (AVE) |
| VISUAL | GREEN | GREEN | |
| TOXICITY | NON-TOXIC | NON-TOXIC | |

TANK CONVERSION TABLE FOR DYE BURIAL GROUND SAMPLES
12/15-17/97

| Sample # | Lab Sample | Tank # |
|---|---|---|
| DBGFT-1-121597 | N98-2025 | S1647SD |
| DBGFT-1-121597 | N98-2025D | S1647SD |
| DBGFT-2-121597 | N98-2026 | 1001MEA |
| DBGFT-2-121597 | N98-2026D | 1001MEA |
| DBGFT-1-121697 | N98-2027 | S47ST(Top) |
| DBGFT-2-121697 | N98-2028 | S47ST(Bottom) |
| DBGFT-3-121697 | N98-2029 | GS88EA(Top) |
| DBGFT-4-121697 | N98-2030 | GS88EA(Bottom) |
| DBGFT-4-121697 | N98-2030D | GS88EA(Bottom) |
| DBGFT-1-121797 | N98-2056 | GS522EA(Top) |
| DBGFT-2-121797 | N98-2057 | GS522EA(Bottom) |
| DBGFT-3-121797 | N98-2058 | S679NSD(Top) |
| DBGFT-4-121797 | N98-2059 | S679NSD(Bottom) |
| DBGFT-5-121797 | N98-2060 | GS650NEA(comp) |
| DBGFT-5-121797 | N98-2060D | GS650NEA(Dup) |
| DBGFT-6-121797 | N98-2061 | GS505EA(Top) |
| DBGFT-7-121797 | N98-2062 | GS505EA(Bottom) |
| DBGFT-8-121797 | N98-2063 | S1885EA(comp) |

TLE BLUE DYE SPIKE OF SAMPLES 3-16-98 Book No.

rom Page No. 3-13-98 (900 MLS) to 10 MLS TRY SPIKING AROUND 10 T

GET ON SCALE

SPIKE with 5.6 mls of 3.55 ppm = 3.55 ppm × X

19B 2031 MS 5.6 mls of (3.55 mls) in H2O ✓ 3-16-98 X = 9.6 mls

20B 2031 MSD 5.6 mls (3.55 ppm in H2O) ✓ 3-16-98 19.88 ppm SPIKE

(50% of 7.1 ppm) SCW ~2.00 ppm

21B 2062 MS 5.6 mls (3.55 mls) (Blue Dye) in H2O ✓ 3-16-98 19.88 ppm

22B 2074 MSD 11.2 mls (1.775 mls) in H2O ✓ 3-16-98 19.88 ppm

23B 2072 MS (Bottle broke 3-16-98) (GLSO Not MS)

24B 2072 MSD (GLSO Not MS) Treat and Spike 900 MLS (1.1 ppm Metolachlor × 3 mls) 3-17-98 ✓ 21.3 ppm

14B 2060 (GLSO Not Dye) 900 MLS Already has blue dye

15B 2060 Dup (GLSO Not Dye) 900 MLS (7.1 ppm Metolachlor × 3 mls Spike) in H2O ✓ 3-16-98 21.3 ppm ~2.1 ppm

FINAL SOLUTION 10

Samples and Standards in 10 milliliters methanol as of 3-30-98

21.3 ppm in 1 ml

∴ 2.13 ppm in 10 mls

SCW

| Witnessed & Understood by me, | Date | Invented by | Date |
|---|---|---|---|
| | | Recorded by | |

1-15-98

No.

BLUE DYE STANDARD Dodie

.0071g per 100mls $\frac{.0071g}{100mls} \cdot \frac{10^6 ug}{g} = 71$ ppm Blue Dye

71 ppm SCW

Mil-D-16627 is only 50% Blue Dye so
Actual ppm is 71 ppm * .5 = 35.5 ppm SCW

STOCK 35.5ppm SCW

QAPP Calls for 15ppm (ppb) Spike Blue Dye (Sect 7, p16 of 23)

~~25 mls X 71 ppm ÷ 100 = 17.2 ppm~~ SCW

25mls * 35.5ppm ÷ = 7.1 ppm SCW

Then Spike 1 ML into each 90ML Sample

QAPP Calls for 3ppm for Blue Dye Spike (Sect 7 p17 of 23)

~~5 mls X 71ppm ÷ 100mls = 3.55 ppm Blue Dye~~ SC

5mls * 35.5ppm ÷ 100mls = 1.78 ppm Blue Dye SCW

1-16-98 Dye Samples Extracted and in Methanol (1.775)

Spiked Samples Still Extracting 2031MS, 2031MSD, 2062MS, 2074MS, 2072MS, 2072MSD

1-21, 22, 26-98 Solids Analyzed on FTIR

To Page No

nessed & Understood by me. | Date | Invented by | Date

42 [illegible]

Book No. _____ TITLE SPIKED BLUE DYE RECHECK

PYE 552 UV/VIS AT 608 nm

From Page No. _____

Air to MeOH - 1053

2:00 PM

bdspk499

| STANDARDS (ppm) | ABS | |
|---|---|---|
| BLANK | 0 | |
| 0.7 | | |
| 1.78 | | |
| 3.55 | | |
| ~~14.2~~ 7.1 | 0.055 | |
| ~~15.65~~ 9.94 | 0.090 | |
| ~~28.4~~ 14.2 | 0.122 | 0.127 After Run Been After Samples |
| ~~35.5~~ 17.5 | 0.166 | (0.167 After Sampling) (0.165 ) |
| ~~70~~ 35 | 0.331 | |
| ~~105~~ 52.5 | 0.494 | |
| ~~133~~ 66.5 | 0.636 | |
| ~~175~~ 87.5 | 0.814 | |
| SAMPLES NEW | | |
| 14B | 0.173 | |
| 15B | 0.192 | |
| 19B | 0.128 | |
| 20B | 0.119 | |
| 21B | 0.154 | |
| 22B | 0.140 | |
| 24B | 0.194 | |

Witnessed & Understood by me. Date

Invented by

Date

Recorded by

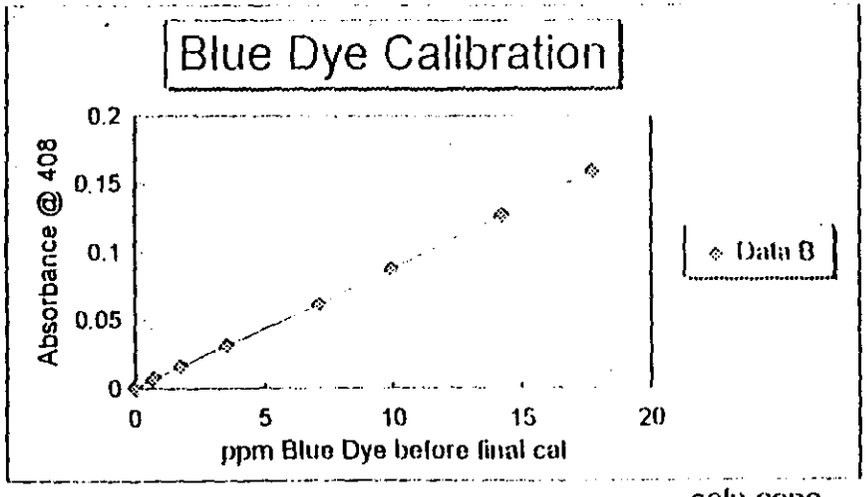
Air to MeOH

Blue Dye In Dye Burial Ground Water sampled Dec 15,16,17, 1997
Report 3-13-98 revised 7-13-98 Samples concentrated from 900 mls to 10 mls

| Blue Dye Standard | Absorbance | Regression |
|---|---|---|
| 0 | 0 | 0 |
| 0.71 | 0.007 | 0.006 |
| 1.78 | 0.016 | 0.016 |
| 3.55 | 0.031 | 0.031 |
| 7.1 | 0.061 | 0.063 |
| 9.94 | 0.088 | 0.088 |
| 14.2 | 0.127 | 0.127 |
| 17.75 | 0.159 | 0.158 |

Regression Output:

| | | |
|---|---|---|
| Constant | | -0.00034 |
| Std Err of Y Est | | 0.00107 |
| R Squared | | 0.99972 |
| No. of Observations | | 8.00000 |
| Degrees of Freedom | | 6.00000 |
| X Coefficient(s) | 0.0089354 | |
| Std Err of Coef. | 0.0000613 | |




| Sample # | Lab Sample# | Tank # | Abs @408 | soln conc ppm blue d | Dil Factor | Conc Factor | Final ppm blue dye |
|---|---|---|---|---|---|---|---|
| 1 | N98-2025 | S1647SD | 0.065 | 7.312419 | 3 | 90 | 0.24375 |
| 2 | N98-2025D | S1647SD | 0.063 | 7.08859 | 4 | 90 | 0.31505 |
| 3 | N98-2026 | 1001MEA | 0.062 | 6.976675 | 2 | 90 | 0.15504 |
| 4 | N98-2026D | 1001MEA | 0.083 | 9.326881 | 3 | 90 | 0.31090 |
| 5 | N98-2027 | S47ST (Top) | 0.064 | 7.200504 | 3 | 90 | 0.24002 |
| 6 | N98-2028 | S47ST(Bot) | 0.084 | 9.438796 | 2 | 90 | 0.20975 |

MICROTOX DATA REPORT FOR DEPARTMENT OF DEFENSE
Basic Test

FILE: N98-2025.K15
DYE SAMPLES FROM BURIAL GROUND AT CRANE

Test Time: 15 minutes  Osmotic Adjustment:X

| NUMBER | I0/IT | CONC. | CR/GAMMA |
|---|---|---|---|
| Control | 95.76/ 75.40 | 0.0 | 0.7874 # |
| 1 | 93.52/ 76.73 | 5.6250 | -0.040 * |
| 2 | 96.31/ 76.96 | 11.2500 | -0.015 * |
| 3 | 92.42/ 76.20 | 22.5000 | -0.045 * |
| 4 | 90.91/ 70.61 | 45.0000 | 0.014 * |

CR = Control Ratio  CORRECTION FACTOR = 0.7874
* Invalid data or controls

EC50 IS GREATER THAN HIGHEST CONCENTRATION

Signature _____  TEST DATE: 3/18/98
TIME: _____

N98-2025 is S1647SD.

MICROTOX DATA REPORT FOR DEPARTMENT OF DEFENSE
Basic Test

FILE: PHENOL-M.K5
PHENOL STD USING 0.0104 GMS/100ML

Test Time: 5 minutes

Osmotic Adjustment:oas

| NUMBER | I0/IT | CONC. | CR/GAMMA |
|---|---|---|---|
| Control | 95.61/ 80.04 | 0.0 | 0.8372 # |
| Control | 87.32/ 70.52 | 0.0 | 0.8076 # |
| Control | 104.73/ 76.56 | 0.0 | 0.7310 * |
| Control | 93.57/ 74.35 | 0.0 | 0.7946 # |
| 1 | 92.43/ 75.47 | 0.3516 | -0.004 * |
| 2 | 86.74/ 68.79 | 0.3516 | 0.025 * |
| 3 | 90.48/ 71.72 | 0.7031 | 0.026 * |
| 4 | 90.01/ 68.08 | 0.7031 | 0.075 |
| 5 | 89.65/ 70.36 | 1.4063 | 0.036 * |
| 6 | 90.47/ 67.85 | 1.4063 | 0.084 |
| 7 | 92.15/ 67.83 | 2.8125 | 0.105 |
| 8 | 83.73/ 61.04 | 2.8125 | 0.115 |
| 9 | 88.17/ 53.67 | 5.6250 | 0.336 |
| 10 | 88.54/ 55.13 | 5.6250 | 0.306 # |
| 11 | 91.21/ 43.87 | 11.2500 | 0.691 # |
| 12 | 88.59/ 39.21 | 11.2500 | 0.837 # |
| 13 | 86.08/ 27.38 | 22.5000 | 1.556 # |
| 14 | 84.20/ 27.22 | 22.5000 | 1.515 # |
| 15 | 86.45/ 15.81 | 45.0000 | 3.446 # |
| 16 | 90.76/ 20.76 | 45.0000 | 2.555 |

CR = Control Ratio
# Used for calculations

CORRECTION FACTOR = 0.8131
* Invalid data or controls

EC50 15.0939 mg/l (95% CONFIDENCE RANGE: 13.8226 TO 16.4821)

Signature _____

TEST DATE: 3/19/98
TIME: _____

CONTINUED TO NEXT PAGE...

