



United States Air Force

Asbestos Landfill



Loring Air Force Base

FINAL CONSTRUCTION REPORT

DRAFT

November 1999

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# Loring Air Force Base

## ASBESTOS LANDFILL

### FINAL CONSTRUCTION REPORT



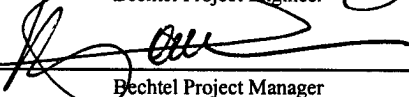
DRAFT

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Contract No. F41624-94-D-8072  
Job No. 22784

November 1999  
Revision A

|          |   |                         |
|----------|---|-------------------------|
| Prepared |                             | <u>11/23/99</u>         |
| Approved | <br>Bechtel Project Engineer | <u>11/23/99</u><br>Date |
| Approved | <br>Bechtel Project Manager  | <u>11/23/99</u><br>Date |

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## ACRONYMS AND INITIALISMS

|       |   |
|-------|---|
| ACM   | asbestos containing material                  |
| AFB   | Air Force Base                                |
| AFBCA | Air Force Base Conversion Agency              |
| AFCEE | Air Force Center for Environmental Excellence |
| BEI   | Bechtel Environmental, Inc.                   |
| MDEP  | Maine Department of Environmental Protection  |
| QA    | quality assurance                             |
| QC    | quality control                               |
| RFI   | Request for Information                       |
| USAF  | United States Air Force                       |
| UTS   | Underground Transformer Site                  |

## UNITS OF MEASURE

|                 |            |
|-----------------|------------|
| ft              | feet       |
| in.             | inch       |
| yd <sup>3</sup> | cubic yard |

## 1.0 INTRODUCTION

The Air Force Center for Environmental Excellence (AFCEE) has retained Bechtel Environmental, Inc. (BEI), under Prime Contract No. F41624-94-8072, as the full-service removal/remedial action contractor for Loring Air Force Base (AFB) in Limestone, Maine. Final placement of asbestos-containing materials (ACM) into the asbestos landfill and closure of the asbestos landfill was completed during the 1999 construction season by BEI and its subcontractors. This report describes activities associated with closure of the asbestos landfill.

### 1.1 SITE DESCRIPTION AND BACKGROUND

The former Loring AFB occupies about 9,000 acres in Aroostook County. The closest town is Limestone, Maine, located 2 miles east of the base. On September 30, 1994, it was officially closed and is now the responsibility of the Air Force Base Conversion Agency (AFBCA) and the Loring Development Authority. Figure 1-1 is a base location map. Figure 1-2 shows the location of the asbestos landfill.

The asbestos landfill facility covers approximately 3.5 acres of which approximately 1.75 acres was used for disposal of ACM. The asbestos landfill is located within a gated compound of approximately 100 acres, comprised of two debris landfills and two solid waste/contaminated soils landfills (see Figure 1-2). The asbestos landfill lies in the northwest end of the compound in an area previously used as a borrow area and is surrounded by an earth embankment.

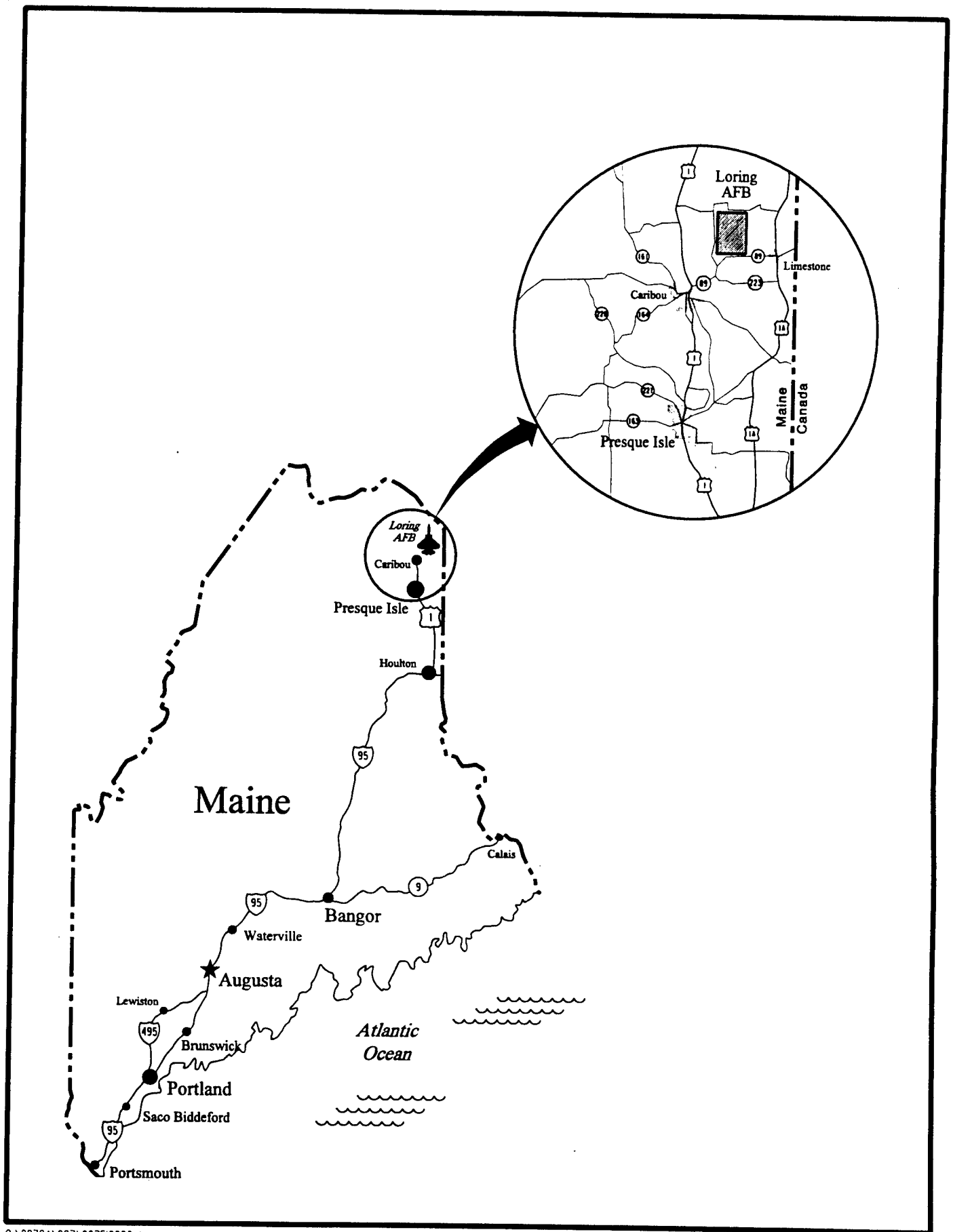
The United States Air Force (USAF) originally received approval from Maine Department of Environmental Protection (MDEP) to establish and operate an asbestos landfill at Loring AFB on March 25, 1983. Subsequent license and permit extensions were obtained and ACM placement continued until September 1999. In July 1999, the final "Loring Air Force Base Asbestos Landfill Closure Application", was prepared by BEI for AFCEE.

Pre-construction activities such as placement and covering of ACM from on-base asbestos abatement operations, investigative trenching for confirming extent of asbestos waste boundaries, civil surveying support, installation of groundwater monitoring wells, soil and groundwater sampling and testing were implemented prior to closure of the asbestos landfill. Asbestos landfill closure activities, which commenced in September 1999 and were completed in November 1999, included subgrade preparation, barrier soil placement, topsoil placement, re-sloping adjacent vicinity areas, seeding and mulching, and production of as-built and topographic survey.

### 1.2 SCOPE

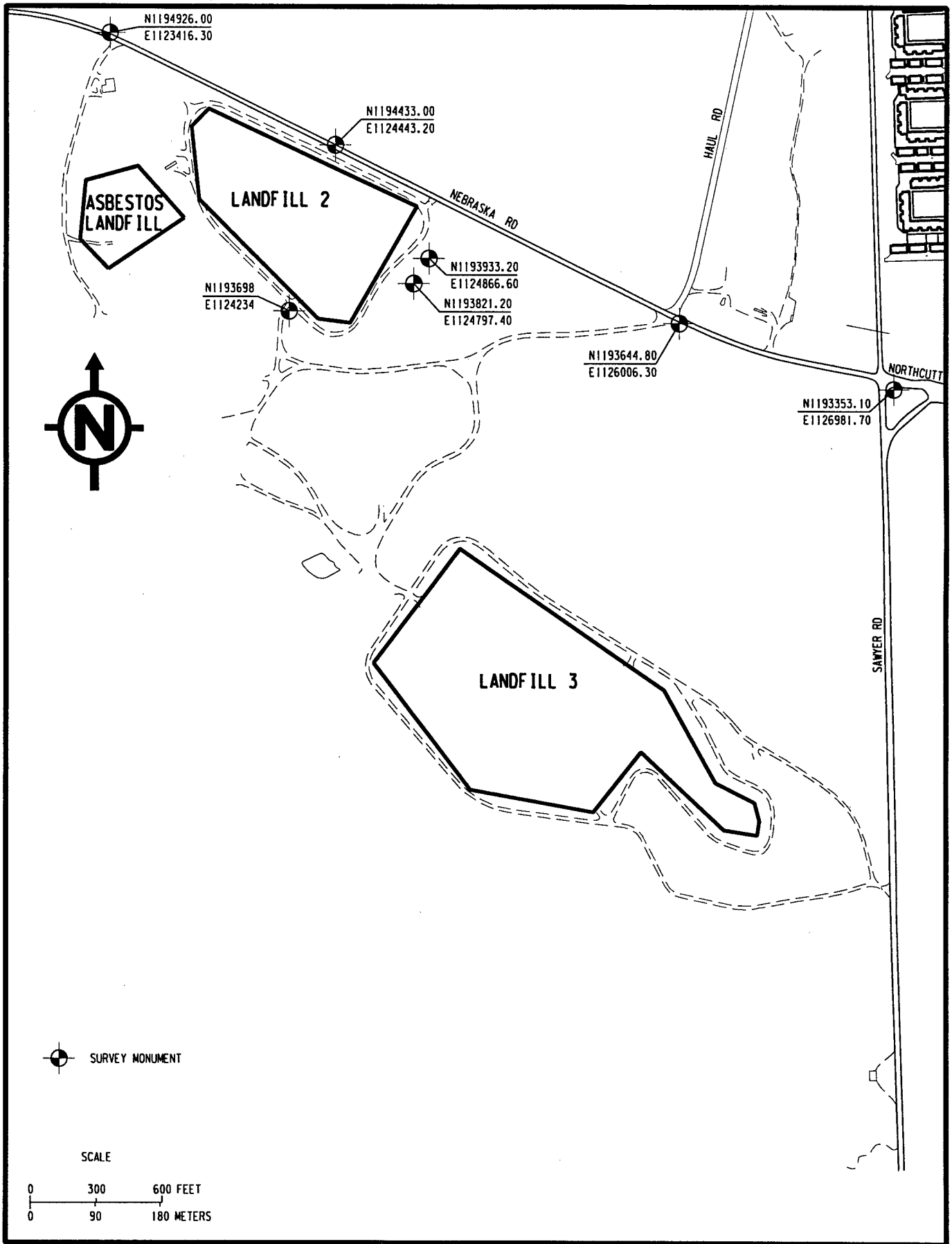
The scope of cap construction activities included in this report can be summarized as follows:

- Mobilization and site preparation
- Civil surveying to delineate and stake out the horizontal extent of asbestos containing materials and to provide horizontal and vertical control prior to and during cap construction.



O:\22784\007\007FIG002.dgn  
 14 JAN 1999

Figure 1-1  
 Loring Air Force Base  
 Location Map



o:\22784\007\007fig003.dgn  
05 FEB 1999

Figure 1-2  
Landfill 2, 3, and Asbestos Landfill  
Location Map

- Preparation of subgrade, including placement of common borrow to bring the subgrade to design elevations.
- Placement of common borrow as needed to further shape the subgrade for sloping and drainage purposes.
- Sampling of soil from borrow sources.
- Placement and compaction of barrier soil in accordance with the design drawings.
- Performing density and lift thickness tests in each lift of the placed barrier soil.
- Excavating and performing visual lift interface tests between the two lifts of placed barrier soil.
- Placement of topsoil.
- Construction of drainage swale and placement of erosion control matting.
- Seeding and mulching.
- Performing as-built boundary and topographic surveys.
- Inspection of construction activities.
- Placement of asbestos warning signs.
- Performing general site restoration activities including re-sloping of adjacent side slopes.

Most activities were accomplished through the use of heavy earth-moving equipment, including dump trucks for soil transport; bulldozers, front end loaders, excavators, backhoes, and compactors for earth work (including excavation, backfill, and shaping operations); and heavy duty mulch blower for seeding and mulching.

### **1.3 OBJECTIVES**

The objectives of this closure report are as follows:

- Documenting the cap construction activities performed at the asbestos landfill
- Providing verification that performance and quality standards were met.
- Providing documentation to the MDEP and AFCEE that work activities were performed in accordance with applicable work-controlling documents.

### **1.4 REGULATORY SETTING**

MDEP defines asbestos as a group of naturally occurring minerals that separate into fibers of high tensile strength and are resistant to heat, wear, and chemicals. Asbestos waste means any waste that contains asbestos. This term includes, but is not limited to, ACM from abatement projects, ACM from control devices, and friable and non-friable asbestos waste. The handling,

control, transport, disposal, and storage of asbestos is governed by State and Federal Regulations. Chapter 401.5 of the MDEP regulations addresses landfill closure requirements.

On March 25, 1983, the USAF received approval from MDEP to establish and operate an asbestos landfill at Loring AFB for a term of five years. On May 10, 1989, the USAF requested and received a 5-year extension to the original landfill operation license. On July 8, 1993, the USAF requested that the license be extended until the closure of the Loring AFB in October 1994. On October 27, 1993, MDEP granted the USAF an extension to operate the asbestos landfill until November 10, 1994.

In September of 1994, Loring AFB ceased operations as an active military base and AFBCA began overseeing the conversion of the military base into a civilian industrial/commercial complex. On November 2, 1994 AFBCA requested an additional 5-year extension to the existing asbestos landfill license to allow for disposal operations during the Loring AFB conversion period. The extension request was denied.

In May 1996 AFBCA again requested that the previous asbestos landfill license be renewed and extended. MDEP presented AFBCA with two options: apply for a new license or enter into a Schedule of Compliance with MDEP. AFBCA opted for the second choice and on September 30, 1998 MDEP issued an order providing for continued operation of the asbestos landfill, under the terms and conditions of the previously expired license until September 30, 1999. After this period, the AFBCA was required to commence with the closure of the asbestos landfill in accordance with the Schedule of Compliance and the new MDEP Solid Waste Management Rules.

Placement of ACMs into the asbestos landfill resumed in October 1998 with the disposal of ACM waste generated from abatement of buildings and the removal of aboveground heatlines at Loring AFB. In February 1999, the USAF submitted a draft closure plan for the asbestos landfill and in July 1999 the "Final Loring Air Force Base Asbestos Landfill Closure Application" was submitted.

Placement of ACMs continued until September 1999 and closure activities began immediately thereafter. Landfill closure was completed in November 1999.

## **1.5 WORK CONTROLLING DOCUMENTS**

Work was performed in accordance with "Loring Air Force Base Asbestos Landfill Closure Application", BEI, July 1999.

## **1.6 SUBCONTRACTS**

The construction activities described in this report were performed under BEI's full service remedial action subcontract.

BEI was under the authority of the onsite AFCEE field engineer, who coordinated activities with AFBCA and with project representatives from EPA and MDEP. Work activities during the landfill closure were overseen and inspected by BEI. Soderberg Construction Company of Caribou, Maine was the primary subcontractor to BEI for closure construction activities. Doody, Blackstone, & Bubar Land Surveying of Caribou, Maine provided civil surveying support to BEI. S.W. Cole Engineering, Inc. of Caribou, Maine provided soil sampling and geotechnical testing services

Independent of BEI, URS Consultants, Inc. of Buffalo, New York provided quality assurance (QA) services under contract to AFCEE.

## **2.0 CONSTRUCTION ACTIVITIES**

### **2.1 SITE ACTIVITIES**

Landfill closure activities included site preparation; civil surveying; construction of the landfill cap, including subgrade preparation, placement of common borrow, placement and compaction of barrier soil, placement of topsoil, seeding, and mulching; and placement of warning signs. The major work elements for the site activities are discussed below.

#### **2.1.1 Pre-construction Activities**

Pre-construction activities such as placement and covering of ACM from on-base asbestos abatement operations, investigative trenching for confirming extent of asbestos waste boundaries, civil surveying support, installation of groundwater monitoring wells, soil and groundwater sampling and testing were implemented prior to closure of the asbestos landfill. Final loads of ACM were safely placed and covered with common borrow material. A boundary survey was performed to delineate the horizontal extent of ACMs by placing boundary flagging along the ACM placement. A pre-construction conference as required by MDEP Chapter 401 regulations was held prior to the commencement of field activities.

Since the entire asbestos landfill is contained within a natural earthen embankment, no special stormwater run-off or run-on controls were required. However, to prevent temporary run-on into work areas and siltation of the infiltration drainage basin at the base of the landfill, temporary soil erosion and sedimentation controls, including silt fencing and hay bales, were utilized during capping activities.

#### **2.1.2 Subgrade Preparation**

Common borrow was used to bring the surface of the asbestos landfill to the approximate subgrade design elevations as specified on the construction design drawings. At no time was the existing ACM material disturbed, cut into, or graded to achieve the proposed subgrade elevations. Common borrow was obtained from BEI-designated areas located adjacent to Landfill 3.

Upon completion of common borrow placement, the area was topographically surveyed to ensure that slopes and grades met the intent of the design and adhered to the slope and cover requirements. A pre-final inspection was held and the subgrade was approved prior to proceeding with placement of the barrier soil (see Appendix C).

### **2.1.3 Barrier Soil Placement**

Upon completion of the common borrow placement, barrier soil was placed and compacted in two 10-in. lifts to the extent of ACM placement as defined by the boundary survey. Barrier soil placement extended to the limits of the staked ACM and a maximum of 5 ft beyond.

In accordance with the technical specifications, the barrier soil material consisted of glacial till, having a maximum particle size of 6-in. and a minimum of 35 percent fines passing the #200 sieve. This material was screened and tested in accordance with barrier soil geotechnical testing requirements contained in Table 3-1 of the Asbestos Landfill Closure Application. To meet the intent of the MDEP regulations, and as specified in the Asbestos Landfill Closure Application, one sample per 1,250 yd<sup>3</sup> was collected from the barrier soil borrow pit and analyzed for moisture/density relationships per ASTM D1557 and grain size per ASTM D422 as the material was excavated for cap construction. The results of the moisture density tests and the sieve analyses are provided in Appendix A.

In accordance with the technical specifications, barrier soil was placed in two 10 in. compacted lifts, for a total of 20 in. of in-place compacted soil. Lift surfaces were smooth and free of pits. Each lift was compacted to at least 90 percent of maximum dry density (modified Proctor). The results of the density tests are provided in Appendix A. The test locations are identified on Drawing 007-DD-003 included in Appendix F.

As specified, barrier soil was originally obtained from a BEI-designated pit near the Underground Transformer Site (UTS) in East Loring. Sampling and analysis performed in 1998 for grain size and moisture/density characteristics met or exceeded all of the requirements for use as a source of barrier material for the asbestos landfill cap. However, during construction, source conditions changed, resulting in a barrier soil material that had a declining fines content and could not meet compaction requirements. An alternative offsite borrow source was tested that met the specifications and the team agreed to change borrow sources (Reference Section 2.2.1)

Barrier soil from Soderberg's Sawyer Road borrow pit was subsequently used for the duration of the closure activities. This material proved to be much more workable. The fines contents met specification and all compaction requirements were met.

The barrier soil lifts were constructed and compacted in such a manner that interface bonding was attained. Excavations were made and interface bonding was confirmed by visual inspection. The location of the interface bond tests are indicated on Drawing 007-DD-003 included in Appendix F.

Placement of the topsoil layer proceeded immediately upon placement of barrier soil. This quick placement of the protective layer limited the potential for desiccation, cracking, and erosion of the low permeability barrier soil.

Approximately 12,000 yd<sup>3</sup> (loose volume) of barrier soil was placed on the asbestos landfill cap.

#### **2.1.4 Topsoil Placement**

Topsoil was placed in one lift over the barrier soil surface. Topsoil was obtained from Soderberg's Sawyer Road borrow pit. In accordance with the Asbestos Landfill Closure Application requirements, the topsoil was natural, friable soil, suitable for vigorous growth of vegetation and representative of productive soils in the vicinity. The borrow source was inspected and approved for use by BEI and AFBCA. The topsoil was free of any admixture of subsoil, foreign matter, trash, debris, stumps, rubbish, toxic substances, contamination, or any material that could be harmful to plant growth. Approximately 5,000 yd<sup>3</sup> (loose volume) of topsoil was placed on the landfill cap and surrounding surfaces.

The topsoil from the borrow source was generally free of stones and rocks larger than 2 in. Therefore, to avoid the additional cost of screening, a Request for Information (RFI) was issued and approved to allow the use of unscreened topsoil (Reference Section 3.0).

Prior to placement of topsoil, a portion of the barrier soil was loosened by tracking with a bulldozer, followed by back-blading. The scarification of the top 2 in. of barrier soil, along with the placement of 4 in. of topsoil, was intended to provide a 6 in. thick medium suitable to support and maintain a vegetative cover. Due to concerns raised over the effectiveness of the methods used to loosen the surface of the barrier soil, and after discussions with the Air Force, it was decided that a full 6 in. of topsoil would be placed.

The topsoil was lightly compacted by tracking in with a low ground pressure dozer.

Upon completion of topsoil placement, the entire extent of asbestos landfill cap, as well as any other areas which were disturbed within the asbestos landfill area, were limed, fertilized, seeded, and mulched to promote evapotranspiration and limit erosion of the underlying soils. The seed mix used was a conservation mix as specified by the U.S. Fish and Wildlife Service. The annual rye content of the specified make was increased slightly to obtain earlier growth as requested by the Air Force. Hay mulch was applied with a blower-type mulch spreader.

#### **2.1.5 Miscellaneous Site Activities**

A drainage swale was shaped in the middle of the landfill to convey water to the infiltration drainage basin. In the upper portion of the landfill where the slope was less than 8 percent, the swale was lined with North American Green S75 temporary erosion control mat. Below this area, where slopes exceeded 8 percent slope, the swale was lined with North American Green P300.

Upon completion of earthwork activities, asbestos warning signs were posted every 50 ft around the landfill as per MDEP regulations. Signs were placed 10 ft beyond the outer edge of the ACM placement as surveyed and staked. Signs were mounted on 8 ft long DOT approved heavy metal road signs, placed 4 ft into the ground. Fiberglass signs were backed with pressure treated plywood prior to mounting to the sign posts.

Civil survey support was provided to locate the edge of ACM placement, drainage swale location and elevations, lift thickness confirmation tests, density tests, lift interface bonding tests, boundaries, and topography. Refer to Appendix F for As-built drawings.

## **2.2 MODIFICATIONS TO ORIGINAL DESIGN**

Minor modifications to the original design are discussed below.

### **2.2.1 Request for Information Summary**

As previously agreed with the USAF, any changes to the approved design would be submitted formally to the USAF for review and approval using the RFI process.

A total of four RFIs were submitted and approved for the asbestos landfill closure. Copies of these RFI's can be found in Appendix D.

- RFI No. 336: Requested a change in the lift thickness for placing common borrow from 12 in. to 24 in. This approach was effectively used at Landfill 3 and was subsequently approved by AFCEE.
- RFI No. 337: Requested concurrence on the revised boundaries of the asbestos waste. The original drawing was revised based upon field conditions and input from the USAF. The AFCEE approved this RFI.
- RFI No. 338: Requested the use of unscreened topsoil to cover the surface of the asbestos landfill. This avoided extra screening costs. The AFCEE approved this RFI.
- RFI No. 343: Requested approval to obtain barrier soil for the asbestos landfill from Soderberg's Sawyer Road borrow pit instead of the borrow pit near the UTS in East Loring. The USAF approved this RFI.

## **3.0 INSPECTIONS**

BEI planned and executed quality control (QC) oversight for construction of the asbestos landfill cap in accordance with the Asbestos Landfill Closure Application, July 1999. This plan provided the framework for the site QC representative to implement a three-phase inspection process for QC that included each significant definable feature of the work process. The preparatory, initial, and follow-up phases of this approach are discussed below.

The preparatory inspection phase included a discussion of construction activities that would be part of and influence the actual construction work. The preparatory phase began with a meeting to discuss the specific definable features of work and involved the subcontractors, the site engineer, the construction supervisor, the safety and health representative, the QC and QA representatives, and representatives of AFCEE, AFBCA, LDA, and the Base Fire Department.

Items discussed at the preparatory phase meeting included:

- General scope of work for subgrade preparation, barrier soil placement and topsoil placement.
- Access control during cap construction.
- Sediment and erosion control.
- Clearing and grubbing.
- Soil testing requirements.
- As-built survey requirements.
- Safe work practices.

During the initial and follow-up phase, the QC representative provided oversight and inspection of the field work and a daily report to record activities related to the closure of the asbestos landfill. These inspections included witnessing of soil sampling events, compaction testing, and interface bonding tests. It also included independent confirmation that lift thicknesses were being obtained for the various lifts of material.

Soil testing was conducted in accordance with Table 3-1 of the Asbestos Landfill Closure Application. To meet the intent of the MDEP regulations, one sample per 1,250 yd<sup>3</sup> was collected from the barrier soil borrow pit and analyzed for moisture/density relationships and grain size as the material was excavated for cap construction. Testing was not required during placement. The QC representative witnessed each soil sampling event.

Field density tests were conducted on each lift of barrier soil placed and compacted. The QC representative witnessed each test and test locations were located by survey. A total of 21 tests were performed on the first lift of barrier soil and 27 tests were performed on the second lift. The test totals exclude any re-tests. Based upon an approximate barrier soil placement of 2.36 acres, 9 tests per acre were conducted on lift one and 11 tests per acre were conducted on lift two. The requirement was for 9 tests per acre per lift.

The thickness of each lift of each material was continually checked by a spotter, who was using a calibrated rod to confirm proper thickness as the material was being placed and compacted. The QC representative confirmed these lift thickness measurements by independently measuring the thickness of the various materials and lifts after placement. The closure application required that 5 lift thickness confirmations per acre per lift be obtained. Thirty-two lift thickness

confirmations (14 per acre) were obtained for the first lift of barrier soil and 14 (6 per acre) were obtained for the second lift. A total of 20 (9 per acre) lift thickness confirmations were obtained for the placed topsoil.

The QC representative was also required to confirm barrier soil lift interface bonding and soil remolding tests at a rate of 5 per acre per lift. This was facilitated by digging test pits after placement and compaction of the second lift of barrier soil. The test pits were dug to the barrier soil/subgrade interface. BEI opted to excavate these test pits at the same location where density tests had been performed. Total thickness of the placed barrier soil was also measured at these locations and were used as confirmation for the barrier soil second lift thickness. Fourteen excavations were completed (6 per acre) and in each location there was no visually distinct interface between the lifts. This constituted a passing test. Also, in each location, the lift thickness exceeded 20 in. (the minimum thickness of barrier soil).

All barrier soil density and interface bonding test locations and barrier soil and topsoil lift thickness confirmations were located by survey and are include in Appendix E.

A pre-final inspection was performed at the site to ensure that completed work activities complied with the technical and quality requirements of the Asbestos Landfill Closure Application. The pre-final inspection was performed, using criteria from the project work plan, by the BEI QC representative, the AFCEE QA representative (URS), MDEP, AFCEE, and AFBCA. Items identified as needing additional work or adjustments for completion were compiled into a punchlist. A final inspection was performed following completion of the open items from the pre-final inspection. Appendix C contains the 1999 construction season final inspection record. A photo log of site activities is provided in Appendix F.

