ALUMINUM COMPANY OF AMERICA
MASSENA, NEW YORK

REMEDIATION PROJECTS ORGANIZATION

POST-CLOSURE OPERATION AND MAINTENANCE MANUAL

FOR THE

DENNISON CROSS ROAD SITE

18 March 1994

Prepared by

Camp Dresser & McKee
Massena, New York 13662

CERTIFICATION WITH SUBMITTAL OF OPERATION AND MAINTENANCE MANUAL FOR DENNISON CROSS ROAD SITE

All information contained in this document is to the best of our knowledge, factual and represents CDM's total understanding of the conditions and circumstances at the ALCOA facility and impacted area. The conclusions and recommendations contained in this document represent CDM's best professional engineering judgement on remediation that meets those applicable or relevant and appropriate requirements and represents sound engineering practices and principles to protect public health and the environment.

Signature: _____

William F. McInerney. P.E.
CAMP DRESSER & McKEE

Date: March 18, 1994

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FOR THE
DENNISON CROSS ROAD SITE
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SECTION 1.0 - INTRODUCTION

1.1 INTENT OF DOCUMENT

Camp Dresser & McKee (CDM) prepared this draft Post-Closure Operation and Maintenance Manual for the Dennison Cross Road Site for the Aluminum Company of America (Alcoa) in Massena, New York. This manual was prepared in draft format to supplement the final design documents submitted to the New York State Department of Environmental Conservation (NYSDEC) for review and approval. The information in this report is preliminary; it will be updated with record drawing information after final closure construction activities are completed. Construction activities are anticipated to begin as early as April 1994.

This manual is intended for use by Alcoa for the physical maintenance of the remediated waste disposal areas during the post-closure monitoring period. The environmental monitoring control and reporting procedures are discussed separately in an accompanying report entitled, Post-Closure Monitoring Plan for the Dennison Cross Road Site (CDM, 18 February 1994).

This section briefly summarizes the background information for the Dennison Cross Road Site. This section also describes general post-closure care requirements from 6 NYCRR 373-02 to identify when and how the post-closure care period begins and ends.

1.2 BACKGROUND INFORMATION

1.2.1 General Site Description

Alcoa owns and operates an aluminum and aluminum product production facility in the Town of Massena, County of St. Lawrence, State of New York (Figure 1-1). The facility consists

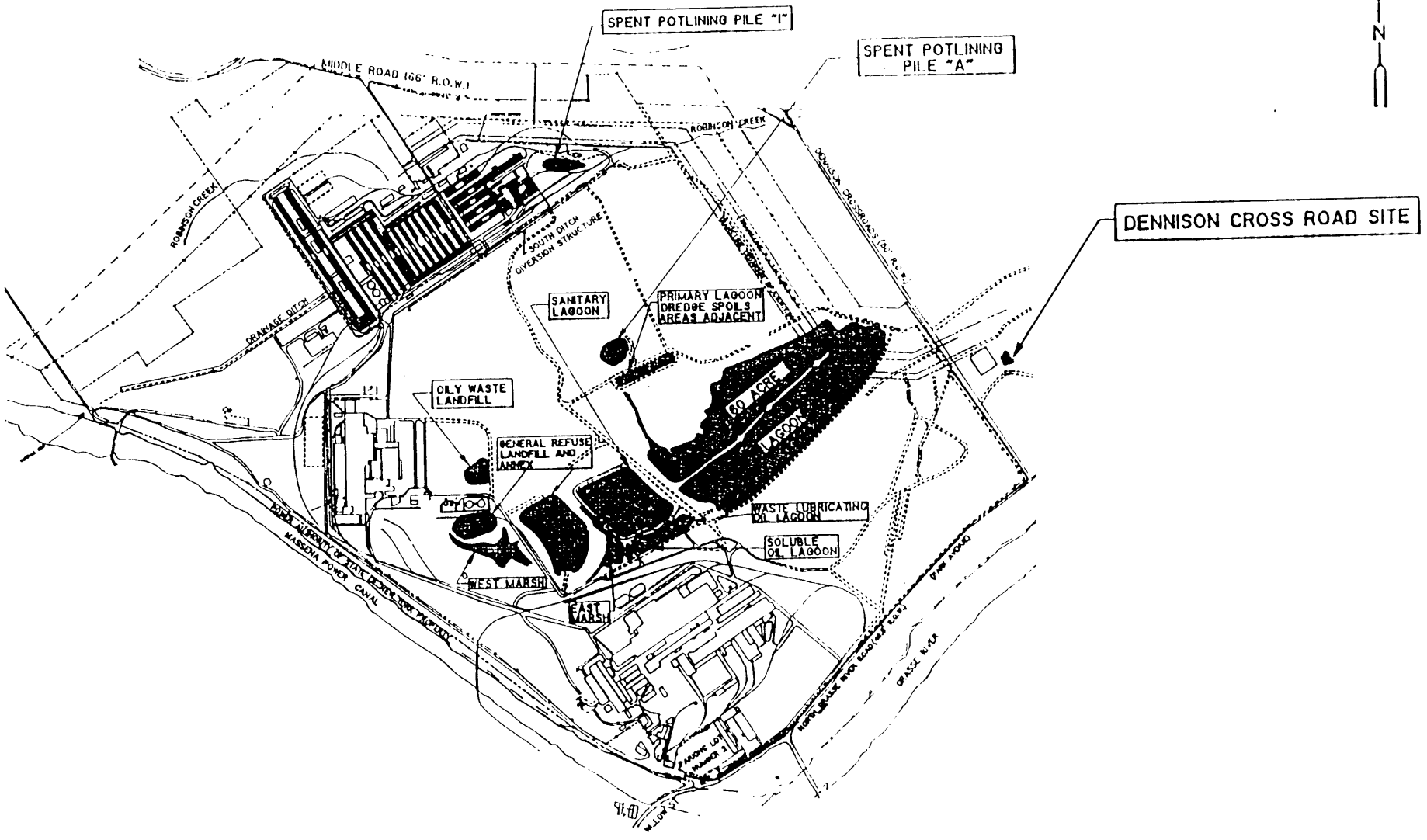
SPENT POTLINING PILE "I"
SPENT POTLINING PILE "A"
DENNISON CROSS ROAD SITE
N
MIDDLE ROAD 166' R.O.W.)
ROBINSON CREEK
SOUTH DITCH DIVERSION STRUCTURE
SANITARY LAGOON
PRIMARY LAGOON DREDGE SPOILS AREAS ADJACENT
DRAINAGE DITCH
OILY WASTE LANDFILL
GENERAL REFUSE LANDFILL AND ANNEX
60 ACRE LAGOON
WASTE LUBRICATING OIL LAGOON
SOLUBLE OIL LAGOON
WEST MARSH
EAST MARSH
MASSENA POWER CANAL
ALCOA - MASSENA, NEW YORK
SITE PLAN
2000
0
2000
4000
SCALE IN FEET

FIGURE 1.1

of approximately 2,700 acres and includes a Wire, Rod and Bar Fabricating Area (Area 1), an Ingot-Extrusion Area (Area 2) and a Smelting Area (Area 3). The Dennison Cross Road Site is a former waste disposal area that is located outside of the Alcoa facility boundary.

1.2.2 Site Location

The Dennison Cross Road Site is an area of approximately 3/4 acre. The site formerly was operated as a disposal area for solvent degreasing bottoms, drawing and soluble oil sludges and debris containing chlorinated solvents. Waste was intermixed with brown sandy fill up to 25 feet in depth (March 1991 ROD). The site is located east of Dennison Road on Alcoa property, outside of the plant facility bounds, on the crest of the South Ridge.

The Dennison Cross Road Site is situated on a north/south drainage divide. Swales exist on both the northern and southern ends of the disposal site. Runoff in the northerly direction travels to the Unnamed Tributary flowing east under Horton Road, discharging to the Grasse River. Southerly flow travels by swale and outlets at an embankment located approximately 1,000 feet north of the North Grasse River Road. Flow continues south, down the embankment and under the North Grasse River Road, via a culvert and eventually outlets to the Grasse River.

1.2.3 Waste History

The landfilling of the Dennison Cross Road Site ravine is reported to have commenced in 1969 and continued over a 10 year period with closure occurring in 1979. The closure of this waste site consisted of the pumping of oily wastes and contaminated groundwater from the site. A soil cover was placed over the residual waste. The cover is characterized as being brown, silty

sand (Atlantic Testing Laboratories Ltd., boring data dated, November 11, 1991). Soil borings performed at the site between November 1991 and January 1992 revealed that contaminant concentrations exceeding cleanup goals lie up to 34 feet below ground surface at the disposal site.

Elevated PCB levels have been detected in soil borings, test pits and sediments. Volatiles and PAHs have also been detected in these samples as well as in leachate outbreaks located in the southern swale (March 15, 1992 ROD).

Prior to waste disposal, the Dennison Cross Road Site consisted of a ravine approximately 600 feet in length and 25 feet in depth (Engineering Science, Inc., Waste Site Investigation Vol. I, 1987).

Natural overburden consists of gray glacial till with bedrock located approximately 100 feet below the existing ground surface. Organic soils exist in sporadic locations over the disposal site surface ranging between 0 to 2 feet in depth. Soil backfill within the disposal area averages 25 feet in depth.

1.2.4 Regulatory Actions

The New York State Department of Environmental Conservation (NYSDEC), in accordance with the Environmental Conservation Law (ECL), Article 27, Title 13, alleged the Alcoa facility to be an inactive hazardous waste disposal site, as defined in the ECL. Under NYSDEC's orders of consent, numerous field activities and studies were conducted to:

- characterize the nature and extent of contamination at the Dennison Cross Road Site;

- assess the impact of the contamination of public health and the environment; and

- evaluate remedial approaches.

Alcoa worked closely with the NYSDEC to develop remedial programs for these sites. These efforts resulted in NYSDEC's issuance of two Records of Decision (ROD) for the sites. The ROD that pertains to the Dennison Cross Road Site was published in March, 1991.

1.2.5 Summary of Remedial Actions

In accordance with the Records of Decision (ROD), which includes the Preliminary Engineering Plan (PEP), the remedial measures for the Dennison Cross Road Site included the following:

- Excavation and disposal of wastes in the drum disposal area, including excavation of all waste material, drums and visibly stained soil in the vicinity of the drums were excavated; characterization of all of the excavated materials and management in accordance with applicable regulations; removal and disposal of intact drums with solids only in the Secure Landfill cell 2; over packing and off-site disposal of intact drums containing liquid residues were placed in overpacks (along with visibly contaminated soils around the drums; disposal of corroded drums, soils, and miscellaneous solid wastes meeting land disposal restrictions (LDRs) at the on-site Secure Landfill facility.

- Excavation and disposal of contaminated soils in Area #1 outside of the drum disposal area, including excavation and disposal of all visibly stained soil at the on-site Secure Landfill.

- Excavation and disposal in the Secure Landfill of contaminated soils from the Southern Swale to grades shown in B-136684-JM Appendix A.

- Confirmatory sampling for cleanup goal attainment in Area #1, the southern swale, and the drum disposal area.

Following achievement of cleanup goals for areas outside of groundwater management units in Area #1, the drum disposal area and the south swale, the following work was performed:

- backfilling operations within the excavations of Area #1, the drum disposal area and the southern swale;

- construction of a low permeability cap over Area #1, the drum disposal area and the southern swale;

- excavation and disposal of contaminated soils in Area #2 as indicated for Area #1, and

- confirmatory sampling of cleanup level attainment in Area #2 as indicated for Area #1.

Following achievement of cleanup goals for areas outside of groundwater management areas in Area #2, the following work was performed:

- backfilling operations within the excavation of Area #2 with common fill to subgrade; and

- construction of a low permeability cap over Area #2.

Operations and maintenance of the completed facilities at the Dennison Cross Road Site is the subject of this manual.

1.3 POST-CLOSURE CARE REQUIREMENTS

1.3.1 Post-Closure Notification

In accordance with 6 NYCRR 373-2.7(i)(1), no later than 60 days after certification of closure of the Dennison Cross Road Site, Alcoa will submit to the Massena Zoning Board, the St. Lawrence County Clerk and to NYSDEC, a record of the type, location, and quantity of hazardous wastes disposed of within the facility. Alcoa will identify the type, location, and quantity of remaining hazardous wastes to the fullest extent possible using existing records.

In particular, 6 NYCRR 373-2.7(i)(2)(I and II) states that within 60 days of closure certification of the site, Alcoa will:

> "Record with the county clerk in the county in which the facility is located a notation on the deed to the facility property--or on some other instrument which is normally examined during title search--that will in perpetuity notify any potential purchaser of the property that:
>
> (a) The land has been used to manage hazardous wastes.
>
> (b) Its use is restricted under 6 NYCRR 373-2.7.
>
> Submit a certification, signed by Alcoa, that records the notation specified in the paragraph above with a copy of the document in which the notation has been placed, to the NYSDEC."

1.3.2 Post-Closure Care

In accordance with 6 NYCRR 373-2.14(g)(2)(i to iv), after final closure, the owner will comply with post-closure requirements, including maintenance and monitoring throughout the post-closure care period. The owner will:

- Maintain the integrity and effectiveness of the final cover, including making repairs to the cap, as necessary,

to correct the effects of settling, subsidence, erosion, or other events.

- Maintain and monitor the groundwater monitoring system, and comply with all other applicable requirements.
- Prevent run-on and run-off from eroding or otherwise damaging the final cover.
- Protect and maintain surveyed benchmarks.

1.3.3 Certification of the Completion of the Post-Closure Care Period

Post-closure care documentation is important for the termination of the post-closure care period. Post-closure certification will be required in the future to verify that the proposed post-closure care activities were conducted in accordance with the approved plan, and to ensure that by terminating the post-closure care period, a threat to human health and the environment is not present. An independent engineer is not expected to verify that every activity was conducted over the 30-year post-closure care period for certification purposes. However, a visual inspection of the site conditions and a review of all internal documentation will be conducted to evaluate whether the post-closure care activities were performed adequately. Therefore, at a minimum, Alcoa needs to maintain copies of all inspection reports performed by Alcoa or other independent party(ies), field reports documenting inspections, and in-house records such as laboratory results and contractor's logs, so that appropriate documentation will be available to certify that post-closure care has been completed.

In accordance with 6 NYCRR 373-2.7(j), no later than 60 days after completion of the established post-closure care period for the Dennison Cross Road Site, Alcoa will need to submit to the NYSDEC, by registered mail, a certification that the post-closure care program for the site was performed in accordance with the approved post-closure plan. The certification has to be signed

by Alcoa and an independent professional engineer registered in New York. Documentation supporting the professional engineer's certification will need to be furnished to the NYSDEC upon request until Alcoa can be released from the financial assurance requirements for post-closure care.

1.4 ORGANIZATION OF THIS MANUAL

Site specific needs as well as NYSDEC requirements pertaining to the final closure of existing landfills are discussed in this manual. Therefore, some sections will reference NYSDEC requirements while others will not.

Many of the NYSDEC requirements for operations and maintenance of the new facilities constructed at these sites have been addressed in separate supplementary documents prepared by the Remediation Projects Organization (RPO: Alcoa, Camp Dresser & McKee, and Morrison-Knudsen). These documents are referenced throughout this report. To gain a full understanding of this operation and maintenance plan, the reader is encouraged to obtain copies of the separate documents referenced herein.

Section 2 presents an overview of the design and functional description of key elements of the closure facilities installed at each site. Section 3 addresses post-closure inspection and maintenance procedures. Section 4 details the operation and control of the site activity, and Section 5 describes the duties and responsibilities of operations and maintenance personnel.

Half-size record drawings are included in Appendix A.

Engineering response procedures are described in Appendix B.

The Post-Closure Health and Safety Plan Template developed for this site is included under Appendix C.

SECTION 2.0 - DESIGN AND FUNCTION OF LANDFILL COMPONENTS

2.1 INTRODUCTION

This section presents an overview of the design and functional description of the following key elements of the Dennison Cross Road Site:

- Composite Cap
- Surface Water Control

Record drawings showing pre and post-construction conditions. Details of the above facilities referenced throughout this Section are included under Appendix A.

2.2 FINAL CAP

The final cap was designed and constructed over the southern swale, the drum disposal area, and the excavated areas #1 and #2. It is used to provide a low permeability cap/barrier which will divert infiltration and stormwater runoff from the remediation site mitigating the effects of stormwater infiltration. The design and functional description for the final cap is described below.

The cap constructed over the Dennison Cross Road Site contains a low permeability geosynthetic clay liner equipped with a final cover designed to minimize erosion and prevent ponding.

A detail showing a typical section through the cap is shown on Drawing No. B-137692-JM. As shown, the Dennison Cross Road Site composite cap is composed of the following layers in descending order:

- 6 inches topsoil
- 12 inches select fill
- Geosynthetic Clay Liner
- 6 inches select fill
- common fill backfill

The topsoil, select fill, and geosynthetic clay liner are graded to allow precipitation to flow to the middle of the capped area and travel to the existing swale located to the south. This swale will eventually outlet to the Grasse River.

The geosynthetic clay liner is the primary barrier against precipitation to reduce the potential for off site migration of remaining contaminants via groundwater at hazardous levels. The impermeable layer covers the entire southern swale and the disposal areas and is keyed into the subgrade along the perimeter.

The topsoil and select fill layers are used to support a vegetative cover (grass). The grass root system stabilizes the soils and prevents washout and erosion. Another function of these soil layers is to store infiltration from storm events until it can be removed via plant uptake and evapotranspiration.

2.3 SURFACE WATER CONTROL

The post-closure conditions at the Dennison Cross Road Site consist of a grass surface ground cover with a low permeability barrier situated 1 1/2 feet below grade. The overland flow travels predominantly in the north and the south directions. The depressed cap in Area 1 will direct runoff to the southern swale. Runoff will eventually drain into the Grasse River to the south and the Unnamed Tributary to the north. The intent was to maintain the present drainage scheme and existing runoff patterns while ascertaining that no

increase in runoff occurs as a result of final remediation measures.

SECTION 3.0 - SITE INSPECTION AND MAINTENANCE

3.1 GENERAL

This section addresses post-closure inspection and maintenance for the Alcoa-Massena Dennison Cross Road Hazardous Waste Site. Post-closure care consists primarily of inspection and maintenance of the final cover and the surface drainage system. This post-closure plan specifies reasonable monitoring and maintenance activities for this site.

3.2 POST-CLOSURE CARE PERIOD

In accordance with 6 NYCRR 373-2.7(g) (1) (i), post-closure care will begin immediately upon completion of the final cover and site drainage facilities and then continue for a period of 30 years.

The post-closure care period may be shortened or extended in accordance with 6 NYCRR 373-2.7(g)(1)(ii)(a and b). This requirement allows that at any time during the post-closure period, the NYSDEC may in accordance with the permit modification procedures:

- Shorten the post-closure care period if it is demonstrated that the reduced period is sufficient to protect human health and the environment; or

- Extend the post-closure care period if it is found that the extended period is necessary to protect human health and the environment.

3.3 USE OF PROPERTY

In accordance with 6 NYCRR 373-2.7(g) (3) (i and ii), post-closure use of property on which hazardous wastes remain will not allow disturbance of the integrity of the final cover, liner, or other components of the containment system or the functions of the monitoring system, unless the NYSDEC finds that the disturbance:

- is necessary to the proposed use of property and will not increase the potential hazard to human health or the environment; or

- is necessary to reduce a threat to human health or the environment.

3.4 INSPECTION AND MAINTENANCE REQUIREMENTS

In accordance with 6 NYCRR 373-2.11(f)(1)(i to ii), after final closure, the owner will comply with post-closure care requirements, including inspection, maintenance and monitoring. Throughout the 30-year post-closure period the owner will:

- Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events.

- Prevent runon and runoff from eroding or otherwise damaging the final cover.

- Protect and maintain surveyed benchmarks.

- Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements.

Maintenance of the environmental monitoring system (including groundwater monitoring wells,) are discussed separately in the Post-Closure Monitoring Plan for the Dennison Cross Road Site (CDM, drafts as of 18 February 1994). This supplemental plan was prepared in accordance with 6 NYCRR 373-2.6.

Site security requirements under 6 NYCRR Section 373-1.5(a)(2)(iv) and 373-2.2(f), security procedures and equipment, will be met by Alcoa. Alcoa's security force will patrol the property on a weekly basis. This is in view of the fact that on site waste will not remain.