Mixture
SPIKE

MICROTOX DATA REPORT FOR DEPARTMENT OF DEFENSE
Basic Test

FILE: 23-CONC.K15
CONCENTRATED DYE SAMPLE. 1000ML CONC TO 10 ML VOLUME

Test Time: 15 minutes  Osmotic Adjustment:oas

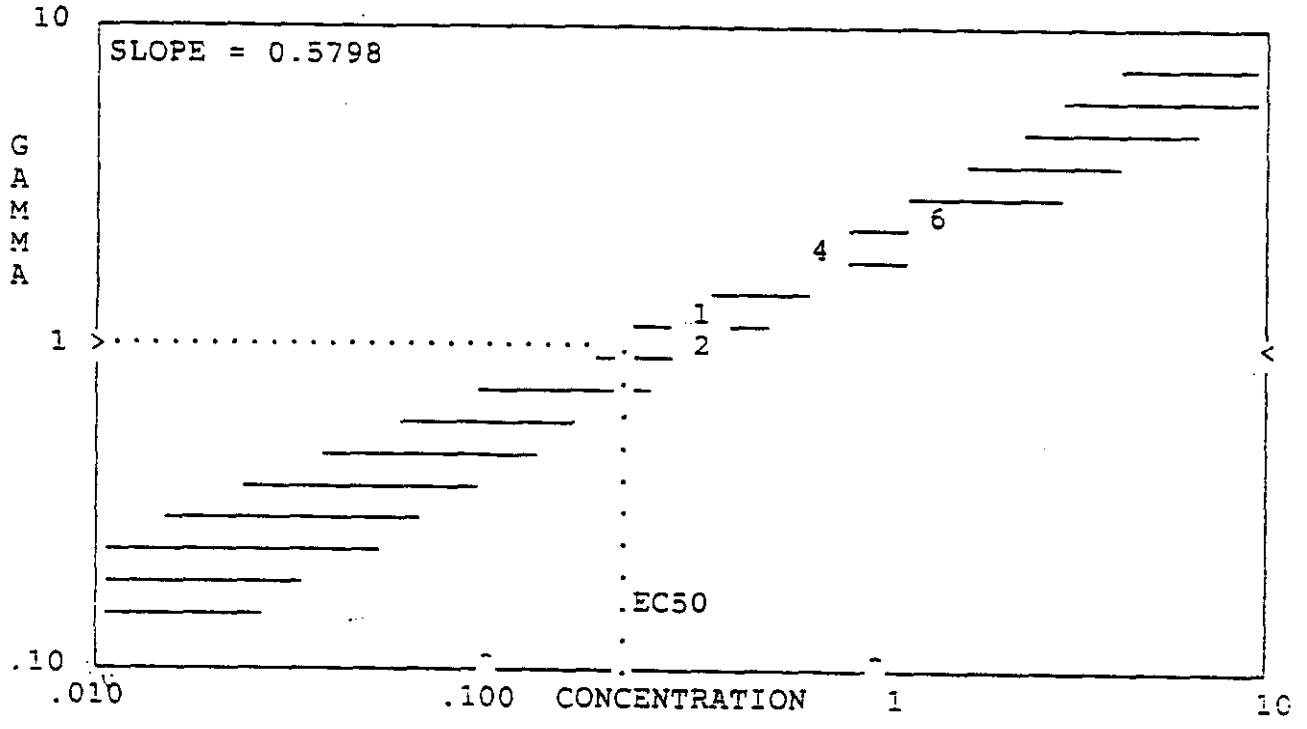
| NUMBER | IO/IT | CONC. | CR/GAMMA |
|---|---|---|---|
| Control | 95.03/ 36.54 | 0.0 | 0.3845 # |
| Control | 96.14/ 37.97 | 0.0 | 0.3949 # |
| Control | 98.86/ 39.52 | 0.0 | 0.3998 # |
| Control | 98.50/ 38.57 | 0.0 | 0.3916 # |
| 1 | 90.88/ 14.91 | 0.35 | 1.394 # |
| 2 | 105.79/ 18.94 | 0.35 | 1.193 # |
| 3 | 99.42/ 11.57 | 0.70 | 2.374 # |
| 4 | 101.65/ 12.73 | 0.70 | 2.136 # |
| 5 | 108.60/ 10.64 | 1.41 | 3.008 # |
| 6 | 102.53/ 10.71 | 1.41 | 2.759 # |
| 7 | 100.50/ 6.56 | 2.81 | 5.016 |
| 8 | 104.85/ 7.67 | 2.81 | 4.368 |
| 9 | 107.27/ 4.56 | 5.63 | 8.238 |
| 10 | 107.27/ 13.99 | 5.63 | 2.011 |
| 11 | 95.14/ 1.44 | 11.25 | 24.945 |
| 12 | 44.00/ 0.94 | 11.25 | 17.382 |
| 13 | 33.42/ 0.08 | 22.50 | 163.049 * |
| 14 | 42.48/ 0.06 | 22.50 | 277.029 * |
| 15 | 31.22/ 0.06 | 45.00 | 203.333 * |
| 16 | 43.04/ 0.06 | 45.00 | 280.694 * |

CR = Control Ratio  CORRECTION FACTOR = 0.3927
* Invalid data or controls

EC50 0.23 % (95% CONFIDENCE RANGE: 0.14 TO 0.38)

Signature _____  TEST DATE: 3/18/98
TIME: _____

CONTINUED TO NEXT PAGE...



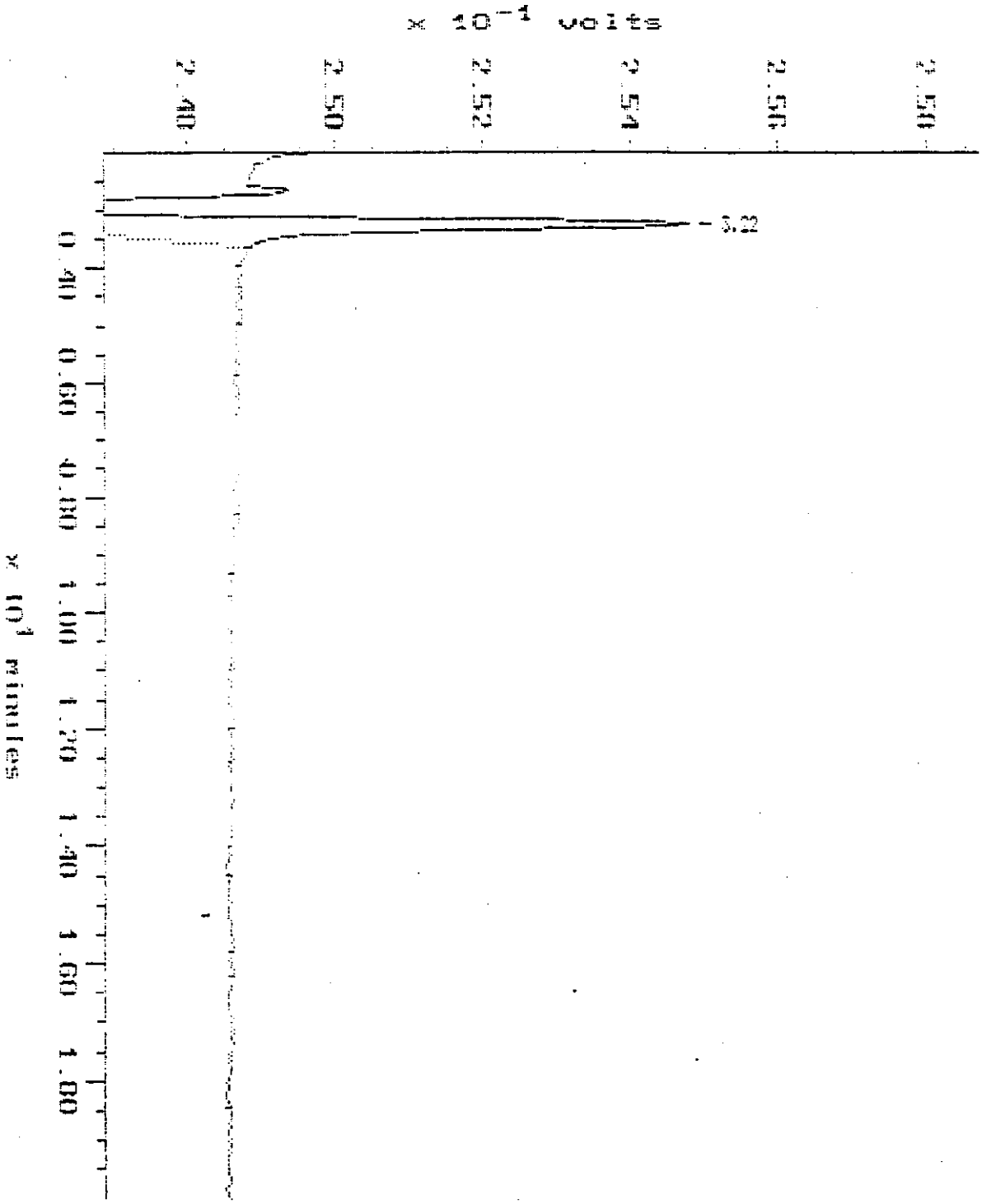

ESTIMATING EQUATION: LOG C = 1.5925 x LOG Γ -0.6427
95% CONFIDENCE FACTOR: 1.64957 FOR EC50
COEFFICIENT OF DETERMINATION: R^2 = 0.92339

GS 1885 EA.

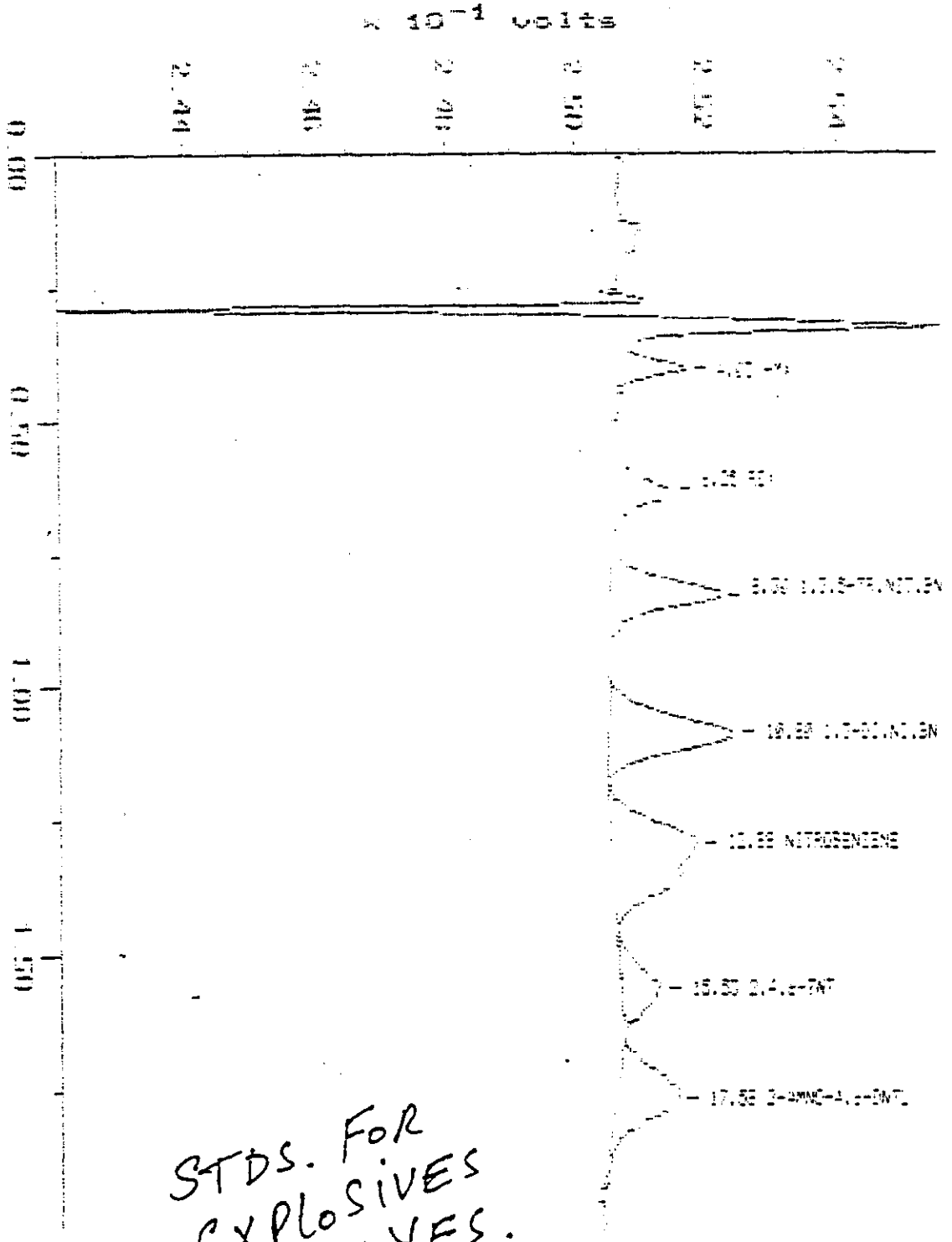
Sample: DYE SAMPLE
Acquired: 14-JAN-99 12:04
Inj Vol: 20.00