#### 4.0 LESSONS LEARNED

- Common borrow can be effectively placed and compacted in one 24 in. lift instead of two 12 in. lifts. Using one lift provides a more cost effective construction and reduces the overall construction time.
- The interface bonding tests were probably unnecessary after initial verification that an adequate bond was being achieved. No hint of an interface could be observed between the two lifts in any of the excavations.
- Although unavoidable in this situation (ACM placement did not cease until early September), construction of the landfill cap would have been more effectively implemented if completed earlier in the year. Inclement weather conditions, including rain and frost, created a difficult working situation, particularly with the topsoil.
- Due to the high variability of the barrier soil at the East Loring UTS borrow site, it was difficult to effectively use this material for the asbestos landfill cap. More extensive testing of the borrow source might have identified the potential problem prior to use.

### 5.0 CERTIFICATION

I, the undersigned engineer, state that, in my professional opinion, work associated with closure of the asbestos landfill was performed in accordance with the respective Asbestos Landfill Closure Application, except for approved field changes.

\_\_\_\_\_  
Carl Dirnbauer, P.E.  
State of Maine Registration Number \_\_\_\_\_  
Expires \_\_\_\_\_

\_\_\_\_\_  
Date

## 6.0 OPERATION AND MAINTENANCE

The Closure Action described in this report does not require a maintenance plan. In the Spring of 2000, minor erosion repair, reseeded and remulching may be necessary. Also, rolling of the surface may be performed if required.

Post-closure monitoring and maintenance of the asbestos landfill site will be performed by others for a period of 30 years following acceptance of closure activities (starting in the Year 2000), in accordance with Chapter 401.6 of the MDEP Regulations.

## 7.0 REFERENCES

BEI, 1999. *Loring Air Force Base Asbestos Landfill closure Application*. July

Maine Department of Environmental Protection, 1998. *Solid waste Management Regulations, Chapters 400-403, 405, 409, & 418*. November

**APPENDIX A**  
**SOIL TEST DATA**

**SODERBERG CO., INC.**

80 Shissock Street - Caribou, Maine 04738

Phone (207) 498 6300 - Fax (207) 498 6535 e-mail: sciencem@nfx.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 11-9-99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB S1R Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

|   |           |                                |
|---|-----------|--------------------------------|
| Item #: 5.010A17                                      | SpecSect: | SOW 051-SOW-121 Sec. 4.0       |
| Submittal: Preliminary Results Onsite/Offsite Testing |           |                                |
| /   |           |                                |
| /   |           |                                |
| Originator:   | Soderberg | Status: Submitted for approval |

|   |
|---|
| Notes: SUBMITTED ASBESTOS LANDFILL FIELD DENSITY TEST<br>RESULTS FOR TESTS # 30-64. |
|---|

|                |             |
|----------------|-------------|
| Date Returned: | BEI Doc. #: |
|----------------|-------------|

PROJECT:  
CLIENT :Asbestos Landfill Cover  
Soderberg Construction

JOB NUMBER: 99758

PAGE 1

## FIELD DENSITY TEST RESULTS

| TEST # | TEST DATE  | TECH INIT | TEST LOCATION                         | ELEV FEET | DEPTH INCHES | SAMPLE/<br>CURVE # | --- IN PLACE ---         |                 | COMPACTION PERCENT | REQUIRED COMPACTIC |
|--------|------------|-----------|---------------------------------------|-----------|--------------|--------------------|--------------------------|-----------------|--------------------|--------------------|
|        |            |           |                                       |           |              |                    | MOISTURE CONTENT PERCENT | DRY DENSITY PCF |                    |                    |
| 30     | 10/20/1999 | DWS       | 64' From BM Tree, 15' From Stake #1   | 99.7      | 8            | 24                 | 9.8                      | 130.1           | 96.2               | 90.0               |
| 31     | 10/20/1999 | DWS       | 85' From BM Tree, 56' From Stake #1   | 99.7      | 8            | 24                 | 9.7                      | 125.3           | 92.6               | 90.0               |
| 32     | 10/20/1999 | DWS       | 126' From BM Tree, 88' From Stake #1  | 99.7      | 8            | 24                 | 9.1                      | 130.9           | 96.8               | 90.0               |
| 33     | 10/20/1999 | DWS       | 104' From BM Tree, 52' From Stake #1  | 99.7      | 8            | 24                 | 8.6                      | 135.6           | 100.3              | 90.0               |
| 34     | 10/20/1999 | DWS       | 150' From BM Tree, 98' From Stake #1  | 99.7      | 8            | 24                 | 9.2                      | 132.4           | 97.9               | 90.0               |
| 35     | 10/20/1999 | DWS       | 197' From BM Tree, 40' From Stake #2  | 99.7      | 8            | 24                 | 10.2                     | 130.4           | 96.4               | 90.0               |
| 36     | 10/20/1999 | DWS       | 204' From BM Tree, 87' From Stake #2  | 99.7      | 8            | 24                 | 11.3                     | 127.8           | 94.5               | 90.0               |
| 37     | 10/20/1999 | DWS       | 248' From BM Tree, 107' From Stake #2 | 99.7      | 8            | 24                 | 8.5                      | 133.2           | 98.5               | 90.0               |
| 38     | 10/20/1999 | DWS       | 278' From BM Tree, 140' From Stake #2 | 99.7      | 8            | 24                 | 8.2                      | 125.6           | 92.9               | 90.0               |
| 39     | 10/20/1999 | DWS       | 282' From BM Tree, 112' From Stake #2 | 99.7      | 8            | 24                 | 10.0                     | 127.7           | 94.4               | 90.0               |
| 40     | 10/20/1999 | DWS       | 273' From BM Tree, 72' From Stake #2  | 99.7      | 8            | 24                 | 10.1                     | 126.6           | 93.6               | 90.0               |
| 41     | 10/20/1999 | DWS       | 241' From BM Tree, 46' From Stake #2  | 99.7      | 8            | 24                 | 9.3                      | 129.7           | 95.9               | 90.0               |

ELEVATION NOTES:

COMMENTS:

## LABORATORY COMPACTION TEST REFERENCE

| SAMPLE/<br>CURVE # | DATE RECEIVED | SAMPLE SOURCE   | SOIL DESCRIPTION | TYPE OF TEST | METHOD | OPTIMUM MOISTURE CONTENT PERCENT | MAXIMUM DRY DENSITY PCF |
|--------------------|---------------|-----------------|------------------|--------------|--------|----------------------------------|-------------------------|
| 24                 | 10/08/1999    | SE CR INPLACE E | BARRIER          | ASTM D-1557  | C      | 7.5                              | 135.2                   |

COMMENTS:

PROJECT:  
CLIENT :JOB NUMBER: 99758  
PAGE 1

## FIELD DENSITY TEST RESULTS

| TEST # | TEST DATE  | TECH INIT | TEST LOCATION                      | ELEV FEET | DEPTH INCHES | SAMPLE/<br>CURVE # | --- IN PLACE ---         |                 | COMPACTION PERCENT | REQUIRED COMPACTION |
|--------|------------|-----------|------------------------------------|-----------|--------------|--------------------|--------------------------|-----------------|--------------------|---------------------|
|        |            |           |                                    |           |              |                    | MOISTURE CONTENT PERCENT | DRY DENSITY PCF |                    |                     |
| 42     | 10/22/1999 | SAA       | 13' Stake 3, 94' Monitoring Well   | 99.6      | 8            | 26                 | 10.0                     | 124.3           | 92.7               | 90.0                |
| 43     | 10/22/1999 | SAA       | 46' Stake 3, 123' Monitoring Well  | 99.6      | 8            | 26                 | 10.9                     | 123.1           | 91.8               | 90.0                |
| 44     | 10/22/1999 | SAA       | 104' Stake 3, 144' Monitoring Well | 99.6      | 8            | 26                 | 10.4                     | 127.7           | 95.3               | 90.0                |
| 45     | 10/22/1999 | SAA       | 145' Stake 3, 165' Monitoring Well | 99.6      | 8            | 26                 | 11.3                     | 127.6           | 95.2               | 90.0                |
| 46     | 10/22/1999 | SAA       | 226' Stake 3, 246' Monitoring Well | 99.6      | 8            | 26                 | 11.4                     | 124.0           | 92.5               | 90.0                |
| 47     | 10/22/1999 | SAA       | 202' Stake 3, 191' Monitoring Well | 98.8      | 8            | 26                 | 10.2                     | 123.0           | 91.7               | 90.0                |
| 48     | 10/22/1999 | SAA       | 229' Stake 3, 196' Monitoring Well | 98.8      | 8            | 26                 | 9.6                      | 127.7           | 95.3               | 90.0                |
| 49     | 10/22/1999 | SAA       | 192' Stake 3, 146' Monitoring Well | 98.8      | 8            | 26                 | 11.1                     | 124.6           | 92.9               | 90.0                |
| 50     | 10/22/1999 | SAA       | 166' Stake 3, 136' Monitoring Well | 98.8      | 8            | 26                 | 10.1                     | 126.4           | 94.3               | 90.0                |
| 51     | 10/22/1999 | SAA       | 116' Stake 3, 106' Monitoring Well | 98.8      | 8            | 26                 | 8.8                      | 129.5           | 96.6               | 90.0                |
| 52     | 10/22/1999 | SAA       | 144' Stake 3, 66' Monitoring Well  | 98.8      | 8            | 26                 | 10.2                     | 127.9           | 95.4               | 90.0                |
| 53     | 10/22/1999 | SAA       | 146' Stake 3, 48' Monitoring Well  | 98.8      | 8            | 26                 | 9.8                      | 126.0           | 94.0               | 90.0                |
| 54     | 10/22/1999 | SAA       | 84' Stake 3, 19' Monitoring Well   | 98.8      | 8            | 26                 | 10.1                     | 122.6           | 91.4               | 90.0                |

ELEVATION NOTES:

COMMENTS:

## LABORATORY COMPACTION TEST REFERENCE

| SAMPLE/<br>CURVE # | DATE RECEIVED | SAMPLE SOURCE | SOIL DESCRIPTION | TYPE OF TEST | METHOD | OPTIMUM                  | MAXIMUM         |
|--------------------|---------------|---------------|------------------|--------------|--------|--------------------------|-----------------|
|                    |               |               |                  |              |        | MOISTURE CONTENT PERCENT | DRY DENSITY PCF |
| 26                 | 10/08/1999    | Sawyer Rd Pit | Barrier N TP 8'  | ASTM D-1557  | C      | 10.0                     | 134.0           |

COMMENTS:

PROJECT: Asbestos Landfill Cover  
 CLIENT : Soderberg Construction

JOB NUMBER: 99758  
 PAGE 1

## FIELD DENSITY TEST RESULTS

| TEST # | TEST DATE  | TECH INIT | TEST LOCATION           | ELEV FEET | DEPTH INCHES | SAMPLE/ CURVE # | --- IN PLACE ---         |                 | COMPACTION PERCENT | REQUIRED COMPACTION PERCENT |
|--------|------------|-----------|-------------------------|-----------|--------------|-----------------|--------------------------|-----------------|--------------------|-----------------------------|
|        |            |           |                         |           |              |                 | MOISTURE CONTENT PERCENT | DRY DENSITY PCF |                    |                             |
| 55     | 10/26/1999 | SAA       | 39' Well, 143' Stake 3  | 99.6      | 8            | 26              | 11.5                     | 121.4           | 90.6               | 90.0                        |
| 56     | 10/26/1999 | SAA       | 55' Well, 154' Stake 3  | 99.6      | 8            | 26              | 11.1                     | 124.1           | 92.6               | 90.0                        |
| 57     | 10/26/1999 | SAA       | 106' Well, 182' Stake 3 | 99.6      | 8            | 26              | 11.8                     | 124.5           | 92.9               | 90.0                        |
| 58     | 10/26/1999 | SAA       | 80' Well, 120' Stake 3  | 99.6      | 8            | 26              | 11.5                     | 122.6           | 91.4               | 90.0                        |
| 59     | 10/26/1999 | SAA       | 130' Well, 140' Stake 3 | 99.6      | 8            | 26              | 10.4                     | 124.9           | 93.2               | 90.0                        |
| 60     | 10/26/1999 | SAA       | 140' Well, 200' Stake 3 | 99.6      | 8            | 26              | 9.6                      | 123.1           | 91.8               | 90.0                        |
| 61     | 10/26/1999 | SAA       | 182' Well, 220' Stake 3 | 99.6      | 8            | 26              | 10.7                     | 125.1           | 93.3               | 90.0                        |
| 62     | 10/26/1999 | SAA       | 227' Well, 257' Stake 3 | 99.6      | 8            | 26              | 10.4                     | 127.0           | 94.7               | 90.0                        |
| 63     | 10/26/1999 | SAA       | 235' Well, 278' Stake 3 | 99.6      | 8            | 26              | 9.9                      | 129.0           | 96.2               | 90.0                        |
| 64     | 10/26/1999 | SAA       | 273' Well, 295' Stake 3 | 99.6      | 8            | 26              | 11.1                     | 125.2           | 93.4               | 90.0                        |

ELEVATION NOTES:

COMMENTS:

## LABORATORY COMPACTION TEST REFERENCE

| SAMPLE/ CURVE # | DATE RECEIVED | SAMPLE SOURCE | SOIL DESCRIPTION | TYPE OF TEST | METHOD | OPTIMUM                  | MAXIMUM         |
|-----------------|---------------|---------------|------------------|--------------|--------|--------------------------|-----------------|
|                 |               |               |                  |              |        | MOISTURE CONTENT PERCENT | DRY DENSITY PCF |
| 26              | 10/08/1999    | Sawyer Rd Pit | Barrier N TP 8'  | ASTM D-1557  | C      | 10.0                     | 134.0           |

COMMENTS:

**SODERBERG CO., INC.**

90 Sincock Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfj.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/26/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

Item #: **5.010A14** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted field density test results for select bedding (tests # 458 thru 488).  
Also submitted field density test results for asbestos landfill and East Loring  
underground transformer site (test # 1 thru 29).*

Date Returned: BEI Doc. #:

PROJECT:  
CLIENT :

JOB NUMBER: 99758  
PAGE 1

## FIELD DENSITY TEST RESULTS

| TEST # | TEST DATE  | TECH INIT | TEST LOCATION    | ELEV FEET | DEPTH INCHES | SAMPLE/<br>CURVE # | --- IN PLACE ---         |                 | COMPACTION PERCENT | REQUIRED COMPACTION |
|--------|------------|-----------|------------------|-----------|--------------|--------------------|--------------------------|-----------------|--------------------|---------------------|
|        |            |           |                  |           |              |                    | MOISTURE CONTENT PERCENT | DRY DENSITY PCF |                    |                     |
| 1      | 8/20/1999  | DMH       | UTS Site         | 99.5      | 12           | 3                  | 10.4                     | 124.8           | 88.3               | 90.0                |
| 2      | 8/20/1999  | DMH       | 50' From #1      | 99.5      | 12           | 3                  | 10.4                     | 129.1           | 91.3               | 90.0                |
| 3      | 10/05/1999 | SAA       | #1 Per Sketch 1  | 98.8      | 8            | 3                  | 11.2                     | 124.6           | 88.1               | 90.0                |
| 4      | 10/05/1999 | SAA       | Retest #3        | 98.8      | 8            | 3                  | 11.1                     | 124.7           | 88.2               | 90.0                |
| 5      | 10/05/1999 | SAA       | #2 Per Sketch 1  | 98.8      | 8            | 3                  | 11.9                     | 121.8           | 86.2               | 90.0                |
| 6      | 10/05/1999 | SAA       | #3 Per Sketch 1  | 98.8      | 8            | 3                  | 12.0                     | 125.6           | 88.8               | 90.0                |
| 7      | 10/05/1999 | SAA       | Retest #6        | 98.8      | 8            | 3                  | 10.6                     | 125.2           | 88.6               | 90.0                |
| 8      | 10/05/1999 | SAA       | #4 Per Sketch 1  | 98.8      | 8            | 3                  | 11.2                     | 123.6           | 87.4               | 90.0                |
| 9      | 10/05/1999 | SAA       | #5 Per Sketch 1  | 98.8      | 8            | 3                  | 9.6                      | 125.4           | 88.7               | 90.0                |
| 10     | 10/05/1999 | SAA       | #6 Per Sketch 1  | 98.8      | 8            | 3                  | 9.9                      | 128.1           | 90.6               | 90.0                |
| 11     | 10/05/1999 | SAA       | #7 Per Sketch 1  | 98.8      | 8            | 3                  | 11.3                     | 120.6           | 85.3               | 90.0                |
| 12     | 10/05/1999 | SAA       | #8 Per Sketch 1  | 98.8      | 8            | 3                  | 11.0                     | 125.4           | 88.7               | 90.0                |
| 13     | 10/06/1999 | SAA       | #9 Per Sketch 1  | 98.8      | 8            | 3                  | 13.9                     | 113.9           | 80.6               | 90.0                |
|        | 10/06/1999 | SAA       | #10 Per Sketch 1 | 98.8      | 8            | 3                  | 10.1                     | 127.2           | 90.0               | 90.0                |
| 15     | 10/06/1999 | SAA       | #11 Per Sketch 1 | 98.8      | 8            | 3                  | 10.6                     | 126.6           | 89.6               | 90.0                |
| 16     | 10/06/1999 | SAA       | #12 Per Sketch 1 | 98.8      | 8            | 3                  | 11.2                     | 121.9           | 86.2               | 90.0                |
| 17     | 10/06/1999 | SAA       | #13 Per Sketch 1 | 98.8      | 8            | 3                  | 10.5                     | 126.1           | 89.2               | 90.0                |
| 18     | 10/06/1999 | SAA       | Retest #9        | 98.8      | 8            | 3                  | 10.2                     | 125.8           | 89.0               | 90.0                |
| 19     | 10/06/1999 | SAA       | Retest #7        | 98.8      | 8            | 3                  | 12.2                     | 122.2           | 86.4               | 90.0                |
| 20     | 10/12/1999 | SAA       | Retest #5        | 98.8      | 8            | 17                 | 11.6                     | 124.4           | 90.9               | 90.0                |
| 21     | 10/12/1999 | SAA       | Retest #19       | 98.8      | 8            | 17                 | 11.2                     | 127.8           | 93.4               | 90.0                |
| 22     | 10/12/1999 | SAA       | Retest #11       | 98.8      | 8            | 17                 | 12.5                     | 120.5           | 88.0               | 90.0                |
| 23     | 10/12/1999 | SAA       | Retest #22       | 98.8      | 8            | 17                 | 11.6                     | 123.3           | 90.1               | 90.0                |
| 24     | 10/12/1999 | SAA       | Retest #13       | 98.8      | 8            | 17                 | 13.2                     | 120.4           | 88.0               | 90.0                |
| 25     | 10/12/1999 | SAA       | Retest #24       | 98.8      | 8            | 17                 | 12.9                     | 120.0           | 87.7               | 90.0                |
| 26     | 10/12/1999 | SAA       | Retest #16       | 98.8      | 8            | 17                 | 11.0                     | 129.3           | 94.5               | 90.0                |
| 27     | 10/12/1999 | SAA       | Retest #25       | 98.8      | 8            | 17                 | 13.5                     | 120.0           | 87.7               | 90.0                |
| 28     | 10/12/1999 | SAA       | Retest #27       | 98.8      | 8            | 17                 | 13.3                     | 122.0           | 89.1               | 90.0                |
| 29     | 10/12/1999 | SAA       | Retest #28       | 98.8      | 8            | 17                 | 12.8                     | 123.3           | 90.1               | 90.0                |

ELEVATION NOTES:

COMMENTS:

LABORATORY COMPACTION TEST REFERENCE

S.W. COLE, ENGINEERING, INC

PROJECT:  
CLIENT :

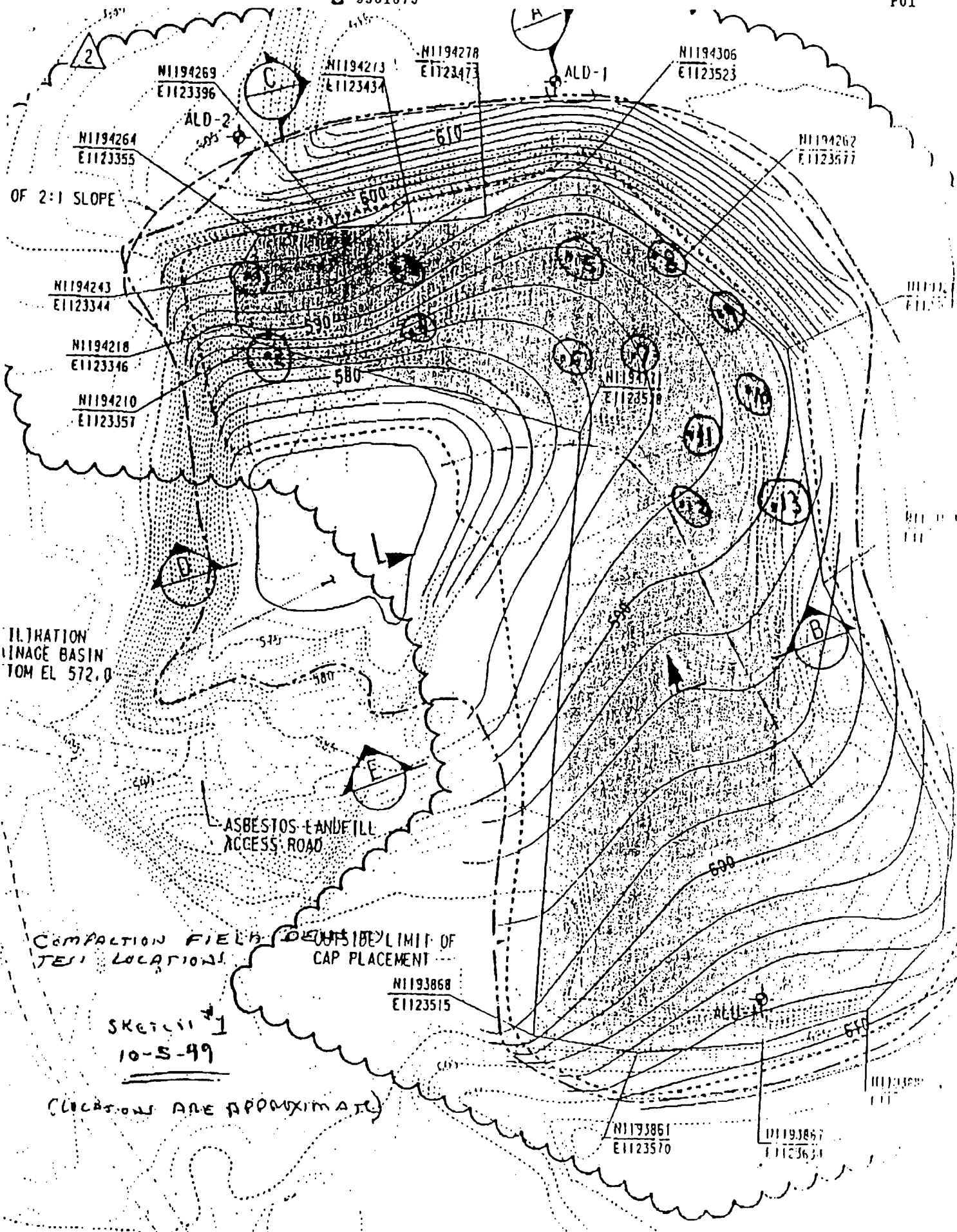
JOB NUMBER: 99758  
PAGE 2

| SAMPLE/<br>CURVE<br># | DATE<br>RECEIVED | SAMPLE<br>SOURCE | SOIL<br>DESCRIPTION | TYPE OF<br>TEST | METHOD | OPTIMUM<br>MOISTURE<br>CONTENT<br>PERCENT | MAXIMUM<br>DRY<br>DENSITY<br>PCF |
|-----------------------|------------------|------------------|---------------------|-----------------|--------|---|----------------------------------|
| 3                     | 8/25/1999        | East Loring UTS  | Barrier             | ASTM D-1557     | C      | 7.0                                       | 141.3                            |
| 17                    | 10/08/1999       | E Face Source    | Barrier Soil        | ASTM D-1557     | C      | 6.7                                       | 136.8                            |

COMMENTS:

9501873

P01



**SODERBERG CO., INC.**

90 Shcock Street - Caribou, Maine 04736  
Phone (207) 498 6300 - Fax (207) 498 6535 e-mail sciencem@mlx.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 11-9-99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB S1R Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

Item #: 5.010 A16 SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: Preliminary Results Onsite/Offsite Testing

Originator: Soderberg Status: Submitted for approval

Notes: • SUBMITTING GRADATION AND MOISTURE DENSITY  
RELATIONSHIP DATA FOR ASBESTOS LANDFILL  
BARRIER SOIL SAMPLES 32 & 33  
• SUBMITTING LAB MOISTURE RESULTS FOR SAMPLES  
34, 35, 36 & 37

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N  
 ASTM C-117, C-136

Project No. 99758  
 Date 10/21/99

Project ASBESTOS LANDFILL  
 Client SODERBERG CONSTRUCTION  
 Sample No. 32, BARRIER, SAWYER RD PIT

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 97.6                   |                                 |
| 1 1/2 "           | 95.2                   |                                 |
| 1 "               | 92.4                   |                                 |
| 3/4 "             | 89.6                   |                                 |
| 1/2 "             | 85.1                   |                                 |
| 1/4 "             | 76.7                   |                                 |
| # 4               | 73.3                   | 35-100                          |
| # 10              | 65.6                   |                                 |
| # 20              | 58.9                   |                                 |
| # 40              | 54.2                   |                                 |
| # 60              | 50.4                   |                                 |
| # 100             | 47.0                   |                                 |
| # 200             | 44.1                   |                                 |

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C  
 Maximum Dry Density : 134.5 pcf  
 Optimum Moisture Content : 7.8 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 10/28/99

Project ASBESTOS LANDFILL CLOSURE  
Client SODERBERG CONSTRUCTION  
Sample No. 33, BARRIER, SAWYER ROAD PIT

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 99.1                   |                                 |
| 1 1/2 "           | 97.6                   |                                 |
| 1 "               | 93.5                   |                                 |
| 3/4 "             | 90.5                   |                                 |
| 1/2 "             | 84.5                   |                                 |
| 1/4 "             | 76.3                   |                                 |
| # 4               | 73.5                   |                                 |
| # 10              | 65.6                   |                                 |
| # 20              | 58.8                   |                                 |
| # 40              | 54.2                   |                                 |
| # 60              | 50.2                   |                                 |
| # 100             | 46.2                   |                                 |
| # 200             | 41.8                   | 35-100                          |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 134.6 pcf  
Optimum Moisture Content : 7.3 %

SAMPLED 10/26/99

# S.W. COLE

ENGINEERING, INC.

91 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501

Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403  
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840  
33 Londonderry Rd., #6, Londonderry, NH 03053 TEL (603) 437-9600 FAX (603) 437-9656  
RR 3, Box 7230, Chirra Road, Winslow, ME 04901 TEL (207) 873-4283 FAX (207) 873-4977

October 29, 1999

Mr. Keith Brown  
SODERBERG CONSTRUCTION  
Irving Complex, Washburn Rd.  
Caribou, ME 04736

**RE: Soil Moisture Content Results  
Asbestos Landfill  
SWC Job No. #99-758**

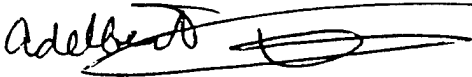
Dear Keith:

The following laboratory results were obtained from the moisture content tests that were performed on October 26, 1999.

| SAMPLE | FIELD DENSITY | FIELD RESULTS | LAB RESULTS |
|--------|---------------|---------------|-------------|
| 34     | FD #61        | 10.5%         | 10.7%       |
| 35     | FD #62        | 11.1%         | 10.4%       |
| 36     | FD #57        | 11.8%         | 11.3%       |
| 37     | FD #59        | 10.4%         | 10.4%       |

Should you have any questions, please feel free to contact me.