3.5 INSPECTION ITEMS, FREQUENCY, AND ROUTINE MAINTENANCE

In accordance with monitoring and inspection requirements of NYCRR Section 373-2.11(d) (2) (i, ii & iv), the Dennison Cross Road Site will be inspected weekly and after storm events of extended duration. The inspections will be aimed at evaluating the site for signs of deterioration, malfunction, or improper operation of runon and runoff control systems. Inspections and maintenance will be conducted as specified in this operating and maintenance plan.

The following items will require periodic inspection and maintenance:

- Final cover and vegetation
- Surface water control system
- Service roads
- Benchmarks
- Health and safety equipment

Maintenance of monitoring wells and other environmental sampling points are addressed separately in the Post-Closure Monitoring

Plan for the Dennison Cross Road Site (CDM draft as of 11 February 1994).

Table 3-1 presents a checklist of problems typically associated with each of the above items and associated schedule of inspection. Note that some elements of the site will be inspected daily, on an as-needed basis, or after storm events. These inspections, however, will not result in written documentation unless problems are found.

Table 3-2 presents a checklist of types of maintenance typically required for each of the above items and a schedule for routine maintenance. The schedule for routine maintenance is approximate and in many cases may be revised, based on operator experience, to an as needed basis.

3.6 INSPECTION REPORTING

An inspection log with explanations of observations will document each inspection and become part of the operating records for the Dennison Cross Road Site.

Inspection logs will be in a checklist/fill-in-the-blank format. All site inspection reports will include the date, place, time, weather, and names of the individual(s) conducting the inspection.

The log is formatted to ensure a specific itinerary is followed and that all pertinent facilities identified are inspected.

Specific Item	Typical Problems	Minimum Suggested Frequency							Visual	Check List/Written Report[2]	Notes
		Daily or as needed[1]	Weekly	Monthly	Quarterly	Biannually	Annually	After Major Storms			
Final Cover and Vegetation	Erosion Vegetation deterioration Settling/Ponding Uplift Washouts Leachate Rodent Holes				• • • • •	• •	• •	• • • • • • •	• • • • • • •	• • • • • • •	Written report will be made if problems are encountered.
Surface Water Control System: swales	Obstructions Bank erosion Ponding Vegetation stress Scouring Siltation				• • • • •		•	• • • • • •	• • • • • •		Written report will be made if problems are encountered.
Service Road	Potholes Ponding Deterioration Washouts					• • • •		• •	• • • •		Written report will be made if problems are encountered.
Benchmarks	Deterioration Damage						• •		• •		Written report will be made if problems are encountered.
Health and Safety Equipment	Operational Condition	•							•	•	Use and calibrate personal protective equipment for all post-closure activities as specified in ALCOA's approved health and safety plan for this site.
Security	Public Safety		•								

NOTES:

(1) No action required for daily inspections unless problems are encountered.

(2) Complete inspection log check list on a quarterly basis unless problems are discovered more frequently.

Table 3-1

CDM

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Post-Closure Operation and Maintenance Plan
Schedule for Inspections
Dennison Cross Road Site
Alcoa - Massena, New York

Specific Item	Maintenance Required	Minimum Suggested Frequency							File Report (2)	Notes
		Daily or as needed	Weekly	Monthly	Quarterly	Biannually	Annually	After Major Storms		
Final Cover and Vegetation	Mowing Reseeding (1) Fertilizing (1) Regrading (1) Backfilling (1)					•	• • •	•	• •	Frequency may depend on as needed basis. Soil testing to determine fertilizer and lime requirements may be taken at 3-year intervals, if applicable.
Surface Water Control System: swales, inlet structure, culverts, pipes	Repairing (1) Replacement (1) Clearing Cleaning Reseeding (1)					• • • •	•	•	• • •	Frequency may depend on as needed basis.
Service Road	Clearing (1) Repairing (1) Backfilling (1)					• • •		• • •	• •	Frequency may depend on as needed basis.
Benchmarks	Repairing (1) Surveying (1)						• •		• •	Frequency may depend on as needed basis.
Health and Safety Equipment	Repairing Replacement	• •								Refer to specific equipment catalogues.

NOTES: (1) If required based on visual observation.
(2) At completion of maintenance activity (ies)

Table 3-2

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Post-Closure Operation and Maintenance Plan
Schedule for Preventative (Routine) Maintenance
Dennison Cross Road Site
Alcoa - Massena, New York

SITE INSPECTION LOG

Inspector's Name : _____ Inspector's Signature : _____

Weather : _____ Date : _____

Temperature : _____ Time Begin : _____

Time End : _____

Sheet : _____ of _____

Specific Item to Inspect	Typical Problems Encountered	Conditions Observed		Comments or Corrective Action(s) Implemented and Dates
		Normal	Abnormal (Attach Report)	
Final Cover and Vegetation	Erosion	☐	☐	Spring Mowing Req'd: YES ☐ NO ☐
	Vegetation deterioration	☐	☐	Date Completed: _____
	Settling/Ponding	☐	☐	Fall Mowing Req'd: YES ☐ NO ☐
	Uplift	☐	☐	
	Washouts	☐	☐	Date Completed: _____
	Leachate	☐	☐	
	Rodent holes	☐	☐	
Surface Water Control System: swales, inlet structure, culverts, pipes	Obstructions	☐	☐	
	Bank erosion	☐	☐	
	Ponding	☐	☐	
	Vegetation stress	☐	☐	
	Scouring	☐	☐	
	Siltation	☐	☐	
Service Road	Potholes	☐	☐	
	Ponding	☐	☐	
	Deterioration	☐	☐	
	Washouts	☐	☐	
Benchmarks	Deterioration	☐	☐	
	Damage	☐	☐	
Health and Safety Equipment	Operational condition			
Miscellaneous : Malfunctions, deterioration, discharges, releases into the environment				

Figure 3-1

CDM
environmental engineers, scientists, planners & management consultants

Post-Closure Operation and Maintenance Plan
Typical Inspection Log
Dennison Cross Road Site
Alcoa - Massena, New York

The log also includes a checklist of typical problems associated with each item to be inspected. Check boxes are provided to indicate normal/abnormal conditions.

The inspection logs will be supplemented, as necessary, with written reports documenting failures and mitigating actions taken.

The inspection log checklist will be completed for each of the specific areas or equipment listed in the inspection schedule and will be maintained in a permanent binder. Separate written reports documenting maintenance activities and remedial actions shall be recorded together with these logs. These inspection and maintenance logs are of utmost importance to provide a post-closure care history for the Dennison Cross Road Site.

Preventive/non-emergency maintenance shall be completed as soon as practical to preclude further damage and minimize the need for emergency corrective action. If a hazard is determined to be imminent or has already occurred during the course of the inspection or anytime between inspections, corrective action shall be implemented immediately with notification of the appropriate authorities.

Specifications for materials and installation procedures for repair of cap components are provided in the Technical Specification. Only those materials meeting the specifications shall be used in making repairs. The Construction Quality Assurance Plan (CQAP) shall be consulted for specific testing requirements of repair work.

3.7 SPECIFIC INSPECTION AND MAINTENANCE OBJECTIVES

3.7.1 Final Cover and Vegetation

Inspection of the final cover and vegetation will include a site walkover with a specific itinerary regarding required observations. Specific parameters on the surface which require observation are:

- erosion effects/side slope sloughing (slippage)
- vegetation deterioration
- settling/subsidence areas
- uplift
- washouts

Locations of noteworthy observations should be recorded on the as-built site base maps with reference (distance) to easily recoverable site features. Surface elevations of suspect areas should be determined to monitor localized subsidence or overall settlement, as necessary. A survey should be performed to document any areas where significant differential movements occur.

Routine final cap maintenance will include annual reseeding, if necessary, and bi-annual mowing. The grass cover must be mowed down to 4 or 5 inches twice per year (late June and early September) to promote growth of shallow rooted grass and to kill seedlet trees, shrubs, weeds, or other pioneer species.

A soil test including pH measurements, will be taken every three years to determine fertilizer and lime requirements. Bare, sparsely covered, and drought damaged areas shall be reseeded (no later than early September) as soil moisture content returns to normal levels.

Simple maintenance related to the items identified above may include the following:

- Fill ruts and gullies in eroded side slope areas and regrade to match design condition, using care not to disturb the composite cap.

- Fill and grade areas of subsidence on the final cap with fill material and topsoil to match existing surface grading.

Localized subsidence or surface depressions (visual or as evidenced by the presence of puddles following a rainstorm) will require backfilling and regrading to reestablish final design grade and ensure proper drainage.

3.7.2 Surface Water Control System

Inspection of the surface water control system will require a site walkover along the perimeter of the site with a specific itinerary regarding required observations. Drainage swales and culverts should be checked for proper operation. Required observations include checking for the presence of obstructions (i.e., accumulated soil from erosion of landfill side slope). Downgradient drainage pathways from the site should be examined for the presence of excess fines due to erosion of the final cap.

Routine maintenance will include clearing/cleaning of drainage swale channels. When accumulated debris obstruct flow, sediment removal will require excavation by a grade-all or similar construction equipment. Sediment may be stockpiled for later use as fill material for regrading, if appropriate.

Drainage swales may need periodic replacement of topsoil and seeding to reestablish vegetation and regrading or reconstruction to eliminate standing water.

3.7.3 Service Roads

Service roads will be inspected regularly for signs of deterioration, potholes, washouts, ponding/poorly drained areas, and debris.

Routine maintenance will include clearing, backfilling, and regrading. Provisions will be made for snow removal during the winter season.

The deficiencies listed above will be given immediate attention.

3.7.4 Benchmarks

Permanent benchmarks will be inspected annually. Inspection will include checking for signs of damage or deterioration. Maintenance may include replacement if damaged or missing or conducting a survey to verify its elevation.

3.7.5 Health and Safety Equipment

Suggested health and safety equipment for various inspection and maintenance activities is listed in the post-closure health and safety plan template developed for this site.

Alcoa's Health and Safety Plan for Operation and Maintenance procedures at the Dennison Cross Road Site will be distributed to all personnel. Alcoa personnel must comply with this plan. In addition, personnel must operate and maintain any necessary equipment in accordance with the manufacturers' instructions.

SECTION 4.0 - PERSONNEL REQUIREMENTS

4.1 PERSONNEL REQUIREMENTS

The personnel responsible, for Dennison Cross Road Site post-closure maintenance, will consist of the site maintenance supervisor, site inspectors and maintenance workers.

The duties of each individual are described below, and may also include the responsibilities at other sites.

4.1.1 Site Maintenance Supervisor

Position responsibilities include:

- supervising overall maintenance plans, procedures and operations;
- maintaining facility compliance with NYSDEC and other permits;
- overseeing site inspectors and maintenance personnel and reviewing their performance;
- reviewing inspection logs and periodically inspecting the facility;
- maintaining all inspection, training and personnel records;
- fulfilling all record keeping and reporting requirements under this plan, including preparing and filing yearly facility report and status reports with appropriate agencies as required;
- overseeing remedial repair efforts if required; and

- reporting directly to the supervisor who is responsible for site maintenance.

4.1.2 Site Inspectors

Position responsibilities include:

- reporting to site maintenance supervisor;
- performing site inspection;
- assisting in training of new inspectors for site inspection;
- making appropriate entries into inspection records and incident reports;
- notifying supervisor of occurrence of "emergency" situations; and
- possibly helping to oversee onsite repair and maintenance work.

4.1.3 Maintenance Personnel

Position responsibilities include:

- reporting to site maintenance supervisor; and
- operating heavy equipment when necessary.

4.2 PERSONNEL TRAINING

Personnel training is necessary to ensure that designated personnel can meet the objectives of the post-closure plan.

Facility personnel must comply with NYSDEC Regulation 6 NYCRR Subpart 373-2 (h) (1-5). A summary of these training requirements is listed in the following sections.

4.2.1 Owner/Operator

Alcoa must maintain documentation that includes hazardous waste management job descriptions (including requisite skills, education and other qualifications and employee duties), job titles, employee names, amount and type of training and employees trained) and any training records of past and current employees in accordance to OSHA regulations (kept for at least 3 years from employees last work date).

4.2.2. Facility Personnel

Facility personnel must successfully complete an instructional program in either classroom or on-the-job training, in which the employee will learn to perform duties in a way that ensures facility compliance. The program must be completed within six months after the date of employment . An annual review of initial instruction must be provided.

4.2.3 Training Program

The training program must have a program director trained in hazardous waste management procedures. Program requirements outlined in Subpart 373-2 (h) (1) (iii), must teach facility personnel hazardous waste management procedures (including contingency planning) relevant to the duty in which they will perform. Other requirements that the program must teach include (minimum), emergency procedures and the use of emergency equipment and systems.

4.2.4 Training Records

Training records must be kept until delisting of the facility. Former employee records must be kept for at least 3 years from the date the employee last worked in/at the facility.

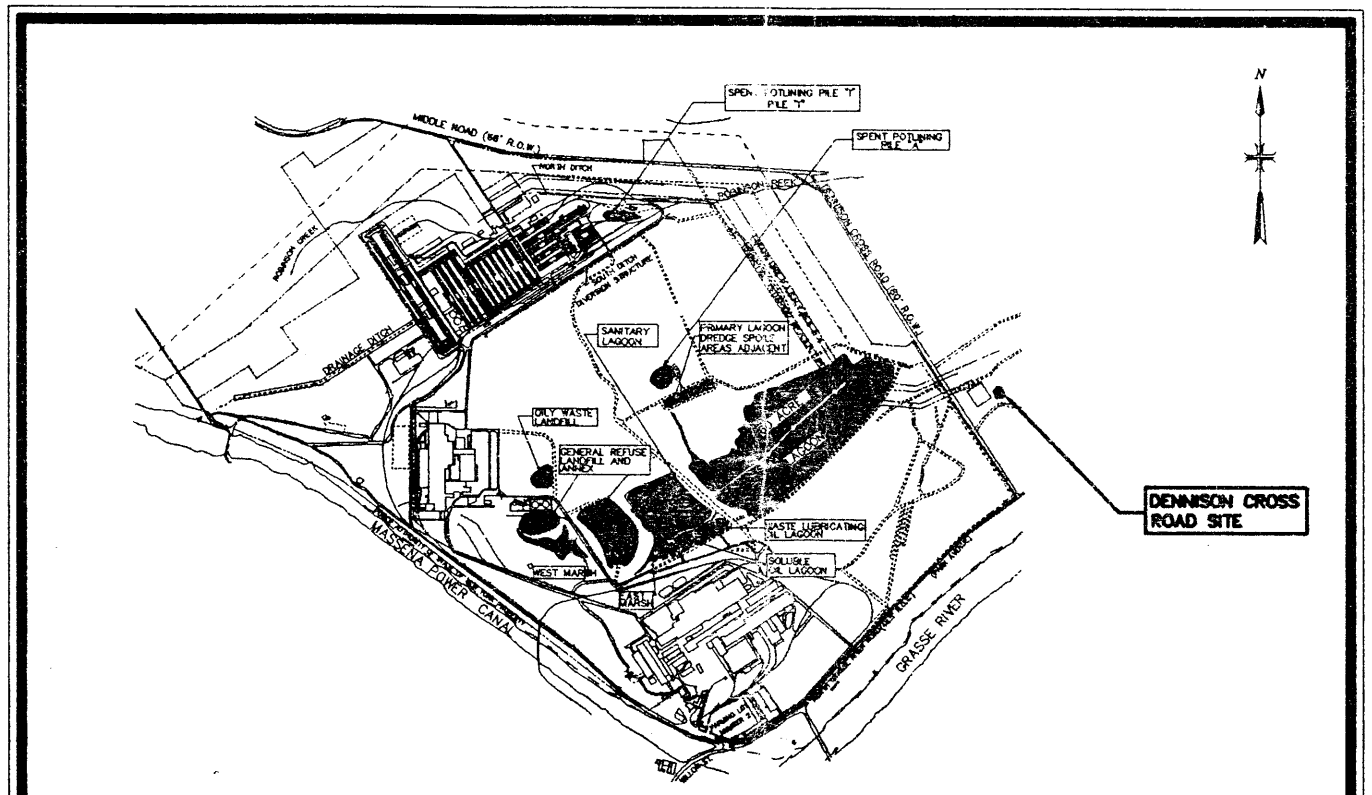
4.3 HEALTH AND SAFETY REQUIREMENTS

Site specific health and safety procedures are required in accordance with Title 29, Code of Federal Regulations, Part 1910 "Hazardous Waste Operations and Emergency Responses: Final Rule." These procedures are described in the Dennison Cross Road Site Post Closure Health and Safety Plan template appended to this O&M manual. This health and safety plan template addresses the health and safety hazards of each phase of site operation and maintenance and includes the requirements and procedures for employee protection. The health and safety plan template should be reviewed and approved by the Alcoa site health and safety officer. The approved plan should also be reviewed periodically for continued compliance with applicable regulations.

APPENDIX A

RECORD DRAWINGS

ALUMINUM COMPANY OF AMERICA
DENNISON CROSS ROAD SITE
RECORD DRAWINGS



LOCATION PLAN

1500 0 1500 3000
SCALE IN FEET

DRAWING INDEX

DRAWING NO.	DRAWING TITLE
B-137682-JM	GENERAL NOTES AND LEGEND
B-137683-JM	PRE-EXISTING CONDITIONS
B-137684-JM	EXCAVATION PLAN - AREA #1
B-137685-JM	EXCAVATION PLAN - AREA #2
B-137686-JM	CAPPING PLAN - AREA #1
B-137687-JM	CAPPING PLAN - AREA #2
B-137688-JM	CROSS SECTION A-A
B-137689-JM	CROSS SECTION B-B
B-137690-JM	CROSS SECTION C-C
B-137691-JM	CROSS SECTION D-D
B-137692-JM	MISCELLANEOUS DETAILS

I HEREBY CERTIFY THAT THE REMEDIAL PROGRAM FOR THE DENNISON CROSS ROAD, AS ILLUSTRATED ON THE RECORD DRAWINGS WAS COMPLETED IN ACCORDANCE WITH THE APPROVED REMEDIAL DESIGN. THIS CERTIFICATION IS BASED UPON THE ENGINEER OF RECORD'S PROFESSIONAL OPINION.

SIGNATURE: Joseph E. Mihm

JOSEPH E. MIHM, P.E.
ENGINEER OF RECORD, NY LICENSE # 061854-1
CAMP DRESSER & MCKEE

DATE: January 12, 1996

STATE OF NEW YORK · JOSEPH E. MIHM · 061854-1 · LICENSED PROFESSIONAL ENGINEER

CAMP DRESSER & McKEE

MASSENA, NEW YORK
JANUARY 12, 1996

J. Mihm 2-5-96
Review Comments Completed

environmental engineers, scientists, planners, & management consultants

CDM

B-137682-JM

GENERAL NOTES

1.0 EXISTING CONDITIONS

1.1 ELEVATIONS BASED ON U.S. LAKE SURVEY (U.S.L.S.) DATUM.

1.2 HORIZONTAL COORDINATES BASED ON ALCOA-MASSENA OPERATIONS PLANT DATUM.

1.3 EXISTING SITE TOPOGRAPHY BASED ON AN AERIAL SURVEY DATED 4/20/87. SEE ALCOA'S SET OF 24 PLANT-WIDE TOPOGRAPHICAL DRAWINGS BEGINNING WITH DRAWING NO. A-126781-JM. SHEET 19 COVERS THE PROJECT SITE. TOPOGRAPHY WITHIN THE DENNISON CROSS ROAD SITE WAS UPDATED ON 2/28/92 FOLLOWING CONSTRUCTION OF INTERIM REMEDIAL MEASURES.

1.4 THE PHYSICAL LOCATIONS OF TEST PITS, SOIL BORINGS, MONITORING WELLS, SEDIMENT SAMPLES, ETC. BEFORE NOVEMBER 1991 WERE LOCATED BASED ON FIELD SURVEY AND RECORDS COMPILED BY THE FIRM OF SPENCER F. THEW, P.E./L.S.