Channel: detector 1
Method: C:\MAX\DATA1\DYESAMPL

Filename: N99-20s3
Operator: MF

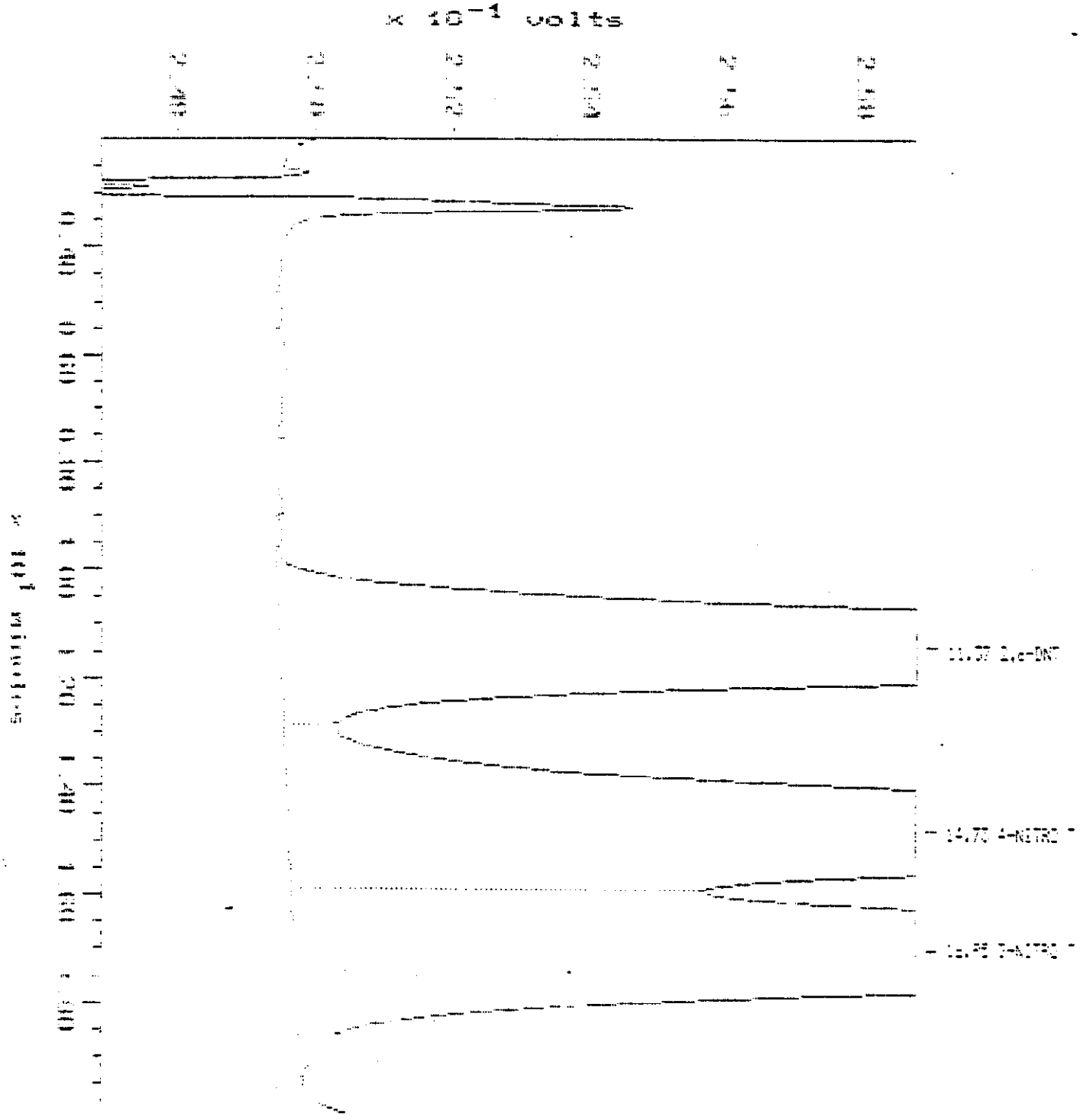


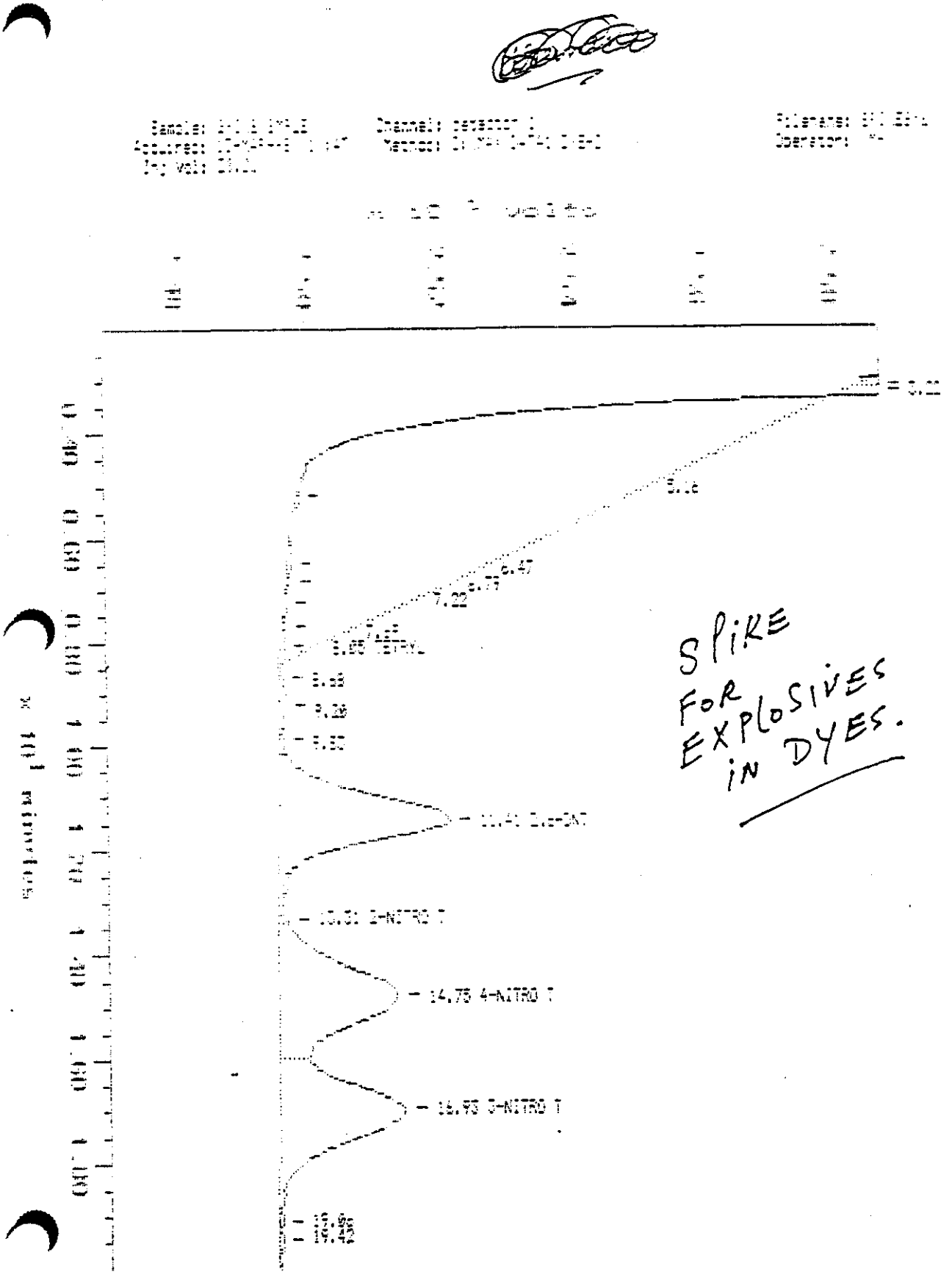
Sample: 3-10-95 STD-A  Channel: Detector 1  Filename: STD1
Acquired: 10-MAR-95 17:07  Method: C:\MAX\DATA\PARABENS  Operator: MHS
Inj Vol: 20.00




STDS. FOR EXPLOSIVES IN DYES.

Sample: STD-3 3-17-93 Channel: detector 1 Filename: STD-1
Acquired: 17-MAR-93 16:24 Method: C:\MAX\DATA1\DYE-2 Operator: MM
Inj Vol: 20.00






SPIKE FOR EXPLOSIVES IN DYES.

From Page No. _____ (500 MCS SAMPLE CONC TO 10 MCS)

| | | TANK | SPIKE | | Date Spiked |
|---|---|---|---|---|---|
| 2031 | MS | GS 88 EA | .2 mls | A | |
| 2031 | MSD | GS 88 EA | .2 mls | B | |
| 2072 | MS | GS 650 NEA | .2 mls | A | |
| 2072 | MSD | GS 650 NEA | .2 mls | B | |
| 2032 | MS | GS 525 EA | .2 mls | A | |
| 2074 | MSD | GS 525 EA | .2 mls | B | |
| A Check Std | 10 mls | Acetonitrile | .2 mls | A | 2-4-98 SCW ✓ |
| B Check Std | 10 mls | Acetonitrile | .2 mls | B | 2-4-98 SCW ✓ |

Final Volume 10 mls

100 µg/ml X .2 ml = 20 µg/10 mls 2 µg/ml 2 PPM

100 µg/ml

8330 STD A 100 µg/ml each component — 8330 STD B 100 µg/ml each component

| | |
|---|---|
| 2-Amino-4,6-Dinitrotoluene | 4-Amino-2,6-Dinitrotoluene |
| 1,3 Dinitrotoluene | 2,6-Dinitrotoluene |
| 2,4-Dinitrotoluene | 2-Nitrotoluene |
| HMX | 3-Nitrotoluene |
| Nitrobenzene | 4-Nitrotoluene |
| RDX | |
| 1,3,5-Trinitrobenzene | Tetryl |

To Page

| Witnessed & Understood by me, | Date | Invented by | Date |
|---|---|---|---|
| 2,4,6-Trinitrotoluene (TNT) | | Recorded by | |

RADIAN INTERNATIONAL LLC

# *Certificate of Analysis*

Radian International LLC certifies that this material meets or exceeds the specifications stated in this data sheet. Accuracy is ensured by exhaustive purity determinations and gravimetric preparation calibrated with NIST traceable weights. Precision is guaranteed by multiple weighings and comparison to existing standards (when available). Finally, homogeneity is demonstrated by random analysis of the ampuled standards.

AUTHORIZED SIGNATURE:

R.A. Chandler, Product Manager

*STANDARD NAME:* METHOD 8330 CALIBRATION MIX B

*COMPOUND DATA*

| COMPOUND | CAS NO. | CHEMICAL FORMULA | MOLECULAR WEIGHT | LOT NO. | CHEMICAL PURITY (%) |
|---|---|---|---|---|---|
| 4-Amino-2,6-dinitrotoluene | 1946-51-0 | $C_7H_5N_3O_4$ | 197.15 | CAP-27980-27 | 99 |
| 2,6-Dinitrotoluene | 606-20-2 | $C_7H_6N_2O_4$ | 182.14 | EB-0210 | 99 |
| 2-Nitrotoluene | 88-72-2 | $C_7H_7NO_2$ | 137.14 | EB-0209 | 99 |
| 3-Nitrotoluene | 99-08-1 | $C_7H_7NO_2$ | 137.14 | EB-0203 | 99 |
| 4-Nitrotoluene | 99-99-0 | $C_7H_7NO_2$ | 137.14 | ASZ-29703-02C | 99 |
| Tetryl | 479-45-8 | $C_7H_5N_5O_8$ | 287.10 | ASZ-29703-01E | 99 |

*STANDARD SOLUTION DATA*

| | |
|---|---|
| Catalog Number: | ERE-012 |
| Solution Lot Number: | 30311-95 |
| Concentration: | 100 µg/mL of each analyte |
| Solvent: | Acetonitrile |
| Amount per Ampule: | 1.2 mL |
| Storage: | Freezer. Protect from light. |
| Expiration Date: | September 1999 |

8501 N. Mopac Blvd./P.O. Box 201088/Austin, TX 78720-1088/(512)454-4797/(800)848-7837(US & Canada)

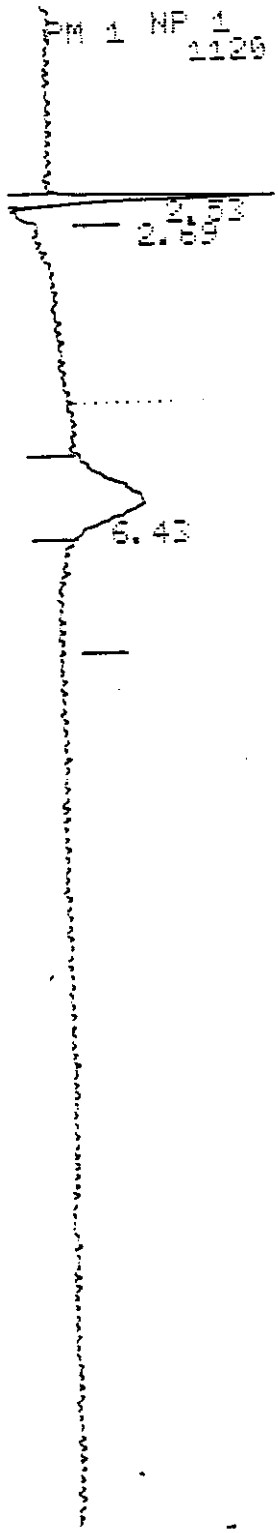
HPLC SCANS.

G55-22 (N98-2056 TOP)

(N98-2057 - BOTTOM)

SPIKE

CHANNEL A INJECT 02/18/98 10:49:44




All the sample were diluted to 5 mL volume & not 10 mL

Spike Sample for URANINE DYE.

2/18/98.

DYEPSAMPLES 02/18/98 10:49:44 CH= "A" PS= 1.

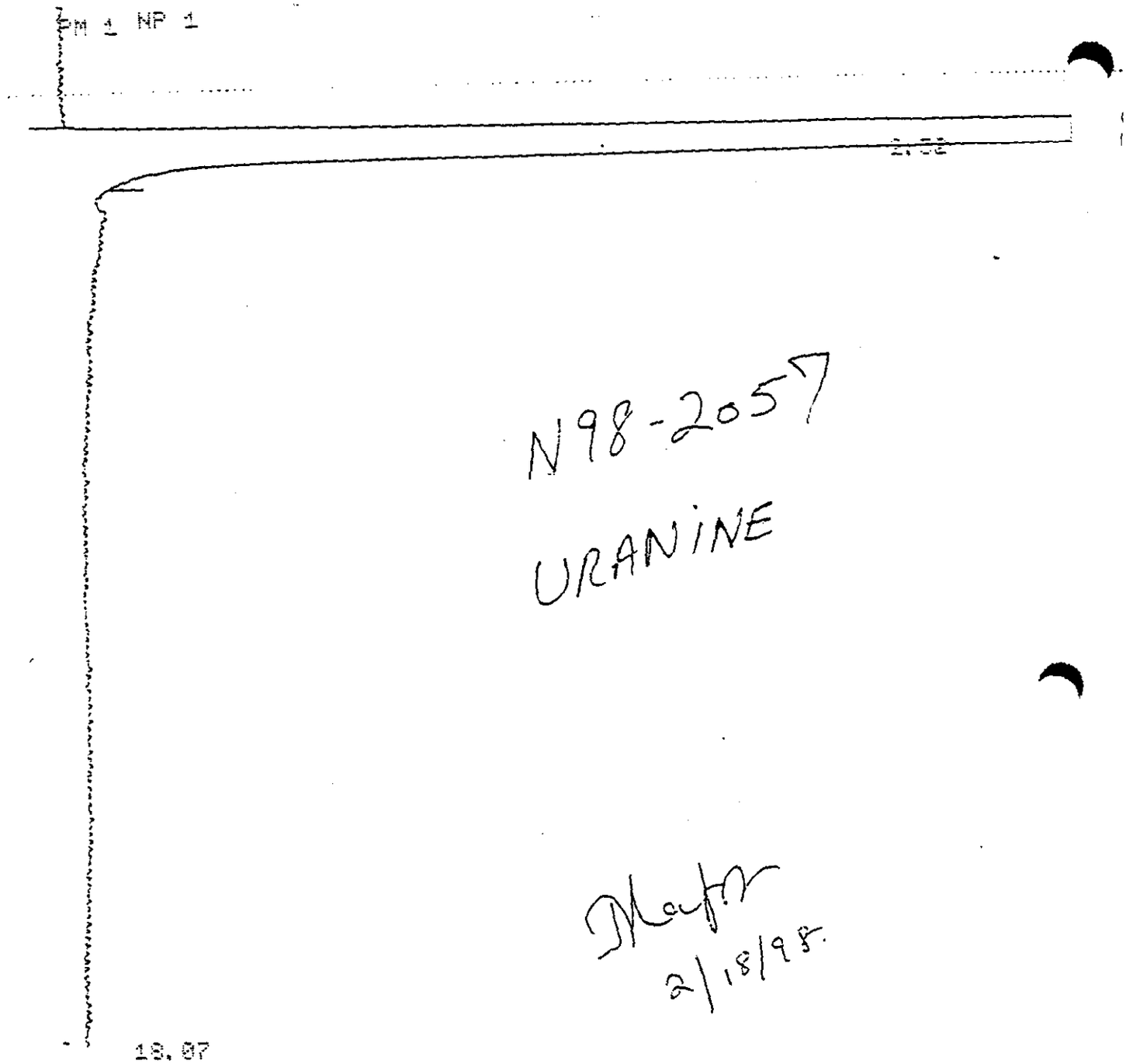
FILE 1. METHOD 0. RUN 20 INDEX 20

| PEAK# | AREA% | RT | AREA BC |
|---|---|---|---|
| 1 | 24.061 | 2.53 | 69371 02 |
| 2 | 10.889 | 2.69 | 31393 03 |
| 3 | 65.05 | 6.43 | 187547 03 |
| TOTAL | 100. | | 288311 |