Sincerely,



Adelbert W. Sutherland  
S. W. COLE ENGINEERING, INC.

AWS:dmh

**SODERBERG CO., INC.**

90 Sincok Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfz.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/26/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

Item #: **5.010A13** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted gradation and moisture density relationship for select bedding sample # 152. Also submitted gradation and moisture density data for asbestos landfill barrier soil samples #5 & 6.*

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N  
ASTM C-117, C-136

Project No. 99758  
Date 10/07/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 5, BARRIER, E FACE OF SOURCE

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 94.0                   |                                 |
| 1 1/2 "           | 91.6                   |                                 |
| 1 "               | 86.5                   |                                 |
| 3/4 "             | 82.9                   |                                 |
| 1/2 "             | 78.3                   |                                 |
| 1/4 "             | 69.4                   |                                 |
| # 4               | 66.0                   | 35-100                          |
| # 10              | 58.4                   |                                 |
| # 20              | 52.4                   |                                 |
| # 40              | 48.4                   |                                 |
| # 60              | 44.6                   |                                 |
| # 100             | 40.6                   |                                 |
| # 200             | 35.0                   |                                 |

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C  
Maximum Dry Density : 132.2 pcf  
Optimum Moisture Content : 8.7 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N  
ASTM C-117, C-136

Project No. 99758  
Date 10/07/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 6, BARRIER, W FACE OF SOURCE

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3/4 "             | 100.0                  |                                 |
| 2 "               | 100.0                  |                                 |
| 1 1/2 "           | 98.3                   | 35-100                          |
| 1 "               | 93.4                   |                                 |
| 3/4 "             | 89.0                   |                                 |
| 1/2 "             | 85.4                   |                                 |
| 1/4 "             | 76.8                   |                                 |
| # 4               | 73.2                   |                                 |
| # 10              | 64.8                   |                                 |
| # 20              | 58.0                   |                                 |
| # 40              | 53.2                   |                                 |
| # 60              | 48.9                   |                                 |
| # 100             | 44.4                   |                                 |
| # 200             | 40.0                   |                                 |

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C  
Maximum Dry Density : 134.8 pcf  
Optimum Moisture Content : 7.9 %

**SODERBERG CO., INC.**

90 Sincok Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mf.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 10/12/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

|             |  |           |                                      |
|-------------|--|-----------|--------------------------------------|
| Item #:     | <b>5.010A12</b>  | SpecSect: | SOW 051-SOW-121 Sec. 4.0             |
| Submittal:  | <b><i>Preliminary Results Onsite/Offsite Testing</i></b> |           |                                      |
| Originator: | Soderberg  | Status:   | <b><i>Submitted for approval</i></b> |

|  |
|--|
| Notes: <i>Submitted moisture density data for samples taken from Soderberg Sawyer Road Borrow Pit. These samples are intended for use as material for barrier soil at the asbestos landfill. Submitted samples # 25, 26, 27, 28.</i> |
|--|

|                |             |
|----------------|-------------|
| Date Returned: | BEI Doc. #: |
|----------------|-------------|

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 10/08/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 25, BARRIER, SAWYER RD PIT, N TP 5

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 100.0                  |                                 |
| 1 1/2 "           | 99.7                   |                                 |
| 1 "               | 99.4                   |                                 |
| 3/4 "             | 97.8                   |                                 |
| 1/2 "             | 95.2                   |                                 |
| 1/4 "             | 88.4                   |                                 |
| # 4               | 85.2                   |                                 |
| # 10              | 76.6                   |                                 |
| # 20              | 69.5                   |                                 |
| # 40              | 64.4                   |                                 |
| # 60              | 60.0                   |                                 |
| # 100             | 54.8                   |                                 |
| # 200             | 50.9                   | 35-100                          |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 133.5 pcf  
Optimum Moisture Content : 6.8 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 10/08/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 26, BARRIER, SAWYER RD PIT, N TP 8'

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 98.6                   |                                 |
| 1 1/2 "           | 97.0                   |                                 |
| 1 "               | 92.0                   |                                 |
| 3/4 "             | 88.6                   |                                 |
| 1/2 "             | 86.7                   |                                 |
| 1/4 "             | 79.0                   |                                 |
| # 4               | 75.9                   |                                 |
| # 10              | 67.7                   |                                 |
| # 20              | 60.8                   |                                 |
| # 40              | 56.0                   |                                 |
| # 60              | 51.8                   |                                 |
| # 100             | 47.7                   |                                 |
| # 200             | 42.7                   | 35-100                          |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 134.0 pcf  
Optimum Moisture Content : 10.0 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 10/08/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 27, BARRIER, SAWYER RD PIT - S TP 5'

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 100.0                  |                                 |
| 1 1/2 "           | 99.4                   |                                 |
| 1 "               | 96.7                   |                                 |
| 3/4 "             | 94.0                   |                                 |
| 1/2 "             | 89.6                   |                                 |
| 1/4 "             | 81.6                   |                                 |
| # 4               | 78.8                   |                                 |
| # 10              | 70.9                   |                                 |
| # 20              | 64.0                   |                                 |
| # 40              | 59.1                   |                                 |
| # 60              | 54.6                   |                                 |
| # 100             | 49.4                   |                                 |
| # 200             | 44.9                   | 35-100                          |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 130.0 pcf  
Optimum Moisture Content : 8.6 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 10/08/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 28, BARRIER, SAWYER RD PIT

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 " /             | 100.0                  |                                 |
| 2 "               | 99.2                   |                                 |
| 1 1/2 "           | 95.2                   |                                 |
| 1 "               | 91.7                   |                                 |
| 3/4 "             | 87.9                   |                                 |
| 1/2 "             | 83.0                   |                                 |
| 1/4 "             | 73.1                   |                                 |
| # 4               | 69.3                   |                                 |
| # 10              | 61.6                   |                                 |
| # 20              | 55.0                   |                                 |
| # 40              | 50.5                   |                                 |
| # 60              | 46.5                   |                                 |
| # 100             | 43.1                   |                                 |
| # 200             | 38.8                   | 35-100                          |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 132.5 pcf  
Optimum Moisture Content : 8.3 %

**SODERBERG CO., INC.**

90 Sincoc Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mf.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 10/12/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

Item #: **5.010A10** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted Moisture Density Data for samples taken from East Loring Borrow Source for use as barrier soil at asbestos landfill. Sumbitted samples # 17, 23, 24.*

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 10/08/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 17, BARRIER SOIL, E FACE OF SOURCE

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 97.7                   |                                 |
| 1 1/2 "           | 93.3                   |                                 |
| 1 "               | 90.0                   |                                 |
| 3/4 "             | 86.9                   |                                 |
| 1/2 "             | 82.4                   |                                 |
| 1/4 "             | 74.5                   |                                 |
| # 4               | 71.1                   |                                 |
| # 10              | 62.5                   |                                 |
| # 20              | 55.4                   |                                 |
| # 40              | 50.6                   |                                 |
| # 60              | 46.2                   |                                 |
| # 100             | 42.1                   |                                 |
| # 200             | 37.6                   | 35-100                          |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 136.8 pcf  
Optimum Moisture Content : 6.7 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 10/08/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 23, BARRIER, N END IN PLACE, E LORING

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 100.0                  |                                 |
| 1 1/2 "           | 98.3                   |                                 |
| 1 "               | 95.2                   |                                 |
| 3/4 "             | 92.0                   |                                 |
| 1/2 "             | 84.6                   |                                 |
| 1/4 "             | 76.8                   |                                 |
| # 4               | 73.9                   |                                 |
| # 10              | 66.6                   |                                 |
| # 20              | 60.3                   |                                 |
| # 40              | 55.9                   |                                 |
| # 60              | 51.9                   |                                 |
| # 100             | 47.5                   |                                 |
| # 200             | 42.4                   | 35-100                          |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 130.7 pcf  
Optimum Moisture Content : 10.0 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 10/08/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 24, BARRIER, SE CORNER INPLACE-E LORING

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 6 "               | 100.0                  | 100                             |
| 5 "               | 100.0                  |                                 |
| 4 "               | 100.0                  |                                 |
| 3 "               | 100.0                  |                                 |
| 2 "               | 100.0                  |                                 |
| 1 1/2 "           | 97.7                   |                                 |
| 1 "               | 91.8                   |                                 |
| 3/4 "             | 86.0                   |                                 |
| 1/2 "             | 81.0                   |                                 |
| 1/4 "             | 72.3                   |                                 |
| # 4               | 69.0                   |                                 |
| # 10              | 61.2                   |                                 |
| # 20              | 54.7                   |                                 |
| # 40              | 50.2                   |                                 |
| # 60              | 46.2                   |                                 |
| # 100             | 42.4                   |                                 |
| # 200             | 37.0                   | 35-100                          |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 135.2 pcf  
Optimum Moisture Content : 7.5 %

**SODERBERG CO., INC.**

90 Sincok Street - Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfz.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 8/30/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

|  |                |           |                               |
|--|----------------|-----------|-------------------------------|
| Item #:  | <b>5.010A1</b> | SpecSect: | SOW 051-SOW-121 Sec. 4.0      |
| Submittal: <i>Preliminary Results Onsite/Offsite Testing</i> |                |           |                               |
| Originator:  | Soderberg      | Status:   | <i>Submitted for approval</i> |

|   |
|---|
| Notes: <i>Submitted gradation test results for select bedding samples 110, 116, 117, 118. Submitted moisture/density relationship data for select bedding samples 110, 116, 118. Submitted Barrier soil gradation results for material from the East Loring area adjacent to the Underground Transformer Site (samples # 1 &amp; 3). Submitted Barrier soil moisture/density relationship data for material from the East Loring area adjacent to the Underground Transformer Site (samples # 1 &amp; 3).</i> |
|---|

|                |             |
|----------------|-------------|
| Date Returned: | BEI Doc. #: |
|----------------|-------------|

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
 ASTM C-117, C-136

Project No. 99758  
 Date 08/25/99

Project ASBESTOS LANDFILL  
 Client SODERBERG CONSTRUCTION  
 Sample No. 1, BARRIER, EAST LORING UTS

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications †</u> |
|-------------------|------------------------|---------------------------------|
| 3 "               | 100.0                  |                                 |
| 2 "               | 97.7                   | 100                             |
| 1 1/2 "           | 97.3                   |                                 |
| 1 "               | 95.3                   |                                 |
| 3/4 "             | 93.8                   | 80-100                          |
| 1/2 "             | 91.6                   |                                 |
| 1/4 "             | 88.5                   |                                 |
| # 4               | 87.3                   |                                 |
| # 10              | 83.8                   |                                 |
| # 20              | 80.9                   |                                 |
| # 40              | 78.9                   | 45-85                           |
| # 60              | 77.2                   |                                 |
| # 100             | 75.0                   |                                 |
| # 200             | 72.5 *                 | 30-70                           |

\* Does not meet project specifications

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
 Maximum Dry Density : 132.1 pcf  
 Optimum Moisture Content : 8.4 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 08/25/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 3, BARRIER, EAST LORING UTS

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 3 "               | 100.0                  | 100                             |
| 2 "               | 97.9                   |                                 |
| 1 1/2 "           | 97.3                   |                                 |
| 1 "               | 92.3                   |                                 |
| 3/4 "             | 89.0                   | 80-100                          |
| 1/2 "             | 85.2                   |                                 |
| 1/4 "             | 78.3                   |                                 |
| # 4               | 75.3                   |                                 |
| # 10              | 67.5                   |                                 |
| # 20              | 61.0                   |                                 |
| # 40              | 56.1                   | 45-85                           |
| # 60              | 51.8                   |                                 |
| # 100             | 47.4                   |                                 |
| # 200             | 42.0                   | 30-70                           |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 141.3 pcf  
Optimum Moisture Content : 7.0 %

**SODERBERG CO., INC.**

90 Sincok Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scieme@mf.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 10/7/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

Item #: **5.010A3** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted Source Results for East Loring Borrow Area. Submitting Gradation Results for Samples 1,2,3,& 4. Submitted Moisture Density Test Results for Samples 1 & 3.*

Date Returned:

BEI Doc. #:

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N  
ASTM C-117, C-136

Project No. 99758  
Date 08/25/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 1, BARRIER, EAST LORING UTS

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 3 "               | 100.0                  | <del>100</del>                  |
| 2 "               | 97.7                   |                                 |
| 1 1/2 "           | 97.3                   |                                 |
| 1 "               | 95.3                   | <del>80-100</del>               |
| 3/4 "             | 93.8                   |                                 |
| 1/2 "             | 91.6                   |                                 |
| 1/4 "             | 88.5                   |                                 |
| # 4               | 87.3                   |                                 |
| # 10              | 83.8                   |                                 |
| # 20              | 80.9                   | <del>45-85</del>                |
| # 40              | 78.9                   |                                 |
| # 60              | 77.2                   |                                 |
| # 100             | 75.0                   |                                 |
| # 200             | 72.5 *                 | <del>30-70</del> 35(MIN)        |

\* Does not meet project specifications.

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C  
Maximum Dry Density : 132.1 pcf  
Optimum Moisture Content : 8.4 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N  
ASTM C-117, C-136

Project No. 99758  
Date 08/25/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 2, BARRIER, EAST LORING UTS

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 3 "               | 100.0                  | <del>100</del>                  |
| 2 "               | 97.4                   |                                 |
| 1 1/2 "           | 93.8                   |                                 |
| 1 "               | 88.7                   | <del>80-100</del>               |
| 3/4 "             | 82.9                   |                                 |
| 1/2 "             | 78.0                   |                                 |
| 1/4 "             | 70.1                   |                                 |
| # 4               | 67.1                   |                                 |
| # 10              | 59.9                   |                                 |
| # 20              | 53.4                   | <del>45-85</del>                |
| # 40              | 48.4                   |                                 |
| # 60              | 43.9                   |                                 |
| # 100             | 39.2                   |                                 |
| # 200             | 33.7                   | <del>30-70</del> 35(min)        |

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION  
ASTM C-117, C-136

Project No. 99758  
Date 08/25/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 3, BARRIER, EAST LORING UTS

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 3 "               | 100.0                  | -100                            |
| 2 "               | 97.9                   |                                 |
| 1 1/2 "           | 97.3                   |                                 |
| 1 "               | 92.3                   | <del>80-100</del>               |
| 3/4 "             | 89.0                   |                                 |
| 1/2 "             | 85.2                   |                                 |
| 1/4 "             | 78.3                   |                                 |
| # 4               | 75.3                   |                                 |
| # 10              | 67.5                   |                                 |
| # 20              | 61.0                   | <del>45-85</del>                |
| # 40              | 56.1                   |                                 |
| # 60              | 51.8                   |                                 |
| # 100             | 47.4                   |                                 |
| # 200             | 42.0                   | <del>30-70</del> 35(min)        |

MOISTURE - DENSITY TEST

ASTM D-1557 Method C  
Maximum Dry Density : 141.3 pcf  
Optimum Moisture Content : 7.0 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N  
ASTM C-117, C-136

Project No. 99758  
Date 08/25/99

Project ASBESTOS LANDFILL  
Client SODERBERG CONSTRUCTION  
Sample No. 4, BARRIER, EAST LORING UTS

| <u>Sieve Size</u> | <u>Percent Passing</u> | <u>PROJECT Specifications %</u> |
|-------------------|------------------------|---------------------------------|
| 3 "               | 100.0                  | -100                            |
| 2 "               | 95.7                   |                                 |
| 1 1/2 "           | 89.7                   |                                 |
| 1 "               | 83.7                   | <del>80-100</del>               |
| 3/4 "             | 78.9                   |                                 |
| 1/2 "             | 73.9                   |                                 |
| 1/4 "             | 67.6                   |                                 |
| # 4               | 64.9                   |                                 |
| # 10              | 58.4                   |                                 |
| # 20              | 53.0                   | <del>45-85</del>                |
| # 40              | 48.9                   |                                 |
| # 60              | 45.3                   |                                 |
| # 100             | 41.8                   |                                 |
| # 200             | 36.8                   | <del>30-70</del> 35(MIN)        |

**SODERBERG CO., INC.**

90 Sincok Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfz.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 10/26/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

Item #: **5.010A15** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted lab moisture test results for moisture samples of select bedding and barrier soil.*

SET DATED 10-8-99  
SET DATED 10-12-99  
SET DATED 10-21-99

Date Returned:

BEI Doc. #:

# S.W. COLE

ENGINEERING, INC.  
GEOTECHNICAL CONSULTANTS

161 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501

Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403  
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840

October 8, 1999

Mr. Keith Brown  
Soderberg Construction  
Irving Complex, Washburn Road  
Caribou, ME 04736

**RE: Soil Moisture Content Results  
Asbestos Landfill  
SWC Job No. #99-758**

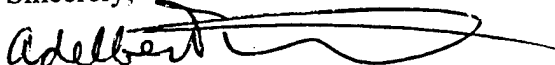
Dear Keith:

The following laboratory results were obtained from the soil samples submitted on October 5<sup>th</sup> and 6<sup>th</sup>, 1999.

| SAMPLE # | LAB RESULT |
|----------|------------|
| 7        | 15.2%      |
| 8        | 11.1%      |
| 9        | 13.6%      |
| 10       | 10.7%      |
| 11       | 11.9%      |
| 12       | 11.0%      |
| 13       | 12.7%      |
| 14       | 11.1%      |
| 15       | 12.5%      |
| 16       | 10.4%      |
| 18       | 12.6%      |
| 19       | 10.4%      |
| 20       | 15.3%      |
| 21       | 13.6%      |
| 22       | 13.3%      |

Should you have any questions, please feel free to contact me.

Sincerely,



Adelbert W. Sutherland  
S. W. COLE ENGINEERING, INC.

# S.W. COLE

ENGINEERING, INC.  
GEOTECHNICAL CONSULTANTS

161 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501

Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403  
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840

October 21, 1999

Mr. Keith Brown  
SODERBERT CONSTRUCTION  
Irving Complex, Washburn Rd.  
Caribou, ME 04736

**RE: Soil Moisture Content Results  
Asbestos Landfill  
SWC Job No. #99-758**

Dear Keith:

The following laboratory results were obtained from the moisture content tests that were performed on October 20, 1999.

| SAMPLE | IDENTIFICATION | MOISTURE CONTENT |
|--------|----------------|------------------|
| 29     | FD #30         | 10.2%            |
| 30     | FD #34         | 10.1%            |
| 31     | FD #40         | 9.6%             |

Should you have any questions, please feel free to contact me.

Sincerely,



Adelbert W. Sutherland  
S. W. COLE ENGINEERING, INC.

AWS:dmh

**SODERBERG CO., INC.**

90 Sincock Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfj.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 10/12/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

Item #: **5.010A7** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted copy of field moisture test results for samples taken from East Loring borrow source.*

Date Returned:

BEI Doc. #:

# S.W. COLE

ENGINEERING, INC.  
GEOTECHNICAL CONSULTANTS

161 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501

Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403  
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840

October 8, 1999

Mr. Keith Brown  
Soderberg Construction  
Irving Complex, Washburn Road  
Caribou, ME 04736

**RE: Soil Moisture Content Results  
Asbestos Landfill  
SWC Job No. #99-758**

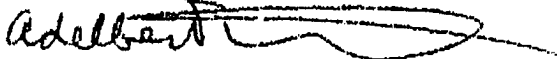
Dear Keith:

The following laboratory results were obtained from the soil samples submitted on October 5<sup>th</sup> and 6<sup>th</sup>, 1999.

| SAMPLE # | LAB RESULT |
|----------|------------|
| 7        | 15.2%      |
| 8        | 11.1%      |
| 9        | 13.6%      |
| 10       | 10.7%      |
| 11       | 11.9%      |
| 12       | 11.0%      |
| 13       | 12.7%      |
| 14       | 11.1%      |
| 15       | 12.5%      |
| 16       | 10.4%      |
| 18       | 12.6%      |
| 19       | 10.4%      |
| 20       | 15.3%      |
| 21       | 13.6%      |
| 22       | 13.3%      |

Should you have any questions, please feel free to contact me.

Sincerely,



Adelbert W. Sutherland  
S. W. COLE ENGINEERING, INC.

**APPENDIX B**  
**MISCELLANEOUS MATERIALS TEST DATA**

**SODERBERG CO., INC.**

90 Sincok Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfx.net

**SUBMITTAL TRANSMITTAL/TRACKING RECORD**

Date Submitted: 7/27/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

Item #: 5.013 SpecSect: Spec 000-SP-02935, Sec. 3.02

Submittal: *Topsoil Nutrient Analysis*

Originator: Soderberg Status: *Submitted for approval*

Notes: *Submitted a copy of the analysis report prepared by Aroostook Testing and Consulting Laboratory. This report contains analysis results of topsoil from both the Soderberg Sawyer Road Pit and the Soderberg Grimes Road Pit.*

Date Returned:

BEI Doc. #:

# aroostook

TESTING & CONSULTING

# laboratory

675 Central Drive, Skyway Industrial Park

Presque Isle, Maine 04769

Phone (207) 762-5771


## ANALYSIS REPORT

| SAMPLE #          | 50758                                | 50561          |    |      |      |     |
|-------------------|--------------------------------------|----------------|----|------|------|-----|
| DESCRIPTION       | Grimesmills                          | Sawyer Rd. Pit |    |      |      |     |
| CLIENT            | Soderburg Construction, Ph# 498-6300 |                |    |      |      |     |
| Attn: Keith Brown | 460 York Street                      |                |    |      |      |     |
| Fax:498-6535      | Caribou, ME 04736                    |                |    |      |      |     |
| RECEIVED          | REPORTED                             |                |    |      |      |     |
|                   | pH                                   | N              | P  | K    | Ca   | Mg  |
| 50758             | 5.6                                  | <10            | 27 | 900  | 1000 | 150 |
| 50561             | 5.2                                  | 16             | 42 | 1100 | 900  | 160 |

## RECOMMENDATIONS:

100 lbs Diamonium Phosphate  
 50 lbs Amonium Nitrate  
 30 lbs Grass Seed per Acre  
 2 tons per Acre of calcitic Lime  
 No Magnesium in Limestone  
 If possible use the Sawyer Rd. Pit Material on top.

G.N. CURRIE II, M.Sc., Ph. D.



G. NOEL CURRIE III, B. Sc.

**SODERBERG CO., INC.**

90 Sincok Street ~ Caribou, Maine 04736  
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@tmfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 8/10/99

To: Bechtel Environmental, Inc.  
RR #1, Box 1724  
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3  
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072  
BEI Subcontract Number 22784-051-SC-121

|             |   |           |                                  |
|-------------|---|-----------|----------------------------------|
| Item #:     | <i>5.003</i><br><i>not numbered</i>                 | SpecSect: | 000-SP-02935, Sect 1.03C         |
| Submittal:  | <i>Seed material and soil additive certificates</i> |           |                                  |
| Originator: | Soderberg   | Status:   | <i>Submitted for information</i> |

Notes: *Submitted certificates of analysis for Special Conservation mix Seed, 18-24-12 fertilizer, and limestone.*

|                |             |
|----------------|-------------|
| Date Returned: | BEI Doc. #: |
|----------------|-------------|

# ProSeeds Marketing, Inc.

13963 Westside Lane South, Jefferson, OR 97352  
 Telephone: (541) 928-9999 Fax: (541) 924-5695

| 83399  | CERTIFICATE OF COMPLIANCE | SPECIAL CONSERVATION GRASS SEED MIXTURE |           |        |             | CERTIFICATE NUMBER |
|--------|---------------------------|---|-----------|--------|-------------|--------------------|
|        |                           | MAX WEED                                | MIN GERM. | P.I.S  | LOT NUMBER  |                    |
| 31.25% | TRIFOLIUM REPENS          | 0.00%                                   | 90.00%    | 89.91% | AUS/FS9093  | 99-8180            |
| 18.75% | PANICUM VIRGATUM          | 0.10%                                   | 75.00%    | 74.91% | 98-9586     | 8734               |
| 18.75% | LOTUS TREFOIL             | 0.19%                                   | 86.00%    | 85.62% | 23942       | 2239               |
| 18.75% | FESTUCA ARUNDINACEA       | 0.08%                                   | 90.00%    | 91.30% | L39-8-F2    | L1086-B            |
| 12.50% | AGROSTIS ALBA             | 0.00%                                   | 90.00%    | 90.63% | L73-8-73RTB | L2716-8            |
| <hr/>  |                           |   |           |        |             |                    |
|        | 100.00%                   | 0.06%                                   | 86.43%    | 86.64% |             |                    |

*Certificate of Compliance*



**AGRICULTURAL LIMESTONE  
High Calcium - Conditioned**

**CHEMICAL SPECIFICATION**

|   |     |       |
|---|-----|-------|
| Calcium - Ca                                  | --- | 37.5% |
| Calcium Carbonate - CaCO <sub>3</sub>         | --- | 93.9% |
| Neutralizing Value                            | --- | 94.0% |
| Alumina - Al <sub>2</sub> O <sub>3</sub>      | --- | .51%  |
| Magnesium Carbonate - MgCO <sub>3</sub>       | --- | .99%  |
| Ferric Oxide - Fe <sub>2</sub> O <sub>3</sub> | --- | 2.93% |
| Silica - SiO <sub>2</sub>                     | --- | .33%  |
| *Moisture - H <sub>2</sub> O                  | --- | 4.1%  |

**PHYSICAL SPECIFICATIONS**

|                  |                     |   |     |   |       |   |       |   |       |   |       |
|------------------|---------------------|---|-----|---|-------|---|-------|---|-------|---|-------|
| Mesh Size - U.S. | 8                   | - | 10  | - | 20    | - | 30    | - | 60    | - | 100   |
| Percent Passing  | 99%                 | - | 98% | - | 89.7% | - | 70.9% | - | 68.2% | - | 59.7% |
| Packaging        | Bulk and 40 Kg Bags |   |     |   |       |   |       |   |       |   |       |

Havelock Lime has been manufacturing the highest grade of calcium aglime available in the maritime region for over 50 years. Our aglime is ground to a fineness which gives optimum performance during the growing year applied, as well as having retention value after the crops are removed.

Havelock's aglime assures that soil calcium depleted by leaching, erosion and/or crop removal will be returned to the soil promoting better overall availability of those nutrients essential for healthy crop growth. Improves the ability of growing crops to utilize them and increases the efficiency of high cost fertilizers.

\*This product is also available dry.

*The technical data contained herein are quoted as typical values and are believed to be reliable. Havelock Lime makes no guarantee of results from use or assumes no obligation of liability in connection with the same.*

HAVELOCK LIME • P.O. Box 59, Havelock, N.B. E0A 1W0 • Phone (506) 534-2311 Fax 534-8241

**1-800-561-LIME**

No MSDS Sheet is required on this product as it is inert.