2.0 SUBSURFACE DATA

2.1 LOGS OF ALL AVAILABLE SUBSURFACE DATA FOR SOIL BORINGS, AND MONITORING WELLS WERE COMPILED FOR THIS DESIGN BY ATLANTIC TESTING LABORATORIES, LTD. GEOLOGICAL INTERPRETATIONS DEPICTED ON SHEETS B-137688-JM THRU B-137691-JM WERE COMPILED BY CDM BASED ON ATLANTIC TESTING LABORATORIES' LOGGED OBSERVATIONS DATED 11/27/91 THRU 12/10/91.

2.2 GROUNDWATER CONTOURS SHOWN ON DRAWING NO. B-137683-JM WERE PREPARED BASED ON HISTORICAL LEVELS MEASURED WITHIN THE ONSITE MONITORING WELLS. THE CONTOURS REPRESENT THE INTERPOLATION OF THE HIGHEST GROUNDWATER READING OF EACH WELL. THE INTENT OF THESE CONTOURS IS TO PROVIDE THE CONTRACTOR WITH A CONSERVATIVE VIEW OF HIGH GROUNDWATER CONDITIONS.

2.3 NOTE THAT THE PRESENCE OF CONTAMINATED WATER IS EXPECTED IN AND AROUND THE DRUM DISPOSAL AREA.

3.0 GENERAL CONSTRUCTION SEQUENCING

3.1 GENERAL

THE ENGINEER HAS BASED THE REMEDIAL DESIGN FOR CLOSURE OF THE DENNISON CROSS ROAD SITE ON THE FOLLOWING GENERAL CONSTRUCTION SEQUENCING. THIS SEQUENCE IS PROVIDED FOR THE CONTRACTORS INFORMATION AND DOES NOT LIMIT THE CONTRACTOR FROM MODIFYING THE CONSTRUCTION SEQUENCE TO CONSTRUCT THE WORK BASED ON THE CONTRACTORS MEANS AND METHODS.

3.1.1 EXCAVATION AND DISPOSAL OF WASTES IN THE DRUM DISPOSAL AREA WILL BE PERFORMED. ALL WASTE MATERIAL, DRUMS AND VISIBLY STAINED SOIL IN THE VICINITY OF THE DRUMS WILL BE EXCAVATED. ALL OF THE EXCAVATED MATERIALS WILL BE CHARACTERIZED AND MANAGED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS. DRUMS WHICH ARE INTACT WITH SOLIDS ONLY WILL BE PLACED IN THE ONSITE SECURE LANDFILL (IF THEY MEET LAND DISPOSAL RESTRICTIONS). DRUMS WHICH ARE INTACT BUT CONTAIN LIQUID RESIDUES WILL BE PLACED IN OVERPACKS AND DISPOSED OF OFFSITE. CORRODED DRUMS, SOILS, AND MISCELLANEOUS SOLID WASTES MEETING LAND DISPOSAL RESTRICTIONS (LDRs) WILL BE DISPOSED OF AT THE ONSITE SECURE LANDFILL IN CELL 2.

EXCAVATION AND DISPOSAL OF CONTAMINATED SOILS IN AREA #1 OUTSIDE OF THE DRUM DISPOSAL AREA WILL BE PERFORMED. ALL VISIBLY STAINED SOIL WILL BE EXCAVATED AND DISPOSED OF AT THE ONSITE SECURE LANDFILL CELL 2.

CONTAMINATED SOILS FROM THE SOUTHERN SWALE WILL BE EXCAVATED AND DISPOSED OF IN CELL 2 OF THE SECURE LANDFILL.

SOME CONTAMINATED SOILS CONTAINING LESS THAN 50 MG/KG PCB's WERE DISPOSED OF AT THE ONSITE SECURE LANDFILL CELL 1.

CONFIRMATORY SAMPLING FOR CLEANUP GOAL ATTAINMENT IN AREA #1, THE SOUTHERN SWALE, AND THE DRUM DISPOSAL AREA WILL BE PERFORMED.

PLACEMENT OF BACKFILL AND FINAL CAP WILL OCCUR OVER AREA #1, THE DRUM DISPOSAL AREA, AND THE SOUTHERN SWALE (ON THE BASIS THAT THE SITE MEETS CLEANUP GOALS).

EXCAVATION AND STOCKPILING OF CLEAN SOILS IN AREA 2 WILL BE PERFORMED THIS TASK WILL BE PERFORMED ONLY ON THE BASIS THAT AREA #1, THE SOUTHERN SWALE AND THE DRUM DISPOSAL AREA ATTAIN CLEANUP GOALS.

EXCAVATION AND DISPOSAL OF CONTAMINATED SOILS IN AREA 2 WILL BE PERFORMED FOLLOWED BY CONFIRMATORY SAMPLING OF AREA #2. THIS TASK WILL BE PERFORMED ONLY ON THE BASIS THAT AREA#1, THE SOUTHERN SWALE AND THE DRUM DISPOSAL AREA ATTAIN CLEANUP GOALS.

BACKFILL AND CAP AREA #2.

ALL RECORD SURVEY INFORMATION WILL BE COMPILED BY THE CONTRACTOR (MKE) UPON COMPLETION.

3.2 SITE PREPARATION ACTIVITIES

3.2.1 DRUM REMOVAL ACTIVITIES WILL BE ESTABLISHED BY THE CONTRACTOR BASED ON THE APPROVED CONSTRUCTION WORK PLAN SUBMITTED BY THE CONTRACTOR TO THE NYSDEC.

3.2.2 ENVIRONMENTAL CONTROLS WILL BE ESTABLISHED BY THE CONTRACTOR BASED ON THE APPROVED CONSTRUCTION WORK PLAN SUBMITTED BY THE CONTRACTOR TO THE NYSDEC.

3.2.3 THE CONTRACTOR WILL PROVIDE INFORMATION AS TO HAULING AND ACCESS ROUTES FROM THE SECURE LANDFILL AND THE DENNISON CROSS ROAD SITE. THESE ROUTES WILL BE INCLUDED IN THE APPROVED CONSTRUCTION WORK PLAN SUBMITTED BY THE CONTRACTOR TO NYSDEC.

3.2.4 EXCAVATION SIDESLOPES DEPICTED ON SHEETS B-137684-JM AND B-137685-JM ARE SHOWN AT 1:1 FOR VOLUME ESTIMATING PURPOSES ONLY. THE INTENT OF THESE PLANS IS TO DELINEATE FOR THE CONTRACTOR THE MINIMUM EXCAVATION LIMITS REQUIRED FOR REMEDIATION OF THE SITE.

3.3 SITE CLOSURE

3.3.1 CLEARING AND GRUBBING WILL BE PERFORMED WITHIN THE LIMITS OF THE EXCAVATION AREAS. ALL GRUBBING MATERIAL WILL BE REMOVED AND HAULED TO THE ONSITE SECURE LANDFILL FOR DISPOSAL IN CELL 2.

3.3.2 EXCAVATE THE SITE TO THE GRADES ESTABLISHED ON THE INDIVIDUAL EXCAVATION PLANS FOLLOWING THIS SHEET. FINAL EXCAVATION WILL BE USED AS THE BASIS FOR CONFIRMATORY SAMPLING. EXCAVATED SOIL WILL BE HAULED TO THE ONSITE SECURE LANDFILL.

3.3.3 DEWATER THE EXCAVATION SITE AS NECESSARY. WATER WILL BE PUMPED FROM THE EXCAVATION AREA TO ESTABLISH A SUITABLY STABLE SUBGRADE FOR COMPLETION OF SUBSEQUENT EXCAVATION, BACKFILLING, AND COMPACTION ACTIVITIES. WATER WILL BE CONTAINED AND REMOVED FROM THE REMEDIATION SITE TO A PROPER FACILITY FOR TREATMENT.

3.3.4 UPON CONFIRMATION THAT THE SITE MEETS THE ESTABLISHED REMEDIATION GOALS THE SITE WILL BE BACKFILLED IN LIFTS TO THE SUBGRADES OF THE FINAL CAP. FINAL SUBGRADE WILL BE SHAPED AND COMPACTED TO OBTAIN THE DESIRED CONTOURS OF THE CAP AS SHOWN WITHIN THESE PLANS. OTHERWISE, ALTERNATIVE REMEDIATION METHODS DETAILING SHORT TERM AND LONG TERM REMEDIATION EFFORTS WILL BE FORMULATED BY THE RPO FOR APPROVAL BY THE NYSDEC.

3.3.5 THE FINAL CAP WILL BE INSTALLED AS DETAILED WITHIN THESE PLANS AND SPECIFICATIONS TO THE GRADES ESTABLISHED.

3.3.6 TOPSOIL AND HYDROSEEDING SHALL BE PLACED ON THE FINAL CAP OF AREA #1, THE DRUM DISPOSAL AREA, THE SOUTHERN SWALE AND AREA #2. TOPSOIL AND HYDROSEEDING SHALL ALSO BE PLACED ON THE PROPOSED SWALES AND ALL SURFACES DISTURBED BY THE CONTRACTOR (SEE SECTION 02930 OF THE SPECIFICATIONS).

4.0 ENVIRONMENTAL CONTROLS

4.1 THE CONTRACTOR SHALL SUBMIT AN ENVIRONMENTAL CONTROL PLAN. THE PLAN SHALL ADDRESS EROSION AND SEDIMENT CONTROL, POTENTIAL SPILL CONTROL, AND CONTROL OF GROUNDWATER. THE PLAN SHALL ADDRESS TEMPORARY HANDLING OF SURFACE WATER.

4.2 ENVIRONMENTAL CONTROLS SHALL BE MAINTAINED UNTIL THE SEEDING IS ESTABLISHED OVER THE FINAL COVER.

5.0 FINAL COVER SYSTEMS

5.1 CONFORMANCE TESTING FOR THE GEOSYNTHETIC CLAY LINER SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS PRESENTED IN THE CONSTRUCTION QUALITY ASSURANCE PLAN.

5.2 SELECT FILL SHALL BE PLACED SO AS NOT TO DAMAGE THE GEOSYNTHETIC CLAY LINER CAP.

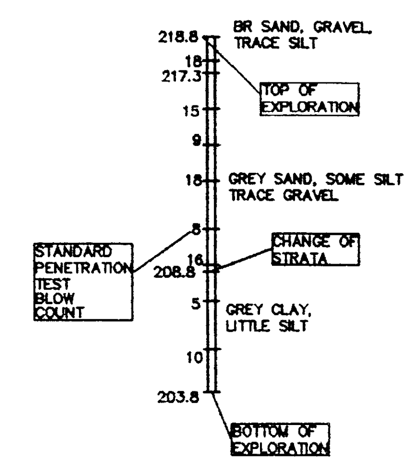
5.3 TOPSOIL COVER AND ALL OTHER DISTURBED AREAS SHALL BE HYDROSEEDED.

5.4 SITE RESTORATION SHALL BE COMPLETED INCLUDING FINAL SITE GRADING OF ALL DISTURBED AREAS.

LEGEND

Symbol	Description
257.34 / 241.54 / 252.06	HIGH G.W. ELEVATION / LOW G.W. ELEVATION / AVERAGE G.W. ELEVATION
-262-	GROUND WATER CONTOURS
TP-9	TEST PIT
260	EXISTING CONTOUR
x 270.6	SPOT ELEVATION
—x—	EXISTING FENCE
	EXISTING BRUSH LINE
L-2	LEACHATE SAMPLE
●	EXISTING UTILITY POLE
MW-114	MONITORING WELL
B-13	SOIL BORING
SED-6	SEDIMENT SAMPLE
-270-	PROPOSED CONTOUR
249.0	PROPOSED SPOT ELEVATION
	WET AREA
255.0	CLEAN ZONE SPOT ELEVATION (AREA #2)
△	EXCVATION BASE POINT

BORING LOG



RECORD DRAWING

By: [signature] Date: 1/12/96

CAMP DRESSER & McKEE

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142

environmental engineers, scientists, planners, & management consultants

CDM

DAY	MONTH	YEAR	NO.	REVISION RECORD	BY	CK.	ZONE
12	JAN	96	01	REVISED FOR RECORD	DB	SA	
18	MAR	94		ORIGINAL DRAWING DATE			

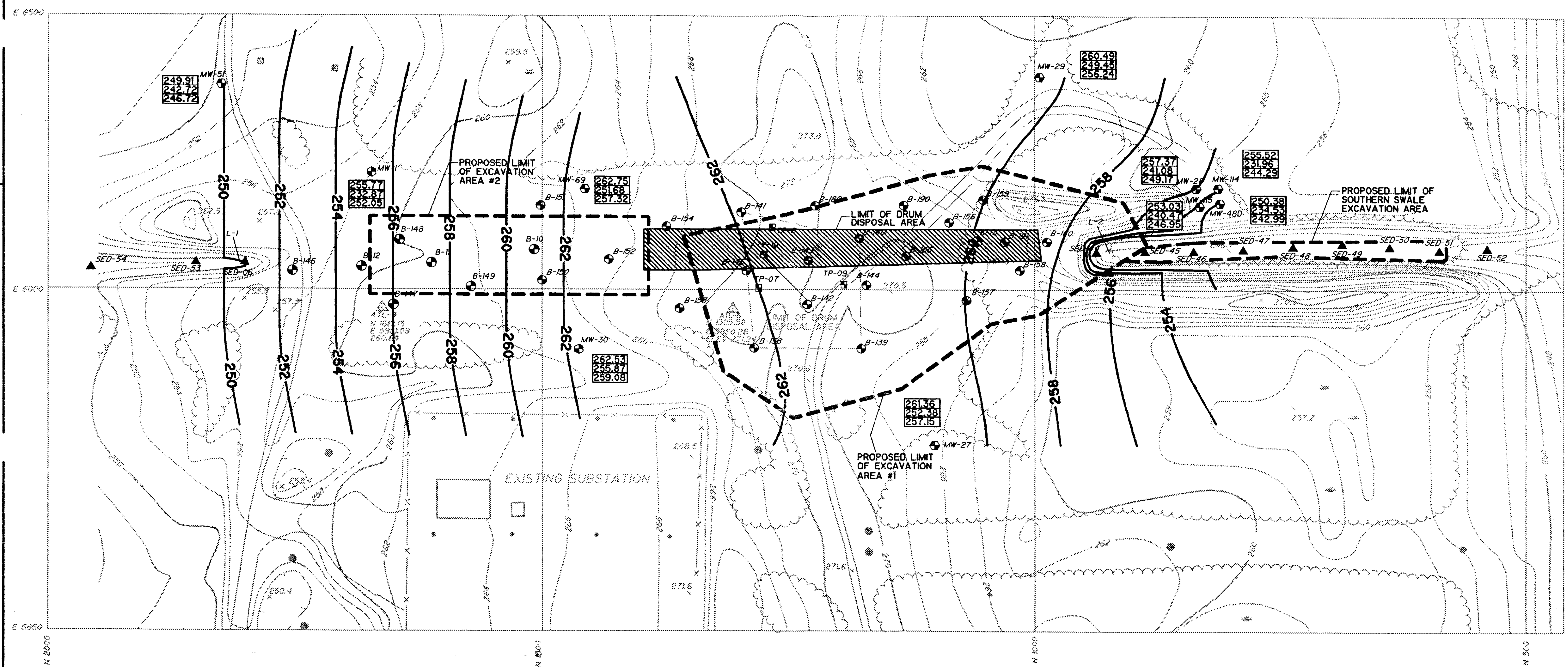
ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS

YARD
ENVIR
DENNISON CROSS ROAD SITE
GENERAL NOTES AND LEGEND

ENGINEER: CHARLES A. JUTRAS P.E.
SCALE: N/A
DESIGNED BY: S.A.
DRAWN BY: S.A.
CHECKED BY: S.A.
APPROVED BY: C.A.J.

DRAWING NUMBER: B-137682-JM

B-137683-JM



GENERAL NOTES:

1. TOPOGRAPHY IS BASED ON THE SURVEY PREPARED BY EASTERN MAPPING COMPANY, DATED APRIL 20, 1987.
2. HORIZONTAL COORDINATES ARE BASED ON "ALCOA PLANT REFERENCE DATUM". VERTICAL DATUM IS BASED ON USLS.
3. BORINGS B-138 THRU B-191 AND SEDIMENTATION SAMPLES SED-44 THRU SED-54 WERE PERFORMED NOVEMBER 91 THRU JANUARY 92. PREVIOUS SAMPLES DEPICTED ON THIS PLAN WERE DEVELOPED FOR THE PURPOSE OF CHARACTERIZING THE DISPOSAL SITE AS PER THE WASTE DISPOSAL SITE INVESTIGATION (1987) THRU THE MOST RECENT FEASIBILITY STUDY (1988).
4. GROUNDWATER CONTOURS ARE BASED ON HIGHEST HISTORICAL OBSERVED ELEVATIONS FOR EACH INDIVIDUAL WELL. NOTE THAT GROUNDWATER LEVELS MAY BE HIGHER IN AND AROUND THE DRUM DISPOSAL AREA.
5. DRUM DISPOSAL LIMITS WERE DELINEATED BASED ON FIELD OBSERVATIONS.

SCALE IN FEET
50 0 50 100

DATE OF PHOTOGRAPHY 4/20/87
2' CONTOUR INTERVAL

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142

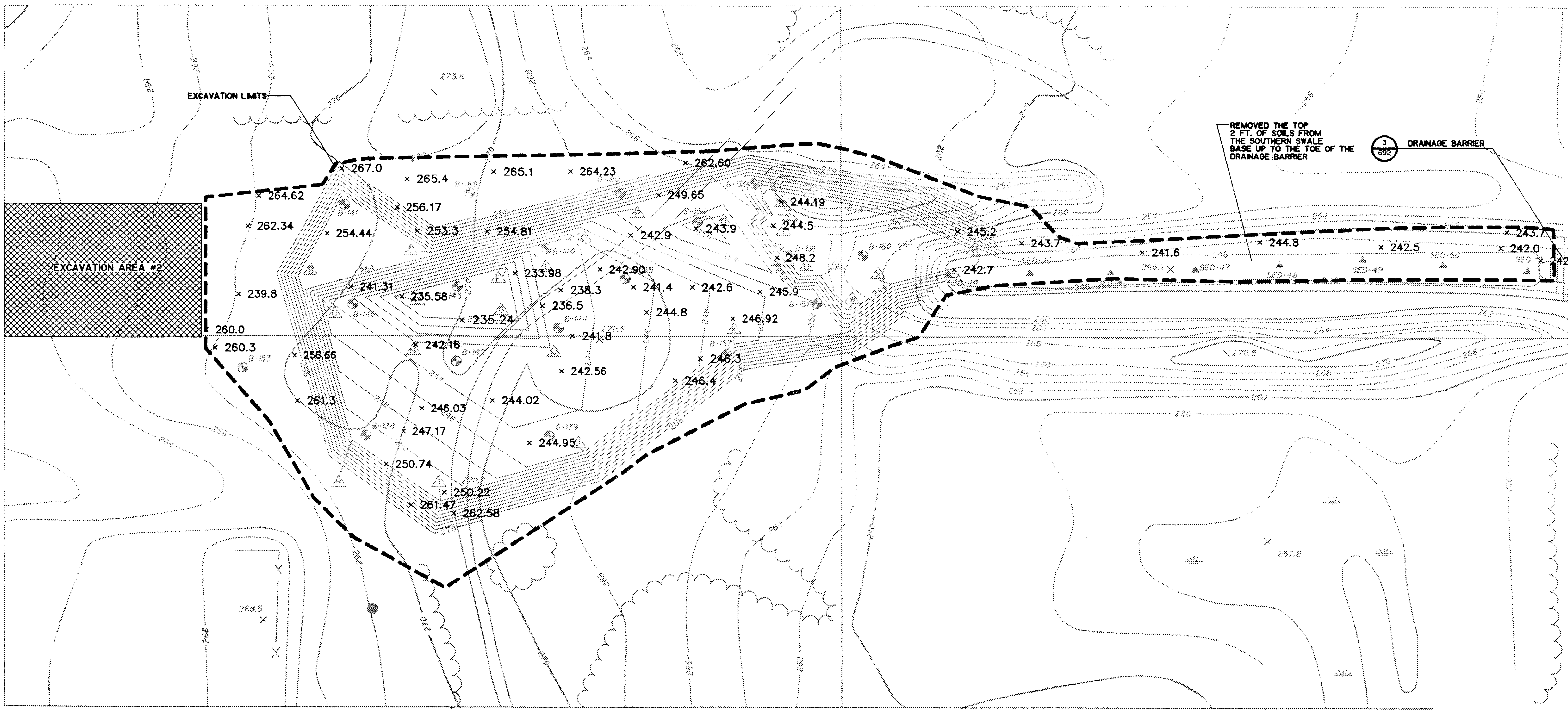
CDM
environmental engineers, scientists, planners, & management consultants

DAY	MONTH	YEAR	NO.	REVISION RECORD	NO.	CK.
12	JAN	96	01	REVISED FOR RECORD	DB	SA
18	MAR	94		ORIGINAL DRAWING DATE	SA	CJ

RECORD DRAWING
By: [signature] Date: 1/12/96
CAMP DRESSER & McKEE

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS
YARD
ENVIR
DENNISON CROSS ROAD SITE
PRE-EXISTING CONDITIONS
CHARLES A. JUTRAS P.E.
SCALE: AS SHOWN
DESIGNED BY: S.M.A.
DRAWN BY: RK\CAL
CHECKED BY: SMA
APPROVED BY: CAJ
DRAWING NUMBER: B-137683-JM

B–137684–JM



POINT	NORTHING	EASTING	POINT	NORTHING	EASTING
A	N 1296.617	E 6085.623	T	N 1046.202	E 6057.040
B	N 1326.715	E 6036.821	U	N 1025.449	E 6036.335
C	N 1245.641	E 6050.502	V	N 1012.870	E 6036.957
D	N 1312.153	E 6022.418	W	N 995.996	E 6017.36
E	N 1268.243	E 6023.775	X	N 969.891	E 6032.067
F	N 1201.063	E 6041.692	Y	N 912.931	E 6046.490
G	N 894.325	E 6008.820	Z	N 895.31	E 6076.303
H	N 1293.729	E 5937.301			
I	N 1240.963	E 5900.259			
J	N 1154.899	E 5950.550			
K	N 1064.904	E 5995.209			
L	N 1187.757	E 6051.451			
M	N 1175.773	E 5993.022			
N	N 1256.706	E 5996.403			
O	N 1163.027	E 6053.345			
P	N 1137.423	E 6075.226			
Q	N 1086.330	E 6069.072			
R	N 1040.996	E 6085.645			
S	N 1038.798	E 6075.376			

Caption: EXCAVATION BASE POINTS

GENERAL NOTES:

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4. BOTTOM EXCAVATION CONTOURS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE DATA TO DATE. THESE LIMITS WILL BE REVISED IN THE FIELD AS NECESSARY BASED ON ADDITIONAL OBSERVATIONS OF CONTAMINANTS.
5. THE DRAINAGE BARRIER WITHIN THE SOUTHERN SWALE WILL BE INSTALLED PRIOR TO CONDUCTING ANY EXCAVATION SHOWN ON THIS SHEET.
6. BASE LINE COORDINATES FOR AREA 1 DEPICT BOTTOM SLOPE CORNERS OF THE PROPOSED REMEDIATION SITE.