62

CHANNEL A INJECT 02/18/98 13:48:08

PM 1 NP 1




N98-2057

URANINE

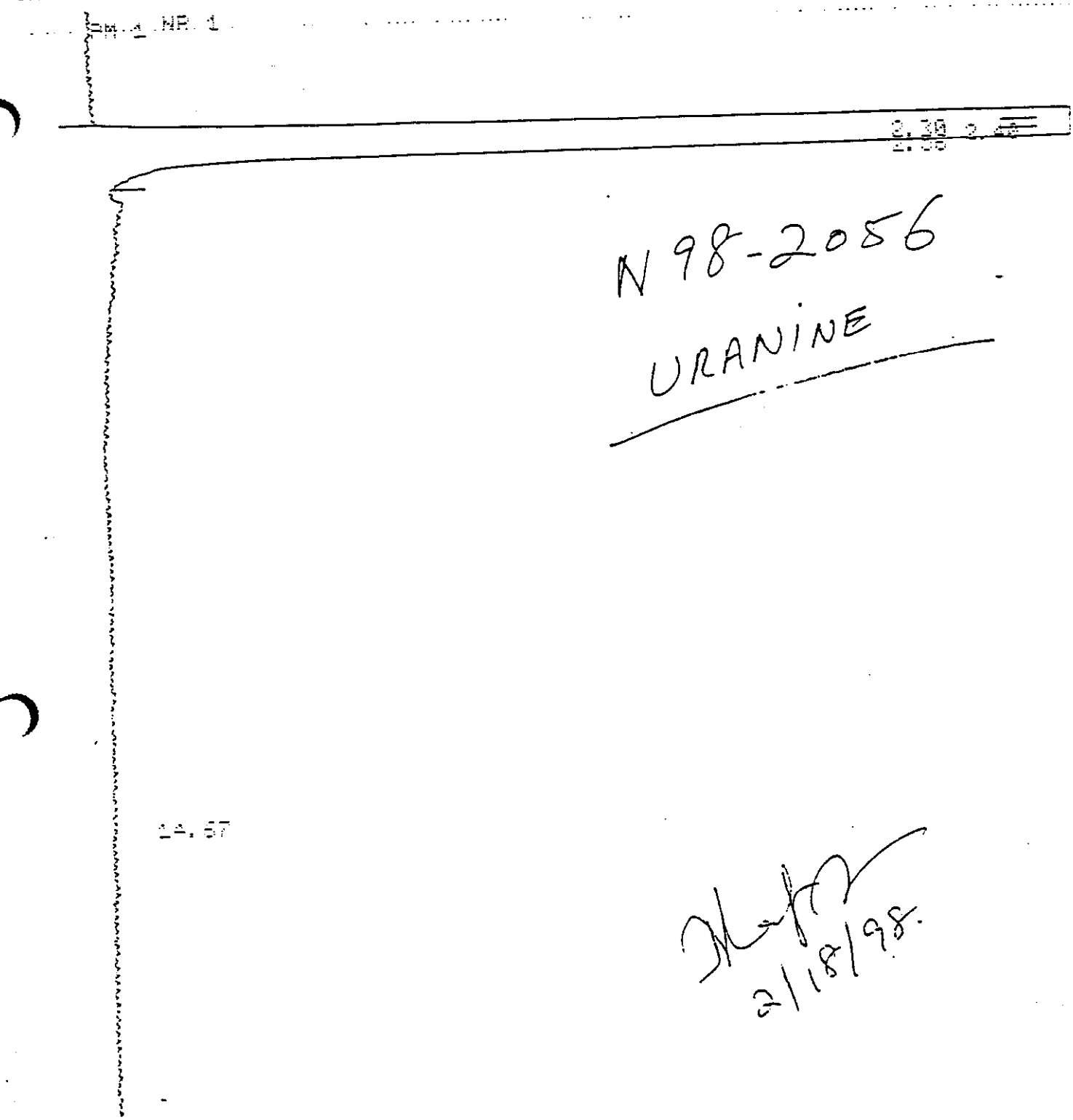
DMayfr
2/18/98.

DYEPSAMPLES 02/18/98 13:48:08 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 27 INDEX 27

| PEAK# | AREAX | RT | AREA | BC |
|---|---|---|---|---|
| 1 | 100. | 2.52 | 9007248 | 01 |
| TOTAL | 100. | | 9007248 | |

CHANNEL A INJECT 02/18/98 13:25:37




2/18/98.

IVEPSAMPLES 02/18/98 13:25:37. CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 26 INDEX 26

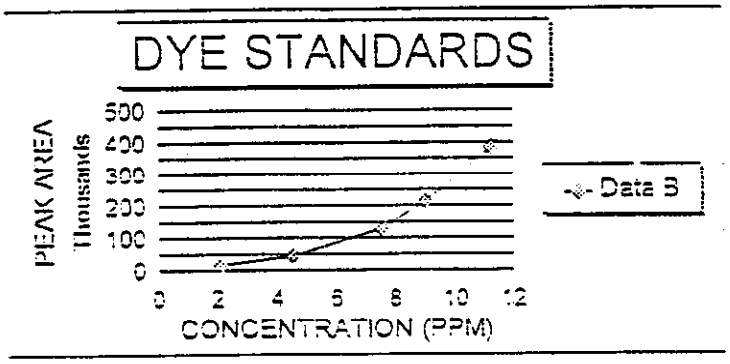
| PEAK# | AREA% | RT | AREA BC |
|---|---|---|---|
| 1 | 36.446 | 2.3 | 2542600 02 |
| 2 | 31.024 | 2.4 | 2164321 02 |
| 3 | 32.53 | 2.56 | 2269423 03 |
| TOTAL | 100. | | 6976344 |

2-12-98

| INJECTION TIME | PEAK AREA | CONCENTRATION PPM | TIME | PEAK AREA STD S NOT FILTERED |
|---|---|---|---|---|
| 2.58 | 21944 | 2.1 | 6.22 | 15454 |
| 2.54 | 29993 | 4.5 | 6.09 | 44740 |
| 2.54 | 36167 | 7.5 | 6.13 | 129075 |
| 2.51 | 56544 | 9 | 6.15 | 211611 |
| 2.47 | 118813 | 11.25 | 6.08 | 385749 |

Regression Output:

| | |
|---|---|
| Constant | -109929.8593964 |
| Std Err of Y Est | 55654.97120825 |
| R Squared | 0.8952674662415 |
| No. of Observations | 5 |
| Degrees of Freedom | 3 |
| X Coefficient(s) | 38901.84 |
| Std Err of Coef. | 7681.994 |




URANINE

FLOW RATE 1.0 ML/MIN

SOLVENT 50/50 Methanol/Water
with one bottle Tetra butyl Ammonium Phosphate
per liter

Project No.
Book No. TITLE URANINE STDS (SAU) 2-11-98

Page No.

NEED 5 STANDARDS TO BLANKET RANGE

HAVE 11.25 ppm and 75 ppm STOCK URANINE

75 ppm X 5 mls IN SOMC VOL FLASK = 7.5 ppm URANINE

Make Up in MeOH/water 50/50

75 ppm X 6 mls in 50 mL Vol Flask = 9.0 ppm

75 ppm X 3 mls in 50 mls Vol Flask = 4.5 ppm

75 ppm X 1.5 mls in 50 mls Vol Flask = 2.10

2.1 4.5 7.5 9.0 11.25

To Page No.

| Witnessed & Understood by me, | Date | Invented by | Date |
|---|---|---|---|
| | | Recorded by | |

From Page No.

URANINE FISHER

0.0075 gms / 100 mls DI Water

$\frac{.0075\ g}{100\ mL} \cdot \frac{10^6\ \mu g}{g} = 75 \frac{\mu g}{mL}$ or ppm Uranine

MADE UP 11.25 ppm from 75 ppm

15 mls X 75 ppm ÷ 100 mls (MeOH/H2O)

11.25 ppm

Peak observed at 5.65 min 50/50 with H2O w/ tributyl (tetraxylene phosphate) Flow rate 1.0 mL/min

1-15-98

URANINE SPIKE

~~SPIKE 100 MS & MSDS with 1 mL 75 ppm Uranine~~

* CHEM says 25 ppm Use 3 mls * 11.25 ppm Instead to SPIKE

✓ THAT COULD GIVE 33.75 ppm or 3.375 in 10 MLS (ppb) Set 1 lb (23) for Dilution Fluorescein

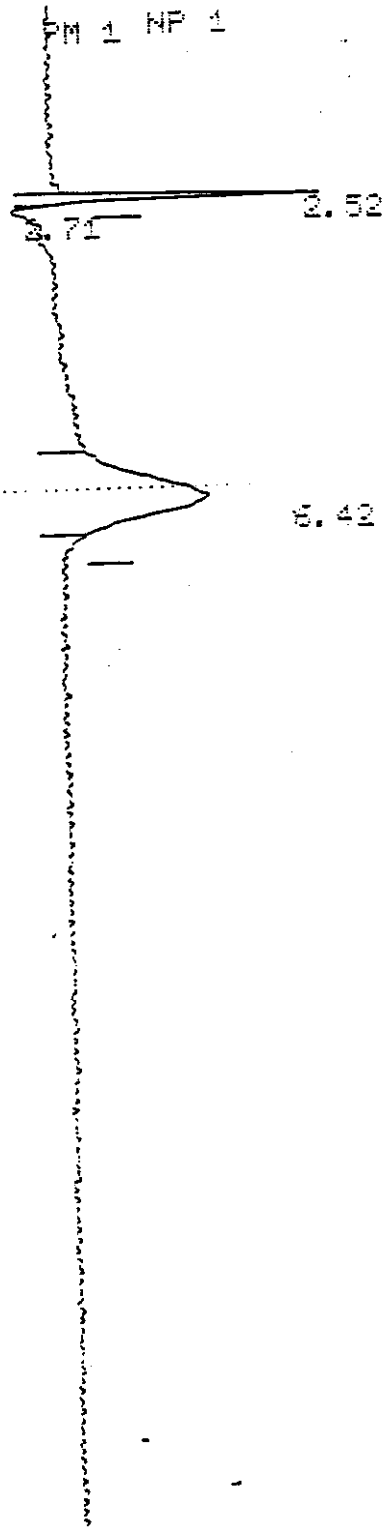
| | URANINE SPIKE 33.75 ppm | BLUE DYE ~~[illegible] ppm~~ 3.375 ppm |
|---|---|---|
| 2031 MS | ✓ | ✓ |
| 2031 MSD | ✓ | ✓ |
| 2072 MS | ✓ | ✓ |
| 2074 MSD | ✓ | ✓ |

To Page No.

Witnessed & Understood by me. 2072 MS | Date ✓ | Invented by ✓ | Date

7.5

CHANNEL A INJECT 02/18/98 11:12:38



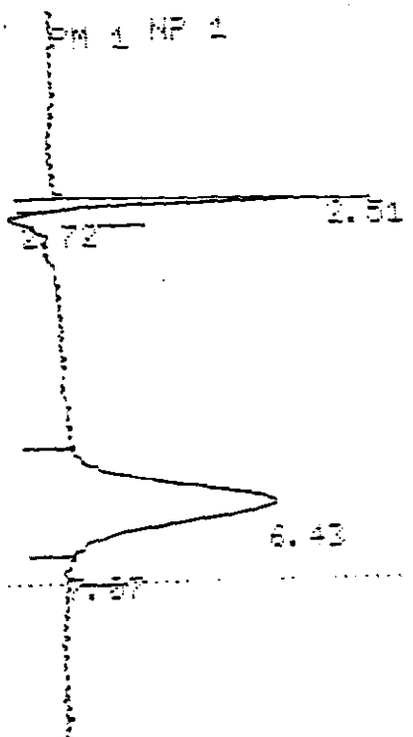

STANDARD
URANINE
DYES.

DYEPSAMPLES 02/18/98 11:12:38 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 21 INDEX 21

| PEAK# | AREA% | RT | AREA | BC |
|---|---|---|---|---|
| 1 | 18.122 | 2.52 | 78123 | 02 |
| 2 | 4.171 | 2.71 | 17981 | 03 |
| 3 | 77.707 | 6.42 | 334984 | 03 |
| TOTAL | 100. | | 431088 | |

CHANNEL A INJECT 02/18/98 11:55:35




STANDARD
URANINE

DYEPSAMPLES 02/18/98 11:55:35 CH= "B" PS= 1.

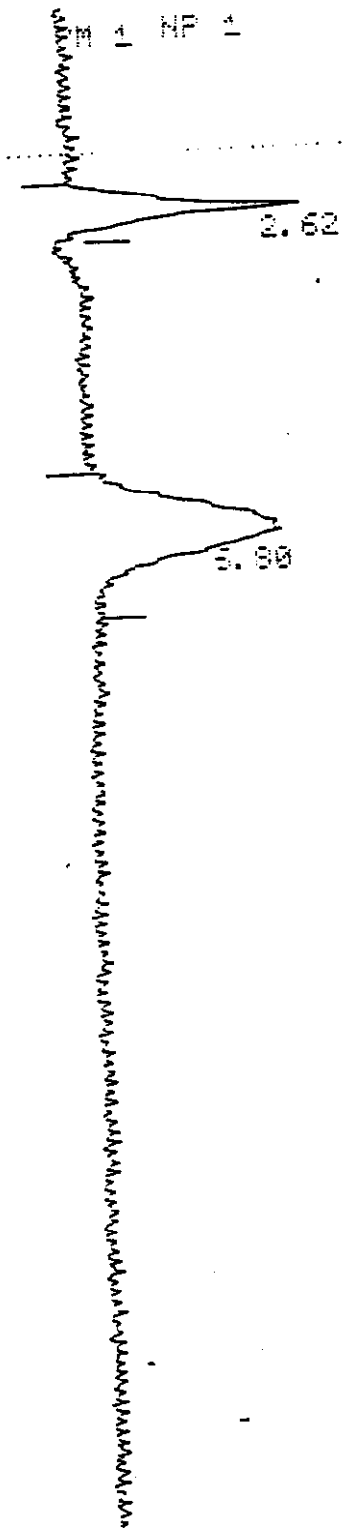
FILE 1. METHOD 0. RUN 22 INDEX 22

| PEAK# | AREA% | RT | AREA BC |
|---|---|---|---|
| 1 | 12.395 | 2.51 | 57353 02 |
| 2 | 3.207 | 2.72 | 23306 03 |
| 3 | 83.396 | 6.43 | 606103 03 |
| TOTAL | 100. | | 726762 |

STD 1

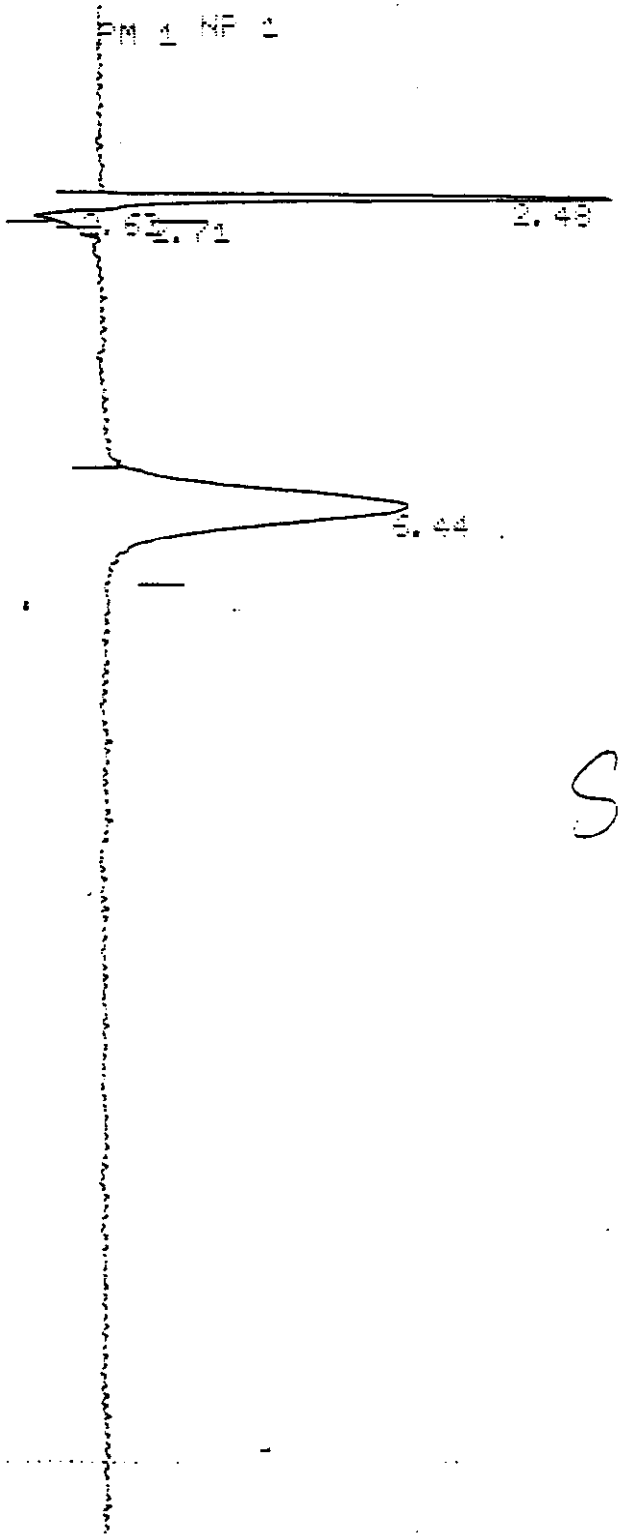
CHANNEL A INJECT - 02/22/98 15:54:22

M 1 MP 1



11.25 SIDE

CHANNEL A INJECT 02/18/98 12:06:00




STANDARD.
URANINE

DYEPSAMPLES 02/18/98 12:06:00 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 23 INDEX 23

| PEAK# | AREA% | RT | AREA BC |
|---|---|---|---|
| 1 | 19.325 | 2.48 | 177388 02 |
| 2 | 0.123 | 2.53 | 1125 02 |
| 3 | 1.992 | 2.71 | 18219 03 |

KD.