*Handwritten signature*



*Nutrite Corp.*

CERTIFICATE OF COMPLIANCE

**Proscape**  
**18 - 24 - 12**  
**Professional Fertilizer**

Guaranteed Analysis

|  |      |   |
|--|------|---|
| Total Nitrogen (N) .....               | 18.0 | % |
| 9.30 % Ammoniacal Nitrogen             |      |   |
| 8.27 % Urea Nitrogen*                  |      |   |
| 0.43 % Water Insoluble Nitrogen        |      |   |
| Available Phosphate ( $P_2O_5$ ) ..... | 24.0 | % |
| Soluble Potash ( $K_2O$ ) .....        | 12.0 | % |
| Sulfur (S) .....                       | 3.24 | % |
| Iron (Fe) .....                        | 0.73 | % |
| Magnesium (Mg) .....                   | 0.05 | % |
| Calcium (Ca) .....                     | 0.18 | % |

Primary plant food nutrients derived from: Urea, Sulfur Coated Poly Coated Urea,  
Diammonium Phosphate, Muriate of Potash

Secondary plant food nutrients derived from: Bio Solids

\* Contains 8.30 % Slowly available Urea from: Poly Coated Urea

Thomas D. Nelson

a subsidiary of  
Hydro Agri North America, Inc.  
358 Leeds Junction Road  
Wales, Maine 04280

**APPENDIX C**  
**INSPECTION REPORTS**

# Pre-Final Construction Inspection Checklist

Site Name: Asbestos Landfill Final Cap Date: 9/30/99

General Work Description: Preparation of Subgrade

Attendees: DAVE WOKKINS \_\_\_\_\_  
BYRON BOST \_\_\_\_\_  
GREG LANDSEN \_\_\_\_\_  
BRYANT PETERSON \_\_\_\_\_  
BOB VAUGHAN \_\_\_\_\_  
 \_\_\_\_\_

Punchlist Items or Observations: (Use additional sheets as needed)

| Inspected Item  | Complete?                           |                                     |
|---|-------------------------------------|-------------------------------------|
|   | QC                                  | QA                                  |
| * 1. Common borrow excavated and placed to established subgrade elevations and grades.    | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 2. Subgrade compacted using four passes with a smooth drum compactor.                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Subgrade reworked/replaced as necessary to verify a firm, stable surface.              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Debris and protrusions greater than 3 inches above smoothed surface rolled or removed. | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 5. Surface free of standing water.  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Area(s) inspected:

See attached drawing for subgrade areas to be approved.

Additional Observations: (Use additional sheets as needed)

- 1 STAKE SWALE AND INSTALL COMMON BORROW TO DEPTH ALLOWED
- 2 \* VERIFY SLOPES AND ELEVATIONS
- 3 REMOVE ORGANIC MATTER (STICKS, ETC) AND RE-ROLL
- 4 \_\_\_\_\_

Byron B. Bost  
QA Representative

Bob Vaughan  
QC Representative

# Pre-Final Construction Inspection Checklist

10003

Site Name: Asbestos Landfill Final Cap Date: 10/1/99

General Work Description: Preparation of Subgrade

Attendees: BYRON BEST \_\_\_\_\_  
CARL DIENBAUER \_\_\_\_\_  
JOE DUNCAN \_\_\_\_\_  
BOB VAUGHAN \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Punchlist Items or Observations: (Use additional sheets as needed)

| Inspected Item  | Complete?                           |                                     |
|---|-------------------------------------|-------------------------------------|
|   | QC                                  | QA                                  |
| 1. Common borrow excavated and placed to established subgrade elevations and grades.        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| * 2. Subgrade compacted using four passes with a smooth drum compactor.                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| * 3. Subgrade reworked/replaced as necessary to verify a firm, stable surface.              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| * 4. Debris and protrusions greater than 3 inches above smoothed surface rolled or removed. | <input type="checkbox"/>            | <input type="checkbox"/>            |
| * 5. Surface free of standing water.  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

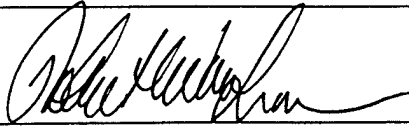
Area(s) inspected:

See attached drawing for subgrade areas to be approved.

Additional Observations: (Use additional sheets as needed)

- 1 \* OK FROM 9/30/99. SEE PREVIOUS PRE-FINAL
- 2 \*\* TO BE RECHECKED 10/2/99.
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

Byron B. Best  
QA Representative

  
QC Representative

# Pre-Final Construction Inspection Checklist

Site Name: Asbestos Landfill Final Cap Date: 10/22/99

General Work Description: Barrier Soil Placement

Attendees: BYRON BEST \_\_\_\_\_  
RICH WITTELER \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Punchlist Items or Observations: (Use additional sheets as needed)

| Inspected Item   | Complete?                           |                                     |
|--|-------------------------------------|-------------------------------------|
|  | QC                                  | QA                                  |
| 1. Barrier soil placed to established grades and elevations.   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Placed in lifts with a maximum thickness of 10 inches in-place, compacted soil per lift for a total of 20 inches of in-place, compacted soil. | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Lifts constructed in such a manner that provides for interface bonding (e.g., scarifying or use of sheep's foot roller)                       | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Testing complete and acceptable.  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|  | <input type="checkbox"/>            | <input type="checkbox"/>            |

Area(s) inspected:

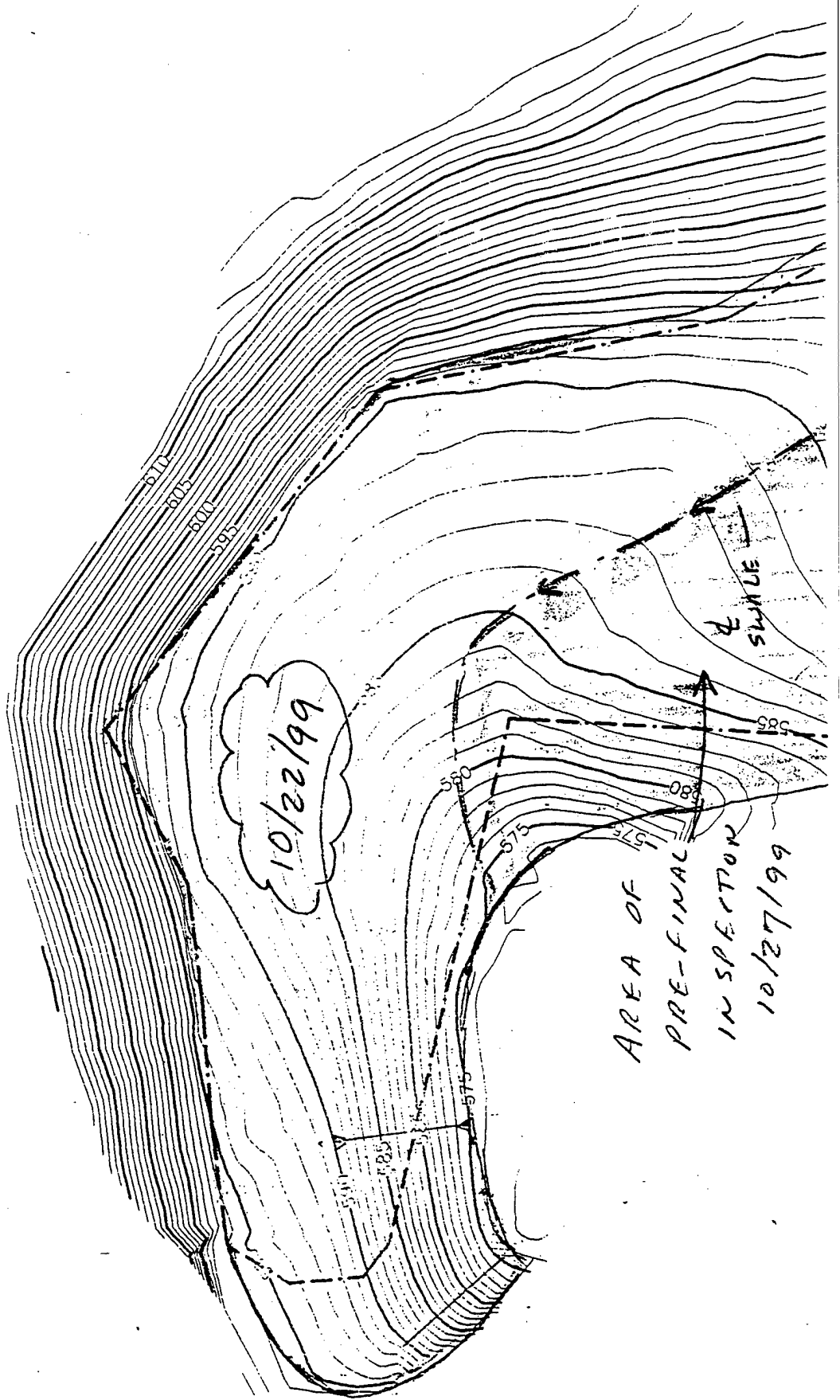
See attached drawing for barrier soil areas to be approved.

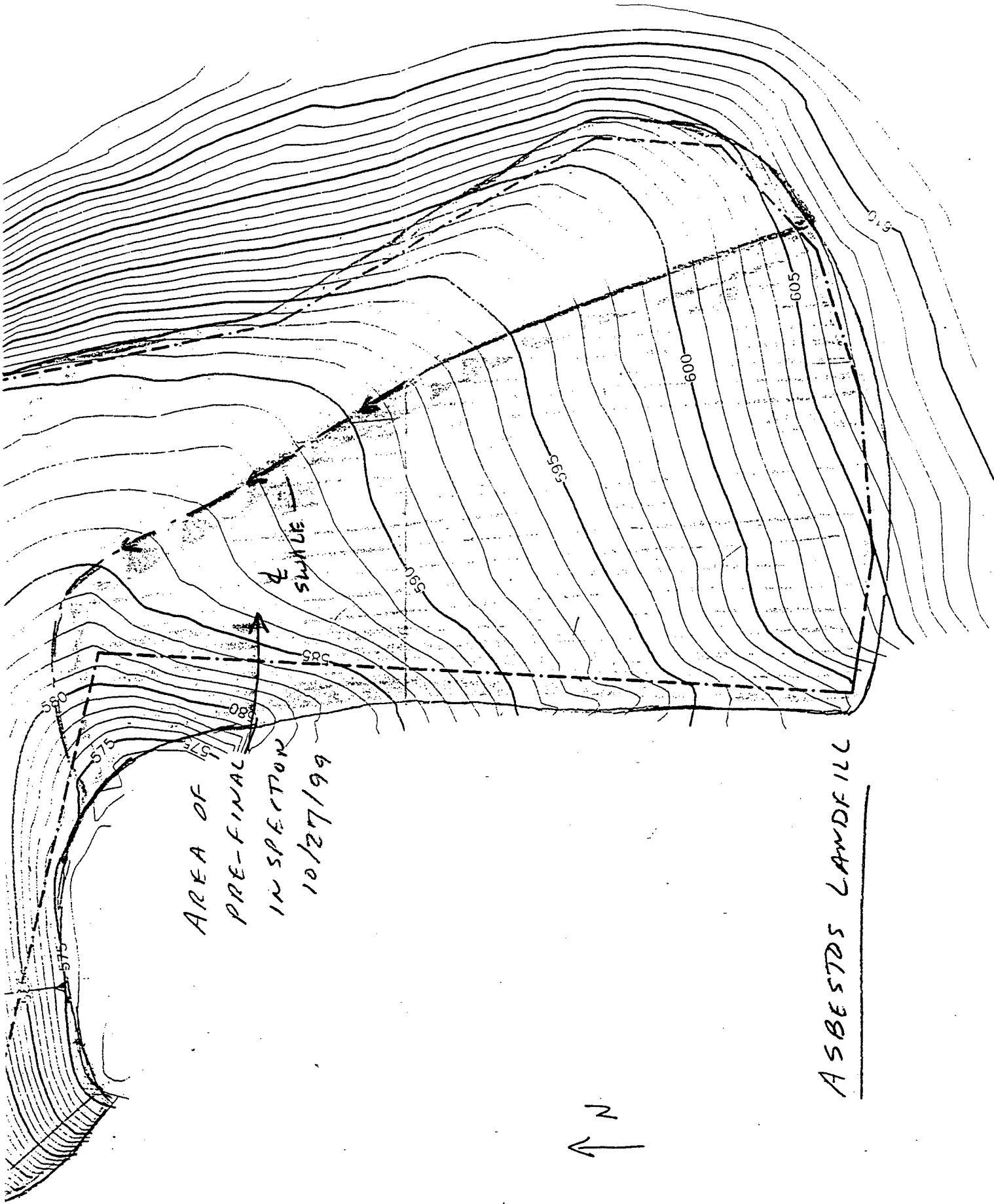
Additional Observations: (Use additional sheets as needed)

- 1) Subject to rework of steep slopes in NW section  
of landfill (refer to sketch) - must be  
reshaped to be no steeper than 3:1
- 42) Subject to final topo

Byron D. Best  
QA Representative

Richard A. Wilson  
QC Representative 10/22/99

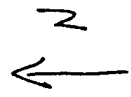




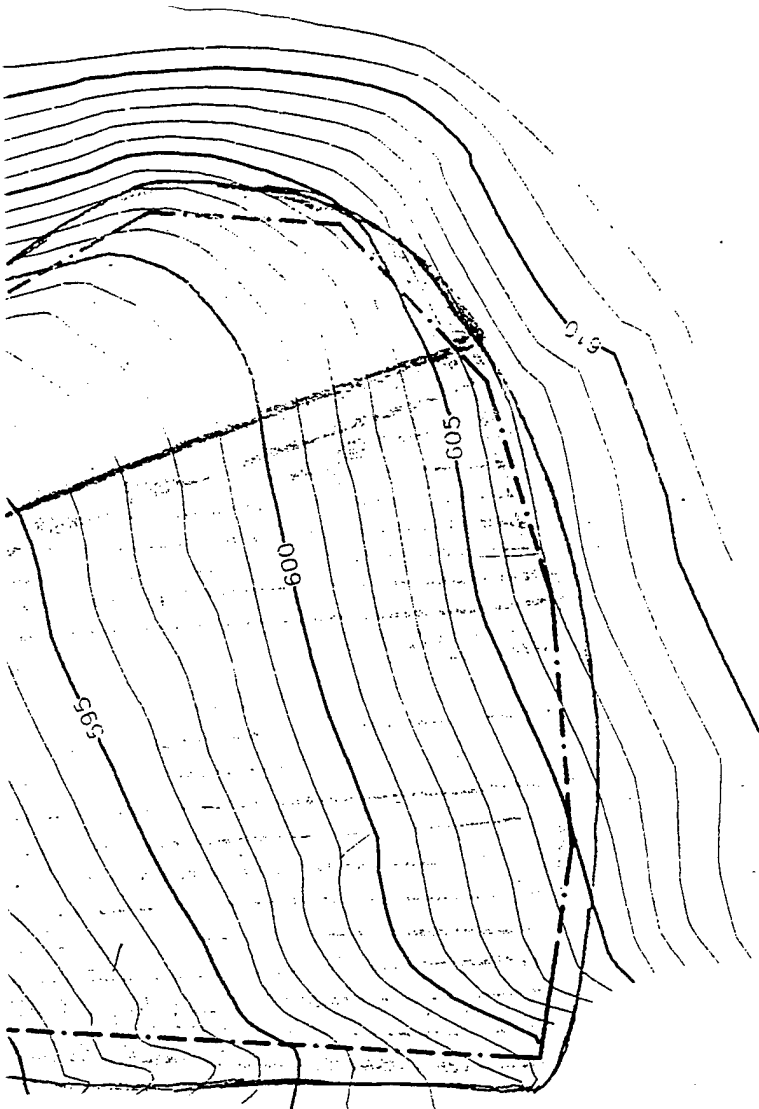
AREA OF  
PRE-FINAL  
INSPECTION  
10/27/99

SWALE

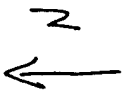
ASBESTOS LANDFILL



10247-1



ASBESTOS LANDFILL



# Pre-Final Construction Inspection Checklist

10247-1

Site Name: Asbestos Landfill Final Cap Date: 10/27/99

General Work Description: Barrier Soil Placement

Attendees: BYRON BEST \_\_\_\_\_  
RICH WHEELER \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Punchlist Items or Observations: (Use additional sheets as needed)

| Inspected Item   | Complete?                           |                                     |
|--|-------------------------------------|-------------------------------------|
|  | QC                                  | QA                                  |
| 1. Barrier soil placed to established grades and elevations.   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Placed in lifts with a maximum thickness of 10 inches in-place; compacted soil per lift for a total of 20 inches of in-place, compacted soil. | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Lifts constructed in such a manner that provides for interface bonding (e.g., scarifying or use of sheep's foot roller)                       | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Testing complete and acceptable.  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|  | <input type="checkbox"/>            | <input type="checkbox"/>            |

Area(s) inspected:

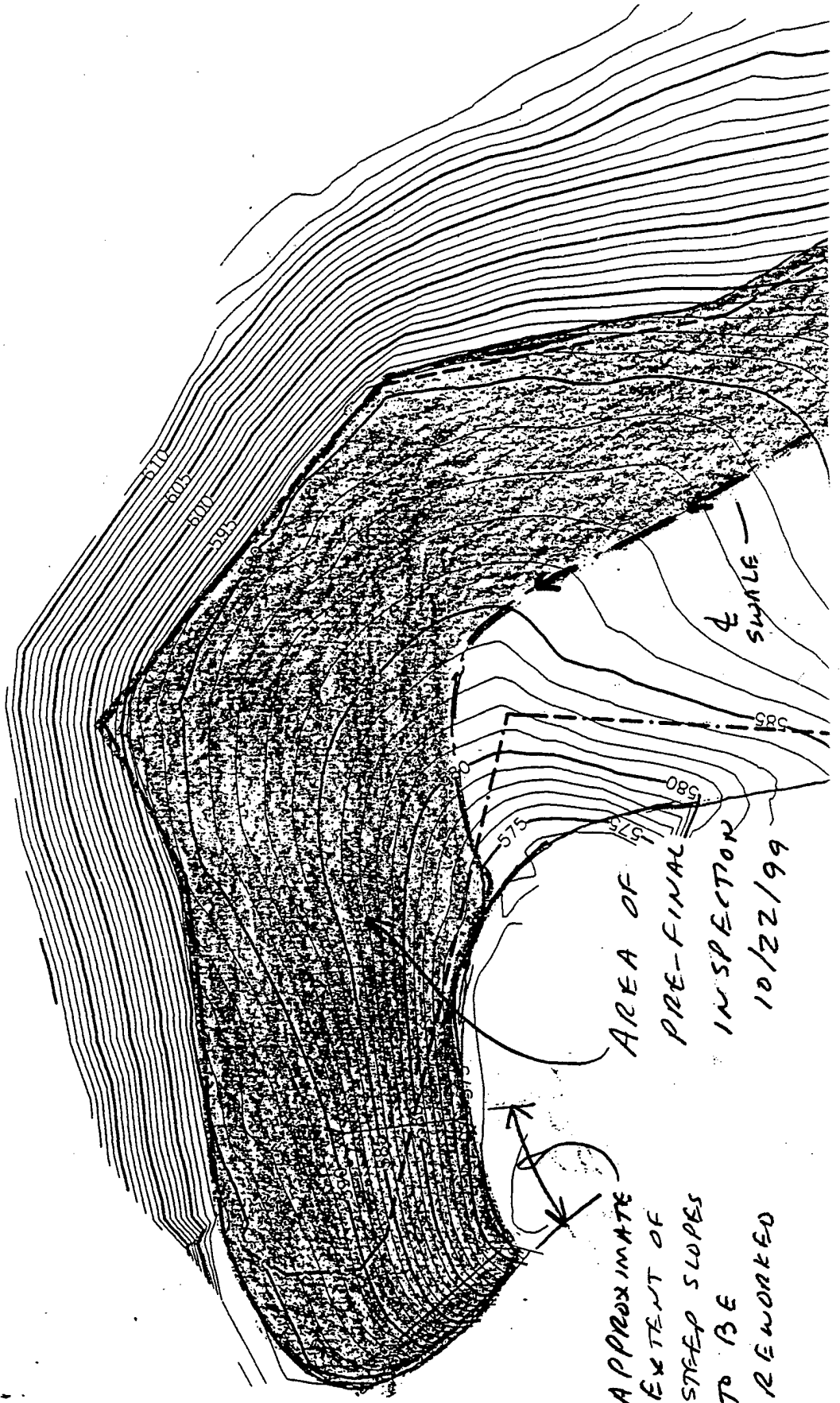
See attached drawing for barrier soil areas to be approved.

Additional Observations: (Use additional sheets as needed)

- 1 SCARIFY SOIL PRIOR TO PLACEMENT OF TOPSOIL
- 2 SUBJECT TO FINAL TOPO
- 3 SUBJECT TO SUCCESSFUL COMPLETION OF LIFT
- 4 INTERFACE BONDING TEST NEAR SOUTH END OF BARRIER SOIL PLACEMENT

Byron Best  
QA Representative

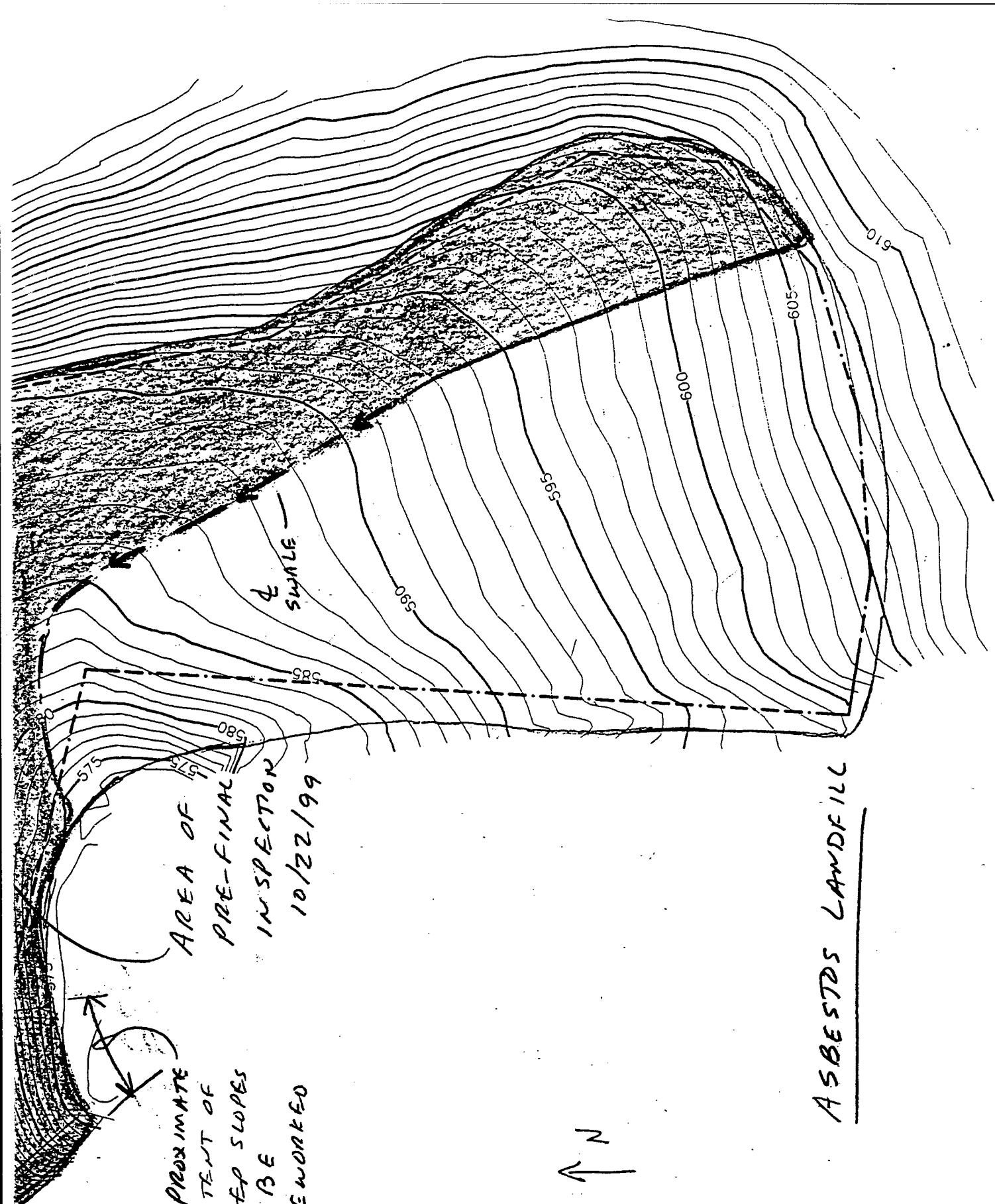
Richard Wheeler  
QC Representative



AREA OF  
PRE-FINAL  
INSPECTION  
10/22/99

APPROXIMATE  
EXTENT OF  
STEEP SLOPES  
TO BE  
REWORKED

SWALE

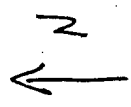


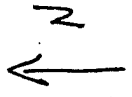
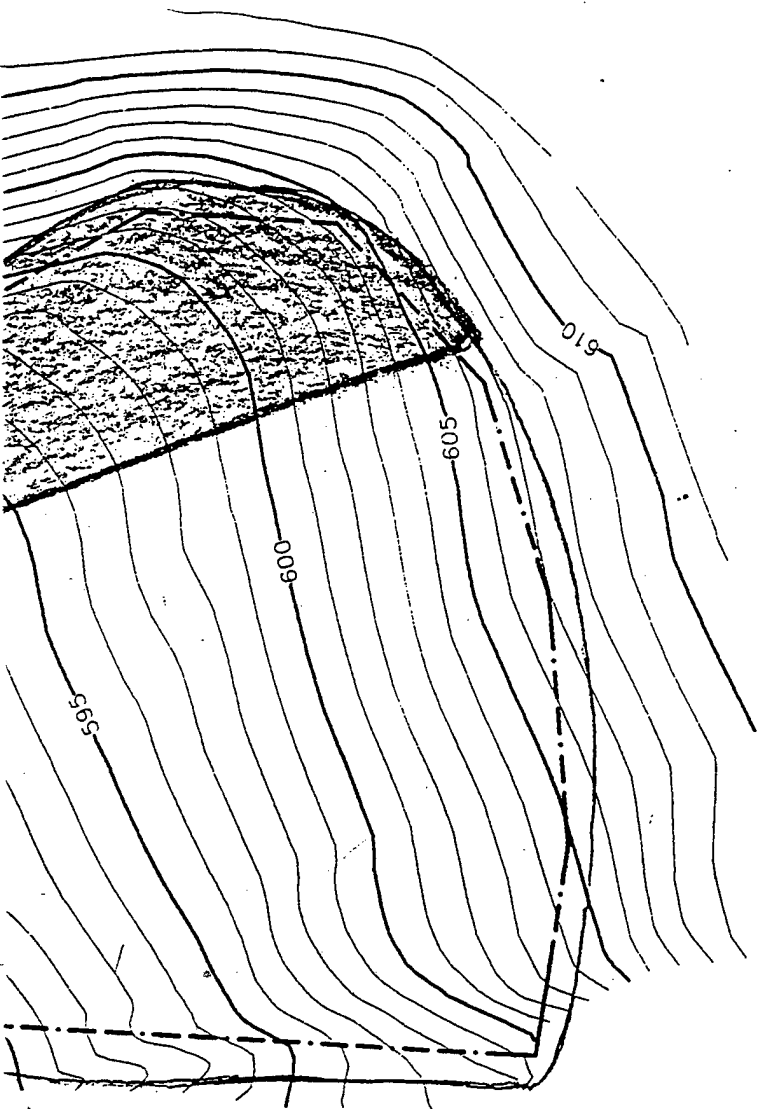
AREA OF  
PRE-FINAL  
INSPECTION  
10/22/99

APPROXIMATE  
EXTENT OF  
STEEP SLOPES  
TO BE  
REWORKED

SWALE

ASBESTOS LANDFILL





ASBESTOS LANDFILL

# Pre-Final Construction Inspection Checklist

Site Name: Asbestos Landfill Date: 10/28/99

General Work Description: Construction of Asbestos Landfill Final Cap. Completion of Work.