SCALE IN FEET
30 0 30 60

DATE OF PHOTOGRAPHY 4/20/87
2' CONTOUR INTERVAL

CAMP DRESSER & McKEE
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Cambridge, Massachusetts 02142

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environmental engineers, scientists, planners, & management consultants

RECORD DRAWING
By: [signature] Date: 1/12/96
CAMP DRESSER & McKEE

LEGEND
× 268.3 EXCAVATION SPOT ELEVATION

12 JAN 96	01	REVISED FOR RECORD	DB	SA		
18 MAR 94		← ORIGINAL DRAWING DATE	SA	CK		
DAY MONTH YEAR	NO.	REVISION RECORD	BY	CK.	ZONE	

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS
YARD
ENVIR
DENNISON CROSS ROAD SITE
EXCAVATION PLAN – AREA #1
CHARLES A. JUTRAS P.E.
SCALE AS SHOWN
DESIGNED BY S.M.A.
DRAWN BY R.A.K./C.A.L.
CHECKED BY P.D.R.
APPROVED BY C.A.J.
B–137684–JM

B-137685-JM

N

AREA 2 EXTENTION OF EXCAVATION

AREA 2 LIMIT OF EXCAVATION

EXCAVATION AREA 1

EXISTING SUBSTATION

× 255.9 × 252.8 × 243.6 × 242.4 × 242.4 × 244.2 × 242.0 × 250.6 × 249.6 × 242.8 × 249.8 × 250.3 × 242.2 × 240.8 × 240.8 × 240.6 × 240.3 × 262.1 × 261.0 × 260.0 × 250.0 × 249.5

C 690

C 650

GENERAL NOTES:

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4. AREA 2 WILL BE EXCAVATED ONLY IN THE EVENT THAT AREA 1 CONFIRMATORY SAMPLING MEETS CLEANUP GOALS.
5. BOTTOM EXCAVATION LIMITS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE DATA TO DATE. THESE LIMITS WILL BE REVISED IN THE FIELD AS NECESSARY BASED ON ADDITIONAL OBSERVATIONS OF CONTAMINANTS.
6. BASE LINE COORDINATES FOR AREA 2 DEPICT BOTTOM SLOPE CORNERS OF THE PROPOSED REMEDIATION SITE.

EXCAVATION BASE POINTS

POINT	NORTHING	EASTING
A	N 1657.195	E 6058.202
B	N 1657.257	E 6026.175
C	N 1407.356	E 6037.734
D	N 1408.020	E 6019.767

SCALE IN FEET
30 0 30 60

DATE OF PHOTOGRAPHY 4/20/87
2' CONTOUR INTERVAL

RECORD DRAWING
By: [illegible] Date: 1/12/96
CAMP DRESSER & McKEE

LEGEND
× 266.8 EXCAVATION SPOT ELEVATION

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142

environmental engineers, scientists, planners, & management consultants
CDM

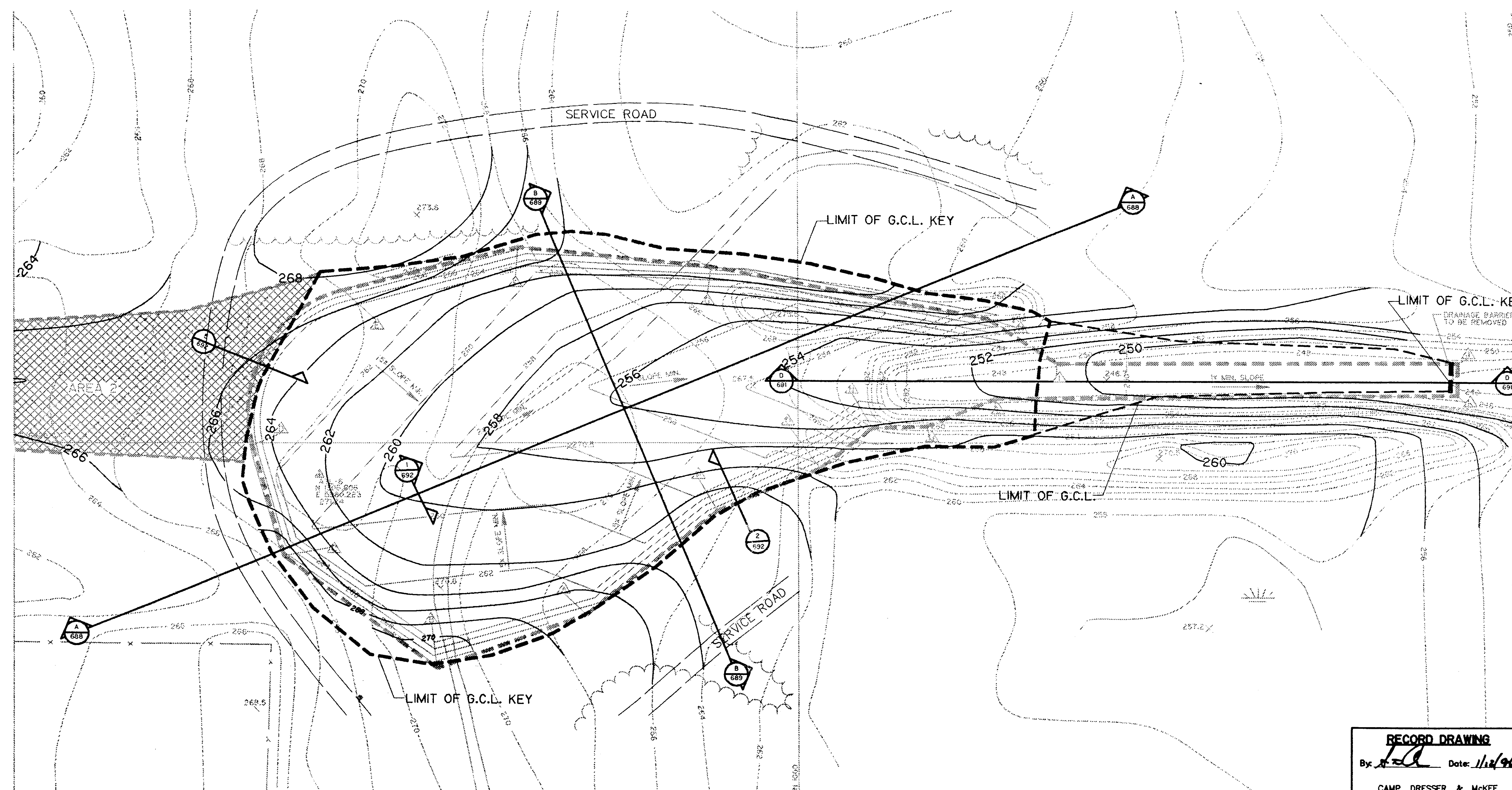
DAY MONTH YEAR	NO.	REVISION RECORD	BR.	CK.	APPR.
12 JAN 96	01	REVISED FOR RECORD	DB	SA	
18 MAR 94	0	ORIGINAL DRAWING DATE	SA	CK	

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS

BLDG. NO.	YARD
	ENVIR
	DENNISON CROSS ROAD SITE
	EXCAVATION PLAN – AREA #2

ENGINEER	CHARLES A. JUTRAS P.E.	PLANT CODE	DESIGNED BY S.M.A.
SCALE	AS SHOWN	GREEN	DRAWN BY RK/CAL
DRAWING NUMBER	B-137685-JM	ENG. CLASS	CHECKED BY SA
			APPROVED BY CAJ

B-137686-JM



		CAPPING BASE POINTS			
POINT	NORTHING	EASTING	POINT	NORTHING	EASTING
A	N 1135.736	E 5889.146	I	N 834.487	E 6051.499
B	N 1231.817	E 5854.680	J	N 578.607	E 6052.406
C	N 1329.910	E 5927.240	K	N 578.609	E 6031.545
D	N 1349.924	E 5990.312	L	N 873.504	E 6023.924
E	N 1291.507	E 6093.869	M	N 917.965	E 6010.634
F	N 1179.290	E 6126.780	N	N 952.446	E 6009.777
G	N 1055.887	E 6114.062	O	N 985.019	E 5983.474
H	N 878.949	E 6080.523	P	N 1052.257	E 5956.264

GENERAL NOTES:

1. TOPOGRAPHY IS BASED ON THE SURVEY PREPARED BY EASTERN MAPPING COMPANY, DATED APRIL 20, 1987.
2. HORIZONTAL COORDINATES ARE BASED ON "ALCOA PLANT REFERENCE DATUM". VERTICAL DATUM IS BASED ON USLS.
3. LOCATION OF THE GCL KEY WILL BE BASED ON THE LIMIT OF EXCAVATION SIDESLOPES AS DETERMINED BY THE CONTRACTOR.
4. CONTOURS DENOTE FINAL CAPPING ELEVATIONS.

SCALE IN FEET: 30 0 30 60

DATE OF PHOTOGRAPHY 4/20/87

2' CONTOUR INTERVAL

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142

environmental engineers, scientists, planners, & management consultants

CDM

RECORD DRAWING

By: [signature] Date: 1/12/96

CAMP DRESSER & McKEE

DAY	MONTH	YEAR	NO.	REVISION RECORD	BY	CK.
12	JAN	96	01	REVISED FOR RECORD	DB	SA
18	MAR	94		ORIGINAL DRAWING DATE	SA	CK

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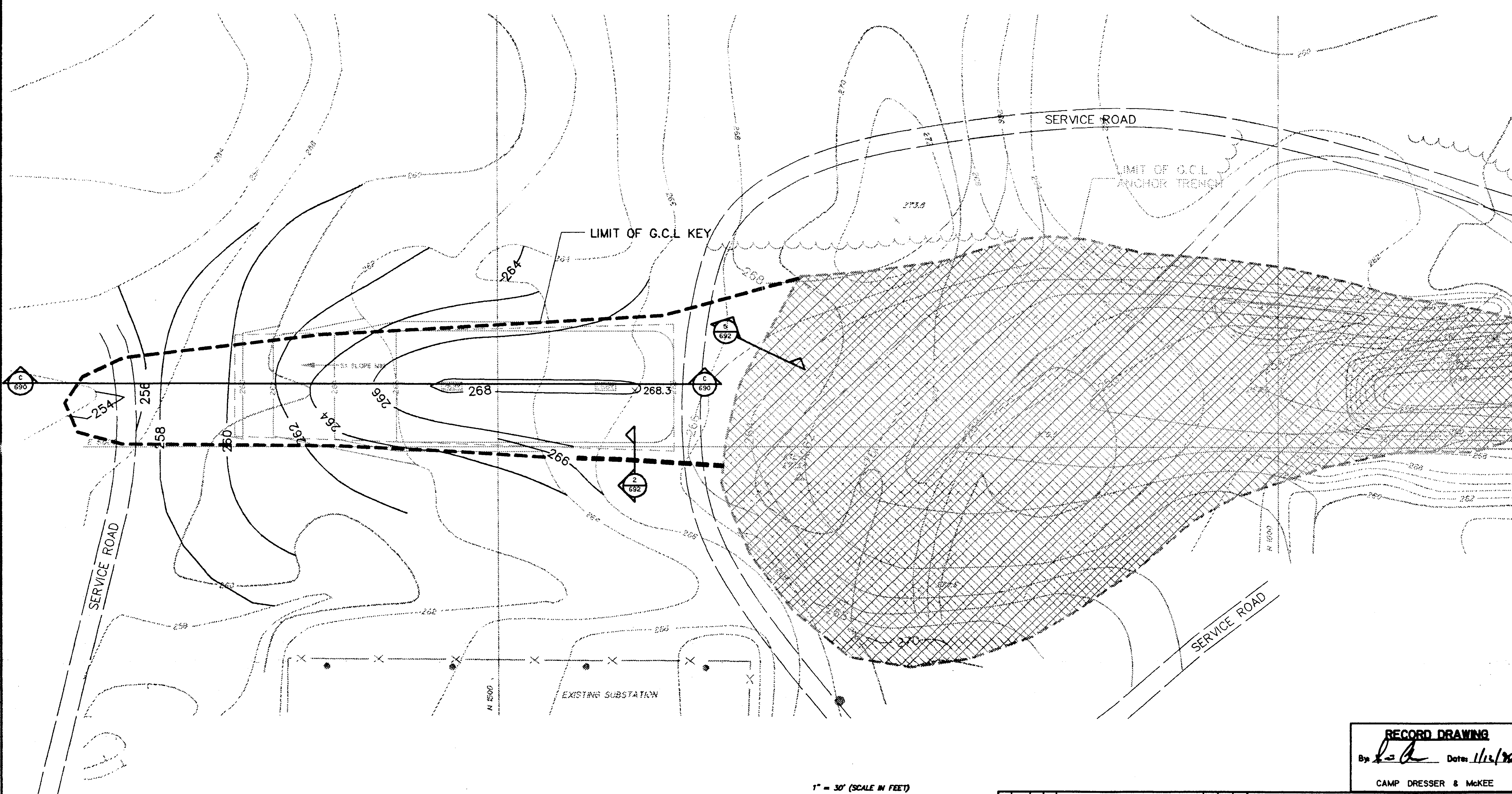
ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS

YARD
ENVIR
DENNISON CROSS ROAD SITE
CAPPING PLAN – AREA #1

ENGINEER: CHARLES A. JUTRAS P.E.
SCALE: AS SHOWN
DESIGNED BY: S.M.A.
DRAWN BY: M.Z.
CHECKED BY: S.A.A.
APPROVED BY: C.A.J.

DRAWING NUMBER: B-137686-JM

B-136687-JM



1" = 30' (SCALE IN FEET)
30 0 30 60

DATE OF PHOTOGRAPHY 4/20/87
2' CONTOUR INTERVAL

GENERAL NOTES:

1. TOPOGRAPHY IS BASED ON THE SURVEY PREPARED BY EASTERN MAPPING COMPANY, DATED APRIL 20, 1987.
2. HORIZONTAL COORDINATES ARE BASED ON "ALCOA PLANT REFERENCE DATUM". VERTICAL DATUM IS BASED ON USLS.
3. LOCATION OF THE GCL KEY WILL BE BASED ON THE LIMIT OF EXCAVATION SIDESLOPES AS DETERMINED BY THE CONTRACTOR.
4. GRADES DENOTE FINAL CAPPING GRADES.

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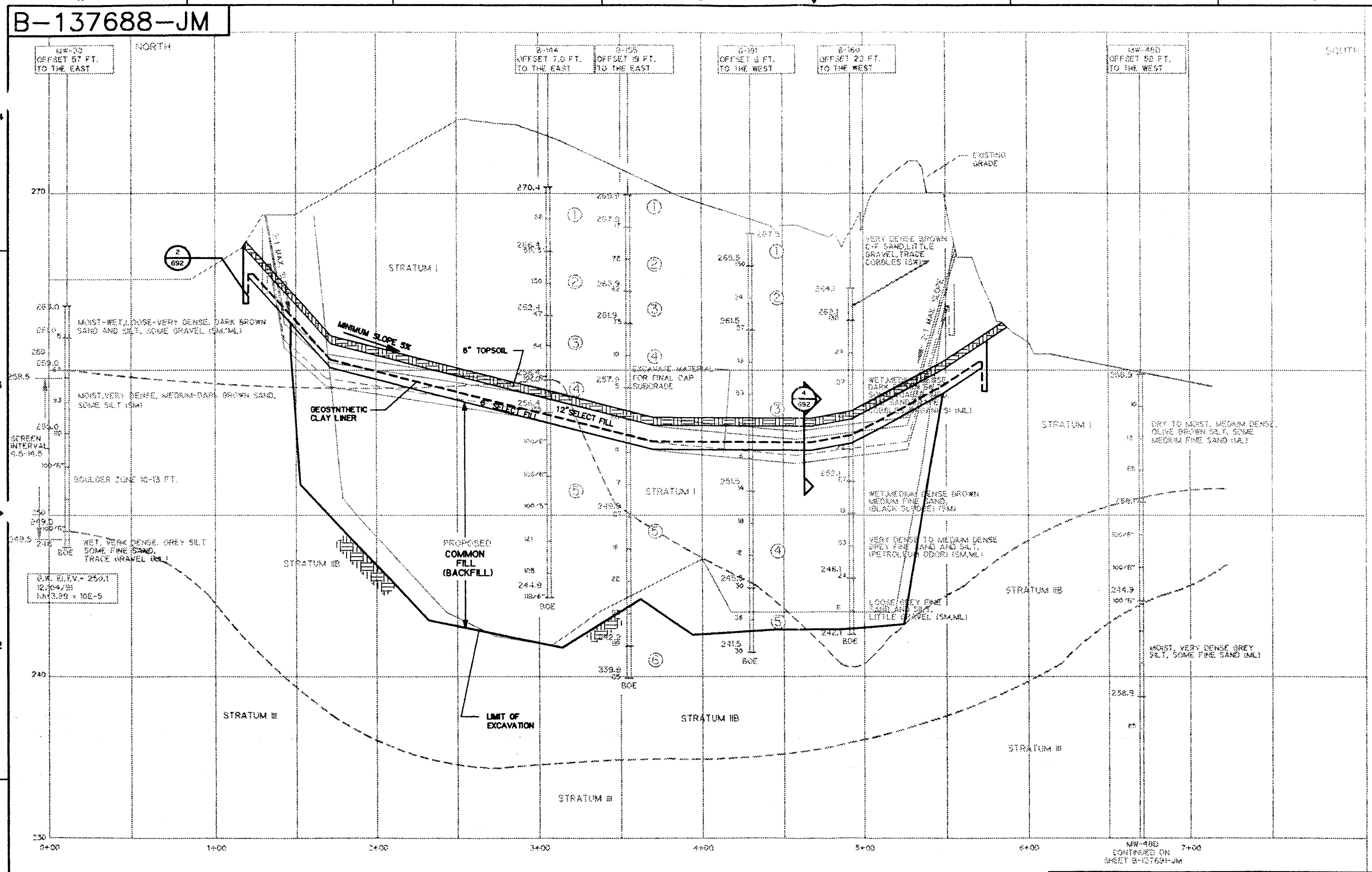
Ten Cambridge Center
Cambridge, Massachusetts 02142
environmental engineers, scientists, planners, & management consultants
CDM