# TOXICITY DATA

INTRODUCTION

Although not typically part of a QAPP, EPA requested that toxicological information be provided on the dyes anticipated to be found at the site under investigation. This Appendix provides the available information readily obtainable within the TOMES database. The available information is reported for the three dyes of concern and consists of: Substance Identification; Synonyms/Trade Names; Health Hazard Data and; References, when available.

Topic: Fluorescein, disodium salt

## 1.0 SUBSTANCE IDENTIFICATION

RTECS NUMBER: LM5425000
CHEMICAL NAME: Fluorescein, disodium salt
CAS NUMBER: 518-47-8
MOLECULAR FORMULA: C20-H10-O5.2Na
MOLECULAR WEIGHT: 376.28
WISWESSER NOTATION: T C666 BO EVJ IR BVQ& MQ &-NA- 2

## 2.0 SYNONYM(S) / TRADE NAME(S)

1. Aizen uranine
2. Calcocid uranine B4315
3. 9-o-Carboxyphenyl-6-hydroxy-3-isoxanthone, disodium salt
4. Certiqual fluoresceine
5. C.I. 766
6. C.I. Acid Yellow 73
7. C.I. 45350 disodium salt
8. C.I. 45350 sodium salt
9. D&C Yellow No. 8
10. Disodium 6-hydroxy-3-oxo-9-xanthene-o-benzoate
11. Fluorescein sodium
12. Fluorescein sodium B.P
13. Fluorescein, soluble
14. Fluor-I-strip A.T.
15. Ful-Glo
16. Funduscein
17. Furanium
18. Hidacid uranine
19. NCI-C54706
20. Resorcinol phthalein sodium
21. Sodium fluorescein
22. Sodium fluoresceinate
23. Sodium salt of hydroxy-o-carboxy-phenyl-fluorone
24. Soluble fluorescein
25. Soluble fluoresceine
26. Spiro(isobenzofuran-1(3H),9'-(9H)xanthen)-3-one, 3',6'-dihydroxy-, disodium salt
27. Uranin

2. LD50; ROUTE: Intravenous; DOSE: 1 gm/kg; REFERENCE: Toxicology and Applied Pharmacology 29:97, 1974.

C. DOG

1. LD50; ROUTE: Intravenous; DOSE: 1 gm/kg; TOXIC EFFECTS: GASTROINTESTINAL - Changes in structure or function of salivary glands; REFERENCE: Toxicology and Applied Pharmacology 29:97, 1974.

3.3 REPRODUCTIVE EFFECTS

A. RABBIT

1. ROUTE: Intravenous; DOSE: 933 mg/kg; DURATION: female 5-8D of pregnancy; TOXIC EFFECTS: MATERNAL EFFECTS - Postpartum; EFFECTS ON NEWBORN - Viability index; REFERENCE: American Journal of Ophthalmology 84:847, 1977.

3.4 GENETIC EFFECTS

3.4.1 DNA ADDUCT

A. BACTERIA - E COLI

1. DOSE: 15 umol/L; REFERENCE: Mutation Research 89:95, 1981.

3.4.2 MUTATIONS IN MAMMALIAN SOMATIC CELLS

A. MOUSE

1. CELL TYPE: lymphocyte; DOSE: 200 mg/L; REFERENCE: Science 236:933, 1987.

3.4.3 SISTER CHROMATID EXCHANGE

A. HAMSTER

1. CELL TYPE: ovary; DOSE: 50100 ug/L; REFERENCE: Science 236:933, 1987.

3.5 TUMORIGENIC EFFECTS

A. RAT

1. ROUTE: Subcutaneous; DOSE: 19 gm/kg/79W-I; TOXIC EFFECTS: TUMORIGENIC - Equivocal tumorigenic agent by RTECS criteria; TUMORIGENIC - Tumors at site of application; REFERENCE: Gann. Japanese Journal of Cancer Research 45:446, 1954.

2. ROUTE: Subcutaneous; DOSE: 16 gm/kg/1Y-I; TOXIC EFFECTS: TUMORIGENIC - Equivocal tumorigenic agent by RTECS criteria; SKIN AND APPENDAGES - Tumors; TUMORIGENIC - Tumors at site of application; REFERENCE: Gann. Japanese Journal of Cancer Research 47:51, 1956.

3.6 OTHER MULTIPLE DOSE TOXICITY DATA

A. RAT

Topic: Ammonium, ethyl(4-(p-(ethyl(m-sulfobenzyl)amino)-alpha-(o-sulfophenyl) benzylidene)2,5-cyclohexadien- 1-ylidene)(m-sulfobenzyl)-, hydroxide, inner salt, diammonium salt

## 1.0 SUBSTANCE IDENTIFICATION

RTECS NUMBER: BQ4550000
CHEMICAL NAME: Ammonium, ethyl(4-(p-(ethyl(m-sulfobenzyl)amino)-alpha-(o-sulfophenyl)benzylidene)2,5-cyclohexadien-1-ylidene) (m-sulfobenzyl)-, hydroxide, inner salt, diammonium salt
CAS NUMBER: 2650-18-2
MOLECULAR FORMULA: C37-H36-N2-O9-S3.2H3-N
MOLECULAR WEIGHT: 783.01
WISWESSER NOTATION: L6Y DYJ AUYR BSWQ&R DN2&1R CSWQ&& DUK2&1R CSWQ &Q &ZH 2

## 2.0 SYNONYM(S) / TRADE NAME(S)

1. Acid Blue 9
2. Acilan Turquoise Blue AE
3. A.F. Blue No. 1
4. Aizen Brilliant Blue FCF
5. Alphazurine
6. Alphazurine FG
7. Alphazurine FGND
8. Alphazurine (indicator)
9. Amacid Blue FG Conc
10. Bleu Brilliant FCF
11. 11388 Blue
12. Brilliant Blue
13. Brilliant Blue FCF
14. Bucacid Azure Blue
15. Calcocid Blue EG
16. Calcocid Blue 2 G
17. C.I. 671
18. C.I. 42090
19. C.I. Acid Blue 9
20. C.I. Acid Blue 9, diammonium salt
21. C.I. Direct Brown 78
22. C.I. Direct Brown 78, diammonium salt
23. C.I. Food Blue 2
24. D and C Blue No. 4
25. Disulphine Lake Blue EG
26. Edicol Supra Blue E6
27. Erioglaucine
28. Erioglaucine A
29. Erioglaucine E
30. Eriosky Blue

1. CELL TYPE: fibroblast; DOSE: 5 gm/L; REFERENCE: Food and Chemical Toxicology 22:623, 1984.

3.3 TUMORIGENIC EFFECTS

A. RAT

1. ROUTE: Subcutaneous; DOSE: 10 gm/kg/77W-I; TOXIC EFFECTS: TUMORIGENIC - Neoplastic by RTECS criteria; TUMORIGENIC - Tumors at site of application; REFERENCE: Toxicology and Applied Pharmacology 8:29, 1966.

35. Solar Violet 5BN
36. Tertracid Brilliant Violet 6B
37. Violet 6B
38. Violet No 1
39. Wool Violet 4BN
40. Wool Violet 5BN

## 3.0 HEALTH HAZARD DATA

### 3.1 TOXICITY VALUES

IARC Summary and Evaluation:

1. No data are available in humans. Sufficient evidence of carcinogenicity in animals. OVERALL EVALUATION: Group 2B:The agent is possibly carcinogenic to humans. REFERENCE: [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer,1972-PRESENT. (Multivolume work).,p. S7 58 (1987)

### 3.2 TOXICITY EXCERPTS

Human Toxicity Excerpts:

1. There is little concern with the acute and subchronic toxicity of the food colors currently in use, but there is considerable concern in some groups about their chronic toxicity. Several of the colors approved for use by the Color Amendments have been delisted since 1971, including .. Violet 1. Their delisting occurred owing to concerns over their chronic toxicity, especially carcinogenicity.REFERENCE: [Amdur, M.O., J. Doull, C.D. Klaasen (eds). Casarett and Doull's Toxicology. 4th ed. New York, NY: Pergamon Press, 1991. 839

2. In..patients, iv admin of /fast acid violet..used/ to aid diagnosis & study of pathology of ocular fundus by vital staining..to differentiate pathologic from normal.. No toxicity to ocular structures..as a result..of dyes. REFERENCE: [Grant, W. M. Toxicology of the Eye. 2nd ed. Springfield, Illinois: Charles C. Thomas, 1974. 440

### 3.2 NON-HUMAN TOXICITY EXCERPTS:

1. Groups of 20 male or 20 female sprague-dawley rats..7-wk old fed diet containing 5% benzyl violet 4b (89.1% pure)..364 days. Nine of 18 treated female rats that survived more than 70 days developed tumors: 5 mammary carcinomas between 138 and 345 days. In 10 untreated control females, 1 mammary fibroadenoma was seen at day 338; no tumors were observed in 15 treated and 10 control males that survived more than 70 days. The average survival times were 187 (males) and 210 (females) days in the treated groups and 228 (males) and 315 (females) days in control groups. REFERENCE: [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work).,p. V16 157 (1978)

8. Arylmethane dyes were tested in the Salmonella/mammalian microsome mutagenicity assay. The food color Benzyl Violet 4B CI 42640, was mutagenic in frameshift mutation detector strains TA1538 and required metabolic activation. Most of these compounds gave weak mutagenic responses with Salmonella and only within narrow dose ranges. Since conflicting results were obtained using dyes from different sources, mino. dye components may have been responsible for their mutagenicity.
REFERENCE: [Bonin AM et al; Mutat Res 89 (1): 21-34 (1981)

MIL-D-16627(BuOrd)
19 September 1951

SUPERSEDING
*Navy-51D28(Ord)
5 April 1946

# MILITARY SPECIFICATION

# DYES, PROJECTILE-SPOTTING

## 1. SCOPE

1.1 This specification covers one grade of projectile-spotting dyes, to be furnished in different colors.

1.2 Colors.- Dyes for projectile-spotting shall be furnished in the following colors (see sec. 6).

Blue
Green
Red
Orange

## 2. APPLICABLE SPECIFICATIONS AND PUBLICATIONS

2.1 The following specifications and standards, of the issue in effect on date of invitation for bids, form a part of this specification.

SPECIFICATIONS

FEDERAL

RR-S-366 Sieves; Standard, Testing

MILITARY

NAVY DEPARTMENT

General Specifications for Inspection of Material.

PUBLICATIONS

BUREAU OF SUPPLIES AND ACCOUNTS

Navy Shipment Marking Handbook

*Superseded O.S. 1678

each primary sample thoroughly and place a 1-ounce portion in a rubber-stoppered bottle so labeled that the container from which it was taken can be easily identified. The remaining portions of the primary samples shall be mixed together thoroughly and quartered until a composite sample of approximately 4-ounces is obtained. The composite sample shall be placed in a rubber-stoppered bottle and labeled so as to show the name of the material, manufacturer, plant, contract or order number, number of pounds in the lot and the lot number. All acceptance tests shall be made on the composite sample representative of the lot. The primary samples shall be held for possible future examination should the composite sample fail to meet the requirements of this specification.

4.2 Inspection.- Inspection shall be made at the place of manufacture, unless otherwise specified.

4.3 Tests.- The following tests shall be made at the Naval Powder Factory, Indian Head, Md., unless otherwise specified.

4.3.1 Color.- Determine by visual inspection.

4.3.2 Uniformity.- Place approximately 1 gram of the material on a piece of white paper and mix well using a spatula. Press down on the dye with the spatula so as to break up any lumps or aggregates. The appearance of streaks of different colors indicates non-uniformity due to poorly mixed components.

4.3.3 Concentration.-

4.3.3.1 Test Solutions.- Prepare solutions of the standard dye (6.2) and the sample dye in the following concentrations, using recently boiled distilled water:

| Color | Weight of dye, gram | Volume of solution, ml. |
|---|---|---|
| Blue | 0.1000 | 1000 |
| Green | 0.1000 | 1000 |
| Red | 0.1000 | 1000 |
| Orange | 0.6250 | 250 |

4.3.3.2 Apparatus.- The instrument used shall be a photoelectric colorimeter, Lumetron Colorimeter Model 400 or equivalent. Filters used shall be as follows:

| Color of Dye | Filter |
|---|---|
| Blue | Green |
| Green | Orange |
| Red | Orange |
| Orange | Orange |

## 6. NOTES

6.1 Ordering data.- Procurement documents should specify the following:

Title, number, and date of this specification.
Color of projectile-spotting dye required (see 1.2).

6.2 Composition of standard dyes.- Portions of the standard dyes maintained at the Naval Powder Factory, Indian Head, Md., will not be distributed. The following compositions are offered as a guide for approximating the standards:

| Color | Ingredient | C.I.No.* | Percent |
|---|---|---|---|
| Blue | Alphazurine B Conc. | --- | 30.0 |
| | Acid fast Violet BG Conc. 200 percent of normal | 699 | 20.0 |
| | Naccosol A (Wetting Agent) | --- | 2.0 |
| | Granular Sugar | --- | 48.0 |
| Green | Wool Yellow Extra Conc. | 640 | 80.0 |
| | Alphazurine 2G | 712 | 20.0 |
| Red | National Fast Crimson "R" Conc. 167 percent of normal | --- | 80.0 |
| | Wool Yellow Extra Conc. | 640 | 20.0 |
| Orange | Wool Orange 2G Crystals | 27 | 100.0 |

*Society of Dyers and Colourists - Colour Index

Notice: When Government drawings, specifications or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished or in any way supplied said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may be in any way related thereto.