Attendees: Dave Hopkins

Byron Best, URS

Dave Burns, MDEP

Rich Wheeler, BEI

Ed Trujillo, BEI

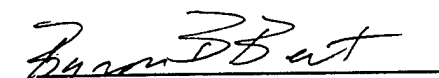
Lou Pizzuti

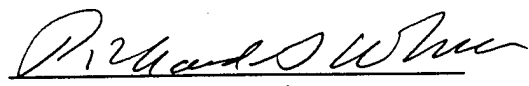
Carl Dirnbauer, BEI

\_\_\_\_\_

Punchlist Items or Observations: (Use additional sheets as needed)

1. Complete Placement of topsoil.
2. Complete pre-final (QA/QC) inspection of topsoil placement,
3. Complete installation of erosion mat in the swale.
4. Seed and mulch areas defined in the work plan.
5. Place signs around the perimeter of the landfill.
6. Complete as-built topographic survey of completed landfill.
7. Remove rocks protruding more than 3 inches above general surface of topsoil.
8. Roll the top surface of the topsoil after seeding and mulching if surface is not too soft.
9. Block two of the three access roads. The center (gated) road shall remain open/accessible.
10. Leave silt fence in place.
11. Do not install seed on frozen ground.
12. Use the P300 erosion mat as specified.
13. Increase the annual rye seed mix to 75# per acre on the 2:1 slopes.

  
\_\_\_\_\_  
QA Representative

  
\_\_\_\_\_  
QC Representative

11/4/99

# Pre-Final Construction Inspection Checklist

Site Name: Asbestos Landfill Final Cap Date: 10/29/99

General Work Description: Topsoil Placement

Attendees: BYRON BEST \_\_\_\_\_  
RICH WHEELER \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Punchlist Items or Observations: (Use additional sheets as needed)

| Inspected Item  | Complete?                           |                                     |
|---|-------------------------------------|-------------------------------------|
|   | QC                                  | QA                                  |
| 1. Placed and lightly compacted in a 4-inch lift over the barrier soil.               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Fertilized at the rate of 600 lb/acre of <sup>18-24-12</sup> 10-10-10 (after 9/15) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Amended with limestone at the rate of 2000 lb/acre.                                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Seeded using the USFWS Conservation Mix.   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Mulched with straw or hay at the rate of 2 bales (minimum 100 lb) per 1000 ft.     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Area(s) inspected: Entire Landfill

Additional Observations: (Use additional sheets as needed)

- 1 subject to final topo
- 2 Some rut repair needed
- 3 A few large rocks on the 2:1 slopes need to  
be removed when surface can be traversed

Byron Best  
QA Representative

Richard Wheeler  
QC Representative  
10/29/99

# Final Construction Inspection Checklist

Site Name: Asbestos Landfill

Date: 18 Nov 99

General Work Description: Construction of Asbestos Landfill Final Cap. Completion of work.

Attendees: John Mueller, AFCEE

Byron Best, URS

Joe Duncan, Bechtel

Punchlist Items or Observations from Pre-Final ( Use additional sheets as needed.)

| Item No. | Description   | Bechtel QC        | Air Force QA | Date   |
|----------|---|-------------------|--------------|--------|
| 1        | Complete placement of topsoil   | JWD               | Roe          | 19 Nov |
| 2        | Complete pre-final (QA/QC) inspection of topsoil placement  | JWD               | Roe          | 19 Nov |
| 3        | Complete installation of erosion mat in the swale   | JWD               | Roe          | 19 Nov |
| 4        | Seed and mulch areas defined in the work plan.  | JWD               | Roe          | 19 Nov |
| 5        | Place signs around the perimeter of the landfill.   |                   |              |        |
| 6        | Complete as-built topographic survey of the completed landfill.   |                   |              |        |
| 7        | Remove rocks protruding more than 3 inches above general surface of the topsoil.  | JWD               | Roe          | 19 Nov |
| 8        | Roll the top surface of the topsoil after seeding and mulching if the surface is not too soft.  |                   |              |        |
| 9        | Block two of the three access roads. The center (gated) road shall remain open/accessible.  | JWD               | Roe          | 19 Nov |
| 10       | Reinforce silt fence with hay bales. At the end of the swale, remove the silt fence and place in a semi-circle a short distance into the drainage basin. Place hay bales on the north side of the swale at the curve. | JWD               | Roe          | 19 Nov |
| 11       | Do not install seed on frozen ground.   | N/A - SEE ITEM #4 | AD           | 19 Nov |
| 12       | Use the P-300 erosion mat as specified.   | N/A - SEE ITEM #3 | AD           | 19 Nov |
| 13       | Increase the annual rye mix to 75 lb./acre on the 2:1 slopes  | N/A - SEE ITEM #4 | AD           | 19 Nov |
| 14       | CONSTRUCT DRAINAGE SWALE PER CLOSURE PLAN   |                   |              |        |

SEE NOTE #5

SEE NOTE #2

SEE NOTE #3

SEE NOTE #1

Additional Observations

- 1 Bechtel will provide an engineering evaluation of the wetted perimeter of the erosion mat placement in the drainage swale v.s. the design drawing
- 2 Bechtel will provide a copy of the final topo map to the AF
- 3 The topsoil will be rolled in spring 2000
- 4 Bechtel will provide keys to the landfill gate to the AF - GIVEN TO D. HOPKINS 19 Nov 99
5. PLACE MISSING SIGNS ON INSTALLED POSTS AT THE LANDFILL.  
(G-B SIGNS)

John Mueller  
QA Representative

Joe Duncan  
QC Representative

**APPENDIX D**  
**REQUEST FOR INFORMATION**

112 2

REQUEST FOR INFORMATION  
(RFI)

PROJECT NAME: AFCEE - Loring

JOB NO. 22784-006

RFI NO: 336

LOCATION: Limestone, Maine

PAGE 1 OF 1 + attach.

TO: John Mueller

OF: AFCEE/ERB-L


REFERENCE DRAWING: 007-DD-002

SPECIFICATION: 007-SP000-001 Technical  
Specification for Earthwork, Asbestos Landfill, Final Cap

LOCATION: Asbestos Landfill

INFORMATION REQUESTED: Change the lift thickness for placing common borrow specified in the above referenced spec ( Section 3.1B) from 12 inches to 24 inches. Other activities outline on this section (i.e. compaction) will not be impacted by this change.

REASON REQUESTED: This approach/technique is being used at the LF-3 with excellent results.


REQUESTED BY: Santi Sanchez 

REPLY REQUIRED BY: 9/13/99

9/9/99  
DATE

BEI  
CONTRACTOR

INFORMATION TO  
CONTRACTOR

|   |   |
|---|---|
| TO:<br>Santi Sanchez                      | FROM:<br>John Mueller   |
| OF:<br>BEI                                | OF:<br>AFCEE  |
| REQUESTED INFORMATION:<br><b>APPROVED</b> |   |
| <u>10/1/99</u><br>DATE                    | <br>AFCEE/ERB-L |

CC: Denis St. Peter, Dave Hopkins, Dorothy Allen, Byron Best, Ken Barry, C. Dirnbauer, S. Sanchez, L. Booth,  
E. Trujillo

Sanchez, Santiago

---

**From:** dhopkins@afbda1.hq.af.mil  
**Sent:** Friday, September 03, 1999 10:05 AM  
**To:** Trujillo, Ed  
**Cc:** byron\_best@urscorp.com; Dirnbauer, Carl; dave.e.burns@state.me.us;  
John.Mueller@hqafcee.brooks.af.mil; lou.s.pizzuti@state.me.us; rlvaugh@bechtel.com;  
Sanchez, Santiago  
**Subject:** Asbestos Landfill Common Borrow 24"Lifts

Ed, As a followup up to Bechtel's informal request this am to increase the lift thickness of the common borrow from 12" to 24", I offer the following:

Currently the design calls for the common borrow to be placed in 12" lifts with 4 passes of a vibratory roller for each lift. There is no compaction tests required.

The proposal is to place the common borrow, which is very similar(borrowed from the same general area) to the select bedding gravel being used at LF3, without being screened, in 24" lifts vs 12" lifts. The request is based on the performance being achieved at LF 3 with the 24" lifts.

This proposal is accepted by the Air Force and the MEDEP provided that similar construction techniques(compaction) will be used at the ACM landfill as at LF3.

This proposal is a change to the workplan and should be followed up by an RFI. I will inform URS of this change. DH

REQUEST FOR INFORMATION  
(RFI)

PROJECT NAME: AFCEE - Loring

JOB NO. 22784-051

RFI NO: 337

LOCATION: Limestone, Maine

PAGE 1 OF 1 + Attach.

TO: John Mueller

OF: AFCEE/ERB-L

REFERENCE DRAWING: 007-DD-002 Rev 2

SPECIFICATION: N/A

LOCATION: Asbestos Landfill

INFORMATION REQUESTED:

Request concurrence on the revised boundaries of the asbestos waste at the Asbestos Landfill. Please see attached drawing 007-DD-002 Revision 2.

REASON REQUESTED:

The boundaries were revised based on field conditions and will minimize the amount of common borrow to be placed.

REQUESTED BY: Carl Dirnbauer 

REPLY REQUIRED BY: 9/13/99

9/9/1999

DATE

BEI

CONTRACTOR

INFORMATION TO  
CONTRACTOR

TO: Carl Dirnbauer

FROM: John Mueller

OF: BEI

OF: AFCEE

REQUESTED INFORMATION:

**APPROVED PER ATTACHED E-MAIL WITH NOTED EXCEPTIONS**

10/1/99

DATE

  
AFCEE/ERB-L

CC: Dave Hopkins, Dorothy Allen, Byron Best, Ken Barry, Ed Trujillo, Carl Dirnbauer, Larry Booth, Eric Berglund, Santi Sanchez, Bob Vaughan

**Dirnbauer, Carl**

**From:** dhopkins@afbda1.hq.af.mil  
**Sent:** Monday, September 13, 1999 8:02 AM  
**To:** John.Mueller@hqafcee.brooks.af.mil  
**Cc:** Dirnbauer, Carl; Trujillo, Ed; Patterson, Rayford; Barry, Ken  
**Subject:** RFI 337- Asbestos Landfill

John, Recommend approval of this RFI with the following exception.

The limits of waste shown on the plan view of the drawing should represent what was staked in the field. However, the waste limits shown(flag symbol) in the sections A,C,D, and E do not match up with the plan view. The final drawing should be corrected.

I would recommend we commence the cap using the staked locations in the field while the drawing is being corrected. I would like to send a corrected drawing to DEP asap. DH

| REQUEST FOR INFORMATION<br>(RFI)  |   |
|---|---|
| PROJECT NAME: AFCEE - Loring  |   |
| JOB NO. 22784-006   | RFI NO: <u>338</u>  |
| LOCATION: Limestone, Maine  | PAGE <u>1</u> OF <u>1 + attach.</u>   |
| TO: John Mueller  | OF: AFCEE/ERB-L   |
| REFERENCE DRAWING: 007-DD-002   | SPECIFICATION: 000-SP000-001 Standard<br>Specification for for Turf Establishment |
| LOCATION: Asbestos Landfill   |   |
| INFORMATION REQUESTED: Allow the use of unscreened topsoil to cover the surface of the asbestos landfill. |   |
| REASON REQUESTED: To avoid extra screening costs.   |   |
| REQUESTED BY: Santi Sanchez / <i>SS</i>   |   |
| REPLY REQUIRED BY: 9/27/99  |   |
| <u>9/23/1999</u>  | <u>BEI</u>  |
| DATE  | CONTRACTOR  |

INFORMATION TO  
CONTRACTOR

|  |   |
|--|---|
| TO:<br>Santi Sanchez   | FROM:<br>John Mueller                     |
| OF:<br>BEI   | OF:<br>AFCEE                              |
| REQUESTED INFORMATION:<br><i>APPROVED PER ATTACHED E-MAIL.</i> |   |
| <u>10/1/99</u><br>DATE   | <u><i>John Mueller</i></u><br>AFCEE/ERB-L |

CC: Denis St. Peter, Dave Hopkins, Dorothy Allen, Byron Best, Ken Barry, C. Dirnbauer, S. Sanchez, L. Booth, E. Trujillo

**Sanchez, Santiago**

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**From:** Dirnbauer, Carl  
**Sent:** Thursday, September 23, 1999 3:16 PM  
**To:** Sanchez, Santiago  
**Cc:** Trujillo, Ed  
**Subject:** FW: Topsoil For Asbestos Landfill

Santi:

Please prep an RFI to allow the use of unscreened topsoil at the Asbestos Landfill. Dave has already agreed to the change (see below) but it is a deviation from the work plan ( see Section 2.7 (c) of Technical Specification 000-SP-000-001, Turf Establishment), so it should be documented with an RFI.

Thanks

Carl

-----Original Message-----

**From:** dhopkins@afbda1.hq.af.mil [SMTP:dhopkins@afbda1.hq.af.mil]  
**Sent:** Monday, August 16, 1999 4:56 PM  
**To:** John.Mueller@hqafcee.brooks.af.mil  
**Cc:** byron\_best@urscorp.com; Dirnbauer, Carl; Trujillo, Ed; Patterson, Rayford  
**Subject:** Topsoil For Asbestos Landfill

John, As you know, the Closure Plan said that the topsoil was to come from on base, the tech spec for the landfill said it would come the UTS pile, the tech spec for turf said the topsoil could come from either onsite or offsite, but if from off site it will be screened to 2"minus. You can see why this was confusing. The proposal was silent on screened vs unscreened. For a Soild Waste cap I expected screened topsoil and would have expected Bechtel to state otherwise. What is planned for LF3? What was in the specs and proposal?

We were told in the prep that if unscreened material was ok. It is. Therefore, in the interest of a tight budget, Bechtel should use unscreened topsoil from either the UTS site or Soderberg's pit, compact it as discussed in the prep, and raked to scarify it in prep for the seed. This raking should also remove unacceptable protrusions. The surface should be left in a "mowable" condition with minimal protrusions. This should be a QC item and added to the QC checklist.

In the future, I would appreciate being informed of decisions that I should be prepared to make in a meeting before the meeting. Thanx DH

**REQUEST FOR INFORMATION  
(RFI)**

PROJECT NAME: AFCEE - Loring

JOB NO. 22784-007

RFI NO: 343

LOCATION: Limestone, Maine

PAGE 1 OF 2

TO: John Mueller

OF: AFCEE/ERB-L

REFERENCE DRAWING: N/A

SPECIFICATION: 007-SP000-001

LOCATION: Asbestos Landfill

INFORMATION REQUESTED:

See Attached

REASON REQUESTED:

See Attached

REQUESTED BY: Carl Dirnbauer *CD*

REPLY REQUIRED BY: 10/12/99

10/9/1999

DATE

BEI

CONTRACTOR

**INFORMATION TO  
CONTRACTOR**

TO: Carl Dirnbauer

FROM: John Mueller

OF: BEI

OF: AFCEE

REQUESTED INFORMATION:

DATEAFCEE/ERB-L

CC: Dave Hopkins, Dorothy Allen, Byron Best, Ken Barry, Ed Trujillo, Carl Dirnbauer, Larry Booth,  
Bob Robinson, Santi Sanchez, Bob Vaughan, Rich Wheeler

**RFI 343 Page 2 of 2****Information Requested:**

Request approval to obtain barrier soil for the asbestos landfill from Soderberg's Sawyer Road borrow pit. The technical specification requirements for this material, including fines content, maximum particle size and geotechnical testing, shall remain the same.

**Reason Requested:**

Section 2.2 of Technical Specification 007-SP000-001 states that barrier soil for the asbestos landfill will be obtained from , "a BEI designated borrow pit near the Underground Transformer Site in East Loring." The material from this borrow pit is becoming unsuitable due to a declining fines content and the inability to achieve the desired level of compaction at point of placement.

**APPENDIX E**  
**PHOTOGRAPHS**  
**(TO BE PROVIDED LATER)**

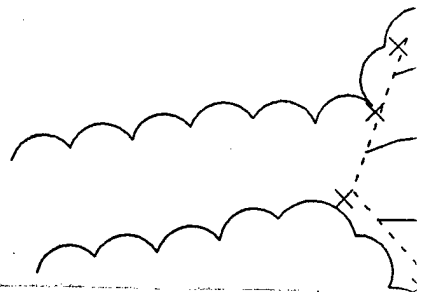
**APPENDIX F**  
**AS-BUILT DRAWINGS**

①

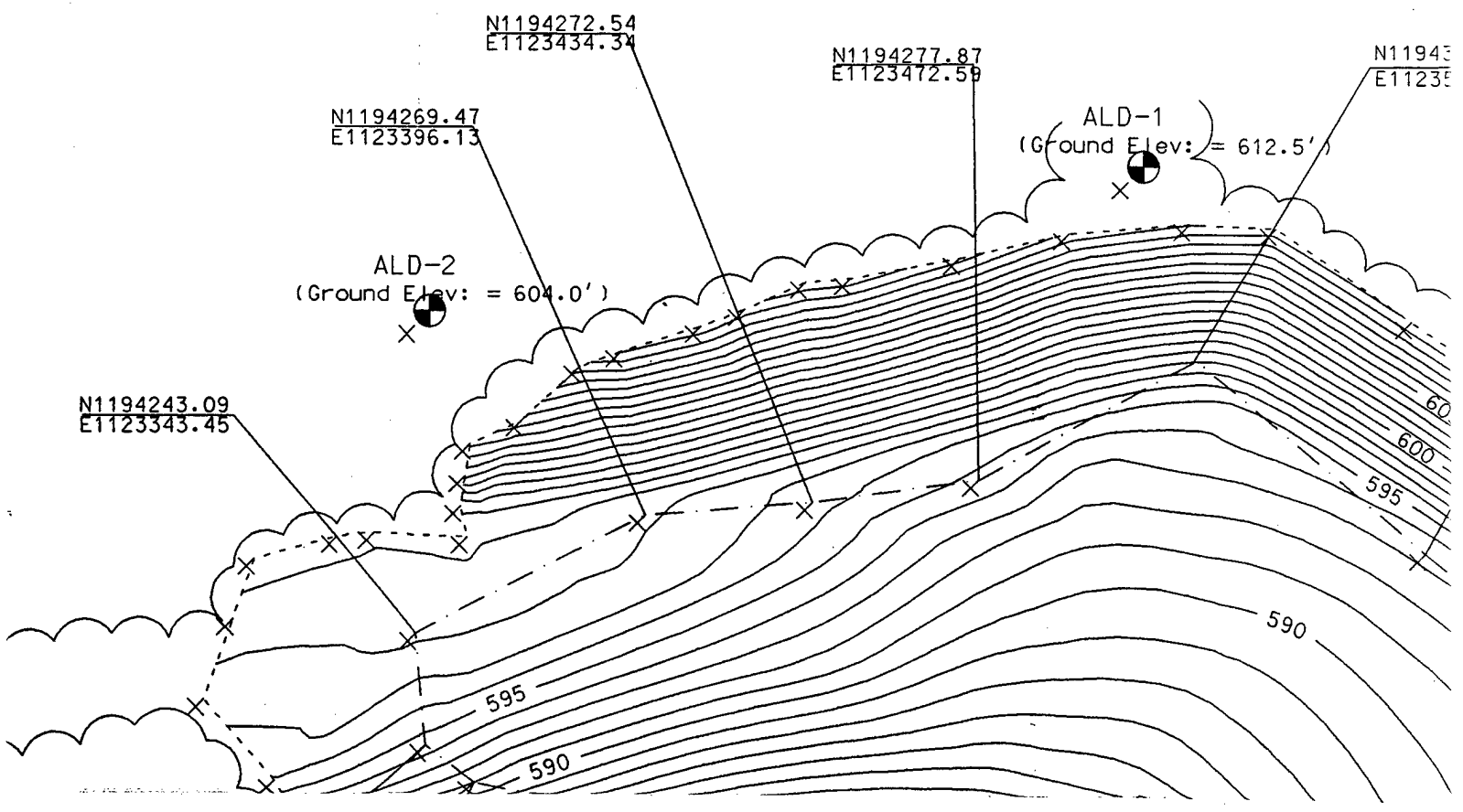


Maine State Grid North

N1194243.09  
E1123343.45



# D R A F T



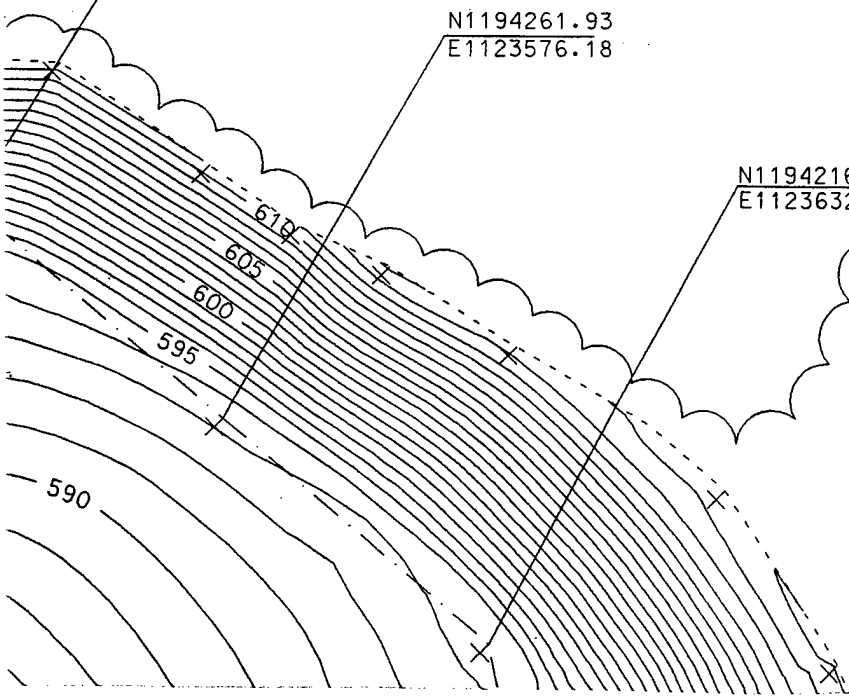
FF T

N1194305.52  
E1123522.74

612.5'

N1194261.93  
E1123576.18

N1194216.59  
E1123632.43



As Built

As

Former L  
Caribou, A

No

30

0



As Built Topographic Survey

of

Asbestos Landfill

at the

Former Loring Air Force Base

Caribou, Aroostook County, Maine

November 8, 1999

1' contour

0

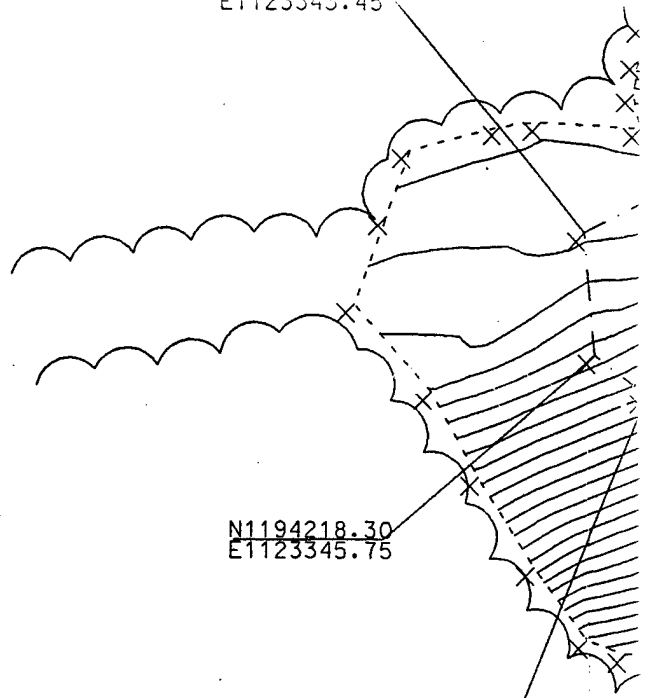
30

60

Feet

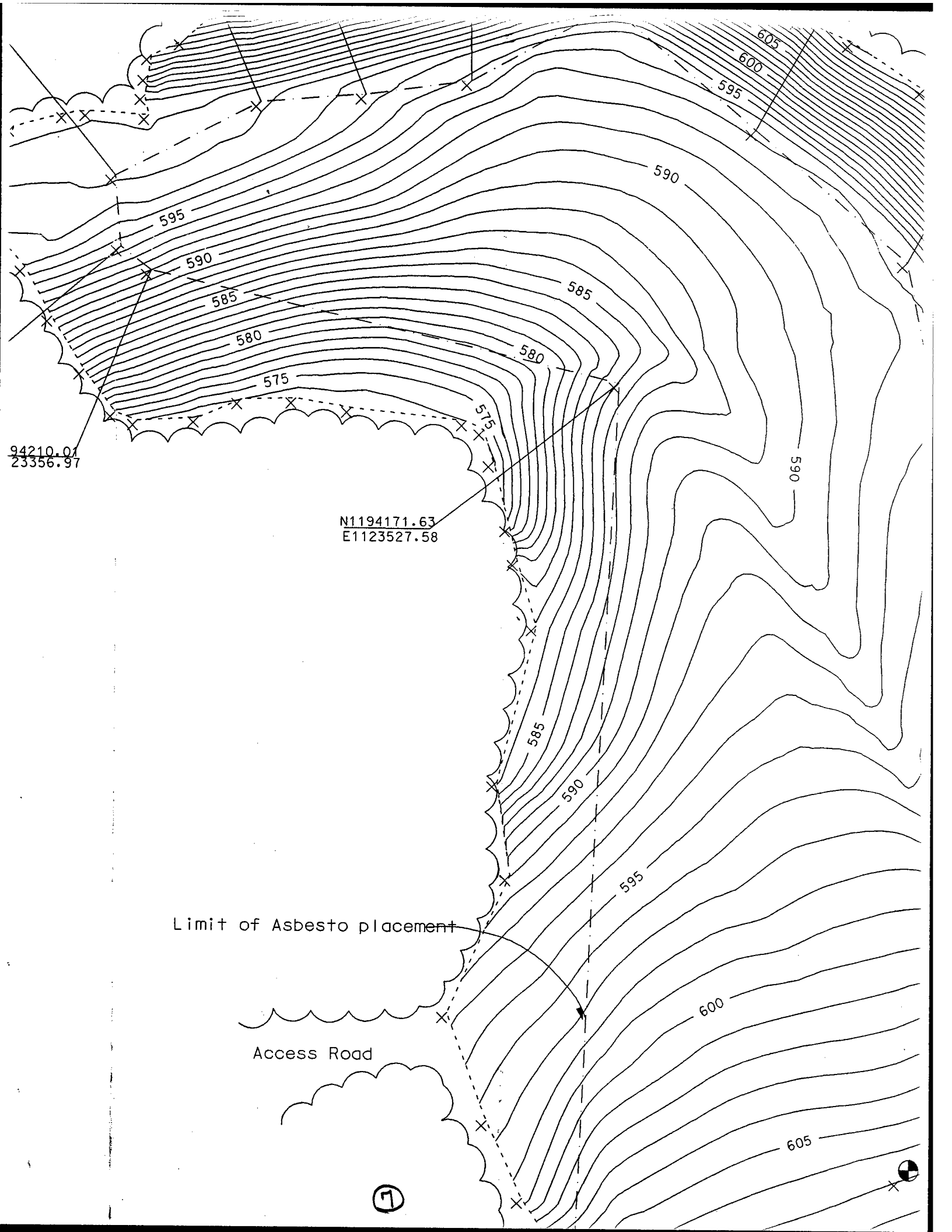
1" = 40'

E1123343.43



N1194218.30  
E1123345.75

N1194210.01  
E1123356.97



94210.01  
23356.97

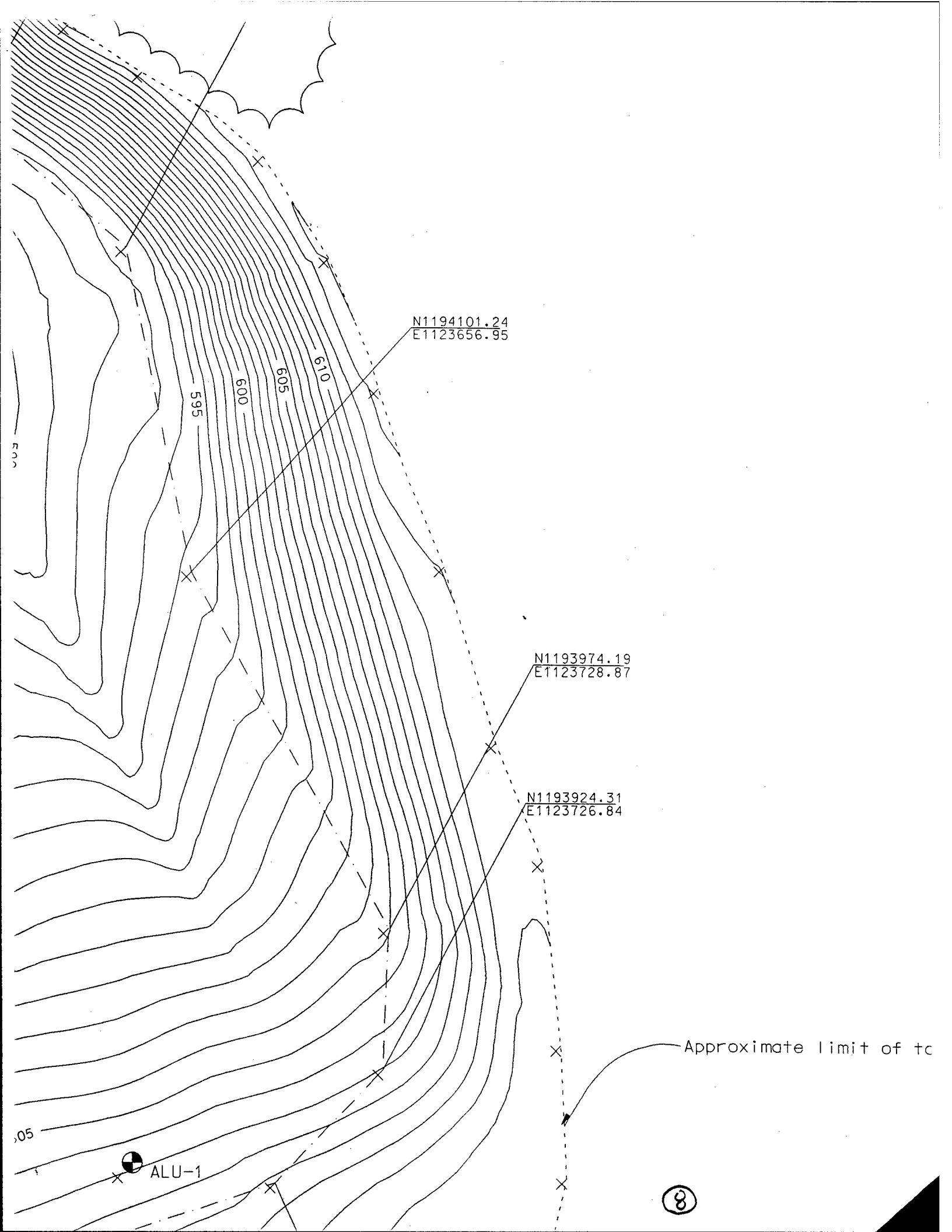
N1194171.63  
E1123527.58


Limit of Asbestos placement

Access Road

7








1" = 40'

Note: Coordinates and elevation  
LF21. LF21 is a brass disk in a  
monument located on the southwest  
2. The horizontal coordinate system  
Coordinate System NAD 1983 and the  
is based on the vertical benchmark  
on the Former Boeing Air Force Base  
the datum is MVD 1929.

limit of topsoil placement



1" = 40'

tes and elevation are referenced to monument  
a brass disk in a 12-14 inch concrete  
d on the southwesterly side of Landfill  
tal coordinate system is Maine State  
em NAD 1983 and the vertical datum  
vertical benchmarks previously established  
oring Air Force Base. It is believed that  
VD 1929.