12 JAN 96	01	REVISED FOR RECORD	DB	SA	
18 MAR 94		ORIGINAL DRAWING DATE	SA	CJ	

RECORD DRAWING
By: [signature] Date: 1/12/96
CAMP DRESSER & McKEE

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS
YARD
ENVIR
DENNISON CROSS ROAD SITE
CAPPING PLAN - AREA #2
CHARLES A. JUTRAS P.E.
AS SHOWN
DESIGNED BY S.M.A.
DRAWN BY R.A.K./C.A.L.
CHECKED BY P.D.R.
APPROVED BY C.A.J.
B-136687-JM

B-137688-JM



B-194 STRATA

1. MOIST, VERY DENSE BROWN SAND AND GRAVEL, (ORGANICS) (SP/GP)
2. WET, VERY DENSE, BROWN COARSE-MED. FINE SAND, LITTLE GRAVEL AND SILT, (BLACK STAINED, PETROLEUM ODOR) (SM)
3. WET, DENSE-VERY DENSE BROWN MEDIUM FINE SAND AND SILT (SM/ML)
4. DRY, VERY DENSE, BROWN SAND AND SILT (SM/ML)
5. VERY DENSE GREY SILT SOME MF SAND (ML)

B-155 STRATA

1. MEDIUM DENSE BROWN, MEDIUM FINE SAND, (TOPSOIL, ORGANICS) (SM)
2. MED. DENSE-DENSE BROWN COARSE-MED. FINE SAND AND GRAVEL, (BLACK STAINED SOILS) (GP/SW)
3. DENSE-VERY DENSE GREY COARSE-MED. FINE SAND, SOME GRAVEL, (PIECES OF WOOD, BLACK STAINED SOILS) (SW)
4. LOOSE GREY MEDIUM FINE SAND, LITTLE GRAVEL, (PETROLEUM ODOR) (SP)
5. MED. DENSE GREY MEDIUM FINE SAND, LITTLE GRAVEL, (BLACK STAINED SOILS, GREEN VISCOUS LIQUID) (SP)
6. VERY DENSE GREY SAND AND SILT (SM/ML)

B-191 STRATA

1. VERY DENSE BROWN, COARSE-MED. FINE SAND, LITTLE SILT, (TOPSOIL) (SM)
2. MOIST-WET, MEDIUM DENSE BROWN FINE SAND, AND SILT, (ORGANICS) (SM/ML)
3. WET, MEDIUM DENSE BROWN MED.-FINE SAND, AND SILT, (ORGANICS, BLACK STAINED) (SM/ML)
4. WET, MEDIUM DENSE BROWN MED.-FINE SAND, AND SILT, ORGANICS, BLACK AND GREEN LIQUID, PETROLEUM SOLVENT ODOR) (SM/ML)
5. WET, DENSE GREY, MEDIUM FINE SAND, AND GRAVEL, (PETROLEUM SOLVENT ODOR, GREEN LIQUID) (GP/SP)

RECORD DRAWING
By: [illegible] Date: 11/14/96
CAMP DRESSER & McKEE

SECTION AA (684.686)
HORIZ: 1"=30'
VERT: 1"=3'

30 0 30 60 HORIZ.
3 0 3 6 VERT.

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142
environmental engineers, scientists, planners, & management consultants
CDM

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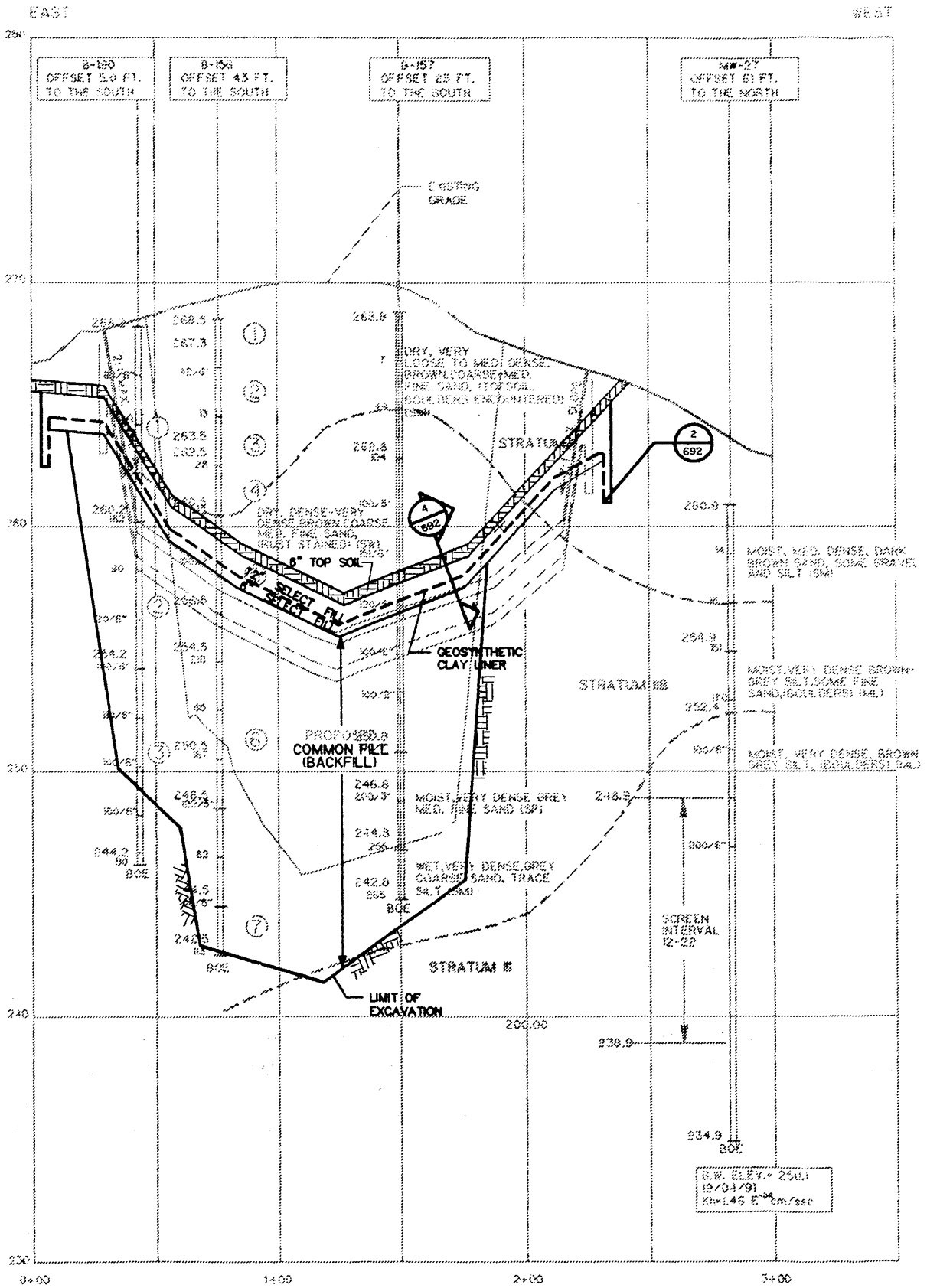
18	MAR	94	0	ORIGINAL DRAWING DATE			

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS

BLDG. DIV. YARD
ENVIR
DENNISON CROSS ROAD SITE
CROSS SECTION A-A

ENGINEER: CHARLES A. JUTRAS P.E. | PLANT CHIEF | DESIGNED BY: S.M.A.
SCALE: AS SHOWN | CHECKED | DETAIL PLANNER | DRAWN BY: M.Z.
DRAWING NUMBER: B-137688-JM | CHECKED BY: S.A.A. | APPROVED BY: C.A.J.

B-137689-JM



SECTION BB
HORIZ: 1"=30'
VERT: 1"=3'
686.688

B-156
STRATA

1. WET, DENSE, BROWN COARSE-MED. FINE SAND (TOPSOIL, ORGANICS) BOULDERS AND COBBLES, (SM)
2. MOIST, MED. DENSE, BROWN COARSE-MED. SAND, GRAVEL (SP)
3. MOIST, MED. DENSE, BLACK SAND, SOME SILT (SM)
4. MOIST, MED. DENSE, BROWN COARSE-MED. FINE SAND (SP)
5. DRY TO MOIST, VERY DENSE BROWN MED. FINE SAND (RUST AND BLACK STAINED SOILS) (SM)
6. MOIST, VERY DENSE, BROWN-GREY (COARSE-MED. FINE SAND AND SILT, (RUST STAINED SOILS) (SM/ML)
7. WET VERY DENSE, GREY SILT AND FINE SAND, LITTLE GRAVEL, (SM/ML)

B-190
STRATA

1. WET, MED. DENSE- VERY DENSE, BROWN MEDIUM FINE SAND, SILT, LITTLE GRAVEL (TOPSOIL) (SM/ML)
2. WET, VERY DENSE BROWN, MED. FINE SAND AND SILT, SOME GRAVEL (SM/ML)
3. WET, VERY DENSE, GREY SAND AND SILT (SM/ML)

30 0 30 60 HORIZ.
3 0 3 6 VERT.

RECORD DRAWING
By [illegible] Date: 11/12/96
CAMP DRESSER & McKEE

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142
environmental engineers, scientists, planners, & management consultants
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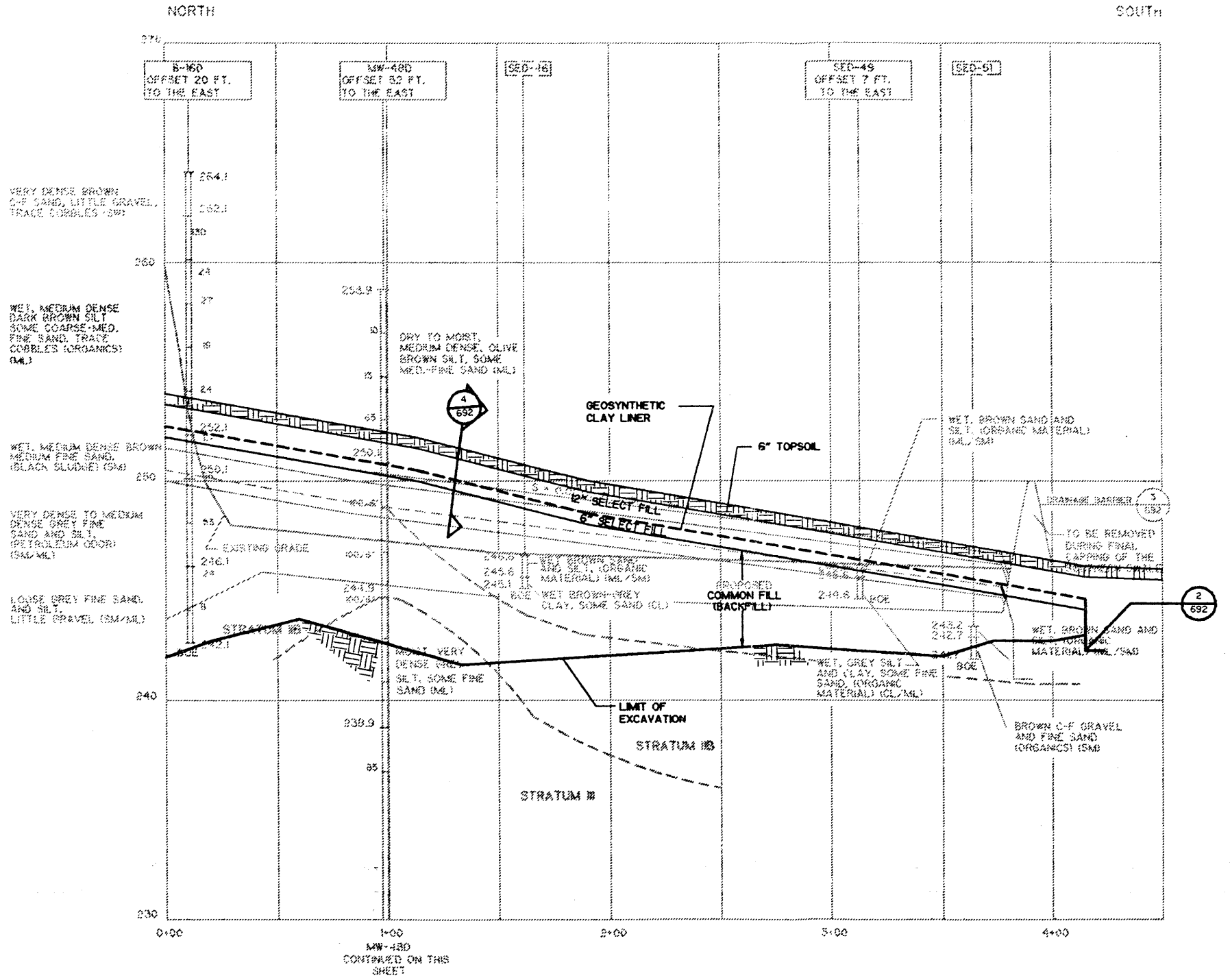
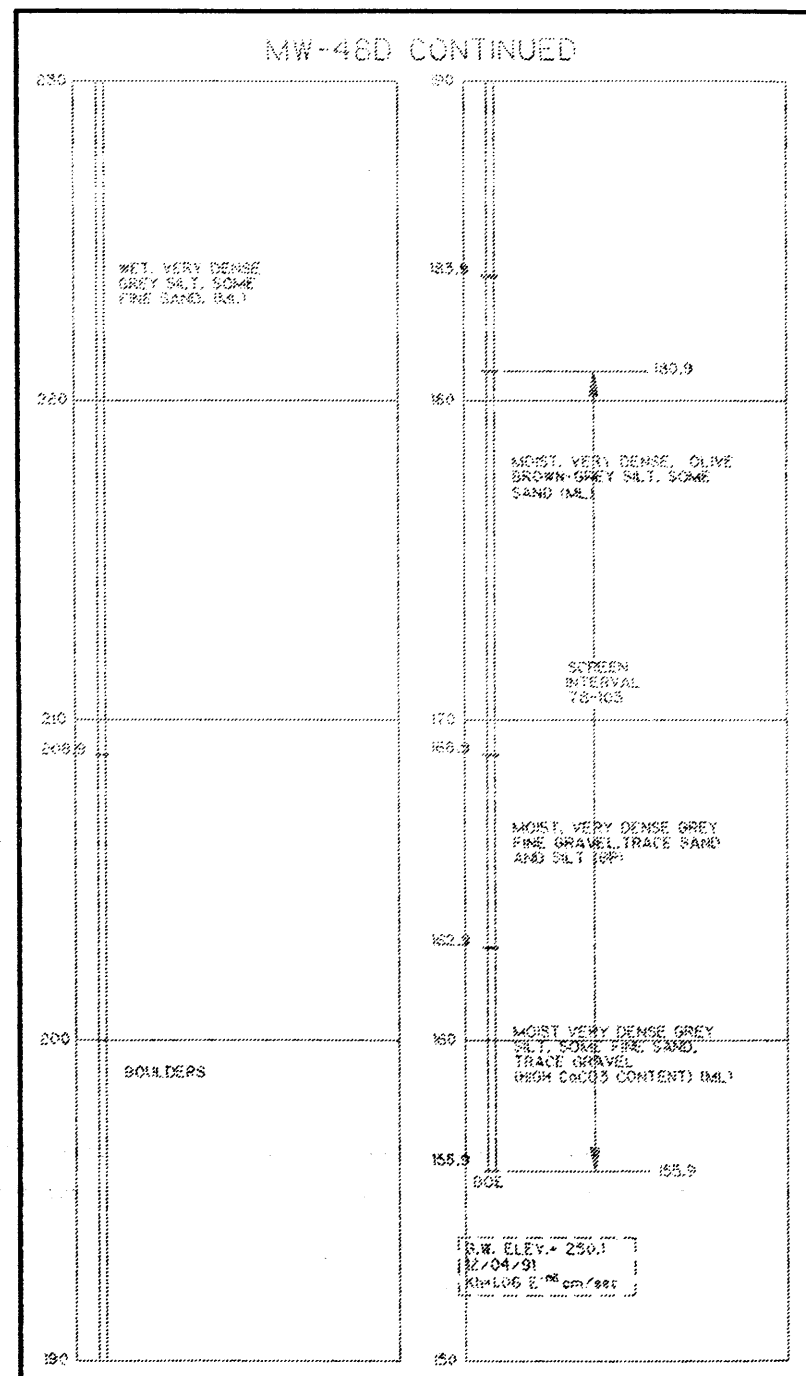
DAY	MONTH	YEAR	NO.	REVISION RECORD	BY	CK.	APP'D
12	JAN	96	01	REVISED FOR RECORD	DB	SA	
18	MAR	94	0	ORIGINAL DRAWING DATE			

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS

BLDG. NO.	YARD
	ENVIR
	DENNISON CROSS ROAD SITE
	CROSS SECTION B-B
ENGINEER	CHARLES A. JUTRAS P.E.
PLANT CODE	
DESIGNED BY	S.M.A.
SCALE	AS SHOWN
DRAWN	
ENG. CLASS	
DRAWN BY	M.Z.
CHECKED BY	S.M.A.
APPROVED BY	C.A.J.
DRAWING NUMBER	B-137689-JM

B-137691-JM





SECTION DD
HORIZ. 1"=30'
VERT. 1"=3'
684,686

30 0 30 60 HORIZ.
3 0 3 6 VERT.