Information Handling Services, DODSTD Issue DN9702

**DYE WATER DISPOSAL PROPOSAL**
**FOR**
**NAVSURFWARCENDIV CRANE**

**July 1998**

## BACKGROUND

Information about the Dye Burial Grounds (DBG) can be found on the IDEM web page at www.state.in.us/idem/oer/cran396.html. The DBG is solid waste management unit SWMU #02/11.

As noted in the enclosure (1) analytical report, there is approximately 150,000 gallons of dye water contained within twelve tanks at the DBG. Each tank has a volume of 20,000 gallons.

## PROPOSAL

Our proposal for disposal is to pump the dye water from the DBG tanks and haul it to a discharge point at an outlying manhole on our wastewater collection system. The dye water will be diluted as it blends with the normal 400,000 gallon per day flow that is processed through our sewage treatment plant. Discharge from our sewage treatment plant is allowed by NPDES permit IN0021539. The rationale for this proposal is presented below.

## RATIONALE

The contaminant of concern in the dye water is the MIL-D-16627 blue dye (green dye was below detectable level of 10 ppb). The blue dye (CAS# 2650-18-2) is a compound made up of 30% alphazurine B, 20% acid fast violet BG, 48% sugar, 2% naccosol A (wetting agent). One of the listed uses for this dye is as a food coloring agent. The dye can be generally described as a polynuclear aromatic hydrocarbon (PAH). PAH compounds are considered to be Clean Water Act, Section 307, toxic pollutants.

Part II, Sec. C, paragraph 7a (pg. 30 of 31) in our NPDES permit Requires that we notify the Commissioner of any Section 307 toxic pollutant discharge that will exceed one hundred micrograms per liter. For this case, we interpret this paragraph to mean that 100 $\mu$g/l of blue dye is the maximum daily discharge limit.

From the analytical results shown in enclosure (1) we know that the maximum concentration of any tank sample is 280 $\mu$g/l (tank

#S1647SD). If we assume maximum concentration for all 150,000 gallons of dye water and determine the total mass of blue dye in the 150,000 gallons we find that there would be 0.35 lbs. If we then assume that the 0.35 lbs. of blue dye is mixed with 550,000 gallons of wastewater (400,000 gal. normal flow + 150,000 gal. dye water) and calculate the concentration of blue dye in the sewage treatment plant discharge, we find it to be 76.4 $\mu g/l$. ***The calculated concentration is an overestimate but is still less than the 100 $\mu g/l$ limit***. Also, the calculation is based on an assumption that 150,000 gallons will be discharged into the collection facility in one day. We expect that it will take several days to pump and haul the 150,000 gallons.

Another issue that we have considered is the color that the dye imparts to the water. Our sewage treatment plant discharges into Boggs Creek, which is normally a clear, low-flow stream. One of the Indiana water quality standards (327 IAC 2-1-6) states that all waters will meet a minimum condition of being free of substances that are attributable to industrial discharges and that produce color in such degree as to create a nuisance. By introducing the dye water at a remote location on the collection facility over several days we believe that the sewage treatment plant discharge will not discolor Boggs Creek. We will conduct dilution tests in the Navy laboratory to estimate a dilution ratio that will be needed to obtain a clear discharge.

# APPENDIX N

## DYE-IMPACTED WATER DISPOSAL RECORDS
## AND
## RESIDUAL SEDIMENTS ANALYTICAL DATA

# APPENDIX N
# DYE-IMPACTED WATER DISPOSAL RECORDS
# AND
# RESIDUAL SEDIMENTS ANALYTICAL DATA

## INDEX


N-1 Dye-Impacted Water Disposal Records

N-2 Residual Sediments Analytical Data

# N-1

# Dye-Impacted Water Disposal Records

WATER TRUCK # 7133 - HERTZ RENTAL

DECON



## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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## DECON WATER QUANTITY

| WATER TRUCK ~~FRAC TANK~~ NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| 7133 | 11/3/98 | 642 | 576 | 483 | 1701 | ☒ | ☐ | DECON INCLUDED HOSES USED TO |
| | | | | | | ☐ | ☐ | DISCHARGE WATER FROM TANK. |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: THOMAS D. DOGAL
(PRINTED NAME)

(SIGNED NAME)

DATE: 11/3/98

## DBG WATER DISPOSAL RECORD

RAINWATER ACCUMULATED IN MUD BOXES

| MUD BOX ~~FRAC TANK~~ NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| M280 | 10/21/98 | 1 | USED GRADUATED PORTABLE POLY. | | 1000 | 1000 | RICK DAVILOFF |
| | | | TANKS | | | | |
| | 10/23/98 | 2 | | | 525 | 1525 | JAMES HAUSER |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| MUD BOX ~~FRAC TANK~~ NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| M280 | 10/22 | 125 | 50 | 25 | 200 | ☑ | ☐ | USED GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE AMOUNT |
| | | | | | | ☐ | ☐ | OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: JEFF DAYHOFF
(PRINTED NAME)

(SIGNED NAME)

DATE: 22 Oct 98

WATER TRUCK # 8174 - HERTZ RENTAL

DECON

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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| | | | | | | | |

## DECON WATER QUANTITY

| ~~WATER TRUCK~~ ~~FRAC TANK~~ NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| 8174 | 11/3/98 | 620 | 574 | 464 | 1658 | ☒ | ☐ | DECON INCLUDED ALL HOSES USED |
| | | | | | | ☐ | ☐ | TO DISCHARGE WATER FROM TRUCK |
| | | | | | | ☐ | ☐ | ALSO, DECON OF PUMP MOUNTED |
| | | | | | | ☐ | ☐ | TO TRUCK FOR FILLING TANK. |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: THOMAS D. DOGAL
(PRINTED NAME)

(SIGNED NAME)

DATE: 11/3/98

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| S879NSD | 10/27/98 | 1 | 72,445 | 73955 | 1510 | 1510 | J. H. |
| S879NSD | 10/27/98 | 2 | 73955 | 75795 | 1840 | 3350 | J. H. |
| S879NSD | 10/27/98 | 3 | 75795 | 77660 | 1865 | 5215 | J. H. |
| S879NSD | 10/27/98 | 4 | 77660 | 79495 | 1835 | 7050 | J. H. |
| S879NSD | 10/28/98 | 5 | 79495 | 81365 | 1870 | 8920 | [illegible] |
| S879NSD | 10/28/98 | 6 | [illegible] 83205 | 85055 | 1850 | 10770 | [illegible] |
| S879NSD | 10/28/98 | 7 | 86945 | 88810 | 1865 | 12635 | [illegible] |
| | | | | | | | |

TOTAL - BOTH SHEETS - 16690

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| S879NSD | 11/3/98 | 293 | 197 | 177 | 667 | ☒ | ☐ | FLOW TOTALIZER USED TO MEASURE |
| | | | | | | ☐ | ☐ | GALLONS OF WATER PER RINSE. |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: THOMAS D. DOGAL
(PRINTED NAME)

[signature]
(SIGNED NAME)

DATE: 11/3/98

TRUCK



## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| S879NSD | Oct 28 | 1 | 81365 | 83200 | 1845 | 1845 | J.H. |
| S879NSD | OCT 28-98 | 2 | 85055 | 86945 | 1890 | 3735 | J.H. |
| S879NSD | OCT 28-98 | 3 | 88810 | 89130 | 320 | 4055 | J.H. |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 of 2 _____ (PRINTED NAME) _____ (SIGNED NAME)

DATE: _____

MUD BOX M281 DECON

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| NO WATER IN MUD BOX | | | | | | | |
| | | TDD | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| MUD BOX ~~FRAC TANK~~ NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| M281 | 11/4/98 | 150 | 108 | 80 | 338 | ☒ | ☐ | USED GRADUATED POTABLE WATER |
| | | | | | | ☐ | ☐ | TANK TO DETERMINE AMOUNT OF |
| | | | | | | ☐ | ☐ | DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: Thomas Dogal (PRINTED NAME) THOMAS D. DOGAL (SIGNED NAME)

DATE: 11/4/98

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| S16475D | 10/20/98 | 1 | 1750 | 3370 | 1620 | 1620 | James Hawke |
| S16475D | 10/20/98 | 2 | 3370 | 5285 | 1915 | 3535 | Donald Hawke |
| S16475D | 10/21/98 | 3 | 5285 | 7110 | 1825 | 5360 | James Hawke |
| S16475D | 10/21/98 | 4 | 7110 | 8975 | 1865 | 7225 | [illegible] 9:40 AM to 10:45 |
| S16475D | 10/21/98 | 5 | 8975 | 10812 | 1867 | 9092 | [illegible] 10:4[illegible] - 11:35 |
| S16475D | 10/21/98 | 6 | 10812 | 12780 | 1968 | 11060 | DLH - 1:00 |
| S16475D | 10/21/98 | 7 | 12780 | 14600 | 1820 | 12880 | JRH |
| S16475D | 10/21/98 | 8 | [illegible] | 16[illegible] | 1665 | 14545 | [illegible] |
| S16475D | 10/21/98 | 9 | 16365 | 18265 | 1900 | 16445 | JRH 3:20 - 4:15 |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| S16475D | 11/5/98 | 800 | 400 | 200 | 1400 | ☒ | ☐ | USED GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE AMOUNT |
| | | | | | | ☐ | ☐ | OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: [signature] (PRINTED NAME) THOMAS D DOGAL (SIGNED NAME)

DATE: 11/5/98

(2)

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| 547ST | 10/22/98 | 1 | 18265 | 20155 | 1890 | 1890 | JH |
| 547ST | 10/22/98 | 2 | 20155 | 22000 | 1895 | 3785 | JH |
| 547ST | 10/22/98 | 3 | 22000 | 23920 | 1920 | 5705 | JH |
| 547ST | 10/22/98 | 4 | 23920 | 25810 | 1890 | 7595 | JH |
| 547ST | 10/22/98 | 5 | 25810 | 27685 | 1875 | 9470 | JH |
| 547ST | 10/22/98 | 6 | 27685 | 29575 | 1890 | 11360 | JH |
| 547ST | 10/22/98 | 7 | 29575 | 31475 | 1900 | 13260 | JH |
| | | | | | | | |

TOTAL GALLONS ALL 3 SHEETS – 17665

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| 547ST | 11/6/98 | 1100 | 500 | 350 | 1950 | ☒ | ☐ | USED GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE AMOUNT |
| | | | | | | ☐ | ☐ | OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: THOMAS D. DOGAL (PRINTED NAME) Thomas D. Dogal (SIGNED NAME)

DATE: 11/6/98

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| S475T | Oct 23 | 1 | 31475 | 33355 | 1880 | 1880 | DONNA HAUSER |
| S47ST | OCT. 23 | 2 | 33355 | 35245 | 1910 | 3790 | DONNA HAUSER |
| | | | | | | | |
| | | | | | | | |
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## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 of 3 _____
(PRINTED NAME) (SIGNED NAME)

DATE: _____

TCN TRUCK



## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| 5475T | 10-23-98 | 1 | 35245 | 35860 | 615 | 615 | JAMES HAUGER |
| | | | | | | | |
| | | | | | | | |
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## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 of 3
(PRINTED NAME)

(SIGNED NAME)

DATE: _____

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| 1001 MEA | 10/28/98 | 1 | 89130 | 91990 | 1860 | 1860 | DKH |
| 1001 MEA | 10/28/98 | 2 | 92600 | 94450 | 1850 | 3710 | DKH |
| 1001 MEA | 10/28/98 | 3 | 96350 | 98200 | 1850 | 5560 | DKH |
| 1001 MEA | 10/29/98 | 4 | 100100 | 101935 | 1835 | 7395 | DKH |
| 1001 MEA | 10/29/98 | 5 | 103805 | 105605 | 1800 | 9195 | DKH |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

TOTAL FROM BOTH SHEETS 16635

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| 1001 MEA | 11/6/98 | 950 | 300 | 200 | 1450 GAL | ☒ | ☐ | USED A GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE |
| | | | | | | ☐ | ☐ | AMOUNT OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: THOMAS D. DOGAL
(PRINTED NAME)

Thomas D. Dogal
(SIGNED NAME)

DATE: 11/6/98

OK
TRUCK



## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| 100 IMEA | 10/28/98 | 1 | 91990 | 92600 | 610 | 610 | J.H. |
| 100 IMEA | 10/28/98 | 2 | 94450 | 96350 | 1900 | 2510 | J.H. |
| 100 IMEA | 10/28/98 | 3 | 98200 | 100100 | 1900 | 4410 | J.H. |
| 100 IMEA | 10/29/98 | 4 | 101935 | 103800 | 1865 | 6275 | J.H. |
| 100 IMEA | 10/29/98 | 5 | 105605 | 106770 | 1165 | 7440 | J.H. |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 OF 2 _____
(PRINTED NAME) (SIGNED NAME)

DATE: _____

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| S1885EA | 10/29/98 | 1 | 107455 | 109260 | 1805 | 1805 | |
| S1885EA | 10/29/98 | 2 | 111160 | 113000 | 1840 | 3645 | |
| S1885EA | 10/29/98 | 3 | 114910 | 116750 | 1840 | 5485 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | TOTAL FROM BOTH SHEETS | | 11750 | |
| | | | | | | | |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| S1885EA | 11/6/98 | 900 | 450 | 250 | 1600 | ☒ | ☐ | USED A GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE AMOUNT |
| | | | | | | ☐ | ☐ | OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: JEFF DAYHOFF
(PRINTED NAME)

(SIGNED NAME)

DATE: 6 NOV 98

OK
TRUCK



## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| S1885EA | 10/28/99 | 1 | 106770 | 107455 | 685 | 685 | J. H. |
| S1885EA | 10/28/99 | 2 | 109260 | 111160 | 1900 | 2585 | [illegible] |
| S1885EA | 10/28/99 | 3 | 113000 | 114910 | 1910 | 4495 | [illegible] H. |
| S1885EA | 10/28/99 | 4 | 116750 | 118525 | 1770 | 6265 | [illegible] H |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 OF 2 _____
(PRINTED NAME) (SIGNED NAME)

DATE: _____

TAN TRUCK



## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| GS 88EA | 10-23-98 | 1 | 37845 | 38830 | 985 | 985 | J. Hanson |
| GS 88 EA | 10-23-98 | 2 | 40730 | 41735 | 1005 | 1990 | J. Hanson |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | TOTAL GALLONS | - ALL SHEETS | | 17479 | |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| GS 88 EA | 11/6/98 | 1000 | 500 | 200 | 1700 | ☒ | ☐ | USED A GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE AMOUNT |
| | | | | | | ☐ | ☐ | OF DECON WATER. |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: JEFF DAYHOFF
(PRINTED NAME)