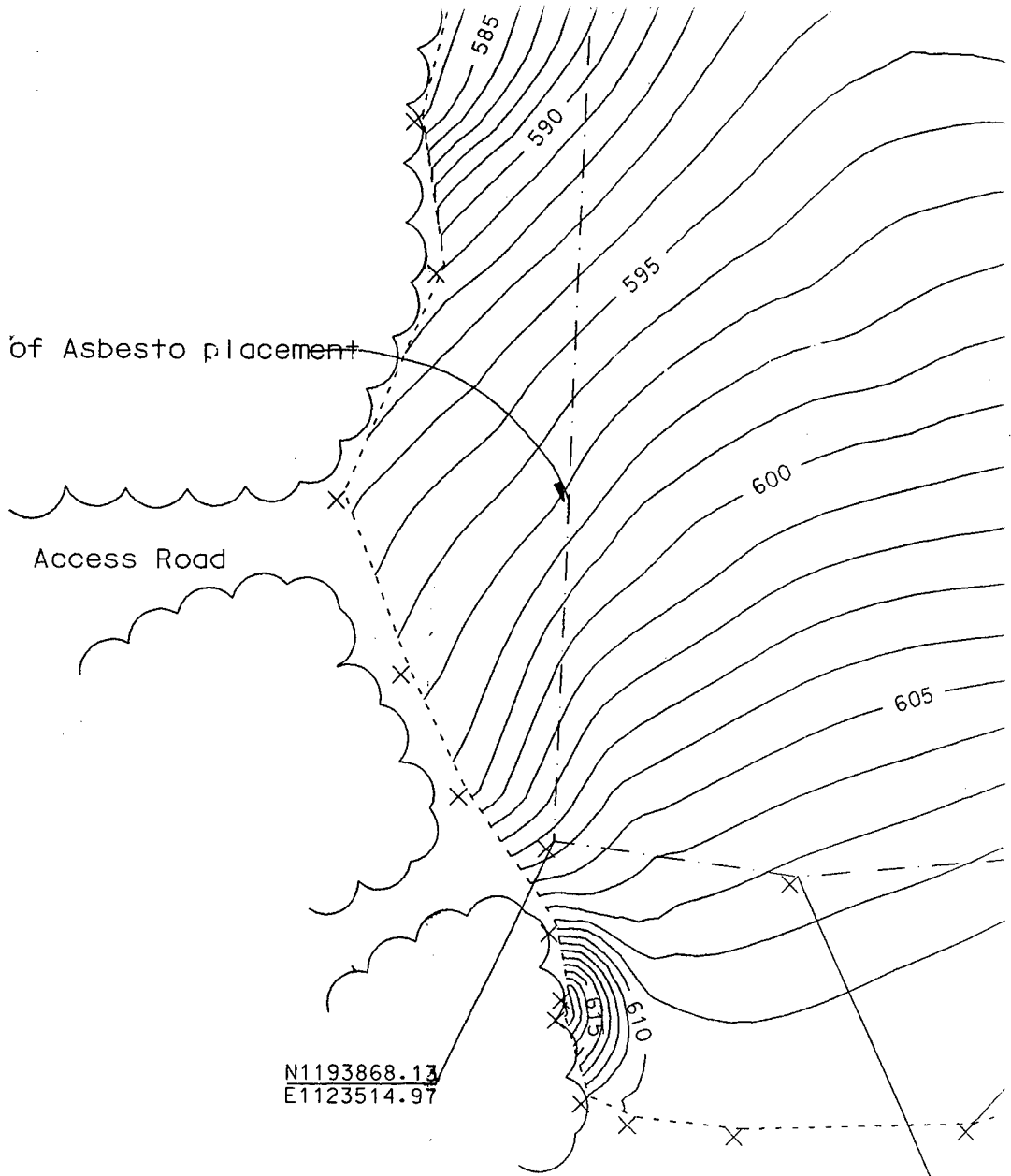


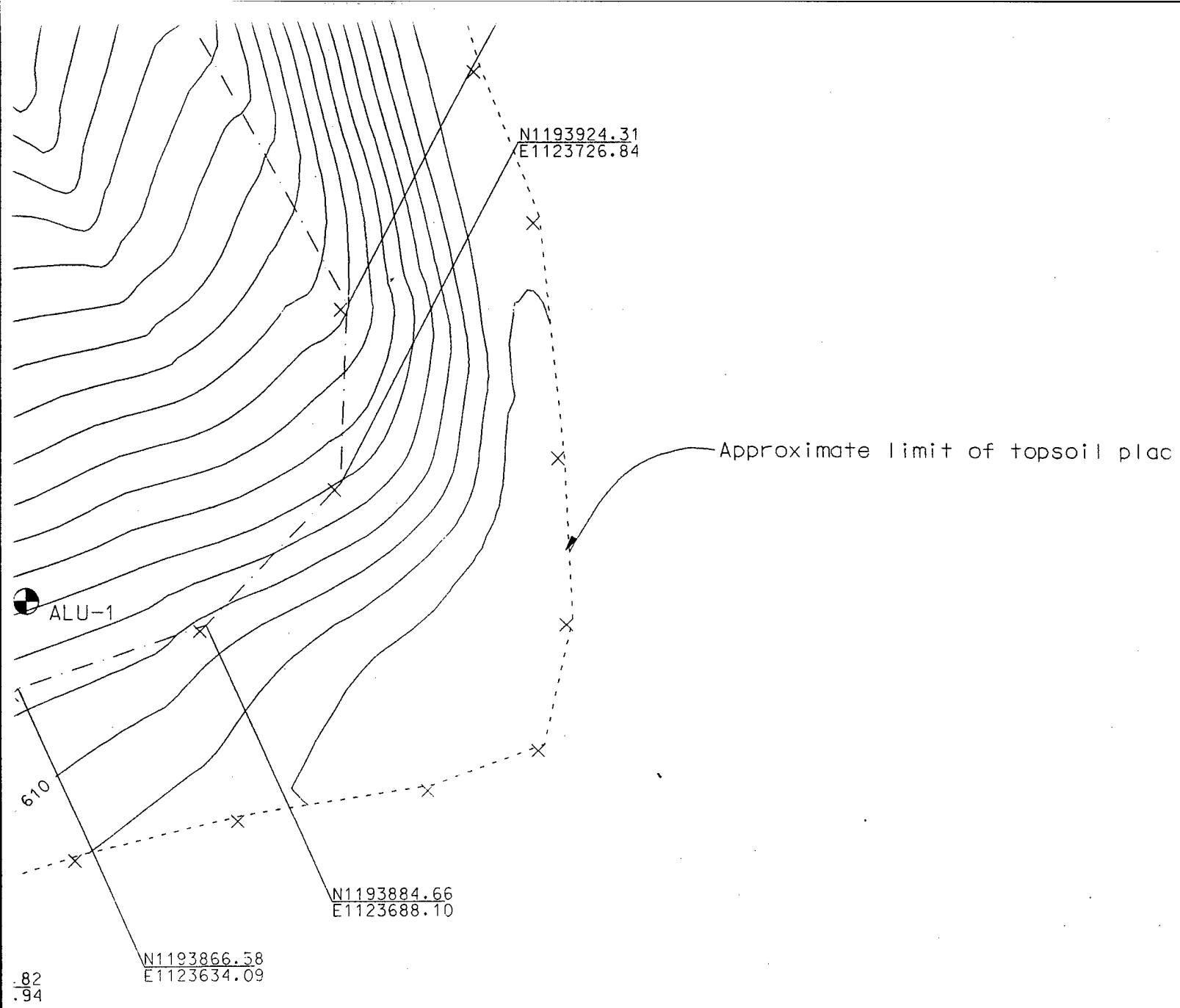
Limit of Asbesto placement

Access Road

N1193868.13  
E1123514.97

N119  
E112



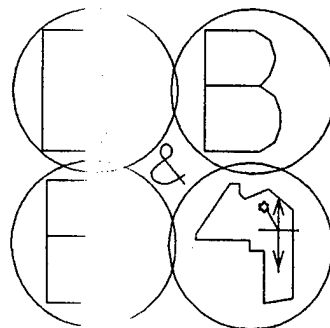


of topsoil placement

Legend:

 Monit

 Edge



Dood

7 F

C

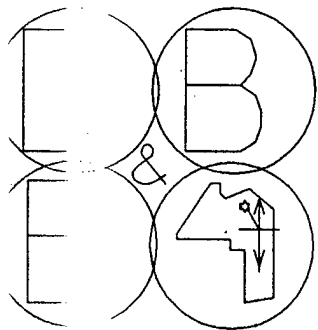
Legend:



Monitoring well



Edge of forested area



**Doody, Blackstone & Bubar**

**Land Surveying**

**7 Hatch Drive, Suite 260**

**Caribou, Maine 04736**

ablfinal.dwg

①

8

7



1123200

1123300

1123400

1194400

D

590

595

600

615

N119427  
E112347

N1194269  
E1123396

N1194273  
E1123434

1194300

N1194264  
E1123355

ALD-2  
605

610

TOP OF 2:1 SLOPE

600

1194200

N1194243  
E1123344

590

N1194218  
E1123346

580

N1194210  
E1123357

C

1194100

INFILTRATION  
DRAINAGE BASIN  
BOTTOM EL 572.0

575

580

1194000

595

585



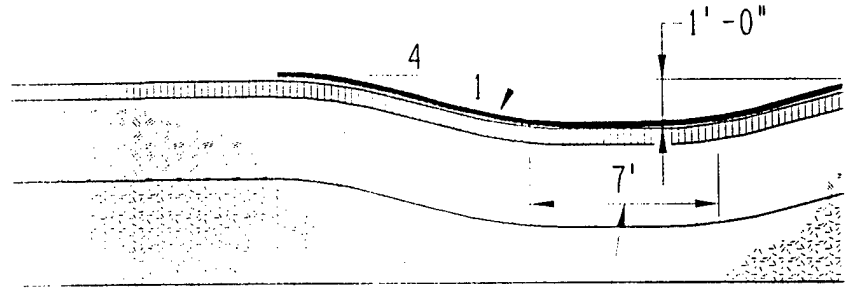
5

4

3

1123800

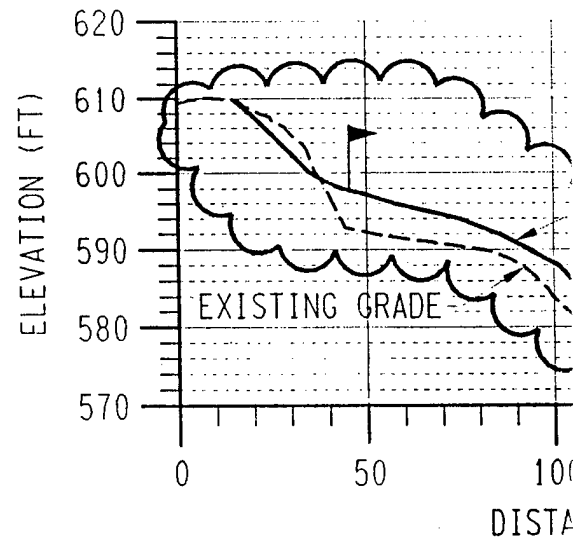
TEMPORARY E  
(SEE NOTE 8)



SWALE BOTTO  
9 FT BELOW

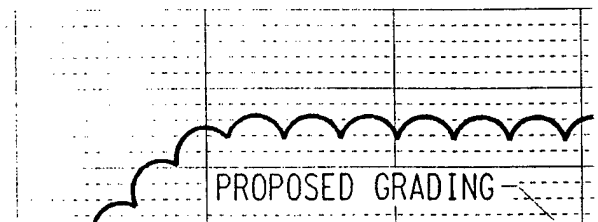
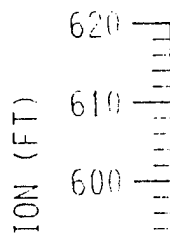
### SECTION

NTS



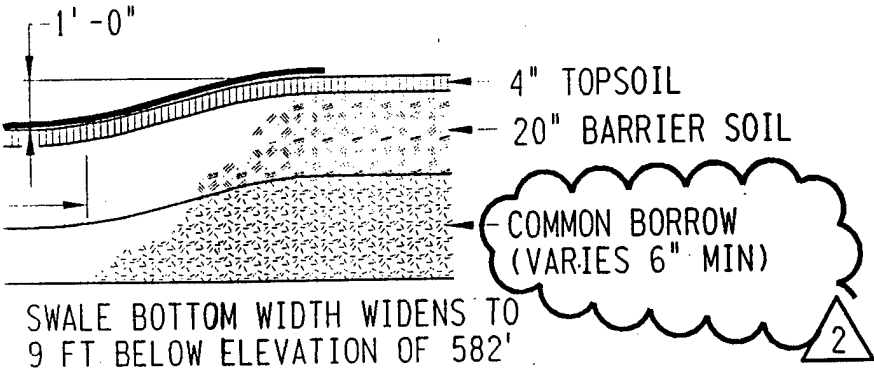
### SECTION

HORZ: 1" = 50'  
VERT: 1" = 25'

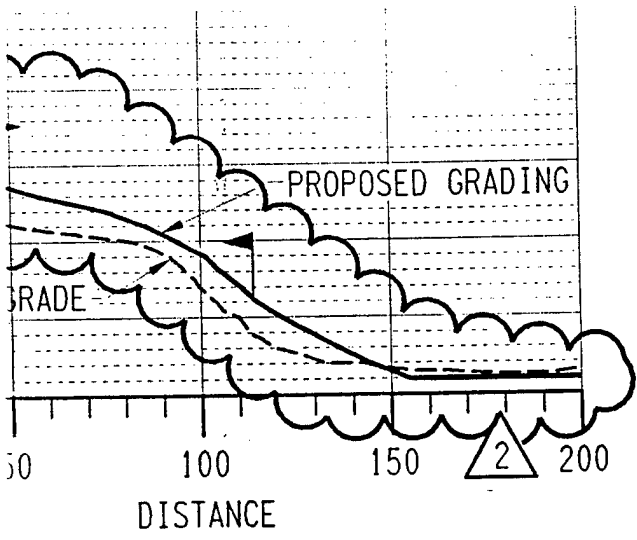


N1193974

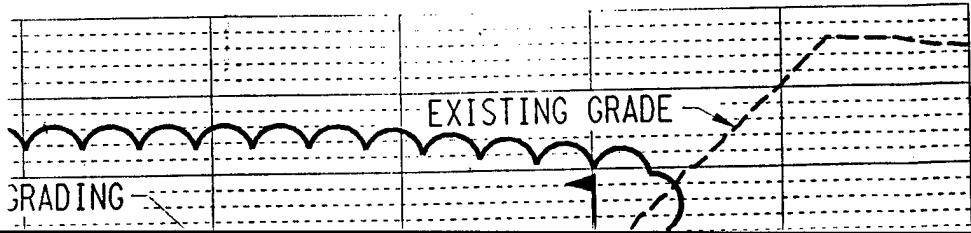
TEMPORARY EROSION CONTROL MAT  
(SEE NOTE 8)



SECTION B



SECTION C



ASBESTOS  
LANDFILL

1. COMMON BORROW SHALL BE USED FOR SUBGRADE (BELOW THE MAT) FOR DRAINAGE PURPOSES. A GRADATION SPECIFICATION SHALL BE USED FOR ON-SITE BORROW SOIL.
2. BARRIER SOIL SHALL BE PLACED TO THE HORIZONTAL EXTENT OF THE BOUNDARY SURVEY. SURVEYED PRIOR TO CONSTRUCTION.
3. FINISH GRADES OF SLOPE SHALL BE MAX. OF 33%.
4. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS 22784-051-SC-121.
5. SLOPE OF DRAINAGE CHANNEL SHALL BE 2H:1V.
6. BARRIER SOIL SHALL BE PLACED BY AN APPROPRIATE METHOD TO PROTECT TOP SOIL.
7. THE EXISTING GRADE SHALL BE REVEALED AND SLOPE OF 2H:1V.
8. USE NORTH AMERICAN STANDARD EROSION CONTROL MAT BETWEEN THE MAT AND THE TOP SOIL.

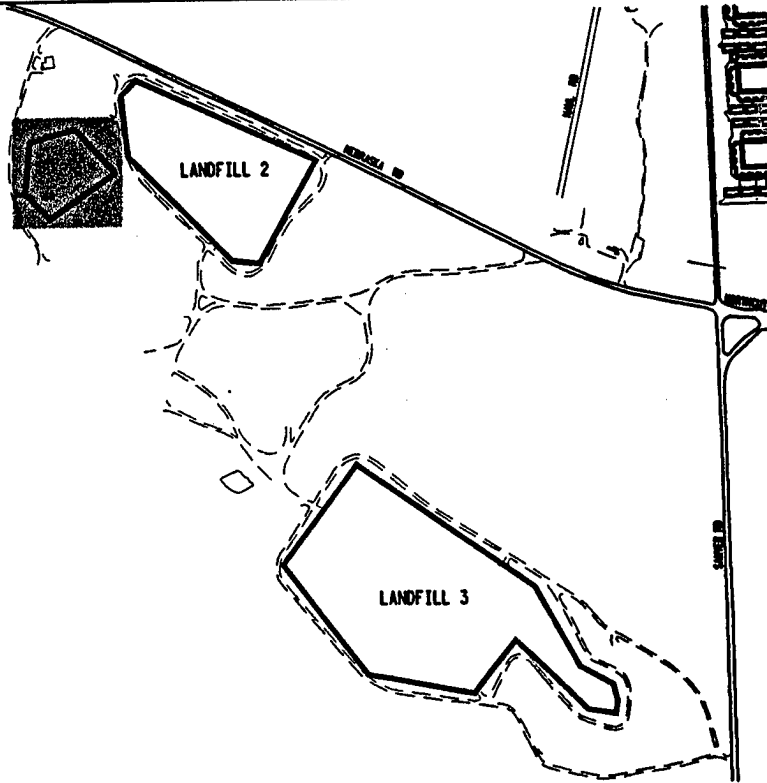
2

1

### KEY PLAN (NTS)



ASBESTOS  
LANDFILL



D

### NOTES

1. COMMON BORROW SHALL BE UTILIZED AS NEEDED TO SHAPE THE SUBGRADE (BELOW THE BARRIER SOIL LAYER) FOR SLOPING AND DRAINAGE PURPOSES. COMMON BORROW IS NOT REQUIRED TO MEET A GRADATION SPECIFICATION AND SHALL BE OBTAINED FROM AN ON-SITE BORROW SOURCE.
2. BARRIER SOIL SHALL BE PLACED TO THE EXISTING GRADE BEYOND THE HORIZONTAL EXTENT OF ACM PLACEMENT AS DEFINED BY THE ACM BOUNDARY SURVEY. LIMITS OF FINAL ACM PLACEMENT SHALL BE CIVIL SURVEYED PRIOR TO PLACEMENT OF FINAL CAP.
3. FINISH GRADES OF THE CAP SHALL BE A MINIMUM OF 6% AND MAX. OF 33%.
4. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH SUBCONTRACT 22784-051-SC-121.
5. SLOPE OF DRAINAGE SWALE SHALL BE 2% TO 8% ABOVE ELEVATION 580.
6. BARRIER SOIL SHALL BE LOOSENED (USING A DISC OR OTHER APPROPRIATE METHOD) TO A DEPTH OF 2" PRIOR TO PLACEMENT OF TOP SOIL.
7. THE EXISTING GRADE EXTENDING BEYOND THE LIMITS OF THE FINAL CAP SHALL BE RE-GRADED WHERE NECESSARY TO ASSURE A MAXIMUM SLOPE OF 2H:1V.

C

8. USE NORTH AMERICAN GREEN S75, OR EQUIVALENT, TEMPORARY EROSION CONTROL MAT BETWEEN ELEVATIONS 598 AND 582 FT MSL. BELOW 582

C

1194100

INFILTRATION  
DRAINAGE BASIN  
BOTTOM EL 572.0

1194000

ASBESTOS LANDFILL  
ACCESS ROAD

1193900

OUTSIDE LIMIT  
CAP PLACEMENT

N119  
E112



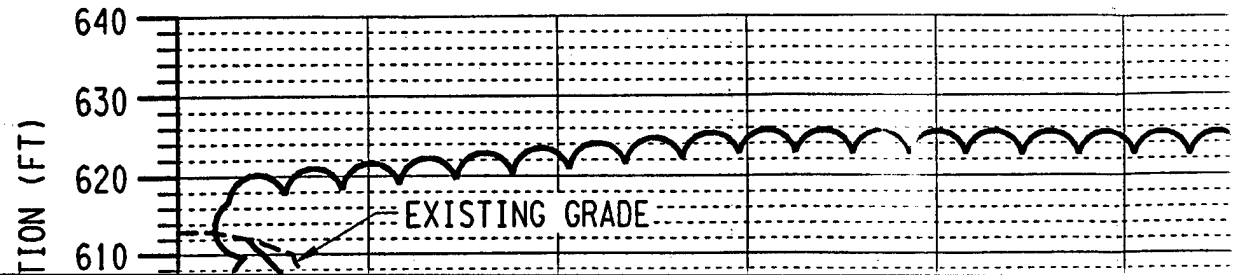
1193800

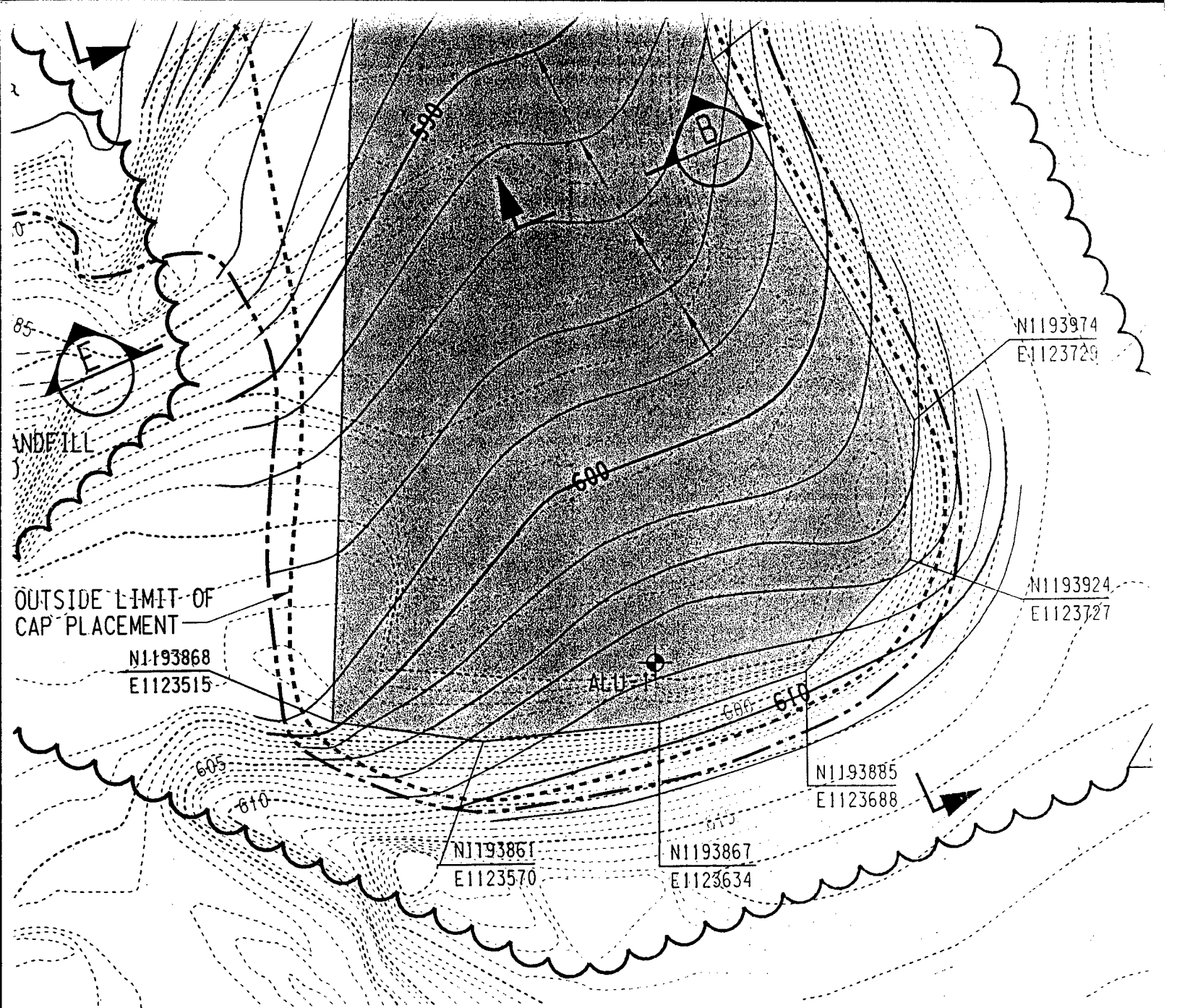
B

ASBESTOS L

1" = 50'