RECORD DRAWING
By: [signature] Date: 1/12/96
CAMP DRESSER & McKEE

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142
environmental engineers, scientists, planners, & management consultants
CDM

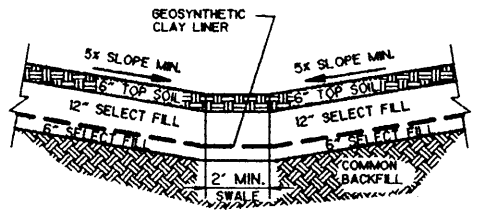
DAY	MONTH	YEAR	NO.	REVISION RECORD	BY	CK.	APP'D
12	JAN	96	01	REVISED FOR RECORD	DB	SA	
18	MAR	94	0	ORIGINAL DRAWING DATE			

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS

BLDG. NO.	YARD
	ENVIR
	DENNISON CROSS ROAD SITE
	CROSS SECTION D-D
ENGINEER	CHARLES A. JUTRAS P.E.
PLANT CODE	
DESIGNED BY	S.M.A.
SCALE	AS SHOWN
DRAWN BY	M.Z.
CHECKED BY	S.M.A.
APPROVED BY	C.A.J.
DRAWING NUMBER	B-137691-JM

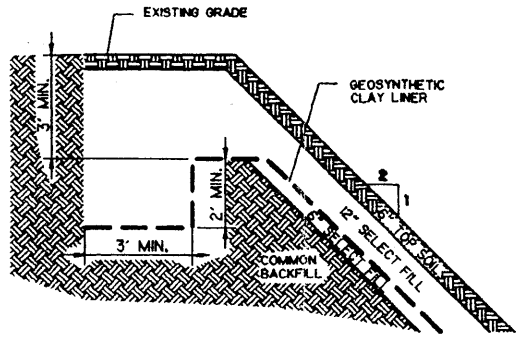
CAD/LOCATION/REC-DWG1 B137691R 1/12/96 DB: ALCOA-MPO

B-137692-JM



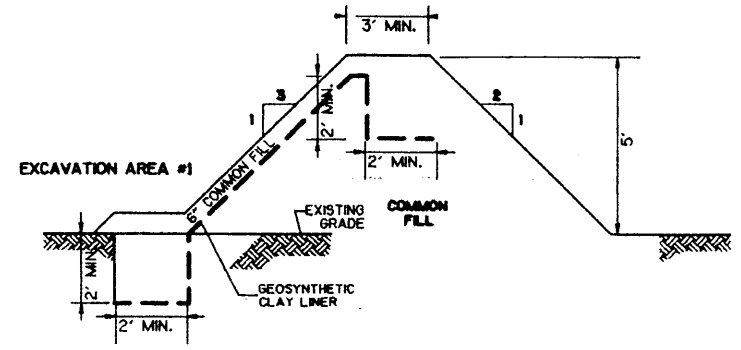
COMMON FILL DETIAL

DETAIL 1 — N.T.S. — 686



GEOSYNTHETIC CLAY LINER KEY

DETAIL 2 — N.T.S. — 686,687



DRAINAGE BARRIER

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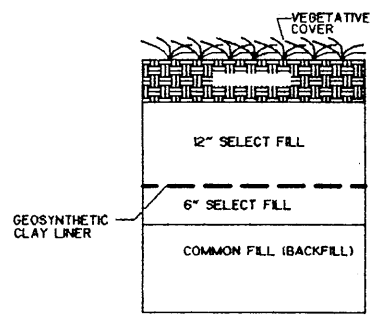
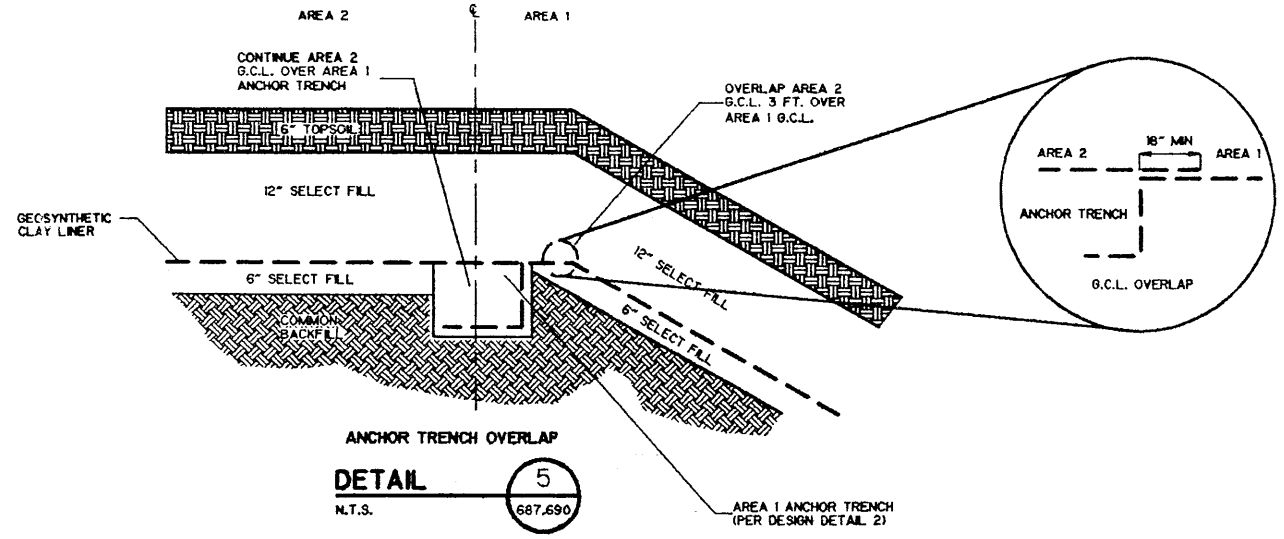


FINAL CAP

DETAIL 4 — N.T.S. — 688,689 690,691



ANCHOR TRENCH OVERLAP

DETAIL 5 — N.T.S. — 687,690

RECORD DRAWING
By: [signature] Date: 1/12/96
CAMP DRESSER & McKEE

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142
environmental engineers, scientists, planners, & management consultants
CDM

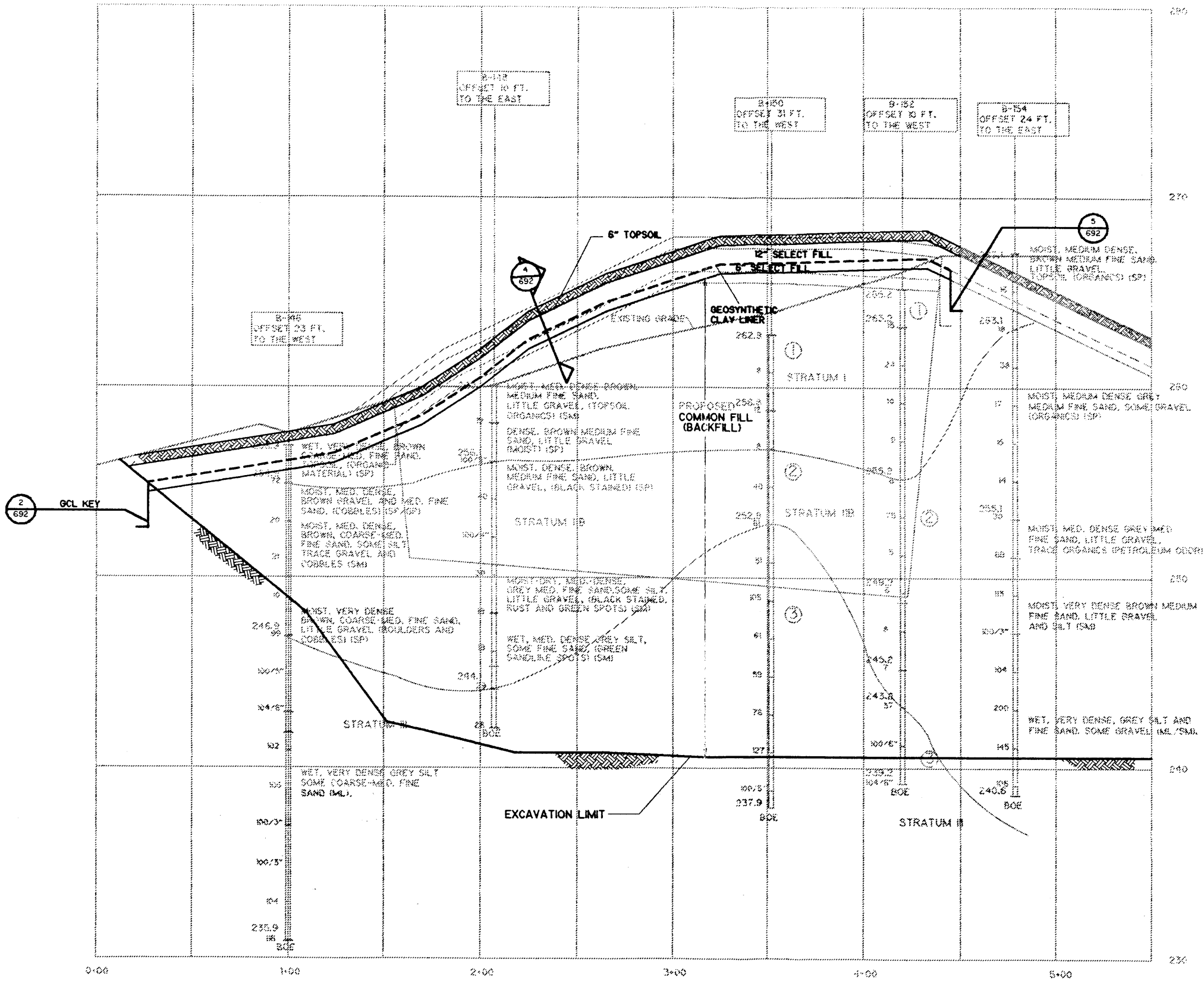
DAY	MONTH	YEAR	NO.	REVISION RECORD	BY	CK.	APPR.
12	JAN	96	01	REVISED FOR RECORD	DB	SA	
18	MAR	94	0	ORIGINAL DRAWING DATE	SA	KM	

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS

PLANT DWG. YARD
ENVIR
DENNISON CROSS ROAD SITE
MISCELLANEOUS DETAILS

DESIGNED BY: CHARLES A. JUTRAS P.E.
PLANT DWG.
DESIGNED BY: S.M.A.
SCALE: N.T.S.
DRAWN BY: M.Z.
DRAWING NUMBER: B-137692-JM
CHECKED BY: S.M.A.
APPROVED BY: C.A.J.

B-137690-JM



B-150 STRATA

1. DRY, LOOSE BROWN, COARSE-MED, FINE SAND, SOME SILT, (ORGANICS, TOPSOIL) (SM)
2. MOIST, MED. DENSE TO VERY DENSE, GREY SILT, COARSE-MED. FINE SAND, LITTLE GRAVEL, (SM/ML)
3. WET, MEDIUM DENSE TO VERY DENSE GREY SILT AND COARSE-MED. FINE SAND (BLACK STAINED SOIL) (SM/ML)

B-152 STRATA

1. MOIST, MED. DENSE, BROWN MED. FINE SAND, SOME GRAVEL, (ORGANICS) (SP)
2. MOIST, LOOSE-MED. DENSE GREY, MED. FINE SAND, SOME SILT, LITTLE GRAVEL, (ORGANICS) (SM)
3. WET, VERY DENSE, GREY SILT, SOME FINE SAND, (ML)

RECORD DRAWING
By: [signature] Date: 1/13/96
CAMP DRESSER & McKEE

SECTION CC
H: 1" = 30'
V: 1" = 3'
687

30 0 30 60 HORIZ.
3 0 3 6 VERT.

CAMP DRESSER & McKEE
Ten Cambridge Center
Cambridge, Massachusetts 02142
environmental engineers, scientists, planners, & management consultants
CDM

DAY	MONTH	YEAR	NO.	REVISION RECORD	DR.	CK.	ZONE
12	JAN	96	01	REVISED FOR RECORD	DB	SA	
18	MAR	94	0	ORIGINAL DRAWING DATE			

ALUMINUM COMPANY OF AMERICA
MASSENA OPERATIONS

BLDG. NO. YARD
ENVIR
DENNISON CROSS ROAD SITE
CROSS SECTION C-C

ENGINEER: CHARLES A. JUTRAS P.E. | PLANT CODE:
SCALE: AS SHOWN | DRAWN: | DWG. CLASS:
DESIGNED BY: S.M.A.
DRAWN BY: R.A.K./C.A.L.
CHECKED BY: S.M.A.
APPROVED BY: C.A.J.

DRAWING NUMBER: B-137690-JM

APPENDIX B

EMERGENCY RESPONSE PROCEDURES

SECTION 5 - EMERGENCY RESPONSE PROCEDURES

5.01 General

As a safety measure to insure prompt and proper response in an emergency, the following Emergency Response Procedures (contingency plan) have been prepared. The Emergency Response Procedures have been written to cover the ALCOA Massena Operations; and outline the procedures to be undertaken to respond to emergencies such as spills, fires or explosions, involving oil, chemicals or hazardous materials.

The Emergency Response Procedures will be subject to revision as technology and personnel change. At a minimum, it is to be reviewed and updated during the SPCC Plan update performed every three years.

The ALCOA Emergency Plan (AEP) currently employed by the Massena Operations is an integral part of the Emergency Response Procedures. Included in the AEP are methods of requesting and coordinating assistance from municipal service agencies such as fire departments and hospitals. Additionally, the AEP outlines evacuation procedures for emergencies such as fires and explosions.

In accordance with the SPCC regulations, a typical Spill Report form has been developed and is shown as pages 13 and 14. This form will be available at several location in the plant, and appropriate employees will be familiar with its use. The form will be used to record any amount of oil or chemical discharge that reaches waters of the state, i.e. the Grasse River, Massena Power Canal, the St. Lawrence River, or groundwater.

5.02 Alert Procedures

The first link in the Emergency Response Procedures is the person discovering the emergency. In the event of a hazardous material spill, this person will immediately notify Plant Security at Extension 4128. Plant Security will notify the Emergency Coordinator listed below. Should a spill of any size occur during transfer of an oil product, the vendor shall immediately contain or clean the spill as best possible and then call into Plant Security. Plant Security will immediately notify the Emergency Coordinator listed below.

Security shall call the LIST OF EMERGENCY COORDINATORS IN Exhibit B-1 until one of the individuals is contacted.

The verbal report of the emergency will include the following information:

a. The exact location of the emergency;
b. The type and description of emergency;
c. An estimate of the amount of material spilled, on fire, etc;
d. The extend of the actual and potential environmental pollution;
e. Injury or property damage; and
f. Remedial action taken.

For a spill of oil causing a sheen or discoloration to the surface of a navigable waterway, or a release of a chemical or hazardous material exceeding the reportable quantity indicated in Appendix B and entering waters of the state (i.e. the Grasse River, Massena Power Canal, St. Lawrence River or groundwater), the Emergency Coordinator, in addition to initiating an action program, will notify, within 2 hours, the following agencies:

New York State Department of Environmental Conservation (800) 457-7362
DEC Spill Hotline

Regional Administrator (201) 548-8730
Chief of Emergency Response Branch
United States Environmental Protection Agency
Edison, NJ 08817

National Response Center (800) 424-8802
U.S. Coast Guard/USEPA
400 Seventh St., S.W.
Washington, DC 20590

NYS Dept. of Environmental Conservation (315) 785-2513
Region 6 Headquarters
Watertown State Office Building
317 Washington St.
Watertown, NY 13601

1

In addition, if a spill occurs in a containment area draining to the sewer system, the Emergency Coordinator will notify the appropriate personnel to take proper precautions at the appropriate lagoons and/or sewer outfalls.

This notification must include:

a. Name and telephone number of reporter;

b. Time and type of incident (e.g., release, fire);
c. Name and quantity of material(s) involved, to the extent known; and
d. The possible hazards to human health, and safety precautions which should be followed.

5.03 Groundwater Contingency Plan

The release of a petroleum product is most likely to occur from within (leaks) and around (spills) the storage tank for that pavement or hard packed soils) or the top of the ground watertable.

Based on the hydraulic conditions at the ALCOA site, the pathways for potential contaminant migration through groundwater pathways all begin with leaching of contaminants through the soil zone and end with the ultimate discharge of groundwater (and contaminants) to a surface water body. A potentiometric surface map along with three cross section profiles of the groundwater are also included for reference, namely Drawings A-128143-JM, A-128145-JM, A-128146-JM, and A-128147-JM, Respectively (See enclosures). The potentiometric surface map also shows the location of all monitoring wells on site. 1

5.04 Action Procedure A - Spill in Diked Area

Actions to control, contain, remove, and clean up spills are to begin immediately when a spill is observed. Different courses of action are require depending on the location and/or type of spill. All actions at the site of the spill are to be performed in accordance with the appropriate safety protocol identified in the ALCOA Emergency Plan (AEP). Outlined below is the action to be taken in the event of a spill in a diked area.

(Note: Wastes resulting from a spill situation, such as spill residues, may be hazardous wastes and have to be disposed of in accordance with the RCRA regulations. Additional information on the identification and disposal of hazardous wastes is provided in the Federal Regulations included as Appendix B).

a. The individual discovering the spill will immediately notify Plant Security who will notify the Emergency Coordinator. (See Section 5.02 - Alert Procedures).
b. The first ALCOA employee on the scene will assess the size of the spill

and attempt to halt any further spillage. The employee, if not knowledgeable of the type of spill and appropriate safety procedures, should take no action but should contact his supervisor without delay.

c. If the conditions warrant, the Emergency Coordinator will arrange for a vacuum truck or similar recovery device to clean up the spill.

d. The spill will be removed from the diked area as quickly as possible, e.g., by putting the suction hose of the vacuum truck directly into the dike area. Clean up will be accomplished with the use of the vacuum equipment and sorbent booms or blankets.

e. The Emergency Coordinator shall contact the appropriate agencies should a reportable quantity of oil, chemical or hazardous material enter the sewer system.

f. If the oil, chemical or hazardous material escapes the diked areas, the plan for controlling Spills in Undiked Areas will be implemented.

5.05 Action Procedure B - Spill in Undiked Area

Actions to control, contain, remove and clean up spills are to begin immediately when a spill is observed. Different courses of action are required depending on the location and/or type of spill. All actions at the site of the spill are to be performed in accordance with the appropriate safety protocol identified in the ALCOA Emergency Plan (AEP). Outlined below is the action to be taken in the event of a spill to an undiked area.

(Note: Waste resulting from a spill, such as spill residues, may be hazardous wastes and have to be disposed of in accordance with the RCRA regulations. Additional information on the identification and disposal of hazardous materials is provided in the Federal Regulations included as Appendix B).

a. The individual discovering the spill will immediately notify Plant Security who will notify the Emergency Coordinator. (See Section 5.02 - Alert Procedures).

b. The first ALCOA employee on the scene will assess the size of the spill and attempt to halt any further spillage. The employee, if not knowledgeable of the type of spill and appropriate safety procedures, should take no action but should contact his supervisor without delay.

c. The Emergency Coordinator will obtain personnel and equipment to control and clean up the spill.

d. The spread of the spill will be controlled by constructing make-shift dikes of dirt and/or sorbent booms or blankets.

e. If there is risk of fire, the Emergency Coordinator will notify the plant fire protection department.

f. Absorbent materials will be spread in the area to sorb patches of oil, chemical or hazardous material on the ground.

g. If oil or hazardous material contained in the make-shift dikes is of sufficient quantity, the Emergency coordinator will arrange for a vacuum truck or similar recovery device to clean up the oil; the pools of oil will be removed by using the suction hose of the vacuum equipment. Clean up of the area will be accomplished by using the vacuum equipment and/or sorbent booms or blankets.

h. Other sources of manpower and equipment will b deployed at the discretion of the Emergency Coordinator.

i. The Emergency Coordinator shall contact the appropriate personnel should a reportable quantity of oil, chemical or hazardous material enter the sewer system.

j. If the spill escapes into waters of the state, the plan for controlling spills in waters of the state will be implemented.

5.06 Action Procedure C - Spill to On-Site Lagoon

Actions to control, contain, remove, and clean up spills are to begin immediately when a spill is observed. Different courses of action are required depending on the location and/or type of spill. All actions at the site of the spill are to be performed in accordance with the appropriate safety protocol identified in the ALCOA Emergency Plan (AEP). Outlined below is the action to be taken in the event of a spill to the sewer system, which ultimately reaches an on-site lagoon.

(Note: Wastes resulting from a spill, such as spill residues, may be hazardous wastes and have to be disposed of in accordance with the RCRA regulations. Additional information on the identification and disposal of hazardous materials is provided in the Federal Regulations included as Appendix B).

a. The individual discovering the spill will immediately notify Plant Security who will notify the Emergency Coordinator. (See Section 6.02 - Alert Procedures).

b. The first ALCOA employee on the scene will assess the size of the spill and attempt to halt further spreading of the spilled material. The employee, if not knowledgeable of the type of spill and appropriate safety procedures, should take no action but should contact his supervisor without delay.

c. The Emergency Coordinator will dispatch personnel and equipment from the plant to assist in the spill-control and clean up operations. Depending on the nature and extent of the spill, other equipment and manpower from outside service contractors will be requested.

d. The spread of the spill will be controlled by deploying sorbent oil booms

and/or blankets in the lagoon to contain or divert the material for collection.

e. Material collected in the booms will be removed from the water surface by vacuum equipment or similar skimming device.

5.07 Action Procedure D - Spill to Subsurface Soils

Actions to control, contain, remove, and clean up spill situations are to begin immediately when a spill situation is observed. Different courses of action are required depending on the location and/or type of spill. All actions at the site of the spill are to be performed in accordance with the appropriate safety protocol identified in the ALCOA Emergency Plan (AEP). Outlined below is the action to be taken in the event of a spill to subsurface soils.