(SIGNED NAME)

DATE: 6/10/98

# DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| G588EA | 10/23/98 | 1 | 35960 | 37845 | 1885 | DLH | 1885 |
| G588EA | 10/23/98 | 2 | 38835 | 40730 | 1889 | DLH | 3774 |
| G588EA | 10/23/98 | 3 | 41745 | 43625 | TDP ~~1980~~ 1880 | J.H. | ~~3754~~ 5654 |
| G588EA | 10/24/98 | 4 | 43625 | 45480 | 1855 | J.H. | ~~7609~~ 7509 |
| G588EA | 10/24/98 | 5 | 45480 | 47375 | 1895 | J.H. | ~~9504~~ 9404 |
| G588EA | 10/24/98 | 6 | 47375 | 49310 | 1935 | J.H. | ~~11439~~ 11339 |
| G588EA | 10/24/98 | 7 | 49310 | 51165 | 1855 | J.H. | ~~13294~~ 13194 |
| G588EA | 10/24/98 | 8 | 51165 | 53025 | 1860 | J.H. | ~~15154~~ 15054 |
| G588EA | 10/24/98 | 9 | 53025 | 53460 | 435 | J.H. | TDP ~~15589~~ 15489 |

# DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 OF 2
(PRINTED NAME)

(SIGNED NAME)

DATE: _____

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| GS522EA | 10/26/98 | 1 | 53460 | 55310 | 1850 | 1850 | J. H. |
| GS522EA | 10/26/98 | 2 | 55310 | 57160 | 1850 | 3700 | J. H. |
| GS522EA | 10/26/98 | 3 | 57160 | 58985 | 1825 | 5525 | J. H. |
| GS522EA | 10/26/98 | 4 | 58985 | 60840 | 1855 | 7380 | J. H. |
| GS522EA | 10/26/98 | 5 | 60840 | 62720 | 1880 | 9260 | J. H. |
| GS522EA | 10/26/98 | 6 | 62720 | 64570 | 1850 | 11110 | J. H. |
| GS522EA | 10/26/98 | 7 | 64570 | 66415 | 1845 | 12955 | J. H. |
| GS522EA | 10/27/98 | 8 | 66415 | 68305 | 1890 | 14845 | J. H. |

TOTAL FROM BOTH SHEETS 18985

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| GS522EA | 11/9/98 | 650 | 250 | 150 | 1050 | ☒ | ☐ | USED A GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE |
| | | | | | | ☐ | ☐ | AMOUNT OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: JEFF DAYHOFF (PRINTED NAME) (SIGNED NAME)

DATE: 9 NOV 98

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| G5522EA | 10/27/98 | 9 | 68305 | 70200 | 1895 | 1895 | [illegible] |
| G5522EA | 10/27/98 | 10 | 70200 | 72100 | 1900 | 3795 | [illegible] |
| G5522EA | 10/27/98 | 11 | 72100 | 72445 | 345 | 4140 | [illegible] |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 of 2 _____
(PRINTED NAME) (SIGNED NAME)

DATE: _____

# DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| GS 505 EA | 10/29/98 | 1 | 118525 | 120350 | 1825 | 1825 | [illegible] |
| 1 rinse GS 505 EA | 10/30/98 | 2 | 122010 | 123810 | 1800 | 3625 | [illegible] |
| GS 505 EA | 10/30/98 | 3 | 125630 | 127450 | 1830 | 5455 | DRH |
| GS 505 EA | 10/30/98 | 4 | 129315 | 131135 | 1820 | 7275 | [illegible] |
| GS 505 EA | 10/30/98 | 5 | 133010 | 134640 | 1630 | 8905 | DRH |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

TOTAL FROM BOTH SHEETS 16105

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| GS 505 EA | 11/9/98 | 800 | 300 | 200 | 1300 | ☒ | ☐ | USED A GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE |
| | | | | | | ☐ | ☐ | AMOUNT OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: JEFF DAYHOFF (PRINTED NAME) [signature] (SIGNED NAME)

DATE: 9 Nov 98

OK
TRUCK



## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| GS505EA | 10/28/98 | 1 | 120350 | 122010 | 1660 | 1660 | J.H. |
| GS505EA | 10/28/98 | 2 | 123810 | 125620 | 1810 | 3470 | J.H. |
| GS505EA | 10/28/98 | 3 | 122450 | 129315 | 1865 | 5335 | J.H. |
| GS505EA | 10/28/98 | 4 | 131140 | 133005 | 1865 | 7200 | J.H. |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 of 2 _____
(PRINTED NAME) (SIGNED NAME)

DATE: _____

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| SDE1EA | Oct 30 98 | ~~TOOL~~ 2 | 136440 | 138270 | 1830 | 1830 | DH |
| SDE 1 EA | OCT 30, 98 | ~~TOO~~ ~~2~~ 1 | 134640 | 136440 | 1800 | 3630 | JH |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | TOTAL | 3630 | |

THIS TANK HAD A PIN HOLE, SO IT WAS USED FOR EMERGENCY BACK UP. PIN HOLE LOCATED AT TOP OF TANK WALL.

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| SDE 1 EA | 11/9/98 | 300 | 150 | 100 | 550 | ☒ | ☐ | USED A GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE |
| | | | | | | ☐ | ☐ | AMOUNT OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: THOMAS D. DOGAL
(PRINTED NAME)

(SIGNED NAME)

DATE: 11/9/98

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| S650NEA | 10/30/98 | 1 | 140060 | 141900 | 1840 | 1840 | D.H. |
| S650NEA | 11/2/98 | 2 | 141900 | 143705 | 1805 | 3645 | J.H. |
| S650NEA | 11/2/98 | 3 | 143705 | 145505 | 1800 | 5445 | J.H. |
| S650NEA | 11/2/98 | 4 | 145505 | 147310 | 1805 | 7250 | J.H. |
| S650NEA | 11/2/98 | 5 | 147310 | 149110 | 1800 | 9050 | J.H. |
| S650NEA | 11/2/98 | 6 | 149110 | 150855 | 1745 | 10795 | J.H. |
| S650NEA | 11/2/98 | 7 | 150855 | 152610 | 1755 | 12550 | J.H. |
| S650NEA | 11/2/98 | 8 | 152610 | 154410 | 1800 | 14350 | J.H. |

TOTAL FROM BOTH SHEETS 16337

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| S650NEA | 11/9/98 | 700 | 200 | 120 | 1020 | ☒ | ☐ | USED A GRADUATED PORTABLE |
| | | | | | | ☐ | ☐ | WATER TANK TO DETERMINE |
| | | | | | | ☐ | ☐ | AMOUNT OF DECON WATER |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: THOMAS D. DEAL (PRINTED NAME) [signature] (SIGNED NAME)

DATE: 11/9/98

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| S 650 NEA | 10/31/98 | 1 | 138270 | 140060 | 1790 | 1790 | J. HAUSER |
| S 650 NEA | 11/3/98 | 2 | 154416 | 154607 | 197 | 1987 | D. HAUSER |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| FRAC TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: SEE SHEET 1 of 2 _____ (PRINTED NAME) _____ (SIGNED NAME)

DATE: _____

PORTABLE WATER TANK AND PUMPS/HOSES

## DBG WATER DISPOSAL RECORD

| FRAC TANK NO. | DATE | LOAD NO. | TOTALIZER BEGINNING READING | TOTALIZER END READING | GALLONS DISCHARGED | ACCUMULATIVE GALLONS | TRUCK DRIVER'S NAME |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## DECON WATER QUANTITY

| WATER ~~FRAC~~ TANK NO. | DATE | GALLONS OF WATER USED PER RINSE | | | TOTAL GALLONS | DECON RESULTS | | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | RINSE 1 | RINSE 2 | RINSE 3 | | ACC | UNACC | |
| PT-2 | 11/10/98 | 500 | 300 | 200 | 1000 | ☒ | ☐ | DECON INCLUDED INTAKE AND |
| PT-3 | 11/10/98 | 550 | 250 | 100 | 900 | ☒ | ☐ | DISCHARGE HOSES |
| 2" PUMP | 11/10/98 | 40 | 30 | 20 | 90 | ☒ | ☐ | |
| POLY TANK-2000GAL | 11/16/98 | 90 | 60 | 50 | 200 | ☒ | ☐ | |
| | | | | | | ☐ | ☐ | |

TANK INSPECTED BY: THOMAS D. DOGAL
(PRINTED NAME)

Thomas D. Dogal
(SIGNED NAME)

DATE: 11/16/98

**DEPARTMENT OF THE NAVY**
OFFICER IN CHARGE OF
NAVAL FACILITIES ENGINEERING COMMAND
CONTRACTS
CRANE DIVISION, NAVAL SURFACE WARFARE CENTER
BUILDING 2516
CRANE, INDIANA 47522-5082

RECEIVED
JUN 6 1997
MK-CRANE

4330
OICC
06 Jun 97

Morrison Knudsen Corp.
P.O. Box 310
Crane Village, IN 47522

Subj: Contract N62467-93-D-1106, ENVIRONMENTAL RAC CONTRACT
Delivery Order 0009 NSWC-CRANE

Gentlemen:

This letter is to serve as technical direction for the following actions related to Dye Burial Grounds Cap:

1) Provide 1 additional frac tank to facilitate movement of the mud boxes and other frac tanks. Please provide a sketch showing location and all applicable certifications prior to bringing tank on site.

You shall proceed promptly with the performance of this technical direction. You are to provide a budgetary impact of this direction to the Contracting Officer within 5 days of its issuance. If in your opinion, this direction falls within any of the categories defined in paragraph (b) of the clause G8, Technical Direction, of your contract, you shall promptly notify the Contracting Officer in writing. You shall take no action until the Contracting Officer has issued a modification to the delivery order or otherwise resolved the issue.

If you have any questions, contact myself at 812-854-3318.

Brent Robertson
Navy Technical Representative

cc: Tom Brent; NSWC Code 095
Jimmy Jones; SDIV Code 18011
Adrienne T. Wilson; SDIV Code 1864
Bob Hess; SDIV Code 0232
OICC Tim Sears
File

MORRISON KNUDSEN CORPORATION
300 Highway 361, CTR-12
P.O. Box 310
Crane, IN 47522
(812) 854-6941
Fax: (812) 854-6944

June 6, 1997 4324-524

Mr. Brent Robertson
Resident Officer in Charge of Construction
Crane Division, NSWC
Building 2516
Crane, IN 47522

Subject: Additional FRAC Tank

Ref: OICC Letter 4330 dated 06/06/97
Contract N62467-93-D-1106, ENVIRONMENTAL RAC CONTRACT NSWC-CRANE

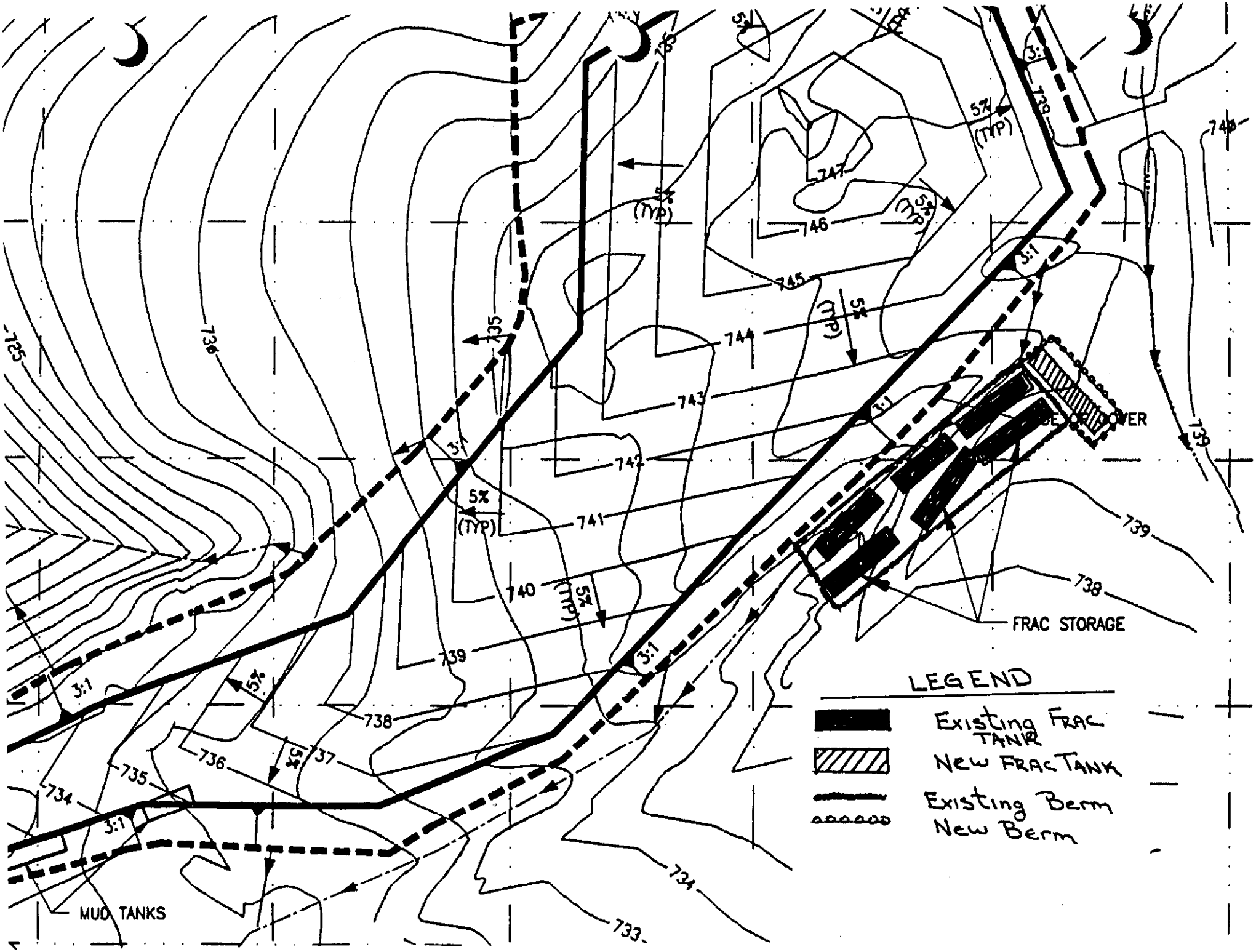
Dear Mr. Robertson:

Morrison Knudsen is taking steps to relieve the immediate problem of there being only minimal freeboard in the existing Frac tanks on site at the Dye Burial Grounds. The attached Frac Tank Status report shows there being less than 10,000 gallons of available storage space in both the Frac Tanks and Mud Boxes; 3,000 gallons of this is needed for possible water expansion due to warming temperature and unleveled tanks. Starting June 06, 1997, Morrison Knudsen constructed a temporary secondary containment area east of the existing Frac tanks (see attached sketch for approximate location) for the seventh Frac tank. Due to the need for this tank, a temporary graveled access road was built to permit the setting of the FRAC tank beside the six existing tanks. The seventh Frac tank was set on June 07, 1997 and is operational as needed to prevent a release. A copy of the tank's certification will follow in the daily construction report.