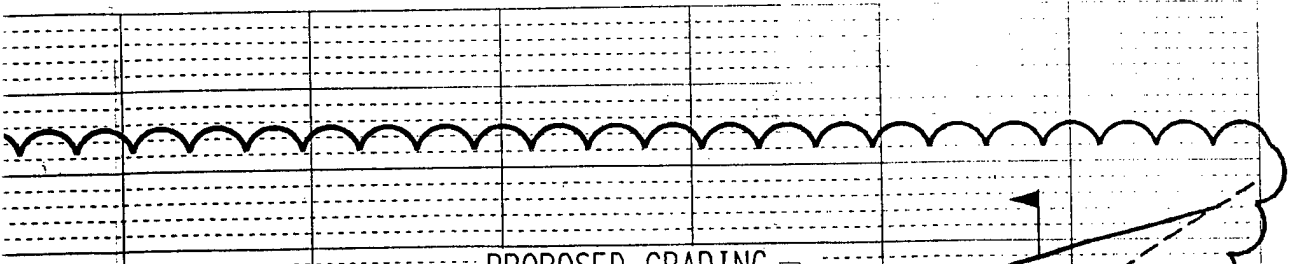
6





# SBESTOS LANDFILL GRADING PLAN

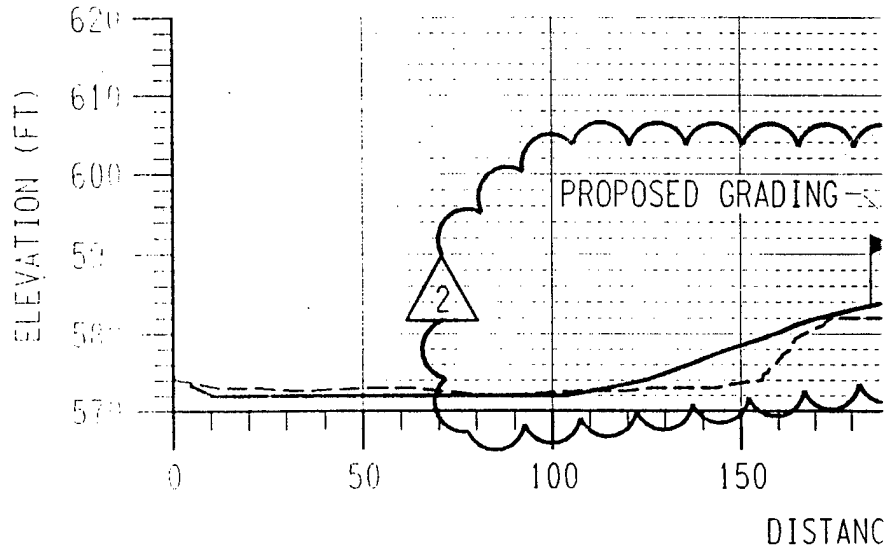
=50'



SECTION

HORZ: 1"=50'

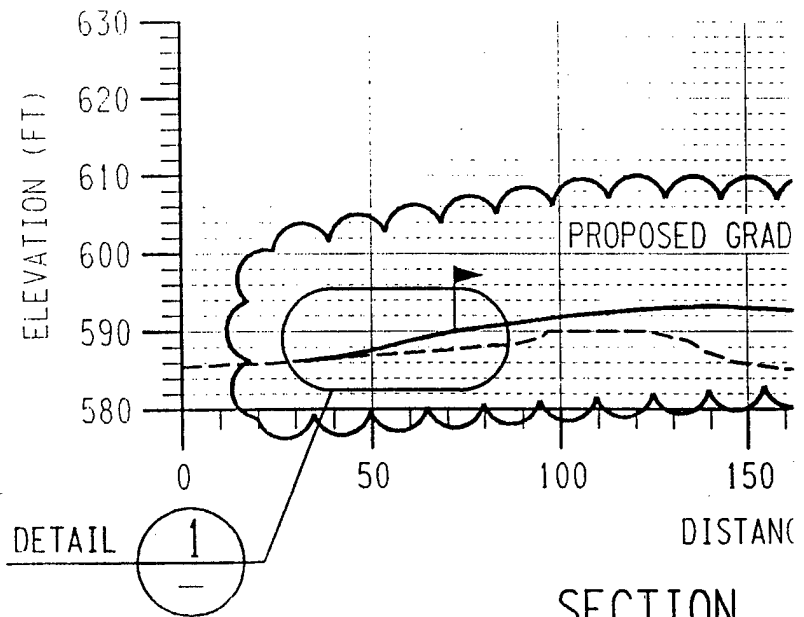
VERT: 1"=25'



SECTION

HORZ: 1"=50'

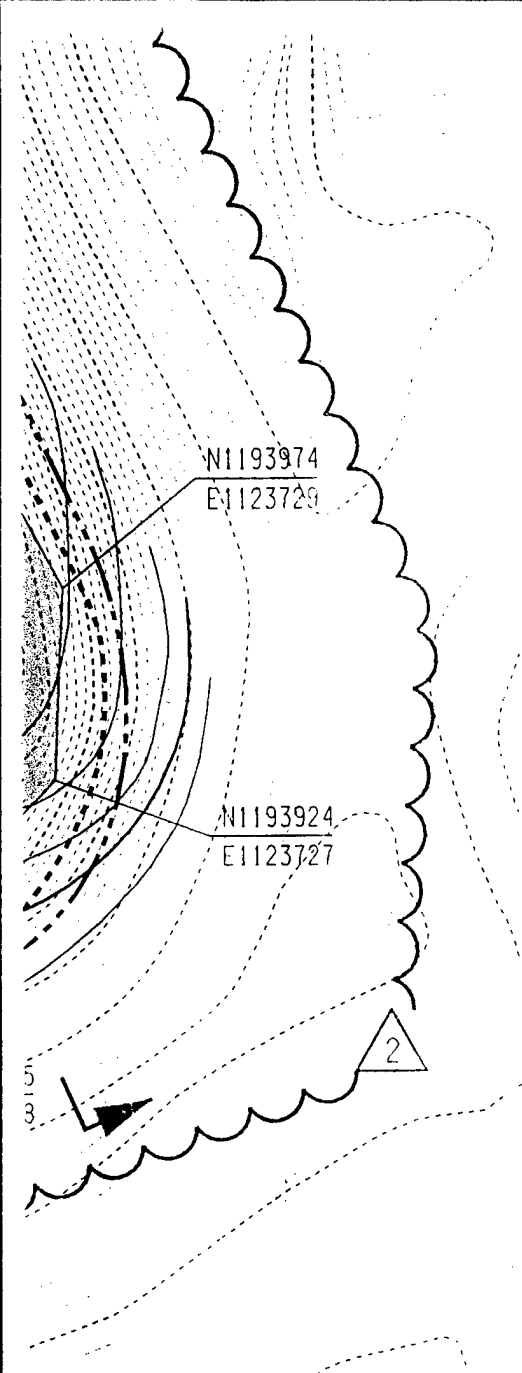
VERT: 1"=25'



SECTION

HORZ: 1"=50'

VERT: 1"=25'



EXTEND BARRIER SO  
WASTE BOUNDARY OR  
GRADE, WHICHEVER

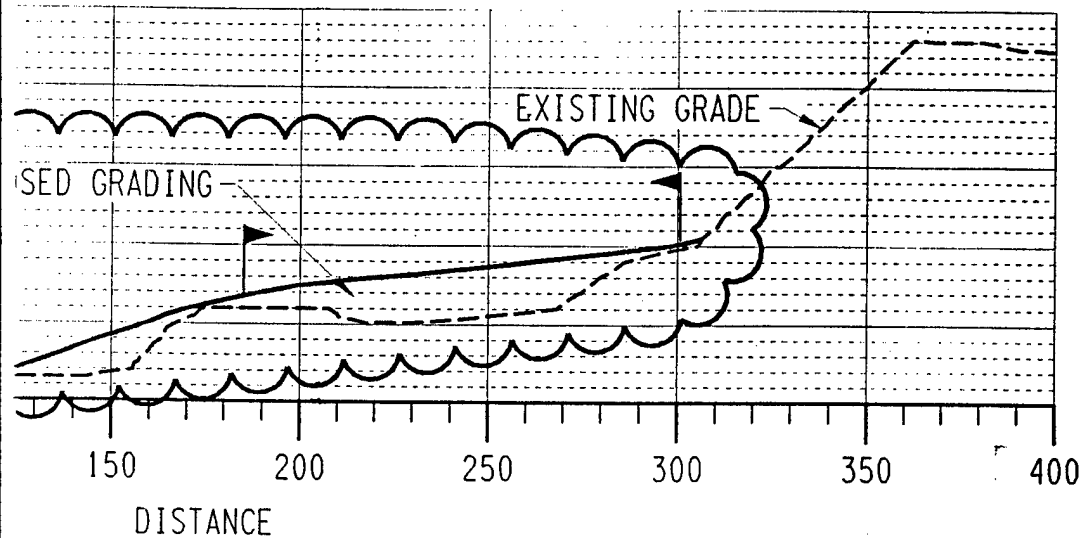
COMMON BORROW  
(VARIES 6" MIN) -

8

4" TOPSOIL

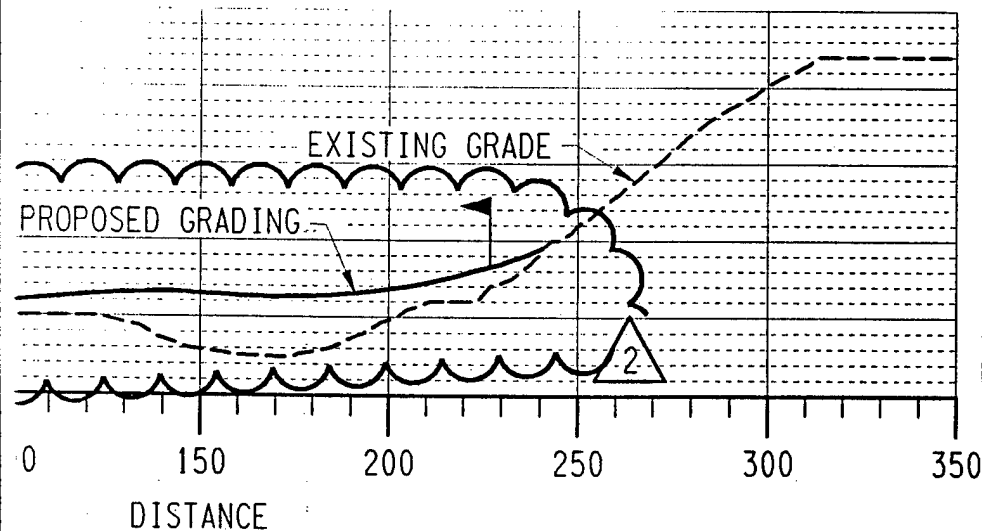
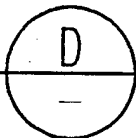
SECTION

HORZ: 1"=50'  
VERT: 1"=25'



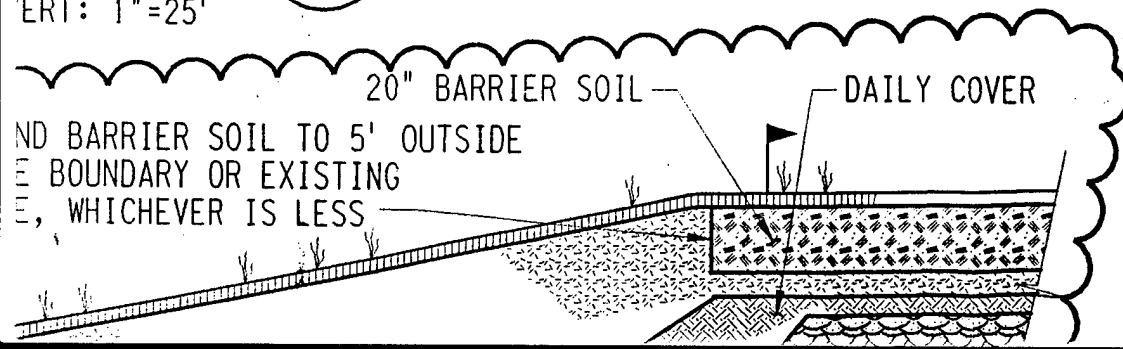
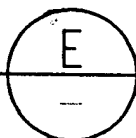
SECTION

HORZ: 1"=50'  
VERT: 1"=25'

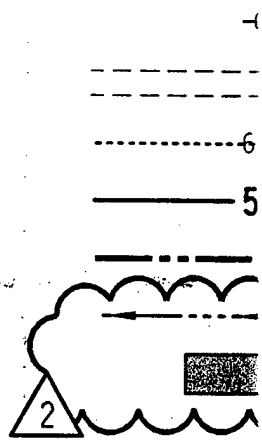


SECTION

HORZ: 1"=50'  
VERT: 1"=25'



4. ALL WORK SHALL BE IN ACCORDANCE WITH SPECIFICATION 22784-051-SC
5. SLOPE OF DRAINAGE SHALL BE 2% TO THE RIGHT
6. BARRIER SOIL SHALL BE APPLIED TO APPROPRIATE TOP SOIL.
7. THE EXISTING CAP SHALL BE MAINTAINED WITH A SLOPE OF 2H:1V
8. USE NORTH ANCHOR CONTROL MAT. 10 FT USE NORTH ANCHOR OF 572 FT MS. APPLY SEED FERTILIZER
9. ASBESTOS DISPOSAL (LIQUID) ACM DISPOSAL



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|     | 2/12/99 |         |
| NO. | DATE    |         |

SCALE NOTED

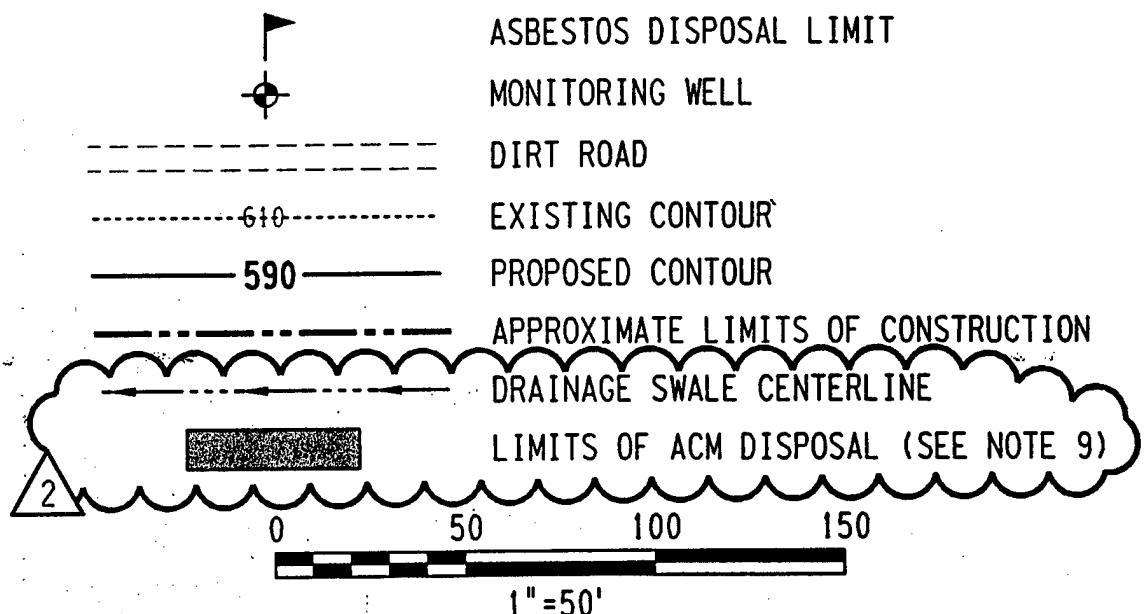
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4. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH SUBCONTRACT 22784-051-SC-121.
5. SLOPE OF DRAINAGE SWALE SHALL BE 2% TO 8% ABOVE ELEVATION 580.
6. BARRIER SOIL SHALL BE LOOSENEED (USING A DISC OR OTHER APPROPRIATE METHOD) TO A DEPTH OF 2" PRIOR TO PLACEMENT OF TOP SOIL.
7. THE EXISTING GRADE EXTENDING BEYOND THE LIMITS OF THE FINAL CAP SHALL BE RE-GRADED WHERE NECESSARY TO ASSURE A MAXIMUM SLOPE OF 2H:1V.

8. USE NORTH AMERICAN GREEN S75, OR EQUIVALENT, TEMPORARY EROSION CONTROL MAT BETWEEN ELEVATIONS 598 AND 582 FT MSL. BELOW 582 FT USE NORTH AMERICAN GREEN P300, OR EQUIVALENT, TO ELEVATION OF 572 FT MSL. INSTALL PER MANUFACTURERS RECOMMENDATIONS. APPLY SEED PRIOR TO INSTALLING MATS.
9. ASBESTOS DISPOSAL LIMITS REPRESENT PRE 1998 AIR FORCE ACM DISPOSAL (LIMITS PROVIDED BY AIR FORCE) AND 1998 THROUGH 1999 ACM DISPOSAL BY BEI.

**LEGEND**



|        |         |   |     |      |             |      |           |            |
|--------|---------|---|-----|------|-------------|------|-----------|------------|
| △      |         |   |     |      |             |      |           |            |
| △<br>2 |         | ASBESTOS DISPOSAL BOUNDARY AND OTHER REVISIONS AS NOTED |     |      |             |      |           |            |
| △<br>1 | 7/28/99 | REVISED AND REISSUED FOR USE                            | JEM | ILG  | WKB         | WKB  | WKB       |            |
| △<br>0 | 2/12/99 | ISSUED FOR USE  | ILG | JWD  | CAD         | CAD  | WKB       |            |
| NO.    | DATE    | REVISIONS.  | BY  | CHKR | DESIGN SUPV | ENGR | PROJ ENGR | MICRO FLMD |

SCALE NOTED 22784 007 007D002 28791 287907 287908 287909 287910 287911 287912 287913 287914 287915 287916 287917 287918 287919 287920 287921 287922 287923 287924 287925 287926 287927 287928 287929 287930 287931 287932 287933 287934 287935 287936 287937 287938 287939 287940 287941 287942 287943 287944 287945 287946 287947 287948 287949 287950 287951 287952 287953 287954 287955 287956 287957 287958 287959 287960 287961 287962 287963 287964 287965 287966 287967 287968 287969 287970 287971 287972 287973 287974 287975 287976 287977 287978 287979 287980 287981 287982 287983 287984 287985 287986 287987 287988 287989 287990 287991 287992 287993 287994 287995 287996 287997 287998 287999

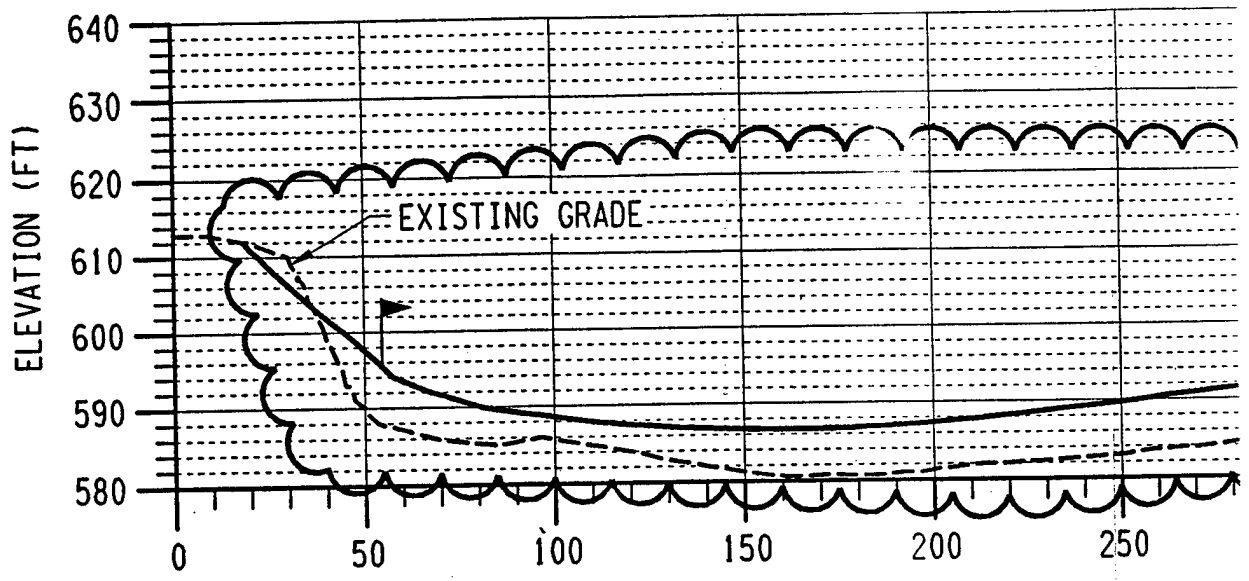
**BECHTEL ENVIRONMENTAL INC.**  
OAK RIDGE, TENNESSEE

LORING AIR FORCE BASE

ASBESTOS LA

1" = 50'

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DIST.

SECTION

HORZ: 1" = 50'  
VERT: 1" = 2'

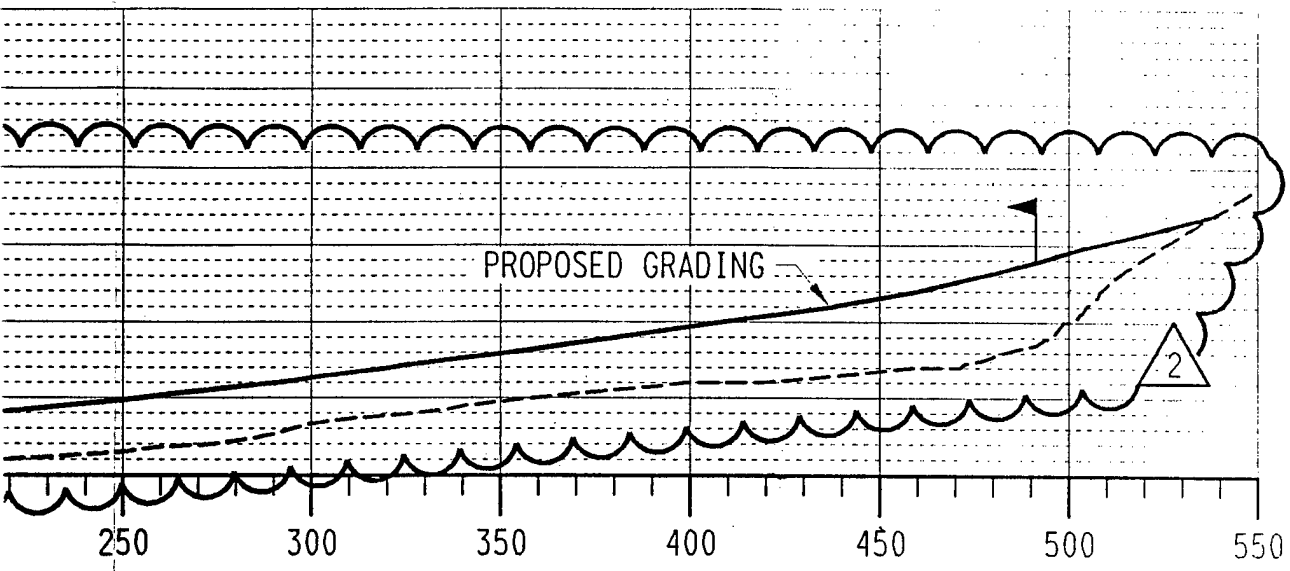
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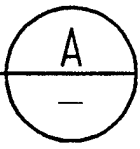
# ASBESTOS LANDFILL GRADING PLAN

1" = 50'



DISTANCE

SECTION



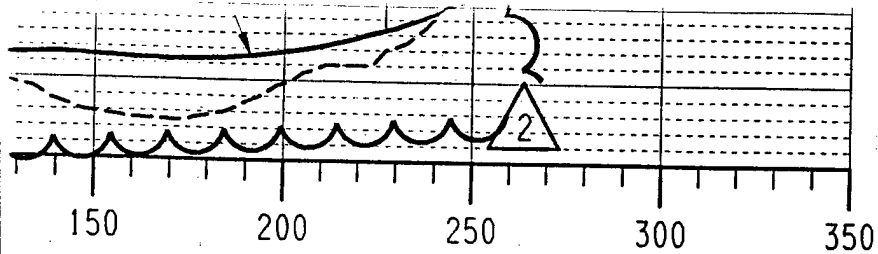
HORZ: 1" = 50'  
VERT: 1" = 25'

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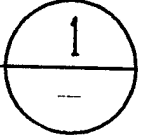
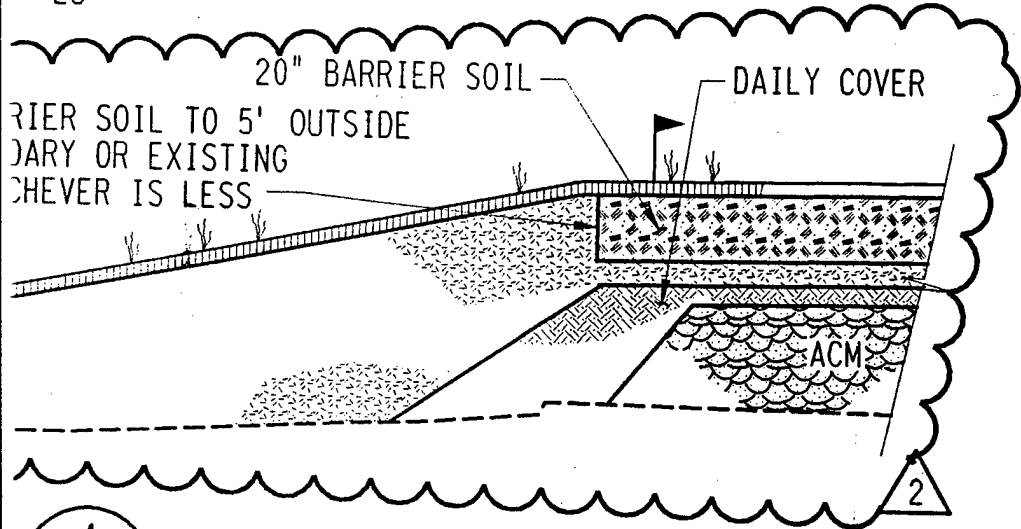
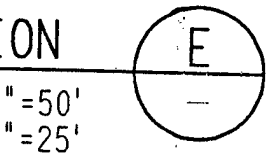
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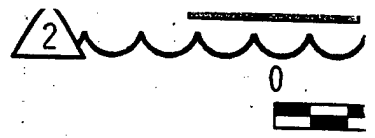