(Note: Waste resulting from a spill, such as spill residues, may be hazardous wastes and have to be disposed of in accordance with the RCRA regulations. Additional information on the identification and disposal of hazardous materials is provided in the Federal Regulations included in Appendix B).

a. The individual discovering the spill will immediately notify Plant Security who will notify the Emergency Coordinator. (See Section 5.02 - Alert Procedures).

b. The first ALCOA employee on the scene will assess the size of the spill and attempt to halt any further spillage. The employee, if not knowledgeable of the type of spill and appropriate safety procedures, should take no action but should contact his supervisor without delay.

c. The Emergency Coordinator will dispatch personnel and equipment from the plant to assist in the spill-control and clean up operations. Depending on the nature and extent of the spill, other equipment and manpower from outside service contractors may be required.

d. The source of the spill will be eliminated. In the instance of an underground storage tank, remaining material in the tank will be immediately pumped to another containment structure.

e. The spread of the spill will be determined by visual interpretation, if possible, and by the installation of groundwater monitoring wells in the vicinity of the source, if necessary.

f. If product is evident on the groundwater table, material recovery wells will be installed as necessary to remove this material.

g. If product has not reached the groundwater table, remedial measures will be initiated as deemed appropriate by the Emergency Coordinator. Remedial measures are intended to prevent the spilled material from reaching groundwater at any time.

5.08 Action Procedure E - Spill to Waters of the State

Actions to control, contain, remove, and clean up spills are to begin immediately when a spill is observed. Different courses of action are required depending on the location and/or type of spill. All actions at the site of the spill are to be performed in accordance with the appropriate safety protocol identified in the ALCOA Emergency Plan (AEP). Outlined below is the action to be taken in the event of a spill to waters of the state.

(Note: Waste resulting from a spill, such as spill residues, may be hazardous wastes and have to be disposed of in accordance with the RCRA regulations. Additional information on the identification and disposal of hazardous materials is provided in the Federal Regulations included in Appendix B).

a. The individual discovering the spill will immediately notify Plant Security who will notify the Emergency Coordinator. (See Section 5.02 - Alert Procedures).
b. The first ALCOA employee on the scene will assess the size of the spill and attempt to halt any further spillage. The employee, if not knowledgeable of the type of spill and appropriate safety procedures, should take no action but should contact his supervisor without delay.
c. The Emergency Coordinator will dispatch men and equipment from the plant to assist in the spill-control and clean up operations. Depending on the nature and extent of the spill, other equipment and manpower from outside service contractors will be requested.
d. The spread of the spill will be controlled by deploying sorbent oil booms and/or blankets in the waterway to contain or divert the material for collection.
e. The Emergency Coordinator will notify appropriate Federal, State, and local agencies of any spills, which exceed the reportable quantities identified in Appendix B.
f. Material collected in the booms will be removed from the water surface by vacuum equipment or similar skimming device.

5.09 Action Procedure F - Fires, Explosions or Unplanned Release of Hazardous Material

Actions to control, contain, remove, and clean up emergency situations are to begin immediately when an emergency situation is observed. Different courses of action are required depending on the location and/or type of emergency. All actions at the site of the emergency are to be performed in accordance with the appropriate safety protocol identified in the ALCOA Emergency Plan (AEP). The various types of emergency situations include spills, fires and explosions. Outlined below is the action

to be taken in the event of a fire, explosion, or release of hazardous material.

(Note: Waste resulting from an emergency situation, such as spill residues, may be hazardous wastes and have to be disposed of in accordance with the RCRA regulations. Additional information on the identification and disposal of hazardous materials is provided in the Federal Regulations included as Appendix B).

a. The individual discovering the emergency situation will immediately notify the Plant Security (this shall include the activation of alarms suitable for the emergency i.e. fire alarms).

b. Plant Security will notify the Emergency Coordinator (see Section 5.02 - Alert Procedures).

c. The Emergency Coordinator will assess the potential adverse environmental and health effects of the emergency situation and shall take the appropriate actions as outlined in the AEP prepared by ALCOA for the Massena Operations.

d. During an emergency, the Emergency Coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous materials at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released material, and removing or isolating containers.

e. If the facility stops operations in response to a fire, explosion or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

f. Immediately after an emergency, the Emergency Coordinator must provide for treating, storing, or disposing of recovered material, contaminated soil or surface water, or any other material that results from a release, fire or explosion at the facility.

g. The Emergency Coordinator must ensure that, at the affected area(s) of the facility:

    1. No other material that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
    2. All emergency equipment listed under the Emergency Response Procedure (Section 5.10) is cleaned and fit for its intended use before operations are resumed.

h. The Environmental Control Manager must notify the EPA Regional Administrator, and appropriate State and local authorities, that the facility is in compliance with paragraph (g) of this Section before operations are resumed in the affected area(s) of the facility.

i. The Emergency Coordinator must note in the operating record the time, date, and details of any incident that requires implementing the Emergency Response Procedure.

5.10 Potential Emergencies: Prediction and Control

For the purposes of this SPCC Plan, the potential emergency problem areas within the ALCOA Massena Operations are associated with the unplanned spill or release of oil or hazardous material from any of the storage tanks at the plant. Table 2 summarizes the potential source of a spill or release from each storage tank, and the action procedure to be followed for each emergency.

5.11 Manpower and Equipment

Emergency response and clean up will take priority over other activities or operations. The following emergency equipment is readily available at the plant site:

Dry Oil Absorbent
Sorbent Blankets; 3/8" X 36" X 150'; 12oz./sq.yd.
Sorbent Blankets; 3/8" X 18" X 18"; 12oz./sq.yd.
Sorbent Booms; 4/bale 8" ϕ X 10' long each; 10 lb./boom
Cantilever Mount Oil Skimmer (60-Acre lagoon)
Oil Water Separators (Outfalls 002,002, and 004)
Vacuum Truck
Portable Pumps
Personal protective safety equipment (i.e. rubberized coveralls, rubber boots, safety goggles, rubber gloves and gas masks).
Telephones
Storage Tanks
55-gallon Drums
Tanker Trucks
Fire Trucks
Fire Extinguishers
Portable Lighting
Fire Hoses
Emergency Showers
Emergency Eye Wash Stations

The following locations are depositories for emergency equipment:

Outfall 001	Building 152
Stores	Building 121
Waste Management Area	Building 79

Area II Maintenance Tool Crib Building 222
Area III Building 351

In the event that assistance is required in cleaning up a spill, the following contractor would be contacted:

Fourth Coast Pollution Control
Post Office Box 278
Waddington, New York 13694
(315) 388-5909
(315) 265-3100 (24 hour service)

A copy of ALCOA's contract with Fourth Coast is provided in Appendix C.

5.12 Inspections and Reports

Inspections of certain items is required to determine the condition and ability of equipment to prevent accidental discharges as a result of failure. Sample Inspection Forms are shown in Appendix A. These inspections will be carried out by designated individuals and will be in addition to the daily visual observations of the general condition of equipment by area personnel. Inspection Reports are filed in the office of the Environmental and Building Services Supervisor.

The following inspection and report forms are permanently maintained at the facility:

1. Monthly Equipment Inspection Reports
2. Dike Drainage Reports
3. Annual Tank Inspection Forms
4. Hazardous Waste Storage Area - Weekly Inspection Reports
5. Spill Reports (ALCOA)
6. Written Reports to Government (Oil Spill)
7. Written Reports to Government (Hazardous Material)
8. NYSDOT Regional Oil/Hazardous Substances Spill Report.

5.13 Written Report

A written report must be submitted to the Regional Administrator of the Environmental Protection Agency, the Region 6 Director of the New York State Department of Transportation, and to the Region 6 Director of the New York State Department of Environmental Conservation if:

1. 1,000 U.S. gallons of oil or oil-like material (approximately 24 barrels) has been discharged into waters of the state in a single spill event.

2. Oil or oil-like material has been discharged in harmful quantities in two reportable spill events to waters of the state within any 12-month period. A reportable spill event is a discharge of oil or oil-like material that causes "a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or causes a sludge emulsion to be deposited beneath the surface of the water or upon adjoining shorelines". (40 CFR, Part 110).

The written report must include:

a. Name of a facility;
b. Name of owner and operator;
c. Location of facility;
d. Date and year of initial operation;
e. Maximum storage or handling capacity;
f. Description of facility:
    1) Maps
    2) Flow diagrams
    3) Flow maps
g. Complete copy of the SPCC Plan;
h. Cause of spill;
i. Corrective action and/or countermeasures taken;
j. Additional preventive measures taken or contemplated; and
k. Other information EPA may require.

This report shall be completed by the ALCOA Environmental Control Manager and be SUBMITTED WITHIN 60 DAYS OF THE SPILL OCCURRENCE. A format for the Written Report to Government in the event of an oil spill is included as pages 11 to 12 of Appendix A.

In the event of a hazardous material incident, the Emergency Coordinator must submit a written report on the incident to the Region 6 Director of the New York State Department of Transportation, the Region 6 Director of the New York State Department of Environmental Conservation and the USEPA Regional Administrator. The report must include:

a. Name, address, and telephone number of the owner or operator;
b. Name, address, and telephone number of the facility;
c. Date, time, and type of incident (e.g., fire, explosion);
d. Name and quantity of material(s) involved;
e. The extent of injuries, if any;
f. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
g. Estimated quantity and disposition of recovered material that resulted from the incident.

This report must be submitted within 15 days of the incident. A format for the Written Report to Government in the event of a hazardous material incident is included as pages 13 to 14 of Appendix A.

In addition to the above mentioned reports, a New York State Department of Transportation (NYSDOT) Regional Oil/Hazardous Substances Spill Report Form must be completed and submitted. A copy of this form is included as page 15 of Appendix A.

5.14 Reporting to Corporate Management

If a spill is of such magnitude that it requires reporting to the local, State, or Federal authorities, it will be communicated through established procedures to Corporate Management.

ALCOA
MASSENA OPERATIONS
SPILL REPORT (ALCOA)

PART A - GENERAL INFORMATION

1. Time Spill Discovered_____Date_____

   Discovered By_____

2. Time Spill Contained_____Date_____

   Contained By_____

3. Location of Spill_____

4. Material Spilled_____

5. Quantity Spilled_____

6. Did spill reach navigable waters (i.e. Grasse River, Massena, Power Canal or St. Lawrence River?

   _____ YES _____ NO

7. Cause of Spill_____

   _____

   _____

8. Extent of Injury or Property Damage_____

   _____

   _____

PART B CORRECTIVE ACTION

1. Corrective Action Taken_____

   _____

   _____

2. Clean up Performed_____

   _____

   _____

3. Permanent Corrective Action Taken to Prevent Reoccurence_____

_____

_____

PART C - NOTIFICATION

1. Agencies Notified (Indicate date, time, individual and whether verbal or written)

_____

_____

_____

_____

_____

_____

APPENDIX C

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN FORM

CDM Health and Safety Program

This document is for the exclusive use of CDM and its subcontractors

CAMP DRESSER & McKEE INC.

PROJECT DOCUMENT #: _____

PROJECT NAME Dennison Cross Road Site

PROJECT # 1902-402-CG

REGION NOE

JOBSITE ADDRESS Massena, NY 13662

CLIENT Alcoa

CLIENT CONTACT Boyd Braniff

CLIENT CONTACT PHONE # (315) 764-4187

( ) AMENDMENT TO EXISTING APPROVED H&SP?

( ) H&SP AMENDMENT NUMBER? _____

( ) DATE EXISTING APPROVED HSP _____

OBJECTIVES OF FIELD WORK:

Upcoming Dennison Cross Road Site field activities involve post-closure site observations and monitoring. These tasks include a walk over/site inspection, groundwater well monitoring, surface water sampling, inspection of drainage swales and final cap.

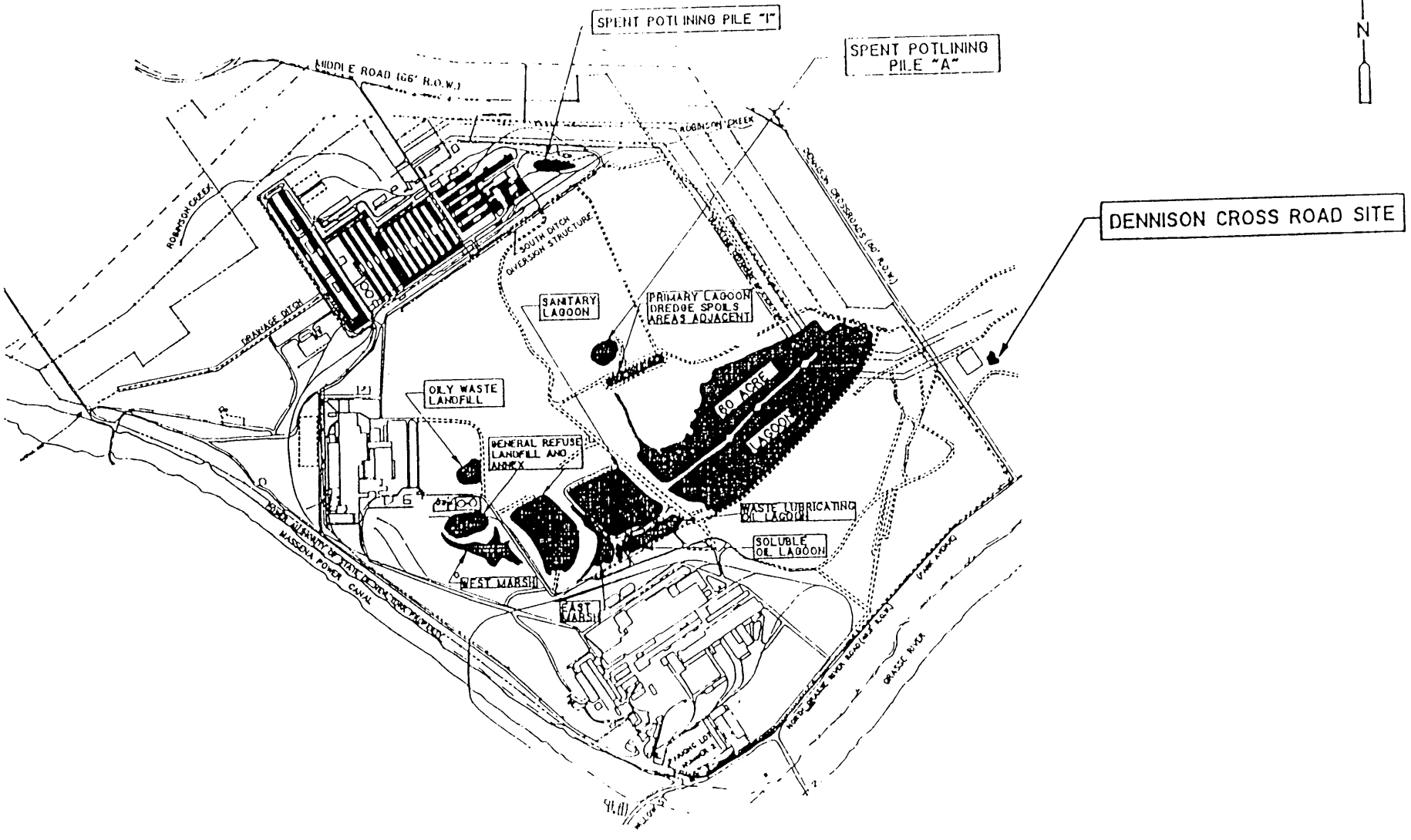
TYPE: *Check as many as applicable*

Active	( )	Landfill	( )	Unknown	( )
Inactive	(x)	Uncontrolled	( )	Military	( )
Secure	(x)	Industrial	(x)	Other *(specify)*	
Unsecure	( )	Recovery	( )		
Enclosed space	( )	Well Field	(x)		

DESCRIPTION AND FEATURES: *Include principal operations and unusual features (containers, buildings, dikes, power lines, hills, slopes, rivers, etc.)*

Alcoa's Massena operations are located on 2,700 acres in the Town of Massena, St. Lawrence County, New York. The village of Massena (population 15,000) is located to the west and to the south. The facility is bordered to the north by the St. Lawrence River, on the southwest by the Massena Power Canal and on the southeast by the Grasse River. The Dennison Cross Road Site is an area approximately 3/4 acres situated on a north/south drainage divide with swales existing on both the northern and southern ends. Runoff in the northerly direction travels to an Unnamed Tributary and southerly by swale to an enbankment, via culvert under the North Grasse River Road crossing and eventually outletting to the Grasse River. Prior to waste disposal, the site consisted of a ravine 600 feet in length and 25 feet in depth with a gray glacial till subgrade located approximately 100 feet above bedrock. Average depth of fill at the site is approximately 25 feet. Previous waste was characterized as consisting of solvent degreasing bottoms, drawing and soluble oil sludges, debris containing chlorinated solvents and some storage drums. Drum removal was performed at the drum storage area. Monitoring wells exist around the disposal area. Soil borings and test pits were advanced along the ravine. A geosynthetic clay cap is present on the southern swale and the drum disposal area and excavation areas 1 and 2.

SURROUNDING POPULATION: (x)Residential ( )Industrial ( ) Rural ( ) Urban OTHER:



ALCOA - MASSENA, NEW YORK

SITE PLAN

2000 0 2000 4000

SCALE IN FEET

FIGURE 1.1

HEALTH AND SAFETY PLAN FORM

CDM Health and Safety Program

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CAMP DRESSER & McKEE INC.

PROJECT DOCUMENT #: _____

HISTORY: *Summarize below. Include complaints from public, previous agency actions, known exposures or injuries, etc.*

Aluminum and aluminum products have been manufactured continuously at the site since 1903, resulting in the generation of various types of industrial wastes. The Alcoa facility is an allegedly inactive hazardous waste disposal site under Consent Order by the NYSDEC. The Dennison Cross Road Site began receiving waste in 1969 and was closed in 1979. It chiefly accepted solvent degreasing bottoms, drawing and soluble oil sludges, debris containing chlorinated solvents and some storage drums. PCBs, volatiles, and fluorides had originally been detected in the disposal area and the southern swale. At closure, the oily wastes and contaminated groundwater were pumped fromtthe site in 1994. Final closure of the Dennison Cross Road Site was completed. The closure included the excavation and disposal of the contaminated soils and from debris Areas 1 and 2, the drum storage area and the southern swale to the Secure Landfill Cell 2. The areas were then backfilled and a low permeability cap was installed.

WASTE TYPES: (x) Liquid (x) Solid (x) Sludge ( ) Gas ( ) Unknown (x) Other *specify:* SOILS

WASTE CHARACTERISTICS: *Check as many as applicable.*

( ) Corrosive	(x) Flammable	( ) Radioactive
(x) Toxic	(x) Volatile	( ) Reactive
( ) Inert Gas	(x) Unkown	( ) Other *specify:*

WORK ZONES: *Describe the Exclusion, Contamination Reduction, and Support Zones in terms on-site personnel will recognize.*

The work zone will consist of the area outside of the confines of the Alcoa plant facility.