Should you have any questions or need additional information please contact Lois Bigley or the undersigned.

Sincerely,
D Beall
Dave Beall
Project Manager

cc: R. Hlavacek M. Wilson A. Wilson J. Hunsicker T. Brent
C. Freeman L. Bigley T. Dogal file: 11.021.F


LEGEND
Existing Frac Tank
New Frac Tank
Existing Berm
New Berm
FRAC STORAGE
MUD TANKS
5% (TYP)
3:1
725
734
733
735
736
737
738
739
740
741
742
743
744
745
746
747
748

Morrison Knudsen Corporation
NSWC-Crane, IN 4324-009
N62467-93-D-1106

SWMU 02/11
Dye Burial Ground
FRAC tank status

| Tank Number | Approx Freeboard *ft-in* | Maximum Volume *Gallons* | Approx. Current volume *Gallons* | Available volume *Gallons* |
|---|---|---|---|---|
| GS505EA | 0' - 4" | 21,279 | 20896 | 383 |
| S1885EA | 0' - 4.5" | 21,279 | 20849 | 430 |
| SDE1EA | 0' - 10" | 21,279 | 20179 | 957 |
| S650NEA | 0 - 3" | 21,279 | 20322 | 287 |
| GS522EA | 0' - 4" | 21,279 | 20992 | 383 |
| 101MEA | 0' - 7" | 21,279 | 20896 | 670 |
| MUD TANK 1 | 2' - 0" | 10,771 | 7171 | 3600 |
| MUD TANK 2 | 2' - 0" | 10,771 | 7171 | 3600 |
| TOTALS | | 149,216 | 138906 | 10,310 |

**As of 02 June 97**

Weekend pumping reduced Freeboard by 1,195 gallons
all tank are at critical levels

| Tank Number | Approx Freeboard *ft-in* | Maximum Volume *Gallons* | Approx. Current volume *Gallons* | Available volume *Gallons* |
|---|---|---|---|---|
| GS505EA | 0' - 4" | 21,279 | 20896 | 383 |
| S1885EA | 0' - 4.5" | 21,279 | 20849 | 430 |
| SDE1EA | 0' - 8.5" | 21,279 | 20179 | 957 |
| S650NEA | 0 - 2.5" | 21,279 | 20322 | 287 |
| GS522EA | 0' - 3" | 21,279 | 20992 | 383 |
| 1001MEA | 0' - 7" | 21,279 | 20896 | 670 |
| MUD TANK 1 | 2' - 0" | 10,771 | 7171 | 3600 |
| MUD TANK 2 | 2' - 0" | 10,771 | 7171 | 3600 |
| TOTALS | | 149,216 | 140,007 | 9,209 |

**As of 05 June 97**

all tank are at critical levels

**TANK CERTIFICATION REPORT**
SWMU 02/11: Dye Burial Ground

| BAKER TANK No. | ARRIVAL DATE | BAKER TEST REPORT(S) RECEIVED | ONSITE INSPECTION (signature/date) | COMMENTS |
|---|---|---|---|---|
| GS505EA (F) | 10JAN97 | Level I dated 1-10-97 | R. Smith/1-10-97 | |
| S1885EA (F) | 24JAN97 | Level I dated 8-16-95 | R. Staub/1-24-97 | Level II dated 4-5-95 |
| SDE1EA (F) | 23JAN97 | Level I dated 1-23-97 | R. Staub/1-23-97 | |
| S650NEA (F) | 10JAN97 | Level III dated 10-19-94 * | R. Smith/1-10-97 | * Level I dated 1-10-97 |
| GS522EA (F) | 10JAN97 | Level I dated 1-10-97 | R. Smith/1-10-97 | |
| 1001MEA (F) | 25JAN97 | Level I dated 11-14-96 | R. Smith/1-25-97 | No distinguishable odors |
| MB280 (M) | 26JAN97 | Level II dated 1-24-97 | R. Staub/1-26-97 | |
| MB281 (M) | 25JAN97 | Level II dated 1-24-97 | R. Smith/1-25-97 | No interior sheens or distinguishable odors |

Morrison Knudsen Corporation
NSWC-Crane. IN 4324-0009

Note 1. (F) = FRAC Tank
(M) = Mud box

Note 2. Onsite inspection verified general appearance, noticeable damages, free of residual products.

Note 3. Refer MK Daily Reports for daily inspection results.

**TANK CERTIFICATION REPORT**
SWMU 02/11: Dye Burial Ground

| BAKER TANK No. | ARRIVAL DATE | BAKER TEST REPORT(S) RECEIVED | ONSITE INSPECTION (signature/date) | COMMENTS |
|---|---|---|---|---|
| GS505EA (F) | 10JAN97 | Level I dated 1-10-97 | 1/10/97 | |
| S1885EA (F) | 24JAN97 | LEVEL I DATED 8-16-95 LEVEL II DATED 4-5-95 | 1/24/97 | |
| SDE1EA (F) | 23JAN97 | | 1/23/97 | |
| S650NEA (F) | 10JAN97 | Level III dated 11-9-94 * | 1/10/97 | * Level I dated 1-10-97 |
| GS522EA (F) | 10JAN97 | Level I dated 1-10-97 | 1/10/97 | |
| 1001MEA (F) | 25JAN97 | LEVEL I DATED 11-14-96 | 1/25/97 | No distinguishable odors |
| MB280 (M) | 26JAN97 | Level II dated 1-24-97 | 1/26/97 | |
| MB281 (M) | 25JAN97 | Level II dated 1-24-97 | 1/25/97 | No interior sheens or distinguishable odors |

Morrison Knudsen Corporation
NSWC-Crane. IN 4324-0009

Note 1. (F) = FRAC Tank
(M) = Mud box

Note 2. Onsite inspection verified general appearance, noticeable damages, free of residual products.

Note 3. Refer MK Daily Reports for daily inspection results.

RECEIVED
JUN 9 1997
MK-CRANE

RECEIVED
JUN 05 1997
MK CORP

5090
Code 18011
4 June 97
NAV/MKC-362

Morrison Knudsen Corporation
2420 Mall Drive
Corporate Square 1 Suite 211
North Charleston, SC 29406

Subj: CONTRACT N62467-93-D-1106, DELIVERY ORDER 27, RESPONSE ACTION CONTRACT, NSWC CRANE, IN

Gentlemen:

This letter is to serve as technical direction for the following actions at SWMU 16/16:

Take the necessary action to remove, sample and dispose of sediments in both sumps.

You shall proceed promptly with the performance of this technical direction. You are to provide a budgetary impact of this direction to the Contracting Officer within 5 days of its issuance. If in your opinion, this direction falls within any of the categories defined in paragraph (b) of clause G8, Technical Direction, of your contract, you shall promptly notify the Contracting Officer in writing. You shall take no action until the Contracting Officer has issued a modification to the delivery order or otherwise resolved the issue.

If you have any questions, contact Jimmy Jones, Code 18011, at 803-820-5544 or DSN 583-5544.

J. F. Jones
J. F. Jones
COTR RAC II

Copy to:
Code 0232RH
Code 1864
Code 0514
Brent Robertson- NTR NSWC Crane

NSWC - CRANE

| PROJECT MEMBER | ACT | INFO | INIT |
|---|---|---|---|
| PROJECT MANAGER | | X | JB |
| PROJECT ENGINEER | | | |
| GNL SUPT | | X | |
| SAFETY AND HEALTH | | | |
| QA/QC [redacted] | | X | |
| PROJECT CONTROLS | | | |
| FIELD ENGINEERING | | | |
| PMO-CHARLESTON | | | |
| T. Dogal | X | | |
| R. Spurgeon | X | | |
| FILE: S. Cory | X | | |
| FILE: | | | |
| FILE: 11.012 F | | | |

4324

| DIST | 1 | A | R |
|---|---|---|---|
| PM | ✓ | | |
| PJM | ✓ | | |
| PCM | ✓ | | |
| CAM | ✓ | | |
| BM | | | |
| PURCH | | | |
| OCM | | | |
| SAFETY | | | |
| BEAU | ✓ | | |
| MUNSON | ✓ | | |
| | | | |
| File | 11-2.27 11-0 | | |

# N-2

# Residual Sediments Analytical Data

TOLTEST, INC.

300 Highway 361, P.O. Box 629
Crane, Indiana
Phone: (812) 854-6941; FAX: (812) 854-6944

Page 1 of 5
Date: 4/13/99

Attention: Kimball Ohsick
Company:
From: Peter Chevalier
Re:

FAX No: 208/386-6669
Phone No:
Project No:
☐ *Check here if hard copy to be mailed*

DBG Mud box composite sample

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MORRISON KNUDSEN CORPORATION

# CHAIN OF CUSTODY RECORD

720 Park Blvd., P.O. Box 73
Boise, Idaho 83729
(208) 386-5000

COC # 147

Project No.: 4324-009-07-30
Project Name: NSWC Crane
Samplers: (Signature) Peter J. Chabalier
Sampler: (Print) Peter J. Chabalier

Analysis Required: RCRA Metals, Base Scale

| Sample Type | Sampling Point Description | Sample Date | Time | Sample I.D. Number | Spill Samples Yes | Spill Samples No | RCRA Metals | Base Scale | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| Soil | Form mud box decom (in 4 drums) composite | 11/3/98 | 0946 | NSWC-02/11-10 | | / | / | / | Dye Burial Grounds |

| Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: | Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: |
|---|---|---|---|---|---|
| | 11/4/98 1600 | | | | |
| Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: | Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: |
| Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: | Received for Laboratory By: (Signature) / Company: | Date/Time | Total No. Samples This Shipping Container: / Company: |
| Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: | Relinquished By: (Signature) / Company: | Date/Time | Received By: (Signature) / Company: |

Seal #s 4816, 4917

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWC021110

Lab Name: SWL-TULSA Contract: NSWC CRANE

Lab Code: SWOK Case No.: MKF-OH SAS No.: SDG No.: 36420

Matrix: (soil/water) SOIL Lab Sample ID: 36420.01

Sample wt/vol: 31.7 (g/mL) G Lab File ID: V24123.D

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: not dec. 14 dec. Date Extracted: 11/17/98

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/19/98

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 360 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 360 | U |
| 95-57-8 | 2-Chlorophenol | 360 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 360 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 360 | U |
| 100-51-6 | Benzyl alcohol | 360 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 360 | U |
| 95-48-7 | 2-Methylphenol | 360 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 360 | U |
| 106-44-5 | 4-Methylphenol | 360 | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 360 | U |
| 67-72-1 | Hexachloroethane | 360 | U |
| 98-95-3 | Nitrobenzene | 360 | U |
| 78-59-1 | Isophorone | 360 | U |
| 88-75-5 | 2-Nitrophenol | 360 | U |
| 105-67-9 | 2,4-Dimethylphenol | 360 | U |
| 65-85-0 | Benzoic Acid | 1800 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 360 | U |
| 120-83-2 | 2,4-Dichlorophenol | 360 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 360 | U |
| 91-20-3 | Naphthalene | 65 | J |
| 106-47-8 | 4-Chloroaniline | 360 | U |
| 87-68-3 | Hexachlorobutadiene | 360 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 360 | U |
| 91-57-6 | 2-Methylnaphthalene | 360 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 360 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 360 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1800 | U |
| 91-58-7 | 2-Chloronaphthalene | 360 | U |
| 88-74-4 | 2-Nitroaniline | 1800 | U |
| 131-11-3 | Dimethylphthalate | 360 | U |
| 208-96-8 | Acenaphthylene | 290 | J |
| 606-20-2 | 2,6-Dinitrotoluene | 360 | U |

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SWC021110

Lab Name: SWL-TULSA Contract: NSWC CRANE

ab Code: SWOK Case No.: MKF-OH SAS No.: SDG No.: 36420

Matrix: (soil/water) SOIL Lab Sample ID: 36420.01

Sample wt/vol: 31.7 (g/mL) G Lab File ID: V24123.D

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: not dec. 14 dec. Date Extracted: 11/17/98

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/19/98

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1800 | U | |
| 83-32-9 | Acenaphthene | 360 | U | |
| 121-14-2 | 2,4-Dinitrotoluene | 360 | U | |
| 51-28-5 | 2,4-Dinitrophenol | 1800 | U | |
| 100-02-7 | 4-Nitrophenol | 1800 | U | |
| 132-64-9 | Dibenzofuran | 360 | U | |
| 84-66-2 | Diethylphthalate | 360 | U | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 360 | U | |
| 86-73-7 | Fluorene | 37 | J | |
| 100-01-6 | 4-Nitroaniline | 1800 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1800 | U | |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 360 | U | |
| 101-55-3 | 4-Bromophenylphenylether | 360 | U | |
| 118-74-1 | Hexachlorobenzene | 360 | U | |
| 87-86-5 | Pentachlorophenol | 1800 | U | |
| 85-01-8 | Phenanthrene | 570 | | 660 |
| 120-12-7 | Anthracene | 150 | J | |
| 84-74-2 | Di-n-butylphthalate | 360 | U | |
| 206-44-0 | Fluoranthene | 810 | | 1,600,000 |
| 129-00-0 | Pyrene | 1300 | | 1,200,000 |
| 85-68-7 | Butylbenzylphthalate | 360 | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 730 | U | |
| 56-55-3 | Benzo(a)anthracene | 350 | J | |
| 218-01-9 | Chrysene | 390 | | 800 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 86 | J | |
| 117-84-0 | Di-n-octylphthalate | 340 | J | |
| 205-99-2 | Benzo(b)fluoranthene | 340 | J | |
| 207-08-9 | Benzo(k)fluoranthene | 380 | | 660 |
| 50-32-8 | Benzo(a)pyrene | 510 | | 660 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 210 | J | |
| 53-70-3 | Dibenz(a,h)anthracene | 360 | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 350 | J | |

(1) - Cannot be separated from Diphenylamine



FORM I SV-2

1

# INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

NSWC021110

Lab Name: SOUTHWEST_LAB_OF_OK Contract: MKF-OH
Lab Code: SWOK Case No.: 36420 SAS No.: SDG No.: 36420
Matrix (soil/water): SOIL Lab Sample ID: 36420.01
Level (low/med): LOW Date Received: 11/17/98
% Solids: 85.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 7.7 | | | P | 0.97 |
| 7440-39-3 | Barium | 106 | | | P | – |
| 7440-43-9 | Cadmium | 0.24 | B | | P | 39.0 |
| 7440-47-3 | Chromium | 112 | | | P | 990.0 |
| 7439-92-1 | Lead | 333 | | | P | 500.0 |
| 7439-97-6 | Mercury | 0.04 | U | | AV | 23.0 |
| 7782-49-2 | Selenium | 1.1 | | | P | 390.0 |
| 7440-22-4 | Silver | 0.14 | U | | P | 390.0 |

Color Before: BROWN Clarity Before: Texture: MEDIUM
Color After: YELLOW Clarity After: Artifacts:

Comments:
CLIENT_ID= NSWC-02/11-10