DISTANCE



WILLIAM K. BARRY, P.E.  
 PROJECT ENGINEER  
 MAINE P.E. #8244  
 EXPIRES DECEMBER 31, 1999

SEAL



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|---|---------|--------------------|
|  |         |                    |
|  |         | ASBESTOS AND OTHER |
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| △      |         |   |     |      |             |      |           |            |  |
| △<br>2 |         | ASBESTOS DISPOSAL BOUNDARY AND OTHER REVISIONS AS NOTED |     |      |             |      |           |            |  |
| △<br>1 | 7/28/99 | REVISED AND REISSUED FOR USE                            | JEM | ILG  | WKB         | WKB  | WKB       |            |  |
| △<br>0 | 2/12/99 | ISSUED FOR USE  | ILG | JWD  | CAD         | CAD  | WKB       |            |  |
| NO.    | DATE    | REVISIONS   | BY  | CHKR | DESIGN SUPV | ENGR | PROJ ENGR | MICRO FLMD |  |

SCALE NOTED 22784 007 007DD002 DGN

**BECHTEL ENVIRONMENTAL INC.**  
OAK RIDGE, TENNESSEE

LORING AIR FORCE BASE  
LIMESTONE, MAINE

ASBESTOS LANDFILL FINAL CAP  
GRADING PLAN AND SECTIONS

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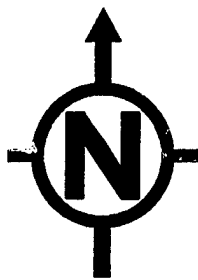
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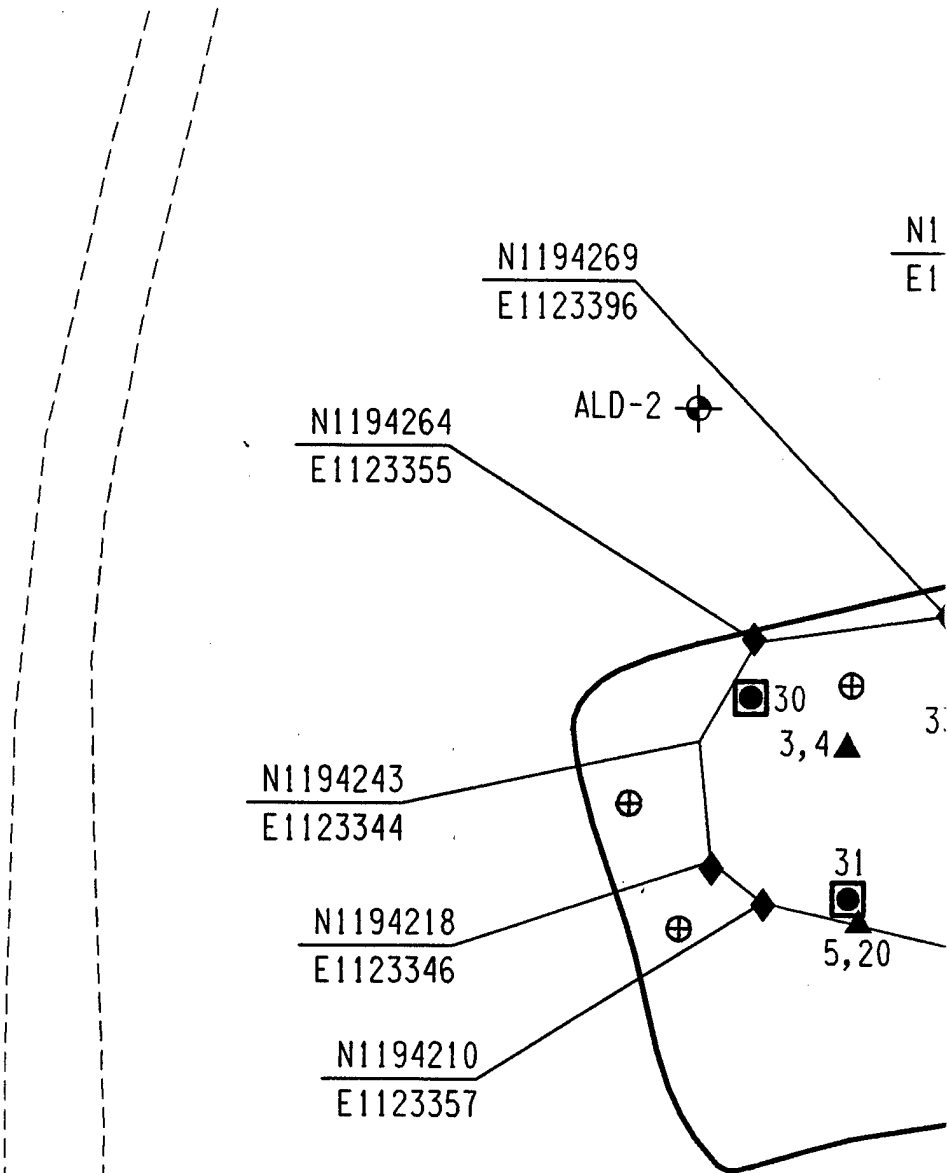
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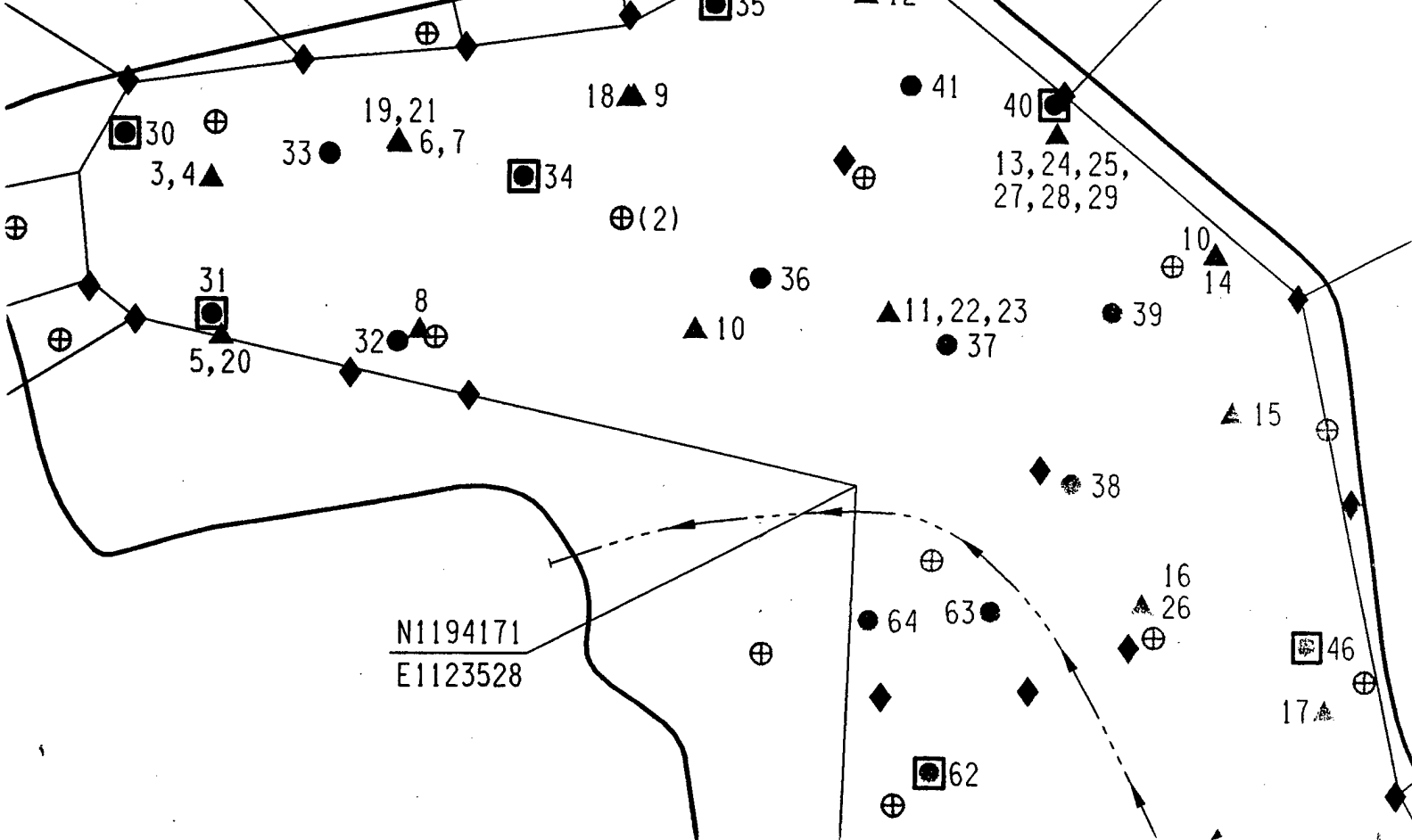
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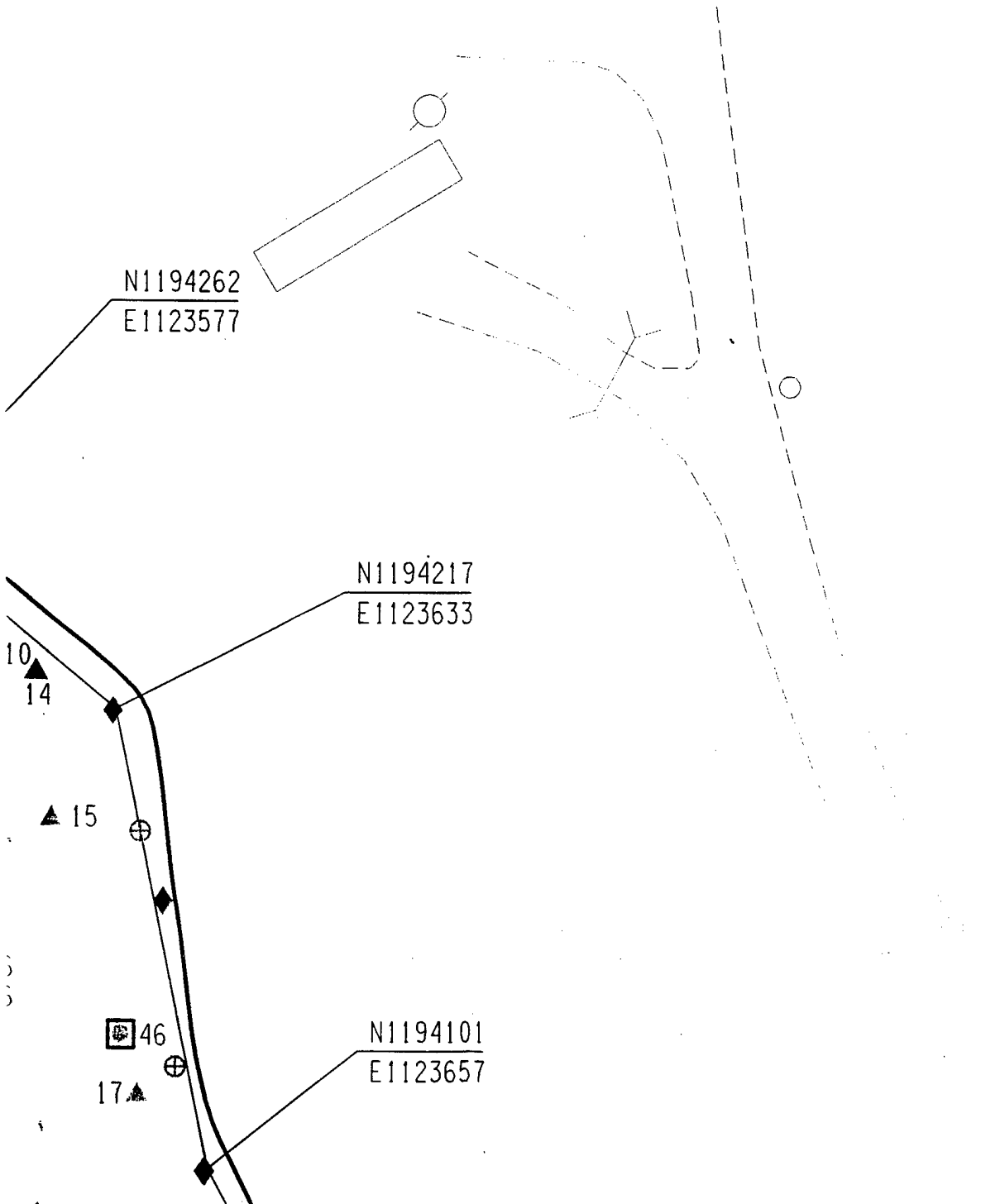
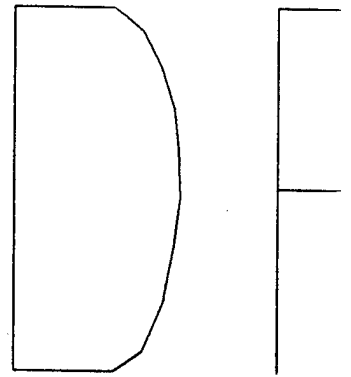
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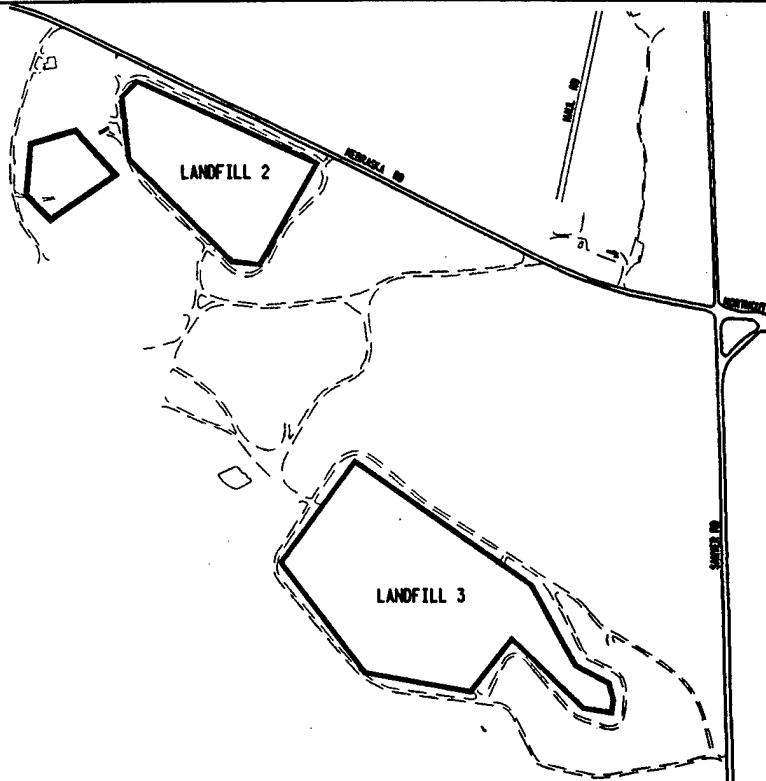
1. TOTAL AREA
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LIFT 1 C
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THICKNESS  
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### KEY PLAN (NTS)



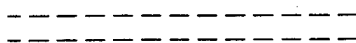
ASBESTOS  
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### NOTES

1. TOTAL AREA IS 2.29 ACRES. (OUTSIDE LIMITS OF CAP PLACEMENT)
2. 35 LIFT THICKNESS MEASUREMENTS PERFORMED & LOCATED FOR LIFT 1 OF BARRIER SOIL PLACEMENT. (15.3 PER ACRE)
3. 14 LIFT INTERFACE TESTS WERE PERFORMED. BARRIER SOIL LIFT THICKNESS MEASUREMENTS (LIFT 2) WERE PERFORMED & LOCATED IN THESE EXCAVATIONS. (6.1 PER ACRE)
4. 22 DENSITY TESTS WERE PERFORMED & LOCATED ON THE FIRST LIFT OF BARRIER SOIL PLACED. (9.6 PER ACRE)
5. 27 DENSITY TESTS WERE PERFORMED & LOCATED ON THE SECOND LIFT OF BARRIER SOIL PLACED. (11.8 PER ACRE)
6. 21 LIFT THICKNESS MEASUREMENTS PERFORMED & LOCATED FOR TOPSOIL PLACED. (9.2 PER ACRE)

### LEGEND



DIRT ROAD

DRAINAGE SWALE CENTERLINE

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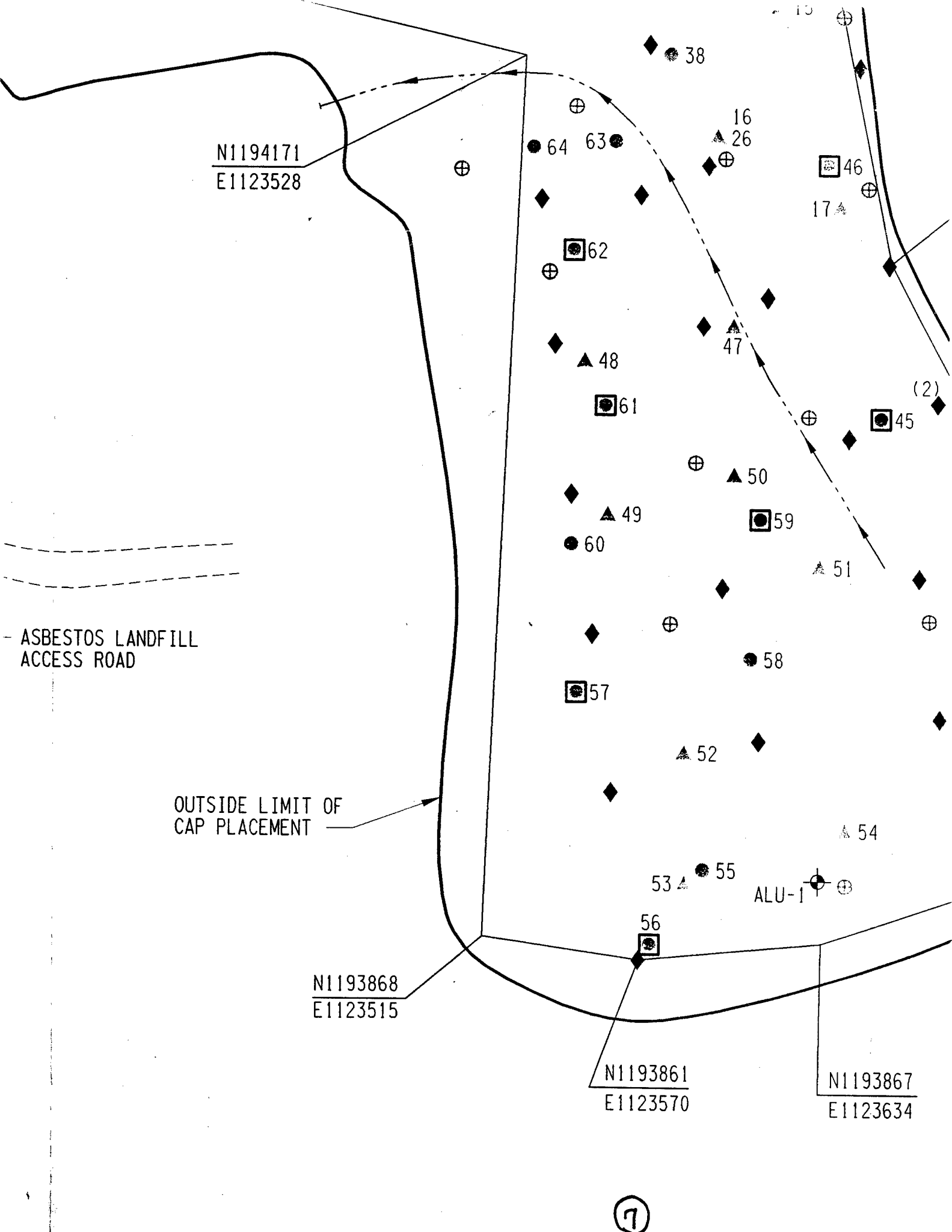
OUTSIDE LIMIT OF  
CAP PLACEMENT

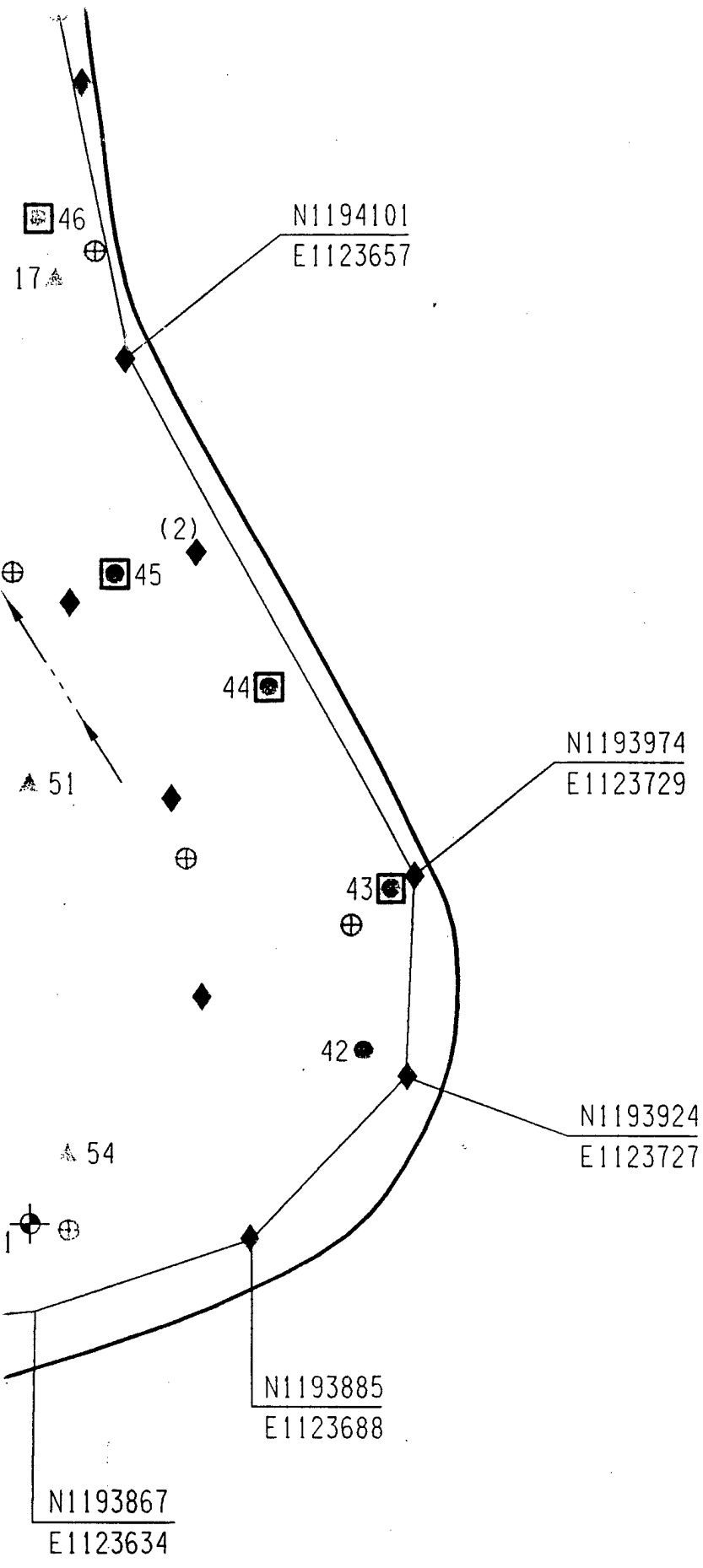
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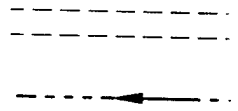




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5. 27 DENSITY  
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6. 21 LIFT TH.  
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SCALE 1" = 40'

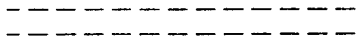
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OF BARRIER SOIL PLACED. (9.6 PER ACRE)

- 5. 27 DENSITY TESTS WERE PERFORMED & LOCATED ON THE SECOND LIFT OF BARRIER SOIL PLACED. (11.8 PER ACRE)
- 6. 21 LIFT THICKNESS MEASUREMENTS PERFORMED & LOCATED FOR TOPSOIL PLACED. (9.2 PER ACRE)

### LEGEND



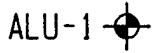
DIRT ROAD



DRAINAGE SWALE CENTERLINE



LIMITS OF ACM DISPOSAL



BENCHMARK



LIFT THICKNESS CONFIRMATION, LIFT 1



LIFT THICKNESS CONFIRMATION, LIFT 2,  
AND LOCATION OF INTERFACE BONDING TEST



LIFT THICKNESS CONFIRMATION, TOPSOIL



DENSITY TEST, LIFT 1



DENSITY TEST, LIFT 2



1" = 40'

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| NO. | DATE | REVISIONS |  |  | BY | CHKR | DESIGN SUPV | ENGR | PROJ ENGR | MICRO FLMD |

SCALE 1" = 40'

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**BECHTEL ENVIRONMENTAL INC.**  
OAK RIDGE, TENNESSEE

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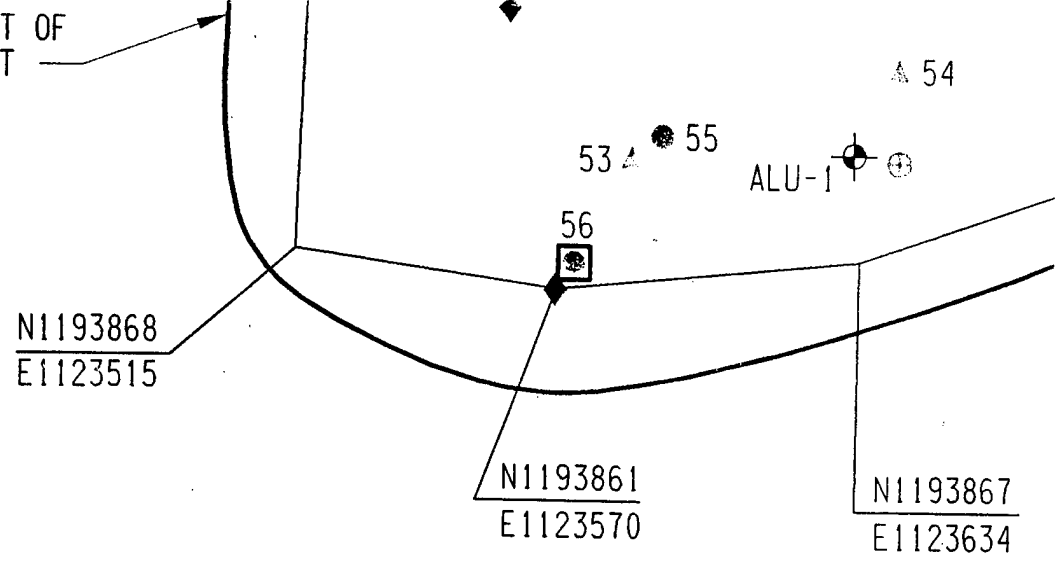
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OUTSIDE LIMIT OF  
CAP PLACEMENT



SITE PLAN - ASBESTOS LANDFILL

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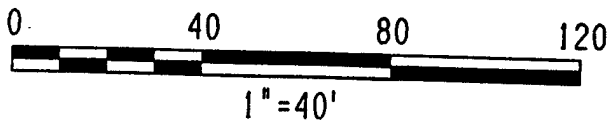
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SCALE 1"=40'

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**BECHTEL ENVIRONMENTAL INC.**  
OAK RIDGE, TENNESSEE

LORING AIR FORCE BASE  
LIMESTONE, MAINE

ASBESTOS LANDFILL FINAL CAP  
BARRIER SOIL & TOPSOIL LIFT THICKNESS,  
DENSITY, & INTERFACE BONDING TEST LOCATIONS



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