HAZARDS OF CONCERN:

(x) Heat Stress *attach guidelines*	( ) Noise
(x) Cold Stress *attach guidelines*	(x) Inorganic Chemicals
( ) Explosive/Flammable	(x) Organic Chemicals
( ) Oxygen Deficient	( ) Motorized Traffic
( ) Radiological	( ) Heavy Machinery
( ) Biological	(x) Slips, Trips, & Falls
( ) Other - *specify*	

FACILITY'S DISPOSAL METHODS AND PRACTICES: *Summarize below.*

HEALTH AND SAFETY PLAN FORM

CDM Health and Safety Program

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HAZARDOUS MATERIAL SUMMARY: *Circle waste type and estimate amounts by category*

CHEMICALS: Amount/Units:	SOLIDS: Amount/Units:	SLUDGES: Amount/Units:	SOLVENTS: Amount/Units:	OILS: Amount/Units:	OTHER: Amount/Units:
Acids	Flyash	Paints	Halogenated (chloro, bromo) Solvents	Oily Wastes	Laboratory
Pickling Liquors	Mine or Mill Tailings	Pigments	Hydrocarbons	Gasoline	Pharmaceutical
Caustics	Asbestos	Metals Sludges	Alcohols	Diesel Oil	Hospital
Pesticides	Ferrous Smelter	POTW Sludge	Ketones	Lubricants	Radiological
Dyes / Inks	Non-Ferrous Smelter	Aluminum	Esters	PCBs	Municipal
Cyanides	Metals Lead Cadmium	Distillation Bottoms	Ethers	Polynuclear Aromatics	Construction
Phenols	Other iron	Other *specify:*	Other *specify:*	Other *specify:*	Munitions
Halogens	*specify:* magnesium manganese chromium antimony beryllium sodium				Other *specify:*
Dioxins					
Other *specify:*					

OVERALL HAZARD EVALUATION: ( ) High ( ) Medium (x) Low ( ) Unknown *(Where tasks have different hazards, evaluate each)*

JUSTIFICATION:

FIRE/EXPLOSION POTENTIAL: ( ) High ( ) Medium (x) Low ( ) Unknown

BACKGROUND REVIEW: (x) COMPLETE ( ) INCOMPLETE

HEALTH AND SAFETY PLAN FORM

CDM Health and Safety Program

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PROJECT DOCUMENT #: _____

KNOWN CONTAMINANTS	HIGHEST OBSERVED CONCENTRATION *(specify units and media)*	PEL/TLV *ppm or mg/m3 (specify)*	IDLH *ppm or mg/m3 (specify)*	WARNING CONCENTRATION *(in ppm)*	SYMPTOMS & EFFECTS OF ACUTE EXPOSURE	PHOTO IONIZATION POTENTIAL
PCB's	6,100 mg/kg (S) 20 ug/L (GW)	.5 mg/m^3	5 mg/m^3	NE	irritated eyes chloracne	NE
VOC's	.88 mg/kg (S)	NA	NA	NA	NA	NA
PAH's	585 mg/kg (S) 56.84 ug/L (GW)	.2 mg/m^3	carc	NE	confusion, nausea, eye irritant, headaches stomach pain	NA
Fluoride	25 mg/L (GW) 24 mg/kg (SD)	2.5 mg/m^3	500 mg/m^3	dust	irritated eyes, stomach pain, diarrhea, excess salivation	dust
Phenols	50 ug/L(GW)	5 ppm	250 ppm	1 ppm	skin corrosive, eye irritant	8.5
Lead	400 ug/L (GW)	.05 mg/m^3	700 mg/m^3	dust	fatigue, pallor, colic	dust
Iron	55.47 ug/L (GW)	1 mg/m^3	NA	N A	NA	NA
Magnesium	116,100 ug/L (GW)	5 mg/m^3	NA	NA	NA	NA
Manganese	2,520 ug/L (GW)	1 mg/m^3	NA	NA	metal fume, fever, acute pneumonia	NA
Cadmium	60 ug/L (GW)	5 mg/m^3	50 mg/m^3	dust	pulmonary edena, chills	dust
Chromium	120 ug/L (GW)	.10 mg/m^3	.25 mg/m^3	NA	irritation, nasal ulcers, skin sensitivity	NA
Antimony	290 ug/L (GW)	.5 mg/m^3	80 mg/m^3	dust	irritate nose, cough, headach, diarrhea	dust

NA = Not Available NE = None Established U = Unknown

S =Soil SW = Surface Water T = Tailings W = Waste TK = Tanks SD = Sediment
A = Air GW = Groundwater S L= Sludge D = Drums L = Lagoon OFF = Off-site

HEALTH AND SAFETY PLAN FORM

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CAMP DRESSER & McKEE INC.

PROJECT DOCUMENT #: _____

KNOWN CONTAMINANTS	HIGHEST OBSERVED CONCENTRATION *(specify units and media)*	PEL/TLV *ppm or mg/m3 (specify)*	IDLH *ppm or mg/m3 (specify)*	WARNING CONCENTRATION *(in ppm)*	SYMPTOMS & EFFECTS OF ACUTE EXPOSURE	PHOTO IONIZATION POTENTIAL
Beryllium	20 ug/L (GW)	.002 mg/m^3	carc	NA	respiratory symptoms, weak, weightloss	NA
Sodium	72,140 ug/L (GW)	NA	NA	NA	NA	NA

NA = Not Available NE = None Established U = Unknown

S =Soil SW = Surface Water T = Tailings W = Waste TK = Tanks SD = Sediment
A = Air GW = Groundwater S L= Sludge D = Drums L = Lagoon OFF = Off-site

HEALTH AND SAFETY PLAN FORM

CDM Health and Safety Program

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PROJECT DOCUMENT #: _____

TASK DESCRIPTION/SPECIFIC TECHNIQUE/SITE LOCATION *(attach additional sheets as necessary)*	TYPE	Primary	Contingency	HAZARD & SCHEDULE
1 SITE WALKOVER	Intrusive / (Non-Intrusive)	A B C (D)	A B C D	HI Med (Low)
		(Modified)	(Exit Area)	
2 GROUNDWATER MONITORING	(Intrusive) / Non-Intrusive	A B C (D)	A B C D	HI (Med) Low
		Modified	(Exit Area)	
3 SURFACE WATER SAMPLING	Intrusive / (Non-Intrusive)	A B C (D)	A B C D	HI (Med) Low
		Modified	(Exit Area)	
4 SWALE DRAINAGE	Intrusive / (Non-Intrusive)	A B C (D)	A B C D	HI (Med) Low
		Modified	(Exit Area)	
5	Intrusive / Non-Intrusive	A B C D	A B C D	HI Med Low
		Modified	Exit Area	
6	Intrusive / Non-Intrusive	A B C D	A B C D	HI Med Low
		Modified	Exit Area	

PERSONNEL AND RESPONSIBLITIES

NAME	FIRM/DIVISION	CDM HEALTH CLEARANCE	RESPONSIBILITIES	On site?
			Work Assignment Manager	(1-2-3-4)
			Site Health and Safety Coordinator	(1-2-3-4)
			Alternate Site H & S Coordinator	(1-2-3-4)
				1-2-3-4
				1-2-3-4
				1-2-3-4

HEALTH AND SAFETY PLAN FORM

CDM Health and Safety Program

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CAMP DRESSER & McKEE INC.

PROJECT DOCUMENT #: _____

PROTECTIVE EQUIPMENT: *Specify by task. Indicate type and/or material, as necessary. Group tasks if possible. Use copies of this sheet if needed.*

BLOCK A

TASKS: 1 2-3-4-5-6-7-8-9-10 A-B-C-D-Modified ( ) Contingency
LEVEL: (X) Primary

Respiratory: (X) Not needed
( ) SCBA, Airline: _____
( ) APR: _____
( ) Cartridge: _____
( ) Escape Mask: _____
( ) Other: _____

Head and Eye: ( ) Not needed
(X) Safety Glasses: w/side shields
( ) Face Shield: _____
( ) Goggles: _____
(X) Hard Hat: _____
( ) Other: _____

Boots: ( ) Not Needed
(X) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
(X) Overboots: _____

Prot. Clothing ( ) Not needed
( ) Encapsulated Suit: _____
(X) Splash Suit: _____
( ) Apron: _____
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall: _____
( ) Other: WORK CLOTHES

Gloves: ( ) Not Needed
(X) Undergloves: _____
(X) Gloves: _____
( ) Overgloves: _____

Other: *Specify below*

BLOCK B

TASKS: 1 (2-3-4) 5-6-7-8-9-10 A-B-C-D-Modified ( ) Contingency
LEVEL: ( ) Primary

Respiratory: ( ) Not needed
( ) SCBA, Airline: _____
( ) APR: _____
( ) Cartridge: _____
( ) Escape Mask: _____
( ) Other: _____

Head and Eye: ( ) Not needed
( ) Safety Glasses: W/SIDE SHIELDS
( ) Face Shield: _____
( ) Goggles: _____
( ) Hard Hat: _____
( ) Other: _____

Boots: ( ) Not Needed
( ) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
( ) Overboots: _____

Prot. Clothing ( ) Not needed
( ) Encapsulated Suit: _____
( ) Splash Suit: _____
( ) Apron: _____
( ) Tyvek Coverall
( ) Saranex Coverall
(X) Cloth Coverall: _____
( ) Other: _____

Gloves: ( ) Not Needed
( ) Undergloves: _____
(X) Gloves: _____
( ) Overgloves: _____

Other: *Specify below*

BLOCK C

TASKS: 1-2-3-4-5-6-7-8-9-10 A-B-C-D-Modified ( ) Contingency
LEVEL: ( ) Primary

Respiratory: ( ) Not needed
( ) SCBA, Airline: _____
( ) APR: _____
( ) Cartridge: _____
( ) Escape Mask: _____
( ) Other: _____

Head and Eye: ( ) Not needed
( ) Safety Glasses: _____
( ) Face Shield: _____
( ) Goggles: _____
( ) Hard Hat: _____
( ) Other: _____

Boots: ( ) Not Needed
( ) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
( ) Overboots: _____

Prot. Clothing ( ) Not needed
( ) Encapsulated Suit: _____
( ) Splash Suit: _____
( ) Apron: _____
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall: _____
( ) Other: _____

Gloves: ( ) Not Needed
( ) Undergloves: _____
( ) Gloves: _____
( ) Overgloves: _____

Other: *Specify below*

BLOCK D

TASKS: 1-2-3-4-5-6-7-8-9-10 A-B-C-D-Modified ( ) Contingency
LEVEL: ( ) Primary

Respiratory: ( ) Not needed
( ) SCBA, Airline: _____
( ) APR: _____
( ) Cartridge: _____
( ) Escape Mask: _____
( ) Other: _____

Head and Eye: ( ) Not needed
( ) Safety Glasses: _____
( ) Face Shield: _____
( ) Goggles: _____
( ) Hard Hat: _____
( ) Other: _____

Boots: ( ) Not Needed
( ) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
( ) Overboots: _____

Prot. Clothing ( ) Not needed
( ) Encapsulated Suit: _____
( ) Splash Suit: _____
( ) Apron: _____
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall: _____
( ) Other: _____

Gloves: ( ) Not Needed
( ) Undergloves: _____
( ) Gloves: _____
( ) Overgloves: _____

Other: *Specify below*

HEALTH AND SAFETY PLAN FORM

CDM Health and Safety Program

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CAMP DRESSER & McKEE INC.

PROJECT DOCUMENT #: _____

MONITORING EQUIPMENT: *Specify by task. Indicate type as necessary. Attach additional sheets if needed.*

INSTRUMENT	TASK	ACTION GUIDELINES		COMMENTS *(When and how will you use the monitor?)*
Combustible Gas Indicator	1-2-3-4-5-6-7-8	0-10%LEL 10-25%LEL >25%LEL 21.0%O_2 <21.0%O_2 <19.5%O_2	*No explosion hazard.* *Potential explosion hazard;notify SHSC.* *Explosion hazard; interupt task/evacuate* *Oxygen normal.* *Oxygen Deficient;notify SHSC.* *Interrupt task/evacuate*	(x) Not Needed
Radiation Survey Meter	1-2-3-4-5-6-7-8	3 x Background: >2mR/hr:	*Notify HSM.* *Establish REZ.*	(x) Not Needed
Photoionization Detector _____ eV Lamp Type_____	1-2-3-4-5-6-7-8	*Specify:* 0-1 ppm 1-5 ppm over 5 ppm	level D level D: check w/detector tube leave area. Call H&S	(X) Not Needed Measure organic vapor continually. Compare action levels to time-averaged breathing zone measurements.
Flame Ionization Detector Type_____	1-2-3-4-5-6-7-8	*Specify:*		(X) Not Needed
Detector Tubes/ Monitox Type_____ Type_____	1-2-3-4-5-6-7-8	*Specify:*		(X) Not Needed
Respirable Dust Monitor Type_____ Type_____	1-2-3-4-5-6-7-8	*Specify:* If team sees visible concentrations of of dust in air or dry windy conditions that produce dusts, they will leave the area.		(x) Not Needed
Other *Specify:*	1-2-3-4-5-6-7-8	*Specify:*		

DECONTAMINATION PROCEDURES

ATTACH SITE MAP INDICATING EXCLUSION, DECONTAMINATION, AND SUPPORT ZONES AS PAGE TWO

Personnel Decontamination

Summarize below or attach diagram;

Team members will remove their protective clothing in the following order:

- Equipment drop
- Boot cover (if worn) removal
- Outer glove removal
- Hard hat removal
- Overall removal
- Respirator (if work) removal
- Surgical glove removal
- Hand and face wash

( ) Not needed

Containment and Disposal Method

Disposable protective equipment will be disposed through the contractor's or facility's waste stream.

Sampling Equipment Decontamination

Summarize below or attach diagram;

Sampling equipment will be decontaminated by:

- Gross mechanical removal of dirt
- Detergent in water wash
- Tap water rinse
- Methanol rinse
- Distilled water rinse

( ) Not needed

Containment and Disposal Method

Methanol will not be discharged to the ground. Sampling equipment cleaning solutions will be collected in a 55-gallon drum for on-site treatment.

Heavy Equipment Decontamination

Summarize below or attach diagram;

CDM will require heavy equipment contractors (e.g. drillers) to decontaminate their equipment before it leaves the site.

( ) Not needed

Containment and Disposal Method

Control of the fluids from decontamination of heavy equipment will be the responsibility of the contractor's (e.g. drillers).

HEALTH AND SAFETY PLAN FORM

CDM Health and Safety Program

This document is for the exclusive use of CDM and its subcontractors

CAMP DRESSER & McKEE INC.

PROJECT DOCUMENT #: _____

EMERGENCY CONTACTS

Water Supply	Massena Water Dept	(315) 769-7052
Site Telephone		(315) 764-4011
EPA Release Report #:	**1-800/424-8802**	
CDM 24-Hour Emergency #:	**1-800/SKY-PAGE**	**31821#**
Facility Management		(315) 764-4128
Other *(specify)*	On-Site Security	Dial 4128
CHEMTREC Emergency #:	**1-800/424-9300**	
	Site Ambulance	Dial 4501

CONTINGENCY PLANS: *Summarize below*

If Contractor's safety officer directs a higher level of protection than this plan does, CDM personnel will wear that level. CDM personnel have the option to choose a level of protection higher than that directed by this safety plan.

CDM staff will avoid the faces and edges of excavations to the extent consistent with their tasks. Contractor will be expected to provide a "competent person" to oversee excavation safety. Each day work proceeds, CDM staff will ask this person to advise them or significant or changed excavation hazards.

CDM may rely on instruments operated by Contractor personnel only upon HSM approval. Construction activities will be addressed in a future safety plan.

HEALTH AND SAFETY PLAN APPROVALS

Prepared by Julie Schreiber Date 8 Nov 93

SHSC Signature _____ Date _____

HSM Signature _____ Date _____

EMERGENCY CONTACTS	NAME	PHONE
Health and Safety Manager	C. Marlowe	(908) 225-7000
Project Manager	W.F. McInerney	(315) 764-4189
Site Safety Coordinator	J. Fern	(315) 764-4189
Client Contact	Boyd Braniff	(315) 764-4187
Other *(specify)*	Francis Gero Site Fire Dept.	(315) 764-4415 Dial 4500
Environmental Agency	NYSDEC	(315) 785-2513
State Spill Number	Tom Higginbotham	(315) 764-4581 (800) 424-8802
Fire Department	Massena	(315) 764-2464
Police Department	Massena	(315) 769-3577
State Police	NY	(315) 769-3503
Health Department		(315) 764-0551
Poison Control Center	800 252-5655 or 1-476-4766 (Syracuse)	
Occupational Physician	**Edward Barnes**	**1-800/229-3674**

MEDICAL EMERGENCY

Hospital Name: Massena Memorial — **Phone:** (315) 764-1711

Hospital Address: 1 Hospital Drive (off Maple)

Name of Contact at Hospital: — **Phone:**

Name of 24-Hour Ambulance: (315) 764-0313

Route to Hospital: Exit Alcoa main gate, turn left onto Park Ave. At end of driveway turn right onto Willow St. At corner of Center St., turn right, go through yield sign and next 2 stop lights onto Maple (Rt 37B), 1-2 miles, Hospital on right on Hospital Drive.

Distance to hospital Approximately 2+ miles

Attach map with route to hospital

HEALTH AND SAFETY PLAN SIGNATURE FORM

CDM Health and Safety Program

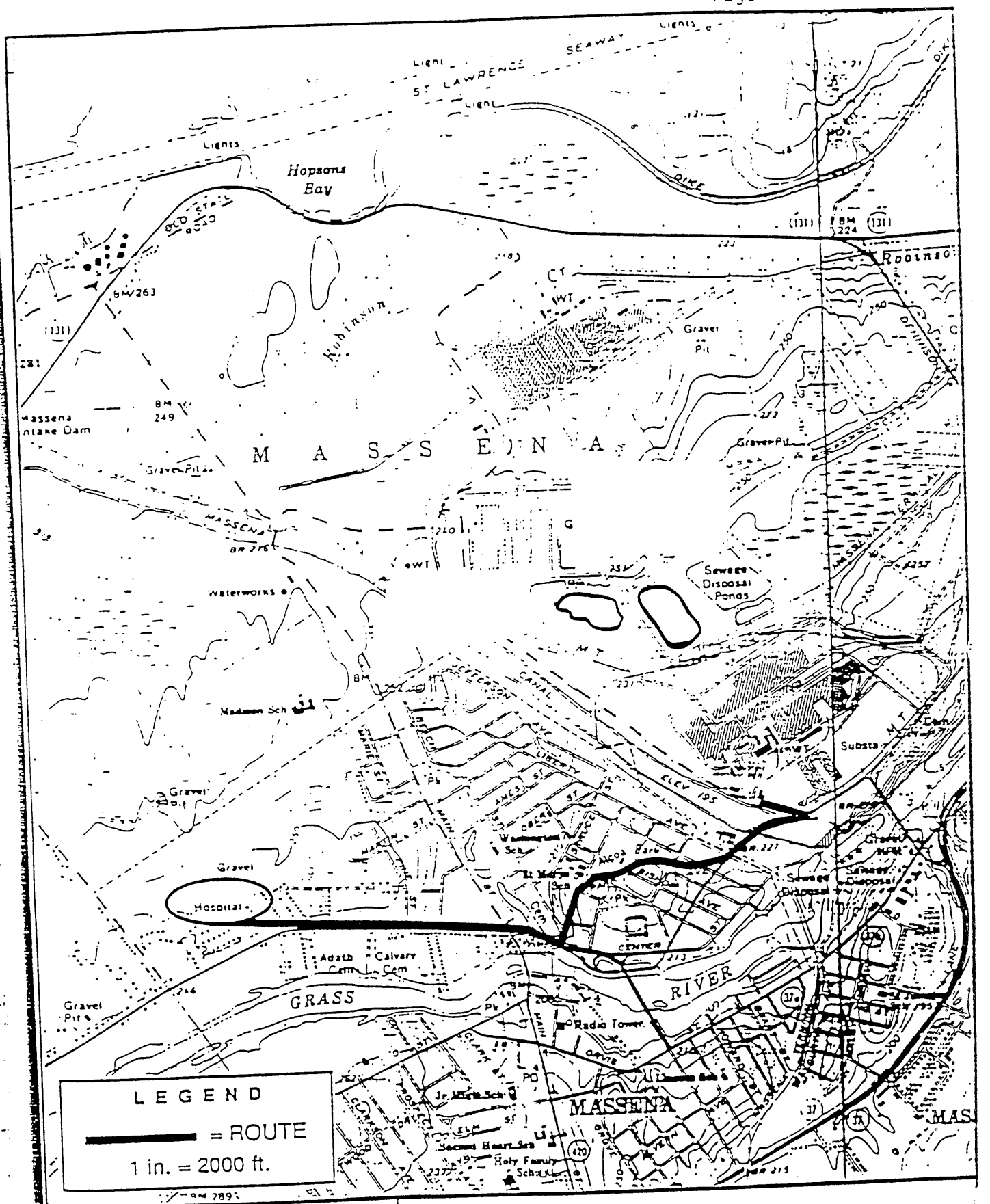
INSTRUCTIONS: Field personnel are required to receive a copy of the final health and safety plan (HSP), and to read, understand, and agree to the provisions of the plan. The Project Manager (PM) is responsible to distribute the HSP to personnel as they are assigned to the project. Personnel are required to sign this form indicating receipt of the HSP. The original of this form is maintained by the PM, and becomes part of the permanent project files. Copies of this form are to be sent to the Health and Safety Manager (HSM). Updated copies of this form are sent to the HSM as additional personnel are assigned to the site.

SITE NAME/NUMBER: DENNISON CROSS ROAD SITE

DIVISION/LOCATION: _____

I have received a copy, read, understood, and agree to comply with the provisions of the above referenced HSP for work activities on this project.

PRINTED NAME	SIGNATURE	DATE



ALCOA - Massena, New York

Camp Dresser & McKee Inc.

ROUTE TO HOSPITAL
HEALTH & SAFETY PLAN